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Foreign Aid and Dutch Disease: The Case of Vietnam

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Abstract

This study examines whether foreign aid from 1986 to 2019 caused the Dutch disease effect in Vietnam using a VAR model and Granger causality test. In this context, "Dutch disease" refers to the weakening of manufacturing processes as a consequence of the appreciation of a local currency due to capital inflow. Since foreign aid is considered a type of capital inflow, it is among the reasons for the appreciation of a local currency, which may offset the impact of foreign aid on economic growth. Although Vietnam experienced rapid economic growth, along with a large amount of foreign aid and appreciation in the real exchange rate, after Doi Moi (economic reform) in 1986, few studies have yet been conducted. The estimation results show that foreign aid does not cause an appreciation of the local currency in Vietnam. Based on this result, the Dutch disease did not occur due to foreign aid in Vietnam.

JEL classification numbers: F35, O53.

Keywords: Foreign Aid, Dutch Disease, Vietnam.

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1 Introduction

The impact of foreign aid on economic growth in a recipient country has not yet been determined. The main hypothesis is that it is determined by governance in the recipient country (Burnside and Dollar 2000; Hansen and Tarp 2001; Dalgaard et al. 2004). Another hypothesis is that foreign aid is not effective (Easterly et al. 2004, Easterly 2007). It seems clear that such aid does not always contribute to economic growth in recipient countries.

An additional aspect is that foreign aid, as a capital inflow, negatively impacts economic growth via currency appreciation, which is analyzed in the Dutch disease model. The concept of Dutch disease itself was derived from the experience of the Netherlands in the 1960s. Due to the discovery and export of oil from the Netherlands, the currency appreciated while the manufacturing industry declined. Dutch disease refers to when the increased export of natural resources causes currency appreciation and weakens manufacturing inside a country.

Vietnam experienced rapid economic growth after the vast economic reform ("Doi Moi" in Vietnamese) that began in 1986. In addition, in terms of free trade, democratic relations with the United States were established in 1994, and Vietnam joined ASEAN in 1995. Consequently, GDP per capita has risen significantly, while the standard of living has drastically changed over the past 30 years, especially after the 1990s (Figure 1). In this process, a considerable amount of foreign aid flowed into the country and the local currency, the Dong, appreciated in terms of the real exchange rate (Figure 2), which may have weakened the manufacturing industries.

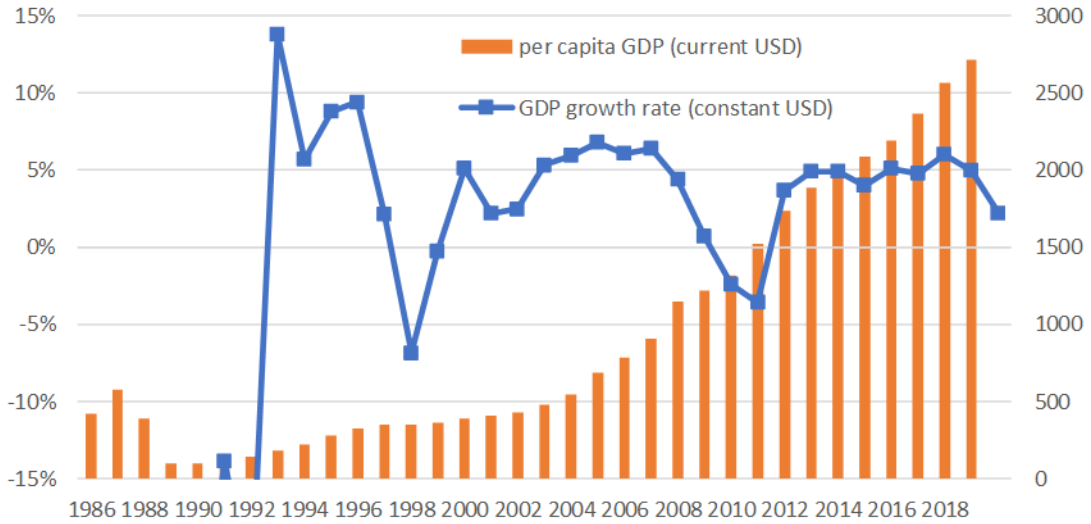

Figure 1: Economic growth and GDP per capita in Vietnam after Doi Moi

Source: World Development Indicators (World Bank)

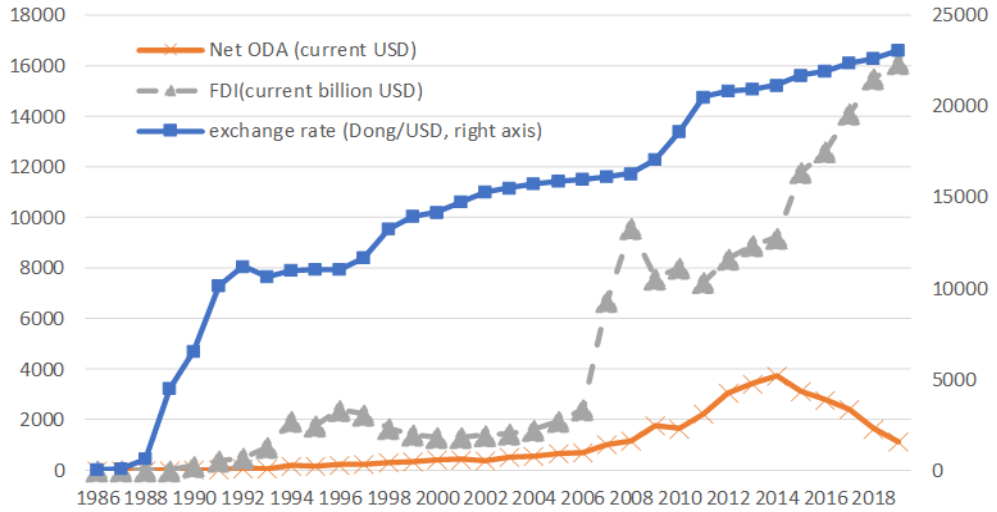

Figure 2: Exchange rate and foreign aid in Vietnam
Source: World Development Indicators (World Bank)

The present study examines the economic impact of foreign aid in Vietnam from 1986 to 2019, specifically whether it induced the Dutch disease. The main purpose of this research is to determine whether the large amount of foreign aid in a relatively short time has negatively impacted the Vietnamese economy.

The rest of the paper is structured as follows. Section 2 describes the literature review including the Dutch Disease itself and a description of the relationship between the Dutch Disease and foreign aid. Section 3 presents the data for key variables and methodology, including vector auto-regression (VAR) estimation. Section 4 shows the estimation results and provides a discussion with interpretation. Section 5 summarizes and concludes the study.

2 Literature Review

2.1 Previous Studies on Dutch Disease

The Dutch disease occurred in the Netherlands in 1960s due to increased oil exports following the discovery of crude oil in the North Sea. Due to the increase in oil exports, the exchange rate appreciated, and the manufacturing sector was weakened, which was the reason for the decline in the GDP. The Economist termed this phenomenon the "Dutch disease" in 1977, as the impact of capital inflow was to lower the GDP by weakening the manufacturing sector (Reisinezhad 2020). From a theoretical perspective, Corden and Neary (1982) developed a two-industry, small, open-economy model for the Dutch disease due to capital inflow. The Dutch disease is divided into two phases: the "resource movement effect" and the "spending effect" (Godfrey et al. 2002). In the first phase, the resource movement effect occurs, which means that aid flows into non-tradable industries and wages and prices increase, making the tradable industry less attractive. In empirical studies, the magnitude of the resource movement effect is shown as the movement of the real effective exchange rate (REER). In the second phase, the spending effect occurs, which means that higher revenues from the non-tradable industry flow into both industries. Since the price in the tradable industry is the same as the world price, production incentive capital flows into the non-tradable industry. The production possibility curve shifts outward due to capital accumulation. In addition, the production of non-tradable goods increases under the unchanged relative price between tradable and non-tradable goods. Overall, the production of tradable goods, that is, goods from manufacturing industries, decreases, whereas that of non-tradable goods increases.

2.2 Previous Studies on Dutch Disease and Foreign Aid

As Reisinezhad (2020) observes, many economists believe that foreign aid can cause the Dutch disease. Fielding and Gibson (2013) demonstrated the impact of foreign aid that caused the Dutch disease in sub-Saharan African countries between 1970 and 2000. They found that most countries in that area experienced an appreciation in the real exchange rate. Rajan and Subramanian (2011) examined evidence of the Dutch disease using cross-country panel data from 32 countries in the 1980s and 15 countries in the 1990s. In contrast, Tekin (2012) examined 48 African countries from 1970 to 2010 using causality tests and did not find evidence of the Dutch disease. Considering the relationship between foreign aid and the REER, Dufrenot and Yehoue (2005) found insignificant effects in 64 countries from 1970 to 2000. Using 83 countries' annual data during the period 1980–2004, Elbadawi et al. (2008) found that the REER appreciated following an inflow of foreign aid. Fielding (2010) examined the Dutch disease effect through foreign aid in South Pacific countries because cash inflow to small countries is expected to cause the Dutch disease; however, the author found no such effect.

Regarding previous studies in southeast Asian countries, Burke and Ahmadi-Esfahani (2006) examined the Dutch disease phenomenon using cross-country panel data across Thailand, Indonesia, and the Philippines for the period from 1970 to 2000 (a total of 93 observations), and found that foreign aid was not effective, even in this region. Nilar et al. (2016) showed the Dutch disease effects from foreign aid in Cambodia, Laos, Myanmar, and Vietnam (CLMV countries). In addition, Sakurai (2017) indicated that the Dutch disease did not occur in Thailand, despite the large amount of foreign aid during the 1980s and 1990s.

3 Data and Methodology

This section outlines the empirics of the Dutch disease effect in Vietnam, including the data for the key variables, relevant methodologies involving the VAR model, and outcomes of estimation.

3.1 Data

To determine the economic impact of foreign aid, one control and three endogenous variables are used. The first endogenous variable is the Real Effective Exchange Rate (REER). REER is measuring the development of the price level adjusted value of country's currency against a basket of the country's trading partners (Darvas 2021, p.2). The second is the official development assistance (NetODA), or foreign aid. The meaning of the "net" is that part of ODA is a loan and that return of payment is offset. The third is the manufacturing service ratio (MOS), with a GDP base. The control variable is the per capita GDP (PGDP). The REER has been estimated by Bruegel (Darvas 2012, 2021), while the other statistics are from the World Development Indicators, World Bank. Table 1 presents a description of the data, while Figure 3 shows an overview of the four variables. Table 1 shows that the standard deviations of the net ODA and per capita GDP are bigger than those of REER and MOS. Figure 3 reveals that the three endogenous variables exhibit different trends. Foreign aid (ODA) shows a positive trend until 2014, whereas the MOS is negative. The REER shows a positive trend from the 1990s, having been negative in the late 1980s. Although the local currency is seen to appreciate under larger ODA, the trend for the nominal exchange rate for the local currency against the US dollar declines. Since Vietnam appears to be suffering from a development of the manufacturing industry under an appreciating local currency, the VAR model and Granger causality test are used.

Table 1: Data description

	NetODA	REER	MOS	PGDP
mean	30.18	0.89	0.43	29.50
std	25.10	0.56	0.10	14.66
min	0.01	0.40	0.32	11.46
max	85.54	3.14	0.72	61.49

Sources: World Development Indicators (World Bank) and Darvas (2012, 2021).

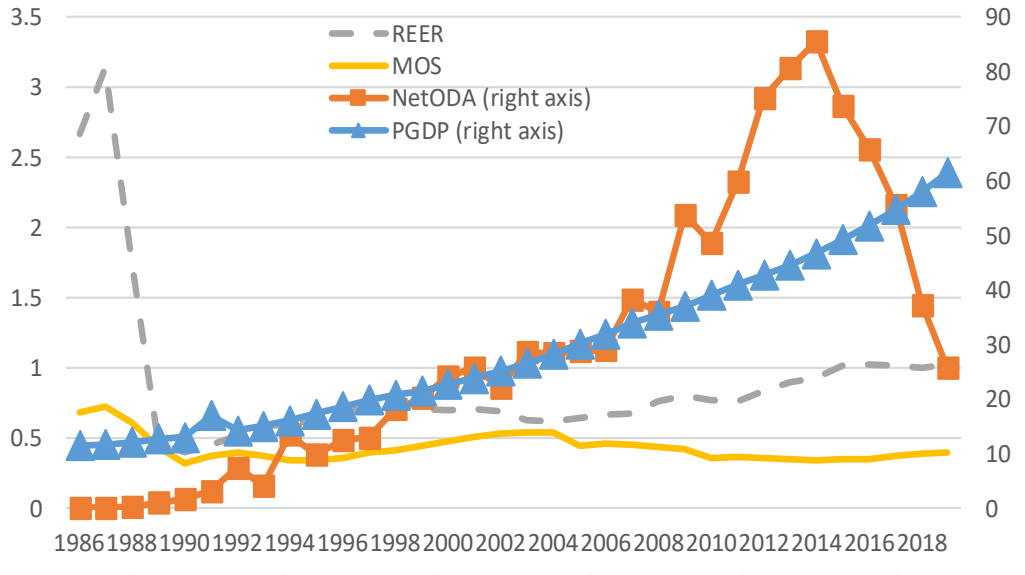

Figure 3: Overview of variables

Sources: World Development Indicators (World Bank) and Darvas (2012, 2021).

3.2 Methodology

We conduct an estimation using the VAR model. This model is used because it allows us to determine the relationships among the variables of interest and facilitates the tracing of the dynamic responses of the variables from an exogenous shock.

Before constructing the VAR model, we conduct a unit root test for stationarity. The augmented Dickey-Fuller (ADF) and Phillips Perron (PP) tests are used to assess whether these statistics have unit roots. The test for stationarity involves the null hypotheses of unit roots on the values and their first difference, including both "intercept" and "trend and intercept."

We next construct the VAR model according to the following equation:

$$\begin{bmatrix} \mathrm{D(NetODA)}_t \\ \mathrm{D(REER)}_t \\ \mathrm{D(MOS)}_t \end{bmatrix} = \alpha_t + \begin{bmatrix} \beta_1 & \gamma_1 & \delta_1 \\ \beta_2 & \gamma_2 & \delta_2 \\ \beta_3 & \gamma_3 & \delta_3 \end{bmatrix} \begin{bmatrix} \mathrm{D(NetODA)}_{t-1} \\ \mathrm{D(REER)}_{t-1} \\ \mathrm{D(MOS)}_{t-1} \end{bmatrix} + \begin{bmatrix} \mathrm{D(PGDP)}_t \\ \mathrm{D(PGDP)}_t \\ \mathrm{D(PGDP)}_t \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \end{bmatrix} \quad (1)$$

In this model, there are three endogenous variables: $D(NetODA_t)$, $D(REER_t)$, and $D(MOS_t)$. In addition, there is one control variable, $D(PGDP_t)$, which is the first difference in PGDP. PGDP is used for the following two reasons: 1) diminishing the shock by the short-term business cycle and 2) the effect of the long-term Petty-Clark's law. The other terms in the equation are as follows: α denotes the constant term; β, γ, and δ represent the endogenous variables; and ε represents the error terms. Based on this VAR model, we use bilateral Granger causality tests among the three variables, $D(NetODA_t)$, $D(REER_t)$, and $D(MOS_t)$.

4 Estimation Results and Discussion

The results of the unit root tests in Table 2 indicate that only REER is rejected in the level series. In contrast, the other three variables, NetODA, MOS, and PGDP, are rejected in the first difference. Thus, we conclude that these variables are I(1), and use the first difference series for the VAR model, denoted as $D(NetODA_t)$, $D(REER_t)$, $D(MOS_t)$, and $D(PGDP_t)$, in period t.

Table 2: Estimation results of unit root tests

Net Official Development Assistance（NetODA）: I(1)

	ADF		PP	
	intercept	intercept&trend	intercept	intercept&trend
level	-2.174	-3.309*	-1.443	-1.277
first difference	-0.990	-4.282**	-4.153***	-4.341***

Real Effective Exchange Rate（REER）: I(0)

	ADF		PP	
	intercept	intercept&trend	intercept	intercept&trend
level	-3.706***	-21.845***	-4.040***	-8.432***
first difference	-	-	-	-

Manufacture Service Ratio（MOS）: I(1)

	ADF		PP	
	intercept	intercept&trend	intercept	intercept&trend
level	-2.806*	-2.374	-2.802*	-2.442
first difference	-3.661***	-4.826***	-3.700***	-4.031**

Per Capita GDP（PGDP）: I(1)

	ADF		PP	
	intercept	intercept&trend	intercept	intercept&trend
level	5.486	0.951	21.514	1.989
first difference	-4.639***	-8.361***	-4.788***	-9.883***

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

We use the unrestricted VAR model in the previous and present periods, as shown in Equation (1) partly because the adequate lag length is zero from the AIC and SIC values. The results of the estimation using the VAR model are reported in Table 3. D(--) means the first difference, while (-1) means the previous period. Because the first difference is used, the number of observations is 32. Since the variable, D(NETODA)(-1), does not show significance for any other present variables, D(NETODA), D(REER), or D(MOS), we can infer that foreign aid in the previous period does not affect the REER, nor does it affect manufacturing.

Table 3: Estimation results of the VAR model

	D(NETODA)	D(REER)	D(MOS)
D(NETODA(-1))	0.271	0.001	-0.001
	(0.184)	(0.008)	(0.001)
D(REER(-1))	4.286	0.433	0.086
	(5.698)	(0.252)	(0.032)
D(MOS(-1))	-42.585	-1.045	-0.008
	(39.673)	(1.752)	(0.224)
D(PGDP)	-0.708	-0.007	0.000
	(0.733)	(0.032)	(0.004)
Adj. R-squared	0.023	-0.009	0.269

Note: D(--) indicates the first difference, and (-1) indicates the previous period.
Standard errors are shown in parentheses (no significant values).

Although foreign aid to Vietnam does not have an impact on the REER based on the results of the VAR model, it is confirmed using the Granger causality test shown in Table 4. Only the impulse of D(REER) could have an impact on D(MOS) at the 5% level, meaning that the local currency appreciation will impact the manufacturing industries. Based on these results, we can infer that foreign aid toward Vietnam did not cause the Dutch disease effect in this century.

The result of the causality test enables us to focus only on the relationship between REER and MOS in the impulse response analysis. Figure 4 shows that MOS positively respond to the shock of REER. Although the shock of REER should have a negative impact on the manufacturing industry from a theoretical point of view, the manufacturing industry in Vietnam appears to be resilient so as to maintain productivity regardless of the local currency appreciation.

Table 4: Estimated results of the Granger causality tests

Null Hypothesis:	Obs	F-Statistic
D(REER) does not Granger Cause D(NETODA)	32	0.001
D(NETODA) does not Granger Cause D(REER)	32	0.108
D(MOS) does not Granger Cause D(NETODA)	32	0.288
D(NETODA) does not Granger Cause D(MOS)	32	0.540
D(MOS) does not Granger Cause D(REER)	32	0.451
D(REER) does not Granger Cause D(MOS)	32	7.042**

Note: ** indicates the significance level at 5%.

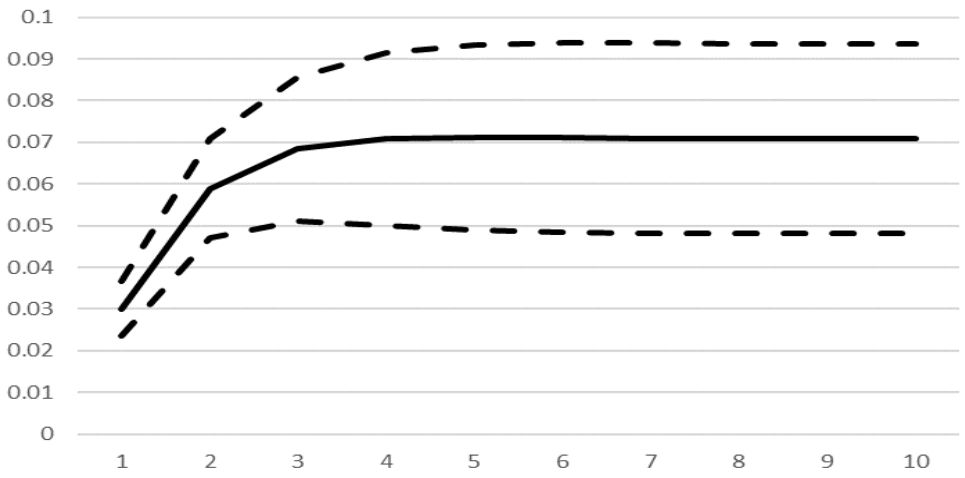

Figure 4: Impulse response of manufacture service industry ratio to real effective exchange shock to Vietnam

Note: Dashed line denotes 95% error band respectively over 10 years horizons.

In conclusion, foreign aid received by Vietnam does not induce Dutch disease. This result can be interpreted as follows. First, the "resource movement effect" is relatively small in terms of the REER, as shown in Figure 5. Second, from the perspective of the "spending effect," the associated reductions in cost are considered to assist in increasing factor prices such as wages and interest. In addition, the savings rate is high. In the 2000s, the national savings rate was more than 20% (Figure 4). Third, from the perspective of economic growth theory and the accumulation of capital, foreign direct investment and the high savings rate promote the growth of production.

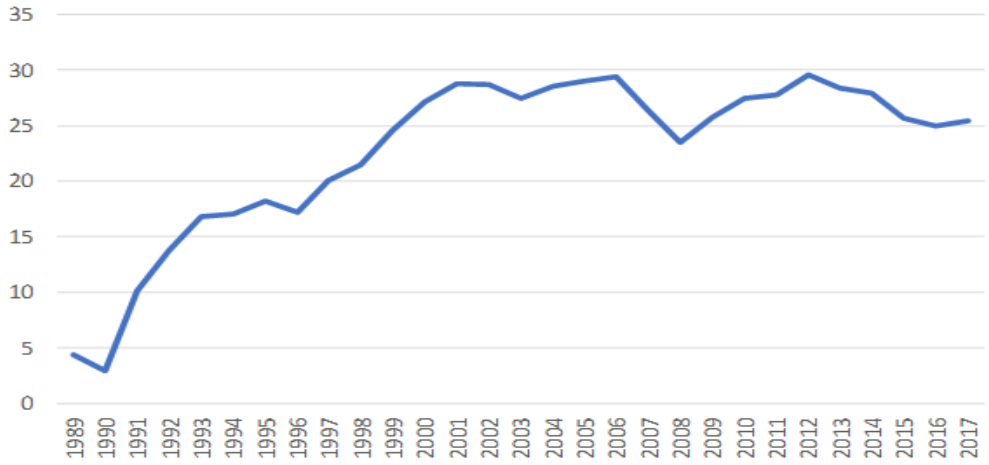

Figure 5: Gross Domestic Saving in Vietnam (% of GDP)

Source: World Development Indicators.

5 Conclusion

This study examined the economic impact of foreign aid in Vietnam between 1986 and 2019 in terms of whether it caused the Dutch disease. We constructed a VAR model and employed the Granger causality test among the ODA, REER, and MOS. It was found that the ODA did not cause an appreciation of the REER or a lower MOS. These empirical findings imply that Vietnam has never suffered from the Dutch disease, and that foreign aid may have had a positive effect. We indicate that the use of foreign aid in Vietnam, which focused on the construction of infrastructure, provided little room for increasing consumption and contributed directly to capital accumulation. When receiving a huge amount of ODA while maintaining a stable exchange rate, it is necessary for both the donor country and recipient country to cooperate, and it can be inferred that this policy works well so far in Vietnam.

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