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Revisiting the Validity of the Weak Currency Policy

Evidence from Vietnam's Export and Import Demand

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This paper revisits the validity of the weak currency policy in Vietnam. It estimates the income and exchange rate elasticities of Vietnam's bilateral export and import demand with its twenty-three trading partners between 1994 and 2016. The Fully Modified OLS (FMOLS) estimates suggest that the income elasticities of both export and import demand are consistently significant and more elastic with expected positive signs. Meanwhile, the exchange rate elasticities are inconsistent in terms of their size, sign and statistical significance. In general, bilateral import demand, compared to bilateral export demand, shows considerably inelastic exchange rate elasticity with signs that are opposite to expectation. Only three countries satisfy the Marshall-Lerner condition. Also, the influence of income over trade balance outweighs that of exchange rate. The weak currency policy that was once claimed to be effective is now ineffective in Vietnam as the country's external sector is dominated by foreign-invested enterprises.

Keywords: Income elasticities of demand for exports and imports, price elasticities of demand for exports and imports, weak currency policy, Marshall-Lerner condition, FMOLS panel analysis, Vietnam

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1. Introduction

Vietnam's external sector has shown an unusual trajectory over the last ten years. As Figure 1 demonstrates, large and chronical trade deficits began to improve from 2009 and, for the first time, a surplus was recorded in 2012—which has lasted up until now. The nominal value of the Vietnam dong (VND) against the US dollar has continued to depreciate since 1994. Meanwhile, the real value of the VND against the US dollar depreciated over two periods (1994–2002 and 2015–17) and appreciated from 2003 to 2014, which is not commonly observed in other economies. This could imply that the weak currency policy

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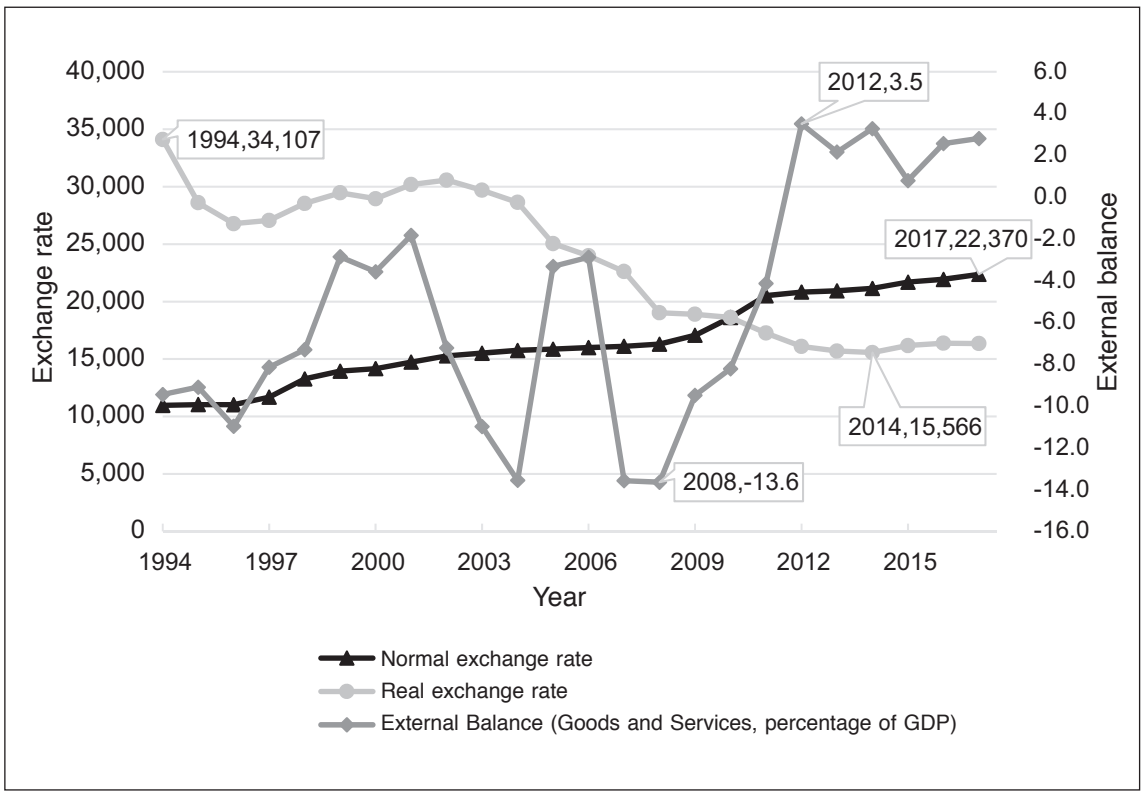
FIGURE 1
Trade Balance and Real Exchange Rate of Vietnam (1994–2017)



Notes and Sources:

(1) Nominal exchange rates are period-averaged that measure the amount of the VND per unit of the US dollar. These are collected from the IMF's *International Financial Statistics (IFS)*.

(2) Real exchange rates are calculated by deflating the nominal exchange rates by the ratio of GDP deflator of the US to Vietnam, that is, $NER \cdot \frac{Deflator_{US}}{Deflator_{VN}}$. GDP deflator data are collected from the *IFS*.

(3) External balance data, measure net exports of goods and services, are collected from the World Bank's *World Development Indicator (WDI)*.

based on a presumed long-run relationship between trade balance and real depreciation, has not been compatible with Vietnam's external sector.

The contribution of Vietnam's external sector to its economic growth has been critical. The GDP share of the country's merchandise trade grew rapidly from 60.7 per cent in 1994 to 190.2 per cent in 2017. The average annual growth rate of Vietnam's trade stands at 17.8 per cent. Its exports and imports have grown annually at 18.8 per cent and at 16.9 per cent, respectively. These figures are far higher than the average annual growth rate of GDP at 6.3 per cent.[1] Acknowledging the importance of the external sector, Vietnamese authorities have actively pushed for extensive engagement in international trade by implementing various policies such as managing the country's exchange rate,[2] promoting FDI,[3] and signing multilateral FTAs aggressively.[4]

This impressive growth of the external sector, however, should be appraised with caution for a number of reasons. First, Vietnam has continuously recorded trade deficits throughout the last twenty-five years (with the exception of the past few years), which makes it doubtful whether the recent turn towards a trade surplus is on track. As Figure 1 shows, the size of the trade deficit usually varied from 7 per cent to 12 per cent of GDP (the largest deficit recorded in 2007 was 18 per cent of GDP), whereas the trade surplus was just around 1 per cent of GDP (the largest surplus recorded in 2017 was 1.3 per cent of GDP).

Second, foreign invested enterprises (FIEs) play a key role in the country's external sectors, while dominant local firms—usually state owned enterprises (SOEs)—take the lion's share of the domestic market and make little contribution to Vietnam's exports.[5] This heavy reliance is verified by the share of FIE-dominated industries such as mobile phones, electronics and computer chips. As demonstrated in Table A2, the share of "phones" and "electronic/computer parts" in the ten main exports grew from 13.7 per cent to 47.2 per cent between 2004 and 2016, whereas that of other industries such as "rice", "coffee", "fishery" and "wood products" reduced from 32.9 per cent to 20.1 per cent over the same period.[6]

Third, the nominal bilateral exchange rate of the VND against the US dollar has continuously depreciated over the sample period of this paper. The annual average rate of depreciation was 3.15 per cent between 1994 and 2017. While the Vietnamese monetary authority has never declared (or has not been able to declare) that it keeps its currency weak, it is commonly agreed that the priority of the monetary authority is to maintain the stability of the nominal bilateral exchange rate of the VND against the US dollar (Nguyen Tran Phuc and Ngueyn Duc-Tho 2009; Camen 2006; Bui 2018). It is evident that sustaining the stability has meant devaluing the VND instead of revaluing it. The effort to stabilize the nominal bilateral exchange rate, however, has decoupled the real bilateral exchange rate against the dollar that has appreciated over the last fifteen years, during which period Vietnam's trade deficits first deteriorated (until 2008) and then began to show impressive improvement (from 2009). This is in outright contradiction with the typical positive long-run relationship between these two variables.

The above observations suggest that the factor that is most likely to affect Vietnam's trade balance is not exchange rate management but the performance of FIEs in the world export market. Some of these FIEs have significant global market power in terms of setting prices, implying that their exports might not be sensitive to the bilateral exchange rate. Similarly, Vietnam's imports are possibly insensitive to the bilateral exchange rate because, when FIE exports grow fast, so do imports of intermediary goods—regardless of the variation in the bilateral exchange rate.[7] This idea naturally casts doubt on the validity of the weak currency policy.

Explanations provided by a shallow pool of Vietnam-based studies on this matter is inconclusive. Some argue in favour of a positive long-run relationship (Thanh and Kalirajan 2005; Thom 2017; Pham 2014; Le, Ho and Dang 2018; Pham and Nguyen 2013), while others argue against (Lee 2018; Phan and Jeong 2015). The main limitation of all these studies, except Thanh and Kalirajan (2005), is that they are unable to capture the specific influence of the real exchange rate over exports and imports because trade balance is used as the dependent variable in these analyses. Moreover, most of the studies are based on aggregate level analysis, an approach that has been deemed biased due to the "average out" effect (Rose and Yellen 1989).

To fill some of these gaps, this paper estimates the income and exchange rate elasticities of bilateral export and import demand of Vietnam with its twenty-three trading partners that account for around 90 per cent of total trade. It also tests the Marshall-Lerner (ML) condition to check whether the real depreciation of the VND has helped improve the nation's trade balance. The Fully Modified OLS (FMOLS) estimator is used for the analysis of panel time-series data to improve the explanatory power in the presence of cointegration.

The structure of this paper is as follows. The next section provides a comprehensive literature review, while the third section elaborates on the methodology. The subsequent section discusses the estimation results, and the final section concludes with policy implications.

2. Literature Review

The elasticity and absorption approaches are two representative models that are frequently used to explain the impact of real depreciation on trade balance. Assuming two small open economies, Home and Foreign, the elasticity approach expects Home's trade balance to improve when its currency depreciates at the given income levels in Home and Foreign. The real depreciation of Home's currency increases the selling price of Foreign's goods in Home and their sales decrease (the volume effect), whereas it decreases the selling price of Home's goods (the price effect) in Foreign where sales consequently increase (the volume effect). The size of the volume effect in Home's import payments depends on that economy's import elasticity. Meanwhile, Home's export receipts either increase or decrease, depending on Foreign's import elasticity that determines the marginal change of the price effect and the volume effect. The ML condition indicates that Home's trade balance will improve if the sum of these marginal changes is positive. This is the main rationale behind implementing the weak currency policy.

The absorption approach developed by Alexander (1952), on the other hand, includes the impact on national income caused by real depreciation to explain the relationship between real depreciation and trade balance. Similar to the elasticities approach, the real depreciation of Home currency improves its trade balance at first, leading to higher national income in that economy. This then causes Home to purchase more imported goods. Home's trade balance consequently deteriorates. The net impact depends on the country's marginal propensity to import and to save.[8]

It is not difficult to find studies that focus on the influence of income over exports and imports, as expected in the absorption approach (Irandoust, Ekblad and Parmler 2006; Duasa 2007; Hossain 2009; Ketenci 2014, to name a few). However, few Vietnam studies explicitly pay attention to the impact of income. Thanh and Kalirajan (2005) report that trading partners' income positively affects Vietnam's exports, but domestic income has no statistically significant impact on its imports. Phan and Jeong (2015) observe a positive impact of foreign income and a negative impact of domestic income on the trade balance. Le, Ho and Dang (2018) detect a negative impact of domestic and foreign income on the trade balance. Lee (2018) finds that the income factor is not so strong and inclusive at the bilateral level.

On the other hand, existing studies on the influence of real depreciation draw incoherent conclusions. Many studies acknowledge that there is a positive relationship in the long run between trade balance and real deprecation, but they argue that there is no such monotonic relationship in the short run. It is argued that the relationship has a J shape or an S shape, or even no pattern.[9]

A number of studies on Vietnam examine the trade (balance) and the (real) depreciation of the VND. Nguyen (2010) and Narayan and Nguyen (2016), for instance, employ the gravity model. The former finds that the average real exchange rate of the VND had a statistically significant positive relationship with Vietnam's exports during the 1986–98 and 1999–2006 periods. Nonetheless, the size of the coefficient was close to zero (0.001 and 0.002, respectively, in each period). This implies that the contribution of the real depreciation of the VND was limited. Narayan and Nguyen (2016) report mixed results on the relationship between the nominal depreciation of the VND and Vietnam's trade volume. They divide the country's fifty-four trading partners into five groups based on region and income level. A positive relationship in each group, but a negative relationship in the whole panel group are observed. Pham and Nguyen (2013), while analysing the correlation between inward FDI, real exchange rate and Vietnam's exports over the 1990–2010 period, observe that a 1 per cent real depreciation of the VND against the US

dollar is likely to increase Vietnam's exports by 0.22 per cent. They also argue that a 1 per cent of real depreciation of the VND is likely to stimulate inward FDI by 0.17 per cent.

Among the J-curve effect studies, Pham (2014), Thom (2017) and Le, Ho and Dang (2018) report that the J-curve does exist. Nonetheless, the influence of real depreciation on trade balance is found to be weak, i.e., a 1 per cent real depreciation improves the trade balance by 0.2 per cent (Pham 2014) and 0.75 per cent (Le, Ho and Dang 2018).[10] On the other hand, the existence of the J-curve effect and the positive relationship between real depreciation and trade balance are denied in bilateral analyses (Phan and Jeong 2015; Lee 2018). Nonetheless, the reported estimates in Phan and Jeong (2015) are highly elastic compared to those reported in Lee (2018).

Thanh and Kalirajan (2005) estimate the elasticities of Vietnam's export and import demand. They estimate the price, the nominal exchange rate and the income elasticity of the country's export and import demand by using quarterly data from 1992 to 1998. The response of aggregate export demand to nominal depreciation is positive but that of aggregate import demand is statistically insignificant. Price elasticities satisfy the ML condition. Hence, they conclude that the nominal depreciation of the VND was an effective policy in stimulating Vietnam's exports in the 1990s. Their argument has an important implication for this paper, too, because the structure of Vietnam's external sector in the 1990s (when nominal depreciation of the VND was claimed to be effective) was quite different from what has been seen in the last ten years (when both real appreciation of the VND as well as improvement in trade balance were observed simultaneously).

3. Model Specification and Data Description

3.1 Model Specification

As a small open economy, Vietnam's bilateral trade balance is determined by the difference between the export receipts from and the import payments to its trading partner country i, which can be expressed as follows:

$$TB_i = P_x X_i - P_m M_i, \tag{1}$$

where TB_i denotes Vietnam's trade balance with country i; P_x represents the price of Vietnam's exports to i; X_i is the volume of Vietnam's exports to i; P_m stands for the price of Vietnam's imports from i; and M_i is the volume of Vietnam's imports from i. It is assumed that both X_i and P_x as well as M_i and P_m have an inverse relationship, as explained in the previous section.

This paper expresses Vietnam's export and import demand following the frequently used form in extant literature (Kwack et al. 2007; Irandoust, Ekblad and Parmler 2006; Ketenci 2014; Bahmani-Oskooee and Ratha 2008). The equations in the form of natural logarithm are:

$$ln\ REX_{it} = c_1 + \alpha_1 lnY_{it} + \beta_1 lnE_{it} + \epsilon_{1t}, \tag{2}$$

$$ln\ RIM_{it} = c_2 + \alpha_2 lnY_{vn,t} + \beta_2 lnE_{it} + \epsilon_{2t}, \tag{3}$$

where REX_{it} denotes Vietnam's real exports to country i at time t; RIM_{it} indicates Vietnam's real imports from country i; Y_{it} is the real income of country i; $Y_{vn,t}$ is Vietnam's real income; and E_{it} represents the real bilateral exchange rate (defined as the number of VND per country i's currency).[11]

As assumed in the absorption approach, Vietnam's real exports are positively affected by foreign income, while real imports are positively affected by domestic income. A positive sign for both α_1 in equation (2) and α_2 in equation (3) is expected. As assumed in the elasticities approach, the real depreciation of the VND is supposed to increase Vietnam's real exports, but reduce its real imports. A positive sign for β_1 in equation (2) and a negative sign for β_2 in equation (3) are expected.

After acquiring the estimates for the exchange rate elasticities, we can check for the ML condition to assess whether real depreciation will improve bilateral trade balance.[12] The ML condition (or the change in trade balance to the change in the real exchange rate) is defined as follows:

$$\frac{\Delta \mathrm{TB}_i}{\Delta E_i} = \beta_1 - E_{t+1}\left(\frac{RIM_{it}}{REX_{it}}\right)\beta_2 - E_t\frac{RIM_{it}}{REX_{it}} > 0, \tag{4}$$

where β_1 and β_2 are the real exchange rate elasticities attained from equation (2) and equation (3); E_{t+1} is the real bilateral exchange rate at time $t+1$; REX_{it} stands for Vietnam's real exports to country i at time t; and RIM_{it} indicates Vietnam's real imports from country i. Real depreciation will improve bilateral trade balance if equation (4) is satisfied.[13]

3.2 Data Collection

Annual bilateral trade data are collected from the IMF's *Direction of Trade Statistics (DOTS)* database in which export values are quoted in free on-board US dollar prices and import values in cost, insurance and freight US dollar prices. To choose trading partners, annual exports to and imports from fifty-five countries are summed for the1994–2017 period and then ranked. The top twenty countries are selected because they account for around 90 per cent of Vietnam's trade. Three ASEAN member countries—the Philippines (twenty-first position), Cambodia (thirtieth position) and Laos (thirty-second position)—that are not included in the top twenty are added for comparison among similar economic community countries.[14] Data for the bilateral nominal exchange rate, the GDP deflator and the nominal GDP in the local currency units are collect from the IMF's *International Financial Statistics (IFS)* database. The real GDP of each country is calculated based on 2010 constant prices.[15] The collected data are arranged in the form of panel time-series.

4. Empirical Results and Discussion

4.1 Test Results for Data

The presence of a unit root in the time series is detected by conducting a panel unit root test developed by Im, Pesaran and Shin (2003), which tests the presence of a unit root assuming different autoregressive (AR) coefficients in each series.[16] The test results presented in Table 1 indicate that all level series have

TABLE 1
Panel Unit Root Test Results (The Im, Pesaran and Shin Method)

	Level		*First Difference*	
Variables	*t-Statistics*	*Prob.*	*t-Statistics*	*Prob.*
ln REX	–0.086	0.466	–18.158	0.000
ln RIM	0.422	0.663	–19.940	0.000
ln Y_i	0.847	0.801	–10.973	0.000
ln Y_{vn}	2.026	0.979	–7.283	0.000
ln E	–1.317	0.094	–22.695	0.000

a unit root and that they become stationary after taking the first difference. The next step is to conduct a panel cointegration test using the method developed by Pedroni (1997) to investigate the presence of any long-run relationship between variables. The test results for export demand are summarized in Table 2, and for import demand in Table 3. The test considers three possible forms of the cointegration equation: no intercept or trend; intercept; and intercept and trend. Common AR coefficients are calculated based on aggregate panel whereas individual AR coefficients are determined using individual country data.

TABLE 2
Cointegration Test Results for the Export Demand (Pedroni Method)

	No Intercept or Trend		*Individual Intercept*		*Individual Intercept and Trend*	
	t-Statistics	*Prob.*	*t-Statistics*	*Prob.*	*t-Statistics*	*Prob.*
Common AR Coefficients (Within-Dimension)						
Panel v-Statistic	1.819	0.035	2.549	0.005	2.298	0.011
Panel rho-Statistic	–4.107	0.000	–5.391	0.000	–5.355	0.000
Panel PP-Statistic	–6.743	0.000	–10.162	0.000	–14.885	0.000
Panel ADF-Statistic	–1.514	0.065	–0.532	0.298	–3.087	0.001
Individual AR Coefficients (Between-Dimension)						
Group rho-Statistic	0.086	0.534	0.355	0.639	1.447	0.926
Group PP-Statistic	–2.824	0.002	–2.564	0.005	–3.891	0.000
Group ADF-Statistic	–2.445	0.007	–2.648	0.004	–3.431	0.000

SOURCE: Author's calculations.

TABLE 3
Cointegration Test Results for the Import Demand (Pedroni Method)

	No Intercept or Trend		*Individual Intercept*		*Individual Intercept and Trend*	
	t-Statistics	*Prob.*	*t-Statistics*	*Prob.*	*t-Statistics*	*Prob.*
Common AR Coefficients (Within-Dimension)						
Panel v-Statistic	–0.275	0.608	1.589	0.056	–1.044	0.852
Panel rho-Statistic	–1.194	0.116	–5.228	0.000	–3.061	0.001
Panel PP-Statistic	–2.814	0.002	–9.765	0.000	–10.539	0.000
Panel ADF-Statistic	–2.550	0.005	–6.574	0.000	–8.224	0.000
Individual AR Coefficients (Between-Dimension)						
Group rho-Statistic	–1.367	0.086	–2.516	0.006	–0.445	0.328
Group PP-Statistic	–5.242	0.000	–8.624	0.000	–8.174	0.000
Group ADF-Statistic	–4.898	0.000	–6.805	0.000	–7.382	0.000

SOURCE: Author's calculations.

The reported test results suggest that the null hypothesis of no cointegration is rejected at the 5 per cent significance level, implying possible long-run relationship between variables.

4.2 Estimation Results and Discussion

This paper employs the fully modified OLS (FMOLS) developed by Phillips and Hansen (1990) to estimate the income and real exchange rate elasticities of both export and import demand of Vietnam. The FMOLS estimator fits the data series used in this study (from twenty-three countries) because it not only accommodates considerable heterogeneity across individual members of the panel, but also improves the explanatory power of the model when the number of observations is relatively small (Pedroni 2000).

4.2.1 Income Elasticities of Export and Import Demand. Table 4 summarizes the elasticity estimates for Vietnam's bilateral export and import demand with its twenty-three trading partners. It is noticeable that both export and import demand are more sensible to income than to real exchange rate, which is consistent with the findings from other countries (Irandoust, Ekblad and Parmler (2006) for Sweden; Kwack et al. (2007) for China; Hossain (2009) for Indonesia; Ketenci (2014) for the case of Turkey; inter alia).

The estimate for bilateral export income elasticity is significant in nineteen countries, out of which seventeen estimates are greater than |2|. Only the estimate for Singapore is reported as inelastic. The highest export income elasticity observed in the case of Australia suggests that a 1 per cent increase in Australian income leads to a 38 per cent increase in Vietnam's bilateral exports. The lowest elasticity, 0.964, is observed in the case of Singapore. Western high-income countries tend to have greater export income elasticities compared to their Asian and ASEAN counterparts. The estimates for the ASEAN members are either insignificant (Malaysia and the Philippines) or inelastic (Singapore). Most of the estimates carry positive signs, as expected in the model. A negative sign is reported in the case of Indonesia, Japan and Korea.

The estimates for bilateral import income elasticity are significant in all twenty-three countries, out of which nineteen estimates are greater than |2|. The highest import income elasticity observed in the case of Hong Kong implies that a 1 per cent increase in Vietnam's income leads to an 11 per cent increase in real bilateral import from Hong Kong. The lowest elasticity is obtained in the case of Russia. In contrast to export income elasticities, import income elasticities of Western high-income countries are less elastic compared to those of Asian and ASEAN countries. This reflects that Vietnam's main import items (as shown in Table A3) are either intermediate goods or mainly include machinery and tools—all necessary imports for Vietnam's production. Not surprisingly, these inputs are mainly produced in high-income countries. This also explains why the bilateral import income elasticities of these countries are less elastic. The elasticities in almost all cases carry a positive sign, as expected in the model—except in the cases of South Korea and Laos.

4.2.2 Exchange Rate Elasticities of Export and Import Demand. The estimates for real exchange rate elasticity are diverse in terms of their significance, size and sign. Nonetheless, bilateral export demand is more sensitive than bilateral import demand to real exchange rate changes. The estimate for export exchange rate elasticity is significant in fifteen cases, and nine estimates are larger than |1|. The highest export exchange rate elasticity is observed in the case of the Philippines (–6.562) and the lowest for Singapore (–0.274). Meanwhile, the estimates for import exchange rate elasticity are significant in eight cases. The highest and the only elastic estimate for import exchange rate elasticity is observed for India (2.905) and the lowest for Laos (0.153).

This observation regarding the insignificance is consistent with the presumption of this paper.[17] A large proportion of Vietnam's imports is composed of intermediate goods to be assembled and exported

TABLE 4
FMOLS Estimates for the Income and the Real Exchange Rate Elasticities of Vietnam's Bilateral Export and Import Demand

	Export Demand		*Import Demand*	
Countries	*Income Elasticity*	*Ex Rate Elasticity*	*Income Elasticity*	*Ex Rate Elasticity*
Australia	3.771	2.514	2.332	(0.103)
Cambodia	4.363	(–0.697)	3.675	(1.007)
Canada	8.071	1.348	2.631	0.851
China	2.446	–3.645	4.586	(0.854)
France	10.605	–0.575	1.353	–0.320
Germany	11.059	(–0.265)	2.189	(–0.206)
Hong Kong	1.749	1.305	11.413	(0.741)
Indonesia	–4.297	–0.891	2.316	0.519
India	3.978	(–1.111)	4.534	2.905
Italy	(–0.020)	(0.031)	2.248	(0.034)
Japan	–4.847	(–0.450)	1.943	(–0.207)
Korea	–9.895	(–0.521)	–15.707	(–0.272)
Laos	14.583	–1.402	–15.928	0.593
Malaysia	(–2.021)	2.075	7.094	0.902
Netherlands	5.587	–0.979	9.687	0.480
The Philippines	(0.162)	–6.562	11.276	(0.928)
Russia	4.386	–1.360	1.321	(–0.026)
Singapore	0.964	–0.274	9.527	(–0.835)
Thailand	2.679	–3.505	8.248	1.022
Taiwan	(–2.329)	(–0.465)	7.536	(–0.176)
UAE	9.905	(–1.185)	3.959	(0.989)
UK	7.325	–0.942	1.680	(–0.302)
US	11.450	–0.452	2.628	(–0.795)

NOTES:
(1) The estimates in the bracket are *not* statistically significant at the 5 per cent level.
(2) Corresponding t-statistics and p-values are reported in Table A1 in the Appendix.
SOURCE: Author's calculations.

as final goods, mainly by FIEs. Consequently, real exchange rate changes have a limited impact on Vietnam's real bilateral import, especially from its main importing countries such as China, Japan, Korea and Taiwan. This is supported by the fact that their estimated import exchange rate elasticities are not statistically different from zero at the 5 per cent significance level.

On the other hand, only few estimates for exchange rate elasticity carry the expected sign. Positive export exchange rate elasticity is obtained in three cases—Canada, Hong Kong and Malaysia—out of fifteen, and negative import exchange rate elasticity is reported only in one case—France—out of eight.

This suggests that, contrary to typical expectations, real appreciation of the VND has tended to stimulate rather than discourage real bilateral exports to many countries.[18] However, it is natural that the real appreciation has boosted real bilateral imports. The obtained signs of the estimates are consistent with Vietnam's trade data. As explained earlier, Vietnam's exports have grown at the rate of 18.8 per cent each year and imports at 16.9 per cent despite the real appreciation of the VND.

Does this imply that the Vietnamese authorities have tactically chosen to appreciate the real exchange rate? This seems quite unlikely. The annual average depreciation rate of the nominal exchange rate is 3.15 per cent between 1994 and 2017, but due to the high level of inflation prevalent in Vietnam, the real exchange rate has not been coupled with the nominal depreciation. The currency's average annual appreciation rate, coincidently, is also 3.15 per cent over the same period. A rare analysis of the equilibrium exchange rate of the VND supports this idea. It is argued that the VND was significantly overvalued compared to its optimal rate for extended periods, from 1997 to 2003, and 2008 to 2013 (Bui, Makin and Ratnasiri 2017).

Possible explanations for the negative sign of export exchange rate elasticities include: first, that Vietnamese exports are primarily composed of furniture, fishery and agricultural products—goods that remain competitively priced, even after real appreciation; and second, that goods made in Vietnam benefit from a "first appearance in the market" effect—as an emerging exporter, Vietnam has been developed several new selling channels, and once these goods are displayed in the market, they are swiftly purchased at any rate. These two factors could have mitigated the negative effects of real appreciation of the VND.

4.2.3 Is the ML Condition Satisfied? The next step is to check whether the export and import demand of Vietnam satisfy the ML condition, or in other words, whether the weak currency policy is still valid for the country. This paper calculates the ML condition using equation (4) and data from 2017. It also calculates the expected change in Vietnam's trade balance by assuming a 10 per cent real depreciation of the VND based on its 2017 value. Table 5 reports the results that are extracted from Table A5, which includes detailed calculations.

It is remarkable that the ML condition is satisfied only in three cases—Canada, Hong Kong and Malaysia. A 10 per cent real depreciation of the VND is expected to improve Vietnam's bilateral trade balance with Canada and Hong Kong as expected, but not with Malaysia. This is because Vietnam recorded a trade deficit of around US$1,792 million with Malaysia in 2017, and the net change in trade balance caused by the 10 per cent real depreciation was not large enough to outweigh the existing deficit.[19] This contradicts the findings of Thanh and Kalirajan (2005), who concluded that the ML condition was satisfied at the aggregate level in Vietnam with its thirteen trading partners during the 1990s. Although this paper does not carry out an aggregate level analysis, the expected gross change in trade balance obtained by summing the bilateral changes does not seem to support the idea that real depreciation will improve Vietnam's trade balance. Instead, it is expected that a 10 per cent real depreciation will deteriorate the trade balance by around US$31,865 million. This implies that real depreciation of the VND has not played a significant role in improving its bilateral trade balance, at least not in the last ten years when the country's external sector underwent a dramatic transformation.

4.2.4 Diagnostic Test. Residual diagnostics are conducted to test for a normal distribution and to confirm the absence of autocorrelation. The Jarque-Bera statistic is employed to test the null hypothesis of normality and the Ljung-Box Q-statistic to test the null hypothesis of no autocorrelation. The test results reported in Table A4 suggest that the estimated models do not suffer from the problems of autocorrelation and non-normality in general. However, four cases (Korea, Laos, the Netherlands and the UAE) in the export demand and one case (the UAE) in the import demand do not pass the normality test. One case (Hong Kong) in the export demand and no cases in the import demand fail to pass the autocorrelation test.

TABLE 5
ML Condition and the Effect of 10 per cent Depreciation of the VND on the Trade Balance (in million US$)

	ML Condition[1]	*Trade Balance Change*
Australia	–1.648	–889.4
Cambodia	0.000	0.0
Canada	1.348*	31.8
China	–3.645	–14,242.7
France	–0.575	–523.6
Germany	0.000	0.0
Hong Kong	1.305*	211.3
Indonesia	–2.254	–688.2
India	–0.013	–1,088.7
Italy	0.000	0.0
Japan	–0.008	0.0
Korea	–0.219	0.0
Laos	–1.929	–189.1
Malaysia	2.074*	–82.5
Netherlands	–0.979	–1,482.6
The Philippines	–6.562	–1,814.7
Russia	–1.361	–525.2
Singapore	–0.274	–352.7
Thailand	–3.515	–3,009.2
Taiwan	–0.007	0.0
UAE	0.000	0.0
UK	–0.942	–1,022.6
US	–0.452	–6,197.0
Total change		–31,865.2

NOTES:
(1) ML condition is calculated using equation (4) and the data of 2017. Insignificant estimates for the elasticities are put as zero in the calculation. To calculate E_{t+1}, 0.0315 is multiplied to E_t because the annual average change in the value of the VND for the last twenty-three years is 3.15 per cent.
(2) Asterisk (*) indicates the number satisfies the ML condition.
SOURCE: Author's calculations.

5. Conclusion and Policy Implications

Four noticeable findings are drawn from the FMOLS estimates for income and real exchange rate elasticities for Vietnam's bilateral export and import demand. First, Vietnam's exports and imports have been affected much more by the income factor than by the real exchange rate factor. Second, in the case of Vietnam, bilateral export demand is more sensitive than bilateral import demand to the real exchange

rate factor. Third, only few estimates for real exchange rate elasticity carry the expected sign. And fourth, the ML condition is satisfied in three countries.

The stronger influence of the income factor over Vietnam's export and import demand can be interpreted in the words of Ketenci (2014): "when deviations from the long-run equilibrium occur in the export and demand functions, it is primarily the foreign and domestic incomes that adjust to restore long-run equilibrium … rather than the real exchange rate". This also suggests that managing the real exchange rate is unlikely to be a suitable policy option for the Vietnamese government to improve the country's trade balance. In other words, Vietnam's weak currency policy is at the brink of losing its validity.

Nonetheless, this conclusion does not necessarily suggest that the weak currency policy has been completely ineffective. In fact, it is argued that the policy used to be very effective in Vietnam during the 1990s (Thanh and Kalirajan 2005). What this paper suggests is that the structure of the country's external sector has changed over the last twenty years, from being dominated by domestic enterprises then to now being FIE-dominant. Consequently, the benefits from managing real exchange rate under the new structure are not as large as those under the old structure.

Vietnam's exports and imports are unlikely to be sensitive to real exchange rate. The top three export and import items come from FIE-dominated industries: mobile phones, textiles and electronics including computer parts (see Table A2 and A3 for the full list of goods). FIEs operating in these industries (such as Samsung, Intel, Toshiba and Nike, inter alia) have utilized Vietnam as their key assembly base. Hence, the country's imports rely largely upon its exports. These FIEs are oligopolists in the world market and able to set their own prices to directly influence the sales of their respective goods globally. In such a scenario, managing real exchange rate will have a limited impact on Vietnam's real bilateral exports and imports.

On the other hand, domestic enterprises have dominated goods such as furniture, fishery, rice and coffee in the export market. Cheap labour costs are possibly the main source of the comparative advantage that Vietnam has in the production of these items. The export of furniture and fishery goods might be affected by real exchange rate change. However, given that the international price of rice and coffee is determined externally, managing real exchange rate for Vietnam's bilateral exports is again likely to have only a limited impact.

The evidence presented in this study suggests that other policy options are needed, given the changed structure of Vietnam's external sector. FIEs are the now main source of exports. This, however, might not be the case in the future. Domestic firms must be able to replace the position that FIEs currently take, at least in some areas. To take advantage of the spillover from these FIEs, domestic firms have to narrow the technology gap. Strengthening the country's technological capabilities via FDI utilization and strategic R&D investments will become more important when Vietnam's advantages arising from the "first appearance in the market" effect and cheap labour costs disappear in a few years.

One limitation of this study is that the bilateral sample size is relatively small. This is inevitable because of the unavailability of quarterly GDP data for many countries. Also, the paper can be improved further by considering the capital market. Vietnam is an emerging economy with a constrained domestic capital market. Considering these factors in estimating the export and import demand will make the conclusion on the (in)effectiveness of the weak currency policy more inclusive.

APPENDIX

TABLE A1
Estimates for the Income Elasticity and the Exchange Rate Elasticity of the Export Demand and the Import Demand with t-statistics and p-values

		Australia	*Cambodia*	*Canada*	*China*	*France*	*Germany*	*Hong Kong*	*Indonesia*	*India*	*Italy*
Export Demand											
α_1	*coefficient*	3.244	4.363	8.071	2.446	10.605	11.059	1.749	–4.297	3.978	(0.020)
	t-statistics	5.599	2.558	19.222	30.896	7.788	19.316	9.207	–4.918	6.466	0.012
	prob.	0.000	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.991
β_1	*coefficient*	0.713	(–0.697)	–1.348	3.645	–0.575	(–0.265)	–1.305	–0.891	(–1.111)	(0.031)
	t-statistics	0.910	–0.632	–3.547	3.460	–2.562	–1.298	–7.636	–2.320	–0.740	1.042
	prob.	0.375	0.535	0.002	0.003	0.019	0.209	0.000	0.032	0.468	0.310
Import Demand											
α_2	*coefficient*	2.332	3.675	2.631	4.586	1.353	2.189	11.413	2.316	4.534	2.248
	t-statistics	15.610	6.995	18.909	12.639	13.947	30.566	3.305	48.075	9.566	17.450
	prob.	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.000
β_2	*coefficient*	(0.103)	(1.007)	0.851	(0.854)	–0.320	(–0.206)	(0.741)	0.519	2.905	(0.034)
	t-statistics	0.220	1.043	2.500	0.256	–4.909	–1.675	1.509	4.350	2.705	1.776
	prob.	0.828	0.310	0.021	0.801	0.000	0.110	0.148	0.000	0.014	0.091

TABLE A1 — *cont'd*

		Japan	*Korea*	*Laos*	*Malaysia*	*Netherlands*	*The Philippines*	*Russia*	*Singapore*	*Thailand*	*Taiwan*	*UAE*	*UK*	*US*
Export Demand														
α_1	*coefficient*	–4.847	–9.895	14.583	(–2.021)	5.587	(0.162)	4.386	0.964	2.679	(–2.329)	9.905	7.325	11.450
	t-statistics	–3.144	–3.120	7.150	–0.901	4.948	0.154	10.034	13.993	15.972	–1.791	12.692	8.324	58.051
	prob.	0.005	0.006	0.000	0.379	0.000	0.879	0.000	0.000	0.000	0.093	0.000	0.000	0.000
β_1	*coefficient*	(–0.450)	(–0.521)	–1.402	2.075	–0.979	–6.562	–1.360	–0.274	–3.505	(–0.465)	(–1.185)	–0.942	–0.452
	t-statistics	–1.734	–0.509	–6.351	2.622	–6.251	–3.733	–2.905	–6.953	–14.695	–0.870	–0.589	–2.401	–4.058
	prob.	0.099	0.617	0.000	0.017	0.000	0.001	0.182	0.000	0.000	0.395	0.562	0.026	0.001
Import Demand														
α_2	*coefficient*	1.943	–15.707	–15.928	7.094	9.687	11.276	1.321	9.527	8.248	7.536	3.959	1.680	2.628
	t-statistics	8.564	–5.426	–6.322	4.273	4.231	4.554	8.321	4.504	5.712	5.720	27.703	5.841	7.427
	prob.	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
β_2	*coefficient*	(–0.207)	(–0.272)	0.593	0.902	0.480	(0.928)	(0.026)	(–0.835)	1.022	(–0.176)	(0.989)	(–0.302)	(–0.795)
	t-statistics	–0.838	–0.645	3.878	2.514	3.551	1.301	0.099	–0.856	3.053	–0.671	1.900	–0.723	–1.363
	prob.	0.412	0.527	0.001	0.021	0.002	0.209	0.922	0.402	0.007	0.511	0.072	0.478	0.188

NOTES:

(1) α_1 and α_2 is the estimate for the income elasticity of the export demand and the import demand and β_1 and β_2 are the estimate for the price elasticity of the export demand and the import demand.

(2) Estimates in the brackets are not significant at the 5 per cent level.

SOURCE: Author's calculations.

TABLE A2
Top Ten Export Items of Vietnam (1995–2016, US$ million)

	Phones of All Kinds and Their Parts	*Textile, Sewing Products*	*Electronic Parts (Including TV Parts), Computer and Their Parts*	*Footwear*	*Wood and Wooden Products*	*Fishery Products*	*Crude Oil*	*Rucksacks, Bag, Pockets, Wallets, Hats and Umbrellas*	*Rice*	*Coffee*
1995	..	1,891.9	788.6	1,471.7	311.4	1,478.5	..	..	..	..
1996	..	1,975.4	709.5	1,587.4	343.6	1,816.4	..	183.3	..	..
1997	..	2,732.0	605.4	1,875.2	460.2	2,021.7	..	237.2	..	..
1998	..	3,609.1	854.7	2,260.5	608.9	2,199.6	..	243.3	..	..
1999	..	4,429.8	1,062.4	2,691.1	1,101.7	2,408.1	..	382.1	..	..
2000	10.4	4,772.4	1,427.4	3,038.8	1,561.4	2,732.5	..	470.9	..	..
2001	..	5,854.8	1,807.8	3,595.9	1,943.1	3,358.0	..	502.1	..	..
2002	..	7,732.0	2,165.2	3,999.5	2,384.6	3,763.4	..	627.1	..	..
2003	..	9,120.5	2,640.3	4,769.9	2,767.2	4,510.1	..	773.1	..	..
2004	593.3	9,065.6	2,763.0	4,071.3	2,989.3	4,255.3	..	824.1	..	..
2005	2,307.3	11,209.8	3,590.1	5,123.3	3,444.5	5,016.9	5,023.5	985.5	3,249.5	1,851.4
2006	6,396.7	13,211.7	4,662.2	6,549.4	3,960.5	6,112.4	..	1,285.4	..	..
2007	12,746.6	14,416.2	7,848.8	7,263.9	4,665.5	6,088.5	8,211.9	1,522.5	3,673.7	3,674.4
2008	21,253.3	17,933.4	10,636.0	8,400.6	5,591.8	6,692.6	7,226.4	1,933.1	2,922.7	2,717.3
2009	23,572.7	20,101.2	11,434.4	10,317.8	6,145.3	7,825.3	7,224.2	2,533.5	2,935.2	3,557.4
2010	30,239.6	22,808.7	15,607.6	12,012.6	6,797.5	6,568.8	3,823.8	2,874.7	2,796.3	2,671.0
2011	34,315.6	23,824.9	18,956.9	12,998.1	6,964.5	7,047.7	2,361.1	3,169.9	2,159.0	3,334.2
2012	12,746.6	14,416.2	7,848.8	7,263.9	4,665.5	6,088.5	8,211.9	1,522.5	3,673.7	3,674.4
2013	21,253.3	17,933.4	10,636.0	8,400.6	5,591.8	6,692.6	7,226.4	1,933.1	2,922.7	2,717.3
2014	23,572.7	20,101.2	11,434.4	10,317.8	6,145.3	7,825.3	7,224.2	2,533.5	2,935.2	3,557.4
2015	30,239.6	22,808.7	15,607.6	12,012.6	6,797.5	6,568.8	3,823.8	2,874.7	2,796.3	2,671.0
2016	34,315.6	23,824.9	18,956.9	12,998.1	6,964.5	7,047.7	2,361.1	3,169.9	2,159.0	3,334.2

SOURCE: *The Statistical Yearbook of Vietnam* (http://gso.gov.vn).

TABLE A3
Top Ten Import Items of Vietnam (1995–2016, US$ million)

	Electronic Goods, Computers and Their Parts	*Machinery, Apparatus and Parts For Telecom-munication*	*Textile Fabrics*	*Iron, Steel*	*Plastic in Primary Form*	*Petroleum Oil, Refined*	*Product of Plastic*	*Chemicals*	*Motor Vehicles, Assembled*	*Auxiliary Materials for Sewing*
1995	..	..	108.6	..	229.8	..	..	..	..	..
1996	..	..	221.7	..	278.2	..	..	..	..	..
1997	..	..	414.3	..	333.1	..	..	..	..	..
1998	..	..	592.5	..	348.6	..	..	..	..	..
1999	..	..	710.6	..	383.4	..	..	..	..	..
2000	892.8	141.4	761.3	..	530.6	..	..	275.7	..	917.4
2001	710.1	206.4	880.2	..	551.0	..	..	322.4	..	1,036.2
2002	701.2	211.2	1,523.1	..	613.5	..	..	426.4	..	1,069.3
2003	1,014.1	302.6	1,805.4	..	829.0	..	..	529	..	1,264.9
2004	1,349.5	378.1	2,066.6	..	1,251.5	..	..	703.4	..	1,443.7
2005	1,638.6	598.2	2,474.2	..	1,516.9	..	..	921.4	..	1,438.7
2006	1,869.7	945.7	2,947.0	..	1,886.2	..	..	1,121.8	..	1,123.9
2007	2,958.4	1,631.7	3,990.5	..	2,528.7	..	..	1,527.9	..	1,224.0
2008	3,714.1	2,017.0	4,457.8	..	2,949.0	..	..	1,797.5	..	1,329.3
2009	3,220.6	2,586.1	4,212.3	..	2,811.7	..	..	1,638.7	..	1,176.9
2010	5,208.3	2,480.6	5,383.1	..	3,780.4	..	..	2,137.4	..	5,383.1
2011	7,873.8	2,682.3	6,791.1	..	4,763.1	..	..	2,717.1	..	6,791.1
2012	13,166.4	5,030.4	7,135.5	6,019.9	4,804.0	8,960.2	..	2,780.3	594.8	1,793.6
2013	17,784.3	8,048.0	8,397.0	6,701.2	5,715.3	6,951.9	2,587.5	3,032.0	752.2	2,109.9
2014	18,823.5	8,700.7	9,560.0	7,732.1	6,316.3	7,467.2	3,137.6	3,236.4	1,568.3	2,371.3
2015	23,211.4	10,968.0	10,234.3	7,491.7	5,942.9	5,522.7	3,694.9	3,133.6	2,990.2	2,581.5
2016	27,892.4	..	10,483.3	8,051.8	6,261.6	5,086.3	4,406.0	3,209.8	2,381.2	..

SOURCE: *The Statistical Yearbook of Vietnam* (http://gso.gov.vn).

TABLE A4
Test Results for Normality and Autocorrelation

	Export Demand				*Import Demand*			
	Normality		*Autocorrelation*		*Normality*		*Autocorrelation*	
	JB stat.[1]	*Prob.*	*Q-stat.*[2]	*Prob.*	*JB stat.*[1]	*Prob.*	*Q-stat.*[2]	*Prob.*
Australia	2.692	0.260	1.392	0.846	0.718	0.699	3.664	0.453
Cambodia	2.433	0.296	5.294	0.258	3.892	0.143	3.276	0.513
Canada	1.591	0.451	3.868	0.424	0.899	0.638	1.913	0.752
China	2.074	0.355	1.796	0.773	1.663	0.435	3.787	0.436
France	4.408	0.110	0.972	0.914	1.200	0.549	2.981	0.561
Germany	0.402	0.818	4.513	0.341	1.154	0.562	2.200	0.699
Hong Kong	0.678	0.712	*21.143*	*0.000*	2.164	0.339	2.991	0.559
Indonesia	1.174	0.556	3.050	0.550	2.666	0.264	1.404	0.844
India	1.811	0.404	3.138	0.535	0.450	0.798	2.597	0.627
Italy	0.470	0.791	2.803	0.591	0.648	0.723	4.563	0.335
Japan	1.540	0.463	0.763	0.943	5.852	0.054	3.595	0.464
Korea	*19.071*	*0.000*	1.265	0.867	0.964	0.618	1.840	0.765
Laos	*19.105*	*0.000*	0.476	0.976	2.337	0.311	7.862	0.097
Malaysia	0.265	0.876	8.965	0.069	0.501	0.778	0.285	0.991
Netherlands	*22.869*	*0.000*	1.394	0.845	0.579	0.749	6.659	0.155
The Philippines	1.950	0.377	1.944	0.746	0.592	0.744	1.603	0.808
Russia	1.829	0.401	8.547	0.073	1.097	0.578	1.633	0.803
Singapore	2.732	0.255	1.271	0.866	0.924	0.630	6.498	0.165
Thailand	2.141	0.343	9.142	0.058	1.682	0.431	3.623	0.459
Taiwan	0.675	0.714	1.201	0.878	0.765	0.682	8.118	0.087
UAE	*13.645*	*0.001*	5.071	0.280	*18.996*	*0.000*	0.375	0.984
UK	0.644	0.725	8.094	0.088	0.729	0.694	1.734	0.785
US	0.466	0.792	3.317	0.506	0.865	0.649	1.170	0.883

NOTES:
(1) JB stat. denotes Jarque-Bera statistic for testing the null of a normal distribution.
(2) Q-stat. denotes Ljung-Box Q-statistic for testing the null of no autocorrelation up to order k, which is set at 4 in this paper.
(3) Italic numbers indicate that they fail to pass the test.
SOURCE: Author's calculations.

TABLE A5
Effects of the 10 per cent Depreciation of the VND on the Export and the Import of Vietnam (US$ million)

	ML condition[1]	*RER 2017*[2]	*RIM 2017*[2]	*REX 2017*[2]	*Export Change*[3]	*Import Change*[4]	*Trade Balance Change*
Australia	–1.648	12,343.2	2,879.3	3,358.9	–889.4	0.0	–889.4
Cambodia	0.000	4.2	895.4	3,126.7	0.0	0.0	0.0
Canada	1.348*	12,414.7	784.6	2,831.2	98.5	66.8	31.8
China	–3.645	2,592.6	56,982.9	30,662.5	–14,242.7	0.0	–14,242.7
France	–0.575	17,340.1	1,402.5	3,609.4	–568.5	–44.9	–523.6
Germany	0.000	18,361.6	3,880.7	6,526.1	0.0	0.0	0.0
Hong Kong	1.305*	2,284.7	1,595.7	6,926.9	211.3	0.0	211.3
Indonesia	–2.254	1.5	3,595.9	2,652.2	–501.5	186.6	–688.2
India	–0.013	312.9	3,747.6	3,594.6	0.0	1,088.7	–1,088.7
Italy	0.000	17,683.2	1,670.0	2,782.9	0.0	0.0	0.0
Japan	–0.008	131.4	17,316.0	16,838.6	0.0	0.0	0.0
Korea	–0.219	14.3	45,186.1	14,376.3	0.0	0.0	0.0
Laos	–1.929	2.5	541.7	653.6	–157.0	32.1	–189.1
Malaysia	2.074*	3,905.3	6,364.2	4,572.7	491.6	574.1	–82.5
Netherlands	–0.979	17,355.5	722.0	7,316.7	–1,448.0	34.7	–1,482.6
The Philippines	–6.562	334.0	1,312.1	2,399.8	–1,814.7	0.0	–1,814.7
Russia	–1.361	423.9	1,414.0	2,225.3	–525.2	0.0	–525.2
Singapore	–0.274	11,168.0	5,394.1	2,768.4	–352.7	0.0	–352.7
Thailand	–3.515	495.1	10,881.4	4,211.1	–1,897.1	1,112.1	–3,009.2
Taiwan	–0.007	498.9	12,205.5	3,618.7	0.0	0.0	0.0
UAE	0.000	3,920.4	575.1	6,691.1	0.0	0.0	0.0
UK	–0.942	21,017.0	831.9	5,265.7	–1,022.6	0.0	–1,022.6
US	–0.452	16,347.4	7,192.0	42,679.0	–6,197.0	0.0	–6,197.0
Total change					–28,815.1	3,050.1	–31,865.2

NOTES:

(1) ML condition is calculated using equation (4). Insignificant estimates for the elasticities are put as zero in the formula. To calculate E_{t+1}, 0.0315 is multiplied to E_t because the annual average change in the value of the VND for the last twenty-three years is 3.15 per cent. The asterisk (*) indicates that the numbers satisfy the ML condition, that is, they are larger than one.

(2) RER, RIM and REX denote the real exchange rate, the real import and the real export in 2017 respectively.

(3) Export change is calculated by using the following formula: $\Delta REX = \frac{(\beta_1 - 1)}{100} \cdot REX_{2017}$, then multiply 0.1 because we assume the 10 per cent depreciation.

(4) Import change is calculated using the following formula: $\Delta RIM = \frac{(\beta_2 - 1)}{100} \cdot RIM_{2017}$, then multiply 0.1 because we assume the 10 per cent depreciation.

NOTES

1. The GDP share data are collected from the *World Develop Indicators (WDI)*, accessible at http://databank.worldbank.org/data/home.aspx and the average annual growth rates are author's own calculation.
2. The International Monetary Fund (2016) identifies Vietnam as a country that maintains a de facto exchange rate anchor to the US dollar in implementing a stabilized arrangement in managing its exchange rate. The anchor currency of Vietnam changed from a basket of multiple currencies to the US dollar since 2008 to mitigate sudden fluctuations of the VND stemming from compounded global effects (Takagi and Pham 2011).
3. The volume of FDI has also grown from US$1.9 billion (11.9 per cent of GDP) in 1994 to US$14.1 billion (6.3 per cent of GDP) in 2017 according to the *WDI*.
4. Vietnam has become a hub of FTAs by signing twelve regional and bilateral FTAs as of 2017 taking a strategic approach. See Barai, Le and Nguyen (2017) for a detailed analysis. Signing more FTAs makes it impossible for Vietnam to use tariffs to restrict imports.
5. According to the *Statistical Yearbook of Vietnam*, the share of domestic enterprises in Vietnam's exports dropped from 73 per cent to 27.5 per cent over the 1995–2017 period and that in its imports decreased from 82 per cent to 40.1 per cent over the same period. Unfortunately, separate data for the share of SOEs are not available.
6. There is even more extreme opinion about the reliance on the foreign-invested firms. An IMF report asserts that the "export-oriented sector financed by FDI … in 2017 was responsible for more than two-thirds of Vietnamese exports and a third of the ASEAN's tech exports" (International Monetary Fund 2018). If we include textile and footwear industries in the category of FIEs dominated industries, the share increases up to 80 per cent of top ten export items as of 2016.
7. Table A2 and Table A3 show that top three export and import items are overlapped. They are related to phones, electronics-computers and textiles.
8. There are some other effects such as the terms of trade effect and the redistribution effect of wealth to be included in assessing the impact on trade balance (Alexander 1952). Important determinants the trade (or trade balance) is not limited to these two variables. Gravity models generally include such factors as the distance, the usage of the same language, sharing of the same border, joining the same economic community, signing the same multilateral trade agreements and the same colonial experience. See Head and Mayer (2014) for an in-depth survey of the gravity models.
9. A body of literature covering the J-curve effect has dominated the discourse on the influence of real depreciation over trade balance since Magee (1973) reported that an initial negative impact on the US trade balance was observed before positive impacts began to work when there was the real depreciation of the US dollar. Aggregate level analyses tend to approve the J-curve effect (Rosensweig and Koch 1988; Gupta-Kapoor and Ramakrishnan 1999; Lal and Lowinger 2002; Kyophilavong, Shahbaz and Uddin 2013). Bilateral level analyses tend to disapprove it (Rose and Yellen 1989; Shirvani and Wilbratte 1997; Bahmani-Oskooee and Kantipong 2001; Arora, Bahmani-Oskooee and Goswami 2003; Bineau 2016; Bahmani-Oskooee and Harvey 2017). An S-shape is reported in OECD countries (Backus, Kehoe and Kydland 1994) and in less developed countries (Senhadji 1998).
10. Thom (2017) does not report the detailed estimates, but the reported impulse response function indicates the real depreciation has a little influence on the trade balance.
11. *REX (RIM)* is calculated by deflating nominal export (import) values by the Vietnamese export (import) price index whose base year is 2010. The indices are collected from the *Statistical Yearbook of Vietnam* for the period 2000 to 2016 and from the *Vietnam Statistical Data in the 20th Century* for the period from 1994 to 1999. Both are published by the General Statistics Office of Vietnam. Because the indices for 2017 are not available at the time of writing, the forecasted values are used for the calculation of *REX (RIM)* in 2017. E_{it} is defined as $\left(\frac{e_i \cdot P_i}{P_{vn}}\right)$, where e_i is nominal bilateral exchange rate expressed by the amount of the VND per country *i*'s currency, P_i country *i*'s GDP deflator and P_{vn} Vietnam's.
12. Note that the derivation of the ML condition is under the assumption that national income remains constant when the currency depreciates.
13. The derivation of equation (4) follows the steps suggested in Krugman, Obstfeld, and Melitz (2012). Equation (4) can be simplified to $\beta_1 - \beta_2 > 1$ if we assume that the bilateral trade account is balanced at time *t* and the fluctuation in the real bilateral exchange rate is small. Krugman, Obstfeld, and Melitz (2012) assume that the import demand elasticity has a negative sign and their simplified form is written as $\beta_1 + \beta_2 > 2$.
14. Two other ASEAN members—Brunei and Myanmar—are not included because not only their data availability is poor but also their bilateral is minimal. Both are not ranked within the fifty-five largest trading partners.

15. The Taiwanese trade data are collected from the Bureau of Foreign Trade of Taiwan, accessible at https://cus93.trade.gov.tw because they are not available either in the *DOT* or in the *IFS*.
16. The lag order is automatically selected based on Schwartz Criterion (SC) following that the power of explanation is higher when the sample size is not big.
17. We may consider existing explanations of inelastic import demand such as the incomplete pass-through or the "pricing-to-market-behaviour" by exporters to avoid negative impact on their exports in foreign import market (Bahmani-Oskooee and Goswami 2004).
18. Some may argue that this is because of the J-curve effect. This effect, however, is a short-run phenomenon while the estimates obtained in this paper are based on the long-run model.
19. Note that the ML condition refers to the net change caused by the real deprecation from zero trade balance.

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