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Vietnam's National Export Strategy: Evidence from an Economic Policy Modelling Study

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ABSTRACT

This paper is a rigorous study of Vietnam's exports determination and its causal relationship to the country's growth, and addresses growing concerns regarding Vietnam's growth path. The objective is to provide substantive evidence and credible inputs from a demand-side macroeconomic perspective. Significantly for Vietnam, an important open and transition economy in Asia, the study is carried out from an economic integration growth framework. Specifically, a multi-simultaneous equation model of Vietnam's endogenous growth and exports determination is developed. The model innovatively incorporates gravity theory and classical consumer demand contributors, Ironmonger-Lancaster new commodity attributes and Johansen policy impact add- and sub-factors (i.e., reforms and crises) explicitly in its economic integration structure. Empirical findings also provide significant evidence to support a focus on strategies affected by external or demand side determinants of Vietnam's exports and the influence of crises and reforms. The research will contribute to advances in the international trade literature and the findings provide useful insights and much needed evidence-based inputs on the determination and contributors of Vietnam's exports to the national economy. These strategic recommendations are useful to key stake-holders such as policy-makers, government and academic researchers, and business analysts for national export strategic policy analysis and practical implementation.

Keywords: Vietnam's exports and growth, economic integration theory, econometric modelling, national strategic economic and trade policy.

JEL Classification: C36, C51, C54, F14, F15, F62

1. Introduction

Since its introduction of opening-up reforms Doi Moi in the late 1980s, Vietnam's growth which is attributable particularly to exports-oriented development policy, has achieved remarkable results (averaged annually 6.6 per cent during the volatile period 2000-2019, ADB (2021)). This makes it one of the 'miracle' economies in East and South-East Asia. In recent years however, due to the country's deep engagement in regional economic integration in Asia and beyond through free trade agreements and WTO membership, Vietnam's growth and exports have experienced the ups and downs of global developments, regional competitiveness and crises that need investigation for sustainable strategic long term analysis and that have attracted national export strategy interest. To address these, the paper is a serious rigorous study of Vietnam's exports determination and its causal relationship to the country's growth. The objective is to provide substantive evidence and credible inputs from a demand-side macroeconomic perspective, to complement other official supply-side studies (e.g., ITC (2021), VIOIT (2021a, 2021b)) for appropriate policy analysis and implementation.

Significantly for Vietnam, an important open and transition economy in Asia, the study is carried out from an economic integration (globalisation) growth framework, which is also the expenditure (as opposed to production or income) perspective of the United Nations System of National Accounts 1998/2003 (for related studies in such other fields as trade, CO2 emissions, official development assistance and tourism, see Tran (2004), Tran (2007), Tran and Limskul (2013), Tran et al. (2018), Tran et al., 2020, Tran et al., 2021). Specifically, a multi-simultaneous equation model of Vietnam's endogenous growth and exports determination is developed. The model innovatively incorporates gravity

theory and classical consumer demand contributors, Ironmonger-Lancaster new commodity attributes and Johansen policy impact add- and sub-factors (i.e., reforms and crises) explicitly in its economic integration structure. The model is then estimated by system methods with 2000-2019 official economic and trade data from national and international databases such as ADB (2021), ERS-USDA (2021) and UNCTAD (2021). The research will contribute both to advances in the trade literature and the findings provide useful insights and appropriate and much needed evidence-based inputs on the determination and contributors of Vietnam's exports to its growth. Strategic recommendations will be provided as complementary inputs to key stake-holders such as policy-makers, government and academic researchers, and business analysts for national export strategic policy analysis and practical implementation.

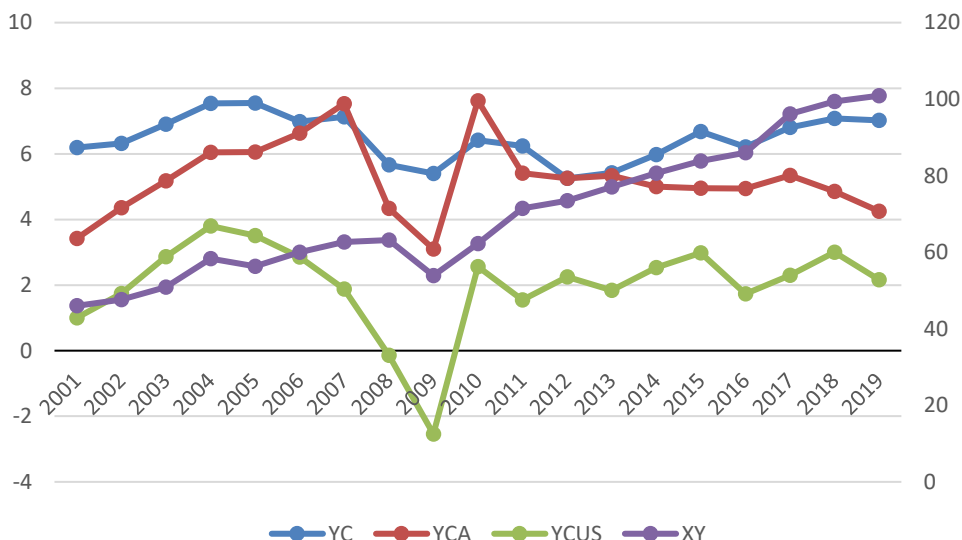
The plan of the paper is as follows: section 2 uses official international data to briefly survey the recent trends of Vietnam's growth, exports, economic integration and key export contributing factors, and importantly, the impact of regional and global crises and domestic reforms in Vietnam during the volatile period 2000-2019 where latest data are available. Section 3 briefly describes an appropriate and new multi-equation econometric model of endogenous growth and export determination for Vietnam and its special innovative and appropriate features, and previous related studies. Section 4 describes the data and estimation methods and presents the empirical findings and, importantly, their statistical modelling characteristics. Major strategic policy implications for sustainable exports and growth for Vietnam and their relevance to current studies and national export strategy interests are discussed in Section 5 and Section 6 concludes.

2. Recent Trends in Vietnam's Exports and Growth

In recent years, Vietnam had experienced high and fairly stable growth and volatility in comprehensive trade due to number of factors. These include investment and trade liberalisation through 16 free trade agreements and other partnerships, enhanced development in domestic production capability, development of regional and global production networks, 2006 and 2014 investment legal reforms, regional and global crises, and relatively weak domestic service providers, to name a few. More specifically, the historical data for the study's key indicators in focus during the period 2000-2019 namely Vietnam's growth (YC), its main export partners' (Asia and Oceania and the US) economic conditions (YCA and YCUS respectively), and its merchandise exports/GDP (gross domestic product) denoted by XY are given in Figure 1. Vietnam's three main economic integration determinants of growth (WTO, 2021) also standardised by GDP for international comparison, namely merchandise imports/GDP (IMY), foreign direct investment/GDP (FDIY), and total services/GDP (SY) are given in Figure 2. The sum of XY and IMY is also known as an indicator of the country's openness. FDIY represents the country's capital inflows and SY its services including tourism.

From Figure 1, we note the country's high and fairly stable growth starting at 6.19 per cent in 2001 and ending at 7.02 per cent in 2019. Its annual average is relatively high at 6.46 per cent for the whole period 2001-2019. Interestingly, the effect of the country's WTO membership in 2007 was not beneficially reflected in its growth. But it was rather negatively impacted by the global financial crisis (GFC) of 2008 and the so-called euro crisis during 2012-2013. Vietnam's growth seems to have improved mildly in recent years however.

Figure 1. Growth of Vietnam and Major Partners and Exports, 2001-2019



Notes: YC=Vietnam's growth, YCA=Asia and Oceania's growth, YCUS=US growth, XY=merchandise exports/GDP (secondary axis).

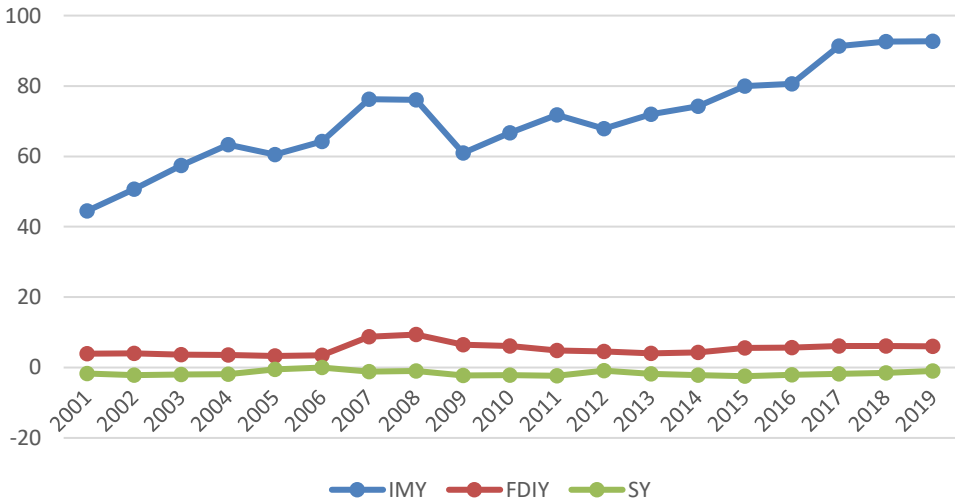
Sources for data in Figures 1-3: ADB (2021), ERS-USDA (2021), UNCTAD (2021).

The economic conditions of Vietnam's two major export markets, namely Asia and Oceania and the US as depicted in Figure 1, show a similar pattern of movements during 2001-2019: more volatility and a lower growth. While the annual average growth for Asia and Oceania is 5.29 per cent it is much weaker at only 1.99 per cent for the US. Both Asia and Oceania and the US experienced a severe downturn as a result of the GFC and a continuing mild decline in recent years. In contrast, Vietnam's merchandise exports (as a percentage of its GDP) in Figure 1 show an almost continuous rising trend during 2001-2019 starting at 46.00 per cent in 2001 and ending at 100.90 per cent in 2019 and with a high annual

average of 70.01 per cent. While some benefits of its 2007 WTO membership were noticed, the negative impact of the GFC on Vietnam's exports fell by about 10 per cent in 2009. This setback seems to be the only temporary effect on the country's growing exports in recent years.

In Figure 2, we also note the almost continuous rising and high trend of Vietnam's merchandise imports as percentage of its GDP during 2001-2019 starting at 44.50 per cent in 2001 and ending at 92.70 per cent in 2019 and with an annual average of 70.72 per cent (indicating an average trade deficit). The impact of the GFC on imports was serious with a fall of about 15 per cent in 2009.

Figure 2. Vietnam's Key Globalisation Indicators, 2001-2019

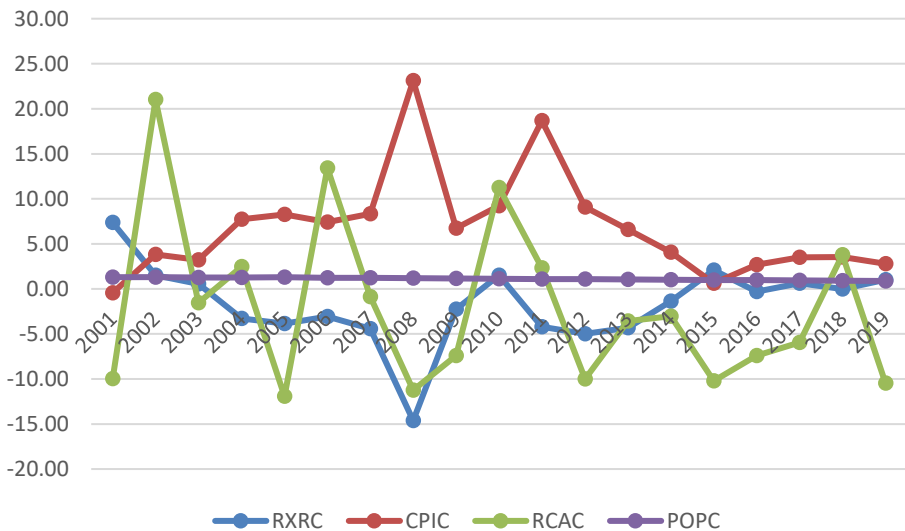


Notes: IMY=merchandise imports/GDP, FDIY=FDI/GDP, SY=services/GDP.

This seems the only downturn of imports during the whole period under study. On the other hand, foreign direct investment (FDIY) is low but stable even with the country's

need for capital inflows in support of its FDI-led growth policy and with various investment reforms in 2006 and 2014 (see Tran, 2020). As a country with early financial developments and relatively weak domestic service providers, services (SY) were in deficit but also low and stable. The annual average for FDIY is 5.26 per cent and for SY -1.62 per cent. The adverse effect of the GFC on both FDIY and SY was mild. The performance of both FDIY and SY has improved in recent years.

Figure 3. Vietnam's Key Export Determinants (%), 2001-2019



Notes: RXRC=change in real exchange rates (%), CPIC=Vietnam's cost of living or inflation (%). RCAC= Vietnam's revealed comparative advantage (%), POPC=population growth.

Figure 3 describes the movements of the four representative key contributors to Vietnam's exports (see the conceptual rationale given in Tran (2002)) during the period

2001-2019. These contributors include, in addition to the country's usual human and natural endowments and policies (ITC, 2021) and economic conditions, importantly its main trading partners' economic demand conditions or growth (YCA and YCUS, see above). Vietnam's cost of living (CPIC), Vietnam's real exchange rates (RXRC), Vietnam's revealed comparative advantage index (RCAC), and Vietnam's population growth (POPC) representing an important gravity factor for trade time-series data (Frankel and Romer, 1999).

The picture from Figure 3 shows a complex group of indicators with diverse and fluctuating movements that may have potential collective impact on Vietnam's exports and subsequently growth. First, in addition to our discussion earlier on YCA and YCUS, the country's inflation shows on the other hand a highly volatile trend during the GFC and euro crisis period between 2008 and 2012 where it rose to 23.12 per cent and 16.68 per cent in 2008 and 2011 respectively, The annual average for CPIC is fairly high at 6.79 per cent (compared to 6.46 per cent for growth) during the whole period. Second, real exchange rates indicate a falling trend starting at 7.36 per cent in 2001 and bottoming at -14.62 per cent in 2008 during the onset of the GFC. With a recovery in 2010, RXRC had slowly improved in recent years ending at 1.00 per cent in 2019. The annual average of RXRC is -1.69 per cent for the whole period. Third, as an important feature to expand exports, Vietnam's revealed comparative advantage index change shows a wide level of fluctuations almost from year to year with an annual average of -2.97 per cent. Finally, by its policy, Vietnam's population growth had been kept low during the period 2001-2019 with an annual average of 1.12 per cent. The trend seems to be alarmingly continually declining starting at 1.32 per cent in 2002 and ending at 0.88 per cent in 2019.

The 2001-2019 statistical data and their statistical descriptive analysis from Figures 1-3 above for Vietnam's major potential determinants of exports and probably economic integration-based growth (through an indirect complex nation-wide interdependent transmission mechanism) during the country's economic integration or globalised and volatile period show a complex system of relationships. This would severely affect the utility of the graphical or correlation analysis or related applied computable equilibrium approaches (Johansen, 1982. See also below) for credible findings and reliable strategic policy analysis. In the sections below, we propose to use an econometric approach to empirically study the causality of Vietnam's export determination and growth and their structural relationship during deepening globalisation as postulated by modern international trade economics via gravity theories, classical and new consumer demand theories and Johansen policy-impacted factors and advanced econometric analysis.

3. A New Model of Vietnam's Exports and Growth under Globalisation

A limited number of studies have been carried out in recent years to investigate the contributing factors to Vietnam's exports and sometimes with growth. These include studies by Thanh and Kalirajan (2005) on the effect of exchange rates, Nguyen and Xing (2008) on the impact of foreign direct investment, Nguyen et al. (2018) on exports and growth, Narayan and Nguyen (2019) on the type of energies used, and, importantly and more recently, major official policy issues in exports and imports VIOIT (2021a, 2021b). In spite of these extensive and varied studies, rigorous studies of Vietnam's exports and growth under the country's current economic integration or globalisation stage and with appropriate data-based policy recommendations are, while

highly desirable, have hardly been undertaken and reported. The gap is addressed by the paper in the sections below from an econometric approach using the data described in Section 2 and other related conceptually relevant contributing factors.

To rigorously explore the causal relationship between Vietnam's exports, growth, economic integration growth contributors (IMY, FDIY and SY), and also key testable economic-theoretic determinants (such as YCA, YCUS, RXR, RCA, and CPIC) and, importantly, major crisis events or reforms for Vietnam in an economic integration structure, an econometric model for Vietnam is developed as follows.

Adopting a new class of so-called economic integration models for growth causality study as proposed previously in Tran (2004, 2007; Tran and Limskul, 2013; Tran and Vu, 2018; Tran et al., 2018; Tran, 2019a; Tran and Vu, 2020, Tran et al., 2020), we consider, for convenience and without loss of generality, a simple model of two simultaneous (circular causality) implicit or arbitrary functions for income (Y) and exports (X), (1) and (2), and their key testable determinant variables in an economic integration growth framework (WTO, 2021). In this model, the underlying theoretical assumptions and testable hypotheses are as follows. First, Vietnam's income (Y) is determined principally not by conventional production (i.e., capital and labour) or income (i.e., wages and profits) factors but by economic integration engines of growth (WTO, 2021), namely, trade openness (exports X and imports IM), FDI, services (F), and additionally economic policy (W), and shocks or reforms (S) (Johansen, 1982; Tran, 2004). Second, exports are simultaneously determined by the GDP of Vietnam (Y) and of its two major proxy export destinations' economic demand conditions such as Asia and Oceania (YA) and the US (YUS) (also known as the gravity factors, Frankel and Romer, 1999), Vietnam's cost of living or inflation (I), its real exchange rate

(RXR) (Thanh and Kalirajan, 2005), FDI (Nguyen and Xing, 2008, VIOIT, 2021a), its demand attractions or revealed comparative advantage (RCA), W and other non-economic factors S. Conceptually, this model incorporates, in one important structural specification aspect, not only economic factors but also geographic or demographic attributes (Frankel and Romer, 1999), policy-impact factors (Johansen, 1982) or demographic dynamics (Kydland, 2006), and Ironmonger (1972) and Lancaster (1966)’s demand attributes. Thus for simplicity and importantly in implicit (function-free) functional form, the two functions for Y and X can be written for a sample N as:

$$Y_t = F_1(a, X_t, IM_t, FDI_t, F_t, W_t, S_t) \quad (1)$$

$$t = 1, \dots, N$$

$$X_t = F_2(b, Y_t, YA_t, YUS_t, I_t, RXR_t, FDI_t, RCA_t, W_t, S_t) \quad (2)$$

$$t = 1, \dots, N$$

where F1 and F2 are two implicit functions linking simultaneously income and exports to their theoretically plausible and empirically testable causal determinants (variables), and a and b are two vectors of parameters. In this model, Y may be defined as GNP (gross national product), per capita income (Easterly, 2007) or more popularly by convention real GDP which is adopted in this study. X and IM are defined as merchandise exports and imports respectively, FDI denotes foreign direct investment, F for services, and S is a vector representing shocks or policy reforms. W denotes other economic (fiscal, monetary, trade and export policy—see Sala-i-Martin, 1991), and S represents non-economic variables (e.g., country size or population, policy reforms and external shocks —see Johansen, 1982; Tran, 2005; for justification) relevant to Vietnam’s growth and export policy.

Importantly for our feasible empirical study especially for developing or transition economies where data are often limited, in addition to the official time-series data for Y , YA , YUS , X , IM , FDI , and F , and identification of relevant influencing national and global events in S , continuous or discrete data for W must be available and consistent with published time-series data from national statistical offices in a standard Kuznets-type accounting framework (e.g., System of National Accounts, SNA93/08), or the accounting system of Stone (1988), or the recent World Bank tables.

As (1) and (2) are in implicit form they assume importantly flexibility or no specific *a priori* functional form, and therefore are not statistically estimable. Since our purpose is ultimately to derive elasticities for their economic variables, we use planar approximations (thus ignoring higher-order differentials) and invariant transformations (e.g., see Allen 1960; and derivation in Tran, 1992; and previous related studies cited above) for (1) and (2) to write more explicitly in stochastic form and in terms of the rates of change for the continuous economic variables (denoted by y , ya , yus , x , im , fdi , f , w , i , rxr , and w) and binary S of all the included econometrically exogenous and endogenous variables as (for $t = 1, \dots, N$)

$$y_t = a_1 + a_2x_t + a_3im_t + a_4fdi_t + a_5S_t + a_6w_t + a_7S_t + u_{1t} \quad (3)$$

$$x_t = b_1 + b_2y_t + b_3ya_t + b_4yus_t + b_5i_t + b_6rxr_t + b_7fdi_t + b_8rca_t + b_9w_t + b_{10}S_t + u_{2t} \quad (4)$$

In (3)–(4), y is growth (the rate of change in real GDP) and the equations are linear and interdependent or simultaneous, while a_1 and b_1 are constant terms, a_2 – a_6 and b_2 – b_9 are the

elasticities (see Tran, 1992), and a_7 and b_{10} are impact parameters. The u 's are other unknown factors outside the model (Frankel and Romer, 1999), or the usual disturbances with standard statistical properties.

The main features of the model can be described as follows (see also Tran (2004, 2007; Tran and Limskul, 2013; Tran and Vu, 2018; Tran et al., 2018; Tran, 2019; Tran and Vu, 2020, Tran et al., 2020)). As specified in (1) and (2) and as testable hypotheses, the model in its implicit form can deal with any possible complex nonlinear functional relationship between growth and exports without requiring arbitrary and restrictive extraneous information about their relationship, and explicitly, in a causal economic integration growth framework. In its transformed form for empirical implementation given in (3)–(4), circular and instantaneous causality in the sense of Granger (1969) or Engle-Granger (1987) and within the economic integration framework exists, or is regarded in our study as a testable hypothesis. A system estimation method such as the 3SLS (three-stage least-squares) is therefore econometrically appropriate. In their exact or non-stochastic forms (in which all disturbances are idealistically zero), these estimated equations form the basic structure of a time-series data-based class of the computable general equilibrium/global trade analysis project (CGE/GTAP)) models of the Johansen class, in which all elasticities and impact parameters are not assumed (calibrated) to be given or known *a priori* and the impact of endogenous or endogenised variables (say X) on Y is dependent on the exogenous variables and calculated system-wise, using such iterative procedures as the Gauss-Euler algorithm with a known sparse matrix of elasticities. In econometric studies, the impact is usually carried out by reduced-form analysis.

Significantly, it should be noted that, in the model's estimation construct (3)–(4) with the variables in the form of the rate of change or, equivalently, log-differences (for small changes), the resulting parameter estimates are the elasticities (see above and Tran, 1992) that may be regarded as short-run causality in the sense of Granger (1969) when the variables are integrated of degree 0 or they may be regarded as long-run causality or co-integration in the sense of Engle-Granger (1987) when the variables are integrated of degree 1. Other important properties of the approach are given for example in Tran et al. (2018). It can be verified that our so-called flexible (or function-free) growth and export Equations (3)–(4) in the model above are econometrically identified in the sense of mathematical consistency. The three-stage least-squares estimation method with relevant instrumental variables (see Table 1) is suitable and adopted.

4. Empirical implementation and substantive findings

4.1. Data

Data sources – In addition to the key economic and export variables mentioned in Section 2 earlier, W in the export Equation (4) includes conventional demand—theoretically Vietnam's cost of living, international trade real exchange rates, FDI, and revealed comparative advantage for textiles and clothing as a proxy for the whole sector. Data for the estimation were obtained from the ADB (2021), UNCTAD (2021) and ERS-USDA (2021) databases. All economic and trade data are in real values or equivalent. In our study, all original data are obtained or derived as annual, and then transformed to their ratios (when appropriate). The ratio variables include merchandise exports and imports, FDI and services, all divided by the GDP. Other non-ratio variables

include population (a gravity factor proxy for time-series models, Frankel and Romer, 1999), inflation, real exchange rates, revealed comparative advantage, and qualitative variables representing the occurrence of the economic, financial and other major crises, policy shift or reforms over the period 2001 to 2019.

Variables definition and data processing - The qualitative binary variables reflect, in a conventional manner, the major domestic, regional and global event dates, with the assumption of long-term non-decaying effects on growth and exports. All non-binary variables are then converted to their percentage rates of change. The use of this percentage measurement (which is equivalent to log-difference for small changes) is a main feature of our policy modelling and impact approach, as it deals with empirical implementation of the implicit functions (1) and (2) and avoids the problems of restrictive and potentially unsuitable *a priori* known linear or log-linear functional forms (see above), and also of logarithmic transformations for negative data (such as budget (fiscal) deficits, and real interest rates or current account deficits). In addition, in the model, we assume a unidirectional direction of comprehensive trade to growth in a “causal” context. That is, the model deals with Vietnam’s exports and imports (in goods), FDI, and services and their causal impact on Vietnam’s growth and not vice versa. Major reforms and crises and economic variables that have been identified or assumed as exogenous or acceptable instrumental variables, affecting simultaneously Vietnam’s growth and exports, are listed in the empirical findings table in the next section.

The p-values for the Phillips-Perron unit root test for all variables in the model are given as: Vietnam’s growth = 0.711, Asia and Oceania growth = 0.470, US growth = 0.406, Vietnam’s exports/GDP = 0.263, Vietnam’s imports/GDP = 0.183, FDI/GDP = 0.441, services/GDP = 0.233, RXR =

0.557, Vietnam's inflation = 0.475, and population = 0.712. Showing all variables used in the estimation are stationary at the 1% significance level. The empirical findings reported below are thus not spurious.

4.2. The estimated model and modelling performance

To provide insights into Vietnam's exports, and with the various key contributing factors to endogenous growth and exports (the instrumental variables), the model (3)–(4) has been appropriately estimated, as mentioned earlier, by the 3SLS using the available official data for the period 2001–2019. The basic findings on the parameter estimates (elasticities for economic, trade, and demographic variables and impact parameters for event variables) are reported in Table 1 below, and their standard graphical and statistical evaluations in this modelling approach are given in Figures 4 and 5 and Table 2. As mentioned above, the model is identified according to the order identification tests, and all included (non-binary) variables have been found to be statistically stationary according to the usual unit root tests.

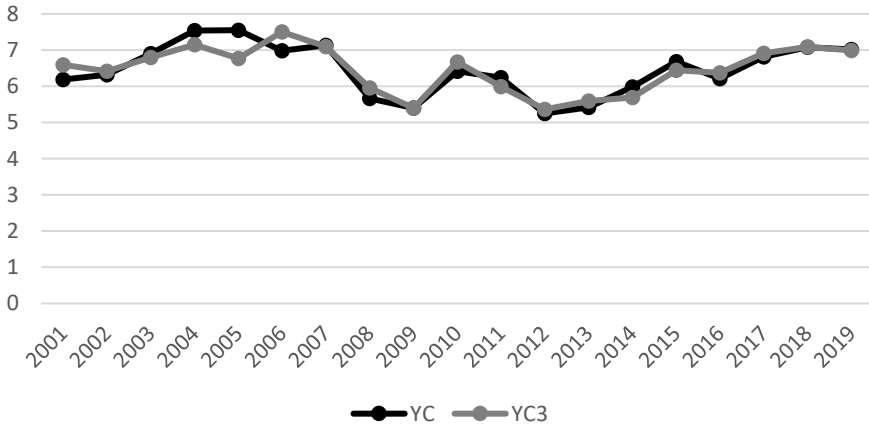
The modelling performance of the estimated equations for Vietnam's growth and exports using our approach has also been measured, importantly, by the Friedman (1953)–Kydland (2006) data-model compatibility or simply “empirical fit” criterion (Figures (4)–(5)) which, unlike many other empirical models in related studies, show excellent fits. More specifically, the estimated model, particularly exports, emulates very well the volatile peaks, troughs and the turning points of both growth and exports in Vietnam over the whole sample period and especially over the deeply turbulent 2002–2010 period covering wars and financial crises.

Table 1. Vietnam's Exports and Impact on Growth. 3SLS Estimates. 2001–2019.

Variables	Growth	Variables	Exports/GDP
Const	-,1.063		-59.340
Exports/GDP	0.099**	Vietnam's Growth	12.252**
Imports/GDP	-0.016	Asia & Oceania's Growth	12.863**
FDI/GDP	0.009	US Growth	-5.174**
Services/GDP	0.0002	FDI/GDP	-0.110**
		Real Exchange Rates	5.734**
		RCA	0.155**
Inflation	-0.057**		5.799**
Population	5.815		-73.865**
		2004	-10.393**
2005	1.203**		-16.473**
Post GFC 2009	-0.245		8.514*
Euro Crisis 2010	-0.678		-53.071**
2012	0.202		70.363**
2015	1.275**		-7.122**
		2016	-16.111**
2018	1.079**		
RSQ	0.916		0.971
DW	2.192		3.102
PP-p value	0.803		0.870

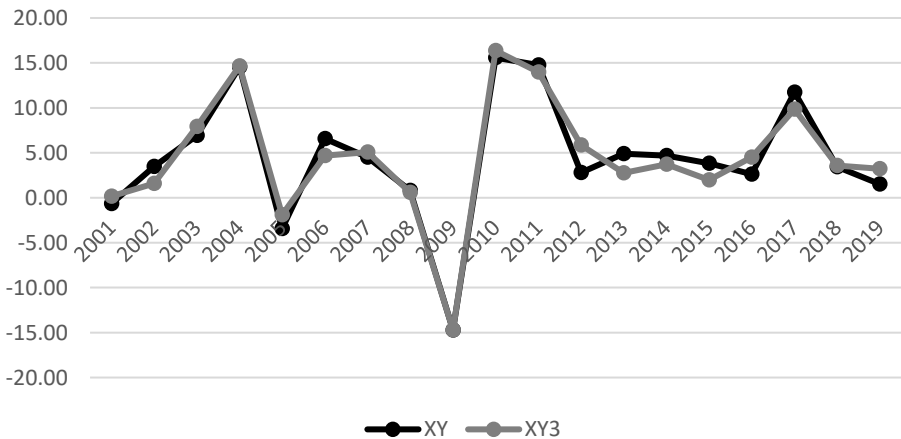
Notes: GFC = Global Financial Crisis, RCA = Revealed comparative advantage, RSQ = R-squared, ** = Significant at the 5 per cent level, * = Significant at the 10 per cent level, PP p-value = Phillips-Perron p-value of the unit root test on the residuals. Software used for estimation = TSP-Oxmetrics 6.

Figure 4. Vietnam's Growth and Its 3SLS Estimate,
2001-2019



Notes to Figures 4–5: YC and YC3 = Vietnam's growth and its 3SLS estimate, XY and XY3 = Vietnam's exports/GDP and its 3SLS estimate.

Figure 5. Vietnam's Exports/GDP and Its 3SLS Estimate,
2001-2019



In addition, modelling performance is measured by their empirical statistical characteristics, using Theil-MSE decomposition, and given in Table 2. Other standard diagnostic tests available for OLS estimation and residuals are not appropriate for 3SLS residuals.

Table 2. Modelling performance—THEIL-MSE decomposition.

	Growth		Exports/GDP	
	Actual	3SLS	Actual	3SLS
Mean	6.462	6.463	4.415	4.416
St. Dev.	0.702	0.636	7.001	6.889
Corr. Coef.	0.902		0.976	
RMSE	0.295		1.471	
Mean Error	0.001		0.001	
m_b	0.000		0.000	
m_s	0.049		0.011	
m_c	0.951		0.989	

Note: $m_b + m_s + m_c = 1$. See Pindyck and Rubinfeld (1998).

As assessed by these various modelling diagnostics reported in Figures (3)–(4) and Table 2, the estimated model first performs very well in emulating the trend and volatile movements of Vietnam’s growth and export data over the whole sample period 2001–2019. Second, the Theil-MSE findings show the closeness of data in the form of the model’s first two moments, that is, bias (m_b), variance (m_s), and especially the high covariance (m_c) of 0.951 and 0.989 for the growth and export equations respectively. The model’s residuals have also been tested for evidence of unit roots, with a Phillips-Perron p-value of 0.803 for growth and 0.870 for

exports establishing statistical stationarity and modelling credibility for reliable analysis. In addition, in the estimated model, the values for R^2 (0.838 for growth and 0.971 for exports) and DW (2.062 for growth and 3.102 for exports) appear acceptable and show no first-order autocorrelation or efficiency problem. The discussions of the findings and strategic policy implications for Vietnam's growth and especially export determination are based on these robust empirical findings, and given in Section 5.

5. Major Findings and National Strategic Export Policy Implications

As mentioned earlier, the rigorous literature on exports determination and its impact and contribution to economic growth in general and with respect to Vietnam in particular has been limited. In recent years, fast rising globalisation and widespread economic integration through for example free trade agreements (WTO 2021) have focussed the sources of growth on international merchandise trade (or openness), FDI flows, and services rather than on the traditional production or income perspective of the economy as adopted by a large number of conventional studies. This requires new directions in fundamental and data-based research for policy analysis that better reflect these global developments and available statistics and provide appropriate and credible policy recommendations.

It is important to note that this study makes use of this contemporary development focus to develop a new generic approach to address these developments, the so-called economic integration or United Nations System of National Accounts (SNA 98/03) expenditure approach that has had wide applications (Tran, 2004; 2005, 2007; Tran and Limskul, 2013; Tran and Vu, 2018; Tran et al., 2018; Tran, 2019; Tran

and Vu, 2020); Tran et al., 2020). The objective was to provide substantive evidence for credible and appropriate policy analysis in the specific case of Vietnam's sustainable exports, and its impact on the country's growth. The findings by 3SLS estimation using official 2001–2019 economic and trade data of the model's two equations (3)–(4) with reported results in Table 1 and their modelling characteristics in Figures (3) and (4) and Table 2, show interesting credible results and insights. They are particularly useful for understanding Vietnam's export determination and the impact of globalisation, exports, domestic reforms, and regional and global crises on country's growth for meaningful strategic policy analysis.

It should be noted that, as these findings are from an endogenous and simultaneous multi-equation economic integration econometric study with acceptable empirical fit (see above), these time-series data-based findings represent another perspective of macro-economic modelling and using official real-life data, and, as expected, may not be consistent with expectations or with other findings from alternative approaches normally used by national and international researchers such as descriptive statistical analysis, input-output analysis, CGE simulation, Granger short-term causality, Engle-Granger long-term co-integration, regression analysis and related studies.

Significant and major implications of our findings above and particularly relevant to Vietnam's national export strategy 2021-2030 (ITC, 2021) consist of several parts. First, important as empirical support are the findings that Vietnam's exports depend significantly on its domestic and sectoral characteristics known collectively as national economic conditions, reforms and developments and captured ultimately through an economy-wide transmission process by growth YC with elasticity of 12.252, and also on the country's major export sector revealed comparative advantage RCA with elasticity of 0.155 (see further details on these domestic

exporting issues in ITC (2021), VIOIT (2021a, 2021b)). Second, more important however are the findings that, from an external demand perspective, Vietnam's exports depend particularly on its trading partners' economic and international trade conditions such as their growth (YCA with elasticity of 12.863) and real exchange rates (RXR with elasticity of 5.734). For policy analysis, these external factors are dominant but largely outside the control of Vietnam. This makes related exporting strategy formulated by the country (VIOIT 2021a, 2021b) more complex and needs additional focus. On the issue of trading partners' economic conditions, the US which is Vietnam's top export destinations (with USD42.558m or 22.36 per cent of all exports in 2019, see ADB, 2021) exerts unexpectedly from our findings on the contrary a negative impact (with an elasticity of -5.174) on Vietnam's exports. While the finding may be of a short term nature, its policy implications would be that as the US's growth improves, it is likely to divert its demand for Vietnam's exports to other competitive exporting countries in the region and beyond.

Our study also finds that FDI somehow hampers Vietnam's exports with an elasticity of -0.110. This evidence seems to support the view of many researchers and analysts on Vietnam that some of the FDI into the country needs to be more appropriately re-directed or attracted to the export-supporting activities (VIOIT, 2021a, 2021b). Relevant to this issue is the recommendation for digitalisation of the related industries to promote exports (see relevant discussion in Tran, 2019b, ITC, 2021). Finally, our findings indicate that domestic reforms and especially national, regional and global crises during the sampling period 2001-2019 do have a strong and varying impact (for example from -53.071 to 70.363 during the euro crisis and recovery) on Vietnam's exports. As these are essentially external influences or factors, they call

for appropriate strategy and policy that mitigate their damaging occurrence or minimise their adverse impact not only nationally but also at the sectoral level whenever can be done. This point would make the strategy and policy for Vietnam's exports especially for the post-COVID-19 pandemic period more complex and need added attention and resources (see some related discussion in Tran, 2002).

On the macroeconomic perspective, Vietnam's exports are found in our study to have significantly contributed to the country's growth (with an elasticity of 0.099). This evidence lends support to the policy of exports-led growth of the government (see also Nguyen et al., 2018). As expected however, imports hinder the country's growth but the evidence is not statistically significant. The findings also indicate that generally Vietnam has not significantly benefitted as expected from the process of globalisation or regional economic integration via free trade agreements or related partnerships where FDI and services are considered important engines of growth (WTO, 2021). While the results may be due to our small sample, some obstacles to these benefits that have been suggested include misdirected or insufficient FDI or weak domestic services providers due to an early financial market. The findings that FDI and services are positive in our study are encouraging, however. As in the study of exports, the strong impact of domestic reforms, national, regional and global crises on Vietnam's economic performance was validated. As a remedy, international co-operation on fiscal remedial policy has been suggested and an appropriate policy to address these issues including the current COVID-19 pandemic is necessary (see IMF, 2021)

6. Conclusion

The paper addresses two important contemporary issues in Asia with a focus on its major economy, namely, export

determination in Vietnam and its contribution to the country's economic growth amid the lack of rigorous studies that take into account the structure of modern economic integration theory appropriately for globally integrated economies. The aims of the study are to contribute rigorously and appropriately to the improvement of the quality, efficiency and suitability of Vietnam's current 2021-2030 national export strategy interest. The new approach introduced in the paper is particularly consistent with contemporary global economic and international trade policy developments and relevant modelling methodological advances. It is highly relevant to studying what causally motivated growing exports in Vietnam, and their important policy issues, and whether they have had any significant impact on its economy during the volatile period 2001–2019 where the country and region had experienced great shocks and reforms.

The study has provided a number of interesting and useful results for practical and sustainable export strategic policy analysis in Vietnam especially during the COVID-19 pandemic and applications to its post period. The findings and policy implications are also supported by rigorous economic-theoretic considerations and robust advanced econometric modelling analysis. Finally, the approach adopted is in the so-called economic integration class of econometric policy modelling and generic. It has wide applications in related fields of causality, impact research and credible strategic policy analysis.

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