

**Quantitative Assessment of Sensitivity to
Exchange Rate Fluctuations for Vietnam:
The Sectoral Approach.**

By

Mai Ngoc Lan

Graduate School of Economics, Shiga University, Japan and
Department of International Economics and Business, National
Economic University, Hanoi, Vietnam.

Figure 1. The Share of Foreign Trade over GDP of Vietnam,
1990-2000

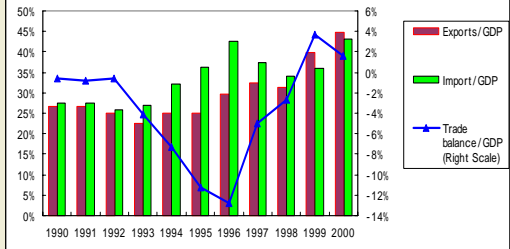
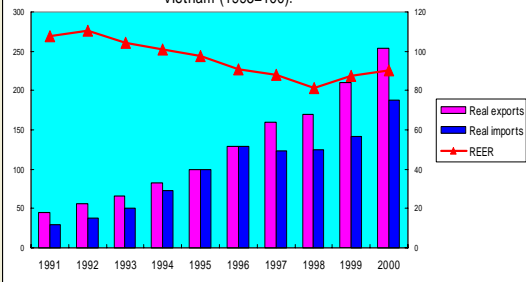


Figure 2. Real exports, real imports and real exchange rates of
Vietnam (1995=100).



The Theoretical Consideration

- The demand function faced by exporter i :

$$P_i = f(Q_i)$$

- The basic condition:

$$E(P_i + Q_i f') = c$$

In which:

$$f' = 0 : EP_i = c$$

$$f' < 0 : E(P_i + Q_i f') = c$$

Empirical Model: Fixed Effect Model (Time-Sector-Country Dimensions)

Export Equations

$$X_{ijt} = c + \sum_{i=2}^{17} (c_i * d_i) + \sum_{i=1}^{17} a_{i0} (ER_{it} * d_i) + a_2 EV_t + a_3 PDVN_{it} + a_4 PDTPT_{it} + a_5 PPVN_{it} + a_6 PPTPT_{it} + u_{ijt}$$

$$X_{ijt} = c + \sum_{i=2}^{17} (c_i * d_i) + a_1 ER_{it} + b ER_{it} * CON_t + a_2 EV_t + a_3 PDVN_{it} + a_4 PDTPT_{it} + a_5 PPVN_{it} + a_6 PPTPT_{it} + u_{ijt}$$

$$X_{ijt} = c + \sum_{i=2}^{17} (c_i * d_i) + a_1 ER_{it} + a_2 ER_{it} * IIS_t + a_3 EV_t + a_4 PDVN_{it} + a_5 PDTPT_{it} + a_6 PPVN_{it} + a_7 PPTPT_{it} + u_{ijt}$$

$$X_{ijt} = c + \sum_{i=2}^{17} (c_i * d_i) + a_1 ER_{it} + b ER_{it} * CON_t + a_2 ER_{it} * IIS_t + a_3 EV_t + a_4 PDVN_{it} + a_5 PDTPT_{it} + a_6 PPVN_{it} + a_7 PPTPT_{it} + u_{ijt}$$

Imports Equation

$$M_{ijt} = c + \sum_{i=2}^{18} (c_i * d_i) + \sum_{i=1}^{18} a_{i0} (ER_{it} * d_i) + a_2 EV_t + a_3 PDVN_{it} + a_4 PDTPT_{it} + a_5 PPVN_{it} + a_6 PPTPT_{it} + u_{ijt}$$

$$M_{ijt} = c + \sum_{i=2}^{18} (c_i * d_i) + a_1 ER_{it} + b ER_{it} * CON_t + a_2 EV_t + a_3 PDVN_{it} + a_4 PDTPT_{it} + a_5 PPVN_{it} + a_6 PPTPT_{it} + u_{ijt}$$

Description Variables

i, j and t denote sector, trading partner and annual time (1991:2000), respectively

X_{ijt} : Exports from Vietnam to trading partner countries.

M_{ijt} : Imports into Vietnam from trading partner countries.

d_i : Dummy variable that take the value 1 for sector i and 0 for otherwise.

ER_{it} : Sector specific real exchange rates.

EV_i : Real effective exchange rates volatility.

$PDVN_{it}$: Total production of Vietnam.

$PDTP_{ijt}$: Total production of trading partner countries.

$PPVN_{it}$: Producer prices of Vietnam.

$PPTP_{ijt}$: Producer prices of trading partner countries.

Exports equation	Imports equation
Processed rice and other cereal grain products	Processed rice and other cereal grain products
Coal	Food products
Crude oil	Beverage and tobacco products
Food products	Textiles
Beverage and tobacco products	Wearing apparel
Textiles	Leather products, including footwear
Wearing apparel	Wood and wood products
Leather products, including footwear	Paper products, publishing
Wood and wood products	Petroleum products
Paper products, publishing	Chemical, rubber, plastic products
Chemical, rubber, plastic products	Non-metal mineral products
Non-metal mineral products	Basic metal
Basic metal	Metal products
Metal products	Motor vehicles and parts
Electronic equipments	Other transport equipment necessities
Machinery and equipment necessities	Electronic equipments
Other manufactures necessities	Machinery and equipment necessities
	Other manufactures necessities

Data sources

Vietnam General Statistic Office:

- + Foreign Trade Statistics of Vietnam 1991-2000.
- + Price and Price Indexes 1991-2000.
- + Vietnam Enterprises Survey, 2000.
- + Vietnam I-O table: 1989,1995,2000.

International Monetary Fund:

- + Direction of Trade CD-ROM
- + International Financial Statistics.

OECD:

- + Main Economic Indicators.
- + Quarterly Energy Statistics.

ADB: Key Economic Indicator.

Japanese Foreign Trade White Papers.

GTAP database v.5.4 trade time series data 1991 – 1998.

Table 1: Exports Equation 1a

Industry	Coefficient	t-statistic
Coal	1.75	1.76**
Crude oil	-5.21	-3.14***
Processed rice and other cereal grain products	2.48	4.02***
Food products	-2.57	-2.14**
Beverage and tobacco products	-4.56	-1.15
Textiles	-4.57	-5.12***
Wearing apparel	-2.65	-2.21**
Leather products, including footwear	-3.71	-2.27**
Wood and wood products	-3.73	-3.86***
Paper products, publishing	4.49	2.42**
Chemical, rubber, plastic products	-1.45	-1.65**
Non-metal mineral products	-2.93	-2.39**
Basic metal	3.68	2.37**
Metal products	-8.22	-5.39***
Electronic equipments	-13.91	-7.41***
Machinery and equipment necessities	-6.76	-4.33***
Other manufactures necessities	-6.84	-5.84***
Real exchange rates volatility	-6.98	-2.4**
Total production of Vietnam	0.60	4.81***
Total production of trading partners	-0.14	-2.58**
Producer price of Vietnam	0.92	3.45***
Producer price of trading partners	0.12	2.11**
Intercept	-13.16	-3.69***

Nob: 1670
R²: 0.45

Note: * : significant at 5 percent
** : significant at 1 percent.
*** : significant at 0.1 percent.
Source: Author's estimations.

Table 2: Imports Equation 1b

Industry	Coefficient	t-statistic
Processed rice and other cereal grain products	-2.98	-2.35**
Food products	-0.84	-0.58
Beverage and tobacco products	-7.42	-2.71**
Textiles	-4.15	-4.6***
Wearing apparel	-3.41	-1.66**
Leather products, including footwear	-5.31	-3.01**
Wood and wood products	-13.15	-5.32***
Paper products, publishing	-1.01	-1.01
Petroleum products	-5.22	-2.61**
Chemical, rubber, plastic products	-4.22	-4.97***
Non-metal mineral products	-2.95	-2.27**
Basic metal	-4.40	-3.81***
Metal products	-2.95	-2.76**
Motor vehicles and parts	-2.47	-2.12**
Other transport equipment necessities	0.57	0.51
Electronic equipments	-5.14	-3.88***
Machinery and equipment necessities	-1.88	-1.74**
Other manufactures necessities	-1.76	-3.82***
Real exchange rates volatility	-12.3	-3.45***
Total production of Vietnam	-0.09	-0.91
Total production of trading partners	0.17	1.81**
Producer price of Vietnam	1.35	5.12***
Producer price of trading partners	0.56	2.02**
Intercept	8.78	1.37*

Nob: 1930
R²: 0.30

Note: * : significant at 5 percent
** : significant at 1 percent.
*** : significant at 0.1 percent.
Source: Author's estimations.

Table 3: Exports Equation 2a

Industry	Coefficient	t-statistic
Industry specific real exchange rates	-2.09	-3.44***
Concentration	6.49	4.67***
Real exchange rates volatility	-0.92	-0.31
Total production of Vietnam	0.73	9.51***
Total production of trading partners	-0.12	-2.27**
Producer price of Vietnam	1.95	8.41***
Producer price of trading partners	0.12	2.01**
Intercept	-9.77	-3.09**

Nob: 1670
R²: 0.38

Note: * : significant at 5 percent
** : significant at 1 percent.
*** : significant at 0.1 percent.
Source: Author's estimations.

Table 4: Imports Equation 2b

Industry	Coefficient	t-statistic
Industry specific real exchange rates	-2.87	-4.95***
Concentration	-0.61	-0.34
Real exchange rates volatility	-12.9	-3.77***
Total production of Vietnam	-0.07	-0.94
Total production of trading partners	0.18	1.95**
Producer price of Vietnam	1.41	5.86***
Producer price of trading partners	0.68	2.47**
Intercept	8.45	1.94**
Nob: 1930 R ² : 0.28		

Note: *: significant at 5 percent
 **: significant at 1 percent.
 ***: significant at 0.1 percent.
 Source: Author's estimations.

Table 5: Exports Equation 3

Industry	Coefficient	t-statistic
Industry specific real exchange rates	1.71	3.24***
Intermediate imported input	-9.89	-8.13***
Real exchange rates volatility	-4.07	-1.4*
Total production of Vietnam	0.37	4.95***
Total production of trading partners	-0.42	-2.15**
Producer price of Vietnam	1.70	7.38***
Producer price of trading partners	0.12	2.01**
Intercept	-11.32	-3.68***
Nob: 1670 R ² : 0.4		

Note: *: significant at 5 percent
 **: significant at 1 percent.
 ***: significant at 0.1 percent.
 Source: Author's estimations.

Table 6: Exports Equation 4

Industry	Coefficient	t-statistic
Industry specific real exchange rates	1.09	1.42*
Intermediate imported input	-9.19	-6.7***
Concentration	1.7	1.1
Real exchange rates volatility	-3.74	-1.28*
Total production of Vietnam	0.42	4.77***
Total production of trading partners	-0.12	-2.18**
Producer price of Vietnam	1.71	7.42***
Producer price of trading partners	0.12	2.04**
Intercept	-12.01	-3.82***
Nob: 1670 R ² : 0.4		

Note: *: significant at 5 percent
 **: significant at 1 percent.
 ***: significant at 0.1 percent.
 Source: Author's estimations.

Concluding Remarks

- In general, imported input contents has played a significant role in influencing export prices.
- Thus, an appreciation of Vietnamese dong in 1990s induced by exchange rate policy does not mean Vietnam has loss export price competitiveness.
- However, in the future as domestic value-added increases, the crucial resource in maintaining export competitiveness provided by having a high import content will diminish, which call for further efforts to monitor exchange rate changes, beside of raising productivity across industries.
- The finding of this paper have important implication for further studies such as trade goods price effect of Vietnamese dong fluctuations, causal effect of traded good price and the behavior of reducing profit mark-up of exportable goods' producer to evaluate completely the relationship of Vietnam's export and movement in the currency value.

Thank you very much