

CHAPTER FIVE

EXPORT INSTABILITY AND ECONOMIC DEVELOPMENT

5.1 Introduction

In LDCs where domestic capital goods industries are still relatively small, it has been argued that the export sector would provide substantial foreign exchange resources for the import of capital goods (for example, see Voivodas,1974; Lim,1976; Love,1989). Imported capital goods, it is argued, augment existing capital stock and thus raise potential output and, therefore, the pace of economic growth. In Malaysia, the domestic capital goods industries are still small. Imports of capital goods rose significantly to account for 40.7 per cent of gross imports in 1991, up from 25.2 per cent in 1970 (Bank Negara,Dec.1993). The average growth rate for import of capital goods was about 21.0 per cent over the 1968-91 period.

Export growth is also believed to promote domestic capital accumulation (for example, see Balassa,1978; Fajana,1979; Feder,1982; Chow,1987). It is argued that the enlargement of the market and exploitation of economies of scale via export expansion, would increase capacity utilisation, induce improvement in technology, increase domestic savings and investment as well as attract foreign investment by the outward-oriented development policies. However, if the economy experiences large fluctuations in export earnings, export instability may generate some uncertainty and diminish business confidence. This uncertainty may adversely affect investment by causing risk-averting behaviour (Lim,1976). Hence, the contention that export instability would bring unfavourable effects on the level of domestic investment, and subsequently on the rate of growth of output.

While some empirical studies confirmed the export instability-led domestic investment instability hypothesis (for example, see Kenen and Voivodas,1972; Glezacos,1973; Lim,1976; Voivodas,1974; Guillaumont,1987; Maizels,1987), other studies argue that uncertainty in export earnings may encourage growth. They generally argue along the line that uncertainty about future income will have a positive effect on savings by increasing the precautionary demand for savings which will ultimately lead to more investment and a higher rate of growth (see Cain,1958; MacBean,1966; Knudsen and Parnes,1975).

Following the *a priori* reasoning which leads one to expect that export instability affects economic growth and development, we now examine the association between economic development and export instability by examining: (a) the relationship between export instability and instability in the import of capital goods, and (b) the relationship between export instability and domestic investment instability in Malaysia, over the 1968-91 period. This approach rests on the argument that both the import of capital goods and level of domestic investment will affect the nation's capital stock and therefore its growth and development.

The chapter is organized as follows: Section 5.2 presents the limitations of this study. Section 5.3 gives an account of the data used. Section 5.4 outlines both the export instability-led import of capital goods instability and export instability-led domestic investment instability models. An examination is done on the alleged causal relationship between the variables. Section 5.5 offers some concluding remarks.

5.2 Limitations of Study

Before testing the above relationships, some weaknesses inherent in the single-equation model adopted in this study should be noted:

(i) Longer term effects of export instability on the rate of economic growth cannot be ascertained by a single-equation model even though allowance is made for time lags. However, Dick et al.(1983) pointed out that unless the effects of uncertainty associated with export instability on the behaviour of key economic agents such as producers, consumers and government are captured, it is inappropriate to tackle the issue of the longer-term consequence of export instability on economic growth. The analytical model used in this study does not explicitly recognize such behavioural changes as it focuses only on the transmission mechanism of export instability to imports of capital goods and on domestic investment. Thus, it can be said that the analysis is restricted to the *short-run*.

(ii) Although an integrated econometric model has the advantage that realistic feedbacks can be properly allowed for¹, the small sample periods (between 20 and 24 years) used in this study would affect the number of degrees of freedom and this may, in turn, lower the efficiency of the econometric specification and estimation.

(iii) In order to test the influence of export instability on investment at an aggregate level, a complete macroeconomic model incorporating all the factors affecting investment, and where export instability is only one of the factors present, would be required. This task is

¹Nevertheless, Nguyen (1983) also points out that although integrated econometric models allow a more comprehensive approach, such models require large volume of information and therefore greater number of assumptions have to be made. This could increase the likelihood of making use of poor information and/or making incorrect assumptions. By using more proxies of less quantifiable factors, dummy variables and arbitrary assumptions, the results may become broader but less robust or reliable.

however, beyond the scope of the present study. Nevertheless, following Moran's (1983,p.203) argument, the analysis that follows can be justified if the omitted variables are thought not to be correlated with export instability or the other included explanatory variables.

(iv) Love (1989) argues that studies on the impact of export instability on economic growth using the Harrod-Domar framework ignores factors such as government expenditure and government planning, which could also exert an influence on the economic growth rate. This study does not include such factors for the following reasons: (a) unlike the export-instability-led imports of capital goods instability transmission, there are analytical difficulties involved in empirical investigation of the export instability-led government expenditure instability. This is due to the indirect nature of the impact of export instability on government expenditure and government planning, and (b) the government's full support for the rapid expansion of the export sector over the past fifteen years (see Chapter Two) is clearly seen by the fact that the share of export taxes in total government revenue declined since 1980, from 18.4 per cent to 5.96 per cent in 1991 (see Appendix 5.1).

(v) Dynamic models such as the cointegration and error correction models formalised by Engle and Granger (1987), could provide more reliable results by looking into the causality of the variables discussed above. However such models could not be performed here due to insufficient data. The approach requires a large set of observations, preferably more than 50 observations. In order to increase our data set, quarterly figures on import price indices for instance, are required. Unfortunately, quarterly data on import price indices and GDP deflator to obtain real export earnings and other relevant variables are not available for our study.

5.3 The Data

Owing to the nature of the study on export instability in which the analysis focuses on longer period disturbances, annual data are employed. As with most studies (see for example, Guillaumont,1987; Love,1989; Martin,1989), figures on imports of capital goods, gross domestic investment, export earnings and other appropriate variables used here (such as international reserves and net long-term capital) are expressed in real terms. Data on capital good imports, export earnings and international reserves are taken from various issues of Bank Negara Quarterly Bulletin while gross domestic investment and net long-term capital are taken from World Tables. Capital good imports, export earnings, international reserves and long-term capital are first deflated using the import price index ($1980=100$), while gross domestic investment by the GDP deflator ($1980=100$).

As with most analyses of variables in terms of instability, they are expressed on the basis of deviations from time trend, $(X_t - \bar{X}_t)$; for instance, X_t =export earnings and \bar{X}_t =the trend value of export earnings. The instability indices are based on *best fit* trends employed. For the period under study, the polynomial function of degree three provides the best fit for the variables under study. They are imports of capital goods, gross domestic investment, total export earnings, international reserves and long term capital (see Appendix 5.2).

5.4 Impact of Export Instability on Imports of Capital Goods and Domestic Investment

If instability in export earnings is believed to inhibit economic growth via its impact on imports of capital goods and domestic investment, we would expect the

relationship between export earnings instability and imports of capital goods instability to be positive. The same argument can be made in terms of the relationship between export earnings instability and domestic investment instability.

5.4.1 *Export-Instability-led Imports of Capital Goods Instability Argument*

Love (1989), in his study of 12 developing countries, tried to establish whether export instability could affect imports of capital goods and, in turn, affect domestic investment². His sample covered the 1960-early 1980s period. Love (1989) further argues that international reserves could act as a stabilizing influence on export earnings instability because sufficient reserves of foreign exchange could help mitigate the adverse effects of export earnings instability. Thus, based on the first transmission of export earnings instability on imports of capital goods, his model is:

$$m_t^k = f(x_t, ir_t)$$

where m_t^k = imports of capital goods

x_t = export earnings

ir_t = international reserves (Reserves here consist of IMF reserves, Special Drawing Rights, and Gold and Foreign Exchange)

for $t = 1, 2, \dots, n$ with lower case letters indicating deviations from trend.

It is *a priori* expected that there is a positive relationship between m_t^k and x_t . However, if m_t^k is found to be negatively and significantly related with ir_t , Love argues that there is evidence of substantial offsetting influence from ir_t on m_t^k . And, if ir_t has a positive sign and statistically significant, he contends that ir_t reinforces the impact of export instability on m_t^k (see Love, 1989, p.188].

²Love's objective was to examine whether the hypothesized adverse effects would lower the level of investment and, in turn, affect economic growth trend.

The argument that ir_t offsets or mitigates the impact of export earnings instability on imports of capital goods instability implies that ir_t is allowed to fluctuate in order to ensure stability in imports of capital goods. It is, however, equally possible to argue that attempts to minimise fluctuations in imports of capital goods will lead to fluctuations in ir_t in the opposite direction. In this case, ir_t would be the dependent variable and m_t^k the independent variable, and Love's model would be a misspecification.

To illustrate our point of contention, we run a similar hypothesis following Love's approach on his argument of export instability-led imports of capital goods instability using our data sample. The model is as follows:

$$NRCAP = a + b NRXP + c NRRES + u \dots\dots\dots(1)$$

- where $NRCAP$ = imports of capital goods instability
- $NRXP$ = export earnings instability
- $NRRES$ = international reserves instability

The results of equation (1) are presented in Table 5.1.

Table 5.1

Eq	Dependent variable	Constant	Independent NRXP	Variable NRRES	\overline{R}^2	D.W	F-ratio	n
1	NRCAP	4.8611737	0.1627593 (2.5303998) ^a	-0.2128208 (-1.3441921) ^c	0.518239	1.834177	9.247179 ^a	24

Figures in parentheses are t-ratios.
a. denotes statistical significance at 99% level of confidence
b. denotes statistical significance at 95% level of confidence
c. denotes statistical significance at 90% level of confidence
n=number of observations.
Source: Appendix 5.3

It is found that export instability and instability of imports of capital goods are positively related. On the other hand, the coefficient for the parameter *NRRES* is negative. If one follows Love's interpretation that *NRRES* exerts an offsetting influence on imports of capital goods instability, then it is, as stated earlier, possible to argue that the correct specification of the model should have *NRRES* as a dependent variable with *NRCAP* as the independent. To illustrate this point, we conduct a simple Granger-causality test to check the direction of causality between *NRCAP* and *NRRES* using our data set.

Given the small sample size, we arbitrarily limit the number of lags to be included in our unrestricted model to four. *Akaike information criterion* (AIC) and the *Bayesian information criterion* (BIC) are used to determine the optimal lag structure. The two criteria are used to reflect the closeness of fit and the number of parameters estimated in the model (Maddala,1992,p.540). We choose the optimal lag in our model as the one which displays the lowest AIC or BIC. Our tests indicate an optimal lag of three when *NRCAP* is the dependent variable and the lag is four when the dependent variable is *NRRES* (see Table 5.2). We need to be sure that there are no serial correlations. Thus, to check for serial correlation pattern of the residuals, we use the Ljung-Box-Pierce Q statistic.

Table 5.2

Dependent Variable	n	p	AIC(p)	BIC(p)
(i) <i>NRCAP</i>	24	2	130.17	132.53
	23	4	129.86	134.40
	22	6	123.68	130.23
	21	8	142.14	150.50
(ii) <i>NRRES</i>	24	2	135.53	137.89
	23	4	129.65	134.19
	22	6	128.59	135.14
	21	8	123.15	131.51

It is found that there is serial correlation when the unrestricted model displays *NRCAP* as the dependent variable with lag three. On the other hand, the observed Q statistic rejects any serial correlation in the unrestricted model with *NRRES* as the dependent variable and lag=4. Thus, we search for the next optimal lag with low AIC or BIC for the model when *NRCAP* is the dependent variable. The AIC has the second lowest value when lag=2. It is found that with lag two, no serial correlation is displayed in the model³.

An F-test is used to test our hypothesis that there is some causality relationship between *NRCAP* and *NRRES*. The 10 per cent point from the F-Table with 2 and 21 degrees of freedom is 2.57 while it is 2.31 with 4 and 17 degrees of freedom. It is found that the observed F (F=0.18254; d.f.=2,21) is lower than the critical value for the model when *NRCAP* is the dependent variable and *NRRES* independent. On the other hand, the observed F (F=2.45490; d.f.=4,17) is higher than the critical value when *NRRES* is the dependent variable with *NRCAP* as independent. This indicates that the relationship is unidirectional in the sense that *NRCAP* Granger causes *NRRES*⁴. Thus, the interpretation of the negative relationship between *NRCAP* and *NRRES* with *NRRES* as a mitigating factor to export instability should be placed as follows:

$$NRRES = d + e NRXP + f NRCAP + v(2)$$

However, from equation (2), it is found that there is multicollinearity between *NRXP* and *NRCAP* indicating that the two predictors *NRXP* and *NRCAP*, are linearly related (see

³The Ljung-Box-Pierce Q statistic has an approximate chi-square distribution with degrees of freedom equal to the number of sample autocorrelations "m" being tested. It is found that $Q_3 = 13.4537 [Q_3 > \chi^2_{0.005}(3)]$; $Q_4 = 6.2746 [Q_4 < \chi^2_{0.100}(4)]$; $Q_2 = 10.5749 [Q_2 < \chi^2_{0.005}(2)]$.

⁴An attempt was also made to test the causality relationship between *NRCAP* and *NRRES* with lag=2 for both models to maintain some kind of consistency. Although no serial correlations were found in both models, the observed F statistics (F= 0.18254 when *NRCAP* is the dependent variable and F = 0.19960 when *NRRES* is the dependent variable) are both lower than the critical value ($F_{0.10} = 2.57$; d.f. = 2,21). It suggests insufficient evidence to show any relationship between *NRCAP* and *NRRES*. However, we disregard the above model because: (i) the results are against the intuitive expectation of some relationship between the variables and, (ii) the model with *NRRES* dependent and *NRCAP* independent with lag two, does not display low AIC (see Table 5.2).

Appendix 5.4). The least squares estimates may be imprecise. Thus, this model is not relevant to the present discussion.

While NRRES appears to be an inappropriate explanatory variable, it could be argued that it is the level of reserves which acts as offsetting influence. The model could then be as follows:

$$NRCAP = g + h NRXP + i RRES + w(3)$$

- where *NRCAP* = imports of capital goods instability
- NRXP* = export earnings instability
- RRES* = international reserves

It is expected that there is a negative relationship between *NRCAP* and *RRES*. The regression results of equation (3) are given in Table 5.3.

Table 5.3

Eq	Dependent variable	Constant	Independent NRXP	Variable RRES	\overline{R}^2	D.W	F-ratio	n
3	NRCAP	-7.2112700	0.1533843 (2.1974171) ^b	0.0776612 (0.7977874)	0.483866	1.778740	8.187358 ^a	24

Figures in parentheses are t-ratios.
a. denotes statistical significance at 99% level of confidence
b. denotes statistical significance at 95% level of confidence
c. denotes statistical significance at 90% level of confidence
n=number of observations.
Source: Appendix 5.5

The coefficient of RRES is positive, contrary to *a priori* expectation, but is not significant. The results do not therefore lend support to the argument that the level of international reserves serves as an offsetting variable.

The international reserves considered here comprised of IMF reserves, Special Drawing Rights and, Gold and Foreign Exchange. It can be argued that these may not serve as a good indicator of private sector reserves which could have a stronger bearing on imports of capital goods. Therefore, a better proxy for private sector capital or liquidity is long-term capital flows. It can be contended that beside export earnings instability, net long-term capital inflow instability may also be positively related to instability of imports of capital goods. It could be argued that fluctuations in long-term capital inflow should in principle, have identical results as export earnings instability because they constitute an alternative source of foreign exchange. Thus, long-term capital inflow instability is also seen here as being responsible for an unpredictable supply of capital good imports. The model is as follows:

$$NRCAP = j + k NRXP + l NRLLTC + y(4)$$

- where *NRCAP* = imports of capital goods instability
- NRXP* = export earnings instability
- NRLLTC* = net long term capital instability

The empirical results are presented in Table 5.4.

Table 5.4

Eq	Dependent variable	Constant	Independent NRXP	Variable NRLLTC	\overline{R}^2	D.W	F-ratio	n
4	NRCAP	4.3560850	0.2206655 (3.4693474) ^a	0.3096329 (2.1054243) ^b	0.679281	2.121592	14.41393 ^a	24

Figures in parentheses are t-ratios.
a. denotes statistical significance at 99% level of confidence
b. denotes statistical significance at 95% level of confidence
c. denotes statistical significance at 90% level of confidence
n=number of observations.
Source: Appendix 5.6

It is found that the adjusted R^2 rose significantly. The value of the F-ratio for the estimating equation is significant at 0.01 per cent level, indicating that export earnings instability and long-term capital instability have significant impact on imports of capital goods instability. The positive coefficients of the parameters which are at least significant at 0.05 per cent level lend support to our *a priori* argument. Of the two predictors, net long-term capital instability appears to exert a larger influence on imports of capital goods instability.

5.4.2 Export-Instability-led Domestic Investment Instability Argument

We now turn to examine a second transmission mechanism. In particular, we examine the relationship between export earnings instability and domestic investment. It is argued that fluctuations in supply of capital goods would create bottlenecks in the implementations of investment programmes of a nation and thus hinder development programmes (Lim,1976). Love (1989), for instance, argues that the root cause is allegedly with export instability. The effects of export instability on domestic investment can then be estimated in a similar manner as the impact of export instability on imports of capital goods. Thus, the estimating equation can be given as :

$$NRGDI = m + n NRXP + p NRLLTC + z(5)$$

where $NRGDI$ = gross domestic investment instability

$NRXP$ = export earnings instability

$NRLLTC$ = long-term capital instability

$NRGDI$ is expected to have a positive relationship with $NRXP$ and $NRLLTC$. The regression results from equation (5) are given in Table 5.5.

Table 5.5

Eq	Dependent variable	Constant	Independent NRXP	Variable NRLLTC	\bar{R}^2	D.W	F-ratio	n
5	NRGDI	3.2750849	0.1735158 (1.7861899) ^b	0.6414707 (2.8514043) ^a	0.546073	1.855328	8.618989 ^a	24

Figures in parentheses are t-ratios.
a. denotes statistical significance at 99% level of confidence
b. denotes statistical significance at 95% level of confidence
c. denotes statistical significance at 90% level of confidence
n=number of observations.
Source: Appendix 5.7

The results conform to our expectations. There is a positive relationship between export earnings instability and instability in domestic investment. It is statistically significant at 0.05 per cent level. However, it appears that net long-term capital instability exerts a larger impact on domestic investment instability than export earnings instability.

By comparing equation(4) in Table 5.4 with equation(5) in Table 5.5, NRXP and NRLLTC appear to explain a larger portion of the instability in imports of capital goods than domestic investments. Other factors may have strong influence on the stability of domestic investment. For instance, the onset of recessionary tendencies in Malaysia during 1971-72, 1975 and 1985-86, caused monetary policy to ease to stimulate expansion in business activity and private investment through reduction of lending and borrowing rates in the commercial banks. Between 1979 and 1982, it was found that the increased share of private investment in non-tradable goods and services was sustained by public sector expenditure in non-tradables⁵. Although there was deterioration in the terms-of-trade in the early 1980s and a decline in corporate profitability in the tradable

⁵The government tried to offset the decline in the terms of trade initially by increasing the level of public expenditure. Public sector deficit rose substantially from 7.5 per cent of GDP in 1979 to 18 per cent of GDP in 1982 (see Gan,1992).

sector due to rise in wages and exchange rate appreciation⁶, the level of investment remained high although savings fell. Moreover, the central bank, Bank Negara, intervened to maintain the stability of the ringgit against the Singapore dollar and US dollar (US dollar was the intervention currency), and hence, succeeded, to some extent, in sustaining confidence in a fundamentally weak economy between 1980 and 1984⁷. Private investment thus remained relatively strong, growing at an average rate of 10.9 per cent during the period.

By the end of 1980s, there were large overhang of excess liquidity following strong export growth of manufactured goods and continuous inflows of capital especially the direct foreign investments (DFIs). As a result, there were tightening of monetary measures. This led to the firming up of the domestic interest rates. Nevertheless, Bank Negara ensured that the rise in interest rates was moderate through its gradual mopping up operations. This was done so as not to abruptly affect the cost of production and the incentives to invest (Lin,1992).

The above events suggest that substantial countercyclical policies were implemented which could have caused the investment environment to be less extensively affected by the negative impact of export instability. Despite some countercyclical policies to ensure a good investment environment by the government, the significant positive relationship between export instability and domestic investment does not seem to go along with the argument of *ratchet mechanism* effect. This effect would insure a

⁶An increase in nominal wages during the 1980s was in large part due to the expansion in the public sector employment and wage adjustment. Massive financial capital inflows as a result of increase in net official foreign borrowing which rose from 3 per cent of GDP to an average of 7 per cent of GDP between 1981 and 1984 accounted partially for the exchange rate appreciation (Gan,1992,p.6).

⁷However, growing deficits in the external and fiscal accounts of Malaysia subsequently increased the pressure to redirect the exchange rate policy to rely increasingly on market forces to determine the principal exchange rate in 1985. This contributed to the sharp depreciation in the ringgit exchange rate after the period.

higher long-run rate of investment inspite of cyclical behaviour in the export sector. Unlike Cain's (1958) earlier empirical findings on the Malayan investment environment during the 1913-14 period⁸, this ratchet effect does not appear strong in our sample period. This could, in part, be due to the higher degree of openness of the Malaysian economy over the years. For instance, gross exports accounted for about 42.5 per cent of Gross National product (GNP) in 1970. By 1991, it rose to 76.5 per cent of GNP (Bank Negara, Dec. 1991; Ministry of Finance, *Economic Report, 1991*). The exposure of the nation's macroeconomic variables to external factors widens as global trade environment becomes increasingly competitive (see Chapter Two).

Gan (1992) has found evidence to support the argument that the increase in private investment was largely fueled by inflow of foreign investment, with some exchange market intervention by the government⁹. The ability to attract capital inflows from abroad especially into the industrial sector can be attributed to several factors. These include liberalized equity guidelines formulated in government's attempt to attract foreign equity into export-oriented industries, the intensification of privatization process and the Yen appreciation following the Plaza Accord in 1985 which encouraged a wave of Japanese foreign direct investment. The tightening of monetary conditions since 1989 to cope with inflationary expectations caused by strong economic expansion especially in the manufacturing sector coupled with sharp increase in private credit demand, caused higher interest rate differentials in favour of ringgit vis-a-vis other currencies. This also attracted inflows of capital. Other factors include global liberalization of trade and

⁸Sir Sidney Caine, 1954, "Instability of Primary Product Prices: A Protest and a Proposal", *Economic Journal*; 1958, "Comments", *Kyklos*.

⁹ For instance, the policy on the exchange rate in 1989 was to maintain relative stability and guard against the erosion in the level of international competitiveness when there were strong inflows of foreign capital and rise in money supply coupled with rising inflationary expectations during the period (see also Lin, 1992).

investment regimes¹⁰. Thus, it is likely that instability in foreign capital inflow in particular, long term capital, would also cause instability in gross domestic investment.

5.5 Conclusion

This chapter examined two hypotheses: (a) that there is a positive link between export instability and imports of capital goods instability, and (b) that there is a positive link between export instability and domestic investment instability. The empirical findings show that export instability induces imports of capital goods instability. Export instability also have significant negative influence on gross domestic investment. This seems to suggest that the course of economic activity in Malaysia is still fairly affected by export instability.

The study also shows that net long-term capital being an alternative source of foreign exchange, is positively related to imports of capital good instability and domestic investment instability. Net long-term capital flow serves as a better proxy than international reserves in our study for private sector capital.

With the limitations of the above technique of estimation, it is, however, difficult to draw further explicit policy implications. The underlying structures or, the causal relationship which involve a host of other variables need to be examined in details which is beyond the scope of study here given the data and time constraints. The former reason in particular was mentioned in the earlier part of this chapter. Nevertheless, the analyses under consideration give some indication that imports of capital goods in particular, and domestic investment appear to move together with export instability.

¹⁰There had been bearish sentiments for the US dollar then in the international foreign exchange markets as a result of the weak economic recovery of the United States (Lin,1992).