CHAPTER IV

INSTABILITY OF THAI ORCHID EXPORTS

4.1 Instability Indexes of Thai Orchids Exports to the World Markets

The instability index was used to analyze the stability of Thai-orchid export values in the world markets. The instability of export value means that the actual export value has fluctuated from the general trend of export value in a short-term.

In this study used to analyze the instability indexes of Thai orchid exports to the world markets. The process can be described as follows.

An average percentage deviation from the least square trend line.

The ways to calculate are as follows (Sukhontapatipark, 1975).

a) Calculating the least squares trend line, regression analysis, of the export values during the year of studying.

b) Calculating an absolute variation between the actual annual value and the trend value.

c) Computing the percentage of the results in (b) in each year.

d) Computing the average percentage of the results in (c) by the years of study, divide 5 years moving.

$$ I = \frac{\sum_{t=1}^{N} \left| 100(X_t - X_t') / X_t' \right|}{N} \qquad (4.1) $$

Where

X_t' = the trend export values of Thai orchid flowers into the world markets in year t,

by $\qquad X_t' = a + bt \qquad$ (4.2)

a, b = constant variables

X_t = the actual export values of Thai orchid flowers to the world markets in year t,

t = the year of study from 1970 – 1997 ,

N = five year moving in each range from 1970 – 1997 : 1970-1974, 1971-1975, 1972-1976, ..., and 1993-1997.

I = instability index of Thai orchid exports in each five year moving

The way to get X'_t by regression analysis of X_t (the actual export values of Thai orchids to the world market in 1970-1997. The results of regression analysis are in Table 4.1 and Figure 4.1 as follows.

The trend exports values of Thai orchids to the world markets tended to increase every year from 1970-1997. From equation (4.1) can predict the trend export values of Thai orchid exports to the world market in the future by multiply the year (number follows the year in Table 4.2) with 29.598 and minus 44.880 that can get the trend export values in that year. The results are in Table 4.2 and Figure 4.1.

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Table 4.1 : Trend of the export values of Thai orchids to the world, Japanese, Italian, and American markets in 1970-1997.

(the export values of Thai orchids = dependent variable, year = independent variable)

Market	Variable				R^2	F-ratio	Significant
	Constant		Export value				
	(a) (Standard error)	t-value (Sig.)	Coeficient (b) (Standard error)	t-value (Sig.)			
1. The world market	-56.331 (24.330)	-2.315 (0.029)	30.468 (1.466)	20.785 (0.000)	0.943	432.029	0.000[a]
Corrected autocorrelation	-44.880 (45.040)	-0.996 (0.328)	29.598 (2.636)	11.226 (0.000)	0.834		
2. Japanese market	-69.278 (17.704)	-3.913 (0.001)	21.041 (1.239)	16.983 (0.000)	0.929	287.379	0.000[a]
Corrected autocorrelation	-53.656 (32.373)	-1.657 (0.112)	19.869 (2.191)	9.067 (0.000)	0.797		
3. Italian market	-16.388 (3.752)	-4.367 (0.000)	3.902 (0.226)	17.259 (0.000)	0.920	297.869	0.000[a]
Corrected autocorrelation	-12.945 (6.870)	-1.884 (0.071)	3.673 (0.403)	9.121 (0.000)	0.769		
4. American market	-20.025 (3.585)	-5.585 (0.000)	3.157 (0.216)	14.617 (0.000)	0.892	213.668	0.000[a]
Corrected autocorrelation	-15.669 (7.577)	-2.068 (0.049)	3.031 (0.431)	7.031 (0.000)	0.664		

(a = within the boundary of)

Figure 4.1 : Trend of the export values of Thai orchids to the world market in
1970-1997.

(dependent variable = export value)

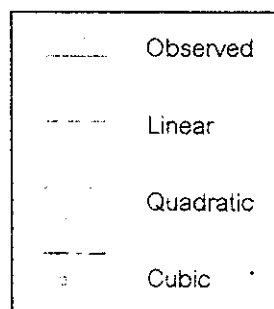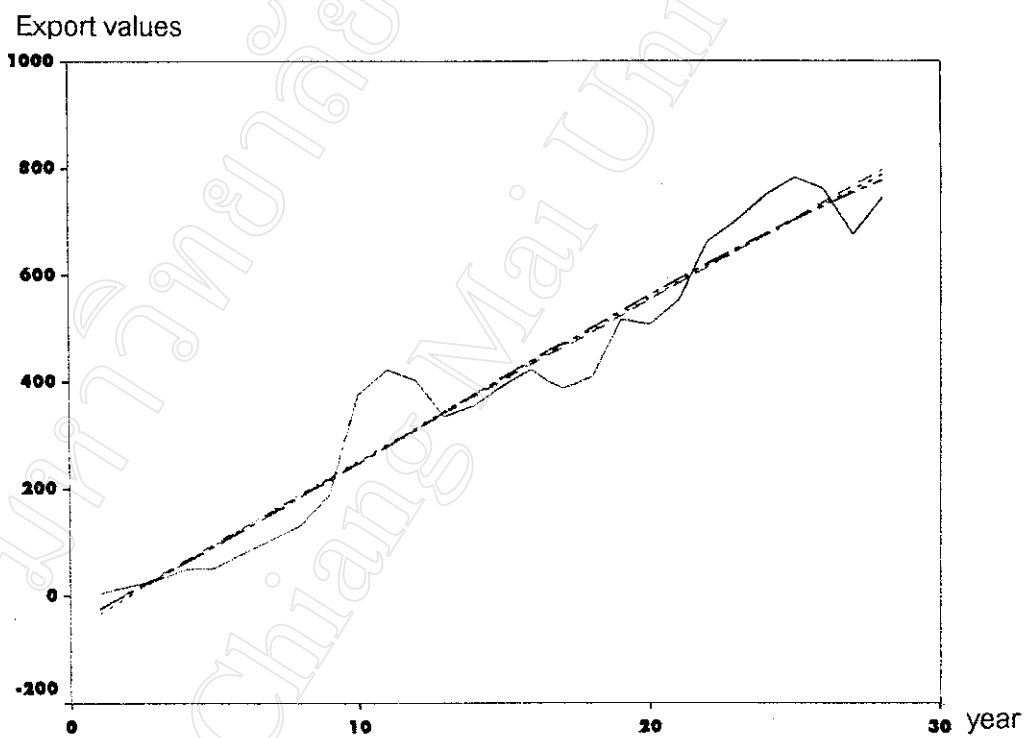| Functional Form	Residual Sum Squares	Degree of freedom	F-ratio	Significance
Linear	0.943	26	432.03	0.000
Quadratic	0.944	25	208.92	0.000
Cubic	0.944	24	134.71	0.000

Table 4.2 : The instability indexes of Thai orchid exports to the world markets in 1970-1997 (the values in (...) are corrected the autocorrelated error results).

Year (t)	Actual export values (million baht) (X_t)	The trend export values (million baht) $X'_t = 30.468\,t -56.331$ ($X'_t = 29.598\,t -44.880$)	The absolute value between the trend export and the actual export value	% change of actual export from the trend export values	Instability index of Thai orchid exports to the world markets
1970 (1)	4.31	-25.86 (-15.28)	30.17 (19.59)	-116.67 (-128.20)	-
1971 (2)	16.56	4.61 (14.32)	11.96 (2.24)	259.44 (15.68)	-
1972 (3)	28.07	35.07 (43.91)	7.00 (15.84)	19.96 (36.08)	-
1973 (4)	48.39	65.54 (73.51)	17.15 (25.12)	26.17 (34.17)	-
1974 (5)	51.10	96.01 (103.11)	44.91 (52.01)	46.78 (50.44)	47.17 (1.63)
1975 (6)	78.74	126.48 (132.71)	47.74 (53.97)	37.75 (40.67)	78.05 (35.41)
1976 (7)	104.28	156.95 (162.30)	52.67 (58.02)	33.56 (35.75)	32.84 (39.42)
1977 (8)	130.52	187.41 (191.90)	56.89 (61.38)	30.36 (31.99)	34.92 (38.60)
1978 (9)	187.13	217.88 (221.50)	30.75 (34.37)	14.11 (15.52)	32.51 (34.87)
1979 (10)	373.49	248.35 (251.10)	125.14 (122.39)	50.39 (48.74)	33.23 (34.53)
1980 (11)	421.83	278.82 (280.70)	143.01 (141.14)	51.29 (50.28)	35.94 (36.46)
1981 (12)	401.76	309.29 (310.29)	92.48 (91.47)	29.90 (29.48)	35.21 (35.20)
1982 (13)	334.43	339.75 (339.89)	5.32 (5.46)	1.57 (1.61)	29.45 (29.12)
1983 (14)	353.89	370.22 (369.49)	16.33 (15.60)	4.41 (4.22)	27.51 (26.87)
1984 (15)	391.03	400.69 (399.09)	9.66 (8.06)	2.41 (2.02)	17.92 (17.52)
1985 (16)	422.26	431.16 (428.68)	8.90 (6.42)	2.06 (1.50)	8.07 (7.76)
1986 (17)	386.71	461.63 (458.28)	74.92 (71.57)	16.23 (15.62)	5.34 (4.99)
1987 (18)	408.73	492.09 (487.88)	83.36 (79.15)	16.94 (16.22)	8.41 (7.92)
1988 (19)	515.81	522.56 (517.48)	6.75 (1.67)	1.29 (0.32)	7.79 (7.14)
1989 (20)	506.76	553.03 (547.07)	46.27 (40.31)	8.37 (7.37)	8.98 (8.21)
1990 (21)	552.09	583.50 (576.67)	31.41 (24.58)	5.38 (4.26)	9.64 (8.76)
1991 (22)	662.38	613.97 (606.27)	48.42 (56.11)	7.88 (9.26)	7.97 (7.49)
1992 (23)	701.33	644.43 (635.87)	56.90 (65.46)	8.83 (10.30)	6.35 (6.30)
1993 (24)	748.65	674.90 (665.47)	73.75 (83.18)	10.93 (12.50)	8.28 (8.74)
1994 (25)	782.45	705.37 (695.06)	77.08 (87.39)	10.93 (12.57)	8.79 (9.78)
1995 (26)	760.15	735.84 (724.66)	24.31 (35.49)	3.30 (4.90)	8.37 (9.90)
1996 (27)	675.27	766.30 (754.26)	91.04 (78.99)	11.88 (10.47)	9.17 (10.15)
1997 (28)	744.68	796.77 (783.86)	52.09 (39.18)	6.54 (5.00)	8.72 (9.09)

From 1970-1997, the customer countries of Thai orchid export increased from 18 to 86 countries (Figure 3.2), the results of instability indexes showed that the instability indexes were between 4.99 in 1986 to 39.42 in 1976. The actual export values fluctuated from the trend export values between 5.32 in 1982 to 143 in 1980 (Table 4.2 and Figure 4.1). The highest and the lowest absolutely changed of the actual export values from the trend export value were in 1980 and 1988, respectively.

In 1985 and 1988 the actual export values were quite similar to the trend export values into the world markets, with 1.50 and 0.32 % different between actual trend respectively. The actual export values were less than the trend exports values or quite the same values of trend exports from 1972-1984, except in 1979-1981. This caused the high values of instability indexes of Thai orchid exports to the world markets (more than 27 % in 1970-1983, except 17.52 % in 1984). Later in 1985-1997, the instability indexes were less than 10 %, except 10.15 % in 1996 that was very stable for Thai orchid exports to the world markets.

4.2 Instability Indexes of Thai Orchids Exports to Japanese Market
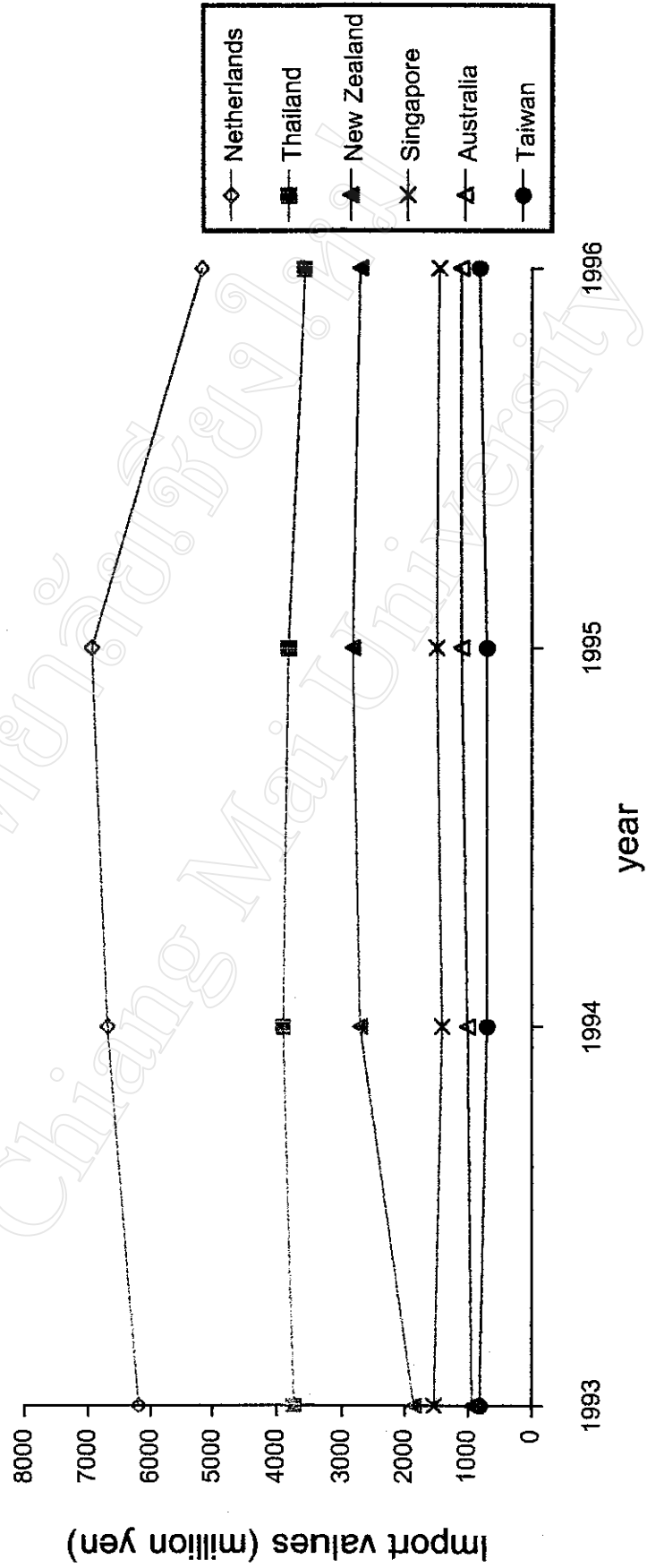
The major exporting countries of orchid flowers to Japan were Thailand, Netherlands, Singapore, New Zealand, Australia and Taiwan (Figure 4.2). These main exporting countries for orchid flowers to Japanese market had directly effected on the market concentration index of Japan including their amount of export values in each year.

Instability indexes of Thai orchid exports into Japanese market, from equation (4.1) can estimate as follows.

N = five year moving in each range (from 1974 – 1997): 1974-1978, 1975-1979, 1976-1980, ..., and 1993-1997.

The result of regression analysis of export data of Thai orchids to Japan in 1974-1997 (Table 4.3 and Figure 4.3) were as follows.

Figure 4.2 : Import values of orchid flowers of Japan (the top-sixth countries) in 1993-1996.
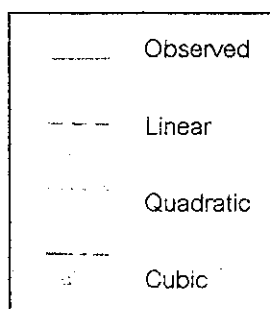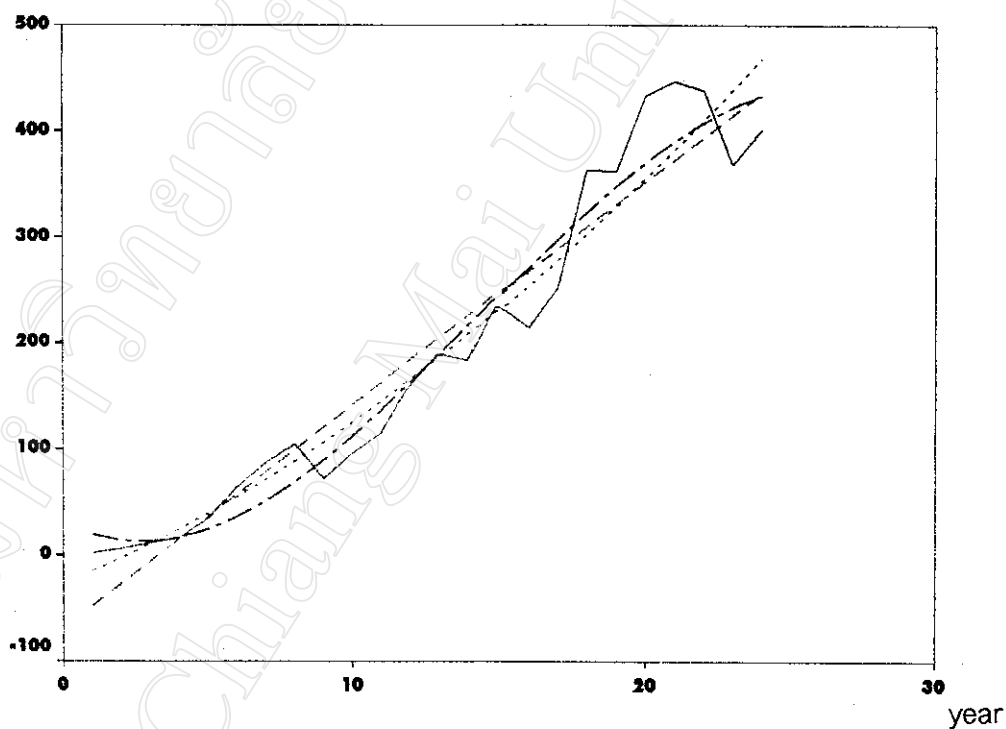
Figure 4.3 : Trend of the export values of Thai orchids to Japanese market in 1974-
1997.

(Independent variable = export year, dependent variable = export value)

Functional Form	Residual Sum Squares	Degree of freedom	F-ratio	Significance
Linear	0.929	22	288.41	0.000
Quadratic	0.941	21	168.27	0.000
Cubic	0.954	20	138.19	0.000

Export values

From the trend equation (in Table 4.3) can predict trend export values of Thai orchids to Japanese market in the future by multiply the year (to follow the year number in Table 4.3 by 1974, 1975, ... equal 1, 2, ..., respectively) with 19.869 and minus 53.656 that could get the trend export values in that year. The results of this relationship were in Table 4.3 and Figure 4.3.
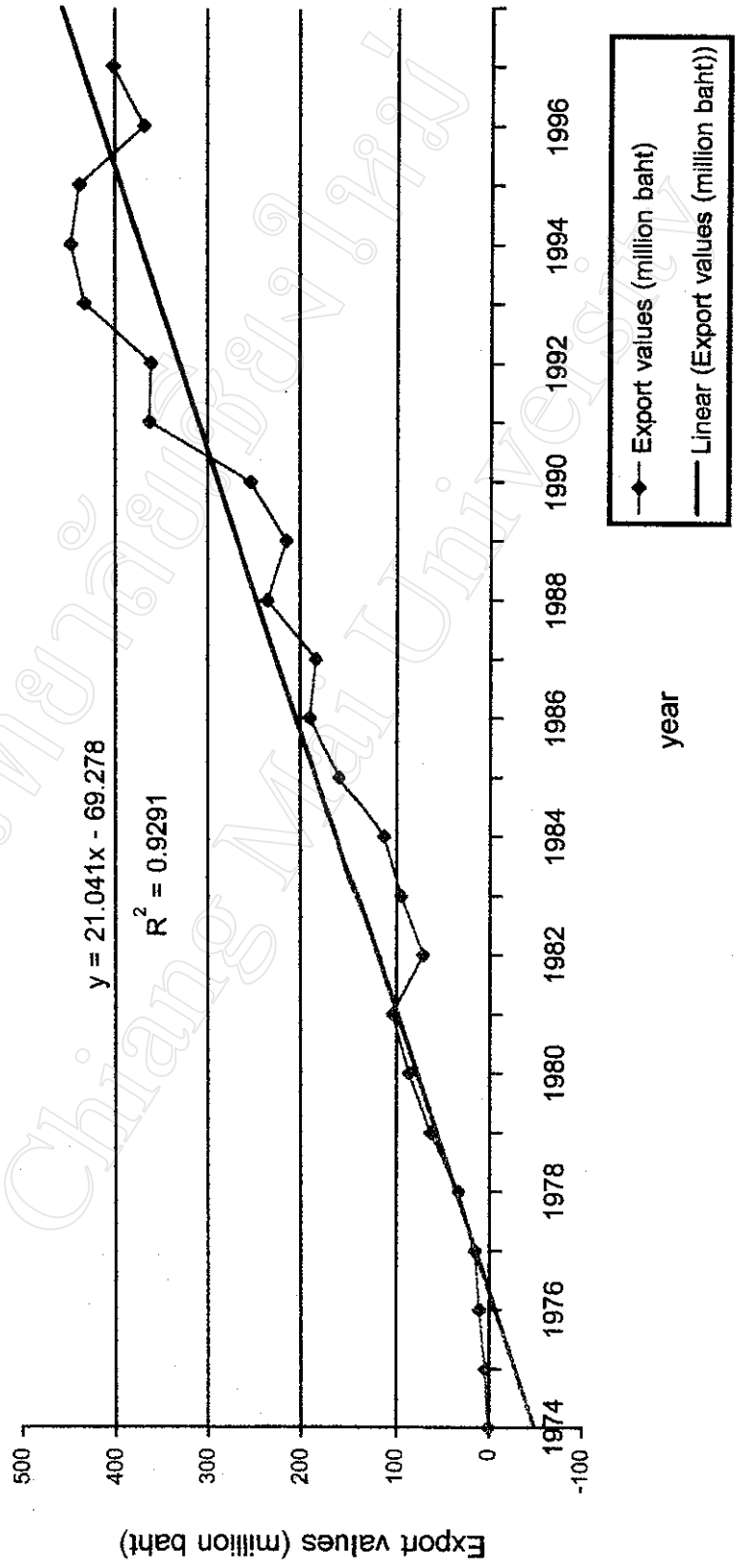
In Japanese market, the results of instability indexes of Thai orchid exports to Japan from 1974-1997 were as following. The results from Table 4.3 showed that the instability indexes were between –18.89 in 1978 (the lowest instability) to 30.68 in 1980 (the highest instability of Thai orchid exports to Japan). The instability indexes had negative sign, which meant that in this year the situation of Thai orchid exports to Japanese market was very stable (the percentage of stability indexes could get from 100 minus from the values of instability indexes).

From 1981-1997, the stability indexes of Thai orchid exports to Japanese market were between 74.22 to 88.02 (100 – 25.78 and 100-11.98). When compared the actual export values and the trend export values, the actual export values were lower than the trend export values every year, except in 1991-1995 (Table 4.3 and Figure 4.4). In 1980 and 1981, the actual export values had the least fluctuated from the trend export values about 1.38 and 0.69 million baht. In 1993 and 1994 had the highest fluctuated about 89.19 and 83.49 million baht, respectively.

Table 4.3 : The Instability indexes of Thai orchid exports to Japan in 1974-1997 (the values in (...) are corrected autocorrelated error results).

Year (t)	Actual export value (million baht) (X_t)	The trend export value (million baht) $X'_t = 21.041\ t - 69.278$ ($X'_t = 19.869\ t -53.656$)	The absolute value between the trend value and actual export value	% change of actual and trend export values	Instability index of Thai orchid export to Japan
1974 (1)	1.56	-48.24 (-33.79)	49.80 (35.35)	-103.23 (-104.62)	-
1975 (2)	5.49	-27.20 (-13.92)	32.69 (19.41)	-120.19 (-139.44)	-
1976 (3)	11.08	-6.16 (5.95)	17.24 (5.13)	-280.02 (86.24)	-
1977 (4)	16.06	14.89 (25.82)	1.17 (9.76)	7.89 (37.80)	-
1978 (5)	34.01	35.93 (45.69)	1.92 (11.68)	5.34 (25.56)	-98.04 (-18.89)
1979 (6)	64.10	56.97 (65.56)	7.13 (1.46)	12.52 (2.22)	-74.89 (2.47)
1980 (7)	86.80	78.01 (85.42)	8.79 (1.38)	11.27 (1.61)	-48.60 (30.68)
1981 (8)	104.60	99.05 (105.29)	5.55 (0.69)	5.60 (0.66)	8.52 (13.57)
1982 (9)	71.59	120.09 (125.16)	48.50 (53.57)	40.39 (42.80)	15.02 (14.57)
1983 (10)	95.77	141.13 (145.03)	45.36 (49.26)	32.14 (33.97)	20.38 (16.25)
1984 (11)	114.37	162.17 (164.90)	47.80 (50.53)	29.48 (30.64)	23.78 (21.94)
1985 (12)	158.69	183.21 (184.77)	24.52 (26.08)	13.39 (14.11)	24.20 (24.44)
1986 (13)	189.55	204.26 (204.64)	14.71 (15.09)	7.20 (7.37)	24.52 (25.78)
1987 (14)	183.23	225.30 (224.50)	42.07 (41.27)	18.67 (18.38)	20.18 (20.90)
1988 (15)	234.74	246.34 (244.37)	11.60 (9.63)	4.71 (3.94)	14.69 (14.89)
1989 (16)	214.19	267.38 (264.24)	53.19 (50.05)	19.89 (18.94)	12.77 (12.55)
1990 (17)	252.09	288.42 (284.11)	36.33 (32.02)	12.60 (11.27)	12.61 (11.98)
1991 (18)	363.02	309.46 (303.98)	53.56 (59.04)	17.31 (19.42)	14.64 (14.39)
1992 (19)	361.12	330.50 (323.85)	30.62 (37.27)	9.26 (11.51)	12.75 (13.02)
1993 (20)	432.91	351.54 (343.72)	81.37 (89.19)	23.15 (25.59)	16.44 (17.42)
1994 (21)	447.07	372.58 (363.58)	74.49 (83.49)	19.99 (22.96)	16.46 (18.22)
1995 (22)	437.90	393.62 (383.45)	44.28 (54.45)	11.25 (14.99)	16.19 (18.81)
1996 (23)	368.10	414.67 (403.32)	46.57 (35.22)	11.23 (8.73)	14.98 (16.67)
1997 (24)	401.66	435.71 (423.19)	34.05 (21.53)	7.81 (5.09)	14.69 (15.39)

Figure 4.4 : Trend line of the export values of Thai orchids to Japan in 1974-1997.

$y = 21.041x - 69.278$

$R^2 = 0.9291$

Export values (million baht)

Linear (Export values (million baht))

Source : From Table 4.3

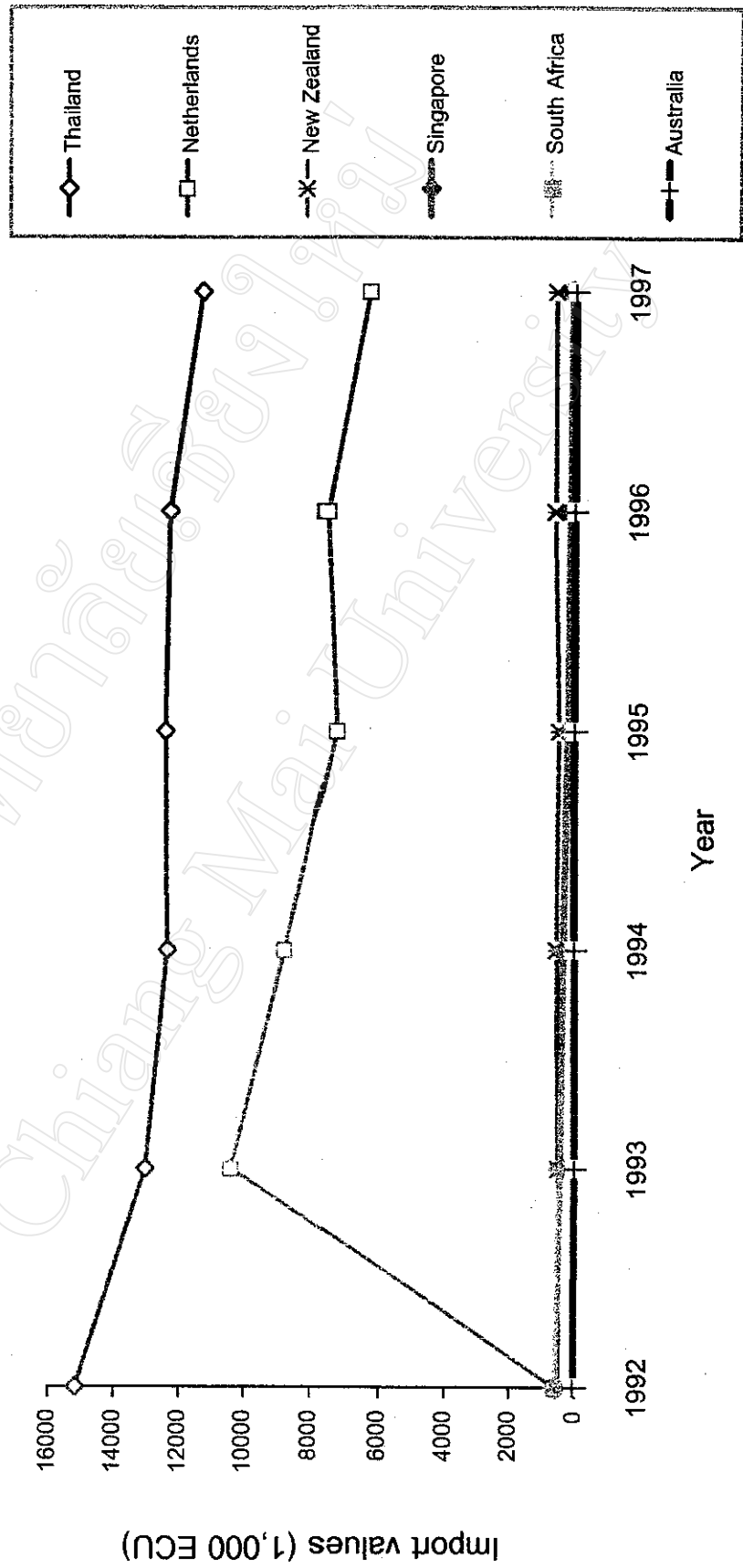### 4.3 Instability Indexes of Thai Orchids Exports to Italian Market

From 1970-1997, Italy was very important importing country of Thailand that the import values for orchid flowers tended to increase every year. Italy became to be the top-second of Thai orchid exports since the import values were about 45-90 million baht in 1985-1997 (Table A 2.2 and Table A 2.4).

The main exporting countries for orchid flowers to Italy were Thailand, Netherlands, New Zealand, Singapore, South Africa and Australia, the top-sixth countries of exporting orchid flowers to Italian market in 1992-1997. Even numbers of export countries of orchid flowers to Italy were between 18 to 27, but only a few countries that export in high values (Figure 4.5). From 1992-1997, market shares in Italian market tended to decrease every year. This may cause from some export countries can increase export values and the new export countries for orchid flowers to Italian market that allotted the market shares.

. This can predict the trend export values of Thai orchids to Italy in the future by multiply the year (follows number the year in Table 4.4) with 3.673 and minus 12.945 that can get the trend export value in that year. The results of this relationship were in Table 4.4 and Figure 4.6.

From 1974 - 1977 the results in Table 4.4, the instability indexes of Thai orchid exports to Italian market were between – 21.07 in 1974 to 97.07 in 1977 and the absolute fluctuation of the actual export values from the trend export values were between 0.10 in 1982 to 17.59 in 1992. The actual export values of Thai orchids to Italy were less than the trend export values from 1976-1983 (except in 1981), which this caused the instability indexes were high about 32.79 to 97.07. From 1984 - 1994, the actual export values were higher than the trend export values (except in 1986 - 1987), the growth rates of Thai orchid exports to Italy in this period tended to increase every year and the instability indexes were low (Table 4.4 and Figure 4.7).

Figure 4.5 : Import values of orchid flowers of Italy (the top-sixth countries) in 1992-1997

Source : From Table 3.6

Figure 4.6 : Trend of the export values of Thai orchids to Italian market in 1970-1997.

(Independent variable = export year, dependent variable = export value)

Functional Form	Residual Sum Squares	Degree of freedom	F-ratio	Significance
Linear	0.920	26	297.87	0.000
Quadratic	0.920	25	143.26	0.000
Cubic	0.960	24	190.18	0.000

Export values

year

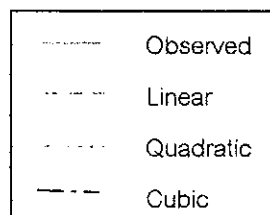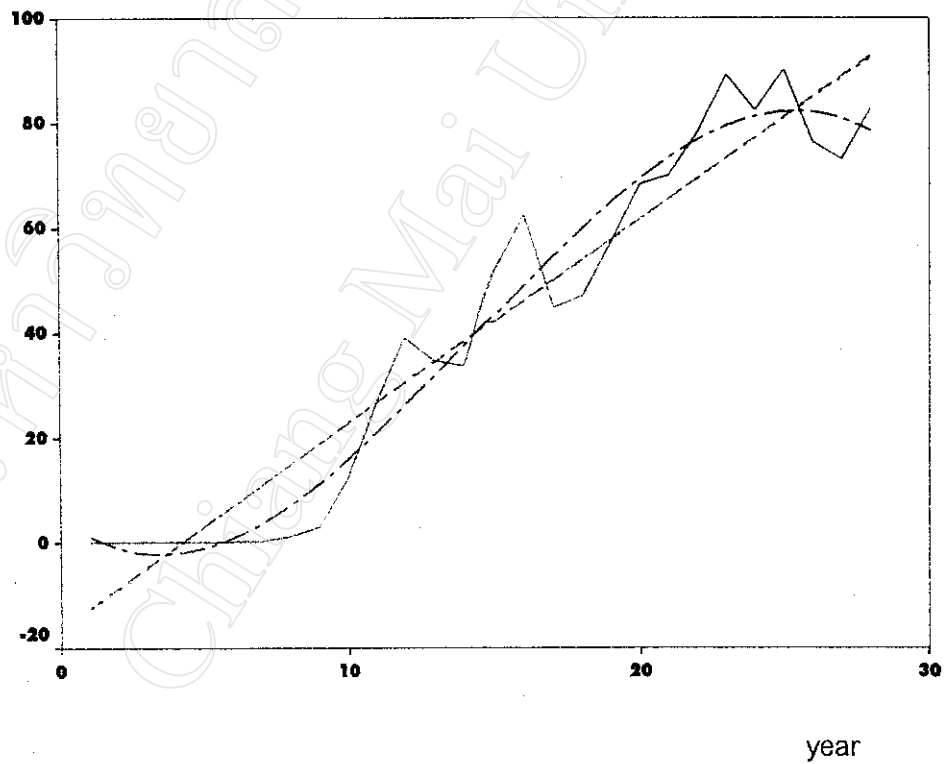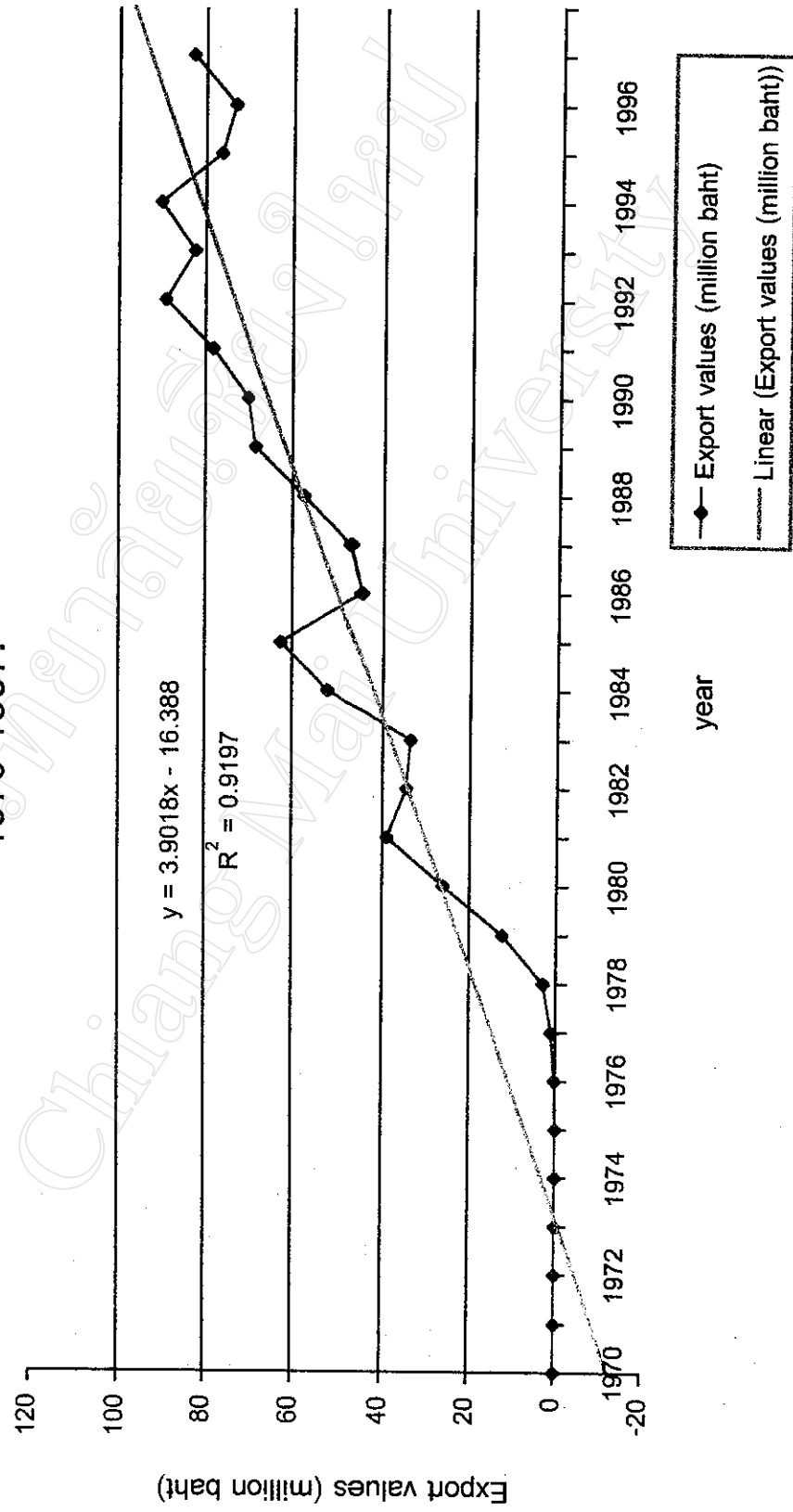|	
....	Observed
.. .. ..	Linear
. . . .	Quadratic
— . —	Cubic

Table 4.4 : The Instability indexes of Thai orchid exports to Italy in 1970-1997 (the values in (…) are corrected autocorrelated error results.

Year (t)	Actual export value (million baht) (X_t)	The trend export value (million baht) $X'_t = 3.902\,t -16.388$ ($X'_t = 3.673\,t -12.945$)	The absolute value between the trend value and actual export value	% change of the trend export values and actual export values	Instability Index of Thai orchid exports to Italy
1970 (1)	0.026	-12.49 (-9.27)	12.51 (9.30)	-100.21 (-100.28)	-
1971 (2)	0.022	-8.58 (-5.60)	8.61 (5.62)	-100.26 (-100.39)	-
1972 (3)	0.021	-4.68 (-1.92)	4.70 (1.95)	-100.45 (-101.09)	-
1973 (4)	0.052	-0.78 (1.75)	0.83 (1.70)	-106.67 (97.03)	-
1974 (5)	0.034	3.12 (5.42)	3.09 (5.39)	98.91 (99.37)	-61.73 (-21.07)
1975 (6)	0.114	7.02 (9.09)	6.91 (8.89)	98.38 (98.75)	-22.02 (18.73)
1976 (7)	0.339	10.93 (12.77)	10.59 (12.43)	96.90 (97.34)	17.41 (58.28)
1977 (8)	1.176	14.83 (16.44)	13.65 (15.27)	92.07 (92.85)	55.92 (97.07)
1978 (9)	2.960	18.73 (20.11)	15.77 (17.15)	84.20 (85.28)	94.09 (94.72)
1979 (10)	12.390	22.63 (23.79)	10.24 (11.40)	45.26 (47.92)	83.36 (84.43)
1980 (11)	26.143	26.53 (27.46)	0.39 (1.32)	1.47 (4.80)	63.98 (65.64)
1981 (12)	39.125	30.44 (31.13)	8.69 (7.99)	28.55 (25.68)	50.31 (51.30)
1982 (13)	34.706	34.34 (34.81)	0.37 (0.10)	1.07 (0.29)	32.11 (32.79)
1983 (14)	33.706	38.24 (38.48)	4.53 (4.78)	11.86 (12.41)	17.64 (18.22)
1984 (15)	51.970	42.14 (42.15)	9.83 (9.82)	23.32 (23.28)	13.25 (13.29)
1985 (16)	62.509	46.04 (45.83)	16.47 (16.68)	35.76 (36.40)	20.11 (19.61)
1986 (17)	44.788	49.95 (49.50)	5.16 (4.71)	10.33 (9.52)	16.47 (16.38)
1987 (18)	46.961	53.85 (53.17)	6.89 (6.21)	12.79 (11.68)	18.81 (18.66)
1988 (19)	57.449	57.75 (56.85)	0.30 (0.60)	0.52 (1.06)	16.54 (16.39)
1989 (20)	68.354	61.65 (60.52)	6.70 (7.83)	10.87 (12.94)	14.05 (14.32)
1990 (21)	70.079	65.55 (64.19)	4.52 (5.88)	6.90 (9.17)	8.28 (8.87)
1991 (22)	78.202	69.46 (67.87)	8.75 (10.33)	12.59 (15.23)	8.74 (10.02)
1992 (23)	89.135	73.36 (71.54)	15.78 (17.59)	21.51 (24.59)	10.48 (12.60)
1993 (24)	82.440	77.26 (75.21)	5.18 (7.23)	6.71 (9.61)	11.72 (14.31)
1994 (25)	90.241	81.16 (78.89)	9.08 (11.35)	11.19 (14.39)	11.78 (14.60)
1995 (26)	76.326	85.06 (82.56)	8.74 (6.23)	10.27 (7.55)	12.45 (14.27)
1996 (27)	73.121	88.97 (86.23)	15.85 (13.11)	17.81 (15.21)	13.50 (14.27)
1997 (28)	82.893	92.87 (89.91)	9.96 (7.01)	10.74 (7.80)	11.34 (10.91)

Figure 4.7 : Trend line of the export values of Thai orchids to Italy in 1970-1997.

$y = 3.9018x - 16.388$

$R^2 = 0.9197$

Export values (million baht)

Linear (Export values (million baht))

year

Export values (million baht)
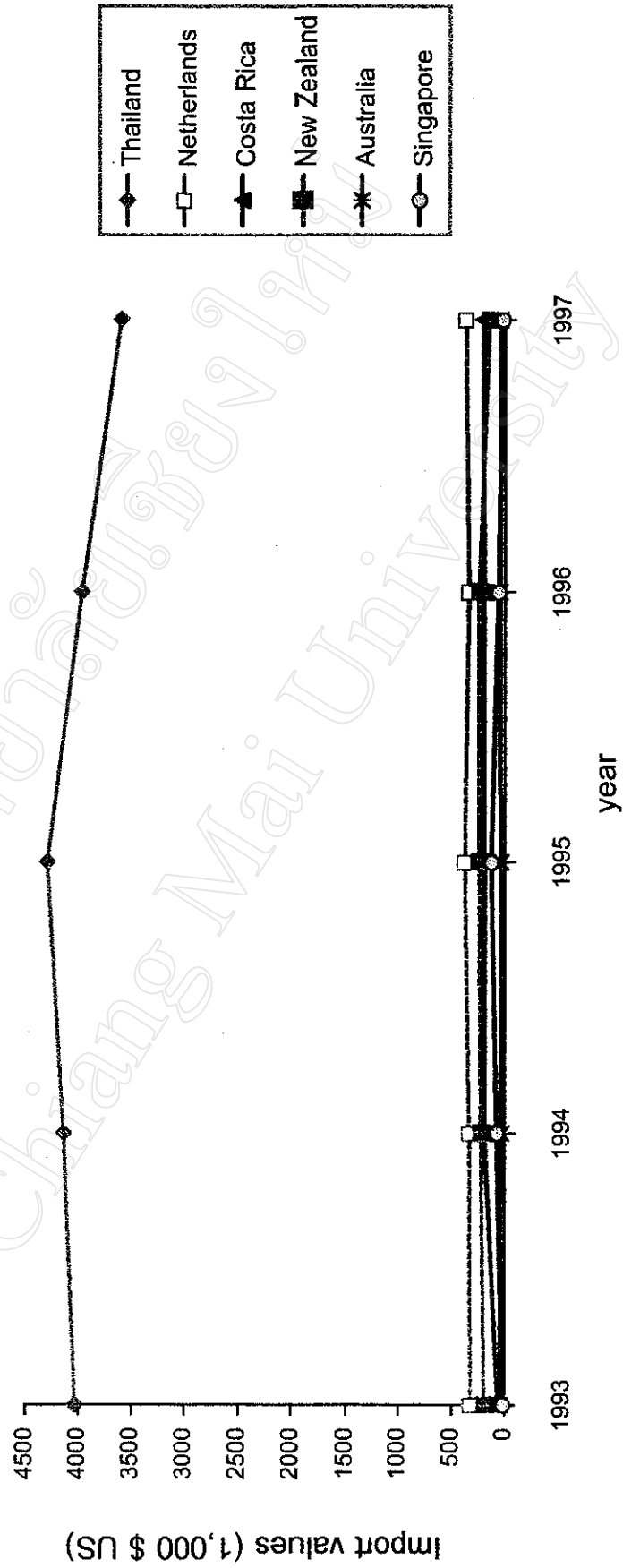
Source : From Table 4.4

4.4 Instability Indexes of Thai orchids Exports to American Market

American market was the top-third of Thai orchid exports in the world markets that the export values were about 50-78 million baht from 1990-1997 (Table A 2.5). The United States of America imports orchid flowers from many countries in the world markets such as Thailand, Netherlands, New Zealand, Costa Rica, Australia and Singapore (the top-sixth export countries for orchid flowers into American market in Figure 4.8).

From the trend equation of Thai orchids exports into American market from 1970-1997, this can predict trend export values of Thai orchids to American market in the future by multiply the year (to follow the number of year in Table 4.5 by 1970, 1971, ... equal 1, 2, ..., respectively) with 3.031 and minus 15.669 that get the trend export values in that year. The results of this relationship were in Table 4.5 and Figure 4.9.

From Table 4.5, the instability indexes of Thai orchid exports to the United States of America were between 95.50, the highest instability in 1979, to – 100.23 %, the lowest instability in 1974. The actual export values were less than the trend export values from 1976-1987 but later the actual export values were more than the trend export values from 1988-1997, except in 1989 and 1996. The instability indexes of Thai orchid exports into American market were low since 1991-1997 (about 7.04 to 11.54 %) that was very stable in this period.

Figure 4.8 : Import values of orchid flowers of the United States of America (the top-sixth countries) in 1993-1997.
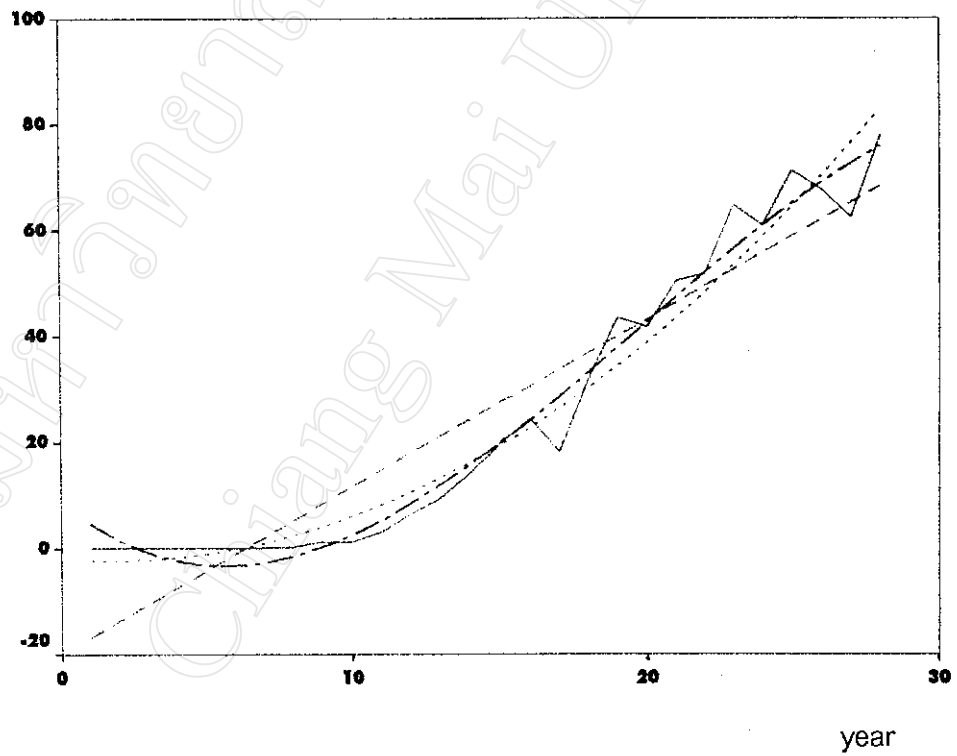
Source : From Table 3.7

Figure 4.9 : Trend of the export values of Thai orchids to American market in 1970-1997.

(Independent variable = export year, dependent variable = export value)

Functional Form	Residual Sum Squares	Degree of freedom	F-ratio	Significance
Linear	0.892	26	213.67	0.000
Quadratic	0.963	25	326.89	0.000
Cubic	0.978	24	355.21	0.000

Export values
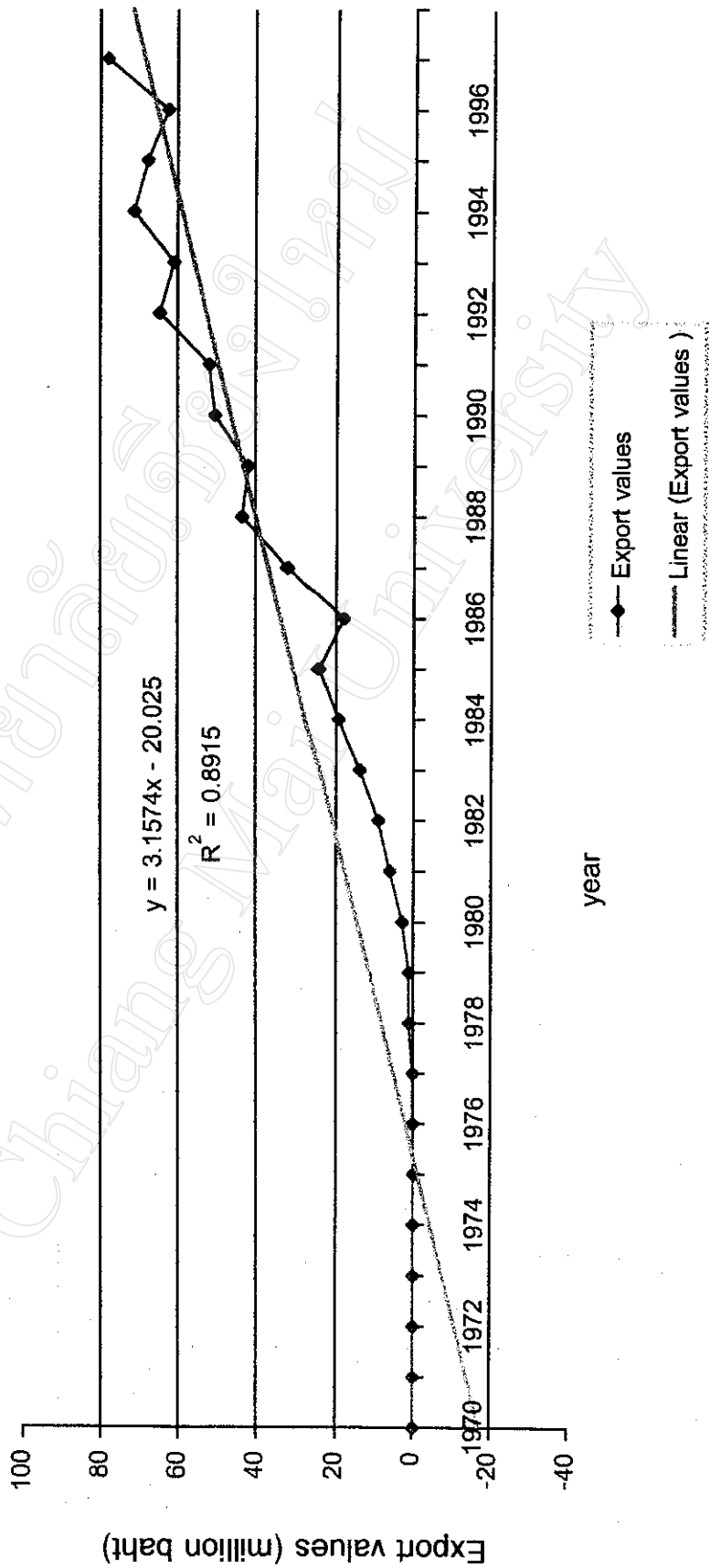

year

....	Observed
— — —	Linear
. . . . .	Quadratic
— . —	Cubic

Table 4.5 : The Instability indexes of Thai orchid exports to the United States of America in 1970-1997 (the values in (…) are corrected the autocorrelated error results).

Year (t)	Actual export value (million baht) (X_t)	The trend export value (million baht) $X'_t = 3.157\ t - 20.025$ $(X'_t = 3.031\ t -15.669)$	The absolute value between the trend value and actual export value	% change of the actual and trend export values of Thai orchids	Instability index of Thai orchid exports to U.S.A.
1970 (1)	0.008	-16.87 (-12.64)	16.88 (12.65)	-100.05 (-100.06)	-
1971 (2)	0.007	-13.71 (-9.61)	13.72 (9.61)	-100.05 (-100.07)	-
1972 (3)	0.009	-10.55 (-6.58)	10.56 (6.59)	-100.09 (-100.14)	-
1973 (4)	0.017	-7.40 (-3.55)	7.41 (3.56)	-100.23 (-100.45)	-
1974 (5)	0.001	-4.24 (-0.52)	4.24 (0.52)	-100.05 (-100.39)	-100.09 (-100.23)
1975 (6)	0.010	-1.08 (2.52)	1.09 (2.51)	-100.92 (99.60)	-100.27 (-60.30)
1976 (7)	0.080	2.07 (5.55)	1.99 (5.47)	96.14 (98.56)	-61.03 (-20.57)
1977 (8)	0.189	5.23 (8.58)	5.04 (8.39)	96.39 (97.80)	-21.73 (19.02)
1978 (9)	1.241	8.39 (11.61)	7.15 (10.37)	85.21 (89.31)	15.35 (56.98)
1979 (10)	1.135	11.55 (14.64)	10.41 (13.50)	90.16 (92.24)	53.39 (95.50)
1980 (11)	3.036	14.70 (17.67)	11.67 (14.64)	79.35 (82.82)	89.45 (92.14)
1981 (12)	6.287	17.86 (20.70)	11.57 (14.41)	64.79 (69.63)	83.18 (86.36)
1982 (13)	9.259	21.02 (23.73)	11.76 (14.47)	55.94 (60.98)	75.09 (78.99)
1983 (14)	14.052	24.17 (26.76)	10.12 (12.71)	41.87 (47.50)	66.42 (70.63)
1984 (15)	19.443	27.33 (29.79)	7.89 (10.35)	28.85 (34.74)	54.16 (59.13)
1985 (16)	24.401	30.49 (32.83)	6.09 (8.42)	19.96 (25.66)	42.28 (47.70)
1986 (17)	18.061	33.64 (35.86)	15.58 (17.79)	46.31 (49.63)	38.59 (43.70)
1987 (18)	31.873	36.80 (38.89)	4.93 (7.01)	13.39 (18.04)	30.08 (35.11)
1988 (19)	43.435	39.96 (41.92)	3.48 (1.52)	8.70 (3.62)	23.44 (26.37)
1989 (20)	41.722	43.12 (44.95)	1.39 (3.23)	3.23 (7.18)	18.32 (20.82)
1990 (21)	50.331	46.27 (47.98)	4.06 (2.35)	8.77 (4.90)	16.08 (16.67)
1991 (22)	51.769	49.43 (51.01)	2.34 (0.76)	4.74 (1.49)	7.77 (7.04)
1992 (23)	64.698	52.59 (54.04)	12.11 (10.66)	23.03 (19.72)	9.70 (7.38)
1993 (24)	60.865	55.74 (57.07)	5.12 (3.79)	9.19 (6.65)	9.79 (7.99)
1994 (25)	71.254	58.90 (60.10)	12.35 (11.15)	20.97 (18.55)	13.34 (10.26)
1995 (26)	67.662	62.06 (63.14)	5.61 (4.53)	9.03 (7.17)	13.39 (10.71)
1996 (27)	62.438	65.21 (66.17)	2.78 (3.73)	4.26 (5.63)	13.30 (11.54)
1997 (28)	77.917	68.37 (69.20)	9.55 (8.72)	13.96 (12.60)	11.48 (10.12)

Figure 4.10 : Trend line of the export values of Thai orchids to American markets in 1970-1997.

$y = 3.1574x - 20.025$

$R^2 = 0.8915$

Export values (million baht)

year

Export values

Linear (Export values)

Source : From Table 4.5