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Competitiveness among Asian Exporters in the World Rice Market

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I. INTRODUCTION

The era of globalisation since the late 1940s has dramatically changed the world's trading patterns, as well as the measures employed by countries to survive in a world where trade is being liberalised. With the gradual reduction in trade barriers led by the process of globalisation, more emphasis is now being placed on promoting export competitiveness. Competitiveness by any means is not a new issue, as it seems nowadays. This concept has become more fashionable because the markets liberalisation and the emphasis in a more global economy. Competition used to be more localised within regions and nations but now, with an increasing international trade, it applies everywhere. Competitors are not fully identified as they used to be and now they might come from far away places, which it was not the case previously.

Competitiveness is an indicator of the ability to supply goods and services at the location and in the form and at the time sought after by buyers, at prices that are as good as or better than those of potential suppliers, while earning at least the opportunity cost of returns on resources employed [Frohberg and Hartman (1997)]. Thus, a competitive firm or industry or country have the ability to satisfy the consumer with a product of the right price, right quality, right packaging etc. i.e., creating place, time and form utility. Such an institution therefore beats the competitors for the scarce Dollars and Pounds etc. of the consumer [Esterhuizen, *et al.* (2001)].

Asia is the home of many of the world's top rice exporters, which accounts for 76 percent of rice exported each year. Prices are shooting up worldwide, in part because many of these countries have cut back on exports due to fears of shortage. International trade in rice is quite small relative to total production. In fact, only 6-7 percent of global rice production is traded each year, well below the trade shares for other grains and oilseeds. The reason for these market characteristics could be explained by several factors. Firstly, rice is largely produced in Asian countries, where rice is traditionally the major food source for nutrition. Secondly, besides being a major producing region, Asian countries are major importers of rice. Because of national security concerns, rice production and trade are highly protected and sensitive. The world rice market is much more conservative than other agricultural commodities, which restricts its development.

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China is the world's largest producer and the largest consumer of rice. Thailand is the largest exporter of rice and Philippines is the largest importer of rice in the world. There exists a high degree of volatility in the world rice market because a small change in production or consumption brings a relatively large change in its total trade. Since most of the rice is produced, consumed and traded by Asian countries and main Asian exporters are Thailand, Vietnam, India, Pakistan and China. Now, the international trade under World Trade Organisation (WTO) rules is free from quantitative restrictions. A country's trade is mostly based on its comparative advantage and competitive advantage in international trade. So, obviously every country faces a tough competition in international market and tries not only to maintain but also to increase its share in market.

The objective of this study is to analyse the competitiveness by computing comparative advantage and competitive advantage for main Asian rice exporting countries and rank them according to their degree of advantage. This study thus will be helpful for trade policy managers to design efficient strategies.

Rest of the study is organised as follows. Section II presents the literature review. Section III explains methods for analysing export performance. Section IV contains analysis and discussion of the results. Final Section V concludes the study.

II. REVIEW OF LITERATURE

The Ricardian (classical) theory of comparative advantage and Heckscher-Ohlin (neo-classical) theory explains international trade within a two-country and two-commodity world. This simple analysis becomes very difficult and even impossible when trade takes place among many countries and many commodities. To overcome this restriction Balassa (1965, 1977) developed an index of "Revealed Comparative Advantage". Jebuni, *et al.* (1988) have used the Balassa Revealed Comparative Advantage (RCA) index to analyse the comparative advantage in exports for twelve less developed countries. Yeats (1997) studies the possible distortions in trade patterns on account of discriminatory trade barriers that are characteristic of the regional trade agreements (RTAs). He uses the index of revealed comparative advantage in conjunction with the changes in the regional orientation of exports to identify any apparent inefficiency in trade patterns for the Mercusor group of countries. Richardson and Zhang (1999) have applied the same index for the U.S. to analyse the patterns of variation across time, sectors and regions. They find the patterns to differ across different parts of the world, over time as also for different levels of aggregation of the export data. Yue (2001) uses the Balassa RCA index to demonstrate the fact that China has changed its export pattern to coincide with its comparative advantage and that there are distinct differences in export patterns between the coastal regions and the interiors in China. Ferto and Hubbard (2003) investigate the competitiveness of Hungarian agriculture in relation to that of the EU employing four indices of revealed comparative advantage including the Balassa RCA index, for the period 1992 to 1998. Consistency tests implies that the indices are less satisfactory as cardinal measures, but are useful in identifying whether or not Hungary has a comparative advantage in a particular product group. Using both a version of the Balassa index and an export similarity index, Batra and Zeba (2005) have analysed revealed comparative advantage at both the two and six digit level of Harmonized System of classification for both India and China. Their analysis reveals that

the pattern of comparative advantage varies at different levels of commodity disaggregation. Brunner and Massimiliano (2006) employ an export unit values (UV's) cum real competitiveness analysis to the manufacturing sector of South Asian countries (with a particular focus on India).

Vollrath (1987) is among the earliest researchers to distinguish between comparative advantage and competitive advantage. He argues that comparative advantage is applied to efficient, well functioning and undistorted prices in markets. In case, if distortions exist competitive advantage is considered better to use. Vollrath (1987, 1991) and White (1987) are of the view that true measure of performance in global markets is competitive advantage rather than comparative advantage. Vollrath (1987, 1991) has introduced revealed competitive index that takes into account a country's exports as well as imports relative to the rest of world's export and import of a particular commodity under neo-classical framework. White (1987) has used revealed competitive advantage to measure changes in competitiveness of US agricultural trade. His method is an extension of Balassa's method and in nature similar to Vollrath's revealed competitive index. Revealed competitive advantage measure has also been used in some other empirical studies to measure economic and export performance [see, Chen (1995); Bender and Li (2002) and Ferto and Hubbard (2003)].

But, the debate for finding an appropriate method with proven properties to measure comparative advantage of the commodity patterns across countries is still continued in the literature [Elumalai (2007)]. However, this study applies both the Balassa index for revealed comparative advantage and the White index for revealed competitive advantage to analyse the export performance of major rice exporting Asian countries.

III. METHOD OF ANALYSIS

Economic approaches to assess competitiveness differ greatly, and depend on analysis related to level of firms, sectors and overall economy [Frohberg and Hartmann (1997)]. Approaches analysing the sector level consider competitiveness to be the ability of an industry to maintain market share, and to compete with foreign counterparts in foreign and domestic markets under free trade conditions [Kim and Marion (1997); Traill (1998)]. As theoretical reference, competitiveness is mainly linked to comparative advantage, which is connected to the Heckscher-Ohlin theory, and to competitive advantage related to the Porter diamond model [Lall (2001)]. An analysis of competitiveness at the sector level is usually carried out by assessing trade indices, comparing trends and countries in the international market. In our analysis, we have considered Revealed Comparative Advantage and Revealed Competitive Advantage indices.

III.1. The Balassa Index

Balassa (1965) has developed "Revealed Comparative Advantage" index that deals with many countries and many commodities. He states that export ratio of a country reflects the relative comparative advantage i.e.,

$$R_{ij} = \frac{X_{ij} / X_{wj}}{X_i / X_w} \quad i = 1, 2, \dots, n, \quad j = 1, 2, \dots, m$$

where R_{ij} is revealed comparative advantage of country i for commodity j , X_{ij} is export by country i of commodity j , X_{wj} is total world exports of commodity j , X_i is total world exports of country i , and X_w is total world exports. The value of R_{ij} may be equal, greater or less than 1. If it is greater than one it means the country i has a comparative advantage in exports of commodity j because its market share is larger in the commodity than its share in total exports and vice versa.

III.2. The White's Index

This method is an extension of Balassa's method. It takes into account the export supply and import demand of a specific commodity for a country. Its advantage is that it uses both export and import data and competitive advantage is determined by both supply and demand. The revealed competitive advantage is calculated as the difference between revealed comparative export share for commodity j and revealed comparative import share for commodity j . Therefore the White's index provides the results of net comparative advantage (unlike Balassa's approach which only takes into the account of exports). The index is calculated as:

$$RCA_{ij} = RCS_{ij} - RCD_{ij}$$

$$RCA_{ij} = \frac{X_{ij} / X_{wj}}{X_i / X_w} - \frac{M_{ij} / M_{wj}}{M_i / M_w}$$

Where RCA_{ij} is revealed competitive advantage of country i for commodity j , RCS_{ij} is the ratio of country i 's share of commodity j to its share in total world exports, RCD_{ij} is the ratio of country i 's share of commodity j to its share in total world imports, M_{ij} is import of commodity j by country i , M_{wj} is total world imports of commodity j , M_i is total world imports of country i , M_w is total world imports.

If $RCA_{ij} > 0$ and $R_{ij} > 1$, then the results of both the models are identical and will show that the country has an advantage in exports of commodity j and vice versa. However, if the signs are not the same then one may conclude that both models are inconsistent. The study has used data for the period 1985 to 2005 that have been collected from FAO, Trade Year book for the years 1985-2005.

The revealed comparative advantage and revealed competitive advantage indices are useful in examining international trade performance. In some cases they yield same results, so revealed comparative index may easily be applied. If they yield contradictory results it is more appropriate to apply competitive advantage index because it also takes into account import performance.

IV. RESULTS AND DISCUSSION

The overview of data shows that Thailand (in Asian countries) has the largest exporter with 29.57 percent market share in world rice market, whereas, India remained the second largest exporter with 17.96 percent share in rice exports in 2005 (see Table 1 in the Appendix). Despite the fact that these two countries are exporting rice in large

volume with more than 40 percent share collectively in recent years, it does not mean that they have more comparative advantage and competitive advantage in rice exports over other exporters.

Since greater share is not a sign of comparative or competitive advantage over other competitors. To analyse the “competitiveness” of a country, the models of comparative advantage and competitive advantage have been applied to data. Keeping in view the fact that rice is an agricultural product; the revealed comparative advantage has been computed using agricultural trade measure (ACA). Since rice is also a product included in total merchandise exports, the revealed comparative advantage has also been computed using total merchandise trade measure (TCA).

The revealed competitive advantage has also been computed using agricultural trade measure (ACE) and total merchandise trade measure (TCE). The overall results show that for most of the years the value of revealed comparative advantage is greater than one (see Tables 2 and 3 respectively in the Appendix) and the value of revealed competitive advantage is positive (see Tables 4 and 5 respectively in the Appendix). It depicts that these countries have both comparative and competitive advantage in rice trade.

The values of mean and variance computed explain the fact that Pakistan has the greatest comparative advantage and the greatest competitive advantage in agricultural trade. Vietnam has the greatest comparative advantage and the greatest competitive advantage in merchandise exports, yet its values are relatively close to those of Pakistan. Thailand ranks third and India fourth, whereas, China is at the last of the ranking with least advantage. However, a *t*-test has also been applied to check whether the results of two models are statistically same or not.

IV.1. Test of Comparative and Competitive Advantage Models

The *t*-test has been applied on the mean of the difference between ACA and ACE (TCA and TCE) to determine if this difference is significantly different from zero or not. So, our null hypothesis is that the difference between comparative and competitive advantage is not different from zero.

$$H_0^a : ACA_i - ACE_i = 0$$

$$H_0^b : TCA_i - TCE_i = 0$$

The alternative hypothesis is

$$H_1^a : ACA_i - ACE_i \neq 0$$

$$H_1^b : TCA_i - TCE_i \neq 0$$

Where $i, \dots, 5$ (1= China, 2 = India, 3=Pakistan, 4=Thailand and 5= Vietnam)

The statistical test results in Table 1 depict that the mean and standard error are not equal to zero for all countries and *t*-ratios are also statistically significant at 5 percent for China, India, Pakistan and Vietnam. So, we accept alternative hypothesis. We accept null hypothesis, as *t*-ratio is statistically not significant at 5 percent for Thailand. This means

Table 1

*Statistics on Differences between Comparative and Competitive Advantage for
Major Asian Rice Exporters (1985-2005)*

Country	Agricultural Product Trade				Total Merchandise Trade			
	Mean	Standard Error	t-ratio	Sig. (2-tailed)	Mean	Standard Error	t-ratio	Sig. (2-tailed)
China	.609	.083	7.332*	.000	.464	.081	5.720*	.000
India	1.121	.505	2.221*	.038	.720	.328	2.192*	.040
Pakistan	.040	.017	2.397*	.026	.099	.036	2.715*	.013
Thailand	.021	.011	1.839	.081	.013	.007	1.822	.083
Vietnam	5.144	2.324	2.213*	.039	4.914	2.263	2.171*	.042

* Indicates significance at 5 percent level.

that revealed comparative and revealed competitive advantage do not yield similar results for all countries except Thailand. Thus, it is more appropriate to use competitive advantage where results differ because competitive advantage also takes import performance into account.

IV.2. Test of Country-to-Country Comparisons

This test determines whether the t -ratio of the difference of same model for one country is significantly different from another country or not. The t -test has been applied on the mean of the difference between ACA_i & ACA_j , ACE_i & ACE_j , TCA_i & TCA_j and TCE_i & TCE_j to determine if this difference is significantly different from zero or not. So, our null hypothesis is that difference between any pair of country is not different from zero.

$$H_0^a : ACA_i - ACA_j = \Delta ACA = 0$$

$$H_0^b : ACE_i - ACE_j = \Delta ACE = 0$$

$$H_0^c : TCA_i - TCA_j = \Delta TCA = 0$$

$$H_0^d : TCE_i - TCE_j = \Delta TCE = 0$$

The alternative hypothesis is that difference between any pair of country is statistically different from zero.

$$H_1^a : ACA_i - ACA_j = \Delta ACA \neq 0$$

$$H_1^b : ACE_i - ACE_j = \Delta ACE \neq 0$$

$$H_1^c : TCA_i - TCA_j = \Delta TCA \neq 0$$

$$H_1^d : TCE_i - TCE_j = \Delta TCE \neq 0 \quad i = 1, \dots, 5 \quad \& \quad j = 2, \dots, 5$$

We have calculated t -ratios for each pair of countries using (ACA , ACE , TCA , TCE) measures. We can see from the results provided in Table 2 that India has both comparative and competitive advantage over China in exports of rice during 1985-2005. Same results can also be seen for Pakistan, Thailand and Vietnam when we compare them with China. India does not possess any comparative and competitive advantage

Table 2

Statistics (t-ratios) on Differences between Countries Comparative and Competitive Advantage for Major Asian Rice Exporters (1985-2005)

Country	Agricultural Product Trade				Total Merchandise Trade			
	ACA		ACE		TCA		TCE	
	t-ratio	Sig. (2-tailed)	t-ratio	Sig. (2-tailed)	t-ratio	Sig. (2-tailed)	t-ratio	Sig. (2-tailed)
China-India	-8.852*	.000	-6.348*	.000	-10.158*	.000	-9.011*	.000
China-Pakistan	-13.834*	.000	-14.259*	.000	-14.857*	.000	-15.032*	.000
China-Thailand	-31.005*	.000	-29.946*	.000	-9.852*	.000	-9.916*	.000
China-Vietnam	-7.674*	.000	-3.094*	.006	-6.973*	.000	-5.237*	.000
India- Pakistan	-12.016*	.000	-14.434*	.000	-9.609*	.000	-9.704*	.000
India- Thailand	-5.485*	.000	-4.956*	.000	-4.073*	.001	-4.057*	.001
India-Vietnam	-4.921*	.000	-1.633	.118	-5.073*	.000	-3.748*	.001
Pakistan-Thailand	6.185*	.000	6.180*	.000	3.908*	.001	3.902*	.001
Pakistan-Vietnam	2.342*	.030	2.635*	.016	-.547	.590	-.050	.960
Thailand-Vietnam	-2.071	.052	-.020	.984	-2.225*	.038	-1.412	.173

* Denotes significance at 5 percent level.

against Pakistan, Thailand. Vietnam has comparative advantage over India in rice exports. But in case of competitive advantage, Vietnam's advantage is only in merchandise exports and there is no significant difference in agricultural product exports between these two countries. Pakistan has both comparative and competitive advantage (in agricultural product trade and total merchandise trade) over Thailand in exports of rice. Pakistan has both comparative and competitive advantage in agricultural product trade over Vietnam but there are no significant differences of revealed comparative and competitive advantage in total merchandise trade. The paired comparison between Thailand and Vietnam depicts that Vietnam has only comparative advantage over Thailand in total merchandise trade otherwise There is no statistically significant difference between agricultural product trade and no competitive advantage on one another in total merchandise trade.

V. CONCLUSION

From the analysis, we come to the conclusion that India, Pakistan, Thailand and Vietnam all have both comparative and competitive advantage over china in rice exports. There are no significant differences of revealed competitive advantage between Thailand and Vietnam or between India and Vietnam in agricultural product trade or Pakistan and Vietnam in total merchandise trade. Pakistan has a revealed comparative and competitive advantage in agricultural product trade (in rice) over all other countries and in total merchandise trade (in rice) over China, India and Thailand. Although Thailand and India are the two largest Asian exporters of rice with 47 percent of the market share in 2005, on average they do not have the greatest comparative and competitive advantage in rice exports. Pakistan has the greatest advantage in rice exports, Vietnam ranks second and Thailand ranks third in five major Asian exporters. Thus, we may conclude that both Pakistan and Vietnam can take the advantage of competitiveness and raise their share respectively in world rice market as compared with other Asian competitions. Therefore, competitive advantage in rice export should be exploited to improve the foreign sector position of both these countries.

As this study has shown that Pakistan has a quite strong position in rice trade *vis-à-vis* its Asian competitors, therefore, to further enhance the overall gain through increase in rice exports, following comprehensive measures should be applied:

- Government agencies should be responsible for day-to-day administration of rice quality control in order to build up the trust and confidence of importers in the quality and safety of the food supply system.
- Government representatives and advisors should take part in identifying technical, institutional and policy constraints faced by the exporters in meeting sanitary and phytosanitary (SPS) requirements.
- Government should play its role in terms of funding new research and development activities, aimed at rice quality improvement and cost reduction.

Appendices

Appendix Table 1

Market Shares of Major Asian Exporters in International Rice Trade 1985-2005

Year	China	India	Pakistan	Thailand	Vietnam	Others
1985	7.29	4.07	6.90	25.97	0.00	55.77
1986	6.80	3.02	10.99	24.79	0.02	54.38
1987	6.84	4.95	9.06	27.27	0.07	51.82
1988	5.03	5.64	9.00	33.79	0.55	45.99
1989	2.21	5.07	6.15	35.05	7.57	43.95
1990	2.37	5.95	5.84	26.23	7.36	52.26
1991	4.08	7.61	7.75	26.85	4.21	49.49
1992	4.36	6.95	7.73	26.72	7.83	46.42
1993	5.32	8.22	6.40	25.99	6.35	47.73
1994	8.85	6.28	4.01	25.88	6.21	48.77
1995	0.77	19.30	6.31	26.61	5.34	41.67
1996	1.80	11.68	6.76	26.30	9.86	43.60
1997	4.08	14.68	7.04	17.41	10.93	45.87
1998	9.79	15.76	5.94	21.94	10.66	35.91
1999	8.57	9.23	7.51	24.79	13.03	36.87
2000	8.95	10.15	8.26	25.36	10.33	36.96
2001	5.01	10.08	7.42	22.50	8.91	46.09
2002	5.78	17.87	6.79	24.05	10.69	34.82
2003	2.75	12.65	7.94	25.84	10.27	40.54
2004	2.28	18.22	7.88	29.79	11.96	29.87
2005	2.86	17.96	14.00	29.57	11.25	24.36

Source: FAO Trade Year Book.

Others: Remaining rice exporting countries in international market.

Appendix Table 2

*Revealed Comparative Advantage for Major Asian Rice Exporters
Using Agricultural Trade Measure (ACA), 1985-2005*

Year	China	India	Pakistan	Thailand	Vietnam
1985	2.36	3.75	20.53	16.91	0.02
1986	1.97	2.90	23.94	15.74	0.15
1987	1.90	5.21	24.58	17.35	0.81
1988	1.42	7.45	20.86	19.25	5.21
1989	0.65	5.75	12.45	17.57	31.88
1990	0.78	6.08	19.20	15.80	36.83
1991	1.15	8.21	24.67	15.01	24.35
1992	1.30	8.44	22.36	14.33	34.57
1993	1.48	8.30	24.92	14.71	29.37
1994	2.36	7.52	22.71	14.10	22.71
1995	0.24	15.54	27.42	13.04	15.34
1996	0.58	9.29	22.54	12.85	26.10
1997	1.37	12.90	38.03	14.67	29.18
1998	3.54	13.22	22.56	13.55	19.50
1999	3.04	8.31	26.42	14.48	22.17
2000	2.82	8.45	31.83	14.37	18.53
2001	1.60	7.97	30.13	12.54	18.20
2002	1.77	14.32	30.35	13.03	22.36
2003	0.85	10.16	33.59	13.03	24.05
2004	0.85	15.47	37.48	14.99	22.30
2005	0.94	12.58	51.51	15.36	18.67
Mean	1.57	9.13	27.05	14.89	20.11
Variance	0.76	13.30	68.85	3.07	115.66

Appendix Table 3

*Revealed Comparative Advantage for Major Asian Rice Exporters
using Total Merchandise Trade Measure (TCA), 1985-2005*

Year	China	India	Pakistan	Thailand	Vietnam
1985	2.44	8.82	52.73	70.83	0.04
1986	1.98	6.91	74.99	59.51	0.42
1987	1.83	10.23	59.98	52.42	2.08
1988	1.33	11.55	56.88	60.67	15.27
1989	0.57	9.41	40.02	53.87	119.89
1990	0.64	11.37	40.14	39.74	116.93
1991	0.97	14.85	43.88	33.26	75.32
1992	0.98	12.78	42.20	30.88	113.81
1993	1.13	13.80	34.54	26.37	79.71
1994	1.77	10.14	24.88	24.46	65.50
1995	0.15	29.91	40.61	24.08	50.08
1996	0.36	18.92	43.37	25.18	72.46
1997	0.74	23.59	47.90	16.63	67.99
1998	1.82	25.45	38.67	21.84	62.30
1999	1.54	14.12	53.53	24.01	63.99
2000	1.44	14.29	58.35	23.82	45.52
2001	0.79	13.94	49.26	21.82	36.32
2002	0.82	21.47	44.06	23.14	41.20
2003	0.35	16.59	49.68	24.60	38.02
2004	0.34	22.60	52.43	27.62	52.78
2005	0.41	24.11	96.75	29.59	38.46
Mean	1.07	15.95	49.76	34.02	55.15
Variance	0.42	40.11	225.86	244.45	1242.22

Appendix Table 4

*Revealed Competitive Advantage for Major Asian Rice Exporters
Using Trade Agricultural Measure (ACE), 1985-2005*

Year	China	India	Pakistan	Thailand	Vietnam
1985	1.89	3.17	20.53	16.91	-33.33
1986	1.32	2.51	23.94	15.74	-27.36
1987	1.02	5.06	24.57	17.35	-25.90
1988	0.83	1.77	20.84	19.25	-10.18
1989	-1.07	-2.58	12.44	17.57	30.15
1990	0.68	0.80	19.20	15.80	35.35
1991	0.85	7.79	24.66	15.01	23.72
1992	1.03	7.08	22.36	14.33	34.40
1993	1.20	7.21	24.92	14.71	29.36
1994	1.70	7.45	22.54	14.10	22.60
1995	-1.15	15.54	27.42	13.04	15.13
1996	-0.32	9.29	22.52	12.85	26.02
1997	0.84	12.90	38.03	14.67	29.15
1998	3.10	13.21	22.55	13.54	19.49
1999	2.75	8.22	26.40	14.46	22.10
2000	2.37	8.37	31.82	14.36	18.46
2001	1.18	7.97	30.05	12.54	18.17
2002	1.31	14.31	30.26	13.02	22.09
2003	0.40	10.16	33.53	12.98	24.02
2004	0.85	15.47	37.48	14.99	22.30
2005	0.94	12.58	51.51	15.36	18.67
Mean	0.96	8.01	27.01	14.87	14.97
Variance	1.18	24.88	68.12	3.08	420.41

Appendix Table 5

*Revealed Competitive Advantage for Major Asian Rice Exporters using
Total Merchandise Trade Measure (TCE), 1985-2005*

Year	China	India	Pakistan	Thailand	Vietnam
1985	2.13	8.30	52.73	70.83	-29.01
1986	1.52	6.61	74.98	59.51	-30.25
1987	1.06	10.09	59.96	52.42	-24.58
1988	0.83	6.58	56.84	60.67	2.64
1989	-1.06	4.62	40.00	53.87	118.58
1990	0.55	8.68	40.14	39.74	116.04
1991	0.74	14.67	43.88	33.26	74.78
1992	0.81	12.01	42.20	30.88	113.68
1993	0.99	13.28	34.53	26.37	79.66
1994	1.33	10.08	24.59	24.46	65.32
1995	-1.05	29.91	40.60	24.08	49.82
1996	-0.38	18.92	43.34	25.18	72.35
1997	0.34	23.59	47.89	16.63	67.95
1998	1.52	25.43	38.64	21.83	62.28
1999	1.36	14.03	53.48	24.00	63.90
2000	1.15	14.23	58.33	23.81	45.42
2001	0.51	13.94	48.93	21.82	36.28
2002	0.56	21.46	43.74	23.13	40.93
2003	0.08	16.58	49.42	24.57	37.99
2004	0.34	22.60	52.43	27.62	52.78
2005	0.41	24.11	96.75	29.59	38.46
Mean	0.60	15.22	49.66	34.00	50.23
Variance	0.69	50.05	223.89	244.63	1853.92

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