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   HYPOTHESES

   RESEARCH METHODOLOGY

   RESULTS & DISCUSSION

   FINDINGS

   RECOMMENDATIONS/SUGGESTIONS

   CONCLUSIONS

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- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

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- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

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DIRECTION AND TRENDS OF INDIA'S PINEAPPLE EXPORTS: A STUDY IN THE FREE TRADE REGIME

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ABSTRACT

Pineapple, one of the most internationalised fruit globally traded where the potential for export from India is not yet exploited has rich trade prospects, being one of the major producers of the world. The present study examines the direction and trend of pineapple (fresh and juice) export from India in background of economic liberalisation and AOA under WTO, using kinked exponential models and aimed at suggesting suitable policy measures for improving exports. The results of the study revealed that Indian pineapple is exported mainly to Asian Countries with a minimum access to major importing markets of European Countries and the USA. The growth rates in Post WTO shows a positive trend and a negative trend in Pre-WTO period, but suitable policy measures are to be made for exploring and penetrating in to the major markets of Europe and USA.

KEYWORDS

Pineapple exports, free trade, Indian exports.

INTRODUCTION

The Uruguay round Agreement on Agriculture (AOA) of 1995 under WTO was the first step towards the reforms in international agricultural trade. (Singh Rampratap 2011) It places emphasis on agricultural export as an instrument of growth that ultimately give benefits to the farmers of developing countries(Singh 2011).The government of India has announced much liberalization polices and policy changes since July 1991 to boost the agricultural exports including devaluation of Indian rupee, decanalisation of the imports of agricultural commodities, removal of quantitative restrictions and reduction in tariff rates, setting up of AEZs, introduction of NHM programmes etc. These policies are in compliance with the free trade regime advocated by WTO in AOA.

India is the second largest producer of fruits (10 percent) and vegetables (14 percent) in the world, ranked behind the China.(Singh 2009). But our share in the world exports of fruits and vegetables is only about 1 percent and 2 percent of the total fruits and vegetable exports in the world. Researches have shown that the production and growth trends of fruits and vegetables in India between the periods 1980 to 2005 shows an increasing trend. Although the agricultural exports show an increase, its per cent share has been decreasing and also fluctuating widely. Thus whether the expectations come true or not is a matter for debate. (Birthal *et al*., 2008, Singh and Mathur 2008, Singh 2009).

Pineapple is one of the most internationalized fruit traded globally, second only to banana and citrus in this regard. More than 6 million (44 percent) of the 14 million tones grown are destined for export, which is significant in comparison to Mango and Banana. The major fresh pineapple exporters are Costa Rica, The Ivory Coast, and Philippines.(Table3) The processed category is completely dominated by Asian countries. Thailand, Philippines and Indonesia holding more than 50% of the total volume of exports and are the main supplier of European countries and US .

India is seventh largest pineapple producer in the world with a share of 7.31 per cent. Major pineapple producing states in India are the North Eastern States, West Bengal, Bihar, Karnataka and Kerala. The major varieties cultivated are Kew and Mauritius of which Mauritius is more suitable for export purpose.The boost to pineapple cultivation came with the govt's diversification of horticulture that coincided with the liberalization policies.

The current export market for pineapple from India is primarily Middle East and export to European countries is minimal. Trade prospects for developing countries are very promising as pineapple is rated as an under achiever implying huge potential to be tapped by improving the bottlenecks in supply capacity and for dynamic export expansion. On an aggregate level, India is viewed to have a conducive environment for the development of pineapple production and exports.(Jacob and Soman 2006).

The liberalisation policy and the establishment of WTO had accelerated the process of free trade in agricultural commodities, its impact vary significantly between crops and across regions. This calls for detailed crop specific and region specific studies on the process of economic liberalisation and AOA. Under this background, the present paper makes an attempt to analyze the direction of India's pineapple export for the period of 2001-2010 and growth trends of export of pineapple for the period 1983 -2010 with special emphasis on liberalisation policy and WTO Agreement.

DATA AND METHODOLOGY

Time series data on fresh (SITC Rev.2 Code 05795) and pineapple juice ((SITC Rev.2 Code 05854) export from India (both quantity and value) was collected from the UNCOMMTRDE DATA for the period 1983-2010. Time series data for analyzing the direction of trade, was taken from UN TRADEMAP,(HS code 080430,200949 and 200941). Trend equations were fitted for fresh and pineapple juice export from India. Since India is a net exporter of fresh pineapple, which is more important on the balance of trade view point, a trend equation was fitted for net export of fresh pineapple also. No such exercise is done on juice category, because India is a net importer of pineapple juice products.

Kinked exponential model was fitted to estimate the trend of export. Single kink and two kink models were employed wherever appropriate. A distinctive feature of kinked exponential growth models, is that it make use of information regarding the values of the variable in question throughout the time series in estimating the growth rate for a given sub period. Kinked exponential models which impose continuity restrictions at the break points between sub periods, eliminates the discontinuously bias and there by provides an improved basis for growth rate comparisons. In the absence of special circumstances such as definitional changes or natural disasters, kinked exponential models are preferable to discontinuous ones for growth rate comparisons.(Boyce J K 1984)

Single kink model was fitted by breaking the time series data at the point K (1995) in to two sub periods i.e., pre WTO(1983-1995) and post WTO period(1996-2010). The discontinuous growth rates for the resulting two sub periods could be derived by fitting the following equation.

$$\ln Yt = \alpha_1 D1 + \alpha_2 D2 + (\beta_1 D1 + \beta_2 D2)t + ut \quad (1)$$

Where Dj is a dummy variable which takes the value 1 in the jth sub period and 0 otherwise. After substituting for α_2 ($\alpha_1 = \alpha_1 D1 + \alpha_1 D2$) we get the restricted form as:

$$\ln Yt = \alpha_1 + \beta_1 (D1t + D2k) + \beta_2 (D2t - D2k) + ut \quad (2)$$

The OLS estimates of $\beta_1$and β_2 from (2) give the exponential growth rates for the two sub periods.

Two kink model was fitted by breaking the time series data at point K_1(1991) and K_2 (1995) so as to create three sub periods, i.e. pre liberalization period (1983-1990), liberalization period (1991-1995),Post WTO (1996-2010). The discontinuous growth rates for the resulting three sub periods could be derived by fitting the following equation.

$$\ln Yt = \alpha_1 D1 + \alpha_2 D2 + \alpha_3 D3 + (\beta_1 D1 + \beta_2 D2 + \beta_3 D3)t + ut \quad (3)$$

The restricted two kink model was obtained after substituting for $\alpha_2$and α_3 as follows:

$$\ln Yt = \alpha_1 + \beta_1 (D1t + D2k_1 + D3k_1) + \beta_2 (D2t - D2k_1 - D3k_1 + D3k_2) + \beta_3 (D3t - D3k_2) + ut \quad (4)$$

A SNAP SHOT OF WORLD PINEAPPLE TRADE

The following tables present a snap shot of world pineapple trade:

TABLE 1: AVERAGE EXPORT QUANTITYOF PINEAPPLES BY REGIONS FOR THE PERIOD 1992-2007

REGION	AVERAGE QUANTITY(in tones)	Percentage
Asia	1824609	51.32
Europe	766737	21.57
Oceania	573265	16.12
America	382142	10.75
Africa	8624	0.24
TOTAL	3555377	100.00
Source: FAO STAT		

Note: Figures in the parentheses represent the percentage to total

Table 1 shows that the countries of Asian region exported more than half (51.32percent) of the pineapple (both fresh or dried and processed) during the period 1992-2007 followed by European countries (21.57 percent). The export from European countries mainly is in the form of re export to other countries. (See table3 presenting the share of major producers)

TABLE 2: AVERAGE IMPORT QUANTITY OF PINEAPPLES BY REGIONS FOR THE PERIOD 1992-2007

REGION	AVERAGE QUANTITY(in tons)	Percentage
America	1854723	46.75
Europe	1701883	42.89
Asia	356215	8.98
Oceania	41683	1.05
Africa	13173	0.33
TOTAL	3967677	100.00
Source: FAO STAT		

Note: Figures in the parentheses represent the percentage to total

Table 2 which gives the region wise import quantity of pineapple (both fresh or dried and processed) for the period 1992-2007.The table shows that America import nearly half (46.75 percent) of the world import followed by European countries (42.89 percent).The import of European countries is mainly for exporting to other countries.

TABLE 3: LEADING PINEAPPLE PRODUCING COUNTRIES &THEIR SHARE IN EXPORT OF FRESH PINEAPPLE FOR THE YEAR 2010

Country	Share in Percentage of Production	Share in Percentage of Export Value
Philippines	11.17	2.8
Brazil	10.92	0.1
Costa Rica	10.18	44.1
Thailand	9.91	0.2
China	7.82	0.1
India	7.31	0.1
Indonesia	7.16	0
Nigeria	5.42	0
Mexico	3.61	1.7
Others	26.49	50.9
World	100	100

Source: Computed from TRADEMAP DATA

The table shows that Costa Rica, the third major producer, hold about half of world's fresh pineapple exports and Mexico is another major exporter, as compared with share of production. Of the major producers, Thailand is the top exporter of processed pineapple products. The share in export value of India, China and Brazil is negligible when compared with the share of production.

DIRECTION AND TRENDS OF INDIA'S PINEAPPLE EXPORTS: AN ANALYSIS

DIRECTION OF INDIA'S PINEAPPLE EXPORT

The following table gives the details of Indian Pineapple export scenario for the period 2001 to 2010.

TABLE 4: MAJOR IMPORTERS OF FRESH PINEAPPLE FROM INDIA (Average for the Period 2001 to 2010) HS code 080430

Importers	Quantity(in Tons)	Value(in US $1000)
Nepal	1119 (45.81)	141 (20.99)
United Arab Emirates	627 (25.67)	225 (33.41)
Saudi Arabia	183 (7.49)	80 (11.90)
Maldives	98 (3.99)	53 (7.92)
Oman	69 (2.81)	32 (4.76)
Spain	56 (2.29)	24 (3.55)
Pakistan	55 (2.27)	16 (2.37)
Bangladesh	48 (1.96)	8(1.22)
Qatar	41(1.68)	22 (3.29)
Netherlands	35 (1.42)	14 (2.03)
Bahrain	27 (1.12)	15 (2.17)
Others	85 (3.49)	43 (6.41)
World	2441 (100)	670 (100)
Source: Computed from TRADEMAP DATA		

Note: Figures in the parentheses represent the percentage to world figures

The table indicates that the Asian countries (Nepal and UAE) have the highest share in average quantity and value of import. Among the top 10 importers only two European countries i.e. Spain (2.29percent in quantity) and Netherlands (1.42 percent in quantity) are included. No significant export is made to USA being the largest importer of pineapples. Among Asian countries, the GCC countries together hold more than fifty percent of value of exports from India.

TABLE 5: MAJOR IMPORTERS OF PINEAPPLE JUICE -BRIX VALUE > 20 FROM INDIA (for the Period 2003 to 2010) HS code 200949

Importers	Quantity(in Tons)	Value(in US $1000)
Netherlands	120 (37.75)	114 (29.50)
Germany	69 (21.73)	75 (19.56)
Nepal	42 (13.19)	70 (18.13)
Belgium	25 (7.89)	42 (10.79)
United Kingdom	12 (3.69)	20 (5.10)
Israel	9 (2.90)	13 (3.25)
United Arab Emirates	8 (2.53)	10 (2.63)
Japan	5 (1.70)	10 (2.63)
Australia	4(1.36)	4 (1.01)
Maldives	4(1.20)	3 (0.65)
Others	19 (6.05)	26 (6.76)
World	319 (100)	385 (100)
Source :Computed from TRADEMAP DATA		

Note: Figures in the parentheses represent the percentage to world figures

Table 5 shows that European Countries (Netherlands and Germany) together hold more than fifty percent of the total export of pineapple juice of Brix value > 20 from India followed by Asian countries (Nepal &UAE). Though USA is the top importer of the pineapple products, there is no evidence of significant export from India which is to be enquired.

TABLE 6

Major Importers of Pineapple Juice - Brix value <=20 from INDIA. (Average for the Period 2003 to 2010) HS code 200941		
Importers	Quantity(in Tons)	Value(in US $1000)
Netherlands	86 (71.34)	77 (68.93)
Germany	19 (15.93)	18 (16.04)
Nepal	9 (7.85)	14 (12.20)
United Kingdom	3 (2.50)	1 (1.03)
USA	3 (2.50)	2 (1.67)
World	120 (100)	120 (100)
Source :Computed from TRADEMAP DATA		

Note: Figures in the parentheses represent the percentage to world figures

Table 6 shows that Netherlands and Germany together hold about ninety percent of the total export of pineapple juice of Brix value <= from India. The share of export to USA is nominal which is to be improved.

India's share in world exporting scenario of pineapple (both fresh and juice) is negligible, being the seventh producer of world .The direction of trade shows that our fresh products reach only to Asian countries and need appropriate strategies to penetrate into European countries and US markets, the major importers so as and to exploit the comparative advantage arise from free trade regime as envisaged by the WTO and AOA. The direction of trade of juice products also presents a similar picture, but European countries dominate in import than the Asian countries. But our balance of trade is unfavourable, steps should be taken to bring down the imports to India, and improve the exports to USA and European countries, the major importers of the world pineapple products.

TRENDS IN INDIA' S PINEAPPLE EXPORTS- AN ANALYSIS USING KINKED EXPONENTIAL TREND MODEL

SINGLE KINK MODEL

Single kink model was fitted to data of export of fresh pineapple, net pineapple export and pineapple juice export. The fitted equations are presented below:

1 Fresh Pineapple (Quantity) N=28 and k= year 1995 (13)

$\ln Y_t = 5.5397 - 0.0381(D1t+D2k) + 0.1137\,(D2t-D2k)$

Variance Explained =79.76%

2 Fresh Pineapple (Value) N=28 and k= year 1995 (13)

$\ln Y_t = 5.4019 - 0.0679(D1t+D2k) + 0.1154\,(D2t-D2k)$

Variance Explained =78.97%

3 Net Export-Fresh (Quantity) N=28 and k= year 1995 (13)

lnYt= 5.5382 - 0.0383(D1t+D2k) +0.1140 (D2t-D2k)
Variance Explained= 79.56%
4 Net Export-Fresh (Value) N=28 and k= year 1995 (13)
lnYt= 5.3981-0.0675(D1t+D2k) +0.1149(D2t-D2k)
Variance Explained= 78.98%
5 Pineapple Juice (Quantity) N=28 and k= year 1995 (13)
lnYt= 6.6513- 0.1527(D1t+D2k) + 0.0784(D2t-D2k)
Variance Explained =37.02%
6 Pineapple Juice (Value) N=28 and k= year 1995 (13)
lnYt= 6.2576 - 0.1092(D1t+D2k) + 0.0682(D2t-D2k)
Variance Explained =31.42 %

TWO KINK MODEL

1Pineapple Juice (Quantity) N=28 and k1= year 1990 (8) and k2=year 1995 (13)

$\ln Yt = 7.4596-0.3171 (D_1t + D_2k_1 + D_3k_1) + 0.0374 (D_2t - D_2k_1 - D_3k_1 + D_3k_2) + 0.2981 (D_3t - D_3k_2)$

Variance Explained =74.32 %

2 Pineapple Juice (Value) N=28 and k1= year 1990 (8) and k2=year 1995 (13)

$\ln Yt = 6.9768 -0.2620 (D_1t + D_2k_1 + D_3k_1) + 0.0447 (D_2t - D_2k_1 - D_3k_1 + D_3k_2) + 0.1680 (D_3t - D_3k_2)$

Variance Explained =66.50 %

The single kink model fitted well for all the data except for pineapple juice. So the two kink model was fitted for pineapple juice and the trend line was a line of good fit. The growth rate of pineapple fresh quantity and net pineapple fresh quantity were more or less the same.

GROWTH RATES

SINGLE KINK MODEL

Product	Period	Growth Rate	Standard Error	p value
Pineapple: Fresh(Quantity)	Pre WTO	- 03.81%	0.0162	0.0267
	Post WTO	11.37%	0.0125	0.0000
Fresh (Value)	Pre WTO	- 06.79%	0.0156	0.0002
	Post WTO	11.54%	0.0120	0.0000
Net Pineapple: Fresh(Quantity)	Pre WTO	- 03.83 %	0.0162	0.0260
	Post WTO	11.40 %	0.0125	0.0000
Fresh (Value)	Pre WTO	-06.75%	0.0155	0.0002
	Post WTO	11.49%	0.0120	0.0000

TWO KINK MODEL

Product	Period	Growth Rate	Standard Error	p value
Pineapple: Processed(Quantity)	Pre Liberalization	-31.71%	0.0578	0.0000
	Liberalization	03.74 %	0.0175	0.0427
	Post WTO	29.81%	0.0967	0.0051
Processed (Value)	Pre Liberalization	- 26.20%	0.0533	0.0000
	Liberalization	04.47 %	0.0161	0.0106
	Post WTO	16.80 %	0.0892	0.0719

The growth rate estimates depicts that, the pre WTO (1983-1995) era experienced a negative rate of growth where as the post WTO (1996-2010) era experienced positive growth rate in single kink model. Similarly in two kink model, the pre liberalization era (1983-1990) showed a negative growth rate and liberalization era (1991-1995) and post WTO era (1996-2010) showed a positive growth rate. All the coefficients are significant at 5% significance level and p values are satisfactory in the kinked models. This is a positive sign to Indian pineapple sector even though our share in total pineapple export is negligible. Steps should be taken by the government, to maintain this momentum and to penetrate in to new markets of European countries and USA so as achieve the comparative advantage arise in the free trade regime.

CONCLUSIONS AND POLICY IMPLICATIONS

The direction of pineapple export of India (fresh and juice) shows that India has an immense potential which is yet to be tapped .Even though our share is negligible in world scenario, there exist unexploited markets like USA and European countries, which can be exploited through proper policy measures and trade strategies. Along with more market accesses, steps should be taken to make India a net exporter of pineapple juice from the present net importer, while sustaining the present status in fresh pineapple export .The government should implement suitable progammes and make policy measures to sustain the present growth rate and make strategical interferences to raise the growth rate so as to reap the advantages as intended by AOA and liberalisation policies. Following are some policy recommendations for boosting pineapple export from India.

SPECIFIC POLICY MEASURES RECOMMENDED FOR BOOSTING OF EXPORT OF PINEAPPLE FROM INDIA.[1]

1 Exploiting the location advantage & tariff duty rates.
2 Lowering the cost of transportation by encourage cultivating the pineapple for export in the states of Kerala, Karnataka and Maharashtra which are nearer to Cochin and Mumbai Ports.
3 Standardization of Controlled Atmosphere (CA) and Modified Atmosphere (MA) storage facilities.
4 Standard post harvest infrastructure and cool chain facilities for supply quality pineapple as pineapple fruit is very sensitive to atmospheric temperature.
5 Promotion of organic pineapple cultivation.
6 Cultivation of export suitable variety which are popular in European countries such as Gold, Baby and MD2.
7 Adequate and sophisticated processing infrastructure facilities.

NOTE

[1] Inputs from *NAFED Report of Market Intelligence study of selected crops having export potential*, Ministry of Agriculture (Trade Division), New Delhi.

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APPENDIX

APPENDIX I: TARIFF STRUCTURE OF FRESH PINEAPPLE

Region &Country	Type of Tariff &Percentage
European Countries	GSP ,NIL
CIS Countries:	
a) Russia	GSP,3.75%
b) Ukraine	GSP, 4%
c) Kazakhstan	GSP, 3.75%
ASIAN Countries	
a) Thailand	40% or 852.74$/ton
b) Indonesia	5%
c) Philippines	10%
d) Malaysia	228.17 $/ton
e) Vietnam	Ad Valorem, 40%
f) Singapore	MFN duties, NIL
GULF COUNTRIES	MFN duties, NIL
PACIFIC RIM COUNTRIES	
a) Australia	NIL
b)South Korea	Ad Valorem, 30%
c) Japan	MFN, 17%
CHINA	MFN, 12%& APTA,&7.9%
USA	GSP ,NIL

APPENDIX II: SPECIFIC PRODUCT PREFERENCES OF PINEAPPLES FOR EU MARKET

MARKET REQUIREMENTS

International quality standard (Codex Alimentarious standards for pineapples)

MINIMUM LABELING

It is well documented and exporters are aware of the requirements like:

Name and address of exporters/ packers, Name of product/ variety, Origin of produce, Class or grade, Weight

PACKAGING

Pineapples are packed in a single layer in fruit cartons (telescope or single piece folding) Fruits are wrapped in paper or padded.

IMPORT REGULATORY DOCUMENTS

Phytosanitary certificate from the country of origin Certificate of origin on GSP Form A for developing and least developed Countries

SPECIFIC MARKET TRENDS AND PREFERENCES

Germany, Italy and UK are the largest markets

EU market is growing and there is demand for new varieties like Baby, MD2.

UK and France prefer 0.9 kg to 1.5 kg fruits.

UK prefers 2/3 colour stage at destination.

Crown must be free of dried and dead leaves and its leaves must be fresh, turgid and green.

Preferences are for uniformity in colour and size in a pack

LIST OF ABBREVIATIONS

AEZ - Agri Export Zones
APTA - Asia-Pacific Trade Agreement
CIS - Commonwealth of Independent States
GSP - Generalized System of Preferences
GCC - Gulf Co-operation Council countries
MFN - Most Favoured Nation
NAFED - National Agricultural Cooperative Marketing Federation of India
NHM - National Horticulture Mission
WTO - World Trade Organization

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