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Managing Foreign Exchange: A Study on Export Potential of Primary Sector of Punjab

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Abstract: In the era of globalization, the macroeconomic indicators of Punjab-Granary of India have shown remarkable positive results. Agriculture is the backbone of economy in state of Punjab where green revolution produced spine shivering results in production of main five crops. But after five decades the farmer in Punjab is shifting to animal husbandry, fisheries and horticulture and this has led to achieving peak of economic development by earning not only from domestic market but from global market too. Punjab produces two percent of world's cotton, two percent of its wheat and one percent of world's rice indicating the prosperity of Punjab. The paper examines the export potential of the primary sector of Punjab (including agriculture, horticulture, livestock and fisheries) and future strategies.

I. INTRODUCTION

Punjab, an economically advanced state, called bread basket India has always attracted attention of policy makers and agricultural scientists. The present state of Punjab came into being after being organized into 3 smaller states i.e. Himachal Pradesh, Haryana and present day Punjab. Its geographical area has decreased from what used to be before independence. Only three rivers satluj, beas and ravi came into present day Punjab after division of India and Pakistan. But the extensive irrigation system developed by policy makers have made it possible for Punjab to gain maximum revenue out of its export potential. The state's fabulous weather conditions coupled with advent of green revolution, extensive use of canals, well connected cities through network of roads, electricity subsidies and credit availability from institutional and non-institutional sources has contributed towards making Punjab one of the richest state of India.

The macroeconomic indicators of economy of Punjab in globalized market are positive and economic growth in recent years has been great. Although the share of primary sector (including agriculture, livestock, fisheries) has come down from 32.67 percent in 2004-05 to 20.84 percent in 2013-14 but Statistical data of Punjab have clearly indicated greater export potentials for the state.

The impressive agricultural growth rate in Punjab is exemplified by the increase in the state's foodgrain production from 2 million tonnes to 29 million tonnes during 1950-57 to 2011-12. The success story of wheat and rice has been spine shivering where rice production of state increased from 0.11 million tonnes in 1950-51 to 6.54 million tonnes in 1990-91 same production of wheat rose from 1.02 million in 1950-51 to 17.9 million tonnes in 2011-12.

With adoption of new agricultural technology backed with adequate agricultural policies in 1960s, the state turned surplus in food grains providing 3 percent of world's production in rice and wheat crops. The progress became speedy by adoption of improved seeds, irrigation and increased use of non-conventional inputs like fertilizers, machinery and pesticides. Sound government policies for providing subsidized inputs, price support and credit facilities have led to the prosperity of the state. Even the animal husbandry occupies prominent position in Punjab's economy. It even has great potential to earn foreign exchange.

II. AIM

The aim of the research is to study the export potential of Punjab's primary sector under categories of agriculture, animal husbandry, horticulture and fisheries.

III. DATA AND METHODOLOGY

The study has used secondary data from various government publications such as Economic Survey (various issues), Statistical Abstracts of Punjab, Agriculture at Glance, Basic Animal Husbandry and Fisheries statistics 2013, Livestock Census, 2007. Various statistical tools have been applied on the data such as percentages and averages to achieve objectives. Here 1970-71 was taken as the reference period and till 2013-14 data was analyzed.

IV. AGRICULTURE

Agriculture sector has always remained significant to economic development of Punjab economy since independence. Out of total geographical area of 5035 thousand hectares in Punjab, only 10 percent is not available for cultivation indicating the situation of extreme export potential.

At present 82 percent of total area of Punjab is under cultivation as compared to national average of 43 percent. This is the result of combination of favorable physical topography, excellent irrigation facilities developed by farmers, high fertility of soil and capital investments undertaken by farmers in public sector.

V. POTENTIAL AGRICULTURE LAND

The crop land comprising net area sown and follow land has increased from 4192 thousand ha in 1970-71 to 4220 thousand ha in 2010-11. The uncultivated land including barren land, cultivable waste and land under free crops decreased from 295 thousand hectares in 1970-71 to 32 thousand hectare in 2010-11.

Table I: Land use pattern in Punjab, 1970-71 to 2011-12 (000' ha)

	1970-71	1980-81	1990-91	2000-01	2007-08	2010-11	2011-12
Geographical area	5036	5036	5036	5036	5036	5036	5036
Total area according	5031	5033	5033	5033	5033	5033	5033
Forests	123	216	222	280	287	293	294
Barren land	208	96	83	28	24	24	39
Land under non-agricultural use	416	436	343	410	483	508	506
Cultivable waste	83	41	35	15	3	4	4
Permanent pasture and grazing land	5	4	10	4	3	4	4
Land under misc.	4	4	12	3	4	4	4
Net sown area	4053	4191	4218	4250	4187	4158	4134
Net sown area as percent to total area	81	83	84	84	83	83	82
Area sown more than once	1625	2572	3284	3691	3683	3724	3767
Total cropped area	5678	6763	7502	7941	7870	7882	7902

Source: Statistical Abstracts of Punjab (various issues)

Table I show apart from increase in area of crop land the cropping intensity in Punjab has increased from 140 percent in 1970-71 to 191 percent in 2011-12. It indicated excessive use of land for agriculture in Punjab. The area sown more than once too increased from 1625 thousand ha in 1970-71 to 3767 thousand ha in 2011-12. Increasing crop intensity indicates proper management of land based resources including crop land, grazing land, forests, wetlands and other land uses.

VI. CROPPING PATTERN

The cropping pattern is dominated by rice in kharif season followed by bajra maize, oilseed and pulses. There has been sharp increase in area under rice cultivation from 1970-71 to 2010-11 that is 6.9 percent and 35.9 percent respectively. Although area under maize declined from 9.8 percent in 1970-71 to 1.7 percent in 2010-11 and under bajra from 3.7 percent in 1970-71 to 0.04 percent in 2010-11 but area under cultivation of cotton increased from 7 percent in 1970-71 to 9.3 percent in 1990-91. All these percent shares given under Table 2 clearly indicates crop specialization for export potential.

Wheat- the main crop of Punjab brings huge revenue to the state. So, in rabi season, the percentage area under wheat increased from 40.5 percent in 1970-71 to 43.6 percent in 1990-91 and further to 44.5 percent in 2010.11. But area under gram and barley have decreased since 1970-71 as same area is replaced for cultivation of wheat only. The state is amongst highest ranking states in the country in terms of productivity of wheat and rice. Such production is instrumental in ensuring national food security by consistently contributing significant share in central pool.

Table II: Cropping pattern in Punjab (percent of GCA)

	1970-71	1980-81	1990-91	2000-01	2010-11	2011-12
Kharif Season						
Rice	6.9	17.5	26.9	33.3	35.9	35.6
Bajra	3.7	1	0.2	0.1	0.04	0.04
Maize	9.8	5.6	2.5	2.1	1.7	1.6
Pulses	7.3	5	1.9	0.7	0.3	0.3
Rabi Season						
Wheat	40.5	41.6	43.6	43.4	44.5	44.6
Barley	1	0.9	0.5	0.4	0.2	0.2
Gram						

Source: Statistical abstracts of Punjab (various issues)

The Punjab has contributed 43.4% of wheat and 29.3% of rice to the central pool during 2013-14. But such monoculture of wheat-paddy crop rotation, stagnation in yields of principal crops, declining incomes and rural indebtedness may pose threat to revenue of Punjab.

VII. PRODUCTION OF MAJOR CROPS

Backed with effective agricultural policies, the farmers of state tended their crops according to the advice of experts through well established agricultural extension network and already achieved the record productivity levels. The total food grains production in Punjab has increased significantly. In 1990-91, the production of food grains was 192.18 lakh metric tonnes that increased to 285.02 lakh metric tonnes in 2012-13 showing increase of 48.31 percent. The production of rice has increased from 65.06 lakh metric tonnes in 1990-91 to 113.74 lakh metric tons in 2012-13 showing an increase of 74.82 percent similarly, production of wheat has increased from 121.59 lakh metric tonnes in 1990-91 to 165.91 lakh metric tonnes during 2012-13 indicating 36.45 percent increase.

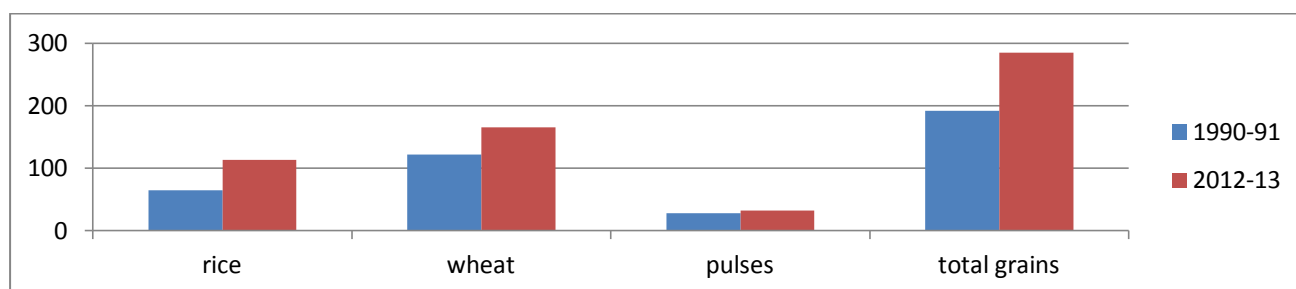


Fig I. Production of crops in Punjab (In 000' metric tonnes)
Source: Ministry of statistics and programme implementation.

There exists ample scope for increasing the production of wheat and rice through increase in productivity with improvement in production technology particularly the evolution of high yielding varieties.

The data in Table III represents that productivity of wheat increased from 22.99 quintal per ha in 1970-71 to 34.08 quintals in 2000-01 and further to 50.97 quintals in 2011-12. Similarly rice production too has shown rising trends. It increased from 17.65 quintals per ha in 1970-71 to 35.06 quintals in 2000-01 and further to 37.41 quintals per ha in 2011-12. The production of maize which was considered as alternative to paddy increased from 15.55 quintal per ha in 1970-71 to 27.93 quintals per ha in 2000-01 and further to 39.77 quintals per ha in 2011-12. However, the productivity of gram showed fluctuations as it was 7.93 quintals per ha during 1970-71 and around 10 in 2011-12. Therefore, yield of cereals like wheat, rice, maize etc. has registered an increase in recent years.

Table III: Productivity of major crops in Punjab, 1970-71 to 2012-13

Crop	1970-71	1980-81	1990-91	2000-01	2010-11	2012-13
Rice	17.65	27.33	32.29	35.06	38.28	39.98
Wheat	22.99	28.12	32.73	34.08	46.93	47.24
Maize	15.55	16.02	17.86	27.93	36.92	36.82
Sugarcane	41.17	55.21	59.41	64.25	59.57	58.92
Gram	7.93	5.81	7.45	9.53	10	15
Cotton	3.99	3.29	4.81	4.37	3.77	3.38

Source: Statistical abstracts of Punjab (various issues)

The remarkable increase in the agricultural production of Punjab state is the result of adoption of synthetic fertilizers and fertilizer responsive varieties along with irrigation the consumption of fertilizers has tremendously increased from 213 thousand tonnes in 1970-71 to 1972 thousand tonnes in 2012-13. But such spectacular rise has brought soils of Punjab under stress of high yield with optimized irrigation and fertilizers. It resulted in deficiency of zinc, iron, sulphur and magnese etc.

Larger attempts have been made by state government to expand irrigation by strengthening existing canal system as well as construction of new canals.

Studies have revealed that Punjab has 98.43 percent of cropped area under irrigation of which 27.42 percent by canals and 72.69 percent by tube wells in 2011-12. Punjab has developed an excellent irrigation distribution network of canals, branch canals and minor distributaries and field channels or water courses.

Punjab state is making use of insecticides and weedicides to prevent yield exploitation and maintain agricultural production stability. Crops like cotton, sugarcane, paddy, oilseeds have shown greater reliance on pesticides. The study reveals that consumption of pesticides in Punjab has increased 96 percent since 1980-81 to 2012-13. Such measures are undertaken to influence export strategy of the Punjab state. Certain macro level economic developments in production, sourcing and supply of crops is being done

Maize

The state proposed to increase area under maize from 1.4 lakh hectare to 5.5 lakh hectare during next 7-8 years. Subsidies on various inputs like pesticides, weedicides, supply of hybrid seeds etc. would be provided.

Cotton

The promotion of cotton has been important task of state government. Various interventions have been done to promote cotton such as distribution of pesticides and weedicides, BT cotton seeds, bio-pesticides and plant protection equipments.

Farm-Forestry

At least 2 lakh hectare area is proposed to be covered under this in Punjab on a rotation cycle of 8 years for planting species like eucalyptus, melia, glemlina etc. that are fast growing.

VIII. HORTICULTURE

Farmers in Punjab are also shifting towards changing consumption patterns of households towards high value horticulture product like vegetables and fruits, dairy products and animal products, which are new profitable alternatives to farmers. Five citrus estates have been set up and new varieties of citrus fruits are being supplied to farmers.

Due to favourable climate conditions, the production of fruits, vegetables and flowers in Punjab is rising. The area under fruits increased from 0.68 lakh hectares in 1990-91 to 0.72 lakh hectares in 2012-13. Kinnow, orange, malta, lemon, mango and grapes are main fruits grown.

The area under vegetables too have doubled during 1990-91 to 2012-13 from 0.55 lakh hectares to 1.14 lakh hectares. The state government laid special emphasis on diversification of agriculture through development of horticulture.

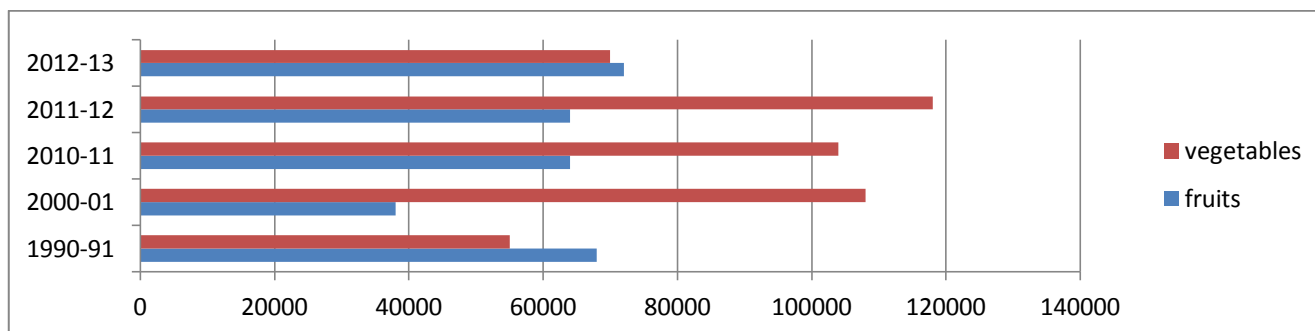


Fig. II: Area under fruits and vegetables
Source: Ministry of Agriculture, Government of India, 2014.

Table IV: Area under production of vegetables and fruits from 1970 to 2012

Year	Vegetables	Fruits
1970-71	0.9	0.6
1980-81	1.1	0.4
1990-91	0.7	0.8
2000-01	1.4	0.4
2010-11	1.3	0.9
2011-12	1.4	0.9

Source: Statistical Abstracts of Punjab (various issues)

IX. ANIMAL HUSBANDRY

Livestock is an integral component of India agriculture supporting livelihood of more than two-thirds of the rural population. Animals provide draught power, dung as organic manure and domestic fuel, hides and skin and are regular source of income for rural households in Punjab the livestock rearing is supported by strong veterinary infrastructure built over the years in state.

This sector has contributed 7.10 percent to the GSDP at constant (2004-05) prices in 2012-13. The share of agriculture including the animal husbandry has increased from 30140.53 crores in 2004-05 to 33939.55 crores in 2012-13. It has registered a growth rate of 1.97 percent per annum during 2004-05 to 2012-13 as against growth of 1.33 percent per annum.

Table V: Gross state domestic product of livestock sector in Agriculture in Punjab

Year	Total Agriculture Sector	Share of livestock
2004-05	30140.53	9621.01 (31.92%)
2006-07	31248.07	10689.73 (34.21%)
2008-09	33113.53	10958.35 (33.09%)
2009-10	32924.59	10839.58 (32.92%)
2011-12	34168.17	11336.47 (33.18%)
2012-13	33939.55	11466.84 (33.78%)

Source: Economic survey of Punjab 2012-13

Table V states that contribution of livestock sector has increased from 9621.01 crores (31.92%) in 2004-05 to 11466.88 crores (33.78%) in 2012-13.

In terms of numbers of cattle and buffalo population in state has declined marginally from 2003 to 2007 at growth rate of -0.42 and -0.041 respectively.

Punjab is fast emerging a quality supplier of meat products due to availability of various varieties of quality animals for meat production. Meat production in Punjab was 122.12 (000 tonnes) as compared to 1103.85 (000 tonnes) in India in 2012-13) according to Ministry of Agriculture, Government of India. Similarly, Punjab has growing trends in production of eggs and the average annual growth rate of eggs production in Punjab is higher than the national average.

Table VI: Production of livestock products in Punjab from 2007-08 to 2011-12

Year	Egg (lakh)	Meat	Wool (in 000 kg)
2007-08	37914	109	435
2008-09	36790	108	451
2009-10	32828	147	485
2010-11	35449	175	506
2011-12	36030	181	532

Source: Basic Animal Husbandry and Fisheries Statistics, Ministry of Agriculture, 2013

Table VI indicates that there has been growing trends in production of meat and wool production which increased at 10.68 percent and 4.11 percent respectively.

This acceleration witnesses high export potential in livestock of Punjab. The significant achievements have been possible only due to massive infrastructure in form of veterinary hospitals and dispensaries in the state that increased from 761 and 798 in 1980-81 to 1367 and 1487 respectively in 2011-12. Artificial inseminations have increased at rate of 5.22 percent in cattle and 8.22 percent in buffaloes annually.

X. DIARY SECTOR

Punjab is one of the leading producer of milk with dairy production of 26 millions kg per day. There are 79 milk plants and chilling centres in the state. Around 200 integrated buffalo development centres have also been set up to cover about 1600 villages across the state so as to tap the potential of dairy sector. The total milk production increased from 9282 thousand tonnes in 2007-08 to 9551 thousand tones in 2011-12 witnessing growth of 0.57 percent per annum. Since milk being main product, the trends in average dairy milk yield were examined species-wise.

Table VII: Trends in average daily milk yield in Punjab from 2007-08 to 2011-12 (kg/day)

Year	Cows		Buffalo	Goat
	Crossbred	Indigenous		
2007-08	9.01	4.24	7.81	1.15
2008-09	10.41	6.01	8.50	1.15
2009-10	10.54	5.64	8.51	1.15
2010-11	10.95	6.50	8.59	1.48
2011-12	10.95	6.52	8.64	1.46

Source: Basic Animal Husbandry and Fisheries Statistics, Ministry of Agriculture (GOI), 2013

The average crossbred cow milk yield in the state increased from 9.01 kg to 10.95 kg from 2007-08 to 2011-12 at an annual growth rate of 3.98 percent while the average indigenous cow milk yield increased from 4.24 kg in 2007-08 to 6.25 kg at an annual growth rate of 8.99 percent. The perception availability of milk in Punjab is also much higher as compared to All India Level. It was 915 grams per day in Punjab as compared to 273 grams per day in India for 2009-10. In 2013-14, it has gone upto 971 grams per day in Punjab.

Table VIII : Productions and per capita availability of milk

Year	Milk production ('000 tonnes)	Per capita availability of milk (grams per day)	Pet capita availability of milk (grams per day)
	In Punjab	In Punjab	In India
2009-10	9389	915	273
2010-11	9423	931	281
2011-12	9551	944	290
2012-13	9724	961	N.A.
2013-14	10014	971	N.A.

Source: Comtrade 2014 & National Dairy Development Board 2014

The poultry service centres have remained same since 1980-81 to 2011-12 i.e. 58 only (Statistical Abstract of Punjab, 2012)

XI. FISHERIES

The state of Punjab is having the highest average fish production of 6560 kg ha⁻¹ against national average of 3000 kg ha⁻¹. There are 868 kms of rivers and 4370 hectare reservoirs and 16585 kms of canals as notified water area with the view to develop professionally qualified human resource in fisheries through education and training in fisheries, to conduct region specific research in fisheries and to provide advisory and consultancy services, a college of fisheries has been established at GADVASU campus at Ludhiana.

Table IX : Trends in production of fisheries on Punjab

Year	Fish production (in 000 tonnes)	Growth rate (%)
2004-05	77.70	-7.11
2005-06	85.64	10.22
2006-07	86.70	1.24
2007-08	78.73	-9.19
2008-09	86.21	9.50
2009-10	122.86	42.51
2010-11	97.04	-21.02
2011-12	97.62	0.60
2012-13	99.13	1.55

Source: <http://www.punjabstat.com/agriculture/2/fisheries/101>

The farmers are rapidly adopting intensive fish culture in ponds and tanks on modern scientific lines through composite fish culture of fast growing species. The fish production is accelerating with growth rate of 1.55 percent in 2012-13 although and was highest in 2009-10.

XII. EXPORTS OF PUNJAB

The Punjab producers exports tremendous volumes of agro products out of their huge production. The percentage contribution of agro products exports in Punjab total production is increasing indicating healthy sign for economy which has its roots in agriculture.

Table X: Punjab Agro Exports as percentage of Total Agro production and Total exports

	2009-10	2010-11	2011-12	2012-13	2013-14
Punjab Agro Exports (Rs. Crores)	3698	3975	6390	10322	11098
Sectoral contribution of agriculture in state GDP (at 2004-05) prices (Rs. Crores)	34694	35267	35905	35953	36113
Punjab total exports (Rs. Crores)	12962	19436	28256	35311	42729
Percentage of agro exports as Punjab agro sector (%)	10.65	11.27	17.29	28.70	30.73
Percentage of Punjab agro product as Punjab total exports	28.52	20.45	22.61	29.23	25.97

Source: Director General of Commercial Intelligence and Statistics, Kolkata, 2014

The study reveals that percentage of agro exports as Punjab agro sector has increased from 10.65 percent to 30.73 percent from 2009-10 to 2013-14 indicating 188 percent rise.

XIII. SUGGESTIONS

Punjab exports in order to tap greater share in international markets must plan and strategize accordingly. Although share of primary sector in Punjab's exports is declining but certain suggestions could be worked upon to achieve positive results.

- Ploughing back the profits from sale of wheat, basmati rice, other cereals, oilseeds, cotton, fruits, vegetables, honey and other animal husbandry products in international market could help in employment generation and breathe taking results.
- Exports of cereals from Punjab must explore further export opportunities in the markets of China (6.8%), USA (5.6%), Malaysia (4.0%), Japan (3.8%), France (2.9%), Yemen (2.8%) and Saudi Arabia (10.9%) as these nations are largest imports of cereals due to lakh of favourable climatic conditions in their own countries. Exporters from Punjab have greater advantage in these nations and must work upon them.
- Although livestock sector of state of Punjab contributes 31-34 percent of total value of agricultural produce but still remedial measures should be undertaken to strengthen animal health and veterinary services in the state for developing strong livestock economy.
- Export promotion councils/ state agro marketing board should work effectively to get long term consistent contractual agreements for the purchase of produce by international buyers. These board must act as an significant link between domestic produces and internationals buyers.
- To ensure rational use of resources and improving resource use efficiency, farm management approach has to be effective only and it must be sustainable practice. Sustainability here is ability of farmland for produce food and other products to satisfy human need without compromising future needs. It will help in building greater export potential.

XIV. CONCLUDING REMARKS

To ensure sustainability and profitability of Punjab primary sector the policy makers strategies by grouped discussion of agricultural scientists, entrepreneurs, investors and industrialists. They need to be more focused to assess, appraise and analyze the factors that hinder Punjab's primary sector growth. Although agriculture has shown spine shaking output but little more efforts could lead breathe-taking results for entire nation.

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