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Export Potential at the State-Level:
A Case Study of Karnataka

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Abstract

Different regions of India have different priority sectors and their requirements are different in the diversified framework. In order to fulfill this, each region will engage in trade with different countries or other regions within India. In case of international trade, it is interesting to observe that, although any particular region (say a state) cannot individually trade with other countries, the trade basket of India, as a whole, will reflect different regional priorities of India. In this framework, it is challenging to find out the regional export potential in a country like India. Data regarding regional trade is not much accurate, since export data of regions are computed on the basis of the port-wise data. In this connection, a methodology is proposed in this paper, to estimate the regional export potential, considering Karnataka as a case. The existing production basket has been matched with the potential export items from India for this purpose. At the end, we shift our emphasis to the products which have export potential but have not yet achieved high export values. Considering tariff, non-tariff barriers and import penetration ratio for different countries we identified high, low, and medium potential products for the state from this set of products. It has been observed that some agricultural products like sunflower, groundnut, onion, turmeric, and silk, electrical machinery, precision engineering products have high unrealized export potential from the state to different countries. Identification of the basis of this unrealized export and the ways to enhance the export of such products were arrived at through the survey of various stakeholders.

JEL classification: F14

Keywords: Export Potential, Comparative Advantage, Shift Share

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1. Introduction

The trade potential of a country depends on a number of parameters. Some of the major demand side parameters include income of the trading partners, exchange rate movements, price movements in domestic as well as foreign countries etc. On the other hand, supply side parameters affect cost of producing export products. Cost of inputs, managerial efficiency, incentives provided by government schemes etc. affect the competitiveness of export products. Other than these some qualitative factors like macro policy in home and partner countries, trade arrangements (in the sense whether the countries are members of Regional Trading Agreements (RTAs)), trade barriers both tariff and non-tariff etc. also affects trade potential of a region. Trade potential at the regional level within countries may not differ from that at the country-level as far as demand side parameters are concerned since national and international factors affects all the regions equally. But the supply side parameters may give rise to differences in competitiveness of regions with respect to potential export products. Depending on the availability of resources and skills cost of producing the same product may differ across regions. Export potential would depend on the complementarities between the supply side and the demand side factors. For example, West Bengal may be a low cost producer of leather goods but such goods from India face a number of NTBs in target countries. In such a case the export potential may be lower for leather goods than other goods like Gems and Jewellery.

India, though a late entrant into the arena of RTAs, have intensified negotiations on this front in the new millennium. The country has already concluded 13 Trade

Agreements mostly with the developing countries and is in the negotiating process with 20 other nations. Preferential access to a number of countries having varying trade interests is a complex issue. The complexities increase further due to the diverse interest of the states within the country having different products of interest. For example, Punjab may have export interests in sports goods, whereas West Bengal may be more interested in leather goods while Karnataka is more interested in spices. During negotiations the Indian delegates must keep these differing interests in mind before finalization of product lists eligible for preferential access. Thus the export potential of states in terms of products they can export assumes a lot of interest in the current economic scenario.

Measuring export potential at the state-level in India is a difficult proposition. Data regarding regional trade is at best inaccurate. Export data of regions are computed on the basis of the port data. If a product originating in a particular state is channeled through a port located in another state, the export figures for the originating state may be undervalued. The reason for this may be that the state of origin code is not filled in most cases by the exporters themselves but by some clearing agents for whom the origin of a consignment does not bear any significant importance. Thus states without a coastline or a major port may be at a disadvantageous position and their exports may be undervalued.

In this paper we try to develop a methodology for finding potential export products from a state. The methodology may also be applied to find new exportable products from a state. We then apply the method to find out potential new export products for the state of Karnataka. Moreover, we also classify the products on the basis of their potential. The paper is organized as follows. In section 2 we discuss existing studies on the subject. Section 3 elaborates our methodology. Section 4 discusses the case of Karnataka and Section 5 concludes this paper.

2. Existing Literature

Wu (2003) applied an extended Hecksher-Ohlin model to compare the export performance among the Chinese regions. Variables like government spending, non-state sector development, and foreign direct investment has been included in the model and it has been observed that they affect import intensity positively. Infrastructure development and government spending also have a positive influence on export efficiency. State sector also plays an important role for boosting regional export potential, but the foreign direct investment does not necessarily have any positive influence on export efficiency. It is found that Chinese regions have on an average achieved above 70 per cent of their export potential during 1992-2001. Regional export efficiency indices were calculated and it has been shown that Chinese regions, in general, performed better in 1998-2001 than the period before 1998.

In Reddy et al (2003), nominal protection coefficients (NPCs), effective protection coefficients (EPCs), and domestic resource cost (DRC) were computed to measure trade competitiveness. Trade competitiveness was estimated using the three measures for rice in India using the data from Karnataka on the basis of importable hypothesis for the two periods, pre-liberalization (1985-86 to 1991-92) and post-liberalization (1996-97 to 2000-01). Trade competitiveness of a commodity reveals whether a country has an opportunity to engage in export trade. It was found that rice, which is the major crop in the state of Karnataka, had been largely competitive on an importable basis with its NPC values being below unity during the reference period. EPC estimates showed a value of greater than unity in only five years during the 17-year reference period, indicating that the state had protected the crop only in those years. However, for the reference period, the average EPC revealed that Karnataka is an efficient producer of rice. The estimates of DRC revealed that the state had a comparative advantage in rice production.

Barua and Chakraborty (2010) tried to find out the relationship between inter-regional inequality and trade openness in case of India. They found that regional inequality in India has been increasing in all components of income except for the primary sector. In these circumstances, while openness initially led to a rise in both income and manufacturing inequalities, there was clear evidence of a decreasing trend in inequality with increase in openness. In case of agriculture, this relationship was found to be just the opposite. Rising inequality in agricultural growth across Indian states significantly increased regional income inequality in India. Again any imbalance in infrastructure development within the country would result in a sustained increase in inter-regional inequality in this framework. But all these results have been drawn on the basis of a generalized measure of openness of a country and not regional openness.

Marjit et al (2007) proposes a Regional Trade Openness Index (RTOI) based on the comparison of production proportion of a state and the export/ import shares of India. The states had been ranked according to the rank correlation for a particular year for a particular state, in case of export. The same methodology has been followed in case of import but an inverse rank has been computed. A composite rank has been calculated from these two ranks (through the arithmetic mean of the two ranks), and this rank is actually the RTOI. This index has been further used to find out its relationship with regional disparity. It was found that states with relatively high levels of income are also those with greater exposure to trade and such a relationship has grown stronger over time.

Helmerts and Pasteels (2006) carries out the analysis through formation of a decision tree using four indicators: A) Trade potential at the sector level, based on the gravity equation specification, B) Trade flow analysis at the commodity level, C) Trade costs at the commodity level, and D) Supply and Demand conditions at the commodity level. It measured the trade potential at the sector

level using the International Trade Centre's (ITC) *TradeSim*¹ gravity model. Trade flow analysis at the commodity level indicates different parameters like current trade, indicative trade potentials (measured through the complementarities of trade between countries) and other parameters like average annual growth rates, unit value etc. It also takes into account the competitors in the exporting countries. The trade cost takes into account the import tariff, trade policy instruments and transportation costs. To assess the supply/demand conditions at the commodity level, the paper takes into account the quantitative production data, other production variables (like rate of utilization of production capacity, production efficiency etc.), product characteristics and consumer preference, FDI etc. It identified a few products where all the criteria have been satisfied. By the nature of the approach, it does not arrive at single numbers, indicating precisely the magnitude of export potentials, but at broad qualitative conclusions. Nevertheless, these qualitative assessments allow for identification of products that bear potential and to narrow down the products under analysis.

Douglas and Hipple (1997) calculated the Export Attainment Index, Export Potential Index and Export Performance Index. Export Performance Indices were used to indicate the relative level of export attainment versus its potential for each of the 8 metropolitan areas in Appalachia. It was found that only one of the eight regions has attained exports in excess of the amount predicted by the export potential index. The figures for two other metro areas suggest that they are both exporting at nearly the national average and may have little room for more export development. The other five metro areas have significantly less export activity than the export potential index would suggest. The degree of deficiency ranges between 6 to 8 percent less than the national average for the five other metro areas.

¹ ITC has developed *TradeSim* Gravity Model (an econometric model), with the specific objective of estimating bilateral trade potential of developing and transition economies with any of their partner countries.

Trade flow analysis was used to find the potential products and their markets by Krakoff (2003). The different non-tariff barriers and ad valorem duties were used to measure the real barrier to trade for South African exporters. Consumption and import penetration ratio was also estimated to identify the markets.

A range of methods and variables have been used to find the export potential at regional or country levels. As we have observed, in case of India, the literature has mainly concentrated on finding openness measures and then relating it to growth and development at the regional level. In contrast, this paper concentrates on export potential at the state-level. Regional priorities in terms of the goods they produce and consume results in differing trade potential. While negotiating with other countries for market access these varying regional priorities should be taken into consideration. This will go a long way in distributing the gains from trade evenly across regions. In this paper we propose a methodology which can find export potential at state-level through minimal use of published state-level data on exports (due to inaccuracy). This paper contributes by devising an objective way of finding new exportable goods at the state-level.

3. Methodology

To identify the potential product basket for exports, the products which have advantage in production in the state have been identified at the very first step. The production advantage has been calculated by considering Revealed Comparative Production Advantage Index for each product at the state level. This index shows the relative production of a particular product in a state compared to the relative production of the product at the national level. Thus if the index has a value greater than one for a particular product for a state, it shows that the state has a comparative advantage in producing that product. This may be due to resource availability, skills, policy incentives etc.

The formula for the index is given as follows:

$$\text{RCA (production)} = \frac{\frac{P_{iK}}{P_K}}{\frac{P_{iI}}{P_I}}$$

P_{iK} = Production of i-th commodity in State k

P_K = Total production (of all commodities) in State k

P_{iI} = Production of i-th commodity in Country I

P_I = Total production (of all commodities) in Country I

This index is a variant of Balassa's (1965) Revealed Comparative Advantage (RCA). Here production figures have been used instead of the export figures. Further the products with RCAP greater than one are matched with production volumes to find out the set of products having export potential from the state. This has been done to eliminate the products with RCAP greater than one but low production volumes.

To identify the potential commodities from the demand side, we have used the country-level export data (since these factors should be same across regions). Shift Share analysis (David L. Huff and Lawrence A. Sheer 1967) has been performed using the export data to find out the potential export products from the demand side. Shift-share analysis requires measurements on a variable of interest (an exported product) for each member of the group (exporting countries) at the beginning and end of a specified period of analysis. The growth rate (GR) of the item i can be measured as:

$$\Delta V_i = V_{i,t} - V_{i,t-1}$$

Where $V_{i,t}$ is the export in year t, and

$V_{i,t-1}$ is the export in year t-1 for an item i.

Now the growth rate of all items (k) is the ratio of total value of terminal time periods to the total value at the initial time period:

$$k = \frac{\sum_{i=1}^n V_{i,t}}{\sum_{i=1}^n V_{i,t-1}}, \text{ where } i = 1 \text{-----} n.$$

The expected value of the growth is the product of growth rate of all items and the value at the initial time period:

$$E(V_{i,t}) = kV_{i,t-1}$$

The expected change of the value of a growth variable for a particular item in a given time period is the difference between the expected value and the actual value for the item at the end of the initial time period. If $E(\Delta V_i)$ is the expected change, then:

$$E(\Delta V_i) = E(V_{i,t}) - V_{i,t-1}$$

The difference between the actual change and the expected change is the net shift. So, if Net Shift is denoted as N_i , then

$$N_i = \Delta V_i - E(\Delta V_i)$$

Now the sum of positive net shifts or the sum of negative net shifts S represents the total absolute net shift.

$$S = \frac{\sum_{i=1}^n |\Delta V_i - E(\Delta V_i)|}{2}$$

The relative gain or loss in the value of a growth variable for a particular product i , in a given time period is defined as the percentage net shift (P_i). So,

$$P_i = \frac{N_i}{S} (100\%)$$

This represents the percentage of the total gain or total loss of market share accounted for by each product (i). The products showing positive net shift are

identified as potential export products. Product list thus obtained from demand and supply side considerations can be matched to find out the potential export products from a state. Thus export potential of a product (i) at the state (j) level (EXP_{ij}) is a function of both demand (D) and supply (S) side factors.

$$EXP_{ij}=f_{ij}(S_{ij}, D), i=\text{product}, j=\text{state}.$$

Further, this list may be matched with the list of exported products from the state to find out the new products whose exports are below potential. Moreover, analyzing the tariff and non-tariff barriers faced by these products in the target markets can help to determine their exportability. Thus some products may have high export potential based on RCAP, production volumes and gain in market share but the barriers they face in the target markets may restrict their entry in the short run.

One problem associated with this methodology is that while considering the supply side factors affecting export potential, we have not considered exportable surplus of the products. This implies that a product may be produced efficiently in one state but may be entirely consumed in that state itself or within the country. Hence such a product will not be exported even if it has a considerable demand in the world market. Example of such a product may be mango, which is produced in large quantities in Karnataka but is not exported at all. Since we have dearth of consumption data for such purpose, secondary sources would not be of much help in calculating exportable surplus. To solve this problem a survey has to be carried out among producers, exporters, policy makers, commodity boards etc. in an attempt to eliminate those products which according to their perception do not have exportable surplus. Such a survey may additionally help to find out other problems faced by exporters, in destination countries and producers within the country in terms of barriers to trade, lack of infrastructure etc.

4. Application of the Methodology: The Case of Karnataka

Karnataka has a long tradition of overseas trade. Historically, Karnataka has been a major exporter of commodities like Coffee, Spices, Silk, Cashew nuts, Handicrafts and Agarbatties. In the last two decades the state has emerged as a major player in the export of Engineering goods, Readymade Garments, Leather goods, Chemicals, Minerals and Ores etc. Since the second half of the 1990's, Karnataka has carved out a niche for itself in the global market as the knowledge and technology capital of the country. The State has made rapid and spectacular strides in the new economy. Information Technology, Bio-Technology and State of the art Research and Development Institutions have given Karnataka a pride of place as a frontier knowledge state in India. Indeed Karnataka has emerged as a leader in the new economy in this part of the World.

It has been observed that Karnataka has production advantage in those commodities where opportunities are increasing in the international markets. But somehow Karnataka could not harness the benefits thrown up by these new developments. One of the reasons for such phenomenon may be that there are certain trade barriers in the destination countries which are limiting market entry in such products.

4.1. Secondary Analysis

To identify the products (from supply side) for Karnataka both comparative production advantage and the high product values have been considered. The production data have been collected from Annual Survey of Industries, 2003-04 (three digit level NIC '98 Code) as well as the Agricultural Statistics, 2002-03. Top twenty commodities satisfying this criterion have been considered for further analysis.

On the other hand to identify the potential commodities from the demand side, we have taken the Indian export data for the years 2000-01 and 2005-06. Four digit data from COMTRADE database has been considered. Shift share method described in the previous section has been used for identifying the potential products.

The top 80 commodities, which have gained high market share, have been selected for further analysis. Now, if we match these products with the set of products, which have high production value/advantage in Karnataka, we will obtain the basket of commodities where Karnataka has export potential. The important point to note here is the difference between product coding in case of production data and export data. In case of the production data we have used NIC ('98) 3 digit code and for export data the HS coding system has been used.

Two related but distinct types of international classification have been used while classifying products: a classification based on economic activities and a classification based on goods and services resulting from these activities. The NIC classification follows activity based classification whereas HS follows product based classification. Thus a one-to-one correspondence between the codes under the two systems is difficult to establish. To take care of these shortcomings it was decided that all classifications of activities or goods should use HS as the building blocks whenever revisions are made to the existing coding systems (Annual Survey of Industries). India was one of the first countries to embrace the HS coding system in 1988. While developing the NIC-1998 classification the steering committee decided that among other principles, "Every 4/5 digit category of the NIC may be so structured that one or more subheading(s) of the HS (applicable only to transportable goods) can be assigned as a whole to only one such category in the NIC to the extent possible". Thus three digit NIC could be matched with 4 or higher coding levels

of HS. In our study we have used the updated concordance table² while matching the manufacturing products/activities under the two classifications. For the agricultural products we have used same method but, without any concordance established between the two classifications. This was due to the absence of any such concordance table for agricultural products. If the product has any production advantage for Karnataka we have matched it with the products obtained from shift share approach. Now it may so happen that through shift share, the product category shows potential for exports. If the activity code under NIC falls under the same category (whether exactly matching or not) we say it has potential for exports. For example if the product category obtained from shift share is horticulture and the product obtained from production/ production advantage is mango, then mango is identified as a potential export product from Karnataka.

Appendix 1 lists fifty-eight products obtained by applying our methodology. These products mainly categorized under animal products, fruits, chemical products, metals, electronic equipments and transport equipments. Now, if India has the potential markets for these products, it is obvious that Karnataka has both the market opportunities and production facilities for these products, since the products are being produced in significant quantity in Karnataka both in relative and absolute terms.

In order to find out whether these products are actually being exported from Karnataka in significant amounts, comparison with State Export Data of Karnataka for the year 2005-06 was done. Appendix 2 lists the products having unrealized export potential from Karnataka. It turns out that mainly metals and transport equipments are showing unrealized export potential from the state.

² The trade industry concordance table for India was developed by Debroy and Santhanam (1993). They matched each of the three digit codes of NIC-1987 with various codes of ITC (International Trade Classification). Later on Veeramani (2003) have used this concordance table to find out the relationship between India's industry structure and export. The concordance table was later updated to include NIC 98 only for selected manufacturing products.

Now, mapping is not available from HS Code to NIC Code for agricultural products. So, for agricultural product, the production data is considered separately and matched with the potential exportable products. This helps in the identification of potential agricultural products as has been done in case of industrial goods.

Table 1: Potential exportable agricultural products from Karnataka derived from secondary analysis

Sl. No.	Products
1.	Coffee, whether or not roasted or decaffeinated; coffee husks & skins; coffee substitutes containing coffee in any proportion
2.	Rape or colza seeds whether or not broken
3.	Cucumbers & gherkins fresh or chilled
4.	Fruit & nuts preserved by so2 gas/other preserving solution unsuitable for immediate consumption

Source: Based on Author's calculations on WITS & CSO Data

The products have been matched with the state level trade data of 2005-06 and the products which have not been exported (having unrealized export potential) are as follows:

Table 2: Agricultural products having unrealized export potential from Karnataka derived from secondary analysis

Sl. No.	Products
1.	Rape or colza seeds whether or not broken
2.	Cucumbers & gherkins fresh or chilled
3.	Fruit & nuts preserved by so2 gas/other preserving solution unsuitable for immediate consumption

Source: Based on Author's calculations on WITS, CSO & VITC Data

4.2. Primary Survey

Now, both the industrial products and the agricultural products identified through the secondary analysis have been verified through primary survey. The primary survey has been conducted among the government officials, producers/exporters, trade promotion bodies and commodity boards. The districts for the survey have been selected based on the number of exporters in the districts for the identified set of products from the secondary analysis. The selected districts are Belgaum, Hubli, Bellary, Mangalore and Simoga. Based on a stratified random sampling approach the districts were first selected and then random samples were drawn from each group of stakeholders. The exporters have been selected from each group of products of importance in each district.

The questionnaire was kept simple and short to ensure good response rates, with most of the information to be furnished by simply checking boxes to indicate ranking of the advantages or disadvantages on a Likert scale³. The sample consists of 35% exporters, 9% producers, 21% government officials and 35% commodity boards/export promotion bodies.

In addition to the general use of Likert Scales in the questionnaires, some questions were framed to allow multiple responses to a range of categories and some were framed to allow free-text answers. The multiple response format was used where the scope for number of responses were many. Here the respondent can select the appropriate answers from different options Likert scale enabled us to quantify the response of exporters on a common scale for the parameters like infrastructure facilities, export policies etc.. On the other hand questions like "Can you prescribe some general measure which can be implemented to increase the exports from Karnataka?" require multiple answers or suggestions.

³ A Likert Scale usually involves assigning between four and ten categories to a numeric scale for indicating one appropriate response. In our case a Likert scale ranging in value from 1-5 has been used with rating improving from highly inadequate (1) to low (2), medium (3), high (4), and excellent (5) has been used. Weighted average for each factor was worked out by using ranks 1-5.

The free text format was used in several places as, such questions required open-ended answers. The use of this structure also facilitated subsequent data entry and analysis. The final list is provided in Table 3 below with deletion of some products and addition of some new products. For example products like mango has been deleted from the list of products having unrealized export potential from Karnataka, as it is having high level of domestic consumption, which could not be captured through the secondary analysis. Again, Handicrafts has been added in the list as it is having good potential from the state as per the availability of skill. It could not be captured through secondary analysis, as the potential has not been realized yet.

Table 3: Products having unrealized export potential from Karnataka as verified from primary analysis

Sl. No	Product	Sl. No	Product
1	Jowar	17	Horticulture Crops
2	Maize	18	Floriculture
3	Ragi	19	Tobacco & Related Products
4	Arhar	20	Coca & Chocolates
5	Horse gram	21	Silk
6	Groundnut	22	Handicrafts
7	Coconut	23	Textiles Products
8	Sunflower	24	Publishing, Printing And Related Activities
9	Sugar	25	Medical, Precision And Optical Instruments
10	Drugs & Narcotics	26	Motor Vehicles, Trailers And Semi-Trailers
11	Cardamom	27	Electrical Machinery And Apparatus, N.E.C
12	Dry Chillies	28	Basic Metals
13	Dry Ginger	29	Aerospace
14	Turmeric	30	Areca nut

Table 3: Products having unrealized export potential from Karnataka as verified from primary analysis (contd)

15	Banana	31	Cashew nut
16	Onion		

Source: Based on Author's calculations on WITS, CSO & ASI Data

4.3. Destinations of the Major Exportable and its Problems

Analysis has been carried out to identify the countries where the major exportable products identified for the state, are being sent from India. The export data for India for the year 2005-06 has been used for this purpose. Major five destination countries have been selected for each product. Again the MFN⁴ Applied Tariff (Average for each group of commodities) has been used as tariff barriers. This will give us a basic overview of the destination countries and also about their market openness. Further, the Import Penetration Ratio⁵ (import as a percentage of GDP) has been calculated through the import data of the destination countries obtained from WITS and the GDP data of specific destination countries from World Bank database (2006). The possibility of penetration in the destination countries can be measured with the help of this index. Appendix 3 lists the major destinations along with tariff levels, extent of openness in those economies and India's FTA (if any) with those countries. Appendix 4 lists the major non-tariff barriers for the potential exportable in major destinations.

The products are then classified in to three different categories:

- ✦ Products having high export potential,
- ✦ Products having medium export potential, and

⁴ Most Favoured Nation tariff is applicable for all countries as per WTO regulations.

⁵ This ratio illustrates how far an economy depends on imports. It may be calculated for an individual industry, but we measure this ratio for the whole economy.

✦ Products having low export potential

This classification is primarily based on three types of entry barriers in a country for the different products, together with the exporters' perceptions. They are:

- ✦ MFN Applied Tariff
- ✦ Import Penetration Ratio
- ✦ Non-tariff Barriers

Products which are facing low MFN Applied Tariff and high Import Penetration Ratio in a particular country will indicate a high export potential. Less stringent non-tariff barriers will be an added advantage for the product in that particular country. High MFN Applied Tariff and low Import Penetration Ratio with stringent non-tariff barriers will indicate a less potential for a product. For example, as turmeric has 4.7% tariff rate in UAE and it is having 62.31% import penetration ratio, it has a high potential in UAE. But ginger is having 5.3% tariff in Spain and 26.96% import penetration ratio, it have medium potential. The classification of products is given as below:

Table 4: Classification of Products based on Degree of Potentiality

High Potential	Medium Potential	Less Potential
Safflower (Singapore)	Sunflower (Germany)	Jowar
Groundnut (Singapore)	Tobacco (Germany)	Maize
Onion (Malaysia)	Ginger (Spain)	Ragi
Turmeric (UAE)	Flowers (Germany)	Cardamom
Silk (Hong Kong)		Sugar
Elect Mach (Hong Kong)		Banana & other Fruits
Precision engg. (Singapore)		Paper print equipment etc.

Source: Based on Author's calculations on WITS, ASI, CSO, WTO, World Bank, Ministry of Commerce, GOI Data

5. Conclusion

The paper has developed a methodology to identify potential export products at the state-level. It has tried to overcome the shortcomings in export data at the state-level through usage of production data at state-level and export data at the country level. It then complemented the secondary analysis through primary survey of stakeholders to arrive at a realistic set of products which have export potential from the state. Most of the products have been captured through the secondary analysis, other than the products which have been excluded for the high level of consumption in the state. The products which have been identified as products having high potential should be the immediate focus of export promotion activities in the state. It has been found that products like motor vehicles, electrical machinery, aerospace industry components, handicraft, some horticulture, and floriculture products are of export interest for the state of Karnataka. While from secondary methodology all items could be captured, handicraft items has been added in the list only after the primary survey. Specific products, silk based products, electrical machinery, precision engineering products, is having high export potential in the international market. Ginger, flower, tobacco have medium level of potential in the international market. Products having middle or low potential must be kept in mind during negotiations. These products face a variety of barriers in the destination countries. Thus the tariffs can be negotiated and non-tariff barriers, if any, may be discussed during the deliberations.

Further, logistical issues, the brand preference of the consumers in the destination countries may also be taken into consideration to find out the most exhaustive set of potential exportable items. The survey among other kinds of stakeholders like logistic firms (both India & abroad), port authorities (both India & abroad), foreign government officials (in embassies) may throw newer insights into the problem.

Appendix

Table A1: Potential exportable manufacturing products from Karnataka from secondary analysis

Sl. No	Product Code	Products
1	0201	Meat of bovine animals, fresh or chilled
2	0812	Fruit & nuts preserved by so2 gas/other preserving solution unsuitable for immediate consumption
3	1509	Olive Oil & Its Fractions whether or not Refined But Not Chemically Modified
4	1520	Glycerol, Crude; Glycerol Waters & Lyes
5	1703	Molasses resulted from the extraction/refining of sugar
6	2806	Hcl (hydrochloric acid) chlorosulphuric acid
7	2845	Isotopes; Compounds Inorganic/Organic, Of Such Isotopes whether or not Chemically Defined
8	2847	Hydrogen Peroxide, whether or not Solidified With Urea
9	2911	Acetals & Hemiacetals, whether or not With Other Oxygen Function and Their Halogenated ,Salphonated Nitrated or Nitrosated Derivatives
10	3601	Propellant Powders
11	3702	Photographic Film In Rolls, Sensitised, Unexposed, Of Any Material Other Than Paper, Paperboard Or Textiles; Instant Print Film In Rolls, Sensitised, Unexposed
12	3705	Photographic plates & films, exposed & developed other than cinematographic
13	3805	Gum, Wood Or Sulphate Turpentine And Other Terpenic Oils Produced By The Distillation Or Other Treatment Of Coniferous Woods; Crude Dipentene; Sulphite Turpentine And Other Crude Para-Cymene; Pine Oil Containing Alpha-Terpineol As The Main Constituent
14	3903	Polymers of styrene in primary forms
15	4902	Newspapers journals & periodicals, whether or not illustrated or containing advertising materials
16	4903	Children's picture drawing or coloring books
17	4906	Plans and drawings for architectural, engineering, industrial, commercial, topographic & similar purposes; hand-written texts; photo reproductions on sensitized paper & carbon copy
18	5003	Silk waste (including cocoons not suitable for reeling yarn waste & granite stock)
19	5113	Woven Fabrics Of Coarse Animal Hair/Of Horse Hair
20	5210	Woven Fabrics Containing <=200g/M2
21	5311	Woven Fabrics Of Other Vegetable Textile Fibres; Woven Fabrics Of Paper Yarn

Table A1: Potential exportable manufacturing products from Karnataka from secondary analysis (contd)

22	5405	Artificial monofilament of 67 decitex or more and of which no cross-sectional dimension exceeds 1mm; strip etc (for example artificial straw)of artificial textile materials of width ≤ 5 mm
23	5506	Synthetic staple fibres carded combed/ otherwise processed for spinning
24	5514	Woven fabrics of synthetic staple fibres containing < 85% by wt of such fibres mixed mainly/solely with cotton of a wt exceeding 170 g/m ²
25	5801	Woven Pile Fabrics & Chenille Fabrics
26	5802	Terry Toweling & Similar Woven Terry Fabrics; Tufted Textile Fabrics
27	5803	Gauze Other Than Narrow Fabrics
28	6701	Skins & other parts of birds with their feathers or down feathers & parts thereof downs& articles
29	6703	Human hair dressed thinned bleached/otherwise worked wool/other animal hair/other textile materials, for making wigs/the like
30	6704	Wigs false beards, eyebrows & eyelashes, switches etc of human/animal hair/or of textile materials; articles of human hair
31	7112	Waste and scrap of precious metals/metal clad with precious metal waste & scrap containing precious metal/metal compound used principally for the recovery of precious metal
32	7115	Other Articles Of Precious Metal Or Of Metal Clad With Precious Metal
33	7226	Flat-Rolled Products of a width of less than 600 mm.
34	7306	Other tubes/pipes & hollow profiles(for example open seam/welded, riveted/similarly closed), of iron/steel
35	7315	Chain & parts thereof of iron or steel
36	7504	Nickel powders & flakes
37	7605	Aluminium wire
38	8004	Tin plates sheets strips of thickness > 0.2 mm
39	8006	Tin tubes pipes and tube or pipe fittings (for example couplings elbows sleeves)
40	8109	Zirconium & articles thereof including waste & scrap
41	8210	Hand-operated mechanical appliances weighing ≤ 10 kg. Used in preparing, conditioning, serving food/drink
42	8444	Machines for extruding, drawing, texturing or cutting man-made textile materials
43	8469	Typewriters excluding printers
44	8502	Electric generating sets & rotary converters
45	8503	Parts suitable for use solely/principally with the machines of heading no.8501 and 8502
46	8506	Primary cells & primary batteries

Table A1: Potential exportable manufacturing products from Karnataka from secondary analysis (contd)

47	8521	Video recording/reproducing apparatus
48	8523	Prepared unrecorded media for sound recording/similar recording of other phenomena
49	8707	Bodies(including cabs),for the motor vehicles of headings 8701 to 8705
50	8710	Tanks & other armored fighting vehicles, motorized, whether or not fitted with weapons & parts of such vehicles
51	8804	Parachutes(including dirigible parachutes & para gliders) rot chutes; parts thereof & accessories thereto
52	8805	Aircraft launching gear; deck arrestor/similar gear; ground flying turners; parts flying turners and parts of these articles
53	9014	Direction finding compasses; other navigational instruments and appliances
54	9015	Surveying, hydrographic, oceanographic, hydrological, meteorological/geophysical instruments & appliances, excluding compass; rangefinders
55	9201	Pianos including automatic pianos harpsichords
56	9207	Musical instruments, the sound of which is produced/must be amplified, electrically (for example organs, guitars, accordions)
57	9306	Parts and accessories of other fire arms of war & parts thereof; cartridges & other ammunitions & projectiles & parts ,including shot & cartridge wads
58	9615	Combs, hair-slides & the like; hairpins, curling pins, curling grips, hair-curlers & the like

Source: Based on Author's calculations on WITS & ASI Data

Table A2: Manufacturing products having unrealized export potential from Karnataka from secondary analysis

Sl. No.	Product Code	Products
1	7305	Other tubes pipes,(e.g. Welded, riveted etc) having circular cross section, the external diameter of which exceeds 406.4mm, of iron/steel
2	7401	Copper mattes; cement copper (precipitated copper)
3	7404	Copper waste & scrap
4	7408	Copper wire
5	7409	Copper plates, sheets & strip of a thickness>0.15mm
6	7416	Copper springs
7	7505	Nickel bars, rods, profiles & wire
8	7507	Nickel tubes, pipes & tube or pipe fittings(e.g. Couplings, elbows, sleeves)
9	7609	Aluminium tube or pipe fittings (for example couplings, elbows, sleeves)

Table A2: Manufacturing products having unrealized export potential from Karnataka from secondary analysis (contd)

10	7801	Unwrought lead
11	7803	Lead bars, rods, profiles & wire
12	7804	Lead plates, sheets, strip, foil, powder & flakes
13	7901	Unwrought zinc
14	7904	Zinc bars, rods, profiles and wire
15	8001	Unwrought tin
16	8003	Tin bars rods profiles and wire
17	8417	Industrial or laboratory furnaces and ovens, including incinerators, non-electric
18	8713	Invalid carriages, whether or not motorized/otherwise mechanically propelled
19	9007	Cinematographic cameras & projectors, whether or not incorporating sound recording/reproducing apparatus
20	9305	Parts & accessories of article of heading 9301-9304
21	9508	Roundabouts, swings, shooting galleries & other fairground amusement; traveling circuses, travelling menageries & traveling theatres
22	9611	Date; sealing/numbering stamps(including devices for printing/embossing labels),designed for operating in hand; hand-operated composing stocks & hand-printing set
23	9618	Tailors' dummies and other lay figures; automata and other animated displays used for shop window dressing
24	9701	Hand paintings drawings & pastels, excl handprint/hand decorated articles; collages & similar decorative plaques

Source: Based on Author's calculations on WITS, ASI & VITC Data

Table A3: Destinations of major exportable products, applied MFN tariff (average) & import penetration ratio

Sl. No.	Products	Major Destinations	MFN Applied Tariff (Average)	Import Penetration Ratio (Import As A % Of GDP) Of Major Destinations	FTA With India
1.	Jowar	Sudan	(Not a member of WTO)	-	
		Benin	13.4	18.72	
		Saudi Arab	3.5	-	
		South Africa	9.7	26.98	
		UAE	3.5	62.31*	
2.	Maize	Bangladesh	15.2	-	SAFTA
		Sri Lanka	23.7	-	SAFTA
		Thailand	19.4	61	ASEAN
		Philippines	10.9	-	ASEAN
		South Africa	9.7	26.98	

Table A3: Destinations of major exportable products, applied MFN tariff (average) & import penetration ratio (contd)

3.	Ragi	UAE	3.5	62.31*	
		Saudi Arab	3.5	-	
		Egypt	22.8	-	
		Yemen	(Not a member of WTO)	25.84	
		UK	25.6	25.57	
4.	Safflower	USA	4.6	14.54	
		Singapore	0	180.56	ASEAN
		Belgium	5.9	90.25	
		Mexico	12.8	30.52	
		UK	5.9	25.57	
5.	Sunflower	UK	5.9	25.57	
		Germany	5.9	31.73	
		Pakistan	14.8	23.15	SAFTA
		Netherlands	5.9	50.41	
		China	11	26.92	APTA
6.	Groundnuts	Indonesia	5.1	-	ASEAN
		Malaysia	3.8	87.18	ASEAN
		Philippines	9.4	-	ASEAN
		UK	11.8	25.57	
		Singapore	0	180.56	ASEAN
7.	Tobacco	Russia	(Not a member of WTO)	13.96	
		Belgium	20.2	90.25	
		UAE	41.7	62.31*	
		Germany	20.2	31.73	
		Vietnam	66.6	-	ASEAN
8.	Onion	Bangladesh	11.2	-	SAFTA
		Malaysia	0.6	87.18	ASEAN
		Sri Lanka	24	-	SAFTA
		UAE	3.3	62.31*	
		Pakistan	8.7	23.15	SAFTA
9.	Ginger	Bangladesh	11.2	-	SAFTA
		Saudi Arab	4.6	-	
		UK	5.3	25.57	
		USA	5	14.54	
		Spain	5.3	26.96	
10.	Turmeric	UAE	4.7	62.31*	
		USA	1.1	14.54	
		Bangladesh	11.2	-	SAFTA
		Japan	6.3	13.34	
		UK	5.3	25.57	
11.	Cardamom	UAE	4.7	62.31*	
		Saudi Arab	4.6	-	
		Pakistan	8.7	23.15	SAFTA
		Japan	6.3	13.34	

Table A3: Destinations of major exportable products, applied MFN tariff (average) & import penetration ratio (contd)

		USA	1.1	14.54	
12.	Sugar	Pakistan	13.3	23.15	SAFTA
		Sri Lanka	18.2	-	SAFTA
		Bangladesh	25	-	SAFTA
		Indonesia	8.3	-	ASEAN
		Portugal	32.9	34.63	
13.	Banana	UAE	3.3	62.31*	
		Saudi Arab	3.3	-	
		Kuwait	3.3	-	
		Bahrain	3.3	72.40*	
		Nepal	12.9	-	SAFTA
14.	Fruits	USA	5	14.54	
		Netherlands	11.8	50.41	
		UAE	3.3	62.31*	
		UK	11.8	25.57	
		Saudi Arab	3.3	-	
15.	Flowers	Japan	6.3	13.54	
		USA	1.1	14.54	
		UK	5.3	25.57	
		Netherlands	5.3	50.41	
		Germany	5.3	31.73	
16.	Coconut & Cashew nut	USA	1.1	14.54	
		Netherlands	11.8	50.41	
		UAE	3.3	62.31*	
		UK	11.8	25.57	
		Japan	12.9	13.54	
17.	Silk	USA	7.9	14.54	
		Hong Kong	0	176.9	
		Italy	6.6	23.71	
		UK	6.6	25.57	
		Spain	6.6	26.96	
18.	Apparel	USA	7.9	14.54	
		Germany	11.5	31.73	
		UK	11.5	25.57	
		France	11.5	23.75	
		Italy	11.5	23.71	
19.	Paper	Sri Lanka	13.8	-	SAFTA
		Nigeria	13.4	-	
		USA	0.4	14.54	
		UK	1.1	25.57	
		UAE	4.8	62.31*	
20.	Print Equipments	UK	4.6	25.57	
		USA	2.8	14.54	
		Sri Lanka	5.3	-	SAFTA
		UAE	4.5	62.31*	
		Ghana	--	41.31	

Table A3: Destinations of major exportable products, applied MFN tariff (average) & import penetration ratio (contd)

21.	Iron & Steel	Russia	(Not a member of WTO)	13.96	
		Ukraine	(Not a member of WTO)	-	
		Korea	4.8	34.84	APTA
		UK	1.9	25.57	
		USA	1.7	14.54	
22.	Automobiles	USA	3.1	14.54	
		South Africa	6.1	26.98	
		Sri Lanka	9.9	-	SAFTA
		Italy	4.1	23.71	
		UK	4.1	25.57	
23.	Aerospace	France	4.1	23.75	
		Russia	(Not a member of WTO)	13.96	
		Ukraine	(Not a member of WTO)	-	
		UK	4.1	25.57	
		Italy	4.1	23.71	
24.	Electrical Machinery	USA	1.7	14.54	
		Germany	2.5	31.73	
		UAE	5	62.31*	
		UK	2.5	25.57	
		Hong Kong	0	176.9	
25.	Precision Engineering	USA	1.2 (non elec.) 1.7 (elec.)	14.54	
		Germany	1.7 (non elec.) 2.5 (elec.)	31.73	
		Singapore	0	180.56	ASEAN
		China	8.3 (non elec.) 8.7 (elec.)	26.92	APTA
		Japan	.2 (elec.) 0 (non elec.)	13.54	

* estimated for 2005 due to non-availability of data

Source: WITS, WTO, World Bank Website, Ministry of Commerce, GOI

Table A4: Product wise non-tariff barriers

Sl. No.	Product	Destination	Restrictions
1.	Automobiles	USA	Notification is Required CA: Department of Transportation (DOT), National Highway Traffic Safety Administration (NHTSA)
2.	Iron & Steel	Russia	Import Certificate is required CA: State Standard Regulation Committee

Table A4: Product wise non-tariff barriers (contd)

3.	Banana	USA	Import Permit may be required Controlling Authority: Department of Agriculture, Animal and Plant Health Inspection Service (APHIS) Notification is Required CA: Department of Agriculture, Animal and Plant Health Inspection Service (APHIS)
4.	Coconut	USA	Import permit may be required CA: Department of Agriculture, Animal and Plant Health Inspection Service (APHIS) Notification is required CA: Food and Drug Administration (FDA)
5.	Ragi	Saudi Arabia	Examination is required CA: Plant and Animal Quarantine Department (Ministry of Agriculture)
6.	Groundnut	Malaysia	Import permit+ import approval (Food Quality Control Division, Ministry of Health)+ import certificate (Director General of Agriculture for Peninsular Malaysia (including Labuan) or the Director of Agriculture for Sabah or Sarawak)
7.	Safflower	USA	Import permit +notification CA: Department of Agriculture, Animal and Plant Health Inspection Service (APHIS) & Food and Drug Administration (FDA)
8.	Tobacco	Russia	Import certificate is required CA: State Standards Regulations Committee
		Saudi Arabia	Inspection is required CA: Saudi Arabian Standards Organization (Ministry of Commerce and Industry)
		USA	Import permit [Bureau of Alcohol, Tobacco, and Firearms (ATF)]+Notification [Food and Drug Administration (FDA)]
9.	Cardamom	Saudi Arabia	Examination is required CA: Quality Control Laboratory (Ministry of Commerce and Industry)
10.	Ginger	USA	Import permit (Department of Agriculture, Animal and Plant Health Inspection Service (APHIS))+notification (Food and Drug Administration (FDA))
11.	Turmeric	USA	Notification (Food and Drug Administration (FDA)) +import permit (Department of Agriculture, Animal and Plant Health Inspection Service (APHIS))
		Malaysia	Import permit + Import approval (Food Quality Control Division, Ministry of Health)

Table A4: Product wise non-tariff barriers (contd)

		Japan	<p>Import certificate (Ministry of Agriculture, Forestry and Fisheries)+notification (Ministry of Health, Labour and Welfare)</p> <p>The following items are prohibited to import except for research purpose: 1) Plants designated by the Ministerial Ordinance and shipped from or passed through the designated districts; 2) Quarantine pests; 3) Soil or plants with soil; 4) Packing material or containers of the above-mentioned items</p> <p>Phyto sanitary Certificate issued by a government agency of the exporting country is required. Imported goods must be inspected by a Plant Quarantine Inspector upon arrival in Japan.</p>
12.	Onion	Malaysia	<p>Import permit + import approval (Food Quality Control Division, Ministry of Health)</p>
13.	Flowers	Japan	<p>Import certificate (Ministry of Agriculture, Forestry and Fisheries)</p> <p>The following items are prohibited to import except for research purpose: 1) Plants designated by the Ministerial Ordinance and shipped from or passed through the designated districts; 2) Quarantine pests; 3) Soil or plants with soil; 4) Packing material or containers of the above-mentioned items</p> <p>Phyto sanitary Certificate issued by a government agency of the exporting country is required. Imported goods must be inspected by a Plant Quarantine Inspector upon arrival in Japan.</p>
		USA	<p>Import permit (Department of Agriculture, Animal and Plant Health Inspection Service (APHIS))+notification (Department of Agriculture, Animal and Plant Health Inspection Service (APHIS))</p> <p>PPQ Form 587 must be filled out and submitted electronically (on-line), by facsimile, or by mail to APHIS. AP2: APHIS inspection is required</p> <p>[Prior notice must be submitted to FDA electronically via either the Bureau of Customs or Border Protection (CBP) Automated Brokers Interface (ABI) of the Automated Commercial System (ACS) or the FDA] Prior Notice System Interface (FDA PN System Interface). The information must be submitted and confirmed electronically as facially complete by FDA for review no more than 5 days and no less than 8 hours (for food arriving by water), 4 hours (for food arriving by air or land/rail), and 2 hours (for food arriving by land/road) before the food arrives at the port of arrival. Food imported or offered for import without adequate prior notice is subject to refusal and, if refused, must be held.</p>

Source: Nextlinx website

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