

Chapter 2

Regional Export Statistics: A Critique and an Alternative

2.1 Introduction

In empirical economic research and analysis, the role of quality and availability of relevant data is crucial as empirically verifiable hypotheses from the economic theory are confronted with data. As far as trade statistics of India is concerned it has become available since the seventeenth century when statistical compilation became increasingly comprehensive under the British rule (Sugihara 1997). The mid-nineteenth century saw annual trade statistics for British India being compiled at the level of the province and released by the custom houses of Bengal, Madras, Bombay, British Burma and Sind. These regional or provincial trade statistics that were compiled until around 1930 are fairly detailed in providing information on port basis and overviews of trade conditions of each province (Sugihara 1997). In 1905 the Directorate General of Commercial Intelligence and Statistics (DGCI&S) was constituted for collecting trade statistics for all of British India (Ghosh et al. 1999).

The regional export statistics that were available for British India have lost their regional relevance in independent India where erstwhile provinces were reorganized into new administrative units, namely, Indian states and Union Territories (UTs). The compilation of export and import data at different custom houses never had any correspondence to these subnational administrative spaces. Although long time series on foreign trade by commodities and trading partners were compiled on a nationwide basis, India has paid little attention to the information on the subnational *origin* of exports until recently. Whether it is trade data from the DGCI&S or trade statistics from the Reserve Bank of India (RBI) none has any clues to segregate national exports by state or district.

It seems that there was a lack of incentives to go beyond national aggregates of trade measures, largely because of India's marginal dependence on exports reflected in the contemporary inward-looking policy regime and anti-export bias of excessive protection given to import substitution economic activities. As a result, for the entire period from the 1950s to 1990s, unfortunately, there are hardly any official estimates on state-wise exports.

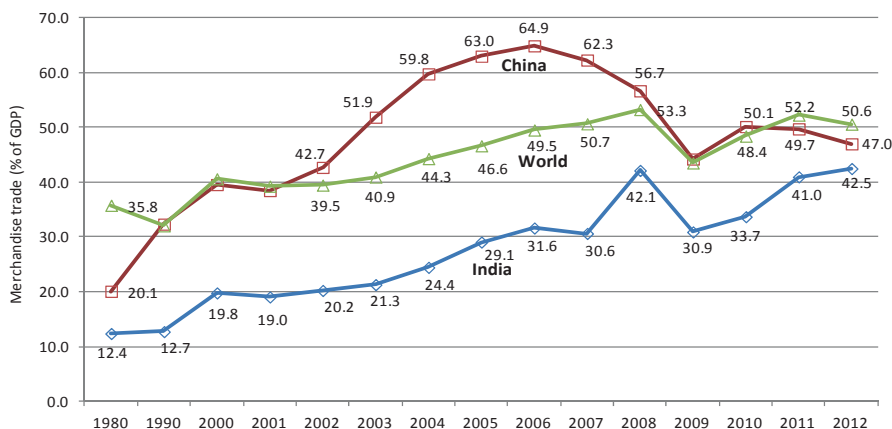


Fig. 2.1 Trade to GDP ratio of India, China and World, during 1980, 1990, 2000–2012. (Source: Based on data obtained from the World Bank at <http://data.worldbank.org/indicator/>)

However, India's participation in international trade has continued to grow since the early 1990s when it started opening up to the globalization process. At present the trade accounts for as high as 42% of India's gross domestic product (GDP) in 2012, which is more than triple of the proportion that existed in 1990 (Fig. 2.1). With trade becoming an important source of economic growth in the liberalized period, there has been an attempt to develop a data inventory on state-level exports. During 2006–2007 commodity export data by Indian states started appearing in the *Economic Survey* of the Government of India.

Given the above background, the chapter begins with a brief discussion on the data issues related to regional exports in India. After examining the official statistics on state-level exports, it proceeds to elaborate an alternative method of estimating state-wise exports based on firms' plant size and location information. Nonetheless, there are a number of limitations of the proposed method.

2.2 Data on State-level Exports: Issues and Concerns

In March 2002, the Department of Commerce (DoC) under the Ministry of Commerce and Industry, Government of India started a scheme called 'Assistance to States for Developing Export Infrastructure and Allied Activities' (ASIDE). By assisting the state governments in creating an export-promoting infrastructure, the scheme intended to involve the states in export efforts. Eighty per cent of the total outlay of the scheme was to be allocated to states and UTs on the basis of the twin criteria of states' share in national exports and in the growth rate of national exports over the previous year. The implementation of the scheme, thus, depended critically on the availability of export data of each state/UT.

In the anticipation of launching the ASIDE scheme, the DoC through the Directorate General of Foreign Trade (DGFT) amended the format of the shipping bill with effect from April 2001 to include the state-of-origin column for exporting goods (CAG 2007). The DGFT revised the formats of Daily Trade Returns (DTRs) for imports and exports, and the circular no. 32/2001-CUS of the Central Board of Excise & Customs, dated 31 May 2001, made these revisions mandatory. As per this new format, shipping bills submitted by exporters to the custom authorities at ports are required to furnish the state of origin of goods exported, among other information. The idea was that this change would make available state-wise export data to help the implementation of the ASIDE scheme.

Notwithstanding the above regulatory provision for information on exports by state of origin, the official source is far from releasing reliable estimates. The blank or invalid entry regarding the state of origin for a large proportion of the DTRs filled with the customs created problems for the DGCI&S to estimate reliable state-wise exports. Incompleteness and inaccuracies in export data reported by DGCI&S forced the DoC to make state-wise ASIDE allocations on the basis of ad-hoc assessment during 2002–2003 to 2005–2006 than on state-level export performance criteria (CAG 2007).

For the first time, the *Economic Survey* of year 2008–2009 provided preliminary estimates on commodity exports for 15 major Indian states from 2006 to 2007. The *Economic Survey* 2009–2010 carried forward the information up to 2009–2010. These figures, as mentioned earlier, are calculated by the DGCI&S based on ‘state of origin of export goods’ reported in the DTRs.

These official estimates on state-wise exports are by no means complete and satisfactory. First, the effective implementation of the revised DTR appears to be lacking in uniformity across different custom points and exporter-specific heterogeneity in actually filling up the state-of-origin information in the shipping bills. Take the case of southern custom zones, where exporters’ noncompliance with the mandatory requirements of furnishing the state-of-origin information has forced the authority to issue another trade notification no. 4/2002–2003, dated 11 October 2002. The implementation can similarly be unsatisfactory at smaller ports, distorting the estimated state-wise export data. As the DTRs of many exporters still suffered from non-furnishing of the state-of-origin information, there is likely to be incomplete coverage of exports. Albeit, the compliance is expected to improve over time.

Second, the dependence on shipping bill information related to the state of origin for estimating regional exports is not free from weaknesses in a federal set-up. The information provided by non-manufacturer exporters can vitiate the estimation as the state of procurement of goods can differ from the state of their production. A large number of trading houses based in metropolitan areas that sourced products from several states may just be reporting from where exports were shipped out and not the state of origin. However, DGCI&S is yet to take into account such measurement errors in its state-wise export estimation.

Third, manufacturer exporters that have plants in different states may be using a single reference for the origin of exported goods. Multiplant firms that manufacture

components in different states and then assemble those into final products in another state, the furnished state-of-origin data may be inaccurate.

Fourth, the DGCI&S reported that state-wise export data were for all commodities. As the basic policy purpose was to implement the ASIDE scheme, the official sources have not gone beyond a single figure for state exports that comprise minerals, agricultural and other primary products as well as exports of manufactured goods. The absence of disaggregated industry-level figures according to the state of origin is a major limitation in the DGCI&S data. This data gap is likely to hamper the evolution of efficient regional policies towards exports.

Fifth, the DGCI&S released state-level export data cover unduly short time periods and for just major exporting states. These data will not be of much help when one sets out to analyse the long-term trends and patterns of exports by Indian states since the early 1990s to cover the post-liberalization period.

Lastly, official state-level export data fail to incorporate the vital export segments like export of services.

2.3 An Alternative Method of Estimation

In view of the above limitations of official statistics on state-wise exports, this study seeks to propose an alternative method for estimating the same. As the basic idea of the origin of exports is to allocate goods exported to their place of production, the use of information on firm-level exports and the state-wise location of their plants appear to be a reasonable approach to arrive at the regional export figures. Figure 2.2 summarizes the outline of our approach to generate regional exports from firm-level export activities.

In general, the universe of firms may be classified into four groups based on the interaction between the number of products manufactured by the firm and the number of locations of its production facilities. Exports of two groups of firms—single-state-based firms (i.e., whose production units are located in a single state/UT)

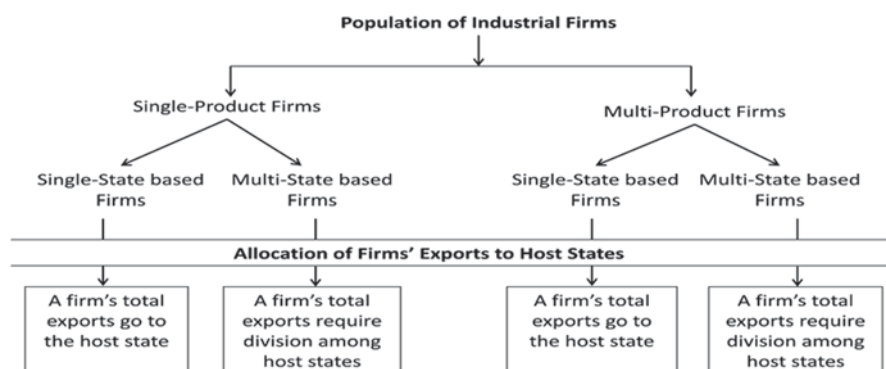


Fig. 2.2 A schema for regional allocation of firms' exports. (Source: Authors' construction)

producing one product and single-state-based firms manufacturing more than one product—can straightforward be allocated to the state where these firms are located.

The regional distribution of total exports of multistate-based firms (i.e., those having plants located in more than one state/UT) producing either single product or multiple products, however, requires special consideration. When it comes to multistate-based firms with single product, a reasonably acceptable approach is to apply the share of host states in the firms' aggregate production capacity to divide its total exports among host states. For multistate-based firms with multiple products, the ideal way would be to use host states' production share in each product to divide product-wise exports among host states and then aggregate those product-wise exports by host states to arrive at state-level exports. However, product-wise export data for multiproduct firms are mostly not available. In such a scenario and when the plant size of different products of a multiproduct firm is in different units, the practical way is to assume that each plant is of the same size in an economic sense. The share of host states in the total number of plants of a multiproduct firm, thus, can be used to divide its total exports across host states.

2.4 Application of the Alternative Method to Indian Firms

The application of the above approach requires the existence of comprehensive firm-level data for the entire manufacturing sector of India. However, such a data source is not available and what is accessible to us is to consult a firm-level dataset related to the organized segment of the manufacturing sector. In the service sector, the study could focus only on information technology (IT) activities.

The study has drawn upon the recently updated Prowess database of the Centre for Monitoring Indian Economy (CMIE) for estimating state-level export series during 1991–2008. An increasing number of financial and nonfinancial variables including exports for a growing number of Indian industrial firms are available in the said database. It also has started furnishing basic plant information for a number of firms. The location data of the Prowess include place of plant location, name of the product manufactured, year to which this location information is related, plant capacity and actual production quantity. However, the availability of information on the last two indicators is not for all firms and plants in the database; rather it is limited to available firms and plants only.

Exports, sales and plant location information for a total of 9296 industrial firms in both manufacturing (8486 firms) and IT sectors (810 firms) were compiled from the Prowess with plant location information on 1000 odd companies reported as blank. These gaps in location data were filled with information sourced through intensive internet searches of company websites, firms' annual reports, consultancy reports and so on.

Taking recourse to the most recent location information on number of plants, size of production and number of states where plants exist, Indian manufacturing and IT firms were broadly divided into single-state-based firms and multistate-based firms.

The former comprises 8129 firms, which have all of their production units located in a single state/UT and account for above 87% of the total number of firms. Total exports/sales of these single-state-based firms are then directly allocated to their respective host state/UT.

Table 2.1 provides illustrative cases of two single-state-based firms whose exports are allocated to the host state. All plants of Claris Lifesciences are located in Gujarat so that its entire exports of US\$36.4 million in 2008 are allocated to the host state Gujarat. Similarly, Chemtrols Industries' US\$13.05 million exports in 2008 have gone to Maharashtra since all of its plants are located in the concerned state.

The set of multistate-based Indian manufacturing and IT firms includes a total of 1167 firms that have plants located in more than one state/UT. Nearly 25% of these multistate-based firms are producers of a single product and have given information on their plant size, based on which exports/sales of these firms are divided into different states where their plants are located. The state-wise break-up of a multistate-based firm's total exports/sales is based on the application of host states' share in the aggregate production capacity of the firm.

For the remaining single-product multistate-based firms for which plant size data are insufficient and those firms that are producing multiple products (where plant sizes are in different units of measurements or not available), the study has assumed a uniform economic size of plants for a firm to derive state-wise production shares for fragmenting its total exports/sales across host states.

The case of BPL Ltd. and India Forge & Drop Stampings Ltd., presented in Table 2.1, depicts two multistate-based firms whose plant size information is either incomplete or sizes are expressed in different units of measurements. As two plants of BPL are located in Karnataka and one plant in Kerala, assuming that plants are of equal economic size, the production share of Karnataka and Kerala worked out to be 66.7% and 33.3%, respectively. Using these shares, BPL's exports of US\$13,792 in 2008 divided into US\$9195 for Karnataka and US\$4597 for Kerala.

India Forge & Drop Stampings Ltd. is observed to have two plants each in Haryana and Maharashtra and another four plants in Tamil Nadu. Thus, its exports of US\$1.18 million in 2008 were allocated based on the following host states share in the total number of plants: US\$0.3 million each to Haryana and Maharashtra, and US\$0.59 million to Tamil Nadu.

After splitting year-wise exports of each firm covering 8486 manufacturing firms and 810 IT firms among host states, annual aggregate export figures for each state are computed. In addition to the estimation of total manufacturing exports by states, the exercise is able to arrive at disaggregated exports for different technology categories of manufacturing activities and individual industries.

2.5 Limitations of the Alternative Method

Although using the production share to derive state-wise exports/sales of a firm is a practical approach, this method is not without its limitations. First, there are likely to be biases in the regional division of exports from multistate-based firms as in

Table 2.1 Illustration of host state export calculation for select firms, 2008. (Source: Authors' estimation based on the SPIESR-GIDR locational dataset of Prowess manufacturing firms (2010))

Firm name	Product, plant location and capacity	Firm's exports (US\$, in millions)	Firms' exports allocated to host states (US\$, in millions)
<i>Single-state based</i>			
Claris Lifesciences Ltd.	Gujarat, Sanand: large volume parenterals (capacity: 128,230,000 in numbers), small volume parenterals (capacity: 30,890,000 in numbers); Gujarat, Savli: 1, 2, 4 trichlorobenzene (capacity: 1200 t), 2:5 dichloronitrobenzene (capacity: 960 t), monochlorobenzene (capacity: 7200 t), orthodichlorobenzene (capacity: 1200 t) and paradichlorobenzene (capacity: 1200 t)	36.41	Gujarat: 36.41
Chemtrols Industries Ltd.	Maharashtra, Powai: analysers/shelters (production quantity: 128,230,000 in numbers), controller (production quantity: 100 in numbers), flowmeter (production quantity: 180 in numbers), level instruments (production quantity: 2529 in numbers), pressure switch (production quantity: 687 in numbers), sample handling system (production quantity: 704 in numbers)	13.05	Maharashtra: 13.05
<i>Multistate based</i>			
BPL Ltd.	Karnataka, Bangalore: medical electronics; Karnataka, Doddaballapur: medical electronics; Kerala, Palakkad: medical electronics	0.014	Karnataka: 0.005; Kerala: 0.009
India Forge & Drop Stampings Ltd.	Haryana, Faridabad: steel assembly; Haryana, Faridabad: steel forgings; Maharashtra, Pune: steel assembly; Maharashtra, Pune: steel forgings; Tamil Nadu, Kandanchavadi: steel assembly; Tamil Nadu, Kandanchavadi: steel forgings; Tamil Nadu, Madras and Maraimalai Nagar: steel assembly; Tamil Nadu, Madras and Maraimalai Nagar: steel forgings	1.18	Haryana: 0.29; Maharashtra: 0.29; Tamil Nadu: 0.59
Financial year average nominal exchange rate has been used to convert firms' exports value in Indian rupees to US\$			

a number of cases the allocation is based on host states' share in the total number of plants rather than product-specific aggregate production capacity. If multistate firms account for a significant proportion of aggregate exports by all firms in the dataset, then the magnitude of bias will be very large.

In the sample firms considered in the study, single-state-based firms accounted for more than 42% of total exports of all sample firms during 1991–2008, followed by two-state-based firms with 27% and three-state-based firms with 11% shares—together these firms contributed nearly 80% of total exports by sample firms (Fig. 2.3). This shows that firms with a relatively small number of host states account for the major proportion of total exports by all the industrial firms in the sample. Hence, it is unlikely that biases from the division of multistate-based firms' exports will overshadow the overall estimates of regional exports.

Second, the alternative approach uses the plant location information data of firms available for the latest year. This assumes that the present spatial distribution of plants or firm sizes remained valid for earlier years too, which is questionable. Although this is not an issue for single-state-based firms, today's multistate firms may or may not have been multistate in the past. As firms with a small number of host states are major exporters, however, one may still hope that the present method provides useful starting estimates on state-level exports.

Third, the coverage of firms belongs to the organized sector and this could be a limitation of the study. However, it is reassuring that the sample firms' exports,

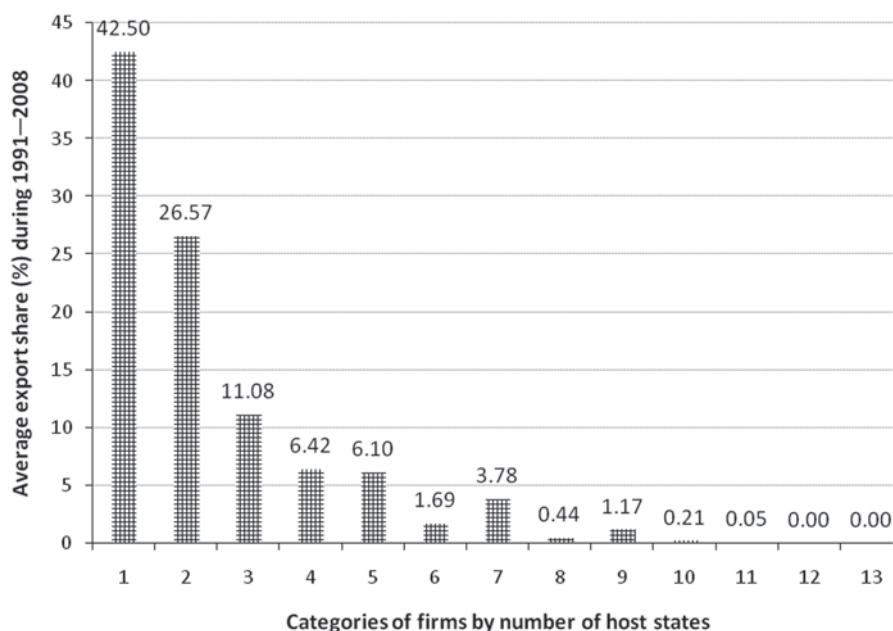


Fig. 2.3 Export share of groups of firms by number of host states, 1991–2008. (Source: SPIESR-GIDR locational dataset of Prowess manufacturing firms (2010))

which have been assigned to different state-based plant location information, account for a substantial proportion of national exports during the study period. The share of sample firms' manufactured exports in national manufacturing exports grew from about 30% in 1990–1991 to about 77% in 2007–2008, achieving as much as 58% share in national exports for the study period (Table 2.2). Hence, this empirical exercise is able to capture a fair proportion of national manufacturing exports by states.

Further, the sample of software firms contributed about 47% of total software and IT services exports from India during the period 1990–1991 to 2007–2008 (Table 2.2). Similar to the trend in sample firms' share in national manufacturing exports, sample firms' software exports have been growing from a relatively lower level in the early 1990s to the first decade of the twenty-first century. These trends

Table 2.2 Share of sample firms' manufacturing and software exports in national exports, 1991–2008. (Source: (i) National exports of manufactured goods is from RBI Database on Indian Economy Online database (2010); (ii) National software exports data are from Statistical Year Books, various issues, Electronics and Computer Software Export Promotion Council (ESC) and Annual Reports, 2004–2005 and 2009–2010, Department of Information Technology, Ministry of Communication & Information Technology, Government of India; (iii) SPIESR-GIDR locational dataset of Prowess manufacturing firms (2010))

Year	Manufacturing exports (US\$, in billions)			Software exports (US\$, in billions)		
	<i>National exports</i>	<i>Sample firms' exports</i>	<i>Sample as a % of national exports</i>	<i>National exports</i>	<i>Sample firms' exports</i>	<i>Sample as a % of national exports</i>
1990–1991	13	3.9	30.0	0.14	0.03	21.4
1991–1992	13.15	4.74	36.0	0.21	0.04	19.0
1992–1993	14.04	5.35	38.1	0.24	0.06	25.0
1993–1994	16.66	7.28	43.7	0.33	0.11	33.3
1994–1995	20.4	8.98	44.0	0.47	0.19	40.4
1995–1996	23.75	10.34	43.5	0.79	0.27	34.2
1996–1997	24.61	10.7	43.5	1.16	0.35	30.2
1997–1998	26.55	11.25	42.4	1.83	0.55	30.1
1998–1999	25.79	11.32	43.9	2.97	0.91	30.6
1999–2000	29.71	12.55	42.2	3.96	1.49	37.6
2000–2001	34.34	15.96	46.5	6.21	2.58	41.5
2001–2002	33.37	16.02	48.0	7.65	3.05	39.9
2002–2003	40.24	21.14	52.5	9.53	4.47	46.9
2003–2004	48.49	27.61	56.9	12.67	5.92	46.7
2004–2005	60.73	37.09	61.1	17.84	9.53	53.4
2005–2006	72.56	44.8	61.7	23.51	11.43	48.6
2006–2007	84.92	68.89	81.1	33.37	17.31	51.9
2007–2008	102.98	79.12	76.8	40.83	18.96	46.4
All years	685.29	397.04	57.9	163.72	77.26	47.2

Financial year average exchange rate has been used to convert rupee figures into US\$

may help us to infer that the regional distribution of exports by Indian states is better in more recent years.

In spite of the above limitations of the new method for estimating regional exports from firm-level information, this is the first ever systematic exercise to derive state-wise industrial exports from production-related information. This exercise has generated state-wise exports starting from 1991, thus, covering an important phase of the growing interface between Indian firms and the global market.

2.6 Comparative Ranking of States by Manufacturing and Commodity Exports

The absolute values of the new estimates on state-wise manufacturing exports is not strictly and meaningfully comparable with the absolute values of exports reported in official sources as the latter includes merchandize exports covering products from the primary sector. However, it may be suggested to compare the obtained state ranking and export shares in our state-level manufacturing export estimates with information available from official statistics on commodity exports.

Table 2.3 reports state rankings based on state-wise commodity exports from official sources and those based on manufacturing exports for a 2-year period, 2006–2008. It is natural for export ranking of states based on official statistics to diverge from those derived from our estimates as there are differences in sectoral coverage for the two estimates.

During this period, while Maharashtra tops the merchandize export performance with 28% share in national exports, it is Gujarat that has reported the highest level of exports in manufacturing products with 28% export share. The position of Gujarat turns out to be second in merchandize exports with 20% export share. Maharashtra with 22% share becomes the second most important state of origin in manufacturing exports. It is apparent that both these western states are major exporting states in India together claiming more than 48% and 50%, respectively, of national merchandize and manufacturing exports.

The second category of major state exporters during 2006–2008 includes three southern Indian states, namely, Karnataka, Tamil Nadu and Andhra Pradesh jointly contributing 23.5% of national merchandize exports and 22% of manufacturing exports from India. An analysis of official statistics, similar to our estimates on manufacturing exports, had led to the same list of top five exporting states in India: Maharashtra, Gujarat, Karnataka, Tamil Nadu and Andhra Pradesh. These five states together account for 72% of exports, whether merchandizing or manufacturing. During 2006–2008, although Delhi had the sixth position in merchandize exports, its ranking dropped to 12 in manufacturing exports, and West Bengal had claimed the seventh position in both merchandize and manufacturing exports. Clearly, the official estimates and ours converged at least on the same top five exporting states.

Table 2.3 State ranking and export shares based on merchandize and manufacturing exports, 2006–2008. (Source: Authors' computation based on (i) *Economic Surveys 2008–2009 and 2009–2010* based on DGCI&S, Government of India; (ii) SPIESR-GIDR locational dataset of Prowess manufacturing firms (2010))

Official estimates: Merchandize exports (US\$ million)				Our estimates: Manufacturing exports (US\$ million)			
Rank	State	Value	%	Rank	State	Value	%
1	Maharashtra	80,714	27.9	1	Gujarat	40,936	27.7
2	Gujarat	58,945	20.4	2	Maharashtra	33,086	22.4
3	Tamil Nadu	27,913	9.6	3	Karnataka	15,101	10.2
4	Karnataka	27,317	9.4	4	Tamil Nadu	9403	6.4
5	Andhra Pradesh	12,906	4.5	5	Andhra Pradesh	7969	5.4
6	Delhi	10,063	3.5	6	Uttar Pradesh	5113	3.5
7	West Bengal	9690	3.3	7	West Bengal	4208	2.8
8	Haryana	8206	2.8	8	Rajasthan	3539	2.4
9	Uttar Pradesh	7927	2.7	9	Madhya Pradesh	3479	2.4
10	Rajasthan	6632	2.3	10	Haryana	3468	2.3
11	Odisha	4995	1.7	11	Odisha	2779	1.9
12	Madhya Pradesh	4908	1.7	12	Delhi	2556	1.7
13	Punjab	4746	1.6	13	Punjab	2505	1.7
14	Kerala	4657	1.6	14	Kerala	2457	1.7
15	Goa	2811	1.0	15	Dadra and Nagar Haveli	2208	1.5
				16	Himachal Pradesh	1467	1.0
				17	Uttarakhand	1411	1.0
				18	Jharkhand	1310	0.9
				19	Daman and Diu	1207	0.8
				20	Chhattisgarh	1172	0.8
				21	Bihar	864	0.6
				22	Assam	787	0.5
				23	Jammu and Kashmir	454	0.3
				24	Goa	361	0.2
				25	Pondicherry	45	0.0
	Others	17,063	5.9		Others	116	0.1
	India's total exports	289,493	100		Sample firms' total exports	148,002	100

2.7 Conclusions

Over two decades of liberalization and openness policies have unfolded into growing global integration marked by heightened activities in trade by Indian firms. The dynamism in internationalization has, however, not been matched by efforts to understand how subnational entities are connected to this Indian export boom, simply due to the absence of reliable, usable and comprehensive database.

In terms of coverage and accuracies, official statistics on state-wise exports are far from satisfactory. They are available since the late 2010s and expressed at aggregate merchandise level making it difficult for researchers to determine how the regional origin of exports in India has evolved since the start of the economic reforms in the early 1990s. Lack of disaggregated industry-level export data for Indian states is surely a serious limitation towards designing relevant policy.

The present study has proposed a new approach to estimate regional exports based on firm-level export data. Although the task is challenging in classifying yearly exports from a large number of Indian firms, it demonstrated the feasibility of deriving values of regional exports. The method, despite its limitations, offers opportunities for estimating manufacturing exports by state and their industrial disaggregation over a long period. The estimates on state-wise exports calculated based on the new method are summarized in Chap. 3, which may benefit concerned scholars and policymakers to understand how local industries and firms have been faring in exports.

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