

# EXIM BANK: RESEARCH BRIEF

## *Indian Electronic Goods Industry: Neutralizing Trade Deficit with China*



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### GLOBALSCENARIO

The electronic industry is one of the most diversified and dynamic sectors, evolving at a rapid pace with continuous innovations. Globally, USA is the largest producer of electronics in terms of value added, accounting for a share of 29.2% of the world production in 2012, up from 27.0% in 2007. China consolidated its position as the second largest producer with its share nearly doubling from 15.3% in 2005 to 26.7% in 2012. On the contrary, share of Japan almost halved – from 14.1% to 8.6% during the same period.

Global exports of electronic goods were valued at US\$ 2149 billion in 2012, registering a y-o-y decline of 0.5%, after recording two years of positive growth. Global exports are more than twice the global value added in the production of electronics goods. This may seem inflated essentially on account of the industry being characterized by a large presence of established global value chains implying that the component and sub-assemblies are moving either vertically or horizontally in the value chain.

### INDIAN SCENARIO

Although there has been significant increase in production of electronics, there remains large unmet demand which is currently being met by imports. Majority of the electronic production in India is intended for the domestic market. Export intensity of sales in electronics industry has grown in 2000s. However, there has been a marked decline in the export intensity in the post-2008-09 period.

The growth in India's exports and imports of electronic goods had peaked in 2010-11, but has witnessed moderation since then. Currently, India is a net importer of electronic goods and had a huge trade deficit of US\$ 23.5 billion in 2013-14, primarily on account of huge imports from China whose share in India's total trade deficit in electronic products stood at 66.7 % in 2013-14. In 2013-14, China accounted for 73 % of India's trade deficit in final electronic goods.

### NEUTRALIZING THE TRADE DEFICIT

Although India has substantial trade deficit with China in the electronics segment, Chinese products are not necessarily more competitive than those supplied by Indian players. Moreover, substantial complementarities have been found in the trade baskets of India and China. The purpose of analysing trade complementarities is twofold- identifying areas where China's imports are substantial, indicative of the demand for those products and suggesting strategies for developing domestic capabilities in those areas, and identifying areas where there is scope for attracting FDI from China on account of substantial demand by India.

At the six digit HS code level, three major points have been considered while identifying the products where India can attract investment from China:

- China's outward investment in electronics sector has been increasing. Quite a few of these investments are horizontal and were

envisaged with the objective of serving the local Chinese market (import platform investment)<sup>1</sup>. Hence, an analysis of Chinese electronic imports becomes important.

- However, when it comes to investments into India in the electronics goods sector by Chinese firms, they have cited market seeking investment as a major reason for investment. This implies that India's import demand would be a key parameter for the identification process.
- From the above two, a case can be made for identifying products where trade structures of India and China are complementary. If India's exports are complementary to China's imports, import platform investment can be attracted. If China's exports are complementary to India's imports, market seeking investment can be attracted.

Based on the above methodology, sixty one such products have been identified, accounting for 19.8% of China's total electronics imports and 69.7 % of India's total electronics imports in 2012 (Exhibit). Most of these products are in the final electronic goods segment. Within the final goods segment, computer and storage devices is the most important sub-category where investment can be attracted.

India can also strive towards enhancing its export capabilities in the identified

<sup>1</sup> Alon, Molodtsova & Zhang (2012). Macroeconomic Prospects for China's outward FDI

electronic goods. These would include products where:

- China is not a real producer currently, and has got significant import demand (>US\$ 50 million). Whether China is a real producer can be identified from the TSI index<sup>2</sup>. China will not be a real producer in all those goods where TSI is negative.
- India has got a certain minimum amount of exports (>US\$ 10 million), indicative of some production capabilities available in the country.

Twenty two such products have been identified, largely from the segments of medical devices and components. These products in total account for 50.4% of total imports by China. These products account for 15.9% of India's total electronics exports and 17.3% of India's total electronics imports.

To neutralize India's trade deficit in electronics goods, strategies may be undertaken under the following three broad heads: a) developing domestic electronic production capabilities, b) attracting investments from China in the electronics segment, and development of software industry to meet the needs of the Chinese market, and c) adopting good practices in the broader policy space. The focus should be on identified product categories, where the scope for neutralizing trade deficit is greatest, through development of domestic capabilities and attracting FDI.

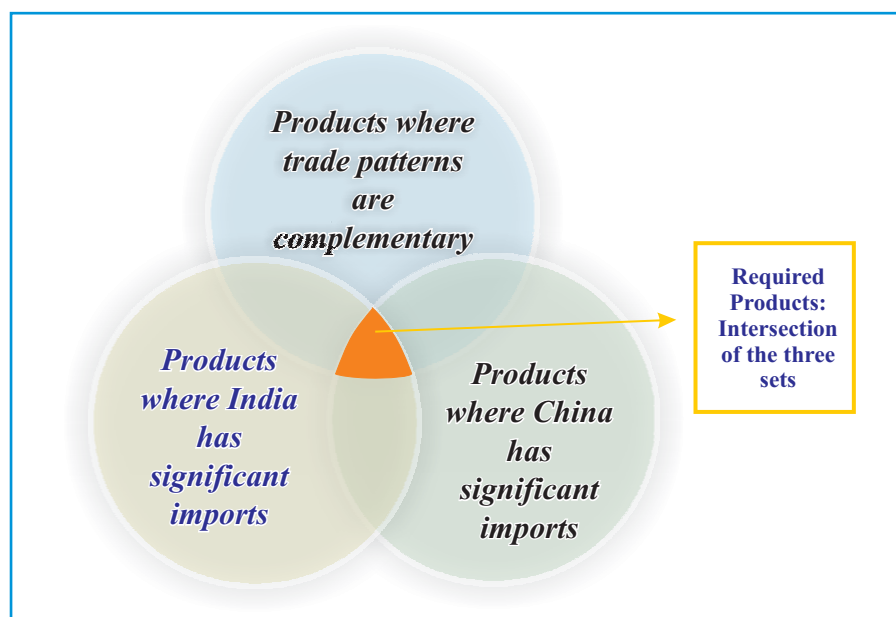
## STRATEGIES FOR DEVELOPING DOMESTIC CAPABILITIES

### Developing the Electronic Components

**Category:** Electronic components are the building blocks of a successful electronics industry. Its growth has been frail in India. Like India, Brazil also has seen a surge in the electronic components import. An influential effort was taken by the Brazilian government in the form of Integrated Circuits Brazil (CI Brasil) program, from which cue can be taken by India. Established in 2007, this program

<sup>2</sup> Trade Specialization Index (TSI) is used to measure the degree of net exportation by a country in a particular commodity.

## Exhibit : Criteria for Identification of Electronic Sub-Sectors for Attracting FDI from China to India



has established training centers in ICT clusters and many semiconductor designers have graduated under this program. Such training help develop domestic technical pool.

### Tax Related Incentives for Semiconductor Industry :

Tax related incentives also go a long way in developing the electronics industry. Brazil started the Program for the Development of the Semiconductor and Display Industry (PADIS) which provides incentive for manufacture of semiconductor electronic devices, crystal and plasma displays and on-board chip systems. PADIS allows for several incentives, including zero percent corporate income tax for development and design, testing and packaging, and diffusion (physical/chemical) processes. Countries like Japan, China and Taiwan also provide tax subsidy for manufacturing in the electronics and semiconductor categories. In this direction, India recently provided for reimbursement of central taxes and duties in select high-tech units like fabs under the M-SIPS scheme. More such incentives along with simplification of tax structure are required.

### Venture Capital (VC) Investment:

Although VC firms might seem skeptical about their involvements in the

electronics sector and might see these investments as high risk, low yield and unstable returns, the government backing can help build trust in the sector. In Europe, the government supports VC in several ways. In Germany, the High-Tech Gründerfonds invests directly in emerging businesses which fund technology start-ups. The European Investment Fund, which is funded by member states of European Union, also plays a key role through investment in VC growth funds.

### Setting up of Clusters for Mobile Telecom:

State of cluster development is considered as strength in the Indian case, among all other ways to promote innovation linkages<sup>3</sup>. It is essential to promote the concept of cluster development for mobile telecom in India, as the country has substantial prowess in the model of cluster development.

Finland's "wireless valley" is an example of mobile telecom cluster which was a major component of "Mona" – a Finnish mobile services development program. The cluster comprised of several related players, with terminal manufacturers (producing mobile phones) and network manufacturers (producing equipment

<sup>3</sup> Global Innovation Report 2013

needed for mobile networks) being a part of the core industries.

**Development of Industrial Clusters for Medical Devices:** Similarly, development of industrial clusters specifically for the medical devices industry would provide an impetus to the sector. In this regard, Gujarat Government intends to develop a specialized pharmaceutical machinery cluster in the State. More such Central and State Government initiatives would help improve Indian capabilities in the segment.

**Guidance for Product Development in Medical Devices:** US-FDA and European Medicines Agency give guidance to their national industry about product development. In a case study by Szymon Jarosławski and Gayatri Saberwal (2013), lack of guidance and dialogue regarding product specifications has come out as a major challenge for product innovations. The firms found it essential to engage with foreign regulatory agencies for their guidance, distinguishing their innovative products from other substandard ones, and also to access global markets<sup>4</sup>. Such guidance needs to be provided by national regulatory agencies.

**Greater and More Transparent Procurement of Innovative Medical Devices:** Share of general government expenditure on health as percentage of total expenditure on health in India has risen steadily over the years and is expected to continue to rise. Given this trend, promotion of innovative technologies through government procurement is going to gain significance. Szymon Jarosławski and Gayatri Saberwal (2013) suggested greater government procurement of innovative devices in the Indian case to encourage product innovations<sup>5</sup>. Agencies in many European and Asian countries (like, Japan, Singapore and Malaysia) appraise technologies and advise on their financing from public sources.

**Separate Regulatory Environment for**

**Medical Devices:** Under the Drugs and Cosmetics Act, many medical devices have been currently notified as drugs, even though difference between drugs and devices is stark. Moreover, those medical devices which are not considered as “drugs” only require import or manufacturing license and no quality check system exists for them. Drugs and Cosmetics (Amendment) Bill, 2013 is an attempt towards specifying provisions specific to medical devices. For example, conditions have been specified under which medical devices shall be deemed to be misbranded, adulterated, and spurious. The Bill needs speedy implementation.

**Stronger Linkages between Academia and Industry:** In promoting partnerships between industry and academia, India can take inspiration from the Innovation law and Good law of Brazil. These laws allowed automatic use of fiscal benefits for investment in R&D, without any need for a formal request.

**Creation of a Fund for Promotion of Innovation in Analytical Instrument Category:** A Fund can be created to support the premier science and technology related educational and research institutes in the country for the development of scientific instruments. Since, the amount of funding can be quite large in case of some scientific instruments, programs of joint funding requirements can be established with like-minded countries. Motivation can be taken from the PRODEX program, which was a joint funding of European Union. It began in 1986 with the objective of providing funds “for the industrial development of scientific instruments or experiments, proposed by Institutes or Universities in the Participating States that have been selected by European Space Agency (ESA) for one of its programs in the various fields of space research (science, microgravity, earth observation, etc).”

**Creation of a Fund for Computer Hardware Component Production:** In 2012-13, imported raw materials accounted for 78.73% of the total raw materials consumed by the Indian computer hardware industry, as per the sample of companies taken from CMIE

Prowess database. Around 46.13% of operating expenses incurred by this industry category has been on account of raw materials, stores and spares, which is indicative of immense potential which exists for electronic component producers.

Value added in the electronics industry of India is merely 5-10%. Boosting production of electronic components and subassemblies gains greater significance in this context as substantial value addition happens at the components and subassembly stage of an electronics manufacturing process, contrary to other manufacturing activities. Hence, for lowering the import and increasing the domestic value added production, promotion of production of computer hardware components is crucial.

Inspiration can be taken from Electronics Industry Development Fund (EIDF) which was set up in China in 1986. It was first set up to support R&D and production of four key electronic products: integrated circuits, computers, software and program-controlled switching devices. Producers who were eligible to apply for support from the Fund had to meet the criteria of state-owned status and high local content of their products. The Fund later enlarged its support to include all major electronic products, components, and to include non-state owned firms<sup>6</sup>.

## STRATEGIES FOR ATTRACTING FDI FROM CHINA

**Development of Infrastructural Facilities :** Current state of infrastructure and logistic services in India is grossly inadequate. According to the World Bank's Logistics Performance Index, India is ranked 45<sup>th</sup> place in 2012 which is explanatory of the relatively poor state of infrastructure and logistics. Countries like Singapore and Hong Kong which rank highest on the logistics performance index have attracted large investments in their electronics industries and established an important presence in the global value chain for electronics. Hence, infrastructure development will have a

<sup>4</sup> Szymon Jarosławski and Gayatri Saberwal (2013), Case studies of innovative medical device companies from India: barriers and enablers to development

<sup>5</sup> Ibid. 4

<sup>6</sup> Zhongxiu Zhao et al. / 33 - 51, Vol. 15, NO. 3, 2007



crucial role to play in attracting FDI in the industry.

### Human Resource Development:

Electronics companies require workforce with diverse knowledge and skills, and as the industry moves on a path with greater technological innovations, the worker profile needs greater education and training. As per a Report by NSDC on Human Resource and Skill Requirements in the Electronics and IT Hardware Industry, the incremental requirement in India for level-2 and level-3, which require technical knowledge and long drawn preparations in the industry, will be the highest at 25-27%, and 49-50%, respectively, in 2022. In order to attract investment into this industry, workforce needs to be trained as per the industry requirements.

One major problem which has emerged out of the studies concerning the education sector has been the presence of significant regulatory roadblocks like limitations on entry by foreign universities, and collaboration of Indian university with foreign players. These regulatory hurdles need to be addressed, especially since the role of private players in higher education has been growing at a rapid pace.

**Favorable Duty Structure for Final Electronics Exports:** The duty structure should be such that it should favor the production of final electronics goods over the components and subassemblies, and also to support the domestic production over imports. China had established an export processing policy wherein raw materials such as parts and components and other intermediate imported goods did not have any duty imposed, as long as they are used to produce export goods. However, in the Indian case, there exists no such enabling environment.

While there is no import duty on finished products, the Government has put tariff barriers on electronic components

required to manufacture telecom hardware (Chattopadhyay, 2013)<sup>7</sup>. For example, while most of the six final electronics products in the category of phones, fax machines, and routers face basic custom duty (average effective rate of duty: 18.1 %), electronic integrated circuits: other (Hs Code: 85423900) faces basic customs duty of 7.5 % (effective rate of duty: 21.6%). Simplifying the tax structure and aligning the taxes in favor of domestic manufacturing is essential. Preferential laws for usage of domestic products can also help incentivize investments.

### Creating Greater Market for Analytical Instruments through R&D Promotion:

India ranks fairly low in gross expenditure on R&D (ranked 44<sup>th</sup>) and only 33.9 % of it is financed by business enterprises. China on the other hand has 71.7% of its R&D by business enterprises. R&D promotion will serve the dual purpose of creating robust innovation base in India and also create a greater market for analytical instruments in India.

Inspiration can be taken from Israel which ranks topmost in GERD and has come up with novel ways to encourage R&D in the economy. India has already taken many steps to promote R&D in the country, but need to focus more on incentivizing the business enterprises and promoting collaborations among institutions.

**Enlarging the Technical Pool Required for Medical Devices:** The number of colleges offering biomedical engineering/ bio-engineering courses in India is not much. Biomedical engineering is an interdisciplinary subject in which engineering and technology is applied to medicine, surgery and healthcare of humans and other higher forms of life. It mainly involves bio-instrumentation, biomaterials, imaging, and biomedical devices. Such programs need to be

<sup>7</sup> Utpal Chattopadhyay (2013), Making India a Telecom Manufacturing Hub: Emerging Issues and Challenges.

promoted in more number of institutions, so that the skill set required for manufacture of medical electronics is enhanced.

### SUM UP

Several steps have been taken towards the improvement of electronics industry in the recent times by the Government of India, including the seminal National Electronics Policy 2012, which envisages achieving a turnover of about US\$ 400 billion by 2020. These policies should move in tandem with exploring opportunities presented by the electronics market in China, and attracting Chinese investors.

Going forward, rapid urbanization, rising personal disposable income, adoption of high-end technology devices, high technology obsolescence and product innovation, competitive pricing of products, easy financing schemes, expansion of organized retail and distribution networks, and several government initiatives are going to be the major drivers for the electronics industry in India. On the back of these, there exists huge opportunity for the domestic manufacturers.

*The contents of the publication are based on information available with Export-Import Bank of India and on primary and desk research through published information of various agencies. Due care has been taken to ensure that the information provided in the publication is correct. However, Export-Import Bank of India accepts no responsibility for the authenticity, accuracy or completeness of such information.*

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