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Implications of Signing Information Technology Agreement (ITA-1) and Expansion of ITA (ITA-2)

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Rashmi Banga[1]

1. Introduction

The Fourth Digital Revolution has increased the importance of Information Technology products and software. This has brought back the focus on plurilateral agreements like Information Technology Agreement (ITA-1) and Expansion of the ITA (ITA-2). ITA-1 was signed in 1996 with initially 29 participants (EU as one member), where the signatories agreed to eliminate custom duties and other duties and charges on selected IT products on MFN basis. In 2019, there were 52 participants of ITA-1 (EU as one member). The ITA-1 products cover broadly many high technology IT physical products including computers, telecom equipment, semiconductors, semiconductor manufacturing and testing equipment, software and scientific instruments and a significant number of other products.

In 2015, at the Nairobi Ministerial Conference, some of the WTO members concluded the expansion of the ITA (ITA-2), which was signed by 25 participants, including US, EU and China. In 2019, number of ITA-2 participants were 27, with inclusion of Macau and Georgia. While ITA-1 focuses on the physical IT products and the traditional carrier media of the software[2], ITA-2 covers all electronic transmissions like software and digital content; digitized and digitizable products like photographic or cinematographic products, touch screens, GPS navigation equipment, video game consoles, portable interactive electronic education devices, etc., along with physical IT products. These products and software are now being extensively used in digital technologies.

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[2] Cannistra and Cuadros (2010), 'Digital Convergence and Electronic Commerce: Customs and Trade Implications', Global Trade and Customs Journal. Vol 5, Issue 4: pp 137.

Further, these IT agreements include products that do not yet have corresponding HS codes (Attachment B). It is not possible to empirically estimate the impact of taking binding commitments of not applying custom duties on imports of the products which have no HS codes assigned to them. Therefore, the impact of not regulating the imports of these products on developing countries cannot be estimated. For Attachment B products, only an assessment can be provided on the likely implications of taking binding commitments on their custom duties.

There is a growing literature on the costs and benefits of signing ITA-1 and ITA-2 for the developing countries. It must be noted that out of 126 countries, 114 countries are net importers of ITA-1 products and 106 countries are net importers of ITA-2 products, with China; Hong Kong, China; Korea, Rep.; Singapore; Germany; Japan and USA being the top seven exporters in the world with a share of more than 80% of total exports.

A decision to sign ITAs depends on a number of factors in developing countries- including the country's competitiveness in these products which will determine the extent of increased market access in other countries; the existing manufacturing of these products in the country and thereby need to protect domestic industry; the importance of the lost tariff revenue given the financial position of the country; the impact of zero-duty imports on competitiveness of IT-using industry; but most importantly, given the fourth digital revolution, the impact of not regulating the IT trade on digitalization strategies of the country and on digital industrialization of the country. This paper reviews the studies on costs and benefits to countries of signing ITA-1 and ITA-2.

2. Existing Literature on Impact of Signing ITA-1 and ITA-2 on Developing Countries

There is a growing stream of literature assessing the impact of signing ITA-1 and ITA-2 on developing countries, focusing particularly on how signing these agreements can spur growth in developing countries. The arguments put forward by these studies include (a) lowering of prices of ITA products; (b) lowered prices increases the use of ITA products, which in turn increase productivity in the economy; (c) higher productivity increases output, creates jobs and therefore leads to higher growth in the economy. Further, it is argued that signing of ITA agreements can

increase competitiveness of developing countries, enhance their participation in global value chains and boost their exports of ICT goods and services. It has also been argued that the tariff revenue lost by signing the ITA agreements can be recovered by the Governments from increased internal taxes due to subsequent higher growth in the economy. However, while studies have projected these gains using empirical methodologies, usually CGE models which are based on unrealistic assumptions, these arguments have not been supported by empirical evidence.

Many developing countries which have signed ITA-1 have reported a fall in their competitiveness, which has not only resulted in decline in their exports, but has also led to adverse impact on their domestic production of ITA products as well as inputs that go into the production of these products, leading to an overall fall in their domestic output and employment. Further, these countries have lost potential tariff revenues from growing imports of IT products. Empirical studies have also shown that while developed countries are able to recover their lost tariff revenues due trade liberalization through internal taxes, developing countries are not able to do so.

2.1 Studies for India

Some of the empirical studies which have estimated the impact of signing ITA-1 on India include Kallummal (2012)[3], Joseph (2013)[4], and Ernst (2013)[5]. All the three studies show that India ITA-1 did not deliver the above argued benefits, in fact India experienced many losses apart from the lost tariff revenues. According to Kallummal (2012) signing ITA-1 increased India's dependence on imports of these products providing very limited market access in developed and other developing countries, consequently a decline in local content resulting in an adverse impact on employment generation. Further, the study provides empirical evidence that

[3] Kallummal, M. (April 2012). Process of trade liberalization under the Information Technology Agreement (ITA): The Indian experience (Working Paper). New Delhi: Centre for WTO Studies, IIFT.
[4] K.J.Joseph (2013), Information Technology Agreement of WTO: Call for a Revisit, Working Paper, Ministry of Commerce Chair, Centre for Development Studies.
[5] Ernst, Dieter, The Information Technology Agreement, Manufacturing and Innovation – China's and India's Contrasting Experiences (February 23, 2016). East-West Center Workshop on Mega-Regionalism - New Challenges for Trade and Innovation. Available at
SSRN: https://ssrn.com/abstract=2737082 or http://dx.doi.org/10.2139/ssrn.2737082

signing of ITA-1 did not increase India's competitiveness in ITA products and did not contribute to the success of IT enabled services, which were recording unprecedented growth even prior to signing of the agreement.

The results of this study are corroborated by Joseph (2013) which provides empirical evidence of the lack of growth-augmenting impact of ITA-1. It further establishes that except for China, none of the Asian countries (e.g. Malaysia, Thailand, Indonesia) were able to increase their share in electronic production networks. It also shows that ITA-1 enabled MNCs from East and West to become "price-makers" challenging the price lowering impact of ITA-1. According to the study, India also experienced a drastic fall in export growth in almost all ITA-1 products in the post ITA-1 period, while global exports of ITA-1 products further concentrated increasing the share of top four exporters.

2.2 Study by ITIF (2017)[6]

ITIF (2017) has estimated the impact of signing ITA agreements on Argentina, Cambodia, Chile, Kenya, Pakistan, and South Africa. It finds that by joining ITA-1 and ITA -2, these countries will experience a rise in their economic growth which will allow them to collect tax revenues in the 10th year following accession, which will more than offset their tariff revenue losses. The study assumes that impact of ICT usage on productivity will be same in all these countries i.e., a 10% increase in ICT investment will increase output growth by 0.5%-0.6%. This result is based on a previous study by Cardona et al (2013)[7] which according to ITIF (2017) is based on 29 econometric analyses. However, there is an extensive literature in recent years which has challenged this estimation. According to Stanely et al (2015)[8] this figure of the impact on GDP has been arrived by Cardona et al (2013) based on just six national level studies. According to

[6] Stephen J. Ezell and J. John Wu (2017), "How Joining the Information Technology Agreement Spurs Growth in Developing Nations", ITIF.
[7] M. Cardona, T. Kretschmer, and T. Strobel, "ICT and Productivity: Conclusions From the Empirical Literature," *Information Economics and Policy 25*, (2013): 109–125.
[8] Stanley, T. D. & Doucouliagos, Chris & Steel, Piers, 2015. "Does ICT generate economic growth? A meta-regression analysis," Working Papers eco_2015_9, Deakin University, Department of Economics.

Neibel (2014)[9], to date there is "rather weak and ambiguous empirical evidence on the contribution of ICT investments on economic growth for emerging and especially developing countries". The results with respect to impact of ICT investment on GDP growth will depend on the absorptive capacity of a country which depends on the appropriate level of human capital or other complementary factors such as R&D expenditures, etc.

Many studies point out that developing countries suffer serious constraints that hinder capital accumulation and obstruct efficient use of the existing resources and therefore may not be able to have similar impact of ICT on productivity as the developed countries. For ICT investment to lead to GDP gains requires skilled labour, solid economic infrastructure and a business environment that can take advantage of ICT products. For example, Mack and Faggian (2013)[10] conclude that "broadband only produces positive productivity impacts when used by more educated and/or highly skilled occupations".

To assume that higher imports of ICT products will necessarily lead to higher GDP is also wrong. According to Piketty & Saez, (2014)[11] ICT can negatively impact on GDP growth if it contributes to widening inequality within the country. This can occur, if ICT accelerates automation and displaces labour, especially unskilled labour. This would suggest that developing countries should be cautious about the extent to which it invests in ICT. According to Falk and Biagi (2015)[12] the impact of ICT should not be estimated using ICT investment, but it needs to be estimated based on ICT usage. Impact may vary between ICT producing and ICT using industries as well as between manufacturing and services sectors.

Based on the above studies and the existing literature, the estimate used by ITIF (2017) of impact of the 10 % increase in ICT investments which leads to an increase in 0.5-0.6 percent increase in

[9] Niebel, Thomas, ICT and Economic Growth – Comparing Developing, Emerging and Developed Countries (December 15, 2014). ZEW - Centre for European Economic Research Discussion Paper No. 14-117. Available at SSRN: https://ssrn.com/abstract=2560771 or http://dx.doi.org/10.2139/ssrn.2560771.

[10] Elizabeth Mack and Alessandra Faggian (2013), *Productivity and Broadband : The Human Factor", International Regional Science Review, Sage publications.

[11] Piketty T. and Emmanuel Saez (2014), Inequality in the Long Run, Science of Inequality, 344(6186): 838– 43 .

[12] Federico Biagi & Martin Falk, 2015. "Empirical studies on the impact of ICT usage in Europe," JRC Working Papers on Digital Economy 2015-14, Joint Research Centre (Seville site).

GDP growth in all the identified countries is highly questionable and can definitely not be applied equally to all the identified developing countries.

This also puts a question mark on the claim that increased GDP growth will enable these countries to recover the lost tariff revenues in a period of 10 years. Studies like Devika et al (2020) [13] have shown that while this may be possible for developed countries to be able to recover their lost tariff revenues in course of trade liberalization, it may not be possible for the developing countries. Developed countries can recover the lost tariff revenues through imposition of direct and indirect taxes like income tax, VAT, sales tax etc., but in developing countries the presence of a large informal sector, which is outside the tax net, makes it extremely difficult to generate additional tax revenues. According to Devika et al (2020) a 1% decline in effective tariff rate is associated with a 1.98%-3.22 % decline in total tax revenue. Countries reducing tariff rates also tend to lose the associated duties and additional charges. Based on 120 countries analyses, UNCTAD (2000)[14] estimates that the additional duties and taxes levied on imports of digitizable products amount to 23 percent compared to 6.9 per cent for the tariff.

Further, many studies which estimate the impact of tariff reduction on productivity and via productivity on GDP growth use Computable General Equilibrium or CGE models. ITIF (2017) uses the estimates provided by Cardona et al (2013) which is further based on some studies which use CGE models. One needs to be aware of the limitations of such models. Besides the fact that most of the estimates used for the impact of tariff reduction on productivity are based on data for developed countries (for which productivity estimates are available), these models use unrealistic assumptions. It is well documented in the literature that CGE models are designed in such a manner that liberalization will always lead to increase in 'overall gains' and Government budgets will always be ‘balanced’.

[13] Devika Dutt, Kevin P. Gallagher and Rachel D. Thrasher (2020), Trade Liberalization and Fiscal Stability in Developing Countries: Does the Evidence Tell Us?, Policy Insights, Global Development Policy Centre, Boston University,USA.
[14] UNCTAD. (2000). Tariffs, Taxes and Electronic Commerce: Revenue Implications for Developing Countries. Geneva: United Nations Conference on Trade and Development.

According to Taylor and Arnim (2006)[15], most of the CGE models assume (i) fixed or 'full' employment of labour and capital is maintained everywhere in the world; (ii) each country's trade deficit (or surplus) stays constant after liberalisation; and (iii) completely flexible taxes on households enable each country's internal economy to adjust smoothly. This implies that the models are designed in such a way that tariff lost by the Governments through tariff reduction will always be recovered by increase in internal taxes. In other words, these models assume that the government budgetary balance or a key component of the budgetary balance is fixed when considering the impacts of trade liberalization. The inbuilt 'price system' will therefore always respond to liberalization in a way that it leads to increases in overall well-being. Further, the 'Armington assumption' used in all CGE models, implies that there exists 'product differentiation' which means that no country, however small, produces something which is also produced by another country in the world. In other words, domestic and foreign products are imperfect substitutes.

The above discussed literature therefore nullifies the claims that signing of ITA-1 and ITA-2 will necessarily lead to higher growth in developing countries. These agreements may lead to higher dependence on imports of IT products, increase trade deficit, lower the tariff revenues and further may have adverse implications on domestic production and employment. The empirical evidence show that these agreements have led to concentration of exports in a few countries which become the price-makers. Experience of other developing countries like India shows that signing of ITA-1 led to adverse impact on growth of domestic IT hardware industry, reduced output and employment as well as India's competitiveness with no impact on exports of IT-Enabled services, which were growing at unprecedented rate even before ITA-1 was signed.

3. Impact of ITA-1 and ITA-2 on Competitiveness of Domestic Industry and Services

One of the arguments put forward in favour of signing ITA-1 and ITA-2 is that these agreements would help to enhance the competitiveness of domestic industry as well as of services. While,

[15] Taylor, L., and R. von Arnim. 2006. Computable General Equilibrium Models of Trade Liberalization: The Doha Debate, New School for Social Research.Oxford: Oxfam GB.

higher use of ICT has shown to have increased productivity of manufacturing and services, participating in ITA-1 and ITA-2 may not necessarily lead to increase in use of ICT since, as discussed in above, the existing literature shows that an increase in ICT use can lead to higher competitiveness only if it is combined with skilled labour and appropriate infrastructure. Even without a binding commitment on lowering the custom duties to zero, countries can lower apply zero custom duties on selective ITA products which are needed by the ICT using industries and services.

In fact, ITA agreements have the potential to adversely impact domestic competitiveness. To begin with it should be noted that ITA-2 includes many other products that are not covered in the ICT goods definition, for example, medical appliances and instruments such as magnetic resonance imaging (MRI) machines. In fact, according to UNCTAD (2015) [16] only about a quarter of the ITA 1 and ITA 2 product codes are also defined as ICT goods.

Further, it is argued that these agreements will boost domestic production of other IT products. This argument assumes that many of the inputs that are needed for the domestic manufacturing of IT products like cellular phones or IT hardware will come duty-free. While even without signing IT agreements countries can lower their custom duties for the needed IT-related inputs to zero, signing of these agreements forces the countries to lower the tariffs to zero for all finished IT products as well. Many of these products are for general consumption and could therefore lead to higher conspicuous consumption, adversely impacting on the trade deficit.

According to India's experience of ITA-1, the Department of Electronics and IT (DeitY) reported that the agreement has proved to be a barrier for the domestic electronic manufacturing sector's growth by decreasing investments in this sector. It was also pointed out that there were rising security implications of IT goods being imported in the country under ITA [17].

[16] https://unctad.org/en/PublicationsLibrary/tn_unctad_ict4d05_en.pdf.
[17] https://economictimes.indiatimes.com/industry/cons-products/electronics/ita-an-obstacle-for-domestic-electronic-manufacturing-government/articleshow/46784507.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst.

Further, it has been sometimes argued that signing of ITAs will bring predictability for foreign firms and therefore lead to increase in FDI in these sectors. However, there is little empirical evidence to support this argument. Zero tariff regime may in fact discourage tariff jumping FDI in this sector, as foreign firms will be able to export their finished IT and electronic products duty free and therefore will have little incentive to undertake investments in the country. Further, more important determinants of FDI include good infrastructure, stable business and political environment, growing per capita income, ICT-skilled labour, etc. This is supported by the results arrived for Egypt by Fakher (2016)[18] which estimates the impact of ICT investments on inward FDI for Egypt. The results of the study show that ICT investments has no impact on FDI, mainly because of the weakness of the ICT infrastructure in Egypt, which makes the technology in this stage the result of investment not a cause. The study also finds that the industrial wages and good governance play a key role to support FDI determinants by acting as an umbrella to them.

4. Impact of signing ITA-1-and ITA-2 on Digital Transformation in Developing Countries

With the advent of Industry 4.0, all developing countries have prioritized digital transformation in their national plans. All binding agreements are being assessed primarily on the basis of their impact on digital transformation strategies of the countries. ITA-1 and ITA-2 are being poised as agreements which can strengthen developing countries efforts for digital transformation. However, if examined closely these agreements can have serious adverse implications on digital industrialization of developing countries.

Digital revolution can be explained as a rapid rise of digital content or digital value-added in industrial production. This increase of digital content in industrial production is occurring in all stages of production for example, through use of big data analytics in the pre-production stage; 3D printing and robotics in the production stage; and e-commerce in the post-production stage. Higher use of digital technologies and digital services are needed to add digital content to industrial production. All digital technologies and digital services use data and software. It

[18] Amany Fakher (2016), "The Impact of Investment in ICT Sector on Foreign Direct Investment: Applied Study on Egypt", Review of Integrative Business and Economics Research, Vol. 5, no. 2, pp.151-166, April 2016.

therefore becomes extremely important to regulate the imports of data and software as a prerequisite to digital industrialization.

This industrialization strategy is similar to what developing as well as developed countries did when the first industrial revolution occurred. Tariffs were used as an important policy instrument to give domestic infant industry some protection and time to develop. In line with this, industries in developing countries also need protection to digitally develop and be able to face international competition. It is important to have the policy space and flexibility to apply zero tariff regime on IT products that are needed for digital transformation but higher tariffs on IT products that may challenge the domestic production.

Digital technologies like 3D printing has the potential to destroy domestic manufacturing in developing countries. It can achieve mass production of customized products, within the national boundaries of the consumers without physical presence of the foreign firms. New technologies for 3D printing are fast developing, e.g., high-speed sintering which mass produces customized products up to 100 units at a speed which is 100 times faster than a conventional 3D printer. According to (ING 2017)[19] with the current growth in investments in 3D printing, 50% of the manufactured products will be printed in 2060, which will wipe out 40% of cross-border trade and if investments are doubled, this can be achieved by 2040.

To remain competitive in the digital era, developing countries will have to digitally transform through targeted digital industrial policies and develop digital skills of its labour. It will have to learn to process data and build its digital capacities. All this will require a comprehensive digital transformation plan at the national level which should be supported by more targeted digital industrial policies at the sectoral level.

Further, the new digital technologies e.g., 3D printing use software, i.e., computer aided designs (CAD files) to print currently manufactured products like textiles, clothing, footwear, etc. These digital technologies can make all the negotiated tariffs on the physical goods become redundant as any foreign firm will be able to 3D print customized products like clothing, footwear, houses,

[19] https://think.ing.com/reports/3d-printing-a-threat-to-global-trade/.

etc. within the national boundaries of the consumers using their data, without being physically present.

ITA-2 includes many products which are used for producing, transmitting, or consuming digital content, such as touch screens, sound equipment, telecommunications satellites, video game hardware, all digital cameras, all software, and all recorded or unrecorded media (all of the 6-digit subheadings within HS 8523). It also includes digital content which do not yet have corresponding HS codes. Table Annex 2 reports a list of product descriptions which are included in ITA-2 but do not have corresponding HS codes at the 6-digit level. Countries which sign ITA-2 therefore will not be able to apply custom duties to digital content of the included digitizable products. In other words, these signatory countries will not be able to regulate the imports of software used in digital technologies including the software used in 3D printing.

The lack of capacity to impose customs on any software would imply that foreign firms will not want to establish base within the national boundaries as they will be able to electronically transmit software without any tariff and will be able to print any currently manufactured products. This will further discourage inflow of FDI.

ITA -2 list also includes some of the identified digitizable products where cross-border trade is expected to rise considerable with progressing digitalization. This includes digitizable products in chapter 85 like smart-cards; storage devices; video games, etc. But more importantly, ITA -2 also covers new age products which do not yet have six-digit HS classification like Multi-component integrated circuits (MCOs,); Light-Emitting Diode (LED) Backlights modules; Touch-Sensitive Data Input Devices (so-called touch screens) ; Printed matter which grants the right to access, install, reproduce or otherwise use software (including games), data, internet content (including in-game or in-application content) or services, or telecommunications services (including mobile services); Portable interactive electronic education devices; etc. All these products are being increasingly used in the digital technologies. According to USITC, demand

for MCOs is going to be high in coming years and US headquartered companies like Intel, Texas, Broadcom, etc. are among the leaders in this market[20].

It is therefore not advisable for developing countries to take binding commitments on agreements like ITA expansion where it is difficult to understand the implications of the agreement as there is no way of estimating the existing or future imports in the new products which do not yet have HS classification.

5. Conclusions

The main objective of this paper is to assess costs and benefits of signing ITA-1 and ITA-2. The paper highlights that while ITA-1 includes physical ICT products, ITA-2 covers many more products which are not defined as ICT products. Many of these products are consumer goods; electronic transmissions; digital content and digitizable products. The Agreements also include those products which do not yet have HS codes but are being increasingly used in digital technologies.

It needs to be noted that other participants of ITA-1 and ITA-2 lower their tariffs to zero on MFN basis and therefore full market access is available to developing countries even without participating in ITA agreements.

This paper provides a detailed critique of the methodology used by ITIF (2017). The results arrived by ITIF (2017) are based on the results of an earlier study by Cardona et al (2013), which using six national level analyses, had arrived at a result that a 10% increase in ICT investment will increase output growth by 0.5%-0.6%. Most of the studies used for this result used models which are based on unrealistic assumptions like government budgets are always balanced and tariff revenue lost can be recovered through internal taxes. In developing countries the existence

[20] Platzer, Michaela D. & Sargent, John F., Jr. U.S. Semiconductor Manufacturing: Industry. Trends, Global Competition, Federal Policy, report, June 27, 2016; Washington D.C. (digital.library.unt.edu/ark:/67531/metadc855842/m1/1/: accessed January 21, 2019), University of North Texas Libraries, Digital Library, digital.library.unt.edu; crediting UNT Libraries Government Documents Department.

of a large informal sector which is out of tax net makes it extremely difficult to recover the lost tariff revenue through increasing internal taxes.

With the advent of the fourth digital industrial revolution, it is important for developing countries to assess the impact of taking binding commitments in ITA agreements on their digital transformation efforts. Data and software are heart and brain of digital revolution and regulating their trade becomes extremely important. Signing of ITA-1 and ITA-2 can have far reaching implications for the existing policy space, especially in term of its digital industrial policy. These agreements include products like software, digital content and those products which are being increasingly used in digital technologies like 3D printing. Flexibility in applying tariffs as an effective policy instrument to regulate imports of these products will be needed by developing countries in its digital transformation plan.

With the outbreak of COVID-19, the need for generating revenues is being acutely felt by the Governments in developing countries in order to save lives and livelihoods of their citizens. Tariff revenues are not just needed to face the immediate crisis but will also be needed to enable the economies to recover and become resilient. Governments will also need the policy space to be able to regulate imports of luxury items and increase the imports of essential items. Any binding commitments will eat into this much-needed policy space and reduce the ability of the governments to generate additional revenues.

Table Annex 1; ITA-1 Products at HS-Combined Nomenclature

	HS CODES	
1	350691	350691 -- -- Adhesives based on polymers of headings 3901 to 3913 or on rubber
2	370130	370130 -- - Other plates and film, with any side exceeding 255 mm
3	370199	370199 -- -- Other
4	370790	370790 -- - Other
5	381800	381800 -- Chemical elements doped for use in electronics, in the form of discs, wafers or similar forms; chemical compounds doped for use in electronics
6	390799	390799 -- -- Other
7	702000	702000 -- Other articles of glass
8	841459	841459 -- -- Other
9	841950	841950 -- - Heat-exchange units
10	841990	841990 -- - Parts
11	842010	842010 -- - Calendering or other rolling machines
12	842129	842129 -- -- Other
13	842139	842139 -- -- Other
14	842191	842191 -- -- Of centrifuges, including centrifugal dryers
15	842199	842199 -- -- Other
16	842320	842320 -- - Scales for continuous weighing of goods on conveyors
17	842330	842330 -- - Constant weight scales and scales for discharging a predetermined weight of material into a bag or container, including hopper scales
18	842381	842381 -- -- Having a maximum weighing capacity not exceeding 30 kg
19	842382	842382 -- -- Having a maximum weighing capacity exceeding 30 kg but not exceeding 5000 kg
20	842389	842389 -- -- Other
21	842390	842390 -- - Weighing machine weights of all kinds; parts of weighing machinery
22	842489	842489 -- -- Other
23	842490	842490 -- - Parts
24	844230	844230 -- - Machinery, apparatus and equipment
25	844240	844240 -- - Parts of the foregoing machinery, apparatus or equipment
26	844250	844250 -- - Plates, cylinders and other printing components; plates, cylinders and lithographic stones, prepared for printing purposes (for example, planed, grained or polished)
27	844331	844331 -- (2007-) -- Machines which perform two or more of the functions of printing, copying or facsimile transmission, capable of connecting to an automatic data-processing machine or to a network
28	844332	844332 -- (2007-) -- Other, capable of connecting to an automatic data-processing machine or to a network
29	844339	844339 -- (2007-) -- Other
30	844391	844391 -- (2007-) -- Parts and accessories of printing machinery used for printing by means of plates, cylinders and other printing components of heading 8442
31	844399	844399 -- (2007-) -- Other
32	846693	846693 -- -- For machines of headings 8456 to 8461
33	846694	846694 -- -- For machines of heading 8462 or 8463
34	847010	847010 -- - Electronic calculators capable of operation without an external source of electric power and pocket-size data-recording, reproducing and displaying machines with calculating functions

35	847021	847021 -- -- Incorporating a printing device
36	847029	847029 -- -- Other
37	847030	847030 -- - Other calculating machines
38	847050	847050 -- - Cash registers
39	847090	847090 -- - Other
40	847130	847130 -- (1996-) - Portable automatic data-processing machines, weighing not more than 10 kg, consisting of at least a central processing unit, a keyboard and a display
41	847141	847141 -- (1996-) -- Comprising in the same housing at least a central processing unit and an input and output unit, whether or not combined
42	847149	847149 -- (1996-) -- Other, presented in the form of systems
43	847150	847150 -- (1996-) - Processing units other than those of subheading 847141 or 847149, whether or not containing in the same housing one or two of the following types of unit: storage units, input units, output units
44	847160	847160 -- (1996-) - Input or output units, whether or not containing storage units in the same housing
45	847170	847170 -- (1996-) - Storage units
46	847180	847180 -- (1996-) - Other units of automatic data-processing machines
47	847190	847190 -- (1996-) - Other
48	847210	847210 -- - Duplicating machines
49	847290	847290 -- - Other
50	847321	847321 -- -- Of the electronic calculating machines of subheading 847010, 847021 or 847029
51	847329	847329 -- -- Other
52	847330	847330 -- - Parts and accessories of the machines of heading 8471
53	847340	847340 -- - Parts and accessories of the machines of heading 8472
54	847350	847350 -- (1996-) - Parts and accessories equally suitable for use with machines of two or more of the headings 8470 to 8472
55	847521	847521 -- (1996-) -- Machines for making optical fibres and preforms thereof
56	847590	847590 -- - Parts
57	847689	847689 -- (1996-) -- Other
58	847690	847690 -- - Parts
59	847790	847790 -- - Parts
60	847989	847989 -- -- Other
61	847990	847990 -- - Parts
62	848620	848620 -- (2007-) - Machines and apparatus for the manufacture of semiconductor devices or of electronic integrated circuits
63	848630	848630 -- (2007-) - Machines and apparatus for the manufacture of flat panel displays
64	848640	848640 -- (2007-) - Machines and apparatus specified in note 9(C) to this chapter
65	848690	848690 -- (2007-) - Parts and accessories
66	850440	850440 -- - Static converters
67	850450	850450 -- - Other inductors
68	850490	850490 -- - Parts
69	850590	850590 -- - Other, including parts
70	850870	850870 -- (2007-) - Parts
71	851430	851430 -- - Other furnaces and ovens
72	851440	851440 -- - Other equipment for the heat treatment of materials by induction or dielectric loss

73	851490	851490 -- - Parts
74	851519	851519 -- -- Other
75	851590	851590 -- - Parts
76	851711	851711 -- (1996-) -- Line telephone sets with cordless handsets
77	851712	851712 -- (2007-) -- Telephones for cellular networks or for other wireless networks
78	851718	851718 -- (2007-) -- Other
79	851761	851761 -- (2007-) -- Base stations
80	851762	851762 -- (2007-) -- Machines for the reception, conversion and transmission or regeneration of voice, images or other data, including switching and routing apparatus
81	851769	851769 -- (2007-) -- Other
82	851770	851770 -- (2007-) - Parts
83	851810	851810 -- - Microphones and stands therefor
84	851821	851821 -- -- Single loudspeakers, mounted in their enclosures
85	851822	851822 -- -- Multiple loudspeakers, mounted in the same enclosure
86	851829	851829 -- -- Other
87	851830	851830 -- - Headphones and earphones, whether or not combined with a microphone, and sets consisting of a microphone and one or more loudspeakers
88	851840	851840 -- - Audio-frequency electric amplifiers
89	851850	851850 -- - Electric sound amplifier sets
90	851890	851890 -- - Parts
91	851950	851950 -- (2007-) - Telephone answering machines
92	851981	851981 -- (2007-) -- Using magnetic, optical or semiconductor media
93	851989	851989 -- (2007-) -- Other
94	852110	852110 -- - Magnetic tape-type
95	852190	852190 -- - Other
96	852290	852290 -- - Other
97	852321	852321 -- (2007-) -- Cards incorporating a magnetic stripe
98	852329	852329 -- (2007-) -- Other
99	852351	852351 -- (2007-) -- Solid-state non-volatile storage devices
100	852352	852352 -- (2007-) -- 'Smart cards'
101	852359	852359 -- (2007-) -- Other
102	852380	852380 -- (2007-) - Other
103	852550	852550 -- (2007-) - Transmission apparatus
104	852560	852560 -- (2007-) - Transmission apparatus incorporating reception apparatus
105	852580	852580 -- (2007-) - Television cameras, digital cameras and video camera recorders
106	852610	852610 -- - Radar apparatus
107	852691	852691 -- -- Radio navigational aid apparatus
108	852692	852692 -- -- Radio remote control apparatus
109	852712	852712 -- (1996-) -- Pocket-size radio cassette players
110	852713	852713 -- (1996-) -- Other apparatus combined with sound recording or reproducing apparatus
111	852719	852719 -- -- Other
112	852721	852721 -- -- Combined with sound recording or reproducing apparatus

113	852729	852729 -- -- Other
114	852791	852791 -- (2007-) -- Combined with sound recording or reproducing apparatus
115	852792	852792 -- (2007-) -- Not combined with sound recording or reproducing apparatus but combined with a clock
116	852799	852799 -- (2007-) -- Other
117	852849	852849 -- (2007-) -- Other
118	852871	852871 -- (2007-) -- Not designed to incorporate a video display or screen
119	852872	852872 -- (2007-) -- Other, colour
120	852910	852910 -- - Aerials and aerial reflectors of all kinds; parts suitable for use therewith
121	852990	852990 -- - Other
122	853120	853120 -- - Indicator panels incorporating liquid crystal devices (LCD) or light-emitting diodes (LED)
123	853180	853180 -- - Other apparatus
124	853190	853190 -- - Parts
125	853210	853210 -- - Fixed capacitors designed for use in 50/60 Hz circuits and having a reactive power handling capacity of not less than 0,5 kvar (power capacitors)
126	853221	853221 -- -- Tantalum
127	853222	853222 -- -- Aluminium electrolytic
128	853223	853223 -- -- Ceramic dielectric, single layer
129	853224	853224 -- -- Ceramic dielectric, multilayer
130	853225	853225 -- -- Dielectric of paper or plastics
131	853229	853229 -- -- Other
132	853230	853230 -- - Variable or adjustable (pre-set) capacitors
133	853290	853290 -- - Parts
134	853310	853310 -- - Fixed carbon resistors, composition or film types
135	853321	853321 -- -- For a power handling capacity not exceeding 20 W
136	853329	853329 -- -- Other
137	853331	853331 -- -- For a power handling capacity not exceeding 20 W
138	853339	853339 -- -- Other
139	853340	853340 -- - Other variable resistors, including rheostats and potentiometers
140	853390	853390 -- - Parts
141	853400	853400 -- Printed circuits
142	853630	853630 -- - Other apparatus for protecting electrical circuits
143	853650	853650 -- - Other switches
144	853669	853669 -- -- Other
145	853690	853690 -- - Other apparatus
146	853810	853810 -- - Boards, panels, consoles, desks, cabinets and other bases for the goods of heading 8537, not equipped with their apparatus
147	853890	853890 -- - Other
148	853939	853939 -- -- Other
149	854110	854110 -- - Diodes, other than photosensitive or light-emitting diodes (LED)
150	854121	854121 -- -- With a dissipation rate of less than 1 W
151	854129	854129 -- -- Other

152	854130	854130 -- - Thyristors, diacs and triacs, other than photosensitive devices
153	854140	854140 -- - Photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light-emitting diodes (LED)
154	854150	854150 -- - Other semiconductor devices
155	854160	854160 -- - Mounted piezoelectric crystals
156	854190	854190 -- - Parts
157	854231	854231 -- (2007-) -- Processors and controllers, whether or not combined with memories, converters, logic circuits, amplifiers, clock and timing circuits, or other circuits
158	854232	854232 -- (2007-) -- Memories
159	854233	854233 -- (2007-) -- Amplifiers
160	854239	854239 -- (2007-) -- Other
161	854290	854290 -- - Parts
162	854320	854320 -- - Signal generators
163	854330	854330 -- - Machines and apparatus for electroplating, electrolysis or electrophoresis
164	854370	854370 -- (2007-) - Other machines and apparatus
165	854390	854390 -- - Parts
166	854442	854442 -- (2007-) -- Fitted with connectors
167	854449	854449 -- -- Other
168	854470	854470 -- - Optical fibre cables
169	854890	854890 -- (1996-) - Other
170	880390	880390 -- - Other
171	880529	880529 -- (2002-) -- Other
172	900120	900120 -- - Sheets and plates of polarising material
173	900190	900190 -- - Other
174	900219	900219 -- -- Other
175	900220	900220 -- - Filters
176	900290	900290 -- - Other
177	901050	901050 -- (1996-) - Other apparatus and equipment for photographic (including cinematographic) laboratories; negatoscopes
178	901060	901060 -- (1996-) - Projection screens
179	901090	901090 -- - Parts and accessories
180	901110	901110 -- - Stereoscopic microscopes
181	901180	901180 -- - Other microscopes
182	901190	901190 -- - Parts and accessories
183	901210	901210 -- - Microscopes other than optical microscopes; diffraction apparatus
184	901290	901290 -- - Parts and accessories
185	901310	901310 -- - Telescopic sights for fitting to arms; periscopes; telescopes designed to form parts of machines, appliances, instruments or apparatus of this chapter or Section XVI
186	901320	901320 -- - Lasers, other than laser diodes
187	901380	901380 -- - Other devices, appliances and instruments
188	901390	901390 -- - Parts and accessories
189	901410	901410 -- - Direction finding compasses
190	901420	901420 -- - Instruments and appliances for aeronautical or space navigation (other than compasses)

191	901480	901480 -- - Other instruments and appliances
192	901490	901490 -- - Parts and accessories
193	901510	901510 -- - Rangefinders
194	901520	901520 -- - Theodolites and tachymeters (tacheometers)
195	901540	901540 -- - Photogrammetrical surveying instruments and appliances
196	901580	901580 -- - Other instruments and appliances
197	901590	901590 -- - Parts and accessories
198	901710	901710 -- - Drafting tables and machines, whether or not automatic
199	901720	901720 -- - Other drawing, marking-out or mathematical calculating instruments
200	901790	901790 -- - Parts and accessories
201	901820	901820 -- - Ultraviolet or infra-red ray apparatus
202	901850	901850 -- - Other ophthalmic instruments and appliances
203	901890	901890 -- - Other instruments and appliances
204	902150	902150 -- - Pacemakers for stimulating heart muscles, excluding parts and accessories
205	902190	902190 -- - Other
206	902212	902212 -- (1996-) -- Computed tomography apparatus
207	902213	902213 -- (1996-) -- Other, for dental uses
208	902214	902214 -- (1996-) -- Other, for medical, surgical or veterinary uses
209	902219	902219 -- -- For other uses
210	902221	902221 -- -- For medical, surgical, dental or veterinary uses
211	902229	902229 -- -- For other uses
212	902230	902230 -- - X-ray tubes
213	902290	902290 -- - Other, including parts and accessories
214	902300	902300 -- Instruments, apparatus and models, designed for demonstrational purposes (for example, in education or exhibitions), unsuitable for other uses
215	902410	902410 -- - Machines and appliances for testing metals
216	902480	902480 -- - Other machines and appliances
217	902490	902490 -- - Parts and accessories
218	902519	902519 -- -- Other
219	902590	902590 -- - Parts and accessories
220	902610	902610 -- - For measuring or checking the flow or level of liquids
221	902710	902710 -- - Gas or smoke analysis apparatus
222	902730	902730 -- - Spectrometers, spectrophotometers and spectrographs using optical radiation (UV, visible, IR)
223	902750	902750 -- - Other instruments and apparatus using optical radiation (UV, visible, IR)
224	902780	902780 -- - Other instruments and apparatus
225	902790	902790 -- - Microtomes; parts and accessories
226	902830	902830 -- - Electricity meters
227	902890	902890 -- - Parts and accessories
228	903010	903010 -- - Instruments and apparatus for measuring or detecting ionising radiation
229	903020	903020 -- - Oscilloscopes and oscillographs
230	903031	903031 -- -- Multimeters, without a recording device
231	903032	903032 -- (2007-) -- Multimeters, with a recording device

232	903033	903033 -- (2007-) -- Other, without a recording device
233	903039	903039 -- -- Other, with a recording device
234	903040	903040 -- - Other instruments and apparatus, specially designed for telecommunications (for example, cross-talk meters, gain measuring instruments, distortion factor meters, psophometers)
235	903082	903082 -- (1996-) -- For measuring or checking semiconductor wafers or devices
236	903084	903084 -- (2007-) -- Other, with a recording device
237	903089	903089 -- -- Other
238	903090	903090 -- - Parts and accessories
239	903110	903110 -- - Machines for balancing mechanical parts
240	903141	903141 -- (1996-) -- For inspecting semiconductor wafers or devices or for inspecting photomasks or reticles used in manufacturing semiconductor devices
241	903149	903149 -- (1996-) -- Other
242	903180	903180 -- - Other instruments, appliances and machines
243	903190	903190 -- - Parts and accessories
244	903220	903220 -- - Manostats
245	903281	903281 -- -- Hydraulic or pneumatic
246	950430	950430 -- - Other games, operated by coins, banknotes, bank cards, tokens or by any other means of payment, other than automatic bowling alley equipment
247	950490	950490 -- - Other

Table Annex 2: ITA Expansion List with No HS Codes

ITA-expansion product list

Item	HS 2007	ex *	Product Description
190	950430	ex	Other games, operated by coins, banknotes, bank cards, token, or by any other means of payment, other than automatic bowling equipment and games of chance that immediately return a monetary award
191	950490	ex	Video game consoles and machines, other than those of subheading 950430
192	B		**Multi-component integrated circuits (MCOs):** a combination of one or more monolithic, hybrid, or multi-chip integrated circuits with at least one of the following components: silicon-based sensors, actuators, oscillators, resonators or combinations thereof, or components performing the functions of articles classifiable under heading 8532, 8533, 8541, or inductors classifiable under heading 8504, formed to all intents and purposes indivisibly into a single body like an integrated circuit, as a component of a kind used for assembly onto a printed circuit board (PCB) or other carrier, through the connecting of pins, leads, balls, lands, bumps, or pads. For the purpose of this definition the following expressions mean: 1. " Components" may be discrete, manufactured independently then assembled onto the rest of the MCO, or integrated into other components. 2. "Silicon based" means built on a silicon substrate, or made of silicon materials, or manufactured onto integrated circuit die. 3(a). "Silicon based sensors" consist of microelectronic or mechanical structures that are created in the mass or on the surface of a semiconductor and that have the function of detecting physical or chemical quantities and transducing these into electric signals, caused by resulting variations in electric properties or displacement of a mechanical structure. "Physical or chemical quantities" relates to real world phenomena, such as pressure, acoustic waves, acceleration, vibration, movement, orientation, strain, magnetic field strength, electric field strength, light, radioactivity, humidity, flow, chemicals concentration, etc. 3(b). "Silicon based actuators" consist of microelectronic and mechanical structures that are created in the mass or on the surface of a semiconductor and that have the function of converting electrical signals into physical movement. 3(c). "Silicon based resonators" are components that consist of microelectronic or mechanical structures that are created in the mass or on the surface of a semiconductor and have the function of generating a mechanical or electrical oscillation of a predefined frequency that depends on the physical geometry of these structures in response to an external input. 3(d). "Silicon based oscillators" are active components that consist of microelectronic or mechanical structures that are created in the mass or on the surface of a semiconductor and that have the function of generating a mechanical or electrical oscillation of a predefined frequency that depends on the physical geometry of these structures.
193	B		**Light-Emitting Diode (LED) Backlights modules,** which are lighting sources that consist of one or more LEDs, and one or more connectors and are mounted on a printed circuit or other similar substrate, and other passive components, whether or not combined with optical components or protective diodes, and used as backlights illumination for liquid crystal displays (LCDs)

Item	HS 2007	ex *	Product Description
194	B		**Touch-Sensitive Data Input Devices (so-called touch screens)** without display capabilities, for incorporation into apparatus having a display, which function by detecting the presence and location of a touch within the display area. The sensing of touch may be obtained by means of resistance, electrostatic capacity, acoustic pulse recognition, infra-red lights, or other touch-sensitive technology
195	B		**Ink cartridges** (with or without an integrated print head) for insertion into apparatus of HS subheadings 844331, 844332 or 844339, and incorporating mechanical or electrical components; thermoplastic or electrostatic toner cartridges (with or without moving parts) for insertion into apparatus of HS subheadings 844331, 844332 or 844339; solid ink in engineered shapes for insertion into apparatus of HS subheadings 844331, 844332 or 844339
196	B		**Printed matter** which grants the right to access, install, reproduce or otherwise use software (including games), data, internet content (including in-game or in-application content) or services, or telecommunications services (including mobile services)**
197	B		**Self-adhesive circular polishing pads** of a kind used for the manufacture of semiconductor wafers
198	B		**Boxes, cases, crates and similar articles,** of plastic, specially shaped or fitted for the conveyance or packing of semiconductor wafers, masks, or reticles, of subheading 392310 or 848690
199	B		**Vacuum pumps** of a kind used solely or principally for the manufacture of semiconductors or flat panel displays
200	B		**Plasma cleaner machines** that remove organic contaminants from electron microscopy specimens and specimen holders
201	B		**Portable interactive electronic education devices** primarily designed for children

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