**Appendix A**

Table 10: Descriptive statistics

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variables** | **Mean** | **Standard Deviation** | **Minimum** | **Maximum** | **Data Source** |
| Duty drawback | 421238.4 | 1272283 | 0 | 1.56e+07 | CMIE Prowess |
| Gross fixed assets | 1.45e+07 | 4.18e+07 | 24418.22 | 5.79e+08 | CMIE Prowess |
| Abatement expenditure | 155588.8 | 428356.7 | 0 | 5185973 | CMIE Prowess |
| Product scope | 5.047445 | 4.386774 | 1 | 70 | Author’s calculation from CMIE Prowess database |
| Number of firms | 50.40389 | 43.1141 | 1 | 107 | Author’s calculation from CMIE Prowess database |
| Capital-labour ratio | -6794332 | 1.42e+08 | -2.83e+09 | 7045644 | Author’s calculation from ASI |
| Export of final goods | 1.63e+07 | 5.06e+07 | 0 | 5.08e+08 | CMIE Prowess |
| Imported inputs | 5691686 | 1.81e+07 | 0 | 1.79e+08 | CMIE Prowess |
| Import of capital goods | 395622.6 | 1210601 | 0 | 1.31e+07 | CMIE Prowess |
| Number of employees | 1512.315 | 4427.821 | 2 | 39821 | CMIE Prowess |
| Gross value added | 2.13e+07 | 7.72e+07 | -582364 | 1.35e+09 | ASI |
| R & D expenditure | 1431715 | 5869446 | 0 | 5.10e+07 | CMIE Prowess |
| Technical know-how fees | 141115.8 | 243238.5 | 7770.687 | 705930.1 | CMIE Prowess |
| Royalty | 974044.6 | 2414445 | 0 | 9283091 | CMIE Prowess |
| Age | 27.93552 | 13.63352 | 9 | 97 | Author’s calculation from CMIE Prowess database |

**Appendix B**

Table 11: Description of industries at 3-digit NIC code

|  |  |
| --- | --- |
| NIC 2008 code | Description |

 Division 10 Manufacture of food products Group 101 Processing and preserving of meat

Group 102 Processing and preserving of fish, crustaceans and molluscs

Group 103 Processing and preserving of fruit and vegetables Group 104 Manufacture of vegetable and animal oils and fats Group 105 Manufacture of dairy products

Group 106 Manufacture of grain mill products, starches and starch products Group 107 Manufacture of other food products

Group 108 Manufacture of prepared animal feeds Division 11 Manufacture of beverages

Group 110 Manufacture of beverages Division 12 Manufacture of tobacco products Group 120 Manufacture of tobacco products Division 13 Manufacture of textiles

Group 131 Spinning, weaving and finishing of textiles

Group 139 Manufacture of other textiles Division 14 Manufacture of wearing apparel

Group 141 Manufacture of wearing apparel, except fur apparel Group 142 Manufacture of articles of fur

Group 143 Manufacture of knitted and crocheted apparel Division 15 Manufacture of leather and related products

Group 151 Tanning and dressing of leather; manufacture of luggage, handbags, saddlery and harness; dressing and dyeing of fur

Group 152 Manufacture of footwear

Division 16 Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials

Group 161 Sawmilling and planing of wood

Group 162 Manufacture of products of wood, cork, straw and plaiting materials

Division 17 Manufacture of paper and paper products Group 170 Manufacture of paper and paper products Division 18 Printing and reproduction of recorded media

Group 181 Printing and service activities related to printing Group 182 Reproduction of recorded media

Division 19 Manufacture of coke and refined petroleum products

Group 191 Manufacture of coke oven products

Group 192 Manufacture of refined petroleum products

Division 20 Manufacture of chemicals and chemical products

Group 201 Manufacture of basic chemicals, fertilizer and nitrogen compounds, plastics and synthetic rubber in primary forms

Group 202 Manufacture of other chemical products

Group 203 Manufacture of man-made fibres

Division 21 Manufacture of pharmaceuticals, medicinal chemical and botanical products

Group 210 Manufacture of pharmaceuticals, medicinal chemical and botanical products Division 22 Manufacture of rubber and plastics products

Group 221 Manufacture of rubber products Group 222 Manufacture of plastics products

Division 23 Manufacture of other non-metallic mineral products Group 231 Manufacture of glass and glass products

Group 239 Manufacture of non-metallic mineral products n.e.c.

Division 24 Manufacture of basic metals Group 241 Manufacture of basic iron and steel

Group 242 Manufacture of basic precious and other non-ferrous metals Group 243 Casting of metals

Division 25 Manufacture of fabricated metal products, except machinery and equipment Group 251 Manufacture of structural metal products, tanks, reservoirs and steam

generators

Group 252 Manufacture of weapons and ammunition

Group 259 Manufacture of other fabricated metal products; metalworking service activities

|  |
| --- |
| Division 26 Manufacture of computer, electronic and optical products |
| Group | 261 | Manufacture of electronic components |
| Group | 262 | Manufacture of computers and peripheral equipment |
| Group | 263 | Manufacture of communication equipment |
| Group | 264 | Manufacture of consumer electronics |
| Group | 265 | Manufacture of measuring, testing, navigating and control equipment; |
|  |  | watches and clocks |
| Group | 266 | Manufacture of irradiation, electromedical and electrotherapeutic equipment |
| Group | 267 | Manufacture of optical instruments and equipment |
| Group | 268 | Manufacture of magnetic and optical media |
| Division 27 Manufacture of electrical equipment |

Group 271 Manufacture of electric motors, generators, transformers and electricity distribution and control apparatus

Group 272 Manufacture of batteries and accumulators Group 273 Manufacture of wiring and wiring devices Group 274 Manufacture of electric lighting equipment Group 275 Manufacture of domestic appliances Group 279 Manufacture of other electrical equipment

Division 28 Manufacture of machinery and equipment n.e.c.

Group 281 Manufacture of general purpose machinery Group 282 Manufacture of special-purpose machinery

Division 29 Manufacture of motor vehicles, trailers and semi-trailers Group 291 Manufacture of motor vehicles

Group 292 Manufacture of bodies (coachwork) for motor vehicles; manufacture of

trailers and semi-trailers

Group 293 Manufacture of parts and accessories for motor vehicles Division 30 Manufacture of other transport equipment

Group 301 Building of ships and boats

Group 302 Manufacture of railway locomotives and rolling stock Group 303 Manufacture of air and spacecraft and related machinery Group 304 Manufacture of military fighting vehicles

Group 309 Manufacture of transport equipment n.e.c. Division 31 Manufacture of furniture

Group 310 Manufacture of furniture

Division 32 Other manufacturing

|  |  |  |
| --- | --- | --- |
| Group | 321 | Manufacture of jewellery, bijouterie and related articles |
| Group | 322 | Manufacture of musical instruments |
| Group | 323 | Manufacture of sports goods |
| Group | 324 | Manufacture of games and toys |
| Group | 325 | Manufacture of medical and dental instruments and supplies |
| Group | 329 | Other manufacturing n.e.c. |

Division 33 Repair and installation of machinery and equipment

Group 331 Repair of fabricated metal products, machinery and equipment Group 332 Installation of industrial machinery and equipment

# Appendix C

## Effective rates of protection

Apart from nominal tariffs, other measures of protection include input tariffs, effective rates of protection and an array of non-tariff barriers. While output tariff data are easily available and comparable over time, data on input tariffs are not available. It is pertinent to control for the effects of input tariffs in order to ascertain the degree of protection of any industry (Topalova and Khandelwal, 2011). The effect of any change in output tariff in an industry would be offset by corresponding changes in tariffs on intermediate inputs. As a result, measures like input tariffs and effective rates of production lay out a more comprehensive exposition of patterns of trade protection across industries.

I compute input tariffs and the effective rates of protection across two-digit NIC codes in order to get a more concrete idea about the pattern of protection across industries over time. Following the methodology defined by Corden (1966), the effective rate of protection (ERP) has been computed as

 ; (C1)

where *ERPjt* refers to the effective rate of protection of industry *j* at time *t*; *αjs* is the share

of input *s* in the value of output *j*, i.e., the input-output coefficient and input tariff for industry *j* is given by

 *input tariffjt* = Σ*sαjs.output tariffjt.* (C2)

Data on input-output coefficients for India have been obtained from the World Input-Output Database, 2016, which provides annual input-output tables for the period 2000-14 for 56 sectors classified under the International Standard Industrial Classification revision 4 (ISIC Rev. 4) on which the NIC 2008 codes are based. The results are compiled in Table 12.

Table 12: Output tariff, input tariff and effective rate of protection

|  |  |  |  |
| --- | --- | --- | --- |
| Industry | Year | Nominal tariff (simple average in per cent) | Nominal tariff (weighted average in per cent) |
| Manufacture of food products | 2009 | 36.300 | 54.270 |
|  | 2010 | 35.560 | 39.680 |
|  | 2011 | 39.640 | 51.130 |
|  | 2012 | 42.220 | 58.030 |
|  | 2013 | 42.230 | 58.430 |
| Manufacture of tobacco products | 2009 | 34.000 | 31.510 |
|  | 2010 | 34.090 | 30.820 |
|  | 2011 | 36.260 | 28.180 |
|  | 2012 | 36.260 | 28.180 |
|  | 2013 | 36.260 | 28.180 |
| Manufacture of textiles | 2009 | 11.840 | 12.200 |
|  | 2010 | 9.040 | 9.900 |
|  | 2011 | 12.360 | 11.030 |
|  | 2012 | 12.070 | 10.850 |
|  | 2013 | 11.710 | 11.030 |
| Manufacture of leather and related products | 2009 | 9.430 | 9.390 |
|  | 2010 | 8.310 | 8.520 |
|  | 2011 | 10.000 | 10.000 |
|  | 2012 | 10.000 | 10.000 |
|  | 2013 | 10.000 | 10.000 |
| Manufacture of paper and paper products | 2009 | 9.260 | 8.770 |
|  | 2010 | 8.170 | 5.050 |
|  | 2011 | 9.660 | 8.750 |
|  | 2012 | 9.660 | 8.750 |
|  | 2013 | 9.660 | 8.750 |
| Printing and reproduction of recorded media | 2009 | 8.410 | 8.290 |
|  | 2010 | 6.590 | 8.130 |
|  | 2011 | 6.630 | 6.310 |
|  | 2012 | 7.110 | 8.200 |
|  | 2013 | 6.650 | 8.190 |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Industry | Year | Nominal tariff (simple average) | Nominal tariff (weighted average) |
| Manufacture of coke and refined petroleum products | 2009 | 5.100 | 5.000 |
|  | 2010 | 7.760 | 7.580 |
|  | 2011 | 6.220 | 5.820 |
|  | 2012 | 4.990 | 5.010 |
|  | 2013 | 4.990 | 5.010 |
| Manufacture of rubber and plastics products | 2009 | 9.690 | 9.460 |
|  | 2010 | 8.810 | 8.740 |
|  | 2011 | 9.910 | 9.890 |
|  | 2012 | 9.910 | 9.890 |
|  | 2013 | 9.910 | 9.890 |
| Manufacture of other non-metallic mineral products | 2009 | 9.200 | 8.020 |
|  | 2010 | 7.910 | 7.850 |
|  | 2011 | 9.460 | 8.700 |
|  | 2012 | 9.480 | 8.710 |
|  | 2013 | 9.480 | 8.710 |
| Manufacture of basic metals | 2009 | 5.990 | 8.650 |
|  | 2010 | 5.290 | 8.640 |
|  | 2011 | 6.200 | 8.810 |
|  | 2012 | 6.560 | 8.960 |
|  | 2013 | 6.540 | 8.940 |
| Manufacture of fabricated metal products, except machinery and equipment | 2009 | 9.650 | 9.460 |
|  | 2010 | 8.390 | 8.540 |
|  | 2011 | 9.880 | 9.870 |
|  | 2012 | 9.910 | 9.880 |
|  | 2013 | 9.910 | 9.880 |
| Manufacture of machinery and equipment n.e.c. | 2009 | 7.940 | 6.880 |
|  | 2010 | 6.510 | 5.940 |
|  | 2011 | 7.650 | 6.840 |
|  | 2012 | 7.730 | 6.860 |
|  | 2013 | 7.580 | 6.680 |

Table 12 (continued): Output tariff, input tariff and effective rate of protection

|  |  |  |  |
| --- | --- | --- | --- |
| Industry | Year | Input tariff (in per cent) | Effective rate of protection (in per cent) |
| Manufacture of food products | 2009 | 13.165 | 61.474 |
|  | 2010 | 11.342 | 43.391 |
|  | 2011 | 13.496 | 59.343 |
|  | 2012 | 12.146 | 66.081 |
|  | 2013 | 11.516 | 65.926 |
| Manufacture of tobacco products | 2009 | 13.165 | 27.435 |
|  | 2010 | 11.342 | 29.824 |
|  | 2011 | 13.496 | 23.155 |
|  | 2012 | 12.146 | 23.092 |
|  | 2013 | 11.516 | 23.418 |
| Manufacture of textiles | 2009 | 5.115 | 13.061 |
|  | 2010 | 4.907 | 10.249 |
|  | 2011 | 5.369 | 11.122 |
|  | 2012 | 4.874 | 10.871 |
|  | 2013 | 4.615 | 11.129 |
| Manufacture of leather and related products | 2009 | 5.115 | 7.881 |
|  | 2010 | 4.907 | 7.416 |
|  | 2011 | 5.369 | 9.099 |
|  | 2012 | 4.874 | 9.325 |
|  | 2013 | 4.615 | 9.342 |
| Manufacture of paper and paper products | 2009 | 3.095 | 7.775 |
|  | 2010 | 2.408 | 3.643 |
|  | 2011 | 3.134 | 7.817 |
|  | 2012 | 0.463 | 8.646 |
|  | 2013 | 2.709 | 7.939 |
| Printing and reproduction of recorded media | 2009 | 3.150 | 7.719 |
|  | 2010 | 2.407 | 8.668 |
|  | 2011 | 3.086 | 4.929 |
|  | 2012 | 3.004 | 7.647 |
|  | 2013 | 2.844 | 7.674 |

|  |  |  |  |
| --- | --- | --- | --- |
| Industry | Year | Input tariff | Effective rate of protection |
| Manufacture of coke and refined petroleum products | 2009 | 0.347 | 4.918 |
|  | 2010 | 0.463 | 7.526 |
|  | 2011 | 0.474 | 5.732 |
|  | 2012 | 0.132 | 4.977 |
|  | 2013 | 0.119 | 4.980 |
| Manufacture of rubber and plastics products | 2009 | 3.096 | 8.522 |
|  | 2010 | 2.877 | 7.967 |
|  | 2011 | 3.243 | 9.031 |
|  | 2012 | 3.029 | 9.126 |
|  | 2013 | 2.947 | 9.163 |
| Manufacture of other non-metallic mineral products | 2009 | 2.324 | 7.281 |
|  | 2010 | 2.503 | 7.009 |
|  | 2011 | 2.668 | 7.980 |
|  | 2012 | 2.035 | 8.205 |
|  | 2013 | 1.947 | 8.227 |
| Manufacture of basic metals | 2009 | 2.352 | 8.524 |
|  | 2010 | 2.409 | 8.499 |
|  | 2011 | 2.549 | 8.667 |
|  | 2012 | 1.931 | 8.875 |
|  | 2013 | 1.937 | 8.856 |
| Manufacture of fabricated metal products, except machinery and equipment | 2009 | 3.503 | 9.719 |
|  | 2010 | 3.511 | 8.379 |
|  | 2011 | 3.645 | 10.316 |
|  | 2012 | 3.207 | 10.195 |
|  | 2013 | 3.294 | 10.239 |
| Manufacture of machinery and equipment n.e.c. | 2009 | 2.755 | 6.177 |
|  | 2010 | 2.814 | 4.910 |
|  | 2011 | 3.058 | 5.932 |
|  | 2012 | 2.774 | 6.064 |
|  | 2013 | 2.788 | 5.825 |

# Note: Nominal tariff rates have been obtained from the WITS database. Input tariffs and effective rates of protection have been computed by the authors.

**Appendix D**

**Effect of a duty drawback scheme on the domestic price**

Suppose, an economy exports good $Y$ that uses an imported input $X$, such that the input-output coefficient is given by an exogenous parameter, $a\_{XY}$ (the amount of good $X$ used to produce one unit of good $Y$). Furthermore, there exists an ad valorem tariff, $t\_{X}$ on imports of the intermediate input $Y$. The domestic and international price of good $Y$

are $p\_{Y}$ and \_$p\_{Y}^{\*} $, respectively. $p\_{Y}^{\*} $may or may not be exogenous.

Now, in order to promote international competitiveness of the export sector, the government introduces a duty drawback scheme where the export sector either receives partial or complete remission of the tariff levied on the import of the intermediate good $X$ that is used in the manufacture of export good $Y$. Let $d$ be the percentage of duty drawback accruing on the tariff paid on the input used to produce one unit of export good $Y$, such that $d\in [0, 1]$. Sector $Y$ receives partial refund when $d<1$, and a full refund implies $d=1$.

Therefore, the per unit remission, $r$ received by sector $Y$ is given by

|  |  |  |
| --- | --- | --- |
|  | $$r=dt\_{X}a\_{XY}$$ | (D1) |

The duty drawback would make exports cheaper and raise the domestic price of good $Y$, i.e.,

|  |  |  |
| --- | --- | --- |
|  | $$p\_{Y}=\left(1+r\right)p\_{Y}^{\*}$$ | (D2) |

Under an alternative scenario where the government introduces an ad valorem export subsidy, $s$ on good $Y$ instead of a duty drawback, the domestic price of $Y$ would rise. We have,

|  |  |  |
| --- | --- | --- |
|  | $$p\_{Y}=\left(1+s\right)p\_{Y}^{\*}$$ | (D3) |

Equations (E2) and (E3) are equivalent in terms of the effect of the trade policy on the domestic price of good $Y$. Consequently, the price distortion driven by a duty drawback scheme is equivalent to that of an export subsidy. As per the SCM Agreement, a duty drawback would be viewed as an export subsidy when $d>1$.