Macro-trends in Steel Industry in India: Implications for Risk

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ABSTRACT

This paper presents a macro level analysis of steel industry. We have estimated the growth trend for production, consumption, exports and imports at the economy level by using a semi-log equation model. Firstly, we found that all variables are significantly related to a catch-all variable called 'time'. Secondly, we calculated the predicted value of all variables and compared them with the actual value by the graphic presentations. They closely follow each other in most cases. The regression analysis shows that production grew at 8% and consumption at 7.75 during the time period 1992-2015. Exports grew at 9.78% per annum and declined drastically after the year 2005. On the other hand, the imports grew at 10.53% and increased also drastically after 2005. It shows that after the year 2005, there could have been a change in the industrial policy. On the whole we concluded that production and consumption increased over the time. Exports and imports show an increasing trend but export trend is weaker than the import trend. This shows that systematic risk arises due to transaction exposure of volatility in foreign exchange because we earned less Foreign Exchange (FE) and spent more on steel import in the form of Foreign Exchange. Since the time when FE rate regime has been liberalised the FE rates have been very volatile and Rupee has been depreciating constantly. If a larger sum is spent on imports it implies that the foreign exchange risk is higher. But since this is systematic risk it cannot be diversified.

Keywords: *Semi-log growth equation; Steel industry; Export of steel; Systematic risk.*

1.0 Introduction

Steel industry is a traditionally heavy industry which had been dominated by the public sector. It was only after liberalization, in 1991 that decontrol of this industry happened. This implied many things. In the era of control, the consumption was restricted; there was a license system for buying steel in bulk. Therefore, consumption was to made match production. This led to a restrictive business environment in the industry.

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After policy of liberalization, financial management of steel industry too was liberalised. The economy opened up to the external sector; trade was liberalised and tariffs were reduced. In the absence of licensing, new steel firms could be set-up. All of this led to the growth of steel industry. Steel industry saw more competition between public and private sectors and this led to a further environment of risk. The opening of the external sector had implications for the pattern of import and export because of domestic consumption and production. The increase in the steel industry's exposure to foreign markets gave rise to foreign exchange risk which added to the existing risk.

We need to understand the macro picture for realising the significance of systematic risk. Hence, our first level of analysis consists of the study of production, consumption, export and import by analysing the macro level. In this section, we will calculate the annual compound growth rate (ACGR) of steel industry from 1992 to 2015 (after decontrol) over the time period of 24 years by using semi-log regression model. There are four variables (production, consumption, export and import) and one independent variable (year) for all respective dependent variables. For ACGR firstly, we will calculate the instantaneous growth rate (for all respective variables) by taking log both side, then calculate the exponential value of instantaneous growth rate and subtract one from this value and multiply by 100. Now we find ACGR for all respective dependent variables over the time. Secondly, we calculate the predicted value of all dependent variables by taking the exponential value of log value of respective variables and compare them with actual variables by graph.

2.0 Review of Literature

Panday (2008) observes a particular trend in the steel industry. He found that per capita consumption and exports have also been gone up with the LPG era (liberalization, privatization and globalization). He showed that due to availability of raw material and low costs manpower, the Indian steel industry was in the growth stage, and this trend will be continue for next several years. Bhandari, Firoz, Mundhe and Jaitly (2009) show that economic growth of India is contingent upon the growth of the Indian steel industry and steel consumption is also taken to be an indicator of economic development. They find that production of steel in India has increased by a compounded annual growth rate (CAGR) of 8 percent during the period 2002-03 to 2006-07.

Firoj (2014) shows that all nations from their industrialization history have been supported by a strong steel industry of their own. From construction, industrial machinery to consumer products, steel finds a wide variety of applications. He finds that steel industry is characterized by high capital intensity, high dependence on bulk raw

materials, cyclical growth trends, perpetual over-capacity and relatively low profitability. He also shows that the problems associated with the steel industry are generally complex requiring larger governmental and social interventions for its sustainable growth.

Kulkarni (2015) gives a brief report on iron and steel industry in India. He explains the growth in production, consumption, exports, imports, investment, and sales in steel industry. He focuses on the New National Steel Policy, 2005. Parmila, Kumar and Karmakar (2016) show that New Industrial policy opened up the Indian iron and steel industry for private investment by removing it from the list of industries reserved for public sector and exempting it from compulsory licensing. Imports of foreign technology as well as foreign direct investment are now freely permitted up to certain limits under an automatic route. They show that Ministry of Steel plays the role of a facilitator, providing broad directions and assistance to new and existing steel plants, in the liberalised scenario. They also show that the rapid and stable growth of the demand side has also prompted domestic entrepreneurs to set up fresh greenfield projects in different states of the country from the last few years.

3.0 Data and Methodology

Since 1991 when economic reforms were initiated by the government, we have seen new dimensions of industrial growth particularly in steel industry. Licensing requirement to increase capacity has been abolished. Steel industry has been removed from the list of industries reserved for the public sector and has an approval of foreign equity investment upto 100% automatically. Price and distribution controls have been removed from Jan. 1992. Restrictions on external trade, both in import and export have been removed. Import duty rates have been reduced drastically.

We collected the aggregate data from MS (Ministry of Steel) and JPC (Joint Plant Committee). There are four aggregate variables which we have used in growth analysis.

(i) *Production: (alloy + non-alloy)*: This is the large share of the main and other producers in total finished production for sale. It is largely due to substantial availability of raw materials as well as expansion of capacities and emergence of new units.

(ii) *Consumption*: Real Consumption is obtained from apparent consumption (production + imports – exports +/- variation in stocks) of total finished steel after adjusting for double counting in flat products.

(iii) *Export*: India started exporting steel way back in 1964, as exports were not restricted largely on domestic surpluses. Therefore, after liberalization, export of steel has been increased drastically. Subsequently, the rapid growth of domestic steel demand has led to a decline in the rate of growth exports as India ensured that her domestic requirements are

adequately met.

(iv) *Import*: Steel products were free to be imported; the advance licensing scheme allowed duty free import of raw material for export.

3.1 Methodology for Macro-level analysis

We have analysed the trends and growth of steel industry by using semi-log regression model at economy level during 1992 to 2015 (after decontrol policy). We have calculated the Annual Compound Growth Rate (ACGR) of the four variables (production, consumption, export and import).

Semi-log Growth Equation: The growth rate has been calculated by using the semi-log regression function, which is the best for determining growth rates.

$$\text{Log } Y_t = a + b \cdot t \quad \dots\dots\dots(1)$$

$$\text{Log } Y_{(t-1)} = a + b \cdot (t-1) \quad \dots\dots\dots(2)$$

Subtracting equation (2) from (1)

$$\text{Log } t - \text{Log } (t-1) = b$$

$$\text{Or } \text{Log } (Y_t/Y_{(t-1)}) = b$$

Hence, b is measure of the relative change of Y over time and it is the exponential growth rate.

And now,

$$Y_t = Y_0 (1+r)^t$$

Taking log on both sides,

$$\text{Ln } Y_t = \text{Ln } Y_0 + t \text{ Ln } (1+r)$$

$$\text{Ln } Y_t = b_1 + b_2$$

Now considering only b_2 for growth rate...

$$b_2 = \text{Ln } (1+r)$$

$$\text{Antilog } b_2 = 1 + r$$

$$r = \text{Antilog } b_2 - 1$$

“ b_2 (Beta)” is *instantaneous growth rate* i.e. at a point of time

“ r ” is *annual compounding growth rate* (ACGR) i.e. over a period of time.

Estimating Equation: With the help of the equation above, we can arrive at estimates of a & b

$$\text{Ln } Y_t = a + bt + \mu t \quad \dots\dots\dots 11$$

There are three purposes of estimating the regression equation:

- To obtain estimators of a & b .
- To ascertain the predicted dependent variable Y_t with the help of independent variable X this is ‘ t ’ in this case.
- To eliminate the error term.

4.0 Results and Analysis: Growth Trends in Macro-Variables

In this section we have analysed the results of macro level analysis. In this context, we have calculated the growth and trends for production, consumptions, exports and imports by semi-log equations. Results and analyses have been presented with the help of regression statistics and graphical analysis.

4.1 Growth and trend for aggregate production

In this section, we calculate the growth and trend for aggregate production of steel industry at economy level. Tables 1(a) to 1(d) show the results of regression and ANOVA, along with residual output. Here, the R square value is 0.991, which suggests that our regression model is a good fit.

Estimated Equation

$$\text{LnPr} = -150.69 + 0.077 + e_t$$

(t-stat) (-47.73) (48.89)

Table 1(a): Regression Statistics

Multiple R	0.995429826
R Square	0.990880538
Adjusted R Square	0.990466017
Standard Error	0.053436881
Observations	24

Table 1(b): ANOVA

Output	Df	SS	MS	F	Significance F
Regression	1	6.825	6.8258	2390.4229	6.12745E-24
Residual	22	0.0628	0.0028		
Total	23	6.8886			

Table 1(c): Coefficients

Variables	Coefficients	Standard Error	t-stat	P-value
Intercept	-150.6946559	3.157069335	-47.73245056	1.03406E-23
Years	0.077042355	0.001575768	48.8919514	6.12745E-24

Table 1(d): Residual Output

Observation	Predicted LnPR	Residuals	Predicted Production	Actual Production
1	2.773716179	-0.11808271	16.01804949	14.234
2	2.850758535	-0.024273659	17.3009002	16.886
3	2.92780089	-0.093176777	18.68649163	17.024
4	3.004843246	-0.004869978	20.18305207	20.085
5	3.081885601	0.108302642	21.79946877	24.293
6	3.158927957	0.111553114	23.54534077	26.324
7	3.235970312	0.075302362	25.43103585	27.42
8	3.313012668	0.003280207	27.46775215	27.558
9	3.390055023	0.027507713	29.66758463	30.495
10	3.467097379	0.009702097	32.04359689	32.356
11	3.544139734	-0.036302655	34.60989881	33.376
12	3.621182089	-0.005787725	37.38173026	37.166
13	3.698224445	0.008224753	40.37555166	40.709
14	3.7752668	-0.002207056	43.6091417	43.513
15	3.852309156	-0.011438495	47.10170292	46.566
16	3.929351511	0.032013887	50.87397577	52.529
17	4.006393867	0.020296214	54.94836174	56.075
18	4.083436222	-0.037511893	59.34905641	57.164
19	4.160478578	-0.055787723	64.10219314	60.624
20	4.237520933	-0.008922323	69.23599824	68.621
21	4.314563289	0.015762074	74.78095862	75.969
22	4.391605644	0.011215773	80.7700028	81.681
23	4.468648	0.004988796	87.23869649	87.675
24	4.545690355	-0.029788637	94.22545378	91.46

The Annual compound growth rate (ACGR) of production of steel industry is 8% over the time and t-statistic value of intercept and slope are (-47.73) and (48.89) respectively. This variable is statistically significant ($t > 2$). This implies that the production of the steel industry is growing at 8% over period (1992-2015).

Moreover, the overall ACGR for production is 8% for the entire 24 year-period. It is closely related to the instantaneous growth rate of 7.7% p.a derived from the semi-log equation.

Figure 1 below presents the trend in aggregate production of steel for India during 1992-2015. It can be observed that the level of production was low at the beginning, but over the 24-year period there was a definite trend of production growing at a positive rate. This consists with the findings from the equation, wherein the productions were found to be growing at a rate of 8% p.a. during 1992-2015.

Figure 1: Trends in the Aggregate Production in Steel in India during the 1992-2015

It can be seen from Figure 1 that predicted production and actual production are almost same over the time. We found minor difference in the year 1994, 1996 and 2010. In the year 1994 actual production is low to the predicted production, after that actual production started to increase. In 1995 actual and predicted production were same and after that actual production started to increase up to 1997. Since 1997 actual production is higher as compared to predicted production and it started to decrease from 1999. From 1999 to 2009, actual and predicted production were the same. In 2009 actual production started to decrease as compared to predicted production. From 2011 to 2015 predicted and actual production was same. We found minor difference between predicted and actual

production of the steel industry between different times. Therefore, predicted production fits to show the trend in actual production.

4.2 Growth and trends for aggregate consumption

In this section, we calculate the growth trend for aggregate consumption of steel industry at economy level. Tables 2(a) to 2(d) show the results of regression and ANOVA, along with residual output. The R square value is 0.9866, which suggest that our regression fit the data very well.

Estimated Equation

$$\text{LnCo} = -146.086 + 0.07468 + e_t$$

(t-stat) (-39.33) (40.29)

Annual compound growth rate (ACGR) of consumption of steel industry is 7.75% and t-statistic value of intercept and slope are (-39.34) and (40.29) respectively. This variable is statistically significant ($t > 2$). This employs that consumption of the steel industry is growing at 7.75% over the period (1992-2015). Moreover, the overall ACGR for consumption is 7.75% for the entire 24-year period. It is very close to the instantaneous growth rate of 7.46% p.a. derived from the semi-log equation. In fact, we can say both rates are almost same.

Table 2(a): Regression Statistics

Multiple R	0.993292767
R Square	0.986630522
Adjusted R Square	0.986022818
Standard Error	0.062859843
Observations	24

Table 2(b): ANOVA

Output	Df	SS	MS	F	Significance F
Regression	1	6.415187416	6.415187416	1623.539152	4.12793E-22
Residual	22	0.086929917	0.00395136		
Total	23	6.502117333			

Table 2(c): Coefficients

Variables	Coefficients	Standard Error	t Stat	P-value
Intercept	-146.0860864	3.713781171	-39.33621279	6.95622E-22
Years	0.074688847	0.001853636	40.29316508	4.12793E-22

Table 2(d): Residual Output

Observation	Predicted LnCO	Residuals	Predicted Consumption	Actual Consumption
1	2.694096485	0.002960174	14.79214779	14.836
2	2.768785332	-0.008079432	15.93926134	15.811
3	2.843474179	-0.06378572	17.17533218	16.114
4	2.918163026	0.054812261	18.50725886	19.55
5	2.992851873	0.114868903	19.94247487	22.37
6	3.06754072	0.080655097	21.48899018	23.294
7	3.142229566	0.027792092	23.15543593	23.808
8	3.216918413	-0.009710393	24.95111257	24.71
9	3.29160726	-0.020214889	26.88604181	26.348
10	3.366296107	-0.046706546	28.97102252	27.649
11	3.440984954	-0.090274174	31.21769101	28.523
12	3.5156738	-0.092160612	33.63858598	30.677
13	3.590362647	-0.090255511	36.2472185	33.119
14	3.665051494	-0.071114787	39.05814738	36.377
15	3.739740341	-0.015662676	42.08706046	41.433
16	3.814429188	0.031090701	45.35086217	46.783
17	3.889118035	0.064526646	48.86776783	52.125
18	3.963806881	-0.005835842	52.65740537	52.351
19	4.038495728	0.044771034	56.74092481	59.339
20	4.113184575	0.082858807	61.14111634	66.423
21	4.187873422	0.075102186	65.88253752	71.021
22	4.262562269	0.03447821	70.9916503	73.482
23	4.337251116	-0.031903062	76.49696873	74.095
24	4.411939962	-0.068212466	82.42921808	76.994

Figure 2 below presents the trends in aggregate consumption for India during 1992-2015. It can be observed that the level consumption was low at the beginning, but over the 24-year period there was a definite trend of consumption growing at a positive rate. This

consists of the findings wherein the consumption was found to be growing at a rate of 7.75% p.a. during 1992-2015.

Figure 2: Trends in the Aggregate Consumption in Steel in India during the 1992-2015

From Figure 2, it can be seen that predicted consumption and actual consumption are alike. There are minor differences during some time period. From 1995 actual consumption started to increase and from 1996, it started to decrease up to 1998 than predicted consumption. From 1998 to 2001, actual and predicted consumption are same. From 2001 to 2006, the actual consumption is lower than predicted consumption. From 2007 to 2009, actual consumption is higher. In 2009, actual and predicted consumption are same. After that, actual consumption started to increase up to 2014 and then it started to decrease. But the differences between actual and predicted consumption were very minute. Therefore, predicted consumption fits to show the trend in actual consumption.

4.3 Growth and trends for aggregate export

In this section, we calculate the growth and trends for aggregate export of steel industry at economy level. Tables 3(a) to 3(d) show the results of regression and ANOVA, along with residual output. The R square value is 0.7707, which suggest that our regression fits the data reasonably well.

Estimated Equation

$$\text{LnX} = -186.010 + 0.0933 + e_t$$

(t-stat) (-8.55) (8.60)

Annual compound growth rate (ACGR) of export of steel industry is 9.78% and t-statistic value of intercept and slope are (-8.53) and (8.6) respectively. This variable is statistically significant ($t > 2$). This employ that export of the steel industry is growing at 9.78% over the period (1992-2015). Moreover, the overall ACGR for export is 9.78% for the entire 24-year period. It is very close to the instantaneous growth rate of 9.33% p.a derived from the semi-log equation.

Table 3(a): Regression Statistics

Multiple R	0.877918444
R Square	0.770740794
Adjusted R Square	0.760319921
Standard Error	0.368066835
Observations	24

Table 3(b): ANOVA

Output	Df	SS	MS	F	Significance F
Regression	1	10.01976686	10.01976686	73.96125001	1.74059E-08
Residual	22	2.980410296	0.135473195		
Total	23	13.00017716			

Table 3(c): Coefficients

Variables	Coefficients	Standard Error	t Stat	P-value
Intercept	-186.0101226	21.74551541	-8.553953265	1.90866E-08
Years	0.093342599	0.010853699	8.600072674	1.74059E-08

Figure 3 presents the trend in aggregate export for India during 1992-2015. It can be observed that the level export was low at the beginning, but over the 24-year period there was a drastic change in the trend in export. This consists of the findings from the equation above, wherein the exports were found to be growing at a rate of 9.78% p.a. during 1992-2015.

Table 3(d): Residual Output

Observation	Predicted LnX	Residuals	Predicted Export	Actual Export
1	-0.071665758	-0.928006583	0.93084197	0.368
2	0.021676841	-0.301390743	1.02191349	0.756
3	0.115019439	-0.056750531	1.121895246	1.06
4	0.208362038	-0.265991151	1.231658996	0.944
5	0.301704637	-0.001600044	1.352161789	1.35
6	0.395047236	0.111770367	1.484454309	1.66
7	0.488389835	0.171200562	1.629690036	1.934
8	0.581732433	0.038844054	1.789135305	1.86
9	0.675075032	0.348095061	1.964180347	2.782
10	0.768417631	0.214035303	2.156351409	2.671
11	0.86176023	0.134819333	2.367324063	2.709
12	0.955102829	0.552745228	2.598937814	4.517
13	1.048445427	0.601558447	2.853212143	5.207
14	1.141788026	0.406837747	3.13236411	4.705
15	1.235130625	0.333693605	3.438827688	4.801
16	1.328473224	0.328229881	3.775274985	5.242
17	1.421815823	0.202904713	4.144639541	5.077
18	1.515158421	-0.025179949	4.550141909	4.437
19	1.60850102	-0.429538379	4.995317732	3.251
20	1.701843619	-0.410684453	5.484048573	3.637
21	1.795186218	-0.271742019	6.020595759	4.588
22	1.888528817	-0.208073417	6.609637535	5.368
23	1.981871415	-0.192615076	7.256309856	5.985
24	2.075214014	-0.353161957	7.966251167	5.596

From Figure 3, it can be seen that there is a large difference between predicted and actual export. From 1992 to 1999, there is a minor difference between actual and predicted export. After this time period actual export started to increase up to 2001 and started to decrease up to 2002. From 2002 to 2005, the actual exports are increasing drastically than predicted exports. After 2005, the export also started to decrease drastically up to 2010.

After that, exports started to increase up to 2014 and from 2014, they started to decrease. We found actual and predicted export were same in 1994, 1996, 1999 and 2009 only, and a large increasing and decreasing gap between actual and predicted export between different times. There could be so many reason of this gap. Export affected by the international pricing policies, export duties and competition in the international market. Therefore, predicted exports do not fit to show the trend in actual exports. This shows volatility in exports.

Figure 3: Trends in the Aggregate Exports of Steel in India during the 1992-2015

4.4 Growth and Trends for Aggregate Import

In this section, we calculate the growth and trends for aggregate import of steel industry at economy level. Tables 4(a) to 4(d) show the results of regression and ANOVA, along with residual output. Here, the R square value is 0.8457, which suggest that our regression fit the data well.

Estimated Equation

$$\text{LnM} = -199.51 + 0.10008 + e_t$$

(t-stat) (-10.927) (10.98)

Annual compound growth rate (ACGR) of import of steel industry is 10.53% and t-statistic value of intercept and slope are (-10.93) and (10.98) respectively. This variable is statistically significant ($t > 2$). This employ that import of the steel industry is growing at

the rate of 10.53% over the period. Moreover, the overall ACGR for export is 10.53% for the entire 24-year period. It is very close to the instantaneous growth rate of 10.98% p.a derived from the semi-log equation.

Table 4(a): Regression Statistics

Multiple R	0.919639305
R Square	0.845736451
Adjusted R Square	0.838724472
Standard Error	0.309042198
Observations	24

Table 4(b): ANOVA

Output	df	SS	MS	F	Significance F
Regression	1	11.51940317	11.51940317	120.613081	2.13712E-10
Residual	22	2.101155759	0.09550708		
Total	23	13.62055893			

Table 4(c): Coefficients

Variables	Coefficients	Standard Error	t Stat	P-value
Intercept	-199.5122928	18.25831949	-10.92719912	2.34866E-10
Years	0.100084326	0.009113157	10.98239869	2.13712E-10

Figure 4 presents the trend in aggregate import for India during 1992-2015. It can be observed that the level import was low at the beginning, but over the 24-year period there was also a drastic change in the trend in export. This consists of the findings from the equation wherein the exports were found to be growing at a rate of 10.53% p.a. during 1992-2015. From Figure 4, we found a large gap between predicted and actual import. From 1992 to 1994 actual and predicted imports are almost same. After 1994 actual imports starts to increase upto 1995 and then start to decrease upto 1998. In 1998 actual and predicted imports are same and after 1998 actual imports starts to decrease drastically upto 2006. In 2006 actual and predicted imports are found same. After 2006, there is a drastic variation in the increasing and decreasing of actual imports and predicted imports which carries on up to 2013.

Table 4(d): Residual Output

Observation	Predicted LnM	Residuals	Predicted Import	Actual Import
1	-0.14431527	0.113856063	0.865614803	0.97
2	-0.044230944	0.177887329	0.95673298	1.143
3	0.055853382	0.056582047	1.057442632	1.119
4	0.155937708	0.417862715	1.168753397	1.775
5	0.256022034	0.224550546	1.291781191	1.617
6	0.35610636	0.133699896	1.427759397	1.632
7	0.456190686	0.043371745	1.578051229	1.648
8	0.556275012	-0.378965997	1.744163397	1.194
9	0.656359338	-0.13875673	1.927761217	1.678
10	0.756443664	-0.356996629	2.130685299	1.491
11	0.85652799	-0.539529864	2.354970005	1.373
12	0.956612317	-0.447989116	2.602863842	1.663
13	1.056696643	-0.495368037	2.876852005	1.753
14	1.156780969	-0.326919965	3.17968129	2.293
15	1.256865295	0.202911843	3.514387633	4.305
16	1.356949621	0.237780663	3.884326543	4.927
17	1.457033947	0.493010501	4.293206745	7.029
18	1.557118273	0.207783742	4.745127361	5.841
19	1.657202599	0.341842006	5.244619002	7.382
20	1.757286925	0.13943298	5.796689188	6.664
21	1.857371251	0.068773413	6.406872556	6.863
22	1.957455577	0.112566743	7.081286336	7.925
23	2.057539903	-0.361924294	7.826691687	5.45
24	2.157624229	0.074538399	8.650561475	9.32

In 2013 actual and predicted imports are same but there is a drastic decrease in actual imports up to 2014, and from 2014 the imports have started to increase drastically. We found actual and predicted imports are same in 1994, 1998, 2006 and 2013 with only a large increase and decrease exist between the actual and predicted imports at different times. There could be so many reasons for this gap. Imports are also affected by the

international pricing policies, import duties and competitions in the international market and domestic consumption. Therefore, predicted imports sometimes do not match with the actual trend. This shows volatility in imports.

Figure 4: Trends in the Aggregate Import in India during the 1992-2015

5.0 Conclusion

This paper presents a macro level analysis of steel industry. We have estimated the growth trend for production, consumption, exports and imports at the economy level by using a semi-log equation model. Firstly, we found that all variables are significantly related to a catch-all variable called 'time'. Secondly, we calculated the predicted value of all variables and compared them with the actual value by the graphic presentations. They closely follow each other in most cases. The regression analysis shows that production grew at 8% and consumption at 7.75% during the time period 1992-2015. Exports grew at 9.78% per annum and declined drastically after the year 2005. On the other hand, the imports grew at 10.53% and increased also drastically after 2005. It shows that after the year 2005, there could have been a change in the industrial policy. On the whole, we conclude that production and consumption increased over the time. Exports and imports also show an increasing trend but export trend is weaker than the import trend. This shows that systematic risk arises due to transaction exposure of volatility in foreign exchange

because we earned less Foreign Exchange (FE) and spent more on steel import in the form of Foreign Exchange. Since the time when FE rate regime has been liberalised, the FE rates have been very volatile and Rupee has been depreciating constantly. If a larger sum is spent on imports it implies that the foreign exchange risk is higher. However, since this is systematic risk it cannot be diversified.

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