

ECO 412A
Term Paper

India - USA Free Trade

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Abstract

This paper analysis the implication of a Free Trade Agreement between USA and India using the GTAP model. The paper discusses briefly about GTAP model and employ both linear and non-linear methods available. Various cases are considered with different tariff reductions. The impact of such a FTA on the prices of commodity in their respective markets, the import and export quantities, balance of trade and terms of trade is derived. Thus, this paper attempts to clear some air of confusion regarding the various impacts of free trade on various fronts of economy.

Introduction

India has undergone significant trade liberalization in recent years and has also seen strong, fast-paced economic growth. Over the period 2000-2011, trade between India and the United States grew rapidly, with U.S. imports from India increasing from \$13 billion to \$54 billion and U.S. exports to India increasing from \$6 billion to \$32 billion. Trade in services and manufactured goods is particularly important in both directions; however, trade in agriculture (including processed agriculture) remains relatively small.

Over time, the United States will likely want to increase its access to India's growing market, according to the paper. At the same time, other regional agreements could divert trade from India, leading Indian policymakers to seek other avenues of trade. Thus, a free trade agreement between India and the U.S. could be a tempting policy option for both countries in the future.

This paper will analyse what will happen to Indo-USA trade if India and the USA countries form a Free Trade Agreement. GTAP model is used to simulate tariff free trade scenarios.

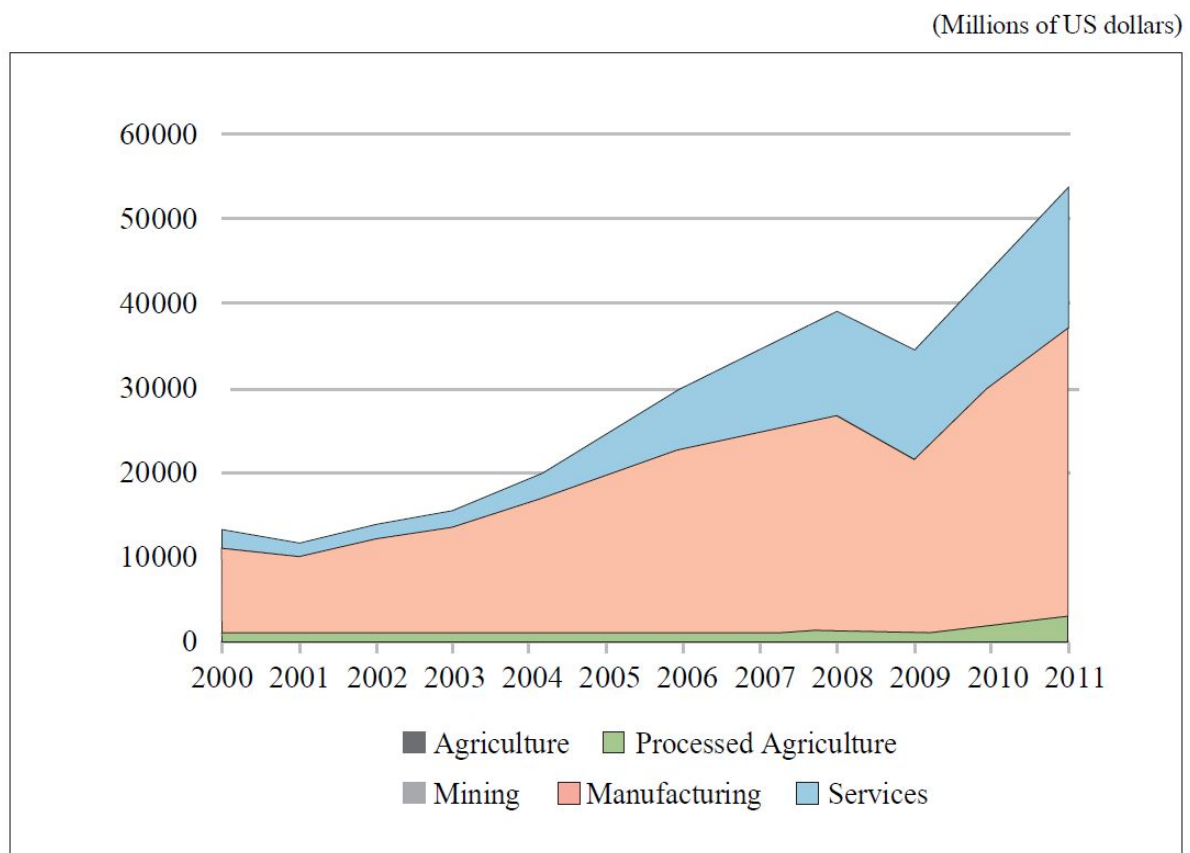
GTAP is a relatively standard applied Computable General Equilibrium (CGE) model that is used for a variety of applications. To ensure maximum clarity and transparency, the analysis is intentionally simple and static in order to address key issues of impact on balance of trade, terms of trade and the implicit benefits possible. The implicit benefits include boost to some sectors of India like textile, which can an generate huge employment, better terms of Trade for countries like USA, etc. Though the GTAP model is extremely versatile and equally cumbersome, I

have not presented any theoretical details, just the direct results and conclusion and a brief methodology.

Historical Trade Patterns

As discussed before, Trade between the countries have grown significantly. Figure 1 and 2 highlights the same.

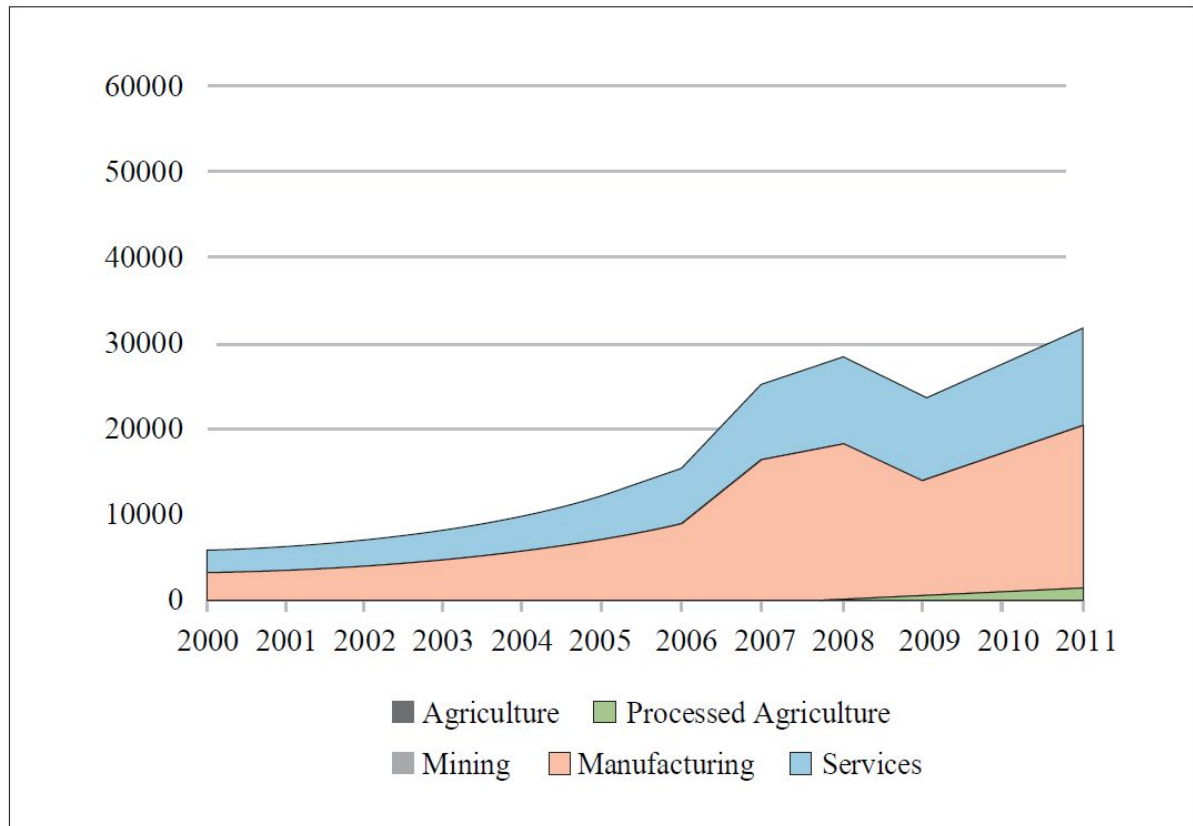
Figure 1. US imports from India



Source: Fukase

Figure 2. US exports to India

(Millions of US dollars)



Source: Fukase

The relevance of the topic becomes more clear after breaking down the trade distribution by trading partners. Figure 3 shows the trade breakdown for US imports. India accounts for just 2% of US imports but the exports of India to US accounts for 9% of total exports to USA. As a result, USA is also having trade deficit with India and one of the reasons is high tariffs imposed by India on US as compared to US on India leading to a distorted TOT. Thus, US would like to improve its TOT structure with a FTA with India. India has the potential to further grow its export to US especially for labor intensive products like textile which would generate huge employment opportunities but may also have to allow for import of agriculture and processed agricultural products.

Fig 3. Source of US Imports

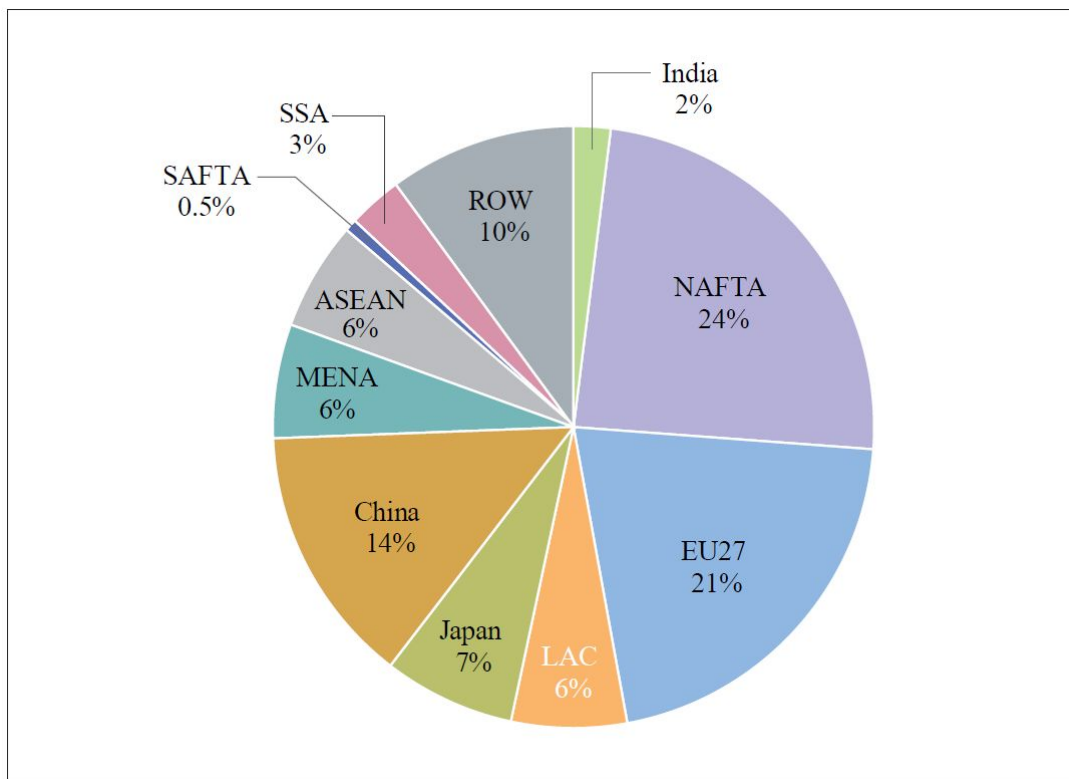
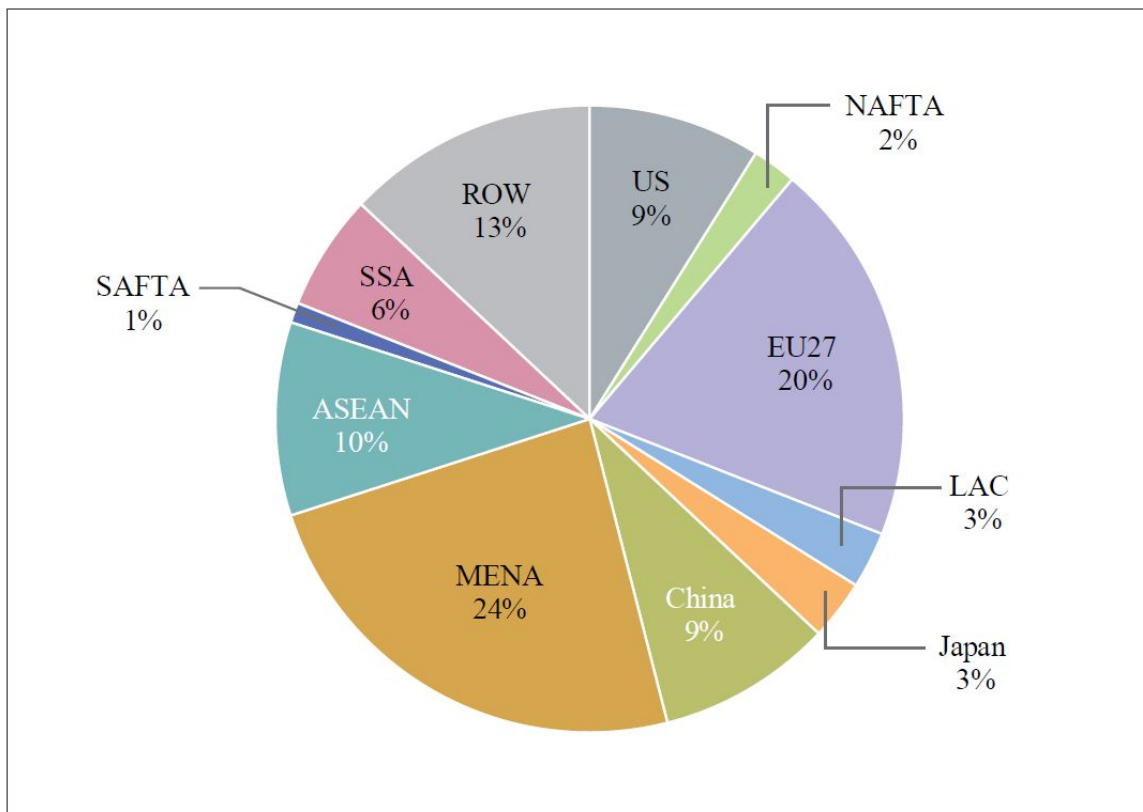


Fig 4. Source of India Exports



Source: Fakusa

Literature Review

The paper which accurately captures all this is “Economic Potential of an India-US Free Trade Agreement” by Emiko Fukase and Will Martin, published in Journal of Economic Integration. This paper explores the economic implication of a potential free trade agreement between India and the United States. While gains from trade creation would be offset by trade diversion on the import side, both countries would gain from improved access on the export side. The United States is likely to gain largely through terms of trade improvements for its goods and services, as initial protection in India remains relatively high (especially in agriculture sector). India would experience an expansion of exports and output, particularly in textiles and apparel. The paper explores how the effects of an India-United States free trade agreement might be affected by prior free trade agreements. The paper employed 100 percent Ad Valorem Equivalent (AVE) tariff cuts for goods and 50 percent cuts for services. The paper does not consider dynamic impacts of an FTA, such as the impacts of increased Foreign Direct Investment (FDI) inflows, impacts on productivity growth resulting from access to foreign knowledge, and accelerated domestic reforms. The paper examines the underlying patterns of trade and protection in each country, illustrates theories of preferential trade liberalization, conducts a series of simulations. The paper also investigate how the economic implications of an India-US FTA vary depending on prior agreements.

The seminal paper “Global Trade Analysis: Modeling and Applications” by Hertel provides the requisite sound understanding of GTAP model and the pointers to performing the analysis and interpretation of results.

The Global Trade Analysis Project (GTAP) model is a multi-region and multi-sector Computable General Equilibrium (CGE) model designed for comparative static analysis of trade policy issues. The model assumes perfect competition, constant returns to scale and bilateral trade via Armington assumption.

Computable general equilibrium (CGE) models are simulations that combine the abstract general equilibrium structure formalized by Arrow and Debreu with realistic economic data to solve numerically for the levels of supply, demand and price that support equilibrium across a specified set of markets.

CGE models are a standard tool of empirical analysis, and are widely used to analyze the aggregate welfare and distributional impacts of policies whose effects may be transmitted through multiple markets, or contain menus of different tax, subsidy, quota or transfer instruments. The general equilibrium methodology provides an analytical framework that allows these inter- and intra-sectoral changes in output mix and by extension the demand for different factors of production to be captured. These models are popular over their partial equilibrium counterparts because they stress the interactions among different sectors.

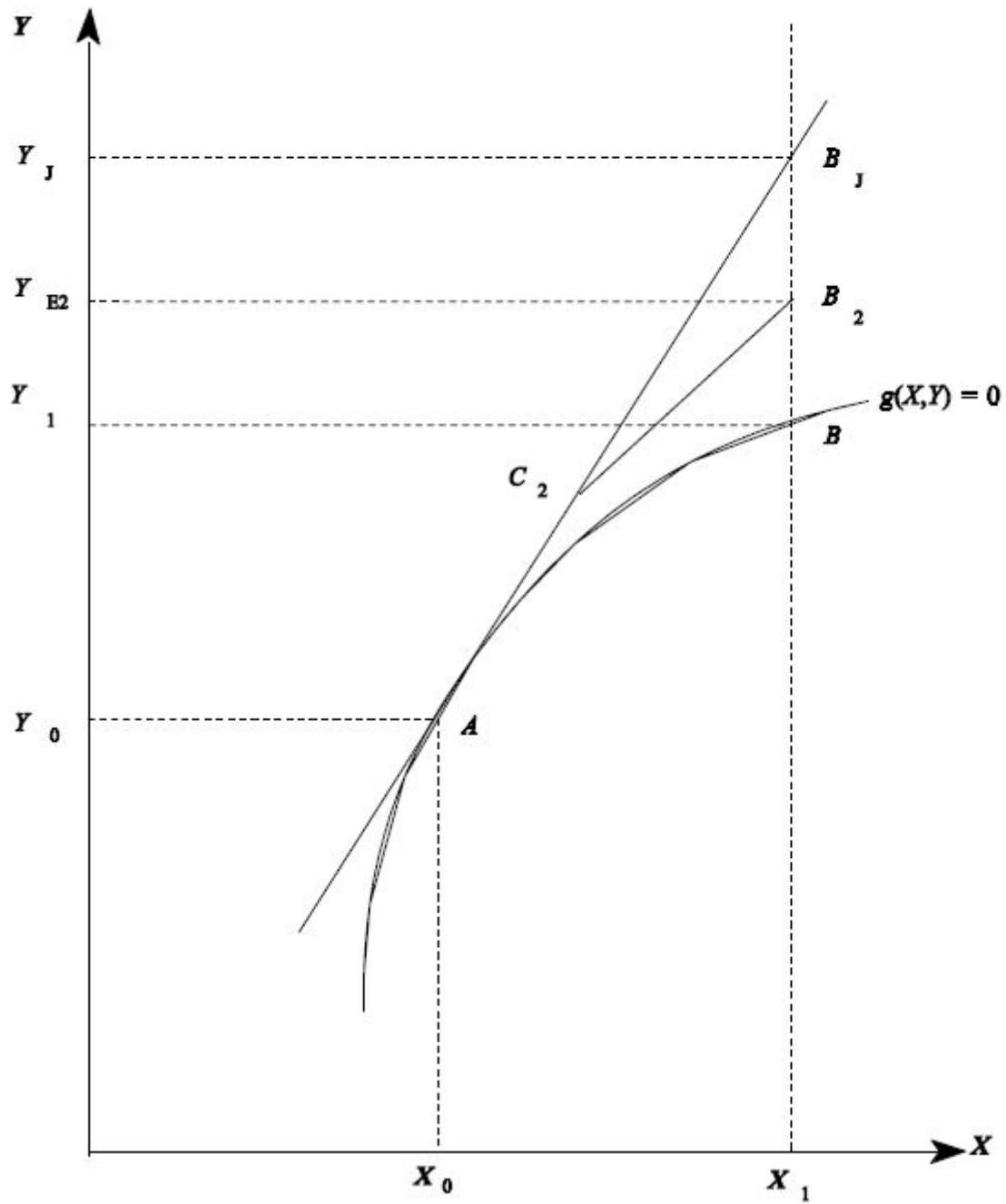
The GTAP model is a linearised model, and it uses a common global database for the CGE analysis. The theory of the GTAP model is documented in detail by Hertel (1997). It can be used to capture effects on output mix, factor usage, trade effects and resultant welfare distribution between countries as a result of changing trade policies at the country, bilateral, regional and multilateral levels. Since the GTAP model puts emphasis on resource reallocation across economic sectors, it is a good instrument for identifying the winning and losing countries and sectors under policy changes involving the trade aspects of the RTAs/FTAs/EPAs.

Methodology

The methods to obtain the solution are discussed qualitatively for sake of clarification and brevity. Refer to Hertel(1996) for details. GTAP inherently solves a non-linear equilibrium model. Figure 5 provides a linearised version solution of the problem. The initial equilibrium is represented by the point(X_0 , Y_0). Our counterfactual experiment involves shocking the exogenous variable to X_1 , and computing the resulting endogenous outcome Y_1 . If we simply evaluated the linearized representation of the model at (X_0 , Y_0) the equations would predict the outcome $B_J = (X_1, Y_J)$. This is the Johansen approach, and it is clearly in error, since $Y_J \gg Y_1$. This type of error has led to criticism of the individuals using linearized Computable General Equilibrium (CGE) models. However, note that the accuracy of the linearized model can be considerably enhanced by breaking the shock to X into two parts and updating the equilibrium after the first shock. This approach takes us from point A to C2 to B2. The default method used for solving the GTAP model is Gragg's method, with extrapolation. In this case the model is solved several times, each time with a successively finer grid. We employed Gragg 2-4-6 steps extrapolation with 3 solutions at 2,4,6 steps. Though Gragg method is the default method, Johansen method (linearised version provided in figure 5) can also hold for small changes. We would verify that by employing both Johansen and Gragg model for the 10% tariff deduction by India no tariff deduction by US. We would observe that it would hold in that case. Also, we would employ the 2 on case of 100% tariff reduction by US and 0% by India, we would see that the Johansen diverges significantly from the Gragg's results. Thus, establishing the validity of Johansen in small changes only.

Figure 5

Figure 2.5. Solving a Non-linear Model via its Linearized Representation



Source: Hertel

Results

The database originally contained 57 sectors and 113 countries. We aggregated them according to our need as given below.

The data is divided into 12 regions:

India, USA, Oceania, East Asia, South East Asia, South Asia, North America, Latin America, European Union 25, Middle East and North Africa, Sub-Saharan Africa and Rest of World

Also, it is divided into 10 sectors

1. Grains and Crops
2. Livestock and Meat Products
3. Mining and Extraction
4. Processed Food
5. Textiles and Clothing
6. Light Manufacturing
7. Heavy Manufacturing
8. Utilities and Construction
9. Transport and Communication
10. Other Services

The 10 sectors are the default sector aggregation in GTAP Database.

Applying Shocks

After creating the aggregate database, we will give shocks, i.e. reduction in ad valorem tariff rates. Table 1 denotes the initial Ad valorem tariffs imposed by India and USA on each other.

Table 1

S.No.	Item	Initial % AV rate (India)	Initial % AV rate (USA)
1	Grain Crops	25.8	1.1
2	Livestock and Meat Products	23.0	0.6
3	Mining and Extraction	13.2	0.01
4	Processed Food	56.06	2.2
5	Textiles and Clothing	15.0	9.1
6	Light Manufacturing	6.5	0.3

7	Heavy Manufacturing	11.4	0.5
8	Utilities and Construction	0	0
9	Transport and Communication	0	0
10	Other Services	0	0

The AV tariffs for 8,9,10 are zero already. So, our focus would be on 1-7 items.

CASE1: India reduces tariff by 10%, US not

We will give a shock to 1-7 in case of India i.e. reduce the tariff rates (AV) by 10% for the case of India and analyse the impact on India, USA and other countries.

1. The impact on prices would be as follows:

(Johansen)

Prices	India	USA
Land	-0.05	0.02
Un-skilled Labour	-0.02	0.01
Skilled Labour	-0.01	0.01
Capital	-0.02	0.01
Natural Resources	0.05	-0.03
Grain Crops	-0.03	0.01
Meat and Livestock	-0.03	0.01
Mining and Extraction	-0.01	0
Processed Food	-0.03	0.01
Textile and Clothing	-0.03	0.01
Light Manufacturing	-0.03	0.01
Heavy Manufacturing	-0.03	0.01
Utilities and Construction	-0.02	0.01
Transport and Communication	-0.02	0.01
Other Services	-0.02	0.01

(Gragg)

Item	India	USA
Land	-0.05	0.02
UnSkLab	-0.02	0.01
SkLab	-0.02	0.01
Capital	-0.02	0.01
NatRes	0.05	-0.03
GrainsCrops	-0.03	0.01
MeatLstk	-0.03	0.01
Extraction	-0.01	0
ProcFood	-0.03	0.01
TextWapp	-0.03	0.01
LightMnfc	-0.03	0.01
HeavyMnfc	-0.03	0.01
Util_Cons	-0.02	0.01
TransComm	-0.02	0.01
OthServices	-0.02	0.01

2. The impact on import quantities in India (Johansen)

import of goods in india after india reduced tarriff				
qim[*India]	(Sim)	Pre	Post	Ch/%Ch
Grains Crops	0.47	4981.06	5004.64	23.58
Meat and Livestock	0.29	407.74	408.93	1.18
Extraction and Mining	-0.02	98166.59	98146.7	-19.89
Processed Food	0.08	8814.97	8821.98	7
Textile and clothing	0.08	3955.2	3958.23	3.03
Light Manufacturing	0.36	30591.8	30703	111.2
Heavy Manufacturing	0.14	125761.3	125932.1	170.88
Utilities and Construction	-0.03	1427.76	1427.32	-0.44
Transport and Communication	-0.04	15389.06	15382.39	-6.67
Other Services	-0.03	33600.44	33591.48	-8.96

(Gragg)

import of goods in india after India reduced tarriff				
qim[*India]	(Sim)	Pre	Post	Ch/%Ch
Grains Crops	0.5	4981.06	5005.8	24.75
Meat and Livestock	0.31	407.74	409.01	1.26
Extraction and Mining	-0.02	98166.59	98146.27	-20.31
Processed Food	0.09	8814.97	8822.68	7.7
Textile and clothing	0.08	3955.2	3958.37	3.17
Light Manufacturing	0.37	30591.8	30704.35	112.55
Heavy Manufacturing	0.14	125761.3	125938.1	176.84
Utilities and Construction	-0.03	1427.76	1427.3	-0.46
Transport and Communication	-0.05	15389.06	15382.06	-7
Other Services	-0.03	33600.44	33591.02	-9.41

4. The impact on import quantities in USA

(Johansen)

import of goods in USA after India reduced tarriff				
qim[*USA]	(Sim)	Pre	Post	Ch/%Ch
Grains Crops	0.03	26629.63	26636.89	7.26
Meat and Livestock	0.03	10887.45	10890.91	3.46
Extraction and Mining	0.01	285080.4	285114.9	34.47
Processed Food	0.02	61758.8	61773	14.2
Textile and clothing	0.03	113643.2	113678.3	35.15
Light Manufacturing	0.03	512207.2	512353.6	146.38
Heavy Manufacturing	0.03	924512.9	924756.4	243.5
Utilities and Construction	0.02	7660.4	7662.27	1.88
Transport and Communication	0.02	110118.5	110143.8	25.27
Other Services	0.03	196878.1	196928.1	50.03

(Gragg)

import of goods in USA after USA reduced tarriff				
qim[*USA]	(Sim)	Pre	Post	Ch/%Ch
Grains Crops	0.03	26629.63	26637.27	7.63
Meat and Livestock	0.03	10887.45	10891.04	3.6
Extraction and Mining	0.01	285080.4	285116.7	36.28
Processed Food	0.02	61758.8	61773.53	14.72
Textile and clothing	0.03	113643.2	113679.6	36.38
Light Manufacturing	0.03	512207.2	512358.2	151.03
Heavy Manufacturing	0.03	924512.9	924764.8	251.88
Utilities and Construction	0.03	7660.4	7662.34	1.94
Transport and Communication	0.02	110118.5	110144.7	26.12
Other Services	0.03	196878.1	196929.8	51.77

4. Balance of Trade

(Johansen)

Trade Balance	
DTBAL	(Sim)
India	-25.54
USA	-167.23

(Gragg)

Trade Balance	
DTBAL	(Sim)
India	-27.41
USA	-172.77

5. Welfare related terms

(Johansen)

Item	India	USA
Equivalent Variation (EV)	-23.59	243.47
Terms of Trade (tot)	-0.02	0.01

(Note that Johansen method is poor for predicting welfare changes, but mentioned just for sake of comparison with Gragg's methodology)

(Gragg)

Item	India	USA
Equivalent Variation (EV)	-30.18	251.8
Terms of Trade (tot)	-0.02	0.01

The Johansen method give the similar results as Gragg(non-linear methods). This means that the 10% deduction can be considered small.

CASE 2: USA reduces tariff to 0, India not (Johansen Method)

import of goods in india after USA reduced tarriff				
qim[*India]	(Sim)	Pre	Post	Ch/%Ch
Grains Crops	1.51	4981.06	5056.34	75.29
Meat and Livestock	1.61	407.74	414.29	6.55
Extraction and Mining	-0.15	98166.59	98018.7	-147.89
Processed Food	0.82	8814.97	8887.35	72.37
Textile and clothing	2.5	3955.2	4053.93	98.73
Light Manufacturing	0.82	30591.8	30841.47	249.67
Heavy Manufacturing	0.59	125761.3	126506	744.78
Utilities and Construction	1.27	1427.76	1445.94	18.18
Transport and Communication	0.8	15389.06	15511.61	122.55
Other Services	0.68	33600.44	33829.65	229.21
import of goods in USA after USA reduced tarriff				
qim[*USA]	(Sim)	Pre	Post	Ch/%Ch
Grains Crops	0.01	26629.63	26633.44	3.8
Meat and Livestock	-0.04	10887.45	10883.54	-3.91
Extraction and Mining	0.02	285080.4	285130.2	49.75
Processed Food	0.02	61758.8	61773.06	14.26
Textile and clothing	1.03	113643.2	114818.5	1175.33
Light Manufacturing	-0.03	512207.2	512071.5	-135.66
Heavy Manufacturing	-0.01	924512.9	924414.3	-98.63
Utilities and Construction	-0.03	7660.4	7658.37	-2.02
Transport and Communication	-0.04	110118.5	110073.7	-44.86
Other Services	-0.07	196878.1	196738	-140.11

Price change		
Item	India	USA
Land	0.71	0.01
Un-Skilled Labour	0.48	-0.02
Skilled Labour	0.37	-0.02
Capital	0.43	-0.02
Natural Resources	-1.47	0.07
Grains Crops	0.49	-0.02
Meat and Livestock	0.5	-0.02
Extraction and Mining	0.06	0
Processed Food	0.4	-0.02
Textile and clothing	0.36	-0.06
Light Manufacturing	0.3	-0.02
Heavy Manufacturing	0.22	-0.02
Utilities and Construction	0.33	-0.02
Transport and Communication	0.38	-0.02
Other Services	0.4	-0.02
TOT		
India	0.32	
USA	-0.02	
EV		
India	1119.57	
USA	-239.71	
Trade Balance		
DTBAL	(Sim)	
India	-309.72	
USA	214.49	

(Gragg Method)

import of goods in india after USA reduced tarriff				
qim[*India]	(Sim)	Pre	Post	Ch/%Ch
GrainsCrops	2.05	4981.06	5083.2	102.14
MeatLstk	2.17	407.74	416.6	8.86
Extraction	-0.23	98166.59	97945.15	-221.44
ProcFood	1.1	8814.97	8912.2	97.22
TextWapp	3.44	3955.2	4091.41	136.21
LightMnfc	1.1	30591.8	30927.15	335.35
HeavyMnfc	0.79	125761.3	126754.8	993.54
Util_Cons	1.74	1427.76	1452.64	24.88
TransComm	1.08	15389.06	15554.55	165.49
OthServices	0.92	33600.44	33910.2	309.76
import of goods in USA after USA reduced tarriff				
qim[*USA]	(Sim)	Pre	Post	Ch/%Ch
GrainsCrops	0	26629.63	26629.17	-0.47
MeatLstk	-0.06	10887.45	10881.05	-6.39
Extraction	0.03	285080.4	285163.8	83.34
ProcFood	0.01	61758.8	61763.58	4.77
TextWapp	1.38	113643.2	115206.9	1563.7
LightMnfc	-0.05	512207.2	511971.1	-236.13
HeavyMnfc	-0.02	924512.9	924297.2	-215.69
Util_Cons	-0.04	7660.4	7657.16	-3.24
TransComm	-0.06	110118.5	110051.8	-66.7
OthServices	-0.1	196878.1	196678.9	-199.19

Price Change		
pm	India	USA
Land	0.95	0.02
UnSkLab	0.65	-0.03
SkLab	0.51	-0.03
Capital	0.57	-0.03
NatRes	-1.99	0.1
GrainsCrops	0.66	-0.02
MeatLstk	0.67	-0.03
Extraction	0.08	0
ProcFood	0.54	-0.03
TextWapp	0.48	-0.09
LightMnfc	0.4	-0.03
HeavyMnfc	0.3	-0.02
Util_Con	0.45	-0.03
TransComm	0.52	-0.03
OthServices	0.54	-0.03
TOT		
India	0.43	
USA	-0.03	
EV		
India	1492.63	
USA	-613.64	
Trade Balance		
DTBAL	(Sim)	
India	-418.78	
USA	338.39	

In case of USA, the results from Johansen and Gragg vary significantly. Therefore, the linear approximation doesn't hold for the case of USA reducing tariff

One of the possible reasons it worked for India is that the deduction of 10% can be assumed small as India charges high tariff but USA at start also has low tariff structure and we reduced it to zero which is 100% reduction.

CASE 3: Both Reduces Tariff

We would consider 2 cases here. Firstly, we assume US reduces tariff to 0 and India reduced only 10% and second one is both reduces the tariff to zero (Free Trade). As we saw above, Johansen method won't work here. Thus, all results are derived from Gragg's method with 2-4-6 interpolation.

US -> 0, India -> -10%			US->0 India->0		
Price change			Price change		
pm	India	USA	pm	India	USA
Land	0.02	0.02	Land	-0.05	0.57
UnSkLab	0.03	0.01	UnSkLab	0.33	0.13
SkLab	0.02	0.01	SkLab	0.23	0.13
Capital	0.03	0.01	Capital	0.27	0.13
NatRes	-0.1	-0.02	NatRes	-1.13	-0.22
Grains Crops	0.02	0.01	Grains Crops	0.09	0.18
Meat and Livestock	0.02	0.01	Meat and Livestock	0.11	0.13
Extraction and Mining	0	0	Extraction and Mining	-0.08	0.04
Processed Food	0.01	0.01	Processed Food	0.02	0.11
Textile and clothing	0.01	0	Textile and clothing	0.03	0.03
Light Manufacturing	0	0.01	Light Manufacturing	-0.07	0.09
Heavy Manufacturing	0	0.01	Heavy Manufacturing	-0.11	0.08
Utilities and Construction	0.01	0.01	Utilities and Construction	0.08	0.1
Transport and Communication	0.02	0.01	Transport and Communication	0.13	0.11
Other Services	0.02	0.01	Other Services	0.23	0.12

Imports in India					Imports in India				
qim[*India]	%change	Pre	Post	Abs Change	qim[*India]	%change	Pre	Post	Abs Change
Grains Crops	0.65	4981.06	5013.59	32.54	Grains Crops	10.37	4981.06	5497.6	516.54
Meat and Livestock	0.48	407.74	409.68	1.94	Meat and Livestock	8.59	407.74	442.77	35.02
Extraction and Mining	-0.04	98166.59	98130.83	-35.76	Extraction and Mining	-0.47	98166.59	97704.41	-462.17
Processed Food	0.17	8814.97	8830.13	15.15	Processed Food	3.84	8814.97	9153.78	338.81
Textile and clothing	0.34	3955.2	3968.57	13.37	Textile and clothing	4.81	3955.2	4145.32	190.12
Light Manufacturing	0.45	30591.8	30730.11	138.31	Light Manufacturing	5.17	30591.8	32172.73	1580.94
Heavy Manufacturing	0.2	125761.3	126014.7	253.47	Heavy Manufacturing	2.75	125761.25	129217.7	3456.43
Utilities and Construction	0.1	1427.76	1429.17	1.41	Utilities and Construction	1.22	1427.76	1445.18	17.42
Transport and Communication	0.04	15389.06	15394.66	5.6	Transport and Communication	0.31	15389.06	15436.83	47.77
Other Services	0.04	33600.44	33614.61	14.17	Other Services	0.46	33600.44	33753.32	152.89

Imports in USA					Imports in USA				
qim[*USA]	(Sim)	Pre	Post	Ch/%Ch	qim[*USA]	(Sim)	Pre	Post	Ch/%Ch
Grains Crops	0.03	26629.63	26637.63	7.99	Grains Crops	0.5	26629.63	26763.88	134.25
Meat and Livestock	0.03	10887.45	10890.64	3.19	Meat and Livestock	0.45	10887.45	10935.97	48.52
Extraction and Mining	0.01	285080.4	285121.9	41.53	Extraction and Mining	0.24	285080.41	285761.8	681.41
Processed Food	0.03	61758.8	61774.9	16.09	Processed Food	0.37	61758.8	61985.42	226.61
Textile and clothing	0.14	113643.2	113800.6	157.4	Textile and clothing	1.87	113643.17	115773.1	2129.88
Light Manufacturing	0.03	512207.2	512344	136.78	Light Manufacturing	0.36	512207.19	514068.9	1861.72
Heavy Manufacturing	0.03	924512.9	924754.1	241.25	Heavy Manufacturing	0.36	924512.88	927872.4	3359.56
Utilities and Construction	0.02	7660.4	7662.13	1.73	Utilities and Construction	0.32	7660.4	7684.58	24.19
Transport and Communication	0.02	110118.5	110140	21.48	Transport and Communication	0.28	110118.53	110422.3	303.8
Other Services	0.02	196878.1	196915.4	37.31	Other Services	0.28	196878.08	197420.1	542.05

export sales to India % change			export sales to India % change		
qxs[**India]	India	USA	qxs[**India]	India	USA
Grains Crops	-0.61	10.41	Grains Crops	-8.97	189.07
Meat and Livestock	-0.63	14.14	Meat and Livestock	-10.51	304.69
Extraction and Mining	-0.05	14.49	Extraction and Mining	-0.58	315.19
Processed Food	-0.21	17.22	Processed Food	-4.76	570.12
Textile and clothing	-0.09	10.26	Textile and clothing	-1.38	180.24
Light Manufacturing	-0.69	3.38	Light Manufacturing	-7.41	39.2
Heavy Manufacturing	-0.39	7.3	Heavy Manufacturing	-5.1	105.91
Utilities and Construction	0.03	0.05	Utilities and Construction	0.63	0.52
Transport and Communication	-0.03	0	Transport and Communication	-0.3	-0.2
Other Services	-0.05	0.01	Other Services	-0.48	-0.07
export sales to USA			export sales to USA		
qxs[**USA]	India	USA	qxs[**USA]	India	USA
Grains Crops	0.5	-0.04	Grains Crops	5.83	-0.69
Meat and Livestock	0.28	-0.05	Meat and Livestock	3.65	-0.7
Extraction and Mining	0.04	-0.04	Extraction and Mining	0.74	-0.73
Processed Food	0.92	-0.03	Processed Food	10.15	-0.42
Textile and clothing	6.08	-0.28	Textile and clothing	84.06	-3.65
Light Manufacturing	0.21	-0.04	Light Manufacturing	2.51	-0.5
Heavy Manufacturing	0.42	-0.04	Heavy Manufacturing	4.78	-0.54
Utilities and Construction	-0.04	-0.03	Utilities and Construction	-0.26	-0.37
Transport and Communication	-0.05	-0.02	Transport and Communication	-0.41	-0.31
Other Services	-0.07	-0.02	Other Services	-0.7	-0.29

TOT			TOT		
India	0.01		India	0.06	
USA	0.01		USA	0.13	
EV			EV		
India	\$US million		India	\$US million	
India	84.85		India	114.27	
USA	225.32		USA	2967.41	
Balance of Trade			Balance of Trade		
India	\$US million		India	\$US million	
India	-59.31		India	-979.98	
USA	-150.48		USA	-2101.19	
Balance of Trade			Balance of Trade		
DTBALi	\$US million		DTBALi	\$US million	
DTBALi	India	USA	DTBALi	India	USA
Grains Crops	-31.48	17.05	Grains Crops	-547.26	342.2
Meat and Livestock	-3.02	-6.95	Meat and Livestock	-42.21	-86.04
Extraction and Mining	36.2	-24.61	Extraction and Mining	466.07	-361.32
Processed Food	-6.63	-6.04	Processed Food	-316.94	221.2
Textile and clothing	328.54	-136.22	Textile and clothing	4600.97	-2011.07
Light Manufacturing	-127.31	36.44	Light Manufacturing	-1470.93	-69.98
Heavy Manufacturing	-194.61	124.31	Heavy Manufacturing	-3038.6	2048.05
Utilities and Construction	-1.82	-5.2	Utilities and Construction	-21.15	-73.06
Transport and Communication	-12.68	-44.77	Transport and Communication	-112.7	-629.68
Other Services	-46.5	-104.48	Other Services	-484.49	-1487.11

Conclusion

Discussing the case of both reducing tariffs, one severe impact for India on reduction of tariffs is the loss in Trade Surplus it has with USA. A major part of it would be coming from Agri sector (Crops and processed agricultural goods), followed with light and heavy manufacturing. But, the positive point is the benefit on terms of textile sector which offers 2 benefits - increase in exports and generation of employment in labour intensive sector. Agriculture sector is suffering from disguised unemployment and it would prove fruitful to absorb the excess labor in productive textile sector. Also, the import of foreign machinery would boost the manufacturing sector and help develop the necessary technology required in manufacturing domain. Concluding for India, the pivot occurs between protecting its agriculture sector and surplus v/s generating employment by growing its various sectors (especially Textiles). US on the other hand would gain in terms of trade but huge imports in some industries from India would still cause the deterioration of Balance of trade and may cause some strain with its relation with other countries due to trade diversion because of the theory of Preferential Trade Liberalisation, it would have to undergo with India. (Fukase).

Glossary

An **AVE** is a tariff presented as a percentage of the value of goods cleared through customs. It is the equivalent of a corresponding specific tariff measure based on unit quantities such as weight, number or volume. There are several methodologies for calculating AVEs. The method chosen depends on the intended application of the data. Most important to the process of calculating an AVE is the way the Unit Value of the product is calculated. The unit value is the value of each unit quantity imported of a product. It is based on the total value of imports of that product divided by the quantity of imports.

Terms of Trade (TOT) effects, which are defined as a change in export prices relative to import prices

References

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Fukase E, Will Martin; The Economic Potential of an India-US Free Trade Agreement, <http://dx.doi.org/10.11130/jei.2016.31.4.774>

AVE (Glossary): <https://www.macmap.org/supportmaterials/glossary.aspx>