

Economic Impacts on the Least Developed African countries by China's Tariff Reduction: an Analysis Based on General Equilibrium Model

I. Introduction

Strengthening bilateral economic and trade cooperation between China and African countries, is not only conforming China's political demand, but also the best strategic choice for the future economic and social developments of China and Africa. As one of the most measures to establish a new type of China-Africa strategic partnership, deepening economic and trade cooperation also has a far-reaching strategic significance for strengthening South-South cooperation and establishing a new international political order. Meanwhile, China's sustained economic development can also benefit a great deal from the growing economy relations. Since the economic reforms in 1978, China's economy continues to grow an average annual rate of 9% for 30 years (China SSB, 2012), And will still maintain a rapid speed of growth in a longer period of time in the future (Worldbank, 2008) The effective supply of resources and a broader market demand are important guarantees for China's sustained and rapid economic development. (UN, 2005; IEA, 2006; Wu , 2003) Africa has rich mineral resources and broad market prospects. Africa's a resource-rich continent (Carroll, 2006; Pan, 2006); Africa has a large population, and in recent years, sustains a relatively rapid economic growth. During 2001 to 2005, Africa's average annual economic growth is as high as 4.5%. (China SSB, 2007) Africa is gradually becoming an international market with great potential. (Carmody and Owusu, 2007) To strengthen economic and trade cooperation with Africa is of great significance to China's economic development.

Since the beginning of the 21st century, the Chinese government has adopted a series of measures to promote economic and trade cooperation with Africa. Among them, the most interesting policy is China's Tariff reduction policy for Africa. In 2000, the beginning of China-Africa Cooperation Forum marked the start of the new stage of China-Africa economic and trade cooperation. The Chinese government has taken

a series of policy measures to increase investment in Africa and the import tariff reduction, including financial assistance, personnel exchanges. Among them, the tariff reduction is an important measure to promote imports of African products to China. Since January 1 2005, the Chinese government began to reduce tariff on 190 import commodities for 25 least developed countries in Africa. On July 1 2007, the tariff reduction range expanded to 454 commodities in 26 least developed countries in Africa, then expanded even wider into 4762 commodities in 33 least developed countries in Africa.

Although this tariff reduction measures have caused wide attention at home and abroad, researches using quantitative methods on this subject are relatively deficient. Firstly, some foreign Medias regard China's unilateral tariff reduction towards the Least Developed African Countries (LDAC) as Neo-colonialism, trumpeting about "China threat theory". On the contrary, some hold the point that China's this particular policy is in accordance with international rules and is a efficient policy to promote China-Africa economic and trade cooperation. However, these views are mostly based on subjective judgment, lacking strong empirical arguments. So far, there are rarely any researches using quantitative methods to evaluate the effects of China's unilateral tariff reduction policy systematically and comprehensively.

This research specifically analyses economic effects of china's tariff reduction policy for the Least Developed African Countries. The structure of our research is arranged as follows: Part II analysis the characteristics of trade structure between China and the Least Developed African Countries. Part III will calculate the tariff reduction extents (shocks) according to China's current commitments. Part IV explains our research methods and scenario arrangements. Part V will show the economic effects on China, the least developed African countries and other major economy groups in the world. Part VI is major conclusions and policy suggestions.

II. Analysis on China-Africa trade structure

China's imports from the 33 least developed African countries (LDAC) have rather different weights in international trades of China and LDAC. As is shown in Table 1, LDAC is not China's major trade partner. In 2010, import from LDAC is only about 0.35% in China's total import value. But on some specific commodities, import from LDAC is of importance for China. For example, cotton import from LDAC took 4.47% of China's total cotton import, while imports of forestry products, other crops and oilseeds took 4.43%, 4.35% and 0.42% of China's imports respectively.

However, China is a very importer from LDAC, especially in some commodities. From Table 1, in 2009 LDAC's export to China was 12.1% in LDAC's total export. On the industry level, exports of oilseeds, nature resource products, cotton, forestry productions, wool, vegetable oil, pork and machinery and equipment industry from LDAC to China took 50.2%、40.19%、25.27%、25.48%、12.11%、5.80%、4.93% and 12.79% respectively in LDAC's total exports in these industries. From this analysis we can tell that China is still one of LDAC's major export targets. China's tariff reduction on 4762 commodities for the 33 least developed countries will promote Africa's export to China, but as China's import from LDAC only takes a small part in China's total import, the effect on China's trade and economy is relatively minor.

Table 1 Structure of China's imports from the least developed African countries

	Share in China's total imports 2010		Share in LDAC's total exports 2009	
	China's total imports (million dollars)	Share of LDAC (%)	LDAC's total exports (million dollars)	Share of China (%)
Rice	253	0.0	127	0.0
Wheat	309	0.0	16	0.0
Other crops	939	0.0	110	1.0
Vegetable and fruit	3549	0.0	815	0.9
Oilseeds	26541	0.4	483	50.2
Sugar	906	0.0	312	0.0
Cotton	5735	4.5	411	27.1
Other Agri products	1372	4.4	2905	1.8
Beef and mutton	1538	0.0	206	0.0
Pork	4263	0.0	207	1.2
Dairy products	2059	0.0	38	0.0
Wool	1863	0.0	29	12.1
Vegetable oil	9102	0.0	193	5.8
Processed food	12039	0.0	1176	0.8
Fishing	599	0.2	34	2.4
Forestry products	6162	4.4	54	25.5
Natural resources	272316	0.5	2079	40.2
Textile and leather	28363	0.1	943	8.2
Natural resource industry	241406	0.0	1602	3.5
Machinery and equipment	387667	0.7	11077	12.8
Transport equipment	73531	0.0	213	2.0
Electronic products	290207	0.0	125	1.3
Other manufacture	6576	0.0	64	2.0
Service	274	0.0	311	0.0
Total	1377568	0.4	23530	12.1

Notes: the trade data comes from UN Contrade database.

III. China's tariff reduction for the least developed African countries

Although China's tariff reduction efforts are relatively large, the difference between tariff reduction structure and China-LDAC trade structure is too huge to promote LDAC's export to China significantly. China has cut tariff for LDAC in 2005, 2007 and 2010, and the reduction in 2010 had the largest degree of concession and the widest commodity range. As is shown in Table 2, simple average tariff of China for LDAC decreased from 7.14% to 2.83%. But China's import from LDAC were mainly machinery and equipment industry, nature resources and forestry industry, and these 3 industries together took 88.9% of China's total import from LDAC (Table 2). But these 3 industries' tariff, 2.03%, 1.01% and 1.03% respectively, were already quite low before the tariff reduction (Table 2). As a result, from the change of weighted average tariff, China's tariff dropped from 2.06% to 0.49% (Table 2). We can conclude that China's tariff policy has limited effects in promoting LDAC's international trade in total.

However, some commodities, especially some agricultural products enjoyed the greatest tariff cut, which will increase China's imports greatly. From Table 2 we can say that vegetable and fruits, fishing, processed food and manufactures all faced a tariff cut larger than 10%, decreasing 16.65%, 14.04%, 10.82% and 10.65% respectively. But LDAC exports relatively less to China on these commodities (Table 2). So, even though China's imports on these commodities will increase larger than other commodities, its pulling effects are rather small. Meanwhile, the tariffs of oilseeds and vegetable oil, which take a great part in China's imports from LDAC, also decrease by 4.76% and 3.77% respectively, which will stimulate LDAC's exports significantly.

Table 2 Changes in China's average tariff for LDAC

	Before reduction (%)	After reduction (%)	Proportion of reduction/Shock (%)
Rice*	3.25	3.25	0.00
Wheat*	1.00	1.00	0.00
Other crops ⁸	3.50	2.10	-1.35
Vegetable and fruit	19.98	0.00	-16.65
Oilseeds	5.00	0.00	-4.76
Sugar*	8.57	7.43	-1.05
Cotton	5.00	5.00	0.00
Other Agri products	9.63	8.08	-1.41
Beef and mutton*	10.41	4.88	-5.00
Pork	6.43	5.64	-0.74
Dairy products*	6.10	2.38	-3.51
Wool*	19.17	16.67	-2.10
Vegetable oil	4.11	0.18	-3.77
Processed food	12.90	0.68	-10.82
Fishing	16.33	0.00	-14.04
Forestry products	1.03	0.00	-1.02
Natural resources	1.01	0.00	-1.00
Textile and leather	7.66	6.05	-1.50
Natural resource industry	2.79	1.55	-1.21
Machinery and equipment	2.03	0.11	-1.88
Transport equipment	6.03	0.01	-5.68
Electronic products	0.37	0.00	-0.37
Other manufacture	11.99	0.06	-10.65
Simple average tariff	7.14	2.83	-4.03
Weighted average tariff	2.06	0.49	-1.54

Data source: these data comes from TASTE database and China's tariff regulations, aggregated with trade value. For the industries with the mark *, as the trade value is zero, we use the simple average tariff.

IV. Database and scenarios

In this chapter we use the GTAP model. As a static model, GTAP assumes a perfect competitive market, constant return to scale in production, producers minimizing the cost of production, consumers maximizing utility and market-clearing for all factors and commodities. Production of each commodity is explained by a nested constant coefficient of elasticity of substitution equation. While Intermediate inputs are composited by domestic and foreign products through constant

coefficients elasticity of substitution equations. Products from different countries are classified by origin (Armington assumption), and are aggregated into commodities by constant coefficients the elastic equations composite as a single imported products. In factor market, GTAP assumes that labor force has full employment and completely free flow in domestic. While land cannot move freely among departments and land of different uses have different prices. Every country has only one account, which collects all its tax revenues and endowment incomes. And this account also allocates income into private household income, government income and savings through Cobb-Douglas utility function. Private expenditure adopts CDE (Constant Difference Elasticity) equations, while government expenditure adopts Cobb-Douglas equations. Also, in GTAP model exist two international departments, world bank and international transportation. Savings from all countries accumulate in world bank, then allocates to each country according to rate of return in capital. And the international transportation department helps to explain the difference between CIF and FOB. The whole world economy ties up together in the GTAP model.

In this research we use the GTAP8 database and adjust its tariff data part by using the TASTE database to fit China's actual tariff system. Released in 2012, the GTAP8 database contains 57 commodities in 127 countries based on the 2007 trade data. According to the research objects of our research, we aggregate the 57 commodities into 24 categories, which are rice, wheat, other crops, vegetable and fruit, oilseeds, sugar, cotton, other agricultural products, beef and mutton, pork, dairy products, wool, vegetable oil, processed food, fish, forestry products, natural resources, textile and leather, natural resource related industry, machinery and equipment, transport equipment, electronic products, other manufacture and service. Also, the 127 countries are aggregated into 10 regions: China, LDAC, other Africa countries, USA, EU, Japan and South Korea, Australia and New Zealand, ASEAN, India and rest of the world.

To accomplish a comparative research, we arrange for 2 scenarios: the baseline scenario and tariff reduction scenario.

Baseline scenario: It assumes that in 2010 China hasn't cut tariff for LDAC, so the tariff remains the same as in 2007. To demonstrate the changes in endowments and economy of all regions from 2007 to 2020, we adopt the Walmsley recursive dynamic approach to update the data about population, skilled labor, unskilled labor, capital and GDP in 3 stages: 2008, 2009 and 2010, and in the end we get the baseline scenario in 2010. (Walmsley, 2000; Yang, 2012)

Tariff reduction scenario: China will cut tariff for LDAC as is shown in Table 2, and other assumptions stay the same as the baseline scenario. By comparing with the baseline scenario, we can analysis the economic effects of China's tariff reduction policy in the world.

V. Simulation results

1. macroeconomic Influences

China's tariff reduction will stimulate LDAC's economy to boom and increase its welfare. As is shown in Table 3, the actual GDP of LDAC increase by 0.008% and its welfare level increase 83.5 million dollars. Due to economy growth, LDAC's rate of return for endowments and GDP deflator also increase obviously. The prices of land, labor and capital increase by 0.38%, 0.11% and 0.11% respectively, while GDP deflator increases 0.13%. The prices of export products increase larger than import products, so term of return for LDAC is higher than that in baseline scenario by 0.12%. The improvement in term of return lowers LDAC's comparative advantages in export products overall, as its total export drops by 0.02%, while its total import increases by 0.16%.

Table 3 macroeconomic Influences of China's tariff reduction policy (%, 2010)

	China	LDAC
Real GDP	0.0001	0.008
GDP deflator	-0.001	0.133
Welfare(million dollars)	-17.2	83.5
Terms of trade	-0.002	0.12

Imports	0.011	0.16
Exports	0.007	-0.022
Factor prices		
land	-0.28	0.38
labor	0.001	0.11
capital	0.002	0.11

Datasource : GTAP simulation

For China, the effects of this tariff reduction policy are rather small. As in Table 3, real GDP of China changes very little, while welfare falls 17.2 million dollars compared with the baseline scenario. As China's tariff reduction policy is a unilateral action, prices of domestic products decrease and GDP deflator falls by 0.001%. Meanwhile, China's term of trade decreases 0.002% and export increases 0.007%, while imports increases by 0.011% compared to the baseline scenario. For factors' prices, as China imports land-intensive products from Africa, China's land price drops slightly as 0.28%. As a result, more resources concentrate on industry and services, which pull up prices of labor and capital by 0.001% and 0.002% respectively.

2. industry-level influence

Different industries in LDAC get different influences from China's tariff reduction policy, which is determined by tariff concessions amplitudes and the degree of reliance on exports to the Chinese market. Changes in output are the results of trades as well as factors reconfigurations. As in Table 4, oilseeds, forestry products, nature resources and machinery and equipment enjoy the greatest trade increases, leading to their outputs increases as well. These industries share the following 2 characteristics: Firstly, tariff reductions on these commodities are relatively significant; Secondly, these products took a large part in China's total import from LDAC. Without these 2 characteristics, the effects of tariff reduction policy are rather limited. For example, although cotton takes a great share in China's import from LDAC (27.1%), its tariff however stays the same. As a result, instead of increasing, cotton export from LDAC to China actually decreases by 3.1 million dollars.

Due to effects of resources' re-allocation, outputs and trades of other industries in LDAC suffer a negative influence. China's tariff reduction policy benefits oilseeds, forestry products, nature resources and machinery and equipment, increasing the demand for factors. This will pull up prices of land, labor and capital (Table 3), improving productions costs and product prices of other commodities and reducing the competitiveness of these products on the international market. Then, as in Table 4, we can tell that outputs and trades of most commodities are decreasing.

Table 4 Industry-level influence in LDAC, compared to the baseline scenario (%, 2010)

Industry	Price	Output	Import	Export	Net export (million dollars)
Rice	0.12	-0.10	0.19	-0.54	-2.1
Wheat	0.08	-0.27	0.05	-0.58	-0.4
Other crops	0.13	0.01	0.16	-0.26	-0.6
Vegetable and fruit	0.13	0.03	0.18	0.03	0.6
Oilseeds	0.14	0.27	0.32	2.82	5.0
Sugar	0.10	-0.13	0.18	-0.42	-2.5
Cotton	0.10	-0.19	-0.01	-0.37	-3.6
Other Agri products	0.11	-0.13	0.23	-0.49	-8.2
Beef and mutton	0.11	-0.02	0.34	-0.51	-1.0
Pork	0.11	-0.01	0.32	-0.66	-2.0
Dairy products	0.11	-0.06	0.33	-0.15	-1.5
Wool	0.13	0.01	0.72	-0.67	0.0
Vegetable oil	0.10	-0.17	0.19	-0.45	-3.0
Processed food	0.11	0.00	0.16	0.04	-2.3
Fishing	0.15	0.02	0.16	0.24	0.3
Forestry products	0.17	0.39	0.26	1.44	22.8
Natural resources	0.15	0.04	0.52	0.07	47.7
Textile and leather	0.08	-0.25	0.10	-0.42	-12.2
Natural resource industry	0.10	-0.18	0.13	-0.39	-26.0
Machinery and equipment	0.09	0.07	0.16	0.24	10.4
Transport equipment	0.07	-0.24	0.09	-0.39	-11.4
Electronic products	0.09	-0.31	0.15	-0.74	-3.4
Other manufacture	0.10	-0.04	0.32	0.35	-2.2
Service	0.10	0.00	0.20	-0.35	-46.4

Datasource : GTAP simulation

China's industries have basically opposite outcomes. As is shown in Table 5, China's import increases are concentrated on forestry products and natural resources, 13.7 million dollars and 71.3 million dollars respectively. Additionally, China's net

imports of vegetable and fruits, oilseeds, other agricultural products, beef and mutton, processed food and fish have slightly increases. Changes on net imports depend on tariff concession amplitudes and imports of LDAC from China. For example, although China's tariff for vegetable and fruit for LDAC decreases by 16.5%, but China's import of vegetable and fruit are rather small, taking only 0.2% of China's total imports from LDAC. So China's vegetable and fruit industry is almost not affected, and import increases merely 0.06%. As for forestry products, although tariff only falls by 1.02%, but China's imports of forestry products from LDAC is relatively important (4.4% of total import of China from LDAC). So the influence on China's forestry industry is pretty obvious, as the import increases 0.22% and net imports increases 13.7 million dollars. (Table 5)

Table 5 Industry-level influence in China, compared to the baseline scenario (%, 2010)

Industry	Price	Output	Import	Export	Net export (million dollars)
Rice	-0.002	0.001	-0.008	0.031	0.1
Wheat	-0.003	0.002	-0.011	0.021	0.1
Other crops	-0.003	0.001	0.007	0.007	0.0
Vegetable and fruit	-0.004	0.000	0.061	0.012	-0.7
Oilseeds	-0.003	0.001	0.004	0.016	-0.4
Sugar	-0.002	0.000	0.002	0.012	0.0
Cotton	-0.001	0.007	-0.021	0.055	0.3
Other Agri products	-0.004	0.000	0.092	0.048	-0.1
Beef and mutton	-0.002	0.001	0.009	0.013	-0.1
Pork	-0.002	0.001	-0.003	0.014	0.5
Dairy products	-0.002	0.000	0.002	0.020	0.0
Wool	-0.002	0.004	-0.003	0.021	0.1
Vegetable oil	-0.003	0.003	-0.005	0.015	0.5
Processed food	-0.002	0.000	0.046	0.007	-2.4
Fishing	-0.005	0.000	0.094	0.010	-0.2
Forestry products	-0.006	-0.039	0.221	0.041	-13.6
Natural resources	-0.009	-0.020	0.049	0.119	-71.2
Textile and leather	0.000	0.002	0.006	0.003	4.7
Natural resource industry	-0.003	0.005	-0.005	0.020	38.4
Machinery and equipment	-0.002	0.002	0.010	0.011	4.0
Transport equipment	-0.001	0.002	0.001	0.003	0.7
Electronic products	0.000	0.000	0.001	-0.001	-3.5
Other manufacture	0.000	0.000	0.026	-0.001	-1.7
Service	0.000	0.001	0.002	0.000	-1.1

Datasouce : GTAP simulation

3. changes in trade flow

China's tariff reduction has positive effects in promoting China's import from LDAC. In Table 6, China's imports in some commodities from LDAC increase greatly. For example, imports of vegetable and fruit, processed food, fishing and manufacture increase 95.1%, 48.4%, 45.3% and 130.9% respectively. However, China's major import commodities from LDAC are resource products, such as cotton, forestry products and natural resources. But tariffs on these commodities are already pretty low and don't decline much in this policy. Compared with the baseline scenario, China's total import from LDAC increases 9.5%. But trade creation effects are rather small, as China imports more from LDAC at the expense of importing less from other countries. Compared to the baseline scenario, China's imports from other African countries and other countries in the world decrease 0.2% and 0.03% respectively.

Table 6 Changes in China's trade flow, compared to the baseline scenario (2010, %)

	Imports				Exports			
	Total imports	LDAC	Other Africa	Rest of world	Total exports	LDAC	Other Africa	Rest of world
Rice	-0.01	-0.66	-0.01	-0.01	0.03	0.21	0.02	0.01
Wheat	-0.01	-0.70	-0.02	-0.01	0.02	0.09	0.03	0.02
Other crops	0.01	3.23	-0.02	-0.02	0.01	0.23	0.02	0.01
Vegetable and fruit	0.06	95.05	-0.09	-0.08	0.01	0.22	0.03	0.01
Oilseeds	0.00	26.12	-0.06	-0.04	0.02	0.43	0.05	0.01
Sugar	0.00	5.28	-0.02	-0.01	0.01	0.28	0.02	0.01
Cotton	-0.02	-0.42	0.03	0.03	0.06	0.42	0.13	0.05
OtherAgri products	0.09	8.61	-0.29	-0.28	0.05	0.44	0.10	0.04
Beef and mutton	0.01	42.19	-0.04	-0.02	0.01	0.43	0.04	0.01
Pork	0.00	4.67	-0.02	-0.01	0.01	0.34	0.02	0.01
Dairy products	0.00	28.74	-0.02	-0.01	0.02	0.36	0.02	0.01
Wool	0.00	29.31	-0.03	0.00	0.02	0.76	0.04	0.02
Vegetable oil	-0.01	28.03	-0.02	-0.01	0.02	0.25	0.03	0.01
Processed food	0.05	48.44	-0.06	-0.05	0.01	0.19	0.02	0.01
Fishing	0.09	45.31	-0.11	-0.10	0.01	0.23	0.02	0.01
Forestry products	0.22	4.13	-0.33	-0.32	0.04	0.63	0.10	0.04
Natural resources	0.05	10.65	-0.24	-0.22	0.12	0.90	0.16	0.12
Textile and leather	0.01	11.52	-0.02	0.00	0.00	0.11	0.02	0.00
Natural resource	-0.01	6.96	-0.02	-0.01	0.02	0.17	0.03	0.02

industry								
Machinery and equipment	0.01	15.14	-0.03	-0.02	0.01	0.18	0.02	0.01
Transport equipment	0.00	43.57	-0.01	0.00	0.00	0.09	0.00	0.00
Electronic products	0.00	2.51	-0.01	0.00	0.00	0.16	0.00	0.00
Other manufacture	0.03	130.92	-0.03	-0.02	0.00	0.33	0.02	0.00
Service	0.00	-0.40	0.00	0.00	0.00	0.20	0.00	0.00
Total	0.01	9.5	-0.2	-0.03	0.007	0.14	0.02	0.006

Data source : GTAP simulation

As this tariff reduction is an unilateral action, China's exports don't increase that much. As in Table 7, compared to the baseline scenario, China's export increases 0.007%, as domestic prices fall and improve competitiveness in the world market. Also, China's exports to LDAC only increases 0.14%, and to other African countries and rest of world increase 0.02% and 0.006% respectively.

Trade diversion effects are more obvious in LDAC's trade flow change. As in Table 8, compared to the baseline scenario, LDAC's exports to China increase only 9.5%, but to other African countries and rest of world decrease 0.66% and 1.05% respectively. As terms of trade improve, LDAC's total export decreases 0.02%. Due to unilateral tariff reduction of China, LDAC's total imports increase 0.15% while its imports from China increase 0.14%, which means that LDAC has not increased imports from China specially.

Table 7 Changes in LDAC's trade flow, compared to the baseline scenario (2010, %)

	Imports				Exports			
	Total imports	LDAC	Other Africa	Rest of world	Total exports	LDAC	Other Africa	Rest of world
Rice	0.19	0.21	0.19	0.20	-0.53	-0.66	-0.59	-0.63
Wheat	0.05	0.09	0.06	0.06	-0.58	-0.70	-0.63	-0.63
Other crops	0.16	0.23	0.22	0.22	-0.26	3.23	-0.29	-0.33
Vegetable and fruit	0.18	0.22	0.20	0.20	0.04	95.05	-0.38	-0.43
Oilseeds	0.32	0.43	0.41	0.41	2.82	26.12	-0.51	-0.61
Sugar	0.18	0.28	0.26	0.27	-0.42	5.28	-0.47	-0.48
Cotton	-0.01	0.42	0.41	0.41	-0.37	-0.42	-0.34	-0.42
Other Agri products	0.23	0.44	0.40	0.41	-0.49	8.61	-0.62	-0.66
Beef and mutton	0.34	0.43	0.41	0.42	-0.50	42.19	-0.70	-0.78

Pork	0.32	0.34	0.32	0.33	-0.65	4.67	-0.72	-0.76
Dairy products	0.33	0.36	0.34	0.35	-0.14	28.74	-0.75	-0.80
Wool	0.72	0.76	0.71	0.73	-0.66	29.31	-1.64	-1.65
Vegetable oil	0.19	0.25	0.22	0.23	-0.45	28.03	-0.59	-0.58
Processed food	0.16	0.19	0.18	0.18	0.04	48.44	-0.33	-0.34
Fishing	0.16	0.23	0.21	0.21	0.24	45.31	-0.32	-0.31
Forestry products	0.26	0.63	0.60	0.60	1.45	4.13	-0.66	-0.73
Natural resources	0.52	0.90	0.79	0.78	0.07	10.65	-1.44	-1.65
Textile and leather	0.10	0.11	0.09	0.11	-0.41	11.52	-0.55	-0.56
Natural resource industry	0.13	0.17	0.14	0.15	-0.39	6.96	-0.52	-0.56
Machinery and equipment	0.16	0.18	0.16	0.17	0.24	15.14	-0.67	-0.69
Transport equipment	0.08	0.09	0.08	0.09	-0.38	43.57	-0.41	-0.42
Electronic products	0.15	0.16	0.14	0.16	-0.73	2.51	-0.76	-0.77
Other manufacture	0.32	0.33	0.32	0.33	0.35	130.92	-0.68	-0.73
Service	0.20	0.20	0.20	0.20	-0.36	-0.40	-0.39	-0.40
Total	0.154	0.14	0.17	0.17	-0.022	9.5	-0.66	-1.05

Data source : GTAP simulation

VI. Conclusions

As can be seen from our analysis, import from LDAC is only a small proportion of China's total import, and the difference between trade structure and tariff reduction structure in China-LDAC trade is rather large. As a result, China's import from LDAC increases relatively greatly while economy stimulation effects for LDAC and other countries in the world are limited. Meanwhile, due to unilateral tariff reduction, China's export to LDAC don't improve as much as LDAC's export to China. The main conclusions are as follows:

Firstly, China's tariff reduction will stimulate LDAC's economy and improve its welfare. LDAC's real GDP increases 0.008% and welfare increases 83.5 million dollars. Due to economy growth, factors' rates of return in LDAC increase significantly. Prices of land, labor and capital increase 0.38%, 0.11% and 0.11% respectively and terms of trade increases 0.12%. The improvement of terms of trade weakens the competitive

advantage of LDAC products, as its total export decreases 0.02% and import increases 0.16%.

Secondly, China's tariff reduction for LDAC has little influence on China's economy. China's real GDP rarely changes but welfare falls 17.2 million dollars. Also, as the result of unilateral tariff reduction policy, international prices fall and China's GDP deflator decrease 0.001%. Also, China's terms of trade worse as much as 0.002%.

Thirdly, the effects on LDAC's industries differ according to the tariff reduction degree and reliance on exports to China's market. Trades in oilseeds, forestry products, natural resources and machinery and equipment increase most greatly and their outputs also increase. Due to resource reallocation effects, LDAC's other industries suffer negative effects.

Fourthly, influences on China's trade are opposite to LDAC. China's imports of forestry products and natural resources increase most, which are 13.7 million dollars and 71.3 million dollars respectively, while their output decrease 0.039% and 0.02%. As the output of these two industries decrease, some factors flow to other industries lowering their costs and even their prices. But outputs grow a little bit.

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