

The Impacts of the Shrinkage in Goods Exports on Chinese Economy: A CGE Model-Based Scenario Analysis

Lin Sun¹

¹ Shanghai Academy of Social Sciences, Shanghai, China

Correspondence: Lin Sun, Shanghai Academy of Social Sciences, Shanghai, 200020, China. Tel: 86-135-0163-0511. E-mail: sunlin@sass.org.cn

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Abstract

Focusing on the shrinkage in goods exports, this paper quantitatively analyzes the impacts of Sino-US trade war on growth, trade, industrial production of China. The method used here is a dynamic simulation for the period from 2019 to 2030 based on a recursively dynamic CGE model of 18 industries. The impacts are analyzed and assessed by providing 5 alternative scenarios and by comparing their deviations from the baseline scenario. Three alternative scenarios are different forms of reduction in goods exports, and two alternative scenarios are different hedging measures to the impacts. A comparison of alternative scenarios reveals that the reduction in goods exports will significantly affect the nominal GDP but cause trouble for the real GDP of China. As the hedging measure, the currency depreciation ultimately only affects the price, and the effect on the real GDP is very limited. To increase the domestic real investment will result in the increase in imports and significantly hedge the loss of nominal GDP and cause a larger-scale trade deficit, and therefore need to be used with caution.

Keywords: Sino-US Trade War, Shrinkage in Goods Exports, Chinese Economy, CGE Model

1. Introduction

Since March 2018, China and the United States have been engaged in a trade war as each country continues to dispute tariffs placed on goods traded between them. July 15, 2018, Trump administration set 25% tariffs on \$34 billions of Chinese imports. China responded in kind with tariffs on \$34 billion of the United States. August 7, 2018, the United States released the list of \$16 billions of Chinese goods to be subject to 25% tariffs. China retaliated with 25% duties on \$16 billion of the United States goods. September 24, 2018, Trump administration implemented 10% tariffs on \$200 billions of Chinese imports and planned to increase the rate to 25% on January 1, 2019. China answered with duties of its own on \$60 billion of the United States goods. December 1, 2018, the United States and China agreed on a 90-day halt to new tariffs. Trump administration agreed to put off January 1, 2019, scheduled increase on tariffs on \$200 billions of Chinese goods until early March while talks between the two countries take place. China agreed to buy more products from the United States. But after more than a year of friction and ten rounds of negotiations, China and the United States ultimately did not reach an agreement. As a result, the two countries entered the second round of retaliatory mutual tariffs. May 10, 2019, Trump administration raised tariffs on \$200 billions of Chinese imports to 25% from 10%. Negotiations are deadlocked until G20 Summit in Japan.

China has been strengthening its linkage with the world economy and the United States steadily after became the membership of WTO from 2001. As shown in Table 1, for the period 2001-2018, real GDP of China increased by 10.2 times, total trade to the world increased by 9.1 times, exports to the world by 9.3 times, and imports to the world by 8.8 times (in nominal US dollars), total trade to the United States increased by 7.9 times, exports to the United States by 8.8 times, and imports to the United States by 5.9 times (in nominal US dollars). The trade surplus of China increased 15.6 times to the world and 11.5 times to the United States. During the period 2001-2018, the trade surplus to the United States accounted for which to the world, the highest more than 250% and the lowest also more than 40%, and more than 73.5% of the trade surplus of this period was from the United States. 2005-2007, the total trade of China accounted for more than 60% of GDP and still exceeded 30%. In other words, China has become the big player in the world economy, and for the Chinese economy, the trade with the world, especially the exports to the United States is very important.

The economic environment surrounding China is being gradually changed because of the Sino-US trade war.

Trade wars have a major impact on the Chinese Economy, there has been some research studying related issues. Li et al. (2018) use a multi-country global general equilibrium (GE) model to numerically simulate the effects of possible Sino-US trade wars. Their simulation results show that China will be significantly hurt by the Sino-US trade war, but negative impacts are affordable. Shagdar & Nakajima (2018) analyzed the economic effects of the ongoing Sino-US trade war by using a CGE Model and GTAP Data Base 9.0a, the results show that both parties will be worse-off from this trade friction, having welfare losses and real GDP contractions, and the negative economic and trade impacts on China would be larger compared to those of the USA. Tsutsumi (2018) analyzed the potential impact of the proposed tariff increases by a global CGE model. The results show that the additionally imposed tariffs on goods alone decline the GDP in the US and China by 0.1% and 0.2%, respectively. Considering the effect of capital deepening and technological spillover induced by trade, the GDP in the US and China declines by 1.6% and 2.5% respectively.

The above researches are based on the multi-national model and mainly study the impact of the Sino-US trade war on China and the United States and other countries, and lack the internal view of the Chinese economy. Focusing on easy quantifiable changes such as the shrinkage in goods exports of China, this paper quantitatively analyzes impacts of the trade war on GDP growth, industrial structure, and the balance of payments. The method used here is a dynamic simulation for the period from 2015 (benchmark) to 2030 based on a recursively dynamic CGE (Computable General Equilibrium) model of 18 industries. Section 2 presents the CGE model of the Chinese economy. Section 3 provides simulation analyses on the impacts of the shrinkage in goods exports of China. Section 4 is the summary and conclusion.

Table 1. China’s GDP and Trade with the World and U.S. (2001-2018, billion US\$)

Year	(A+B) /RGDP (%)	(C+D) /A (%)	C/A (%)	D/B (%)	(C-D) /(A-B) (%)	Real GDP	Total Export (A)	Total Import (B)	Total Trade (A+B)	Total Net Export (A-B)	Export to US (C)	Import from US (D)	Trade with US (C+D)	Net Export to US (C-D)
2001	38.1	15.8	20.4	10.8	124.6	1339	266	244	510	23	54	26	80	28
2002	42.2	15.7	21.5	9.2	140.4	1471	326	295	621	30	70	27	97	43
2003	51.3	14.8	21.1	8.2	230.1	1660	438	413	851	25	92	34	126	59
2004	59.0	14.7	21.1	8.0	250.1	1955	593	561	1155	32	125	45	170	80
2005	62.2	14.9	21.4	7.4	112.0	2287	762	660	1422	102	163	49	212	114
2006	64.0	14.9	21.0	7.5	81.3	2753	969	791	1760	178	203	59	263	144
2007	61.3	13.9	19.1	7.3	61.9	3552	1220	956	2176	264	233	69	302	163
2008	55.8	13.0	17.6	7.2	57.4	4597	1431	1133	2563	298	252	81	334	171
2009	43.3	13.5	18.4	7.7	73.2	5102	1202	1006	2208	196	221	77	298	143
2010	48.9	13.0	18.0	7.3	99.8	6088	1578	1396	2974	182	283	102	385	181
2011	48.2	12.3	17.1	7.0	130.6	7555	1898	1743	3642	155	324	122	447	202
2012	45.3	12.5	17.2	7.3	95.0	8532	2049	1818	3867	230	352	133	485	219
2013	43.4	12.5	16.7	7.8	83.4	9574	2209	1950	4159	259	368	152	521	216
2014	41.2	12.9	16.9	8.1	61.9	10440	2342	1959	4302	383	396	159	555	237
2015	35.9	14.1	18.0	8.8	44.0	11014	2273	1680	3953	594	409	148	557	261
2016	33.1	14.1	18.4	8.5	49.2	11142	2098	1588	3686	510	385	134	520	251
2017	33.8	14.2	19.0	8.3	65.7	12156	2263	1844	4107	420	430	154	584	276
2018	34.0	13.7	19.2	7.3	91.9	13605	2487	2136	4623	352	478	155	634	323
Avg.	46.7	13.9	19.0	8.0	102.9	10.2	9.3	8.8	9.1	15.6	8.8	5.9	7.9	11.5

Note. The last row, column 2-6 is arithmetic average of 2001-2018; column 7 to 15 is times of 2018/2001. Source: *China Statistical Yearbook 2018* (Data for 2018 from online).

2. CGE Model of the Chinese Economy

2.1 Characteristics of the Model

The CGE model of China in this paper uses the latest input-output table of 2015 for the Chinese economy. The model consists of 18 industries (agriculture, 3 energy industries, 8 manufacturing industries including construction, and 6 service industries), 1 private consuming sector, and 1 kind of labor. The model is a simple version of the automobile-related Hybrid CGE model of China (Sun, 2012), and the basic structure based on the model used to study the policies of Chinese trade liberalization (Ezaki & Sun, 2000). It originates basically from

the CGE model of an open economy in Dervis, De Melo, and Robinson (1982). The model here is a dynamic recursive model, is solved year by year dynamically by using extrapolated values on such exogenous variables and parameters. The detailed structure of the model can be found in Ezaki & Sun (2000) and Sun (2012).

2.2 The Dataset and Baseline of Model for the Chinese Economy

Table 2 is a minimal version of the benchmark information of 2015 Social Accounting Matrix (SAM). The parameters of the model are calibrated on the basis of the information contained in the full SAM. The SAM shows the balance between demand and supply in the output market, the balance between aggregate savings and investment, the budgetary balance of various actors, and the balance in the transactions with the world market. The SAM is based on China input-output table of 2015 and other macroeconomic and sectoral information pertaining to that year obtained from China Statistical Yearbook 2016. The model uses three kinds of elasticity pertaining to CES and CET functions. GTAP data is used to obtain the elasticity of substitution between labor and capital and between imports and domestic goods. The evidence available in other studies is used to obtain the elasticity of transformation between domestically output and export.

Baseline scenario (S0) is the standard simulation result for 2015-2030 to be used as the base in comparison. The baseline needs to be reasonable, reflecting what would have happened if the recent trends by and large continued, and parameter values did not change too much. In order to get the baseline scenario, we must assign proper values to exogenous variables and parameters, including elasticity of substitution and transformation of various CES functions. For major exogenous variables, we assume the growth rate of labor supply, real investment, and TFP of each industry, respectively during 2015-2030. These values accord well with the recent experience. Scale parameter of exports and imports in each industry is extrapolated based on the growth performance of exports and imports in the past. The exchange rate is fixed at the 2015 level (zero growth), and the coefficients of intermediate inputs are assumed to remain the same as in the 2015 input-output table.

Table 2. Social Accounting Matrix (SAM) of China, 2015 in 100 Million Yuan

	Activities	Commodities	Capital	Labor	Enterprises	Households.	Government	Investment	Export to World	Total
Activities		1932998							148448	2081447
Commodities	1401192					265980	97053	293925		2058151
Capital	243869									243869
Labor	354110									354110
Enterprises			243869							243869
Households				345493	216736					562229
Government	82275			8617	27133					118025
Savings						296249	20971		-23295	293925
Import from World		125153								125153
Total	2081447	2058151	243869	354110	243869	562229	118025	293925	125153	

Table 3 presents the baseline scenario in terms of average growth rates of key macroeconomic variables and gross value added by industry during 2019-2030. As we can see, under the baseline scenario, the real GDP of China is to grow at an annual average rate of 6.37 percent, nominal GDP is 8.74% and the GDP deflator is 2.2%. Real import from the world market is to grow at a rate of 4.37%. On the other hand, export to the world market is to grow at an annual average rate of 4.97%. The baseline scenario, therefore, reflects the current trend of the increasing dependence of China on the world market as a source of consumption.

Table 3. The Baseline of Chinese Economy, 2019-2030 (100 Million Yuan)

	%	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Nominal GDP	8.74	915223	990065	107198	116157	126000	136830	148756	161907	176429	192487	2102646	229980
Real GDP	6.37	872961	928678	987903	105091	111789	118909	126481	134534	143103	152220	1619244	172254
GDP Deflator	2.22	1.05	1.07	1.09	1.11	1.13	1.15	1.18	1.20	1.23	1.26	1.30	1.34
Real Consumption	6.22	324137	343678	364505	386726	410438	435756	462808	491734	522682	555816	591313	629365

Real Gov Consumption	5.26	117490	123750	130327	137238	144498	152124	160132	168541	177370	186637	196363	206566
Real Exports	4.94	182046	191216	200811	210867	221377	232356	243830	255818	268339	281417	295073	309325
Real Imports	4.37	146319	152275	158555	165160	172149	179548	187384	195685	204486	213823	223731	234258
Real Trade Surplus	6.98	35727	38940	42255	45707	49228	52808	56446	60133	63853	67594	71342	75068
Agriculture	5.95	133423	141369	149782	158692	168129	178127	188720	199946	211843	224453	237818	251986
Coal Industry	6.75	29663	31681	33831	36121	38563	41167	43942	46901	50057	53422	57011	60839
Petroleum & Gas	7.23	73956	79401	85221	91445	98097	105206	112805	120927	129610	138891	148812	159417
Electricity	6.64	85554	91236	97290	103741	110618	117951	125772	134114	143013	152509	162642	173455
Light Industries	6.15	435402	462118	490468	520564	552514	586441	622474	660753	701422	744639	790571	839392
Chemicals	6.37	207074	220337	234425	249397	265305	282209	300176	319275	339578	361165	384117	408522
Metals Industry	6.84	223378	238783	255215	272748	291450	311400	332685	355394	379622	405473	433054	462481
Machinery &	6.73	113297	120954	129119	137829	147116	157021	167584	178851	190868	203686	217359	231943
Transport Equipment	6.58	107895	115002	122573	130640	139235	148394	158156	168562	179657	191486	204100	217553
Electrical & Instrument	6.36	93840	99780	106100	112828	119986	127605	135715	144350	153546	163342	173777	184896
Electronic & Computer	5.35	101760	107014	112578	118488	124744	131368	138392	145843	153752	162152	171079	180566
Construction	6.75	249078	265903	283861	303027	323488	345333	368655	393555	420138	448519	478820	511171
Transportation	6.46	103405	110118	117255	124848	132924	141516	150657	160384	170737	181756	193486	205973
Telecom & Software	6.67	49797	53114	56651	60421	64443	68733	73310	78196	83410	88978	94923	101273
Business Services	6.21	273149	290077	308050	327141	347422	368971	391875	416227	442122	469666	498971	530154
Finance & Insurance	6.98	115599	123594	132149	141309	151119	161629	172895	184975	197933	211837	226762	242788
Real Estate	8.41	80086	86740	93961	101799	110312	119559	129610	140536	152417	165342	179406	194714

3. The Impacts of the Shrinkage in Goods Exports on the Chinese Economy

3.1 Simulation Scenarios

Multi-national models study the impacts of the Sino-US trade war on the trade relation of China with the United States and other countries, while single-national models of China focus on the impacts of the Sino-US trade war on GDP growth, consumption, export, import, the balance of payment and the changes in the production of industries in China. This paper tries to analyze the below impacts of these shocks schemes may cause by the Sino-US trade war on the Chinese economy by simulation and the possible measures to hedge the impacts. In addition to the baseline scenario, 3 alternative simulations are attempted for comparison in order to see the impacts of the Sino-US trade war and 2 simulations of hedging the impacts. Contents of these 5 alternative scenarios (S1-S5) are explained briefly in Table 4.

Table 4. Simulation Scenarios

Scenario	Contents
S0	The baseline scenario (the scale of Goods exports increase 5% every year) (See Table 3)
S1	All goods exports scale 0% increase (5 points decrease from the baseline by 2019)
S2	Selected three key industry's goods exports scale by -5% (10 points decrease from the baseline scenario by from 2019)
S3	All goods exports industries scale -5% decrease (10 points decrease from the baseline scenario by from 2019)
S4	S3+Yuan's value is depreciation of 20% by 2019, hedge the goods exports fall
S5	S3 + Real investment 1 points increase from the baseline scenario by 2019, hedge the goods exports fall

3.2 Simulation Results

Selected results of the simulation are shown from Table 5A, 5B to 7A, 7B and Table 8, 9 for key macroeconomic variables and gross outputs by industry. Table A shows the results of shock scenario compared with the baseline scenario, while Table B shows that the 1 percentage point of total exports reduction corresponds to the changes in other indicators.

Scenario S1 indicates the effects of the decline of all goods exports scale from 5% (the baseline level) to 0%. We can obtain the following observation from Table 5A and 5B. In the macroeconomic level, if all goods export scale decrease 5% (this means the goods exports of China will not increase again from 2019), that will cause a

significant reduction in nominal GDP, and a slight reduction in real GDP because the exports scale decrease leads to a significant decline in GDP deflator. And real private consumption decreases, but real government consumption increases. And the total real imports decline more than the total real exports that mean the goods exports compare large scale imports. Trade surplus increases, this means the decline in total exports caused by the decrease in goods exports is less than the decline in total imports. In the industry level, real production declines especially in Electronic & Computer, Electrical & Instrument, and Light Industries. There is a positive impact on Petroleum & Gas, Coal Industry, Metals Industry, and Transportation. Other industries suffer from positive or negative effects, but all are relatively small. Table 5B shows the change of other indicators by 1 percentage point decline in exports. The situation can be seen more clearly by Table 5B.

Scenario S2 indicates the effects of the selected three key industry's goods exports scale by -5% (that means 10 percentage points decline from baseline scenario from 2019). The selected key industries are electronic & computer, electrical & instrument and light industries, accounted for 30.5%, 12.9% and 27.6% of the total goods exports of China, respectively in 2018. The total share of three industries is more than 70%. From the simulation results show in Table 6A and 6B, we can obtain the following observation. In the macroeconomic level, if the three key industry's goods exports scale decrease -5%, that will cause a significant reduction in nominal GDP (-4.47% in 2019, -23.65% in 2025 and -31.5% in 2030) and in GDP deflator (-4.42% in 2019, -23.09% in 2025 and -30.34% in 2030), and a small reduction in real GDP (-0.05% in 2019, -0.74 in 2025 and -1.65% in 2030). And real private consumption decreases (-0.57% in 2019, -3.23% in 2025 and -4.53% in 2030), but real government consumption has a slight increase. And the total real imports decline more than the total real exports. Trade surplus increases by 2024 and declines from 2025, becomes a negative value by 2030. In the industry level, real production declines especially in Electronic & Computer, Electrical & Instrument and Light Industries, and increases in Petroleum & Gas, Coal Industry, Metals Industry, and Transportation. To other industries, positive or negative effects are relatively small. The situation can be seen more clearly by Table 6B.

Scenario S3 indicates the effects of all goods exports scale by -5% (that means 10 percentage points decline from baseline scenario from 2019). As can be seen from Tables 7A, the situation of impact is similar to the scenario to S2, but the impact is greater. The situation can be seen more clearly by Table 7B.

Scenario S4 is attempted from the point of view of hedging negative impacts of goods exports decline caused by the Sino-US trade war (i.e., GDP reduction) with means of exchange rate devaluation. As can be seen from Tables 8A and 8B, devaluation of Yuan by 20% significantly hedged the decrease in nominal GDP (from -5.29% to 13.61% in 2019, -27.68% to -12.62% in 2025 and -35.64% to -22.77% in 2030), but it has little impact on real GDP, because currency depreciation mainly changes the price (see Table 8).

Scenario S5 is attempted from the point of view of hedging negative impacts of goods exports decline caused by the Sino-US trade war (i.e., GDP reduction) with means of rising real investment. As can be seen from Tables 9A and 9B, an increase in real investment by 1% from 2019 has a relatively obvious hedging effect. In the macroeconomic level, it exacerbates the loss of nominal GDP by 2022, but then the hedging effect gradually appear, it has already hedged the four-fifths losses caused by the reduction of the goods exports by 2030. To Real GDP losses, the hedging effect is gradually increasing, and, it is over 90% by 2030. To real private consumption and real government consumption, the hedging effect is also gradually increasing, and, it is over 50% by 2030. The increase in real investment has a complicated impact on total imports and total exports. It has intensified the decline in total exports but has significantly hedged the decline in total imports caused by the decline in goods exports. As a result, the trade deficit has risen sharply (see Table 9).

Table 5A. S1 Compare with Baseline Scenario S0 (%)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Nominal GDP	-2.65	-5.14	-7.51	-9.68	-11.7	-13.5	-15.3	-16.9	-18.3	-19.6	-20.8	-21.8
Real GDP	-0.03	-0.06	-0.10	-0.16	-0.23	-0.31	-0.40	-0.50	-0.60	-0.71	-0.82	-0.93
GDP Deflator	-2.63	-5.08	-7.41	-9.54	-11.5	-13.3	-14.9	-16.4	-17.8	-19.0	-20.1	-21.1
Real Consumption	-0.33	-0.65	-0.95	-1.23	-1.51	-1.76	-2.01	-2.23	-2.44	-2.64	-2.81	-2.97
Real Gov Consumption	0.04	0.09	0.13	0.17	0.21	0.25	0.29	0.33	0.36	0.40	0.43	0.46
Real Exports	-0.61	-1.23	-1.83	-2.45	-3.07	-3.70	-4.34	-4.99	-5.65	-6.32	-7.01	-7.71
Real Imports	-1.31	-2.55	-3.74	-4.83	-5.84	-6.78	-7.64	-8.43	-9.15	-9.80	-10.3	-10.9
Trade Surplus	2.25	3.94	5.35	6.15	6.60	6.74	6.60	6.20	5.57	4.69	3.58	2.23
Agriculture	-0.02	-0.05	-0.07	-0.09	-0.11	-0.13	-0.15	-0.16	-0.18	-0.19	-0.19	-0.20
Coal Industry	0.11	0.20	0.29	0.38	0.45	0.52	0.58	0.63	0.68	0.72	0.75	0.78

Petroleum & Gas	0.38	0.72	1.05	1.34	1.61	1.84	2.05	2.24	2.40	2.54	2.65	2.74
Electricity	-0.01	-0.03	-0.05	-0.07	-0.08	-0.10	-0.12	-0.14	-0.16	-0.18	-0.20	-0.22
Light Industries	-0.13	-0.26	-0.38	-0.49	-0.59	-0.69	-0.78	-0.86	-0.94	-1.01	-1.06	-1.11
Chemicals	0.00	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05
Metals Industry	0.09	0.18	0.27	0.35	0.43	0.51	0.58	0.64	0.70	0.76	0.82	0.86
Machinery & Equipment	0.02	0.05	0.08	0.11	0.13	0.16	0.19	0.22	0.25	0.28	0.31	0.34
Transport Equipment	-0.03	-0.05	-0.08	-0.11	-0.14	-0.18	-0.21	-0.24	-0.28	-0.31	-0.34	-0.38
Electrical & Instrument	-0.20	-0.38	-0.54	-0.68	-0.81	-0.91	-1.01	-1.09	-1.15	-1.20	-1.24	-1.27
Electronic & Computer	-0.87	-1.66	-2.32	-2.92	-3.44	-3.86	-4.20	-4.46	-4.64	-4.74	-4.78	-4.75
Construction	0.01	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.05	0.06	0.06
Transportation	0.20	0.38	0.55	0.69	0.83	0.95	1.05	1.14	1.22	1.28	1.33	1.37
Telecom & Software	0.02	0.03	0.02	0.01	-0.01	-0.04	-0.07	-0.12	-0.16	-0.22	-0.27	-0.33
Business Services	0.09	0.17	0.24	0.30	0.35	0.39	0.42	0.44	0.45	0.45	0.45	0.43
Finance & Insurance	0.02	0.03	0.04	0.05	0.06	0.06	0.06	0.05	0.04	0.03	0.02	0.00
Real Estate	-0.01	-0.02	-0.03	-0.04	-0.06	-0.08	-0.10	-0.12	-0.14	-0.17	-0.19	-0.22
Public Services	0.02	0.04	0.05	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15

Table 5B. S1 Compare with Real Export 1 point Decrease (%)

1% Exports Vs Others	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Nominal GDP	4.32	4.18	4.11	3.96	3.81	3.67	3.52	3.38	3.25	3.11	2.97	2.84
Real GDP	0.04	0.05	0.06	0.07	0.08	0.08	0.09	0.10	0.11	0.11	0.12	0.12
GDP Deflator	4.28	4.13	4.05	3.90	3.74	3.59	3.44	3.30	3.16	3.02	2.88	2.74
Real Consumption	0.54	0.53	0.52	0.50	0.49	0.48	0.46	0.45	0.43	0.42	0.40	0.39
Real Gov Consumption	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.06	-0.06	-0.06	-0.06
Real Exports	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Real Imports	2.14	2.08	2.05	1.97	1.90	1.83	1.76	1.69	1.62	1.55	1.48	1.41
Trade Surplus	-3.67	-3.20	-2.93	-2.51	-2.15	-1.82	-1.52	-1.24	-0.98	-0.74	-0.51	-0.29
Agriculture	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03
Coal Industry	-0.17	-0.17	-0.16	-0.15	-0.15	-0.14	-0.13	-0.13	-0.12	-0.11	-0.11	-0.10
Petroleum & Gas	-0.61	-0.59	-0.57	-0.55	-0.52	-0.50	-0.47	-0.45	-0.42	-0.40	-0.38	-0.36
Electricity	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Light Industries	0.22	0.21	0.21	0.20	0.19	0.19	0.18	0.17	0.17	0.16	0.15	0.14
Chemicals	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Metals Industry	-0.15	-0.15	-0.15	-0.14	-0.14	-0.14	-0.13	-0.13	-0.12	-0.12	-0.12	-0.11
Machinery & Equipment	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04
Transport Equipment	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Electrical & Instrument	0.33	0.31	0.29	0.28	0.26	0.25	0.23	0.22	0.20	0.19	0.18	0.16
Electronic & Computer	1.42	1.35	1.27	1.19	1.12	1.04	0.97	0.89	0.82	0.75	0.68	0.62
Construction	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Transportation	-0.32	-0.31	-0.30	-0.28	-0.27	-0.26	-0.24	-0.23	-0.22	-0.20	-0.19	-0.18
Telecom & Software	-0.03	-0.02	-0.01	-0.01	0.00	0.01	0.02	0.02	0.03	0.03	0.04	0.04
Business Services	-0.15	-0.14	-0.13	-0.12	-0.11	-0.10	-0.10	-0.09	-0.08	-0.07	-0.06	-0.06
Finance & Insurance	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	0.00	0.00
Real Estate	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03
Public Services	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02

Table 6A. S2 Compare with Baseline Scenario S0 (%)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Nominal GDP	-4.47	-8.59	-12.2	-15.5	-18.5	-21.2	-23.6	-25.7	-27.5	-29.0	-30.4	-31.4
Real GDP	-0.05	-0.11	-0.21	-0.33	-0.47	-0.60	-0.74	-0.91	-1.09	-1.27	-1.46	-1.65
GDP Deflator	-4.42	-8.49	-12.0	-15.2	-18.1	-20.7	-23.0	-25.0	-26.7	-28.1	-29.3	-30.3

Real Consumption	-0.57	-1.09	-1.58	-2.05	-2.48	-2.87	-3.23	-3.55	-3.85	-4.11	-4.34	-4.53
Real Gov Consumption	0.09	0.17	0.25	0.32	0.39	0.46	0.53	0.58	0.64	0.69	0.73	0.77
Real Exports	-1.12	-2.18	-3.25	-4.31	-5.37	-6.37	-7.38	-8.42	-9.48	-10.5	-11.6	-12.7
Real Imports	-2.25	-4.36	-6.24	-7.92	-9.44	-10.8	-12.1	-13.1	-14.1	-14.9	-15.5	-16.1
Trade Surplus	3.53	6.34	7.96	8.72	8.89	8.92	8.36	7.08	5.38	3.26	0.77	-2.11
Agriculture	-0.06	-0.11	-0.16	-0.21	-0.25	-0.29	-0.33	-0.36	-0.38	-0.40	-0.42	-0.42
Coal Industry	0.25	0.47	0.67	0.84	0.98	1.10	1.20	1.28	1.35	1.40	1.43	1.45
Petroleum & Gas	0.74	1.41	2.01	2.53	2.98	3.39	3.73	4.01	4.23	4.40	4.52	4.59
Electricity	0.02	0.04	0.04	0.04	0.03	0.01	-0.01	-0.03	-0.06	-0.09	-0.12	-0.15
Light Industries	-0.30	-0.57	-0.82	-1.04	-1.24	-1.42	-1.57	-1.70	-1.82	-1.91	-1.98	-2.03
Chemicals	0.13	0.24	0.33	0.40	0.46	0.51	0.56	0.58	0.60	0.61	0.61	0.61
Metals Industry	0.29	0.55	0.78	0.98	1.16	1.32	1.46	1.57	1.67	1.75	1.81	1.85
Machinery & Equipment	0.24	0.46	0.64	0.79	0.92	1.03	1.12	1.18	1.23	1.27	1.29	1.30
Transport Equipment	0.14	0.25	0.32	0.37	0.39	0.40	0.39	0.36	0.31	0.26	0.20	0.14
Electrical & Instrument	-0.48	-0.89	-1.25	-1.56	-1.82	-2.01	-2.16	-2.29	-2.37	-2.43	-2.45	-2.45
Electronic & Computer	-2.24	-4.15	-5.80	-7.20	-8.32	-9.13	-9.69	-10.0	-10.2	-10.3	-10.2	-9.95
Construction	0.02	0.03	0.04	0.06	0.07	0.07	0.07	0.08	0.08	0.09	0.09	0.09
Transportation	0.36	0.68	0.97	1.22	1.43	1.63	1.79	1.92	2.03	2.11	2.16	2.19
Telecom & Software	0.02	0.02	0.00	-0.04	-0.09	-0.15	-0.22	-0.30	-0.38	-0.47	-0.56	-0.65
Business Services	0.15	0.29	0.41	0.51	0.58	0.65	0.70	0.72	0.74	0.73	0.72	0.69
Finance & Insurance	0.04	0.07	0.09	0.11	0.12	0.12	0.12	0.11	0.10	0.08	0.06	0.03
Real Estate	-0.01	-0.03	-0.05	-0.07	-0.10	-0.13	-0.16	-0.19	-0.23	-0.26	-0.30	-0.34
Public Services	0.05	0.09	0.12	0.15	0.18	0.20	0.21	0.23	0.24	0.25	0.26	0.27

Table 6B. S2 Compare with Real Export 1 point Decrease (%)

1% Exports Vs Others	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Nominal GDP	4.00	3.94	3.77	3.61	3.45	3.34	3.21	3.05	2.91	2.76	2.62	2.48
Real GDP	0.05	0.05	0.06	0.08	0.09	0.09	0.10	0.11	0.11	0.12	0.13	0.13
GDP Deflator	3.95	3.89	3.72	3.54	3.38	3.26	3.13	2.97	2.82	2.67	2.53	2.39
Real Consumption	0.51	0.50	0.49	0.47	0.46	0.45	0.44	0.42	0.41	0.39	0.37	0.36
Real Gov Consumption	-0.08	-0.08	-0.08	-0.08	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.06	-0.06
Real Exports	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Real Imports	2.01	2.00	1.92	1.84	1.76	1.71	1.64	1.57	1.49	1.41	1.34	1.27
Trade Surplus	-3.16	-2.90	-2.45	-2.02	-1.66	-1.40	-1.13	-0.84	-0.57	-0.31	-0.07	0.17
Agriculture	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.03
Coal Industry	-0.22	-0.22	-0.20	-0.19	-0.18	-0.17	-0.16	-0.15	-0.14	-0.13	-0.12	-0.11
Petroleum & Gas	-0.66	-0.65	-0.62	-0.59	-0.56	-0.53	-0.51	-0.48	-0.45	-0.42	-0.39	-0.36
Electricity	-0.02	-0.02	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01
Light Industries	0.27	0.26	0.25	0.24	0.23	0.22	0.21	0.20	0.19	0.18	0.17	0.16
Chemicals	-0.11	-0.11	-0.10	-0.09	-0.09	-0.08	-0.08	-0.07	-0.06	-0.06	-0.05	-0.05
Metals Industry	-0.26	-0.25	-0.24	-0.23	-0.22	-0.21	-0.20	-0.19	-0.18	-0.17	-0.16	-0.15
Machinery & Equipment	-0.22	-0.21	-0.20	-0.18	-0.17	-0.16	-0.15	-0.14	-0.13	-0.12	-0.11	-0.10
Transport Equipment	-0.12	-0.11	-0.10	-0.09	-0.07	-0.06	-0.05	-0.04	-0.03	-0.02	-0.02	-0.01
Electrical & Instrument	0.43	0.41	0.38	0.36	0.34	0.32	0.29	0.27	0.25	0.23	0.21	0.19
Electronic & Computer	2.01	1.90	1.79	1.67	1.55	1.43	1.31	1.20	1.09	0.98	0.88	0.78
Construction	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Transportation	-0.32	-0.31	-0.30	-0.28	-0.27	-0.26	-0.24	-0.23	-0.21	-0.20	-0.19	-0.17
Telecom & Software	-0.02	-0.01	0.00	0.01	0.02	0.02	0.03	0.04	0.04	0.04	0.05	0.05
Business Services	-0.14	-0.13	-0.13	-0.12	-0.11	-0.10	-0.09	-0.09	-0.08	-0.07	-0.06	-0.05
Finance & Insurance	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	0.00	0.00
Real Estate	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03
Public Services	-0.04	-0.04	-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02

Table 7A. S3 Compare with Baseline Scenario S0 (%)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Nominal GDP	-5.29	-10.1	-14.3	-18.1	-21.5	-24.5	-27.1	-29.5	-31.5	-33.1	-34.5	-35.6
Real GDP	-0.07	-0.15	-0.27	-0.42	-0.60	-0.79	-0.98	-1.17	-1.40	-1.63	-1.88	-2.12
GDP Deflator	-5.23	-9.96	-14.1	-17.8	-21.0	-23.9	-26.4	-28.7	-30.5	-32.0	-33.2	-34.2
Real Consumption	-0.68	-1.30	-1.89	-2.43	-2.94	-3.40	-3.81	-4.18	-4.51	-4.80	-5.05	-5.26
Real Gov Consumption	0.09	0.17	0.26	0.33	0.41	0.48	0.56	0.63	0.69	0.75	0.81	0.86
Real Exports	-1.28	-2.52	-3.79	-5.07	-6.35	-7.64	-8.92	-10.1	-11.5	-12.8	-14.2	-15.6
Real Imports	-2.63	-5.06	-7.25	-9.20	-10.9	-12.5	-13.9	-15.2	-16.2	-17.1	-17.8	-18.4
Trade Surplus	4.26	7.40	9.17	9.86	9.76	8.96	7.79	6.21	3.67	0.62	-2.93	-6.95
Agriculture	-0.05	-0.10	-0.16	-0.21	-0.25	-0.30	-0.34	-0.37	-0.40	-0.43	-0.44	-0.45
Coal Industry	0.22	0.41	0.58	0.73	0.86	0.97	1.06	1.14	1.20	1.25	1.29	1.31
Petroleum & Gas	0.76	1.45	2.07	2.62	3.10	3.52	3.88	4.19	4.43	4.61	4.74	4.82
Electricity	-0.03	-0.06	-0.10	-0.14	-0.18	-0.22	-0.26	-0.30	-0.34	-0.37	-0.41	-0.44
Light Industries	-0.27	-0.53	-0.77	-0.99	-1.19	-1.37	-1.54	-1.68	-1.80	-1.90	-1.99	-2.05
Chemicals	0.00	0.01	0.01	0.00	0.00	-0.01	-0.01	0.00	0.00	0.01	0.01	0.02
Metals Industry	0.18	0.36	0.52	0.66	0.80	0.93	1.04	1.16	1.25	1.34	1.41	1.48
Machinery & Equipment	0.04	0.09	0.14	0.18	0.23	0.28	0.33	0.38	0.43	0.47	0.52	0.55
Transport Equipment	-0.06	-0.11	-0.17	-0.24	-0.30	-0.37	-0.43	-0.49	-0.55	-0.61	-0.66	-0.71
Electrical & Instrument	-0.41	-0.77	-1.08	-1.36	-1.59	-1.78	-1.93	-2.03	-2.12	-2.18	-2.21	-2.21
Electronic & Computer	-1.80	-3.33	-4.67	-5.79	-6.70	-7.38	-7.84	-8.05	-8.18	-8.17	-8.02	-7.77
Construction	0.02	0.04	0.05	0.07	0.08	0.09	0.09	0.09	0.10	0.10	0.10	0.11
Transportation	0.40	0.76	1.08	1.37	1.62	1.83	2.01	2.17	2.28	2.37	2.43	2.46
Telecom & Software	0.04	0.05	0.04	0.02	-0.03	-0.09	-0.17	-0.25	-0.34	-0.44	-0.54	-0.65
Business Services	0.19	0.35	0.50	0.62	0.71	0.79	0.85	0.89	0.90	0.90	0.88	0.85
Finance & Insurance	0.04	0.07	0.09	0.10	0.11	0.11	0.11	0.10	0.08	0.06	0.03	0.00
Real Estate	-0.01	-0.03	-0.06	-0.09	-0.12	-0.15	-0.19	-0.23	-0.27	-0.31	-0.35	-0.39
Public Services	0.04	0.07	0.10	0.13	0.15	0.17	0.19	0.21	0.22	0.23	0.25	0.26

Table 7B. S3 Compare with Real Export 1 point Decrease (%)

1% Exports Vs Others	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Nominal GDP	4.15	4.00	3.79	3.58	3.39	3.21	3.05	2.90	2.73	2.58	2.42	2.28
Real GDP	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.11	0.12	0.13	0.13	0.14
GDP Deflator	4.10	3.95	3.73	3.51	3.32	3.13	2.97	2.82	2.65	2.49	2.33	2.19
Real Consumption	0.53	0.52	0.50	0.48	0.46	0.44	0.43	0.41	0.39	0.37	0.35	0.34
Real Gov Consumption	-0.07	-0.07	-0.07	-0.07	-0.06	-0.06	-0.06	-0.06	-0.06	-0.06	-0.06	-0.05
Real Exports	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Real Imports	2.06	2.01	1.91	1.81	1.73	1.64	1.56	1.49	1.41	1.33	1.25	1.18
Trade Surplus	-3.34	-2.93	-2.42	-1.94	-1.54	-1.17	-0.87	-0.61	-0.32	-0.05	0.21	0.44
Agriculture	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03
Coal Industry	-0.17	-0.16	-0.15	-0.14	-0.13	-0.13	-0.12	-0.11	-0.10	-0.10	-0.09	-0.08
Petroleum & Gas	-0.59	-0.58	-0.55	-0.52	-0.49	-0.46	-0.44	-0.41	-0.38	-0.36	-0.33	-0.31
Electricity	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Light Industries	0.22	0.21	0.20	0.20	0.19	0.18	0.17	0.16	0.16	0.15	0.14	0.13
Chemicals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Metals Industry	-0.14	-0.14	-0.14	-0.13	-0.13	-0.12	-0.12	-0.11	-0.11	-0.10	-0.10	-0.09
Machinery & Equipment	-0.03	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04
Transport Equipment	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Electrical & Instrument	0.32	0.30	0.29	0.27	0.25	0.23	0.22	0.20	0.18	0.17	0.15	0.14

Electronic & Computer	1.41	1.32	1.23	1.14	1.05	0.97	0.88	0.79	0.71	0.63	0.56	0.50
Construction	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Transportation	-0.31	-0.30	-0.29	-0.27	-0.25	-0.24	-0.23	-0.21	-0.20	-0.18	-0.17	-0.16
Telecom & Software	-0.03	-0.02	-0.01	0.00	0.00	0.01	0.02	0.02	0.03	0.03	0.04	0.04
Business Services	-0.15	-0.14	-0.13	-0.12	-0.11	-0.10	-0.10	-0.09	-0.08	-0.07	-0.06	-0.05
Finance & Insurance	-0.03	-0.03	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00
Real Estate	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03
Public Services	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02

Table 8. S4 Compare with Baseline Scenario S0 (%)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Nominal GDP	13.6	7.88	2.76	-1.79	-5.84	-9.42	-12.6	-15.4	-17.8	-19.7	-21.4	-22.7
Real GDP	-0.06	-0.15	-0.27	-0.42	-0.60	-0.79	-0.98	-1.17	-1.40	-1.63	-1.88	-2.12
GDP Deflator	13.6	8.04	3.04	-1.37	-5.28	-8.70	-11.7	-14.4	-16.6	-18.4	-19.9	-21.1
Real Consumption	-0.67	-1.30	-1.89	-2.43	-2.94	-3.40	-3.81	-4.18	-4.51	-4.80	-5.05	-5.26
Real Gov Consumption	0.09	0.17	0.25	0.33	0.41	0.48	0.56	0.63	0.69	0.75	0.81	0.86
Real Exports	-1.26	-2.52	-3.79	-5.07	-6.35	-7.64	-8.92	-10.1	-11.5	-12.8	-14.2	-15.6
Real Imports	-2.65	-5.06	-7.24	-9.20	-10.9	-12.5	-13.9	-15.2	-16.2	-17.1	-17.8	-18.4
Trade Surplus	4.44	7.40	9.17	9.86	9.76	8.96	7.79	6.21	3.67	0.61	-2.93	-6.95
Agriculture	-0.05	-0.10	-0.16	-0.21	-0.25	-0.30	-0.34	-0.37	-0.40	-0.43	-0.44	-0.45
Coal Industry	0.21	0.41	0.58	0.73	0.86	0.97	1.06	1.14	1.20	1.25	1.29	1.31
Petroleum & Gas	0.76	1.45	2.07	2.62	3.10	3.52	3.88	4.19	4.43	4.61	4.74	4.82
Electricity	-0.03	-0.06	-0.10	-0.14	-0.18	-0.22	-0.26	-0.30	-0.34	-0.37	-0.41	-0.44
Light Industries	-0.27	-0.53	-0.77	-0.99	-1.19	-1.37	-1.54	-1.68	-1.80	-1.90	-1.99	-2.05
Chemicals	0.01	0.01	0.01	0.00	0.00	-0.01	-0.01	0.00	0.00	0.01	0.01	0.02
Metals Industry	0.19	0.36	0.52	0.66	0.80	0.93	1.04	1.16	1.25	1.34	1.41	1.48
Machinery & Equipment	0.05	0.09	0.14	0.18	0.23	0.28	0.33	0.38	0.43	0.47	0.52	0.55
Transport Equipment	-0.05	-0.11	-0.17	-0.24	-0.30	-0.37	-0.43	-0.49	-0.55	-0.61	-0.66	-0.71
Electrical & Instrument	-0.41	-0.77	-1.09	-1.36	-1.59	-1.78	-1.93	-2.03	-2.12	-2.18	-2.21	-2.21
Electronic & Computer	-1.77	-3.33	-4.67	-5.79	-6.70	-7.38	-7.84	-8.05	-8.18	-8.17	-8.02	-7.77
Construction	0.02	0.04	0.05	0.07	0.08	0.09	0.09	0.09	0.10	0.10	0.10	0.11
Transportation	0.40	0.76	1.08	1.37	1.62	1.83	2.01	2.17	2.28	2.37	2.43	2.46
Telecom & Software	0.04	0.05	0.04	0.02	-0.03	-0.09	-0.17	-0.25	-0.34	-0.44	-0.54	-0.65
Business Services	0.19	0.35	0.50	0.62	0.71	0.79	0.85	0.89	0.90	0.90	0.88	0.85
Finance & Insurance	0.04	0.07	0.09	0.10	0.11	0.11	0.11	0.10	0.08	0.06	0.03	0.00
Real Estate	-0.01	-0.03	-0.06	-0.09	-0.12	-0.15	-0.19	-0.23	-0.27	-0.31	-0.35	-0.39
Public Services	0.04	0.07	0.10	0.13	0.15	0.17	0.19	0.21	0.22	0.23	0.25	0.26

Table 9. S5 Compare with Baseline Scenario S0 (%)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Nominal GDP	-12.1	-14.6	-16.6	-18.0	-18.8	-19.1	-18.8	-18.0	-16.5	-14.3	-11.5	-7.89
Real GDP	-0.06	-0.09	-0.13	-0.17	-0.20	-0.23	-0.24	-0.26	-0.26	-0.25	-0.23	-0.20
GDP Deflator	-12.0	-14.5	-16.5	-17.8	-18.7	-18.9	-18.6	-17.8	-16.3	-14.1	-11.3	-7.70
Real Consumption	-0.78	-1.44	-1.99	-2.44	-2.78	-3.01	-3.12	-3.12	-2.99	-2.75	-2.39	-1.90
Real Gov Consumption	0.08	0.19	0.31	0.44	0.58	0.73	0.88	1.03	1.18	1.32	1.45	1.57
Real Exports	-2.04	-4.02	-6.01	-8.03	-10.0	-12.1	-14.1	-16.2	-18.4	-20.6	-22.8	-25.0
Real Imports	-1.29	-2.35	-3.08	-3.46	-3.52	-3.26	-2.67	-1.73	-0.44	1.21	3.25	5.66
Trade Surplus	-5.11	-10.5	-17.0	-24.5	-32.9	-42.1	-52.4	-63.6	-76.1	-89.8	-104	-121
Agriculture	-0.13	-0.21	-0.25	-0.26	-0.23	-0.16	-0.07	0.05	0.19	0.36	0.54	0.74
Coal Industry	0.08	0.19	0.32	0.46	0.61	0.77	0.93	1.09	1.24	1.39	1.52	1.65
Petroleum & Gas	0.35	0.69	0.98	1.22	1.41	1.55	1.64	1.66	1.62	1.53	1.38	1.17

Electricity	-0.06	-0.08	-0.06	0.01	0.11	0.24	0.40	0.60	0.81	1.05	1.31	1.59
Light Industries	-0.31	-0.54	-0.71	-0.81	-0.86	-0.84	-0.76	-0.63	-0.44	-0.20	0.08	0.41
Chemicals	-0.23	-0.40	-0.54	-0.64	-0.70	-0.74	-0.75	-0.74	-0.72	-0.68	-0.63	-0.58
Metals Industry	0.18	0.40	0.65	0.91	1.19	1.48	1.77	2.06	2.34	2.60	2.85	3.07
Machinery & Equipment	0.26	0.58	0.93	1.31	1.72	2.15	2.60	3.05	3.51	3.97	4.42	4.87
Transport Equipment	0.14	0.34	0.57	0.84	1.14	1.47	1.83	2.22	2.64	3.09	3.55	4.04
Electrical & Instrument	-0.52	-0.91	-1.20	-1.40	-1.51	-1.54	-1.50	-1.39	-1.23	-1.01	-0.76	-0.48
Electronic & Computer	-3.04	-5.71	-8.13	-10.3	-12.2	-13.8	-15.3	-16.5	-17.6	-18.6	-19.5	-20.3
Construction	0.92	1.83	2.76	3.70	4.65	5.61	6.57	7.54	8.52	9.51	10.5	11.5
Transportation	0.27	0.55	0.82	1.07	1.30	1.52	1.72	1.90	2.06	2.20	2.32	2.42
Telecom & Software	0.35	0.72	1.09	1.48	1.88	2.30	2.74	3.20	3.68	4.19	4.73	5.30
Business Services	0.07	0.17	0.27	0.38	0.49	0.61	0.74	0.88	1.02	1.18	1.35	1.54
Finance & Insurance	0.02	0.09	0.19	0.33	0.50	0.70	0.93	1.19	1.47	1.78	2.11	2.47
Real Estate	0.04	0.14	0.29	0.51	0.77	1.09	1.45	1.85	2.31	2.80	3.34	3.92
Public Services	0.05	0.11	0.21	0.32	0.44	0.59	0.74	0.91	1.09	1.27	1.46	1.66

4. Summary and Conclusion

In this paper, focusing on the goods exports scale decline caused by Sino-US trade war, we have investigated quantitatively its impacts on the macroeconomic level and industries in China from the point of view of growth, industrial structure and trade. We have adopted a methodology of the dynamic simulation for 2019-2030 by means of the CGE model. We have constructed a CGE model of China on the basis of the 2015 input-output table. We have obtained the results of dynamic simulation, which are summarized below.

According to the analysis in the previous section, we can summarize the impacts of the goods export reduction on the macroeconomic level and industries in China as follows. The goods exports reduction contributes to the decline of prices in the Chinese economy because the decline of goods exports compares a large scale import decline, and the nominal GDP decline is obviously but the impact on real GDP is not significant. This phenomenon indicates that a large part of China's goods exports are the final product exports, and the production of the final products require a large number of intermediate products imports such as core components, raw materials, and energy. This is one special aspect of the rapid growth of China's exports that has driven the growth of other relevant economies in the world over the years. Therefore, precisely because of the role of such model, the sharp shrinkage of China's goods exports will lead to a contraction in the goods imports, and will also have a negative impact on the economies which exports these core components, raw materials, and energy to China.

As can be seen from the summary above, the goods export scale decline caused by Sino-US trade war will bring negative influences to the macro economy and industries in China. In order to hedge the impact of the decline of goods exports scale, currency depreciation as a double-edged sword affecting import and export, ultimately only affects the price, and the effect on the real GDP is very limited. To increase the domestic real investment will result in a significant increase in imports and hedge the loss of nominal GDP and real GDP caused by the contraction in the goods exports, but cause a larger scale of trade deficit and therefore need to be used with caution. It should be noted that if the Sino-US trade war becomes long-term, it may lead to the withdrawal of foreign capital from China, and the impact of which may be more profound, but the analysis is not involved in this paper.

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