Research on the impact of consumer goods import on the upgrading of China's manufacturing industry

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Abstract: In this paper, the import amount of seven categories of consumer goods and the output value of the manufacturing industry in China from 2005 to 2016 were used. The rationalization index of the manufacturing industry in China was calculated and used as the index of the upgrading of the manufacturing industry. Eviews software was used for quantitative analysis. Respectively by rationalizing imports of consumer goods and all kinds of imports of consumer goods and manufacturing index regression analysis, the regression results show that imports of consumer goods can promote our country manufacturing rationalization index of ascension and the increase of manufacturing output. Therefore, China should reduce import tariffs on consumer goods, expand the import scale of consumer goods, and increase support for domestic manufacturers in innovation input. Manufacturers should improve the level of innovation and increase investment in science and technology.

1. Introduction

Since China joined the world trade organization (WTO), relying on the "export-oriented" strategy, China has made remarkable achievements in foreign trade and become the world's largest exporter . However, in recent years, the demand of Chinese residents for high-grade commodities has been increasing, but the domestic market can not meet the needs of consumers, so daigou, consumption abroad, and other increasingly common, which makes a large number of Chinese consumption outflow. but in the global value chain division of labor system, the manufacturing industry in our country is still in a mid-range level, can't meet the quality level of consumption of domestic consumers. Expand imports of consumer goods, not only can satisfy people's demand for high quality consumption, reduce the outflow of consumption situation, but also can drive the industry transformation and upgrading, for the current our country government clearly put forward "structure, promote consumption, expanding domestic demand, imports" of economic development policy, has important practical significance.

2. Model setting and variable selection

2.1 Model setting

According to the research purpose of this paper, the manufacturing rationalization index (SR), which measures the upgrading of the manufacturing industry, is taken as the explained variable, and the impact of the import of consumer goods on the manufacturing output (IO) of China is studied. Explanatory variables mainly include the import amount of consumer goods (CI) and the import amount of im-fcli, im-csc, im-he, im-tr, im-cmp, im-en and im-ogd of seven categories of consumer goods classified according to the attributes and characteristics of consumer goods in this paper. In order to eliminate heteroscedasticity, log the selected variables, and the obtained model is as follows:

$$\ln SR_t = \beta_0 + \beta_1 \ln CI_t + \beta_2 \ln gdp_t + \beta_3 \ln open_t + \beta_4 \ln UC_t + \beta_5 \ln T_t + \beta_6 \ln FI_t + \varepsilon_t \quad (1)$$

$$\ln SR_t = \alpha_0 + \alpha_1 \ln IM - i_t + \alpha_2 \ln gdp_t + \alpha_3 \ln open_t + \alpha_4 \ln UC_t + \beta_5 \ln T_t + \beta_6 \ln FI_t + \eta_t \quad (2)$$

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$$\ln IO_t = \lambda_0 + \lambda_1 CI_t + \lambda_2 \ln gdp_t + \lambda_3 \ln open_t + \lambda_4 \ln UC_t + \beta_5 \ln T_t + \beta_6 \ln FI_t + \varphi_t \quad (3)$$

In equations (1), (2) and (3),SR_t and IQ_t represent the rationalization index of the manufacturing industry and the manufacturing output value; CI_t represents the total imports of consumer goods at time t;Where in IM-i_t, i represents fcli, csc, he, tr, cmp, en, ogd, and t represents time;respectively,gdp_t、$open_t$、UC_t、T_t、FI_t refer to the gross domestic product, the degree of opening to the outside world, the urbanization rate, the level of scientific and technological innovation, and the fixed asset investment in the manufacturing industry; ε_t , η_t and φ_t represent random variables.And $SR = \sum_{i=1}^{n} \left(\frac{Y_i}{Y} \right) \left| \frac{Y_i / L_i}{Y / L} - 1 \right|$.

Where, Y represents the total sales output value of the manufacturing industry, Y_i represents the industrial sales output value of a specific industry under the manufacturing industry, L represents the total number of personnel engaged in scientific research activities in the manufacturing industry, and L_i represents the average annual number of employees in a specific industry under the manufacturing industry.

2.2 Data source and description

In this paper, 31 provinces (cities) were selected, and the data were collected and processed by China statistical yearbook, China industrial economic statistical yearbook, China demographic yearbook and United Nations database from 2005 to 2016. The exchange rate of RMB against usd is based on the annual average price. The classification of consumer goods import in this paper refers to the classification of consumer goods (Zhang Jianhui, Li Ying, 2014).

3. Empirical analysis

3.1. Stationarity test

In this paper, Eviews software is adopted. Since all the variables selected in this paper are time series, if the time series is not stable, false regression will occur. Therefore, in order to avoid false regression, unit root test is first adopted for stationarity test of all variables. The stationarity test results of each variable are shown in table 1 below:

Table 1. ADF stationarity test results.

variable	ADFTest value	Test type（c,t,k）	Whether smooth
$lnSR_t$	-0.8429	（c，t，1）	No
$lnIQ_t$	-4.0559**	（c，t，1）	Yes
$lnCI_t$	-2.8409*	（c，t，1）	No
lnIM-$fcli_t$	-1.5613	（c，t，2）	No
lnIM-csc_t	-0.7931	（c，t，2）	No
LnIM-he_t	0.6432	（c，t，1）	No
lnIM-tr_t	-2.301	（c，t，1）	No
LnIM-cmp_t	-1.5298	（c，t，1）	No
LnIM-en_t	-1.8628	（c，t，1）	No
LnIM-odg_t	-3.2110	（c，t，2）	No
$lngdp_t$	-3.8957**	（c，0，1）	Yes
$lnopen_t$	-2.7378	（c，t，1）	No
$lnUC_t$	-27.6493***	（c，0，1）	Yes
lnT_t	-5.8767***	（c，0，1）	Yes
lnFIt	-1.9274**	（c，0，1）	Yes

Note :() is the t value, and "*", "**" and "***" are divided into significance levels representing 10%,

5% and 1%.

As can be seen from table 1 above, only four variables $lngdp_t$, $lnUC_t$, lnT_t and $lnFI_t$ have passed the ADF stationarity test. Among the other variables, $lnIM\text{-}fcli_t$ and $lnIM\text{-}ogd_t$ after second-order difference, they become stationarity variables and have passed the test. The other nine variablesand $lnSR_t$、$lnIQ_t$、$lnCI_t$、$lnIM\text{-}csc_t$、$lnIM\text{-}he_t$、$lnIM\text{-}tr_t$、$lnIM\text{-}cmp_t$、$lnIM\text{-}en_t$、$lnopen_t$ all become stationary variables after the first-order difference and pass the ADF test.

3.2 Regression Analysis

Firstly, regression analysis is carried out on equation (1) and equation (3) to study the influence of the import amount of consumer goods on the rationalization index of China's manufacturing industry. The regression results are shown in table 2 below:

As can be seen from table 2 below, the value of equation (1) keeps increasing with the increase of variables, and the final value is 0.8166, indicating that the goodness of fit of the model results is relatively good. It can be seen from the above that :In the regression of 1, 2, 3, 4, 5 and 6, the coefficients of the import amount of consumer goods are all positive, and the effect is obvious, which indicates that the import of consumer goods can promote the rationality of China's manufacturing industry and invest double insurance in the healthy economic development (Xia Xianliang, 2008)

The values of equation (3) are all above 0.99, indicating that the model has excellent goodness of fit. As can be seen from figure 2, the import amount of consumer goods has a positive effect on the output value of China's manufacturing industry, and the effect is obvious. The larger the import amount of consumer goods, the more the manufacturing output.

3.3 Colour illustrations

Secondly, regression analysis is carried out for equation (2), and the results are shown in table 3 below:

Table 2 Regression Results.

Coeffi-cient	Return to the 1		Return to the 2		Return to the 3		Return to the 4	
	lnSR	lnIQ	lnSR	lnIQ	lnSR	lnIQ	lnSR	lnIQ
C	0.643*** （-8.4）	4.6037*** （15.59）	0.2352 （0.4281）	-1.0674 （-0.779）	0.7663* （1.6151）	-0.7750 （-0.48）	1.958** （1.023）	8.894* （1.276）
CI_t	0.0094* （0.86）	0.9506*** （22.56）	0.1073* （1.7412）	0.3182* （2.067）	0.1090** （2.2902）	0.319* （1.962）	0.021 （0.368）	0.1432** （0.758）
gdp_t			-0.1402* （-1.613）	0.9040*** （4.1762）	-0.1994** （-2.805）	0.871*** （3.596）	-0.348* （-1.552）	-0.662 （-1.235）
$open_t$					-0.1520** （-2.5231）	-0.086 （-0.41）	-0.086*** （-0.13）	0.246*** （0.883）
UT_t							0.990** （1.206）	1.9190 （0.966）
T_t							-0.069*** （-0.932）	0.0543** （0.346）
FI_t							0.1698* （1.143）	1.0943** （3.0532）
R^2	0.7601	0.9826	0.6022	0.9945	0.6349	0.9947	0.8166	0.9987
F-statistic	3.7404	508.9549	1.7328	728.0098	4.0585	434.8355	2.9691	506.690

Coeff-icient	Return to the 1 （i=IM-fcli）	Return to the 2 （i=IM-csc）	Return to the 3 （i=IM-he）	Return to the 4 （i=IM-tr）	Return to the 5 （i=IM-cmp）	Return to the 6 （i=IM-en）	Return to the 7 （i=IM-ogd）
C	1.1846** （0.7104）	-1.0841** （-0.4560）	2.1367** （1.0032）	1.9264** （1.0946）	2.8909** （1.2308）	1.982* （1.102）	1.620 （0.685）
$IM\text{-}i_t$	0.1185*** （1.4729）	0.1431* （1.6901）	0.0007** （0.0273）	0.0445** （0.5885）	-0.0643** （-0.5019）	0.033** （0.398）	0.021* （0.371）
gdp_t	-0.1312 （-0.5524）	0.1403 （0.4164）	-0.3341** （-1.4981）	-0.3790*** （-1.6920）	-0.3409 （-1.6023）	-0.310** （-1.394）	-0.313* （-1.218）
$open_t$	-0.0710** （-0.8449）	-0.0520* （-0.6696）	-0.0613** （-0.6621）	-0.1279** -0.8938	-0.0156 （-0.1224）	-0.0823* （-0.7903）	-0.0389** （-0.3554）

Note :() is the t value, and "*", "**" and "***" are divided into significance levels representing 10%, 5% and 1%

As can be seen from the below table 3, the model has a good degree of goodness of fit and the results have a certain degree of credibility. From the regression results, food smoke wine imports of commodities imports, clothing shoes and hats class, family equipment commodity imports, transportation, commodity imports, cultural entertainment goods imports and other imports of consumer goods and reasonable manufacturing index were positively to the effect of these six types of consumer goods increased imports will promote the reasonable manufacturing index increase, promote the manufacturing industry to upgrade, the regression analysis of the above, and the food smoke wine imports of goods and clothing shoes and hats class commodity imports of rationalization of manufacturing index influence effect is more obvious than other kind of consumer goods.This is related to China's commodity export structure and manufacturing structure.

Table 3 Regression Results.

UC_t	0.1792** （0.2346）	0.3437* （0.3604）	1.1729* （2.4011）	1.0473* （2.1370）	1.6486* （1.5606）	1.083* （2.15）	0.899** （1.094）
T_t	0.0029* （0.0411）	0.01022*** （0.1504）	-0.0603*** （-0.7976）	-0.0893** （-1.1098）	-0.0508** （-0.7386）	-0.060** （-0.911）	-0.054** （-0.716）
FI_t	-0.07141*** （-0.3410）	-0.1927** （-0.7803）	0.1525** （1.6289）	0.1703** （1.1638）	0.1492*** （1.0244）	0.122*** （0.724）	0.156** （0.908）
R^2	0.8937	0.9062	0.8138	0.8286	0.8248	0.821	0.825
F-statistic	4.2052	4.3806	2.9141	3.2235	3.1389	3.055	2.355

Note :() is the t value, and "*", "**" and "***" are divided into significance levels representing 10%, 5% and 1%

4. Equations and mathematics

Through the above empirical analysis, the following conclusions can be drawn:

Firstly, the import of consumer goods has a positive effect on the rationalization index of China's manufacturing industry. The increase of the import of consumer goods can promote the improvement of the rationalization index of manufacturing industry. Secondly, the import value of consumer goods has apositive effect on the output value of China's manufacturing industry. The increase of the import value of consumer goods can improve the output value of China's manufacturing industry. It is food smoke wine imports of commodities imports, clothing shoes and hats class, family equipment commodity imports, transportation, commodity imports, commodity imports of cultural entertainment and other consumer goods imports can promote the reasonable index in the manufacturing industry, and food smoke wine imports of goods and clothing shoes and hats goods import to our country manufacturing rationalization index utility in promoting more apparent, imported supplies goods to a certain extent, can restrain the increase of the rationalization of manufacturing index.

Therefore, based on the above analysis, the author puts forward the following suggestions:

(1) Reduce import tariffs on consumer goods and expand the import scale of consumer good

Consumer goods imported can bring home a lot of benefits, increasing domestic demand, create new industries and driving the development of the transformation and upgrading of domestic manufacturing, at the same time, with the continuous development of our country economy, people's demand for high quality products has become more and more urgent, especially at present, China's middle-income population is more and more, and account for a larger proportion in our country. But by consumer goods import tariffs on imports of consumer goods mainly restrictions, tariffs increase the cost of imported goods, imports of consumer goods in the domestic retail price is higher, hindered the imported consumer goods enter the market in our country, the domestic market to meet the needs of domestic high-end consumers, diversified needs, curb imported consumer welfare. Therefore, the government should adjust the tariff structure of consumer goods and reduce the import tariff of consumer goods, so as to bring technology spillover to Chinese manufacturers and promote the upgrading of China's manufacturing industry.

(2) Enterprises should improve the level of innovation and increase investment in science and technology

The entry of foreign consumer goods into the domestic market is both a bad thing and a good thing. The increase of supply leads to the squeeze on the market. Some enterprises with low efficiency output should strengthen r&d investment and learn advanced foreign product concepts, product quality, product packaging and product publicity. In particular, food, tobacco, wine and clothing enterprises, in the face of competition to improve product quality, create brand effect, establish brand influence, pay more attention to international brand trends.

(3) The government should increase investment support for enterprise innovation and reduce innovation risks of manufacturers

Due to technical innovation has certain market risk and uncertainty, so that when foreign high-quality consumer products to enter the Chinese market, Chinese manufacturers without the confidence and ability of the innovation, so even if the control of the outflow of consumption problem, but did not improve the present situation of low degree of manufacturing rationalization corresponding manufacturing upgrade problem is not solved.Therefore, the government should increase financial and technological support for manufacturing enterprises.

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