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New Exchange Rate Transmission Theory

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Abstract: The exchange rate transmission related literature are reviewed at first, then establishes the new exchange rate transmission theory-the macroscopic exchange rate transmission theory, it is different from the static profit maximization theory and the sunk cost theory and the market share theory, etc., furthermore based on the data of China has carried on the empirical analysis.

Key words: The exchange rate transmission, new theory, empirical, the China experience1200

INTRODUCTION

Is the influence of the fluctuation of exchange re rate how to transfer? The China's exchange rate rate transmission is what kind? For solve problems, we do the following research.

LITERRATURE REVIEW

On the exchange rate transmission concept, Dornbusch gave it as the meaning of exporters are given by lowering (increase) export the goods on the market price, to deliver the exchange rate fluctuation caused by the marginal addition increase (decrease) degree in 1987. Jayant Menon gave the exchange rate transmission definition for exchange rate fluctuation caused by one country import and export commodity destination monetary price change degree. Exchange rate transmission theory literature mainly includes static profit maximization theory, sunk cost theory, market share theory, etc.:

- **Static profit maximization theory:** Dornbusch Puts forward static profit maximization theory to explain the exchange rate fluctuation of price effect and output game model hypothesis, viscidity of the salary, for in the industry manufacturers number unchanged, does not exist to enter and exit. His core of the static profit maximization is that when the exchange rate fluctuation, due to wage stickiness, will cause to local currency said foreign goods labor cost change, so that foreign products in domestic market competitiveness changes, it will damage their original industry equilibrium quantity and price, the manufacturer to realize the profit maximization, will adjust output and price in order to achieve a new level of equilibrium. He thinks that exchange rate fluctuation in degree of relative price changes by the influence of the three factors: one is whether trade goods market segmentation, namely trade goods market whether there are serious barriers to trade; The second is imports and domestic product substitution degree, namely differentiation degree; The third is the market organization form. These factors will affect the manufacturer's pricing strategy and then influence exchange rate on the price of transfer effect. Trade goods market integration degree is higher, imports and domestic product is similar, the market tends to perfect competition, the manufacturer of the weak pricing power, i.e., the exchange rate on the price of transmission rate is lower. His static model ignore the price adjustment of dynamic factors, also did not consider exchange rate fluctuations greatly to the possibility of market structure changes (Dornbusch, 1987)
- **Sunk cost theory:** The sunk cost is to point to in a no alternative use of assets investment that is to say, precipitation cost is no opportunity cost of the assets. Dixt and krugman analyzed the exchange rate transmission incomplete, they also established the exchange rate transmission precipitation cost model. The model of the thought is that under the differences between product cases, export manufacturers should not only investment production, must also devote part of the resource for development in the market, including proprietary equipment, advertising and targeting foreigners demand preference for research and development, etc. The input cost is for access to foreign markets and spending, but these costs once expenditure can be as precipitation, because the manufacturer can't easily sale of its assets, these assets can not to he. Because the cost of precipitation is not only when manufacturers are expected to make up for the cost of precipitation, he will enter a market, once the cost has been precipitation, even if the manufacturer can only

make up for variable cost, it also will still stay in the market and won't quit. So when exchange rate fluctuation is not big, the manufacturer will be within the scope of certain and maintain the status quo and don't want to enter or exit a market, in this case, the manufacturer to exchange rate fluctuations especially small variation of amplitude not sensitive which led to the exchange rate transmission incomplete (Ceglowski, 2010)

- **Market share theory:** It analyzes the exchange rate transmission problems of from the manufacturer's market share perspective. They think that if monopoly manufacturer to its market share as the management goal, so for future exchange rate expectations affect manufacturers now pricing strategy and market share. Exporters to secure the in foreign market share, may maintain present price or lowering product price, sacrifice short-term sales profit, so monetary change on the number of import and export commodities and price transfer may not completely. Beirne and Bijsterbosch (2011) In addition, the exchange rate transmission rate also depended on the fluctuation of exchange rate is expected short-term or long-term, if the manufacturer that the exchange rate fluctuation is temporary, their fluctuation in exchange reaction is not sensitive, the past fluctuation in exchange more frequent, now of the exchange rate change the more likely it is considered to be temporary, the manufacturer to changes in the exchange rate is less sensitive, thus it can be seen the exchange rate fluctuation and import and export price changes is not completely consistent (Sutherland, 2005)

These theory from the view of the micro manufacturers to the analysis of exchange rate transmission rate problem, I think this is not enough, because the exchange rate transmission rate can largely as a macroscopic problem, so we will put forward the macroscopic exchange rate transmission theory and based on China's data do the empirical analysis.

THE NEW THEORY AND EMPIRICAL ANALYSIS

Firstly we put forward macro rate transmission theory model, This theoretical model from the nominal effective exchange rate NEER change, the international Commodity Price Index (All Commodity Price Index, ACPI), on behalf of the impact of monetary demand money supply M1, import Price Index fluctuation, industrial goods ex-factory Price Index PPI and consumer Price Index CPI, etc., to consider mutual relationship by the model based on the exchange rate transmission of these variables.

The model based on China's economic realities build VAR model. Because in the VAR model variable to sort the effect is very big, therefore we in turn to variable order: first of All, we have representative supply shock international Commodity Price Index (All Commodity Price Index, ACPI) and the demand for money on behalf of the impact of M1 money supply the top two; Secondly, by the impact of supply and demand and the influence of nominal effective exchange rate NEER will change; Change in the exchange rate will affect the import price change, therefore, the import price index came in fourth; Finally, the introduction of industrial goods ex-factory price index PPI and consumer price index CPI. Specific rate transfer effect of the equations set as follows:

$$\Delta ACPIt = Et\text{-}1(ACPIt)+\varepsilon t\Delta ACPI \quad (1)$$

$$\Delta M1t = Et\text{-}1(M1t)+|\sigma 1\varepsilon t\Delta ACPI+\varepsilon t\Delta M1 \quad (2)$$

$$\Delta NERt = Et\text{-}1(NERt)+\phi 1\varepsilon t\Delta ACPI+\phi 2\varepsilon t\Delta M1+\varepsilon t\Delta NER \quad (3)$$

$$\Delta IPIt = Et\text{-}1(IPIt) +\phi 1\varepsilon t\Delta ACPI+\phi 2\varepsilon t\Delta M1+\phi 3\varepsilon t\Delta NER+\varepsilon t\Delta IPI \quad (4)$$

$$\Delta PPIt = Et\text{-}1(PPIt)+\xi 1\varepsilon t\Delta ACPI+\xi 2\varepsilon t\Delta M1+\xi 3\varepsilon t\Delta NER+\xi 4\varepsilon t\Delta IPI+\varepsilon t\Delta PPI \quad (5)$$

$$\Delta CPIt = Et\text{-}1(CPIt)+\rho 1\varepsilon t\Delta ACPI+\rho 2\varepsilon t\Delta M1+\rho 3\varepsilon t\Delta NER+\rho 4\varepsilon t\Delta IPI+\rho 5\varepsilon t\Delta PPI+\varepsilon t\Delta CPI \quad (6)$$

The Δ and ε here, respectively represent each index changes and the changes brought about by the impact, VAR model contains a total of six variables, Cholesky information vector decomposition order for below:

$$\Delta ACPI \rightarrow \Delta MI \rightarrow \Delta NER \rightarrow \Delta PPI \rightarrow \Delta CPI$$

Next we do the empirical analysis. The study has selected the international commodity price index (ACPI), money supply (M1), RMB Nominal Exchange Rate (NER), import Price Index (IPI), industrial goods Producer Price Index (PPI) and the consumer price index (CPI) and other six variable indicators, among them, the ACPI comes from the international monetary fund which includes energy prices index, including the energy price index, M1 money supply from the people's bank of China, the money supply growth rate instead of money supply, according to the growth rate of money supply to calculate; NER data from the China administration of foreign exchange, IPI data from the Journal of China foreign trade index monthly, PPI from the East wealth net; CPI is link data, from the China Economy database. To the above data are used for X12

Table 1: Statistics results for ADF test

Variable	ADF	Test (c, t, q)	Test result
lnACPI	-2.1280	(c, 0, 1)	I (1)
DlnACPI	-6.7642	(c, 0, 0)	I (0)
lnM1	-1.1305	(c, 0, 0)	I (1)
DlnM1	-8.5046	(c, t, 0)	I (0)
lnNER	-2.4592	(c, t, 3)	I (1)
DlnNER	-2.9608	(c, 0, 1)	I (0)
DlnPPI	-4.9174	(c, t, 0)	I (0)
lnCPI	-1.8491	(c, 0, 0)	I (1)
DlnCPI	-9.0346	(c, t, 0)	I (0)

(c, t, q) inspection items, c said constant term, t says trend item, q says lag order number, Order number index by software according to AIC and SC criterion automatic generation, D said variable sequence first-order difference

seasonal adjustment, at the same time. We are take logarithmic to the above data, respectively lnACPI, lnM1, lnNER, lnIPI, lnPPI and lnCPI. All the data in the period of choice is from July 2005 to December 2011.

This study, by using Eviews6.0 software, use ADF test to index of the logarithmic form that is the difference implementing stationary test , according to AIC and SC selection principle, test results are in the table below:

From Table 1 can see, ACPI, M1, NER, IPI, PPI and CPI and so on six variables, in 5% of significant level can't refuse the null hypothesis of unit root exists, namely the variable of the original sequence not stationary; After a order difference, six variable sequence into stationary series. Therefore, CPI, PPI, RMI and so on 6 variable sequence is a one order single whole sequence, this also shows that these variables cannot be simple regression analysis. Then we carry on a co-integration analysis. Co-integration relationship index to the choice of a high requirement, this study through the likelihood ratio (likelihood ratio, LR), final prediction error (FPE, final prediction), AIC, SC and HQ (Hannan-Quinn criterion) and other information criterion choose vector autoregressive model index and finally it is determined for index (1), this shows that VAR (1) structure is stable. In the lag one time circumstance, set 5% significance level, using Trace inspection and Maximum Eigen value test knowledge, variable exists between two co-integration relations, according to economics theory, this article chooses logical a co-integration relationship, specific co-integration equation below:

$$\begin{matrix} LnCPI = 0.0899lnNER+0.0866lnACPI+0.5208lnP\ PI \\ (0.031)\ (0.015)\ (0.136)+0.0271lnM1-0.1547lnIPI \quad (7) \\ (0.006)\ (0.031) \end{matrix}$$

The number in brackets is the standard error. The nominal exchange rate every rise 1%, namely the Yuan against the U.S. dollar each one percent, prices will rise 0.09%. This shows that, in the long run, exchange rate transfer effect is to transfer rate nearly 90%, has the quite obvious rate transfer effect, exchange rate transmission macro effect theory also got the empirical support.

CONCLUSION

From the manufacturer micro point of view to analyze the exchange rate transmission rate the weakening of problem, I think this is not enough, because the exchange rate transmission rate can largely as a macroscopic problem, so we will put forward the macroscopic Angle rate transmission theory and based on China's data to the empirical analysis. The empirical results show that China's currency to transfer effect is to transfer rate nearly 90%, has the quite obvious rate transfer effect, exchange rate transmission macro effect theory also got the empirical support in the long run. Of course some studies need further deepening.

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