

# A study on the level of capital flows in the Yangtze River Delta region based on the FH model

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**Abstract:** Based on the literature of capital flow studies, this paper chooses the Feldstein-Horioka model to measure the level of capital flow. The results show that the main factors that positively affect capital flows are savings rate, infrastructure construction, economic structure, government intervention, industry, real estate and transportation facilities construction; the factors that negatively affect capital flows are degree of openness, provincial economic scale and bank capital flows, and finally give policy recommendations to improve the level of capital flows in the Yangtze River Delta.

**Keywords:** Yangtze River Delta city cluster; FH model; capital flows; capital market integration.

## 1. Introduction

The fast-developing Yangtze River Delta region city cluster is internationally recognized as one of the six world-class city clusters with the most dynamic economy, the highest degree of openness and the strongest innovation capacity in China, and is also an important intersection of the "Belt and Road" and the Yangtze River Economic Belt, accelerating the integration of the Yangtze River Delta region is not only an important means to provide innovative services through integration. Accelerating the integration of the Yangtze River Delta region is not only an important tool to serve the "new development pattern with domestic circulation as the main body and domestic double circulation promoting each other", but also a major decision to further promote the coordinated development of the Yangtze River Delta, and a good capital flow can drive the balanced economic growth of the Yangtze River Delta region and accelerate the construction of a new development pattern.

## 2. Literature Review

Studies on the factors influencing capital flows. They are mainly summarized as currency appreciation, interest rate changes, exchange rate changes, degree of capital controls, and government intervention. The IMF points out that the loose monetary policies of developed countries and the optimistic growth prospects of emerging markets are important factors influencing cross-border capital flows. Enhanced expectations of currency appreciation will lead to sustained short-term capital inflows and vice versa [1]. Second, changes in interest rates [2] Although an increase in interest rates may lead to capital inflows in the short run, capital will soon turn into sustained outflows. For example, Byrne and Fiess conclude that the U.S. interest rate is one of the determinants of global push factors that drive cross-border capital inflows to emerging market countries. Third, exchange rate changes. The study by Niu et al found that the main factor affecting China's short-term cross-border capital inflows is the expectation of exchange rate appreciation. Fourth is the degree of capital control. The extreme cross-border capital flows in China are more influenced by the degree of capital control and economic growth among the domestic factors,

and the degree of capital control is positively related to surges and surges at the 5% significance level, i.e., an increase in the degree of capital control instead increases the probability of surges and surges in China [3]. Fifth, government intervention. Wang Yongqin studied the determinants of location choice of outward FDI in China found that government efficiency, taxation and other factors have important effects on capital flows.

In summary, these results provide references and inspiration for this study, but from the existing literature, there are still the following shortcomings: both indirect and direct studies are slightly arbitrary in their selection of influencing factors and do not consider the impact of these factors on capital flows in a multi-perspective classification, plus since there is no indicator that can directly and accurately measure the level of capital flows, the existing studies on capital flow measurement The direct or indirect methods are generally used. In particular, the indirect method represented by the FH method is generally recognized by scholars, so this paper will select the main influencing factors according to the relevant theoretical classification and will measure the level of capital flow in China's Yangtze River Delta based on the FH model.

## 3. Econometric Model and Variable Description

### 3.1. Econometric model

Referring to Feldstein and Horioka for panel data data modeled as

$$\left(\frac{I}{Y}\right)_{it} = \alpha + \beta^x \left(\frac{S}{Y}\right)_{it} + \sum_{j=1}^X (\alpha_j \cdot X_{it}) + \varepsilon_{it} \quad (1)$$

where  $\left(\frac{I}{Y}\right)_{it}$  is the investment rate, and  $\left(\frac{S}{Y}\right)_{it}$  is the savings rate, and  $\beta^x$  is the coefficient of savings retention, and  $\alpha_j$  is the coefficient of each influencing factor variable, and  $X_{it}$  is the set of control variables, and  $\varepsilon_{it}$  is the random error term of the model [4].

### 3.2. Empirical Analysis

#### 3.2.1. time period 2010-2013 FH model estimation

Combining the results of the analysis in Table 1, the investment rate in YRD cities from 2010-2013 is mainly

influenced by the savings rate with a high beta estimate, which also implies a weak level of capital flows during this period, a strong dependence of investment on local savings in

YRD cities, and a negative influence of government intervention factors on this relationship.

**Table 1.** Estimation results of the FH model for the Yangtze River Delta region, 2010-2013

Parameters	FH Model	Conditional FH Model	Improving the FH model		
			1	2	3
$\beta$	0.303** (2.27)	0.375*** (2.71)	0.796*** (3.30)	0.258* (1.88)	0.476*** (3.06)
$\beta_y$				8.269 (1.58)	0.154 (0.10)
$\beta_F$			-9.329** (-2.13)		-2.056** (-2.16)
$\alpha$	0.506*** (7.22)	0.501*** (7.17)	0.312*** (2.77)	0.525*** (7.36)	0.462*** (6.35)
$\alpha_y$		-0.332 (-0.45)		-4.017* (-1.67)	
$\alpha_F$		-0.833* (-1.71)	3.790* (1.70)		
R2	0.047	0.075	0.112	0.071	0.087
AIC	-10.4542	-9.744563	-14.1437	-9.320405	-11.18832

Note: \*, \*\*, \*\*\* denote parameters significant at the 10%, 5%, and 1% significance levels, respectively, and t-statistics are in parentheses.

### 3.2.2. time period 2014-2016 FH model estimation

Table 2 gives the estimation results of the five models for the period 2014-2016, with the constraints as in Table 1. the beta estimates of all five models are in the range of 0.259 to 1.377, and only the improved FH model 1 is significant, and the difference phase has widened compared to Table 1. for the period 2014-2016, the five models and are all statistically

insignificant. Combining the results of the analysis in Table 2, the investment rate in YRD cities in 2014-2016 is mainly influenced by the savings rate, which has a high beta estimate, which also implies a weak level of capital flows during this period, and government intervention factors have a negative impact on this relationship [5].

**Table 2.** Estimation results of the FH model for the YRD region, 2014-2016

Parameters	FH Model	Conditional FH Model	Improving the FH model		
			1	2	3
$\beta$	0.326 (1.54)	0.331 (1.45)	1.377*** (4.33)	0.259 (1.18)	0.434* (1.73)
$\beta_y$				-7.561 (-1.35)	-1.266 (-0.75)
$\beta_F$			-24.539*** (-4.11)		-1.889 (-1.30)
$\alpha$	0.612*** (5.41)	0.626*** (5.32)	0.133 (0.86)	0.639*** (5.47)	0.595*** (4.90)
$\alpha_y$		(-0.53)		3.432 (1.10)	
$\alpha_F$		-0.423 (-0.56)	11.996*** (3.86)		
R2	0.029	0.038	0.208	0.056	0.062
AIC	23.27514	26.56804	10.79671	25.01124	24.52174

Note: \*, \*\*, \*\*\* denote parameters significant at the 10%, 5%, and 1% significance levels, respectively, and t-statistics are in parentheses.

### 3.2.3. time period 2017-2019 FH model estimation

Table 3 gives the estimation results of the 5 models for the period 2017-2019, with the constraints as in Table 1. the beta estimates of all 5 models are in the range of 0.307 to 1.835, only the improved FH model 1 and the improved FH model 3 are significant, and the difference phase has widened compared to Table 2. for the period 2017-2019, the 5 models

and are all statistically insignificant. Combining the results of the analysis in Table 3, the investment rate in YRD cities in 2017-2019 is mainly influenced by the savings rate with a high beta estimate, which also implies a weak level of capital flows during this period and a positive effect of government intervention factors on this relationship.

**Table 3.** Estimated results of the FH model for the Yangtze River Delta region, 2017-2019

Parameters	FH Model	Conditional FH Model	Improving the FH model		
			1	2	3
$\beta$	0.326 (1.54)	0.331 (1.45)	1.377*** (4.33)	0.259 (1.18)	0.434* (1.73)
$\beta y$				-7.561 (-1.35)	-1.266 (-0.75)
$\beta F$			-24.539*** (-4.11)		-1.889 (-1.30)
$\alpha$	0.612*** (5.41)	0.626*** (5.32)	0.133 (0.86)	0.639*** (5.47)	0.595*** (4.90)
$\alpha y$				3.432 (1.10)	
$\alpha F$			11.996*** (3.86)		
R2	0.029	0.038	0.208	0.056	0.062
AIC	23.27514	26.56804	10.79671	25.01124	24.52174

Note: \*, \*\*, \*\*\* denote parameters significant at the 10%, 5%, and 1% significance levels, respectively, and t-statistics are in parentheses.

#### 4. Conclusions and Policy Recommendations

In this paper, an empirical analysis was conducted using statistical data from 2010 to 2019 through a conditional FH extension model to measure the level of capital flows in the Yangtze River Delta region and explore the factors influencing capital flows. The following conclusions are drawn: (1) The level of capital flows in the Yangtze River Delta region shows a trend of rising and then falling, but the overall level of capital flows is better, which is inseparable from the macroeconomic policy of local open development. (2) Compared with real estate prices, the rise of stock market price index is more likely to promote the flow of capital between regions, while the credit policy of banks and the change of exchange rate are also the most important driving forces leading to capital flow.

Based on this, this paper puts forward the following policy recommendations: (1) expand the degree of openness and reduce restrictions on foreign direct investment. The study concludes that increasing the degree of openness to the outside world has a certain promotion effect on capital flows. At present, the Yangtze River Delta region has uneven development and the degree of openness varies from region to region. (2) Appropriately promote the process of interest rate marketization. Changes in interest rates are an important

factor affecting capital flows, and the advancement of interest rate marketization has liberalized the range of interest rate fluctuations. In turn, fluctuating interest rates will seek to further free themselves from interest rate controls, and institutional constraints form the compulsory mechanism of interest rate marketization.

#### References

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