Evaluating the Economic Growth of Zhejiang, China: A Regional Econometric Model

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ABSTRACT

This article attempts to construct a regional econometric model in Zhejiang province, China, for forecasting its economic growth in the period of 2005 - 2010. The regional economy in Zhejiang province in China is rapidly growing. The regional econometric model which is developed in this paper represents a typical case of the regional economy of a coastal area. Besides forecasting the regional economy of Zhejiang, this article suggests several policy implications for the future regional development of Zhejiang.

ABSTRAK

Artikel ini bertujuan membentuk model ekonometrik wilayah di Zhejiang, China bagi membuat pelunjuran pertumbuhan ekonomi antara tahun 2005 - 2010. Ekonomi wilayah Zhejiang semakin berkembang pesat. Model ekonometrik wilayah yang dibentuk dalam artikel ini merupakan kes yang tipikal bagi kawasan persisiran pantai. Di samping membuat unjuran pertumbuhan ekonomi, artikel ini juga mencadangkan beberapa implikasi dasar bagi pertumbuhan wilayah Zhejiang di masa hadapan.

INTRODUCTION

Over the past three decades, since 1978 when reforms began, China's economic growth has been spectacular. The coastal area of China succeeded in achieving a high growth rate for the national economy. During the Asian Financial crisis and since then, China has maintained its growth momentum. Particularly the regional economy in the coastal area has continued to grow and is still the driving force behind the Chinese economy. This paper examines the regional economy of Zhejiang province

investment, consumption, and exports and imports is very important for making the regional plan and the decision making of regional policy. This paper attempts to provide policy implications for Zhejiang's regional economy in the near future.

Various methodologies of regional econometric models have been developed and many empirical studies have been performed in countries and regions (Bell 1993; Bolton 1985; Braid 1983; Choo and Chen [5]; Okazaki and Kaneko 1964; Yamachuchi and Shibusawa, [17]). The regional econometric approach is a standard stream of regional modeling literature. Bell (1993), Fukuchi (1996) and Taylor (1982a, 1982b) surveyed the regional econometric literature and gave fruitful comparisons among regional econometric models.

The evolution of Chinese regional inequality has been studied. For example, Fan, Zhang and Robinson [6] analyzed the relationship between the structural change and the economic growth of China. They found that the structural change has contributed to growth by reallocating resources from low-productivity sectors to high-productivity sectors. Jian et al. (1996) examined the tendency towards convergence among the provinces of China during the 1952-1993 period. They showed that real income convergence of provinces in China has been a relatively recent phenomenon. Sakamoto (2003) investigated the intra-provincial vis-à-vis inter-provincial regional disparities in China. He showed that the disparities among cities are diminishing and their sizes are not large enough to be able to exploit agglomeration effects for future growth.

For previous studies at inter-regional level, Suzuki and Fukuchi (2002) constructed an econometric model of two provinces, Guangdong and Sichuan. They performed various simulations to assess the economic effects of relaxing restrictions on migration, educational distribution, and foreign trade. Suzuki and Fukuchi (2003) also developed a 4-regions model including Beijing, Shanghai, Guangdong, and Sichuan areas. They analyzed the population migration among these regions and assessed their economic impacts on the regional economic growth.

However, while a large literature exists on the economic growth through different aspects of Chinese history at macro level (Harrold and Lall 1993; Jian et al. 1996 and Sakamoto 2003), the econometric modeling

at Chinese regional level has not been attempted enough. This paper tries to analyze the economic structure and growth in Zhejiang as a typical case of Chinese regional economy in coastal areas.

ZHEJIANG AND THE REGIONAL ECONOMY

Zhejiang is located in the southern section of the Yangtze River Delta on the southeastern coast of China. It borders Fujian to the south, Jianxi and Anhui to the west, as well as Jiangsu and Shanghai to the north. The capital of the province is Hangzhou. The direct distances from east to west and from north to south of Zhejiang are about 450 kilometers, covering a total continental area of 101,800 square kilometers, this is 1.06% of China's total area. This means that Zhejiang is one of the smallest provinces in China. With a sea area of 260,000 square kilometers, the province has the largest number of islands and isles in China (3061 islands and islets).

Zhejiang had long been a province which depended mainly on agriculture. After 20 years of development, since the reform and opening up in 1978, Zhejiang is now a province with a strong economy and manufacturing industries. From 1980 to 2003, the GRP achieved an annual increase of 13%, rising from RMB¥ 18.0 billion to RMB¥ 940 billion, which saw it rise from 12th to 4th place among China's provinces. The GRP per capita rose from 13th place to 4th, from RMB¥ 470 to RMB¥[1] 20640, an annual increase of 12% on average. The percentage of Zhejiang GRP to China GRP had risen from 4.0% in 1980 to 7.8% in 2003. The high percentage expresses that Zhejiang's economy has an important position in China's economy. The amount of exports from Zhejiang increased from RMB¥ 2 billion to RMB¥ 386.7 billion, a 30% annual growth rate, which took Zhejiang to 4th place in China. Shares among primary, secondary and tertiary industries changed from 36.0%; 45.8% and 17.2% in 1980 to 7.7%; 52.6% and 39.7% in 2003 respectively. Clearly, the economic structure of Zhejiang has been greatly transformed in the past twenty years.

Zhejiang is one of the most attractive provinces in China. How far will Zhejiang's economy continue to grow in the next five years (2005 - 2010)? This paper attempts to forecast the economic growth of Zhejiang by using a regional econometric model and provides some implications of regional policy for Zhejiang's economic growth in the 2005 - 2010 period.

THE ECONOMETRIC MODEL

SPECIFICATION AND ESTIMATION

Endogenous and Exogenous variables used in Zhejiang's econometric model are listed in Table 1 and Table 2 respectively. Zhejiang's regional econometric model is constructed based on the macro and regional economics. However the model is partly designed to reflect the present economic situation in China. The casual relationship of the model can be shown in Figure 1.

The overall econometric model is shown in Table 3. There are six identities in the model. Gross regional product (*GRP*) can be decomposed

TABLE 1. List of endogenous variables

Variables	Definitions	Units
GRP	Gross regional products	hundred million Yuan
C	Aggregated consumption	hundred million Yuan
I	Aggregated investment	hundred million Yuan
EX	Total export	hundred million Yuan
IM	Total import	hundred million Yuan
GC	Government consumption	hundred million Yuan
HC	Household consumption	hundred million Yuan
DI	Domestic investment	hundred million Yuan
II	International investment	hundred million Yuan
HI	Housing investment	hundred million Yuan
NHI	Non-housing investment	hundred million Yuan
INI	Inventory investment	hundred million Yuan
FS	Gross sales of final goods and services	hundred million Yuan
DIC	Disposable income	hundred million Yuan
POP	Population	ten thousand people
PGRP	Per capita GRP	Yuan

TABLE 2. List of exogenous variables

Variables	Definitions	Units
TAX	Total tax	hundred million Yuan
GDP	Gross domestic products	hundred million Yuan
BN	Number of births	ten thousand people
DN	Number of deaths	ten thousand people
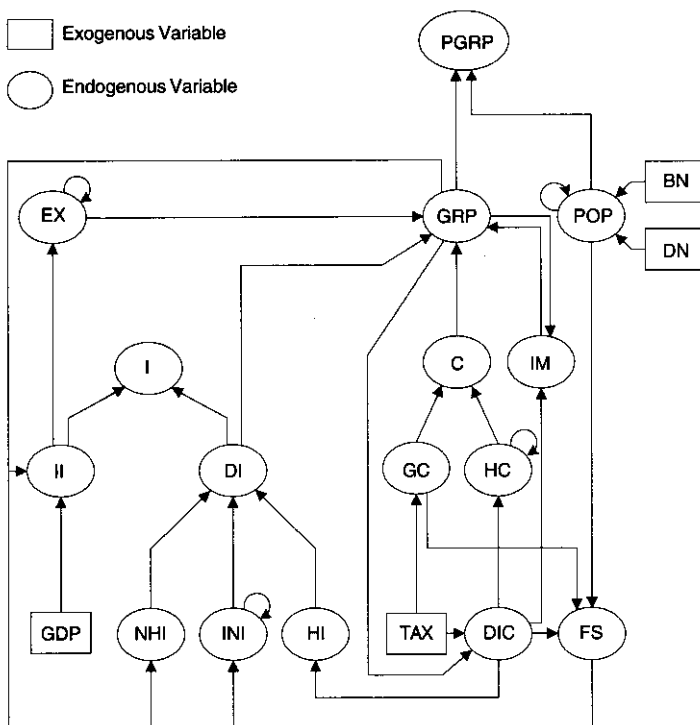
FIGURE 1. Casual relationship of Zhejiang model

TABLE 3. Identities and structural equations

$GRP = C + DI + EX - IM$	(1)
$C = GC + HC$	(2)
$I = DI + II$	(3)
$DI = HI + NHI + INI$	(4)
$POP = POP(-1) + BN - DN$	(5)
$PGRP = GRP \, / \, POP$	(6)
$GC = -127.478 + 0.139 \, TAX$	(7)

$$\quad\quad (-1.227) \quad\quad (0.484)$$

Adjusted $R^2 = 0.9955$ S.E. $= 28.7195$ D-W $= 1.4015$ $\rho = 0.7807$

$HC = -37.776 + 0.616 \, DIC + 0.616 \, HC(-1) - 0.323 \, HC(-2)$ (8)

$$\quad\quad (-0.821) \quad\quad (3.708) \quad\quad (1.939) \quad\quad (-1.411)$$

Adjusted $R^2 = 0.9914$ S.E. $= 73.5878$ D-W $= 1.1925$

TABLE 3. (cont.)

$DIC = 167.354 + 0.4218\ GRP - 0.456\ TAX$ (9)
      (8.364)   (38.111)   (−6.376)
      Adjusted $R^2 = 0.9985$ S.E. = 38.9771   D-W = 1.9063

$II = 15.788 + 0.139\ GRP - 0.007\ (GDP\_GRP)$ (10)
      (0.459)   (4.205)   (−2.4050)
      Adjusted $R^2 = 0.9413$ S.E. = 44.2236   D-W = 1.9032

$HI = -64.465 + 0.257\ DIC$ (11)
      (−1.075)   (6.893)
      Adjusted $R^2 = 0.9804$ S.E. = 41.3030   D-W = 2.4263

$NHI = -5608.635 + 0.569\ GRP$ (12)
      (−0.287)   (5.135)
      Adjusted $R^2 = 0.9891$ S.E. = 109.7316   D-W = 1.2971 $\rho = 0.4906$

$INI = 112.248 - 0.080\ (FS\_FS(-1)) + 0.533\ INI(-1) + 0.004\ (GDP(-1) - GRP(-1))$ (13)
      (1.9664)   (−2.037)   (2.113)   (1.441)
      Adjusted $R^2 = 0.7354$ S.E. = 93.2994   D-W = 2.0828

$FS = -22194.810 + 5.108\ POP + 17.176\ GC + 6.557\ (DIC - DIC(-1))$ (14)
      (−1.0821)   (1.0613)   (15.3161)   (3.4566)
      Adjusted $R^2 = 0.9952$ S.E. = 662.0871   D-W = 1.0657 $\rho = 0.3686$

$EX = -66.934 + 2.807\ II + 0.941\ EX(-1)$ (15)
      (−0.6853)   (1.3683)   (3.7608)
      Adjusted $R^2 = 0.9808$ S.E. = 240.1014   D-W = 1.3451

$IM = -86.533 + 5.250\ (GRP - GRP(-1)) - 11.921\ (DIC - DIC(-1)) + 0.854\ IM(-1)$ (16)
      (−1.1355)   (5.5295)   (−5.2003)   (8.9307)
      Adjusted $R^2 = 0.9912$ S.E. = 150.5105   D-W = 2.0312

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into four components in the view of final products, which are the aggregated consumption (*C*), domestic investment (*DI*), import (*IM*), and export (*EX*). Those endogenous variables play an important role in the regional growth of this economy. Equation (1) represents a definition of the gross regional product. The aggregated consumption (*C*) is the sum of government consumption (*GC*) and household consumption (*HC*), which is defined in Equation (2). The aggregated investment (*I*) is composed of domestic investment (*DI*) and international investment (*II*). It is defined by Equation (3). Domestic investment (*DI*) has three components, i.e., housing investment (*HI*), non-housing investment (*NHI*), and inventory investment (*INI*). The definition is expressed by Equation (4). Generally, population in the region, which is shown in Equation (5), is defined by its previous level, the number of births (*BN*), the number of deaths (*DN*), and

population inflows to Zhejiang and outflows from Zhejiang. However in this study, since we do not have enough information on inflows and outflows, these variables are removed. Per capita *GRP* (*PGRP*) is simply defined by Equation (6).

Eleven structural equations are estimated in this model. Government consumption (*GC*) depends on tax (*TAX*), which is an exogenous variable, the larger tax, the larger government consumption. The reason why tax is exogenously given is that the amount of tax is determined by the tax rate. However the tax rate in China is determined by central government, which is an external force for Zhejiang. The estimated function is shown as Equation (7). Household consumption (*HC*) depends on income level and consumption custom, so the consumption level is a function of disposable income (*DIC*) and the previous consumption levels (*HC*(−1), *HC*(−2)), which are expressed by Equation (8). The disposable income is an essential variable in this model because it influences household consumption (*HC*), housing investment (*HI*), and gross sales of final goods and services (*FS*). The disposable income is explained by gross regional products and tax as shown in Equation (9).

International investment (*II*) is dependent on the levels of economic development in Zhejiang and the other regions in China. The former is reflected by the gross regional product (*GRP*) and the latter is expressed by the difference between the gross domestic products and gross regional products (*GDP* - *GRP*) as shown in Equation (10). The last term has a negative sign because *GRP* expresses Zhejiang's development. The greater *GRP* makes Zhejiang more attractive for international investment. Then (*GDP* - *GRP*) expresses the development in the other regions of China. In this case, the greater (*GDP* - *GRP*) makes other regions of China more attractive for international investment and Zhejiang less so. The negative sign reflects competition to attract foreign investment between Zhejiang and the other regions in China. Housing investment (*HI*) is simply explained by the disposable income as given by Equation (11). As shown in Equation (12), the non-housing investment (*NHI*) is mainly affected by the gross regional products. Inventory investment (*INI*) at period *t* is related to the change between sales of final goods and services at period *t* and period *t* − 1 (*FS* - *FS*(−1)), and the previous inventory investment at period *t* − 1 (*INI*(−1)), which is shown as Equation (13). This is testified by previous studies in the business circle. Gross sales of final goods and services (*FS*), which is shown in Equation (14), depends on population (*POP*), government consumption (*GC*) and the change in disposable income between period *t* and period *t* − 1.

Total export (*EX*) is explained by international investment (*II*) and the previous level of total export *EX*(–1) in Equation (15). Total import (*IM*) is determined by the change in the gross regional products, the change in the disposable income between period *t* and period *t* – 1, and the previous level (*IM*(–1), for production) which is shown in Equation (16).

We applied the methods of SLS and 2SLS to estimate the Zhejiang's regional model. All data are collected from Zhejiang Statistics Yearbook (Zhejiang Statistics Bureau, 1985-2004 [18]) and China Statistics Yearbook (China Statistics Bureau, 1985-2004 [4]) and estimated by nominal price. Because Zhejiang's economy has had no galloping inflation or galloping deflation over the regression period, we can assume that there will be little or no different conclusions in the simulation process by using the nominal price. The sample period is 1988 to 2003. The estimated results of Zhejiang's regional model are shown in Table 3[2].

SIMULATION

We evaluate the estimated model by using two statistics, the mean of absolute percent error (*MAPE*) and the root-mean-square error (*RMSE*). Table 4 shows the calculated statistics of *MAPE* and *RMSE* of this model. Here, the *MAPE* and the *RMSE* are defined as follows.

$$MAPE = \frac{1}{T}\sum_{i=1}^{T}\frac{|Y_t - YF_t|}{Y_t}\times 100\%, \tag{1}$$

$$RMSE = \sqrt{\frac{1}{T}\sum_{i=1}^{T}\frac{(Y_t - YF_t)^2}{Y_t^2}}, \tag{2}$$

TABLE 4. Result of the Final Test

Variables	*MAPE* (%)	*RMSE*	Variables	*MAPE* (%)	*RMSE*
GRP	7.6	0.10	II	12.7	0.25
C	4.3	0.05	HI	11.7	0.23
I	6.4	0.08	NHI	4.7	0.07
EX	10.7	0.20	INI	13.7	0.26
IM	7.8	0.12	FS	9.4	0.11
GC	6.2	0.16	DIC	2.1	0.03
HC	3.4	0.05	POP	0.08	0.01
DI	8.4	0.20	PGRP	7.5	0.10

where Y_t is the actual value, YF_t is the fitted value, and T is time (yearly). A final test is performed on the estimation period of 1988 to 2003. We find that the established model is sound and conclude that the model has good overall statistical fit.

RESULTS OF THE SIMULATION AND FORECASTING

ANALYSIS OF THE SIMULATION

Through the estimated Zhejiang model, the economic structure and the statistical characteristics are examined. Equation (1) to Equation (6) are definitive ones. The Cochrane-Orcutt method is applied to estimate Equations (7), (12), and (14).

In equation (7), the regression result shows that 14% of the additional tax is devoted for government consumption. This means that government consumption has a crucial impact on Zhejiang's economy. In Equation (8), household consumption mainly depends on the disposable income (about 62%), while the other part of *HC* depends on consumption taste and consumption custom ($HC(-1)$ and $HC(-2)$). In Equation (9), the estimated result explains that Zhejiang's household income is formed by 42% of gross regional products, but in which some of the amount would become 46% of tax, nearly half. Equation (10) means that international investment is about 14% of Zhejiang's GRP, but it has competition from other regions in China (*GDP - GRP*). The international investment would decrease about 0.7% of (*GDP - GRP*). Zhejiang's economy is affected by the investment. In Equation (11), housing investment is formed by about 26% of disposable income. It would be interpreted that the remainder may be deposited in a bank or transferred to other regions. Equation (12) means that 57% of the additional *GRP* minus 5608 hundred million Yuan would become non-housing investment and it is mainly the resource of domestic investment. Equation (13) explains that Zhejiang's inventory would increase due to the growth of other regions (*GDP - GRP*) and would decrease due to an increase in gross sales of final goods and services. It accounts for 8% of the additional FS and half of inventory would be kept (53%). Equation (15) means that international investment would promote Zhejiang's export (2.8 times) and is influenced by the last period (94%). From Equation (16), the total import is mainly explained the level of production (*GRP - DIC*) and it is also influenced by a trend from the last period (85%).

FORECASTING

Based on the estimated econometric model, we forecast the growth of the Zhejiang's economy in the period of 2005 - 2010. Firstly, we estimate the trend of the exogenous variables which are denoted by *TAX*, *GDP*, *BN*, and *DN* through auto-regression equations. Table 5 shows the regression results of those exogenous variables (in Table 5, *TIME* is the variable of time trend).

By using the results of Table 5, we forecast the regional growth in Zhejiang in the period of 2005 - 2010 and evaluate economic indicators of the model. As described earlier, all the variables are taken by nominal price. Table 6 shows a summary of the forecast results.

TABLE 5. Equations of exogenous variables for forecasting

$TAX = 50.723 + 1.049TAX(-1) -19.897TIME + 2.034(TIME)^2$
    Adjusted R^2=0.9949
$GDP = -11569 + 0.543GDP(-1) + 0.141GDP(-2) -0.591GDP(-3) +6858.590TIME$
    Adjusted R^2=0.9932
$BN = 43.125 + 0.357BN(-1) -0.989TIME$
    Adjusted R^2=0.9582
$DN = 11.929 + 0.564DN(-1) +0.058TIME$
    Adjusted R^2=07103

TABLE 6. Results of forecast (2004 – 2010)

Variables	Values in 2010 (100 million)	Growth Rates (%)	Variables	Values in 2010 (100 million)	Growth Rates (%)
GRP	20,780	12.0	DI	9,715	11.6
C	8,952	10.9	II	1,615	15.7
I	11,330	12.1	HI	1,328	7.0
EX	21,984	20.1	NHI	8,337	13.2
IM	19,871	19.4	INI	51	–17.5
GC	4,272	16.9	FS	74,426	14.5
HC	4,679	7.1	DIC	5,425	6.8
POP	4,602	0.2	PGRP	45,152	11.8

Here we examine economic implications from the forecast results. The domestic investment (*DI*) would have a 11.6% growth rate in the period of 2003 - 2010 and the amount of *DI* would increase from 463.9 billion Yuan in 2003 to 971.5 billion Yuan in 2010. The international investment (*II*) would have a more rapid growth rate, which would be 15.7% in this period. The amount of *II* would increase from 63.9 billion Yuan in 2003 to 161.5 billion Yuan in 2010. The aggregated investment (*I*) would have a 12.1% growth rate, the amount of *I* would increase from 526.8 billion Yuan in 2003 to 1133 billion Yuan in 2010. The increasing tendency is an obvious one.

The household consumption (*HC*) would have a 7.1% growth rate in the period of 2003 - 2010, the amount of HC would increase from 300.8 billion Yuan in 2003 to 467.9 billion Yuan in 2010. The government consumption (*GC*) would also have a very high growth rate, which would be 16.9%, the amount of *GC* would increase from 136.0 billion Yuan in 2003 to 427.2 billion Yuan in 2010. The aggregated consumption (*C*) would have a 10.9% growth rate and the amount of *C* would increase from 436.8 billion Yuan in 2003 to 895.2 billion Yuan in 2010. The export (*EX*) would have a very high rate in the period of 2003 - 2010, 20.1%, the amount of *EX* would increase from 606.5 billion Yuan in 2003 to 2198.4 billion Yuan in 2010. The import (*IM*) also would have a very high rate, 19.4%. The amount of *IM* would increase from 567.8 billion Yuan in 2003 to 1987.1 billion Yuan in 2010. The balance between *EX* and *IM* would be kept in this period. The gross regional products (*GRP*) of Zhejiang would have a 12.0% growth rate in the period of 2003 - 2010. The *GRP* would increase from 939.5 billion Yuan in 2003 to 2078 billion Yuan in 2010, the amount would be doubled during these seven years.

The disposable income (*DIC*) would grow by 6.8% and the amount of *DIC* would increase from 336.9 billion Yuan in 2003 to 542.5 billion Yuan in 2010. Here, we should pay attention to the growth rate of *DIC*, which is the lower one in this econometric model. The population (*POP*) in Zhejiang would increase by 0.2% in the period of 2003 – 2010, the total would be 46,020,000 in 2010 compared to 45,510,000 in 2003. The growth rate of per capita *GRP* would be 11.8% during the period. The amount of *PGRP* would increase from 20,641 Yuan in 2003 to 45,152 Yuan in 2010. The amount would be doubled during this period. Figure 2 shows the simulations and forecasts for all endogenous variables in the regional model.
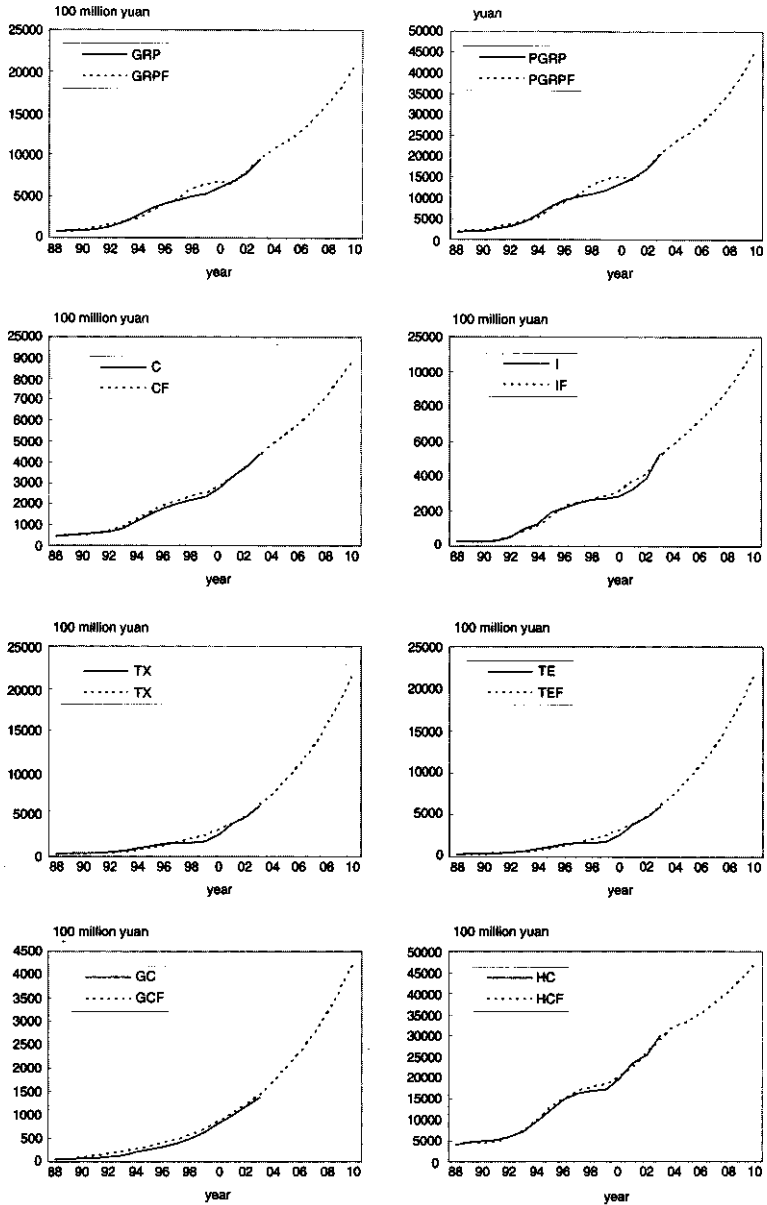
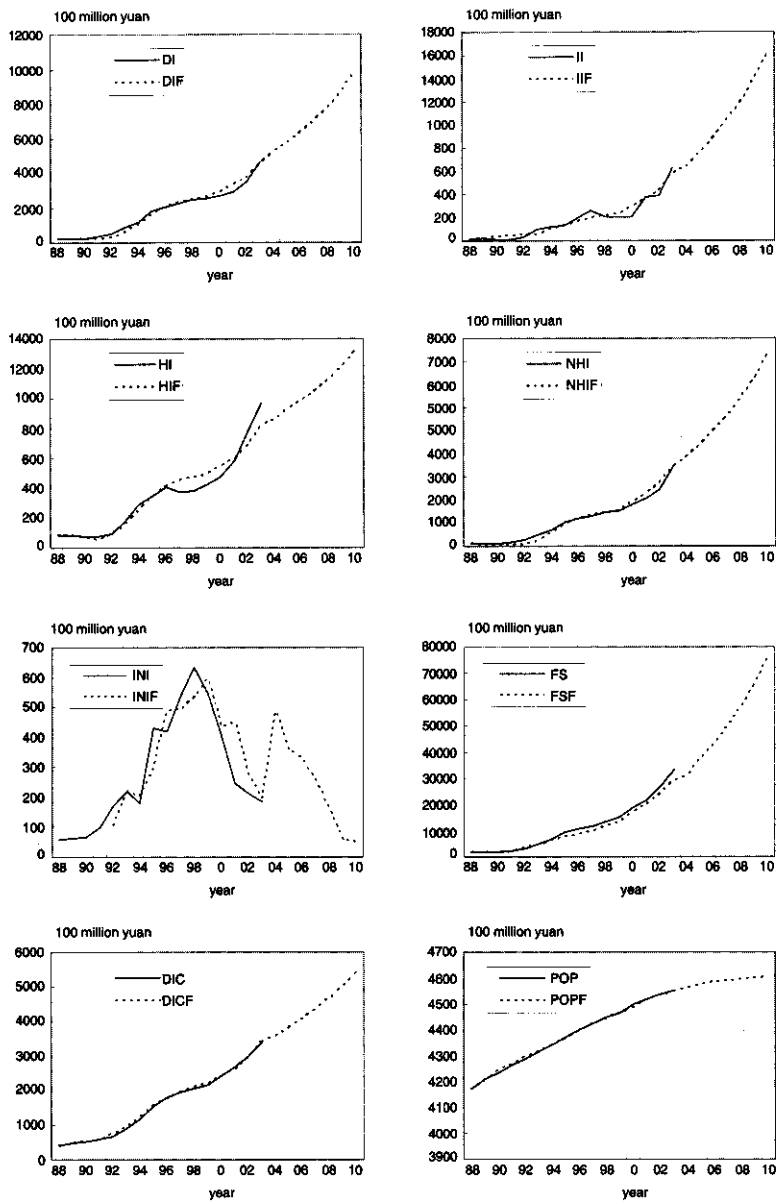FIGURE 2.   Simulations and Forecasts (continued next page)

FIGURE 2. (continued)

POLICY IMPLICATIONS

The above assumptions for the forecast given in Table 3 are based on a hypothesis, that the pattern of the Zhejiang economic growth in the past sixteen years (1988 - 2003) will not change in the next seven years (2004 - 2010). Actually, in other cases, this hypothesis may be unreasonable or untrue. It would be undesirable that we only rely on the results of this simulation and forecast. Therefore, in this study, we will offer policy implications by using not only our results but also Zhejiang's situation in the regional economy. It is more beneficial to adjust the Zhejiang economy more timely and to achieve a goal of the regional development more efficiently.

Implication 1: The international investment would stay at a high level.

The investment rate (*DI/GRP*) was 49.4% in 2003, which would be 46.6% in 2010. The rate would stay very high. Without question, the part of Zhejiang's *DI* is from the central government, and the other is from Zhejiang's GRP. But we should overlook the difference between them. We should pay attention to the following points if Zhejiang keeps such a high investment rate. Firstly, the government's role in investment planning and allocation is very strong in China. The allocation of investment directly has an impact on the strategy for sociol-economic development. In order to achieve sustainable development in Zhejiang, the government should invest in research, education, health care, infrastructure, energy, communication and transportation, and should enlarge investment ratios in those sectors. Secondly, the high investment rate would contribute an increase in physical capital stock and a progress in technology. To utilize the capital stocks effectively, a more efficient management system and high capability or skills would be required. Zhejiang province needs a rich labor market with talented personnels. If such human capital is not accumulated effectively in Zhejiang, the high investment rate would be wasted.

The ratio of international investment to aggregated investment (*II/I*) was 14.4% in 2003, which would be 14.3% in 2010. The ratio keeps the same level during this period and does not become lower. Zhejiang province can attract international investment from foreign countries because this region still has an advantage due to its rich land and labor. The international investment would bring new technology and an advanced management system to Zhejiang. It will enlarge potentials of production

activities. However Zhejiang should keep a high growth rate of export to support international investment. For this reason, Zhejiang should adopt a policy that further encourages export. Besides, Zhejiang should maintain favourable conditions for foreign investors.

Implication 2: The high economic growth rate depends on the level of government consumption.

The ratio of household consumption (HC) to aggregated consumption (C) was 68.9% in 2003, but it would be 52.3% in 2010. It is clear that there is a decreasing tendency in this period. The ratio of government consumption (GC) to aggregated consumption (C) was 31.1% in 2003, but it would be 47.7% in 2010. The increasing tendency is also obvious. This may not be good news for the regional development of Zhejiang. The ratio tells us that the high growth rate of the Zhejiang economy depends strongly on government consumption, and does not depend on household consumption. So, in this situation, the Zhejiang household cannot reap real benefits or attain a sufficient welfare level from the regional economy. If such a situation continues, the Zhejiang economy will shrink in the near future. Therefore, the government of Zhejiang province should adopt an income policy that enhances each household's purchasing power thus sustaining the level of household consumption. We suggests the following three points: (a) raising income taxation point for households in Zhejiang; (b) raising the lowest wage standard or part-time wage standard in Zhejiang; (c) exempting rural households from some taxes.

Implication 3: Zhejiang should formulate a good plan to use foreign exchanges.

The high investment rate for export (EX) and import (IM), especially so for EX, means there is a favorable balance, indicating that Zhejiang will not only have the ability to support a lot of international investment in this area, but will accumulate also more foreign exchange. Zhejiang should have a good plan to utilize those foreign exchanges in order to advance its technology and raise productivity. At present, exports from Zhejiang are mainly consumption goods and primary goods. To join the global economy, Zhejiang should enhance its abilities to compete internationally and further enlarge the amount of export. Therefore, Zhejiang should make a strategic plan to encourage exports of manufactured goods. This will also augur well for advances in new technologies in Zhejiang.

Implication 4: The government should make efforts to raise employment rate and pay attention to the income distribution between public and private sectors.

Comparatively, the growth rate of disposable income (*DIC*) is lower than that of other indicators. The ratio of *DIC* to *GRP*, 35.9% in 2003 would decrease to 26.1% in 2010, meaning that income distribution in Zhejiang would be unfavorable to households as the economy develops. As a result, abilities to consume would decrease, which is unfavorable to Zhejiang's development in the long run. Facing such a problem, the government of Zhejiang province should adopt two measures for this regional economy: (1) to make great efforts to raise the employment rate so that more people will have the opportunity to work and earn money; (2) to pay attention to the income distribution between the public and households, the government of Zhejiang province should decrease its consumption in the current expenditure, and increase the share of household consumption in the aggregate expenditure.

CONCLUDING REMARKS

In this study we established a regional econometric model in China by taking Zhejiang province as an example. Zhejiang is one of the best economic area in China as a province, including a large city and vast countryside areas. The economic situations in Zhejiang province would mirror the national economy of China in the future in several aspects. In this study, we forecast the trend of the Zhejiang economy and evaluated the economic structures. Several regional problems were also identified. Our result points out that the regional economy still depends on investment and the public sector, and Zhejiang should utilize the power of market efficiently and should enlarge international investment to this region. It is expected that economic problems in this region would be alleviated by paying attention to the implications suggested above.

We made several policy proposals for the future regional development in Zhejiang. Firstly, Zhejiang should fully prepare and provide a rich labor market with skilled workers, and should adopt a policy that further encourages exports, in order to meet the high investment rate and to benefit from foreign investment. Secondly, Zhejiang should raise the lowest wage level or the part time wage level; and should exempt rural households from some taxes, in order to enhance households' purchasing power and to sustain the level of household consumption. Zhejiang should make

great efforts to raise the employment rate so that more people will have the opportunity to work and earn money; and should pay attention to the income distribution between the public and private sectors in order to increase the households' consumption ability. Finally, Zhejiang should formulate a good plan to utilize foreign exchange in order to advance its technology and raise productivity so that it can compete internationally.

NOTES

[1]   RMB¥ means Renminbi Yuan, which is the Chinese monetary unit.
[2] R^2 is the coefficient of multiple determinations. S.E. is the standard error of the estimate. D-W is the Durbin_Watson test statistics.

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