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## A Small Macroeconometric Model of the People's Republic of China

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A Small Macroeconometric  
Model of the People's Republic  
of China

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June 2006

Asian Development Bank

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# A SMALL MACROECONOMETRIC MODEL OF THE PEOPLE'S REPUBLIC OF CHINA

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June 2006

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## **FOREWORD**

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## ABSTRACT

This paper describes a quarterly macroeconometric model of the economy of People's Republic of China. The model comprises household consumption, investment, government, trade, production, prices, money, and employment blocks. The equilibrium-correction form is used for all the behavioral equations and the general→simple dynamic specification approach is adopted in order to ensure the best possible blend of *a priori* long-run theories with *a posteriori* identified short-run factors, as well as country-specific features. The tracking performance of the model is evaluated. Forecasting and empirical investigation of a number of topical macroeconomic issues utilizing model simulations have shown the model to be immensely useful.

## I. INTRODUCTION

This paper outlines key features of an Asian Development Bank (ADB) model of the economy of People's Republic of China (PRC), which is adapted and augmented from China\_QEM, a quarterly macroeconomic model built by the Institute of World Economics and Politics (IWEP), Chinese Academy of Social Sciences.<sup>1</sup> First started in early 2004, model adaptation and augmentation have taken more than a year due primarily to the inherent difficulty in modeling a highly vibrant economy like the PRC as well as major revisions in the country's historical data, particularly the revision on the sectoral components of gross domestic product (GDP) in early 2005.<sup>2</sup>

The scale of the model is essentially based on the *Asian Development Outlook* (ADO) data sheet as well as data availability, since the primary purpose of the modeling project is to strengthen preparation of the ADO publication.<sup>3</sup> To facilitate the need for forecasting and policy simulation, the model is guided by the main criteria that all behavioral equations should be economically meaningful; all parameter estimates relatively robust and time-invariant; dummy variables used as rarely as possible; and variables representing policy instruments have valid properties of exogeneity. The model has the following main characteristics:

- (i) *Economic structure.* The model reflects the essence of a transitional economy. This is achieved by extending economic theories purely for market economies to incorporate certain institutional factors pertaining to a mixed economy. Many equations are demand-oriented to reflect a high degree of marketization. It also contains a number of supply-side equations. In particular, the supply side of GDP plays a central role in the real-sector part of the model, a feature absent in most of the existing macroeconomic models in the PRC.
- (ii) *Econometric methods.* The Equilibrium/Error Correction Model form is used for all behavioral equations to embed long-run economic theories into adequately specified dynamic equations following the dynamic specification approach (see Hendry 1995). To ensure within-sample coefficient constancy, we used recursive estimation methods and/or parameter constancy tests extensively. We also minimized the use of dummy variables, except for seasonal dummies, as imposition of occasional dummies often indicates lack of super exogeneity and significantly reduces the policy simulation capacity of the model.

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<sup>1</sup> China\_QEM was first built in 2002 and became relatively settled in 2004 (see He et al. 2005).

<sup>2</sup> The model has had several earlier versions, including the one used for the *ADO 2004 Update* (ADB 2004).

<sup>3</sup> The purpose of the modeling project is spelled out in the 2004 ADO Regional Technical Assistance Report (RETA: OTH 37423; see ADB 2004): "To improve the content and quality of ADO and ADO Update by developing quantitative tools/econometric models in support of ADB's short- and medium-term country economic analysis." The RETA also specifies the required basic functions of the models: "to generate the short- and medium-term economic forecasts" and "to improve the analytical content of ADO and ADO Update through quantitative analysis of economic policy."



Section II sketches the PRC macroeconomy, data, and literature on the existing models. Section III describes the main behavioral equations of the model. Section IV summarizes the model performance results. Section V concludes. Appendix 1 contains the definition of variables and their data sources. A list of the equations and the key diagnostic test results of the estimated equations are given in Appendix 2.

## **II. ECONOMY, DATA, AND EXISTING MODELS**

### **A. The PRC Economy**

The PRC economy has experienced tremendous transformation and record-high growth during the last two decades since the start of economic reforms in 1978. The reforms progressed gradually from farming to commerce, to state-owned enterprises, then to government finance and banking. A so-called “socialist market economic system” was established in the early- to mid-1990s. For instance, over 80% of the agricultural products and most industrial products have been trading at market prices since 1993 (see Cai and Lin 2004, Wang 2002). The Law of the People’s Bank of China (PBC) and the Law of Commercial Banks of China were also released in 1995, making PBC a central bank independent of commercial bank loans and fiscal controls (see Shang 2000). In 1994, the managed floating regime was adopted, and the foreign trade sector became self-managed.<sup>4</sup>

### **B. Data**

In order to make the ADB model useful for policy analysis, we choose a quarterly frequency, as this is the highest frequency at which GDP is accounted, and because much of the short-run dynamic adjustments of an economy to policy shocks occur within one to a few quarters.

Collection of a quarterly data set with an adequate sample size is quite challenging for the PRC case, especially for the GDP components. Experiments to convert the national accounting system from the material product system under the old centrally planned regime to the system of national accounts began in 1985. Although the system of national accounts was formally adopted in 1993, published statistical series are few, short, and infrequent.<sup>5</sup>

The data set was collected by the IWEP in collaboration with the National Bureau of Statistics of China. Most of the time series start from 1992, the year from which the National Bureau of Statistics of China released quarterly GDP from the production side. Due to various constraints, these quarterly series are not seasonally adjusted and are often significantly readjusted after annual data is published to make them consistent with the annual accounts. When quarterly data are unavailable, annual series are interpolated into quarterly series. Appendix 1 gives a full list of all the series used in the model and the data sources.

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<sup>4</sup> See He et al. (2005, chapter 3) for a detailed review of the PRC’s economic dynamics during the last two decades.

<sup>5</sup> For a detailed description of the evolution of the PRC national accounting systems, see Xu (2000).

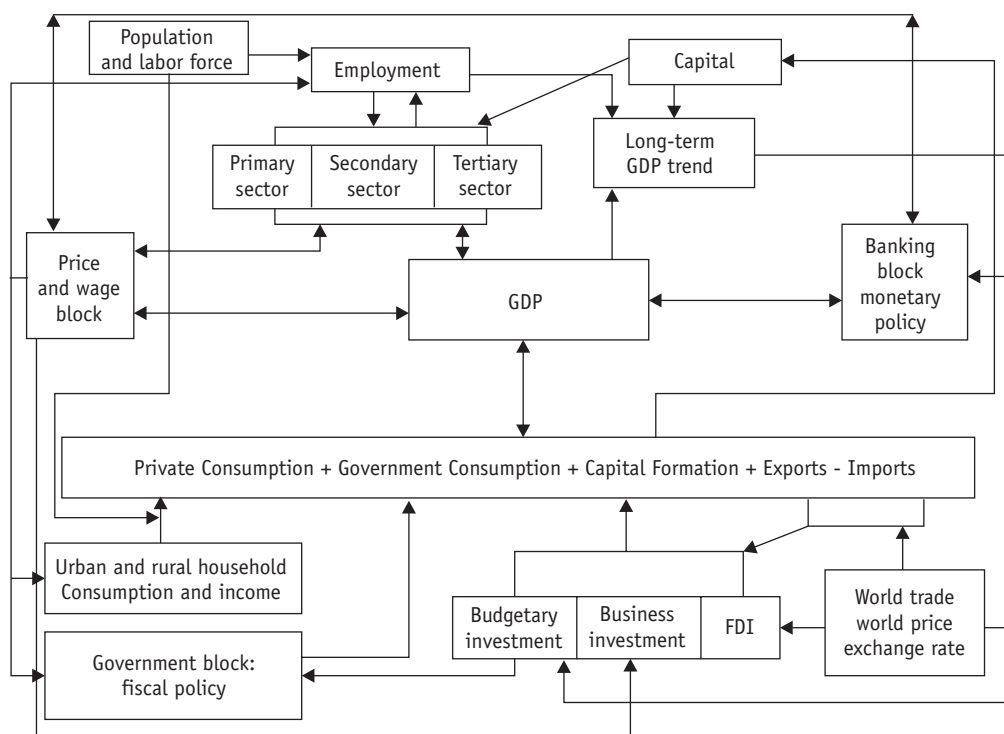
### C. Existing Models

Macroeconometric research started in the PRC in the early 1980s. Early models were built in close association with Project LINK. The models are commonly large and based on annual data series. As annual series have to go back to the prereform period for estimation purposes, many of the equations carry significant features of the old centrally planned regime. Models built using quarterly series and following the dynamic specification approach were first experimented on by the Institute of Quantitative and Technical Economics of CASS. However, their models are currently out of maintenance. The PBC has recently developed a small quarterly model mainly for analyzing the interaction between the macroeconomy and monetary policy (see Liu 2003). In terms of econometrics, these quarterly models have given greater attention to the time-series properties of data than those earlier annual models.<sup>6</sup>

### III. BASIC STRUCTURE OF THE PRC MODEL

The PRC model is roughly divided into the following blocks: income and consumption, labor and employment, investment, government, foreign trade, GDP sectors, price and wage, and monetary. There are 73 endogenous variables and 16 exogenous variables. Specification and estimation of all

FIGURE 1  
 FLOW CHART OF THE PRC MODEL



<sup>6</sup> See He et al. (2005, chapter 4) for a detailed review of the major existing macroeconometric models in the PRC.

the behavioral and linking equations is carried out using PcGive and PcGets (see Doornik and Hendry 2001 and Hendry and Krolzig 2001). Model forecasts and simulations are performed in WinSolve (see Pierse 2001). Figure 1 depicts a simple flow chart of the model. The following briefly describes the key equation structure of each block.

### A. Household Income and Consumption Block

Household income and consumption are modeled separately for urban and rural areas. *Per capita income of urban households* is explained mainly by average earnings per urban employee. Unemployment rate also exerts a negative effect on per capita urban income. *Per capita cash income of rural household* is modeled via the total income of rural households, which depends on the output of the three sectors and unemployment rate in the long run. *Urban per capita consumption* is explained in the long run by urban household income and real interest rate while also affected by inflation in the short run. *Rural per capita consumption* is explained by rural household income in the long run while in the short run, inflation exerts some effect. Aggregation of the two consumption series via population leads to the aggregate private consumption component in GDP.

### B. Labor and Employment Block

*Labor force* depends mainly on population. Total *Employment* is explained by real GDP and urban wage rate. These two variables define *unemployment rate*. *Secondary sector employment* and *tertiary sector employment* are determined mainly by their sector real output and urban wage rate respectively, whereas *primary sector employment* is derived from total employment net of the employment of the other two sectors.

### C. Production Block

A *long-run GDP* is specified as following a standard production function with constant returns to scale. This variable enables us to define a "GDP gap" variable as the deviation of GDP from long-run GDP.

*Real output of both the primary and tertiary sectors* are demand-driven, whereas the *secondary sector real output* follows a production function with constant returns to scale in the long run. The degree of openness is also found to affect the secondary sector real output.

Nominal output of the three sectors is modeled via their price deflators. These deflators are mainly linked with various price indices modeled in the price block.

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<sup>7</sup> A detailed description of an early version of these two equations is in He and Qin (2004). However, as the investment data series have been redefined after the publication of that paper, the equation specification is now somewhat different. See also Qin and Song (2003) and Qin, Cagas, Quising, and He (2005) for more discussions of the investment issue.

## D. Investment Block

The total domestic investment in fixed assets is disaggregated into *government investment* and *business-sector investment*. *Government investment*, measured by fiscal expenditure on capital construction and innovation, serves mainly as a fiscal policy instrument targeted at reducing unemployment and smoothing the GDP gap (see the Production block). Changes in government investment are found to impact on business-sector investment, which otherwise follows a factor-demand equation with real GDP and real lending rate playing the key explanatory roles.<sup>7</sup> *FDI* (foreign direct investment) is modeled separately and determined primarily by GDP, relative factor prices, and interest rate differentials.

## E. Government Block

*Government expenditure* comprises government investment and noninvestment expenditure, the latter being mainly explained by government revenue and linked to *government consumption* on the expenditure side of GDP. *Government revenue* is explained by *tax revenue*, which is composed of tariffs on trade, agricultural tax, and business tax mainly from the secondary and tertiary sectors.

## F. Trade Block

*Imports* is explained in the long run by domestic demand and exports whereas inflation in the investment price is also found to exert certain short-run impact. *Exports* is simply linked to a world import demand variable, which is computed from a trade matrix comprising imports from the PRC by 30 countries and regions that historically have accounted for over 90% of the PRC's exports.

## G. Price and Wage Block

*Consumer price index* is expressed simply as retail markup of industrial output price and import price indices in the long run. In addition, wage rate changes and the GDP gap are found to impact on inflation. The latter factor provides us with a useful macro measure of "overheating." *Industrial output price* is dependent mainly on import price index, investment price index, and ratio of wage earnings per urban employee over per capita output from the secondary sector. *Fixed investment price index* is mainly explained by the secondary sector deflator, import price index, and bank lending rate. *Import price index* follows the world price index and exchange rate while also being affected by export price dynamics. In fact export and import price indices are mutually dependent.<sup>8</sup>

*Urban wage rate* is explained by labor productivity in the secondary and tertiary sectors.

## H. Monetary Block

This block of the model follows the fundamental ideas of the Polak (1957 and 1997) model, which is based on the key entries of two balance sheets: the balance sheet of the total banking

<sup>8</sup> When endogenous variables are found to be mutually dependent, simultaneous-equation estimation is performed to check for simultaneity bias.

sector and the balance sheet of the monetary authority (see Qin, He, Liu, and Quising 2005 for a detailed description of this block).

The total banking sector balance sheet is linked to the real economy via broad money,  $M2$ , and net foreign assets.  $M2$  is explained via its two components:  $M1$  and quasi-money.  $M1$  follows a demand-driven equation with real GDP and real interest rate being the key long-run explanatory variables. Quasi-money is mainly explained by potential savings, i.e., household income less household consumption, and deposit interest rate. *Net foreign assets* is explained mainly by foreign trade balance and foreign direct investment.

The purpose of modeling the balance sheet of the monetary authority is to identify how monetary policies affect the economy. A key policy instrument identified is the imbalance between the monetary base and the base money supply, since the PBC has rarely adjusted interest rates on lending and deposits over the sample period. *Monetary base* comprises *currency issue*<sup>9</sup> and *reserve money*. *Currency issue* is explained by  $M1$  and a gradual downward trend reflecting the impact of technological progress such as electronic transactions on cash demand. *Reserve money* is modeled via excess reserves in terms of the *excess reserve ratio*. This ratio depends mainly on the required reserves ratio, the ratio of money supply to the monetary base, and the lending rate. Base money supply is modeled via the ratio of its excess supply to monetary base, which is found to be dependent on inflation.

#### IV. MODEL PERFORMANCE

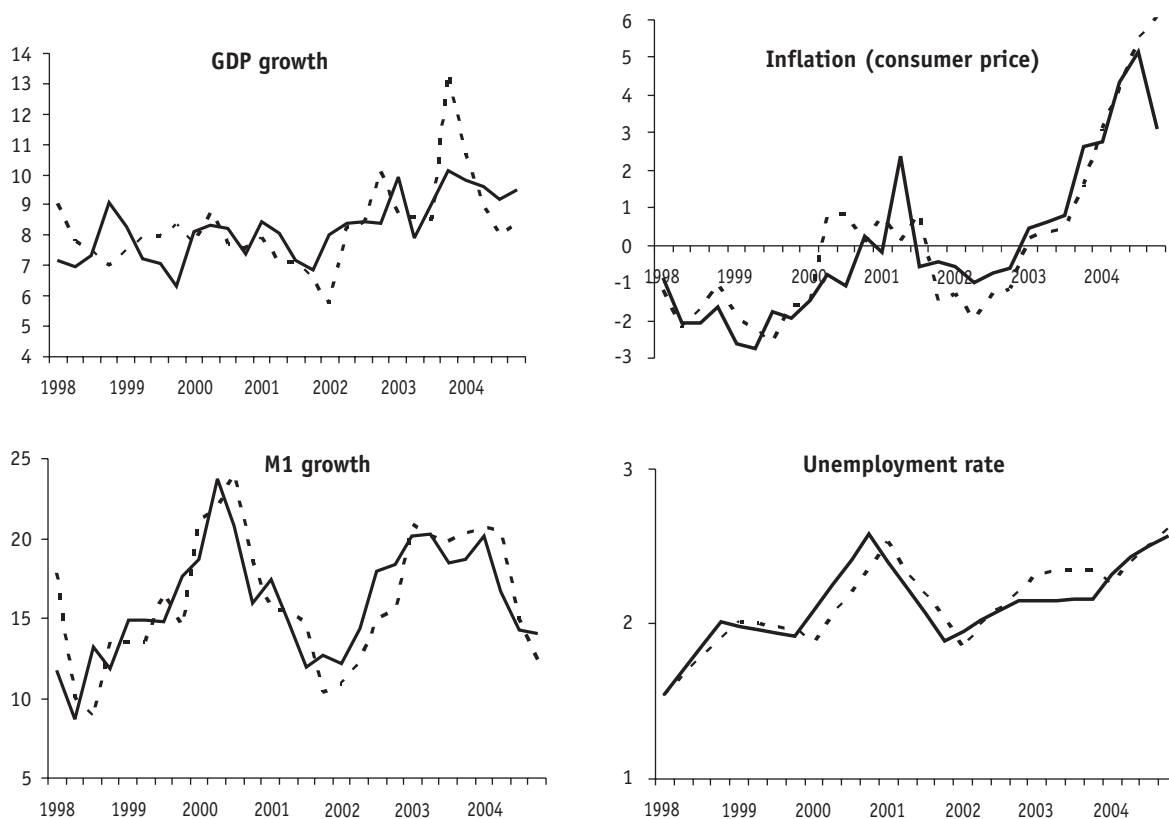
The model is evaluated for both within-sample and out-of-sample predictive performance. Empirical studies of a number of macroeconomic issues by means of model simulations have also demonstrated the usefulness of the model.

- (i) *Within-sample performance:* Using historical data, static solutions of the model are generated. Figure 2 depicts the static simulations versus the actual values of four key macroeconomic variables in terms of their year-on-year growth rates: GDP,  $M1$ , inflation in terms of the consumer price index, and unemployment. The fitted and actual values would be too close to be visually differentiable if they are plotted in levels. In addition, conventional statistics such as the root mean square percentage errors (RMSPE) and the mean percentage errors (MPE) are also calculated. Table 1 presents these statistics for a number of key variables. As seen from the table, the model tracks these major macro indicators reasonably well.
- (ii) *Out-of-sample performance:* We evaluate out-of-sample performance through stochastic simulations. The McCarthy method is used here to generate random shocks from individual equation residuals for a specified sample period. Five hundred stochastic simulations are carried out and quantiles are computed to characterize the distribution of the simulated results. Figure 3 presents the stochastic forecasts of eight selected

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<sup>9</sup> There is a small difference between the item of M0 issue on the balance sheet of the central bank and the item of M0 in circulation on the balance sheet of the banking survey. M0 issue is approximately 1.09 times of M0 in circulation.

FIGURE 2  
STATIC SIMULATION RESULTS: GROWTH RATES OF KEY VARIABLES (PERCENT)



Solid line: actual values; dotted line: fitted values.

Note: Simulated GDP is calculated as the sum of the simulated real output of the three sectors; simulated unemployment is derived from the simulated labor force and total employment.

variables. Three curves are plotted for each variable: the simulated values at 2% quantile, 50% quantile, and 97% quantile. We regard the series at the 50% quantile as the approximate mean forecast, and the series at the 2% quantile and at the 97% quantile approximately as forming the 95% confidence interval.<sup>10</sup>

In addition to the above, the model has proved to be immensely useful in assisting in-depth analysis of topical macroeconomic issues. For example, Qin, He, Liu, and Quising (2005) carry out various simulations to show how monetary policy impacts on the economy via different instruments; Qin, Cagas, Quising, and He (2005) apply impulse analysis to investigate how much and in what ways investment and output affect each other; Qin, Cagas, Ducanes, and He (2005) extend the household block of the model to incorporate income inequality indices into the consumption equations to study the impact of increasing income inequality on growth.

<sup>10</sup> For the detailed description of the stochastic simulations, see Pierse (2001).

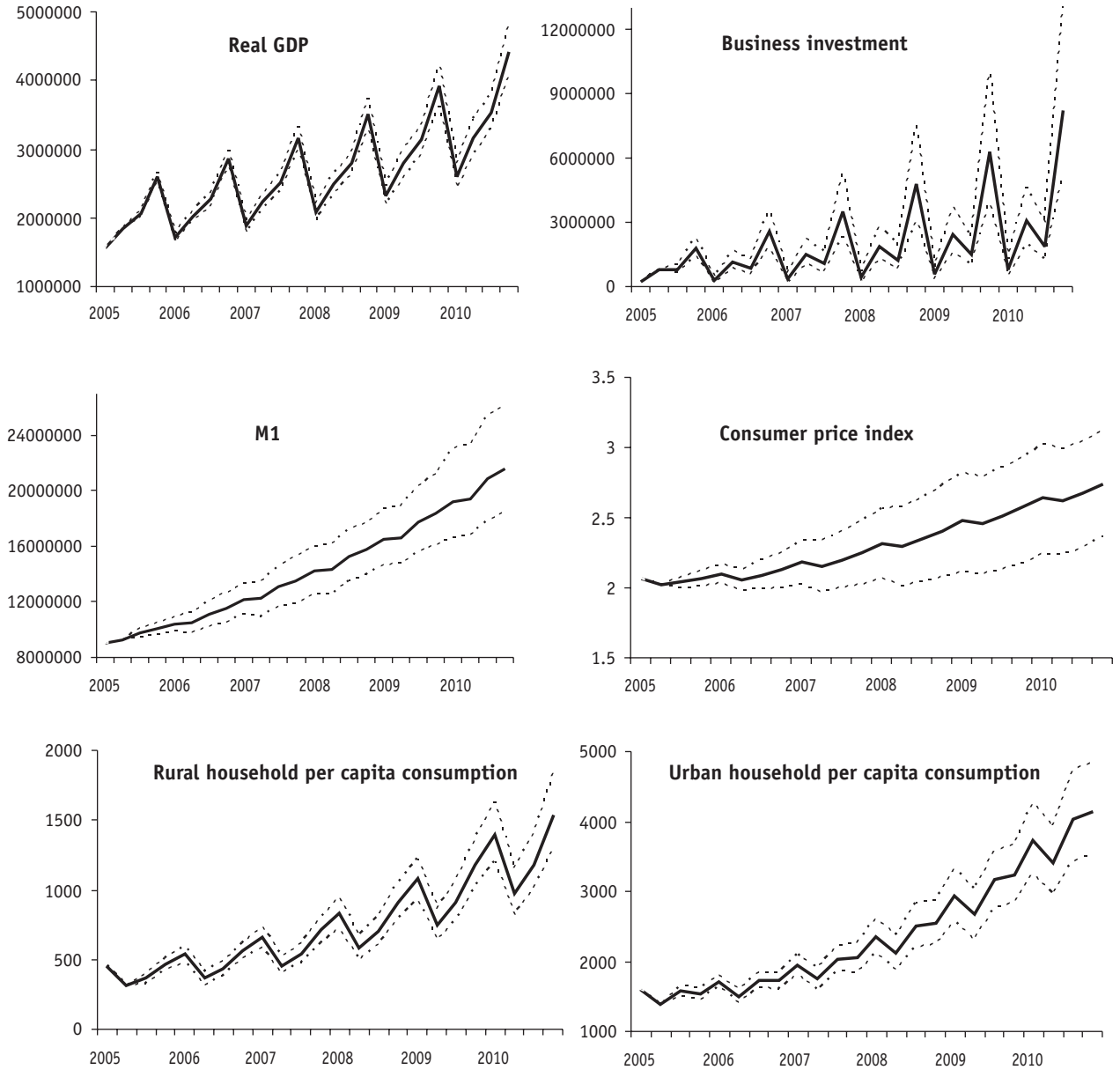
**TABLE 1**  
**PREDICTION STATISTICS OF THE PRC MODEL, 1994Q1–2005Q2**

VARIABLE	RMSPE	MPE
Primary sector real output	0.0095	-0.0010
Secondary sector real output	0.0241	-0.0035
Tertiary sector real output	0.0094	-0.0017
Per capita income of urban households	0.0301	-0.0043
Per capita income of rural households	0.1047	0.0118
Per capita consumption of urban households	0.0321	0.0150
Per capita consumption of rural households	0.0497	-0.0073
Business sector real investment	0.1819	0.0077
Government real investment	0.1187	0.0177
Government expenditure	0.0897	0.0046
Government revenue	0.0141	0.0009
Narrow money (M1)	0.0180	0.0015
Broad money (M2)	0.0082	-0.0014
Consumer price index	0.0099	-0.0003
Producer price index	0.0104	0.0012
Investment price index	0.0157	0.0000

Note: The RMSPE and MPE are computed as follows:  $RMSPE = \sqrt{\frac{1}{T} \sum_{t=1}^T \left( \frac{Y_t^s - Y_t^a}{Y_t^a} \right)^2}$ ;  $MPE = \frac{1}{T} \sum_{t=1}^T \left( \frac{Y_t^s - Y_t^a}{Y_t^a} \right)$  where  $Y^s$  and  $Y^a$  are

the simulated and actual values of an endogenous variable, respectively and  $T$  is the number of simulation periods.

**FIGURE 3**  
**STOCHASTIC FORECASTING: KEY VARIABLES**



Solid line: forecasts (at 50% quantile); dotted line: confidence interval (at 2% and 97% quantiles).  
Note: The simulated GDP is calculated as the sum of the simulated real output of the three sectors.



## **V. CONCLUSION**

Although considerable changes have occurred in the PRC economy over the last two decades, we are able to build a fairly robust econometric model to capture the main macro dynamics and to forecast major macroeconomic indicators of the economy. Real-time forecasts and empirical investigation of a number of topical macroeconomic issues have proven the model to be immensely useful. Further improvements of the model are expected with its continued application to the analysis of the PRC macroeconomy.

**APPENDIX 1**  
**VARIABLE LIST**

VARIABLE NAME		DEFINITION	HOW TO GENERATE IN THE MODEL	DATA SOURCES
1	BINV_PRC	Business Sector Fixed Capital Formation (million yuan, Total investment in fixed assets less GINV)	Identity	Total investment in Fixed Assets net of GINV, CMEI
2	BINVc_PRC	Business Sector Fixed Capital Formation (million yuan, in 1992Q1 price)	Endogenous	BINV deflated by P#INV
3	CAB\$_PRC	Current Account Balance (million US\$)	Endogenous	CSY
4	DC_PRC	Domestic Credit (billion yuan)	Endogenous	IMF
5	DEPK%_PRC	Annual Depreciation Rate of Fixed Assets (%)	Exogenous	IWEP
6	EMP_PRC	Total Employment (million)	Endogenous	Interpolated from CSY
7	EMP1_PRC	Primary Sector Employment (million)	Identity	Interpolated from CSY
8	EMP2_PRC	Secondary Sector Employment (million)	Endogenous	Interpolated from CSY
9	EMP3_PRC	Tertiary Sector Employment (million)	Endogenous	Interpolated from CSY
10	ER_PRC	Exchange Rate (RMB/1US\$, end of period)	Exogenous	CMEI
11	FD_PRC	Foreign Deposits	Exogenous	QB
12	FDI\$_PRC	Foreign Direct Investment in PRC (Actually Utilized, million US\$)	Endogenous	CMEI
13	FDI_PRC	Foreign Direct Investment in PRC (Actually Utilized, million yuan)	Identity	FDI\$ converted by ER
14	GCON_PRC	Government Consumption (million yuan)	Endogenous	Interpolated from CSY by NSBC
15	GCONc_PRC	Government Consumption (million yuan, in 1992Q1 price)	Identity	GCON deflated by P#C
16	GDEF_PRC	Government Deficit (million yuan)	Identity	Computed from GEXP and GREV
17	GDP\$_PRC	Gross Domestic Product (million US\$)	Identity	GDP converted by ER
18	GDP_PRC	Gross Domestic Product (million yuan)	Identity	CMEI
19	GDPc_PRC	Gross Domestic Product (million yuan, in 1992Q1 price)	Identity	CMEI
20	GDPcSD_PRC	Statistical Discrepancy between Supply Side and Demand Side	Identity	Computed by identity
21	GDPe_PRC	Effective Domestic Demand (million yuan)	Identity	Computed by identity
22	GDPLR_PRC	Long-run supply trend of GDP (million yuan)	Endogenous	Computed by identity
23	GEXP_PRC	Government Expenditures (million yuan)	Endogenous	CMEI
24	GINV_PRC	Government Fixed Capital Formation (million yuan, Sum of Expenditure for capital construction and Innovation funds of enterprises)	Identity	CMEI
25	GINVc_PRC	Government Fixed Capital Formation (million yuan, in 1992Q1 price)	Endogenous	GINV deflated by P#INV
26	GIR\$_PRC	Gross International Reserves (million US\$)	Endogenous	CSY
27	GNP_PRC	Gross National Product (million yuan)	Endogenous	CSY
28	GREV_PRC	Government Budgetary Revenue (million yuan)	Endogenous	CMEI
29	GTAX_PRC	Government Tax Revenues (million yuan)	Endogenous	CMEI
30	INV_PRC	Fixed Capital Formation (million yuan)	Identity	Interpolated from CSY

VARIABLE NAME		DEFINITION	HOW TO GENERATE IN THE MODEL	DATA SOURCES
31	INVc_PRC	Fixed Capital Formation (million yuan, in 1992 price)	Endogenous	by CMEI
32	IRCB%_PRC	Central Bank Rediscount Rate (%)	Exogenous	INV deflated by P#INV
33	IRD%_PRC	One Year Interest Rate of Deposit (%)	Endogenous	QB
34	IRDD%_PRC	Interest Rate on Demand Deposits (%)	Endogenous	QB
35	IRL%_PRC	One Year Interest Rate of Lending (%)	Endogenous	QB
36	IRL%_USA	U.S. Prime Lending Rate (%)	Exogenous	Datastream
37	K_PRC	Stock of Fixed Investment Assets (million yuan)	Identity	Computed by identity
38	LF_PRC	Economically Active Population (million)	Endogenous	Interpolated from CSY
39	M\$__PRC	Imports (million US\$)	Endogenous	CMEI
40	M_PRC	Imports (million yuan)	Identity	M\$ converted by ER
41	Mc_PRC	Imports (million yuan, in 1992 price)	Identity	M deflated by P#M
42	MO_PRC	PBC currency issue (million yuan)	Endogenous	QB
43	M1_PRC	Narrow Money (million yuan)	Endogenous	QB
44	M2_PRC	Broad Money (million yuan)	Endogenous	QB
45	MB_PRC	Base Money (million yuan, M0 plus RSV)	Identity	Computed from QB
46	MBS_PRC	Base Money Supply (million yuan, net foreign assets plus net government claims and borrowed reserve by financial institutions at PBC)	Endogenous	Computed from QB
47	MSP_PRC	Money Supply Policy	Exogenous	
48	NFA_PRC	Net Foreign Assets of the Banking Sector (billion yuan)	Endogenous	QB
49	NFIA_PRC	Net Factor Income from Abroad (million yuan)	Exogenous	CSY
50	P#C_PRC	Consumer Price Index (1992Q1=1)	Endogenous	Computed from CMEI
51	P#GDP_PRC	GDP Deflator (1992Q1=1)	Endogenous	CMEI
52	P#INV_PRC	Price Index of Investment in Fixed Assets (1992Q1=1)	Endogenous	CMEI
53	P#M_PRC	Import Price Index (1992Q1=1)	Endogenous	Computed by IWEP
54	P#P_PRC	Producers Price Index; proxied by Ex-factory Price Index of Industrial Products (1992Q1=1)	Endogenous	Computed from CMEI
55	P#WX\$	World Export Price Index (1992Q1=1)	Exogenous	Computed by ADB
56	P#X_PRC	Export Price Index (1992Q1=1)	Endogenous	Computed by IWEP
57	PCCONr_PRC	Per Capita Living Expenditure of Rural Household in Cash (yuan)	Endogenous	CMEI
58	PCCONu_PRC	Per Capita Living Expenditure of Urban Household in Cash (yuan)	Endogenous	CMEI
59	PCGDP_PRC	Per Capita Gross Domestic Product (yuan)	Identity	Computed by identity
60	PCINCr_PRC	Per Capita Income in Cash of Rural Household (yuan)	Endogenous	CMEI
61	PCINCu_PRC	Per Capita Disposable Income of Household, Urban (yuan)	Endogenous	CMEI
62	PCON_PRC	Household Consumption Expenditure (million yuan)	Endogenous	Interpolated from CSY by NSBC
63	PCONc_PRC	Household Consumption Expenditure (million yuan, in 1992 price)	Identity	PCON deflated by P#C
64	POP_PRC	Total Population (million)	Exogenous	Interpolated from CSY

VARIABLE NAME		DEFINITION	HOW TO GENERATE IN THE MODEL	DATA SOURCES
65	POP <sub>r</sub> _PRC	Population, Rural (million)	Identity	Interpolated from CSY
66	POP <sub>u</sub> %_PRC	Urban Population Over Total Population (%)	Exogenous	Computed by Identity
67	POP <sub>u</sub> _PRC	Population, Urban (million)	Identity	Interpolated from CSY
68	PSAV_PRC	Potential Saving Deposit (million yuan)	Identity	Interpolated from CSY
69	RR%_PRC	Required Reserves Ratio	Exogenous	QB
70	RSV_PRC	Deposits by Financial Institutions at PBC (million yuan)	Endogenous	Computed from QB
71	STK_PRC	Changes in Inventories (million yuan)	Identity	Computed by identity
72	STK <sub>c</sub> _PRC	Changes in Inventories (million yuan, in 1992Q1 price)	Identity	Computed by identity
73	TAX%_PRC	Tax Rate (%)	Exogenous	Computed by IWEP
74	TAX <sub>1</sub> _PRC	Proportion of Agriculture Tax	Exogenous	Computed from CSY
75	TB\$_PRC	Trade Balance (in million US\$)	Endogenous	CSY
76	TRF_PRC	Proportion of Tariff in Tax	Exogenous	Computed from CSY
77	UCC%_PRC	User Cost of Capital (%)	Identity	Computed by identity
78	UEMP%_PRC	Unemployment Rate (%)	Identity	Computed by identity
79	VA <sub>1</sub> _PRC	Value Added from Primary Industry (million yuan)	Endogenous	CMEI
80	VA <sub>1c</sub> _PRC	Value Added from Primary Industry (million yuan, in 1992Q1 price)	Endogenous	Computed from CMEI
81	VA <sub>2</sub> _PRC	Value Added from Secondary Industry (million yuan)	Endogenous	CMEI
82	VA <sub>2c</sub> _PRC	Value Added from Secondary Industry (million yuan, in 1992Q1 price)	Endogenous	Computed from CMEI
83	VA <sub>3</sub> _PRC	Value Added from Tertiary Industry (million yuan)	Endogenous	CMEI
84	VA <sub>3c</sub> _PRC	Value Added from Tertiary Industry (million yuan, in 1992Q1 price)	Endogenous	Computed from CMEI
85	WAGE <sub>u</sub> _PRC	Average Earnings of Urban Employed Persons (yuan)	Endogenous	CMEI
86	WT\$_PRC	World Imports from PRC (million US\$)	Exogenous	Computed by ADB
87	X\$_PRC	Export (million US\$)	Endogenous	CMEI
88	X_PRC	Export (million yuan)	Identity	X\$ converted by ER
89	X <sub>c</sub> _PRC	Export (million yuan, in 1992 price)	Identity	M deflated by P#M

Note: CMEI means *China Monthly Economic Indicators*

CSY means *China Statistics Yearbook*

IFS means *International Financial Statistics*

QB means *Quarterly Banking*

IWEP means *Institute of World Economics and Politics*

APPENDIX 2  
 EQUATION LIST

APPENDIX 2A. ESTIMATED EQUATIONS

1. Income and Consumption			
<b>1.1 Income: Urban</b>			
$\Delta \ln(\text{PCINCu\_PRC}) = - \begin{matrix} 0.4213 \\ [0.0399] \\ [0.0608] \end{matrix} * \Delta \ln(\text{PCINCu\_PRC\_1}) + \begin{matrix} 0.0254 \\ [0.0139] \\ [0.0749] \end{matrix} + \begin{matrix} 0.2561 \\ [0.0330] \\ [0.0780] \end{matrix} * \Delta \ln(\text{WAGEu\_PRC}) - \begin{matrix} 0.1265 \\ [0.0532] \\ [0.0512] \end{matrix} * \Delta \text{UEMP\%\_PRC}$ $+ \begin{matrix} 0.20915 \\ [0.0324] \\ [0.1127] \end{matrix} * \text{SQ1} - \begin{matrix} 0.3629 \\ [0.0542] \\ [0.1561] \end{matrix} * \text{PCINCuECM\_PRC\_1}$		B11	
PCINCuECM_PRC	=	$\ln(\text{PCINCu\_PRC}) - \ln(\text{WAGEu\_PRC}) + 0.27 * \text{UEMP\%\_PRC\_1}$	
PCINCu_PRC	=	Per Capita Income of Urban Households	
WAGEu_PRC	=	Average Earnings of Urban Employed Persons	B67
UEMP%_PRC	=	Unemployment Rate	I701
<b>Residual Diagnostics</b>			
<i>sigma</i>	0.03214		
<i>R</i> <sup>2</sup>	0.9560		
No autocorrelation	<i>F</i> (4,35)	= 0.8715 [0.4907]	
No ARCH	<i>F</i> (4,31)	= 0.2334 [0.9174]	
Normality	<i>Chi</i> <sup>2</sup> (2)	= 13.554 [0.0011]**	
Homoscedasticity	<i>F</i> (9,29)	= 0.7352 [0.6739]	
RESET	<i>F</i> (1,38)	= 0.0158 [0.9007]	
<b>Stability</b>			
	<i>variance</i>		0.1851
	<i>joint parameter constancy</i>		1.0307
<b>1.2 Income: Rural</b>			
$\Delta \ln(\text{PCINCr\_PRC} * \text{POPr\_PRC}) = - \begin{matrix} 6.7149 \\ [0.0148] \\ [0.2138] \end{matrix} - \begin{matrix} 0.2400 \\ [0.1184] \\ [0.0618] \end{matrix} * \Delta^2 \text{UNEMP \%\_PRC\_2} + \begin{matrix} 0.1730 \\ [0.0251] \\ [0.0547] \end{matrix} * \Delta \Delta_3 \ln(\text{VA3\_PRC})$ $- \begin{matrix} 0.7460 \\ [0.0261] \\ [0.2961] \end{matrix} * \text{PCINCrECM\_PRC\_1}$		B12	
PCINCrECM_PRC	=	$\ln(\text{PCINCr\_PRC} * \text{POPr\_PRC} / 10000) - 0.3 * \ln(\text{VA1\_PRC}) - 0.45 * \ln(\text{VA2\_PRC\_1}) - 0.25 * \ln(\text{VA3\_PRC}) + 0.2 * \text{UEMP\%\_PRC\_1} + 0.3 * \text{SQ1} + 0.42 * \text{SQ2} + 0.13 * \text{SQ3}$	
PCINCr_PRC	=	Per Capita Income in Cash of Rural Household	
POPr_PRC	=	Population, Rural	I802
UEMP%_PRC	=	Unemployment Rate	I701
VA1_PRC	=	Value Added from the Primary Industry	B51

VA2_PRC	=	Value Added from the Secondary Industry	B53
VA3_PRC	=	Value Added from the Tertiary Industry	B55

**Residual Diagnostics**

<i>sigma</i>	0.0643		
<i>R</i> <sup>2</sup>	0.9661		
No autocorrelation	<i>F</i> (3,36)	=	0.7543 [0.5271]
No ARCH	<i>F</i> (3,33)	=	0.4236 [0.7373]
Normality	<i>Chi</i> <sup>2</sup> (2)	=	0.8760 [0.6453]
Homoscedasticity	<i>F</i> (6,32)	=	1.2704 [0.2985]
RESET	<i>F</i> (1,38)	=	0.1240 [0.7267]

**Stability**

<i>variance</i>	0.1445
<i>joint parameter constancy</i>	0.6479

**1.3 Consumption: Urban**

$$\begin{aligned} \Delta_2 \ln(\text{PCCONu\_PRC}) = & -0.433765 * \Delta_2 \ln(\text{PCCONu\_PRC\_2}) - \frac{0.0570}{\begin{bmatrix} 0.0982 \\ 0.2275 \end{bmatrix}} - \frac{0.03373 * (\text{SQ1} + \text{SQ2})}{\begin{bmatrix} 0.0284 \\ 0.0521 \end{bmatrix} \begin{bmatrix} 0.0139 \\ 0.0919 \end{bmatrix}} \\ & + \frac{0.41419 * \Delta_2 \ln(\text{PCINCu\_PRC})}{\begin{bmatrix} 0.0702 \\ 0.4373 \end{bmatrix}} + \frac{0.536864 * \Delta_4 \ln(\text{P\#C\_PRC})}{\begin{bmatrix} 0.0834 \\ 0.0781 \end{bmatrix}} - \frac{0.49138 * \text{PCCONuECM\_PRC\_2}}{\begin{bmatrix} 0.1067 \\ 0.0530 \end{bmatrix}} \quad \text{B13} \end{aligned}$$

$$\text{PCCONuECM\_PRC} = \ln(\text{PCCONu\_PRC}) - \ln(\text{PCINCu\_PRC}) + 0.005 * [\text{IRDD\%\_PRC} - 100 * \Delta_4 \ln(\text{P\#C\_PRC})]$$

PCCONu_PRC	=	Per Capita Living Expenditures of Urban Household in Cash	
PCINCu_PRC	=	Per Capita Income of Urban Households	B11
IRDD%_PRC	=	Demand Deposit Interest Rate	B75
P#C_PRC	=	Consumer Price Index	B61

**Residual Diagnostics**

<i>sigma</i>	0.0248		
<i>R</i> <sup>2</sup>	0.9232		
No autocorrelation	<i>F</i> (3,33)	=	2.5124 [0.0755]
No ARCH	<i>F</i> (3,30)	=	2.7165 [0.0622]
Normality	<i>Chi</i> <sup>2</sup> (2)	=	0.7686 [0.6809]
Homoscedasticity	<i>F</i> (9,26)	=	0.9385 [0.5097]
RESET	<i>F</i> (1,35)	=	0.8442 [0.3645]

**Stability**

<i>variance</i>	0.3386
<i>joint parameter constancy</i>	1.8855

**1.4 Consumption: Rural**

$$\begin{aligned} \Delta \ln(\text{PCCONr\_PRC}) = & - \frac{0.2142 * \Delta \ln(\text{PCCONr\_PRC\_1})}{(0.0950)} - \frac{0.2400}{(0.1190)} + \frac{0.1000 * \text{SQ1}}{(0.0335)} - \frac{0.1500 * \text{SQ2}}{(0.0647)} - \frac{0.0700 * \text{SQ3}}{(0.0638)} \\ & + \frac{0.5216 * \Delta \ln(\text{PCINCr\_PRC})}{(0.0777)} + \frac{0.6356 * \Delta \ln(\text{P\#C\_PRC})}{(0.2980)} - \frac{0.4589 * \text{PCCONrECM\_PRC\_1}}{(0.1580)} \quad \text{B14} \end{aligned}$$

PCCONrECM_PRC	=	$\ln(\text{PCCONr\_PRC}) - \ln(\text{PCINCr\_PRC})$	
PCCONr_PRC	=	Per Capita Living Expenditure of Rural Households in Cash	
PCINCr_PRC	=	Per Capita Income in Cash of Rural Household	B12
P#C_PRC	=	Consumer Price index (1992Q1=1)	B61

**Residual Diagnostics**

<i>sigma</i>	0.0418		
<i>R</i> <sup>2</sup>	0.9801		
No autocorrelation	<i>F</i> (3,27)	=	0.7066 [0.5565]
No ARCH	<i>F</i> (3,24)	=	2.4427 [0.0888]



P#GDP_PRC	=	GDP Deflator (1992Q1=1)	B66
P#M_PRC	=	Import Price Index (1992Q1=1)	B64

**Residual Diagnostics**

<i>sigma</i>	0.1871		
<i>R</i> <sup>2</sup>	0.6405		
No autocorrelation	<i>F</i> (3,30)	=	4.7339 [0.0081]**
No ARCH	<i>F</i> (3,27)	=	2.8344 [0.0569]
Normality	<i>Chi</i> <sup>2</sup> (2)	=	1.2876 [0.5253]
Homoscedasticity	<i>F</i> (17,15)	=	0.9528 [0.5421]
Sample Period 1994(1) to 2004(3)			

**2.2 Investment: Government Budgetary Investment, constant price**

$$\Delta_4 \ln(\text{GINVc\_PRC}) = 4.73494 - \begin{bmatrix} 0.5825 \\ 0.0669 \end{bmatrix} \begin{bmatrix} 0.3944 \\ 0.1435 \end{bmatrix} * \Delta \ln(\text{GINVc\_PRC\_4}) - \begin{bmatrix} 1.9814 \\ 0.2363 \\ 0.22396 \end{bmatrix} * \Delta \ln(\text{GDP\_PRC\_3 / GDPLR\_PRC\_3}) - 1.5481 * \text{SQ1} - \begin{bmatrix} 0.1821 \\ 0.1107 \end{bmatrix} \begin{bmatrix} 0.7009 \\ 0.0872 \end{bmatrix} * \text{GINVcECM\_PRC\_4}$$

$$\text{GINVcECM\_PRC} = \ln(\text{GINVc\_PRC}) - 0.35 * \ln(\text{GREV\_PRC/P\#GDP\_PRC}) - 0.25 * \text{UEMP\%\_PRC\_1} + 0.9 * \ln(\text{GDP\_PRC/GDPLR\_PRC})$$

GINVc_PRC	=	Government Budgetary Investment in 1992Q1 price	
GDP_PRC	=	Gross Domestic Product	I402
GDPLR_PRC	=	Long-Run Supply Trend of GDP	T51
GREV_PRC	=	Government Budgetary Revenue	T31
P#GDP_PRC	=	GDP Deflator	B66
UEMP%_PRC	=	Unemployment Rate	I701

**Residual Diagnostics**

<i>sigma</i>	0.1100		
<i>R</i> <sup>2</sup>	0.7150		
No autocorrelation	<i>F</i> (3,30)	=	0.6834 [0.5692]
No ARCH	<i>F</i> (3,27)	=	0.94795 [0.4313]
Normality	<i>Chi</i> <sup>2</sup> (2)	=	4.8536 [0.0883]
Homoscedasticity	<i>F</i> (7,25)	=	0.6903 [0.8290]
RESET	<i>F</i> (1,32)	=	0.0722 [0.7899]
Sample Period 1995(1) to 2004(2)			

**Stability**

<i>variance</i>	0.1904
<i>joint parameter constancy</i>	1.0760

**2.3 Foreign Direct Investments, in US Dollars**

$$\Delta_4 \ln(\text{FDI\$\_PRC}) = 0.2091 * \text{DST02Q204Q4\_2} - 1.1387 + \begin{bmatrix} 0.2270 \\ 0.0433 \end{bmatrix} * \Delta_4 \ln(\text{GDP\$\_PRC}) + \begin{bmatrix} 0.0418 \\ 0.0125 \\ 0.0635 \end{bmatrix} * (\text{IRL\%\_PRC\_1} - \text{IRL\%\_USA\_1}) + 0.15175 * \text{SQ2} + \begin{bmatrix} 0.0397 \\ 0.1174 \end{bmatrix} \begin{bmatrix} 4.1333 \\ 1.9510 \\ 0.1346 \end{bmatrix} * \Delta \ln(\text{P\#INV\_PRC\_1}) - \begin{bmatrix} 0.5481 \\ 0.0879 \\ 0.0405 \end{bmatrix} * \text{FDI\$ECM\_PRC\_4}$$

$$\text{FDI\$ECM\_PRC} = \ln(\text{FDI\$\_PRC}) - \ln(\text{GDP\$\_PRC}) + \ln(\text{P\#WX\$*ER\_PRC/P\#INV\_PRC})$$

FDI\\$_PRC	=	Foreign Direct Investment in PRC, in US\$	
GDP\\$_PRC	=	Gross Domestic Product, in million US\$	I404
IRL%_PRC	=	One-year Interest Rate on Lending	B77
IRL%_USA	=	Prime Lending Rate	E



P#INV_PRC	=	Investment Price Index	B65
P#WX\$	=	World Export Price Index	E
<b>Residual Diagnostics</b>			
<i>sigma</i>	0.1107		
<i>R</i> <sup>2</sup>	0.8357		
No autocorrelation	<i>F</i> (4,37)	= 1.6231 [0.1890]	
No ARCH	<i>F</i> (4,33)	= 1.8591 [0.1411]	
Normality	<i>Chi</i> <sup>2</sup> (2)	= 4.3979 [0.1109]	
Homoscedasticity	<i>F</i> (10,30)	= 2.2113 [0.0455]*	
RESET	<i>F</i> (1,40)	= 0.1422 [0.7081]	
Sample Period 1993(2) to 2004(4)			
<b>2.4 Gross Fixed Capital Formation</b>			
$\Delta_4$ INV_PRC	=	$6497.91 + \begin{bmatrix} 0.6926 \\ 11100 \\ 0.14893 \end{bmatrix} * \Delta_3 (\text{BINV\_PRC} + \text{GINV\_PRC} + \text{FDI\_PRC}) - \begin{bmatrix} 0.2576 \\ 0.0570 \\ 0.2328 \end{bmatrix} * \text{INVECM\_PRC\_4}$	T2
INVECM_PRC	=	INV_PRC - 1.3*BINV_PRC + GINV_PRC + FDI_PRC	
INV_PRC	=	Gross Fixed Capital Formation	
BINV_PRC	=	Business Sector Investment	B21
GINV_PRC	=	Government Budgetary Investment	B22
FDI_PRC	=	Foreign Direct Investment	E
<b>Residual Diagnostics</b>			
<i>sigma</i>	33820.4		
<i>R</i> <sup>2</sup>	0.8057		
No autocorrelation	<i>F</i> (3,27)	= 1.4835 [0.2413]	
No ARCH	<i>F</i> (3,24)	= 0.34245 [0.7948]	
Normality	<i>Chi</i> <sup>2</sup> (2)	= 5.1150 [0.0775]	
Homoscedasticity	<i>F</i> (4,25)	= 14.384 [0.000]*	
RESET	<i>F</i> (1,29)	= 2.8853 [0.1001]	
Sample Period 1995(4) to 2003(4)			
<b>3. Government Sector</b>			
<b>3.1 Government Revenue</b>			
$\Delta \ln(\text{GREV\_PRC})$	=	$0.0626 - 0.0700 * \text{SQ1} - 0.0146 * \text{SQ2} - 0.0400 * \text{SQ3} + 0.9547 * \Delta \ln(\text{GTAX\_PRC}) - 0.4590 * \text{GREVECM\_PRC\_1}$	T31
		$\begin{matrix} (0.0119) & (0.0135) & (0.0066) & (0.0093) & (0.0226) \\ & & & & (0.1986) \end{matrix}$	
GREVECM_PRC	=	ln(GREV_PRC) - ln(GTAX_PRC)	
GREV_PRC	=	Government Budgetary Revenue	
GTAX_PRC	=	Government Tax Revenue	
B31			
<b>Residual Diagnostics</b>			
<i>sigma</i>	0.1117		
<i>R</i> <sup>2</sup>	0.9980		
No autocorrelation	<i>F</i> (3,18)	= 0.2319 [0.8730]	
No ARCH	<i>F</i> (3,15)	= 0.1371 [0.9363]	
Normality	<i>Chi</i> <sup>2</sup> (2)	= 4.0680 [0.1308]	



RESET  $F(1,37) = 1.3280 [0.2565]$   
 Sample Period 1993(1) to 2004(2)

**Residual Diagnostics (for Trade)**

sigma	2131.8		variance	0.2946
R <sup>2</sup>	0.9207		joint parameter constancy	1.4146
No autocorrelation	$F(4,35) = 0.5587 [0.6941]$			
No ARCH	$F(4,31) = 0.3837 [0.8186]$			
Normality	$\text{Chi}^2(2) = 4.9080 [0.0859]$			
Homoscedasticity	$F(10,28) = 1.2283 [0.3163]$			
RESET	$F(1,38) = 0.5752 [0.4529]$			

Sample Period 1993(1) to 2004(2)

**3.3 Government Consumption**

$$\Delta_4 \ln(\text{GCON\_PRC}) = \begin{bmatrix} 0.3900 \\ 0.0608 \\ 0.3477 \end{bmatrix} + \begin{bmatrix} 0.1350 \\ 0.0503 \\ 0.3681 \end{bmatrix} * \Delta_3 \ln(\text{GEXP\_PRC\_1} - \text{GINV\_PRC\_1}) - \begin{bmatrix} 0.1875 \\ 0.0388 \\ 0.3683 \end{bmatrix} * \text{GCONECM\_PRC\_4} \quad \text{B32}$$

GCONECM\_PRC =  $\ln(\text{GCON\_PRC}) - \ln(\text{GREV\_PRC} - \text{GINV\_PRC}) + 0.5 * \ln(\text{TIME})$   
 GCON\_PRC = Government Consumption  
 GREV\_PRC = Government Revenue T31  
 GINV\_PRC = Government Budgetary Investment I105

**Residual Diagnostics**

sigma	0.0837		variance	0.2222
R <sup>2</sup>	0.3922		joint parameter constancy	0.7500
No autocorrelation	$F(3,37) = 0.0917 [0.9642]$			
No ARCH	$F(3,34) = 0.3079 [0.8195]$			
Normality	$\text{Chi}^2(2) = 1.9423 [0.3787]$			
Homoscedasticity	$F(4,35) = 0.6937 [0.6014]$			
RESET	$F(1,39) = 1.0410 [0.3139]$			

Sample Period 1993(2) to 2003(4)

**3.4 Government Expenditure**

$$\text{GEXP\_PRC} = \text{GINV\_PRC} + \text{EXP}[\ln(\text{GEXP\_PRC\_2} - \text{GINV\_PRC\_2}) + 0.3250 - \begin{bmatrix} 0.0764 \\ 0.0460 \end{bmatrix} * \text{SQ1} - \begin{bmatrix} 0.0958 \\ 0.1031 \end{bmatrix} * \text{SQ2} - \begin{bmatrix} 0.0450 \\ 0.4386 \end{bmatrix} * \text{SQ3} \\ + \begin{bmatrix} 0.5537 \\ 0.1430 \\ 0.0259 \end{bmatrix} * \Delta \ln(\text{GEXP\_PRC\_1} - \text{GINV\_PRC\_1}) - \begin{bmatrix} 0.3183 \\ 0.0733 \\ 0.2511 \end{bmatrix} * \text{GEXPECM\_PRC\_2}] \quad \text{T32}$$

GEXPECM\_PRC =  $\ln(\text{GEXP\_PRC\_1} - \text{GINV\_PRC\_1}) - \ln(\text{GREV\_PRC\_2}) - 0.01 * \text{UEMP\%\_PRC\_2}$   
 GEXP\_PRC = Government Expenditure  
 GINV\_PRC = Government Fixed Capital Formation I105  
 GCON\_PRC = Government Consumption B32  
 UEMP%\_PRC = Unemployment Rate I701

**Residual Diagnostics**

sigma	0.0605		variance	0.3124
R <sup>2</sup>	0.9752		joint parameter constancy	1.1927
No autocorrelation	$F(3,32) = 0.6097 [0.6136]$			
No ARCH	$F(3,29) = 0.3792 [0.7687]$			
Normality	$\text{Chi}^2(2) = 3.2000 [0.2019]$			
Homoscedasticity	$F(7,27) = 0.6334 [0.7242]$			
RESET	$F(1,34) = 0.7142 [0.4040]$			

Sample Period 1994(3) to 2004(3)

## 4. Trade

## 4.1 Exports, in US Dollars

$$\Delta \ln(X\$\_PRC) = -0.436144 - \begin{bmatrix} 0.0716 \\ 0.1228 \end{bmatrix} \begin{bmatrix} 0.390963 \\ 0.1548 \end{bmatrix} \Delta_4 \ln(X\$\_PRC\_1) + \begin{bmatrix} 0.7940 \\ 0.1103 \end{bmatrix} \Delta_4 \ln(WT\$\_PRC) - \begin{bmatrix} 0.415278 \\ 0.1262 \end{bmatrix} X\$ECM\_PRC\_4$$

B41

$$X\$ECM\_PRC = \ln(X\$\_PRC) - \ln(WT\$\_PRC\_1) - 0.2 * \ln(TIME)$$

$$X\$\_PRC = \text{Exports in US\$}$$

$$WT\$\_PRC = \text{World Imports from PRC, in US\$}$$

T43

**Residual Diagnostics**

<i>sigma</i>	0.0454		
<i>R</i> <sup>2</sup>	0.8941		
No autocorrelation	<i>F</i> (3,34)	=	1.9262 [0.1439]
No ARCH	<i>F</i> (3,31)	=	0.0808 [0.9700]
Normality	<i>Chi</i> <sup>2</sup> (2)	=	2.0832 [0.3529]
Homoscedasticity	<i>F</i> (6,30)	=	1.0225 [0.4299]
X-Homoscedasticity	<i>F</i> (9,27)	=	0.9524 [0.4985]
RESET	<i>F</i> (1,36)	=	1.4860 [0.2308]

Sample Period 1995(2) to 2005(2)

**Stability**

<i>variance</i>	0.1592
<i>joint parameter constancy</i>	0.6031

## 4.2 Imports, in US Dollars

$$\Delta \ln(M\$\_PRC) = \begin{bmatrix} 0.8337 \\ 0.0592 \\ 0.0923 \end{bmatrix} * \Delta \ln(X\$\_PRC) - \begin{bmatrix} 0.3399 \\ 0.0516 \\ 0.1013 \end{bmatrix} * \Delta_3 \ln(M\$\_PRC\_1) + \begin{bmatrix} 0.0700 \\ 0.0306 \\ 0.1667 \end{bmatrix} * SQ1 + \begin{bmatrix} 1.9955 \\ 0.3811 \\ 0.3957 \end{bmatrix} * \Delta_2 \Delta_4 \ln(P\#INV\_PRC) - \begin{bmatrix} 0.1903 \\ 0.0387 \\ 0.1538 \end{bmatrix} * M\$ECM\_PRC\_1$$

B42

$$M\$ECM\_PRC = \ln(M\$\_PRC) - 0.7 * \ln(X\$\_PRC\_1) - 0.3 * \ln(GDP\$\_PRC\_1 - X\$\_PRC\_1) - 2 * \ln(P\#M\_PRC\_1 / P\#GDP\_PRC\_1)$$

$$M\$\_PRC = \text{Imports, in million US\$}$$

$$X\$\_PRC = \text{Exports, in million US\$}$$

$$P\#INV\_PRC = \text{Investment Price Index}$$

$$GDP\$\_PRC = \text{Gross Domestic Product, in million US\$}$$

$$P\#M\_PRC = \text{Import Price Index}$$

$$P\#GDP\_PRC = \text{GDP Deflator}$$

B41

B65

I404

B64

B66

**Residual Diagnostics**

<i>sigma</i>	0.0554		
<i>R</i> <sup>2</sup>	—		
No autocorrelation	<i>F</i> (4,37)	=	0.3262 [0.8586]
No ARCH	<i>F</i> (4,33)	=	2.6483 [0.0507]
Normality	<i>Chi</i> <sup>2</sup> (2)	=	0.9646 [0.6174]
Homoscedasticity	<i>F</i> (9,31)	=	1.0690 [0.4120]
RESET	<i>F</i> (1,40)	=	0.0062 [0.9376]

Sample Period 1993(3) to 2004(4)

**Stability**

<i>variance</i>	0.0884
<i>joint parameter constancy</i>	1.3866

<b>4.3 Trade Balance</b>		
$TB\$\_PRC = (1 - SQ1 - SQ2 - SQ3) * [(X\$\_PRC - M\$\_PRC) + (X\$\_PRC\_1 - M\$\_PRC\_1) + (X\$\_PRC\_2 - M\$\_PRC\_2) + (X\$\_PRC\_3 - M\$\_PRC\_3)] + 7286.7 * (1 - SQ1 - SQ2 - SQ3) + 2232.8 * (1 - SQ1 - SQ2 - SQ3) * DST1999Q4$		T41
	(984.5) (880.6)	
TB\$_PRC	= Trade Balance, in million US\$	
X\$_PRC	= Exports, in million US\$	B41
M\$_PRC	= Imports, in million US\$	B42
<b>Residual Diagnostics</b>		
sigma	2784.65	
R <sup>2</sup>	0.6810	
Sample Period 1994(4) to 2004(3)		
<b>4.4 Current Account Balance</b>		
$CAB\$\_PRC = 0.6800 * TB\$\_PRC$		T42
	(0.0241)	
CAB\$_PRC	= Current Account Balance, in million US\$	
TB\$_PRC	= Trade Balance, in million US\$	
T41		
<b>Residual Diagnostics</b>		
sigma	2481.71	
R <sup>2</sup>	0.9440	
Sample Period 1992(3) to 2004(3)		
<b>4.5 Gross International Reserves</b>		
$\Delta \ln(GIR\$\_PRC) = 0.2173 * \Delta_3 \ln(GIR\$\_PRC\_1) + 0.09968 + 0.4240 * \Delta \ln(NFA\_PRC / ER\_PRC) + 0.0224 * DST2001Q2 - 0.1140 * GIR\$ECM\_PRC\_1$		T43
	(0.0254) (0.0353) (0.0782) (0.0079) (0.0365)	
GIR\$ECM_PRC	= ln(GIR\$_PRC) - 0.9*ln(1000*NFA_PRC/ER_PRC)	
GIR\$_PRC	= Gross International Reserves, in million US\$	
NFA_PRC	= Net Foreign Assets of the Banking Sector	T72
ER_PRC	= Exchange Rate	E
<b>Residual Diagnostics</b>		
sigma	0.0225	
R <sup>2</sup>	0.7986	
No autocorrelation	F(3,31) = 0.4032 [0.7517]	
No ARCH	F(3,28) = 0.8274 [0.4900]	
Normality	Chi <sup>2</sup> (2) = 0.6807 [0.7115]	
Homoscedasticity	F(7,26) = 1.9581 [0.1005]	
X-Homoscedasticity	F(13,20) = 1.3468 [0.2667]	
RESET	F(1,33) = 7.5850 [0.0095]**	
Sample Period 1994(4) to 2004(2)		
<b>5. GDP and the 3 Sectors</b>		
<b>5.1 Long-run Supply Trend of GDP</b>		
$GDPLR\_PRC = EXP[-0.9241 + 0.85 * \ln(K\_PRC) + 0.15 * \ln(EMP\_PRC)]$		T51
GDPLR_PRC	= Long-run Supply Trend of GDP	
K_PRC	= Stock of Fixed Investment Assets	I103
EMP_PRC	= Total Number of Employed Persons	B82

### 5.2 Value Added from the Primary Sector via deflator

$$\begin{aligned} \Delta_4 \ln(VA1\_PRC) = & \Delta_4 \ln(VA1c\_PRC) + \begin{bmatrix} 0.0800 \\ 0.0225 \\ 0.0658 \end{bmatrix} + \begin{matrix} 0.0750 * DST2004Q1 + \\ (0.0202) \end{matrix} + \begin{bmatrix} 0.03947 * SQ1 \\ 0.0187 \\ 0.0992 \end{bmatrix} + \begin{bmatrix} 0.1374 * SQ2 \\ 0.0295 \\ 0.0724 \end{bmatrix} \\ & + \begin{bmatrix} 1.0880 * \Delta_4 \ln(P\#C\_PRC) \\ 0.0602 \\ 0.0533 \end{bmatrix} - \begin{bmatrix} 0.6777 * [VA1c\_PRC\_3 / (VA2c\_PRC\_3 + VA3c\_PRC)] \\ 0.1667 \\ 0.0409 \end{bmatrix} \\ & - \begin{bmatrix} 0.6332 * [\Delta(P\#P\_PRC\_3) - \Delta(P\#C\_PRC\_3)] \\ 0.1987 \\ 0.3265 \end{bmatrix} - \begin{bmatrix} 0.4167 * VA1ECM\_PRC\_4 \\ 0.0910 \\ 0.1049 \end{bmatrix} \end{aligned}$$

B51

$$VA1ECM\_PRC = \ln(VA1\_PRC/VA1c\_PRC) - \ln(P\#C\_PRC)$$

$$VA1\_PRC = \text{Value Added from the Primary Sector}$$

$$VA1c\_PRC = \text{Value Added from the Primary Sector, in 1992Q1 price}$$

$$P\#C\_PRC = \text{Consumer Price Index (1992Q1=1)}$$

B52

B61

#### Residual Diagnostics

$$\sigma^2 = 0.0270$$

$$R^2 = 0.9384$$

$$\text{No autocorrelation } F(3,32) = 0.2255 [0.8780]$$

$$\text{No ARCH } F(3,29) = 0.0736 [0.9737]$$

$$\text{Normality } \chi^2(2) = 3.8019 [0.1494]$$

$$\text{Homoscedasticity } F(11,23) = 0.7095 [0.7177]$$

$$\text{RESET } F(1,34) = 2.5270 [0.1212]$$

Sample Period 1994(1) to 2004(3)

#### Stability

$$\text{variance} = 0.1546$$

$$\text{joint parameter constancy} = 1.6923$$

### 5.3 Value Added from the Primary Sector, constant price

$$\begin{aligned} \Delta \ln_2(VA1c\_PRC) = & -0.45868 * \Delta_2 \ln(VA1c\_PRC\_2) + \begin{bmatrix} 2.9000 \\ 0.0580 \\ 0.1730 \end{bmatrix} - \begin{matrix} 0.766867 * SQ1 - \\ 0.2751 \\ 0.0275 \end{matrix} + \begin{bmatrix} 0.0861 \\ 0.0861 \\ 0.1995 \end{bmatrix} - \begin{bmatrix} 0.61065 * SQ2 \\ 0.0706 \\ 0.0801 \end{bmatrix} \\ & - \begin{bmatrix} 0.0900 * \Delta \ln[(VA3\_PRC\_1 / VA3c\_PRC\_1) / (VA1\_PRC\_1 / VA1c\_PRC\_2)] \\ 0.0176 \\ 0.0825 \end{bmatrix} \\ & + \begin{bmatrix} 0.5700 * \Delta_3 [(VA2\_PRC\_1 + VA3\_PRC\_1) / GDP\_PRC\_1] - \\ 0.1011 \\ 0.1499 \end{bmatrix} - \begin{bmatrix} 0.37416 * VA1cECM\_PRC\_2 \\ 0.0356 \\ 0.0267 \end{bmatrix} \end{aligned}$$

B52

$$VA1cECM\_PRC = \ln(VA1c\_PRC) - 0.3 * \ln[GDP\_PRC / (VA1\_PRC / VA1c\_PRC)] + 0.6 * \ln[(VA3\_PRC / VA3c\_PRC) / (VA1\_PRC / VA1c\_PRC)] - 1.25 * [(VA2\_PRC\_2 + VA3\_PRC\_2) / GDP\_PRC\_2] - 0.1 * \ln[(VA2\_PRC\_2 / VA2c\_PRC\_2) / (VA1\_PRC\_2 / VA1c\_PRC\_2)]$$

$$VA1c\_PRC = \text{Value Added from the Primary Sector, in 1992Q1 price}$$

B55

$$VA3\_PRC = \text{Value Added from the Tertiary Sector}$$

B56

$$VA3c\_PRC = \text{Value Added from the Tertiary Sector, in 1992Q1 price}$$

$$VA1\_PRC = \text{Value Added from the Primary Sector}$$

B51

$$VA2\_PRC = \text{Value Added from the Secondary Sector}$$

B53

$$VA2c\_PRC = \text{Value Added from the Secondary Sector, in 1992Q1 price}$$

B54

$$GDP\_PRC = \text{Gross Domestic Product}$$

I402

**Residual Diagnostics**

<i>sigma</i>	0.0068	
<i>R</i> <sup>2</sup>	1.0000	
No autocorrelation	<i>F</i> (4,35)	= 1.4560 [0.2365]
No ARCH	<i>F</i> (4,31)	= 0.7622 [0.5579]
Normality	<i>Chi</i> <sup>2</sup> (2)	= 2.0247 [0.3634]
Homoscedasticity	<i>F</i> (10,28)	= 0.8344 [0.6004]
RESET	<i>F</i> (1,38)	= 0.0634 [0.8026]
Sample Period 1993(1) to 2004(2)		

**Stability**

<i>variance</i>	0.1622
<i>joint parameter constancy</i>	0.9644

**5.4 Value Added from the Secondary Sector via price deflator**

$$\begin{aligned} \Delta \ln(VA2\_PRC) = & \Delta \ln(VA2c\_PRC) - \begin{bmatrix} 0.3762 \\ 0.0856 \\ 0.4574 \end{bmatrix} * \Delta \ln(VA2\_PRC\_1 / VA2c\_PRC\_1) - \begin{bmatrix} 0.1087 \\ 0.0070 \\ 0.0579 \end{bmatrix} + \begin{bmatrix} 0.2796 \\ 0.0101 \\ 0.5021 \end{bmatrix} * SQ1 \\ & + \begin{bmatrix} 0.1085 \\ 0.0214 \\ 0.2836 \end{bmatrix} * SQ2 + \begin{bmatrix} 0.2239 \\ 0.0293 \\ 0.0923 \end{bmatrix} * \Delta_2 \ln(VA1\_PRC\_2 / VA1c\_PRC\_2) + \begin{bmatrix} 1.6246 \\ 0.2056 \\ 0.0258 \end{bmatrix} * \Delta \ln(P\#INV\_PRC) \\ & - \begin{bmatrix} 0.2422 \\ 0.0682 \\ 0.7048 \end{bmatrix} * VA2ECM\_PRC\_1 \end{aligned}$$

VA2ECM_PRC	=	ln(VA2_PRC) - ln(VA2c_PRC) - ln(P#INV_PRC) + 0.05*ln[(VA2c_PRC_1/EMP2_PRC_1)/WAGEu_PRC_1]	
VA2_PRC	=	Value Added From the Secondary Sector	B54
VA2c_PRC	=	Value Added From the Secondary Sector, in 1992Q1 price	B51
VA1_PRC	=	Value Added From the Primary Sector	B52
VA1c_PRC	=	Value Added From the Primary Sector, in 1992Q1 price	B65
P#INV_PRC	=	Investment Price Index (1992Q1=1)	B82
EMP_PRC	=	Number of Employed Persons	B67
WAGEu_PRC	=	Average Earnings of Urban Employed Persons	

**Residual Diagnostics**

<i>sigma</i>	0.0260	
<i>R</i> <sup>2</sup>	0.9576	
No autocorrelation	<i>F</i> (4,35)	= 0.9404 [0.4521]
No ARCH	<i>F</i> (4,31)	= 0.4297 [0.7860]
Normality	<i>Chi</i> <sup>2</sup> (2)	= 0.2507 [0.8822]
Homoscedasticity	<i>F</i> (10,28)	= 2.0936 [0.0604]
X-Homoscedasticity	<i>F</i> (20,18)	= 1.1393 [0.3930]
RESET	<i>F</i> (1,38)	= 6.5556 [0.0146]

**Stability**

<i>variance</i>	0.0675
<i>joint parameter constancy</i>	1.4474

**5.5 Value Added from the Secondary Sector, constant price (as mainly production function)**

$$\begin{aligned} \Delta \ln(VA2c\_PRC) = & 1.05997 - \begin{bmatrix} 0.0884 \\ 0.0502 \end{bmatrix} - \begin{bmatrix} 0.02258 \\ 0.0076 \end{bmatrix} * SQ3 + \begin{bmatrix} 0.69845 \\ 0.0236 \\ 0.4580 \end{bmatrix} * \Delta \ln(VA3c\_PRC) + \begin{bmatrix} 0.1373 \\ 0.0713 \\ 0.4062 \end{bmatrix} * \Delta_2 [(X\_PRC + M\_PRC) / GDP\_PRC] \\ & + \begin{bmatrix} 0.22867 \\ 0.0912 \\ 0.0411 \end{bmatrix} * \Delta_4 \ln[(K\_PRC\_1 / P\#INV\_PRC\_1) * (VA2\_PRC\_1 / GDP\_PRC\_1)] \\ & - \begin{bmatrix} 0.4100 \\ 0.0333 \\ 0.0509 \end{bmatrix} * VA2cECM\_PRC\_1 \end{aligned}$$

VA2cECM_PRC	=	ln(VA2c_PRC) - 0.45 * (K_PRC / P#INV_PRC) * (VA2c_PRC / GDP_PRC) - ln(EMP2_PRC) - 0.25 * (X_PRC + M_PRC) / GDP_PRC
-------------	---	--

VA2c_PRC	=	Value Added from the Secondary Sector, in 1992Q1 Price	B56
VA3c	=	Value Added from the Tertiary Sector, in 1992Q1 Price	I301
X_PRC	=	Exports	I302
M_PRC	=	Imports	I402
GDP_PRC	=	Gross Domestic Product	I103
K_PRC	=	Stock of Fixed Investment Assets	B65
P#INV_PRC	=	investment Price index	B53
VA2_PRC	=	Value Added from the Secondary Sector	B83
EMP2_PRC	=	Employment in the Secondary Sector	

**Residual Diagnostics**

<i>sigma</i>	0.0210	
<i>R</i> <sup>2</sup>	0.9917	
No autocorrelation	<i>F</i> (3,34)	= 2.5543 [0.0716]
No ARCH	<i>F</i> (3,31)	= 2.7923 [0.0568]
Normality	<i>Chi</i> <sup>2</sup> (2)	= 0.9171 [0.6322]
Homoscedasticity	<i>F</i> (9,27)	= 2.9296 [0.0147]*
X-Homoscedasticity	<i>F</i> (19,17)	= 1.2091 [0.3494]
RESET	<i>F</i> (1,36)	= 3.6097 [0.0655]

**Stability**

<i>variance</i>	0.2489
<i>joint parameter constancy</i>	1.9469*

**5.6 Value Added from the Tertiary Sector via Price Deflator**

$$\ln(VA3\_PRC) = \ln(VA3\_PRC\_4) + \Delta_4 \ln(VA3c\_PRC) - \begin{bmatrix} 0.3250 \\ 0.0948 \\ 0.0733 \end{bmatrix} - \begin{bmatrix} 0.0700 \\ 0.0111 \\ 0.2436 \end{bmatrix} * SQ2 - \begin{bmatrix} 0.0631 \\ 0.0142 \\ 0.2231 \end{bmatrix} * SQ3$$

$$+ \begin{bmatrix} 0.7390 \\ 0.0324 \\ 0.0679 \end{bmatrix} * \Delta_3 \ln(P\#C\_PRC\_1) + \begin{bmatrix} 0.0619 \\ 0.0175 \\ 0.5138 * \end{bmatrix} * \Delta_2 \ln(P\#M\_PRC\_2) - \begin{bmatrix} 0.0623 \\ 0.0232 \\ 0.0876 \end{bmatrix} * \Delta_4 \ln(WAGEu\_PRC)$$

$$+ \begin{bmatrix} 0.1185 \\ 0.0269 \\ 0.4537 \end{bmatrix} * \Delta \ln(WAGEu\_PRC\_3) + \begin{bmatrix} 0.00066 \\ 0.00011 \\ 0.06605 \end{bmatrix} * (VA3\_PRC\_3 / GDP\_PRC\_3) - \begin{bmatrix} 0.3073 \\ 0.0840 \\ 0.0736 \end{bmatrix} * VA3ECM\_PRC\_4$$

$$VA3ECM\_PRC = \ln(VA3\_PRC/VA3c\_PRC) - 0.75*\ln(P\#C\_PRC) - 0.15*\ln(WAGEu\_PRC) - 0.1*\ln(P\#M\_PRC)$$

VA3_PRC	=	Value Added from the Tertiary Sector	
VA3c_PRC	=	Value Added from the Tertiary Sector, in 1992Q1 Price	B56
P#C_PRC	=	Consumer Price index (1992Q1=1)	B61
P#M_PRC	=	Import Price index	B64
WAGEu_PRC	=	Average Earnings of Urban Employed Persons	B11
GDP_PRC	=	Gross Domestic Product	I402

**Residual Diagnostics**

<i>sigma</i>	0.0075	
<i>R</i> <sup>2</sup>	0.9675	
No autocorrelation	<i>F</i> (3,28)	= 1.7362 [0.1824]
No ARCH	<i>F</i> (3,25)	= 0.5734 [0.6378]
Normality	<i>Chi</i> <sup>2</sup> (2)	= 1.1380 [0.5661]
Homoscedasticity	<i>F</i> (14,16)	= 0.4648 [0.9216]
RESET	<i>F</i> (1,30)	= 3.2889 [0.0798]
Sample Period 1994(4) to 2004(3)		

**Stability**

<i>variance</i>	0.1228
<i>joint parameter constancy</i>	1.6624



### 5.7 Value Added from the Tertiary Sector, constant price

$$\begin{aligned} \Delta_4 \ln(VA3c\_PRC) = & 0.0330 - 0.0370 * DSTO3Q203Q3 - 0.0450 * SQ1 + 0.0370 * SQ2 - 0.1110 * VA3cECM\_PRC\_4 \\ & (0.0133) (0.0051) (0.0106) (0.0110) (0.0230) \\ & - 0.2100 * \Delta \ln[(VA2\_PRC\_1 / VA2c\_PRC\_1) / (VA3\_PRC\_1 / VA3c\_PRC\_1)] \\ & (0.0486) \\ & + 0.0300 * \Delta \ln[(PCINCr\_PRC\_3 * POPr\_PRC\_3 + PCINCu\_PRC\_3 * POPu\%\_PRC\_3 * 0.01) / \\ & (0.0188) \\ & (VA3\_PRC\_3 / VA3c\_PRC\_3)] \end{aligned} \quad B56$$

$$VA3cECM\_PRC = \ln(VA3c\_PRC) - \ln[(PCINCr\_PRC * POPr\_PRC + PCINCu\_PRC * POPu\%\_PRC * 0.01) / (VA3\_PRC / VA3c\_PRC)] + 0.35 * \ln[(VA1\_PRC / VA1c\_PRC) / (VA3\_PRC / VA3c\_PRC)]$$

VA3c\_PRC	=	Value Added from the Tertiary Sector, in 1992Q1 Price	
VA2\_PRC	=	Value Added from the Secondary Sector	B53
VA2c\_PRC	=	Value Added from the Secondary Sector, in 1992Q1 Price	B54
VA3\_PRC	=	Value Added from the Tertiary Sector	B55
VA1\_PRC	=	Value Added from the Primary Sector	B51
VA1c\_PRC	=	Value Added from the Primary Sector, in 1992Q1 Price	B52
PCINCr\_PRC	=	Per Capita Income in Cash of Rural Household	B13
POPr\_PRC	=	Population, Rural	I802
PCINCu\_PRC	=	Per Capita Income of Urban Households	B12
POPu\%\_PRC	=	Urban Population over Total Population	E

#### Residual Diagnostics

<i>sigma</i>	0.0079	
<i>R</i> <sup>2</sup>	0.6833	
No autocorrelation	<i>F</i> (3,30) = 1.1587 [0.3418]	
No ARCH	<i>F</i> (3,27) = 0.3660 [0.7781]	
Normality	<i>Chi</i> <sup>2</sup> (2) = 5.3315 [0.0695]	
Homoscedasticity	<i>F</i> (11,21) = 1.0275 [0.4577]	
RESET	<i>F</i> (1,32) = 4.0517 [0.0526]	
Sample Period 1995(1) to 2004(4)		

#### Stability

<i>variance</i>	0.2073
<i>joint parameter constancy</i>	1.5323

### 5.8 Gross National Product

$$GNP\_PRC = 1.0 * [1 - SQ1 - SQ2 - SQ3] * [GDP\_PRC + GDP\_PRC\_1 + GDP\_PRC\_2 + GDP\_PRC\_3] + NFIA\_PRC \quad T52$$

GNP\_PRC	=	Gross National Product	
GDP\_PRC	=	Gross Domestic Product	I502
NFIA\_PRC	=	Net Factor Income from Abroad	E

## 6. Price

### 6.1 Consumer Price Index

$$\begin{aligned} \Delta \ln(P\#C\_PRC) = & - \begin{bmatrix} 0.00197 \\ 0.00175 \\ 0.1286 \end{bmatrix} + \begin{bmatrix} 0.0228 \\ 0.0030 \\ 0.8760 ** \end{bmatrix} * SQ1 + \begin{bmatrix} 0.4096 \\ 0.0738 \\ 0.0836 \end{bmatrix} * \Delta(P\#P\_PRC) + \begin{bmatrix} 0.0523 \\ 0.0050 \\ 0.0677 \end{bmatrix} * \Delta_2 \ln(WAGEu\_PRC) \\ & + \begin{bmatrix} 0.0331 \\ 0.0127 \\ 0.0533 \end{bmatrix} * \Delta^2 \ln(P\#M\_PRC) - \begin{bmatrix} 0.3128 \\ 0.0304 \\ 0.1052 \end{bmatrix} * P\#CECM\_PRC\_1 \end{aligned} \quad B61$$

$P\#CECM\_PRC$	=	$\ln(P\#C\_PRC) - 0.85*\ln(P\#P\_PRC) - 0.15*\ln(P\#M\_PRC) +$	
$0.2*\ln(GDPLR\_PRC\_2/$		$GDP\_PRC\_2)$	
$P\#C\_PRC$	=	Consumer Price Index (1992Q1=1)	
$P\#P\_PRC$	=	Ex-Factory Price Index of Industrial Products (1992Q1=1)	B62
$WAGEu\_PRC$	=	Average Earnings of Urban Employed Persons	B11
$P\#M\_PRC$	=	Import Price Index (1992Q1=1)	B64
$GDPLR\_PRC$	=	Long-Run Supply Trend of GDP	T51
$GDP\_PRC$	=	Gross Domestic Product	I402

**Residual Diagnostics**

<i>sigma</i>	0.0085		
$R^2$	0.9280		
No autocorrelation	$F(3,34)$	=	1.2935 [0.2924]
No ARCH	$F(3,31)$	=	0.2155 [0.8849]
Normality	$\chi^2(2)$	=	5.9130 [0.0520]
Homoscedasticity	$F(9,27)$	=	0.3486 [0.9493]
X-Homoscedasticity	$F(19,17)$	=	0.6461 [0.8216]
RESET	$F(1,36)$	=	3.3072 [0.0773]
Sample Period 1993(1) to 2003(3)			

**Stability**

<i>variance</i>	0.1676
joint parameter constancy	1.7284

**6.2 Industrial Products Price Index**

$$\Delta \ln(P\#P\_PRC) = \begin{matrix} 0.5459 \\ 0.1480 \\ 0.1940 \end{matrix} * \Delta \ln(P\#P\_PRC\_1) + \begin{matrix} 0.02122 \\ 0.0077 \\ 0.1658 \end{matrix} + \begin{matrix} 0.4362 \\ 0.4210 \\ 0.0480 \end{matrix} * \Delta \ln(P\#INV\_PRC) - \begin{matrix} 0.1178 \\ 0.0428 \\ 0.1470 \end{matrix} * P\#PECM\_PRC\_1$$

B62

$$P\#PECM\_PRC = \ln(P\#P\_PRC) - 0.2*\ln(P\#M\_PRC\_1) - 0.05*\ln(WAGEu\_PRC*EMP2\_PRC/VA2\_PRC) - 0.7*\ln(P\#INV\_PRC) - 0.05*(UCC\%\_PRC/100)$$

$P\#P\_PRC$	=	Ex-Factory Price Index Of Industrial Products	
$P\#M\_PRC$	=	Import Price Index	
$WAGEu\_PRC$	=	Average Earnings Of Urban Employed Persons	B11
$EMP2\_PRC$	=	Employment In The Secondary Sector	B83
$VA2\_PRC$	=	Value Added From The Secondary Sector	B53
$P\#INV\_PRC$	=	Investment Price Index	B65
$UCC\%\_PRC$	=	User Cost Of Capital	I102

**Residual Diagnostics**

<i>sigma</i>	0.0069		
$R^2$	0.6126		
No autocorrelation	$F(3,28)$	=	1.11433 [0.3488]
No ARCH	$F(3,25)$	=	0.1899 [0.9023]
Normality	$\chi^2(2)$	=	0.5816 [0.7477]
Homoscedasticity	$F(6,24)$	=	0.68322 [0.6648]
RESET	$F(1,30)$	=	0.07782 [0.7822]
Sample Period 1995(2) to 2003(4)			

**Stability**

<i>variance</i>	0.1393
joint parameter constancy	0.63711

### 6.3 Export Price Index

$$\Delta \ln(P\#X\_PRC) = - \begin{bmatrix} 0.0400 \\ 0.0079 \\ 0.0895 \end{bmatrix} + \begin{bmatrix} 0.2379 \\ 0.0825 \\ 0.0893 \end{bmatrix} * \Delta \ln(P\#M\_PRC) + \begin{bmatrix} 0.7550 \\ 0.1809 \\ 0.3048 \end{bmatrix} * \Delta_2 \ln(P\#P\_PRC) - \begin{bmatrix} 0.3498 \\ 0.0592 \\ 0.0985 \end{bmatrix} * P\#XECM\_PRC\_1 \quad B63$$

$$P\#XECM\_PRC = \ln(P\#X\_PRC) - 0.7 * \ln(P\#M\_PRC) - 0.3 * \ln(P\#P\_PRC\_1) - 0.45 * DSH1998Q1$$

P#X\_PRC = Export Price Index (1992Q1=1)  
 P#M\_PRC = Import Price Index (1992Q1=1) B64  
 P#P\_PRC = Ex-Factory Price Index of Industrial Products (1992Q1=1) B62

#### Residual Diagnostics

sigma	0.0301	
R <sup>2</sup>	0.6345	
No autocorrelation	F(3,35)	= 0.6470 [0.5901]
No ARCH	F(3,32)	= 0.6922 [0.5636]
Normality	Chi <sup>2</sup> (2)	= 3.3971 [0.1829]
Homoscedasticity	F(6,31)	= 0.5278 [0.7828]
X-Homoscedasticity	F(9,28)	= 1.4585 [0.2118]
RESET	F(1,37)	= 0.0819 [0.7763]
Sample Period 1994(2) to 2004(3)		

#### Stability

variance	0.1676
joint parameter constancy	0.8396

### 6.4 Import Price Index

$$\Delta \ln(P\#M\_PRC) = - \begin{bmatrix} 0.49818 \\ 0.1087 \\ 0.3130 \end{bmatrix} * \Delta \ln(P\#M\_PRC\_1) - \begin{bmatrix} 0.0624 \\ 0.0157 \\ 0.0940 \end{bmatrix} * SQ1 + \begin{bmatrix} 0.9369 \\ 0.0868 \\ 0.2385 \end{bmatrix} * \Delta \ln(P\#X\_PRC) + \begin{bmatrix} 0.653423 \\ 0.1204 \\ 0.3857 \end{bmatrix} * \Delta \ln(P\#X\_PRC\_1) \\
 - \begin{bmatrix} 0.185885 \\ 0.0694 \\ 0.1491 \end{bmatrix} * \Delta_2 \ln(P\#WX\$\_2 * ER\_PRC\_2) - \begin{bmatrix} 0.107112 \\ 0.0337 \\ 0.0976 \end{bmatrix} * P\#MECM\_PRC\_1 \quad B64$$

$$P\#MECM\_PRC = \ln(P\#M\_PRC) - 0.25 * \ln(P\#WX\$ * ER\_PRC) - 0.75 * \ln(P\#X\_PRC\_1) + 0.2$$

P#M\_PRC = Import Price Index (1992Q1=1)  
 P#X\_PRC = Export Price Index (1992Q1=1) B63  
 P#WX\$ = World Export Price Index (1992Q1=1) E

#### Residual Diagnostics

sigma	0.0426	
R <sup>2</sup>	---	
No autocorrelation	F(3,31)	= 1.7487 [0.1775]
No ARCH	F(3,28)	= 0.7310 [0.5422]
Normality test	Chi <sup>2</sup> (2)	= 4.4354 [0.1089]
Homoscedasticity	F(11,22)	= 2.0528 [0.0728]
RESET	F(1,33)	= 0.2997 [0.5878]
Sample Period 1993(1) to 2002(4)		

#### Stability

variance	0.1528
joint parameter constancy	1.5135

## 6.5 Investment Price Index

$$\begin{aligned} \Delta_2 \ln(P\#INV\_PRC) = & \begin{bmatrix} 0.2308 \\ 0.03386 \\ 0.02899 \end{bmatrix} * \Delta_2 \ln(P\#INV\_PRC\_2) + \begin{bmatrix} 0.1522 \\ 0.0091 \\ 0.0736 \end{bmatrix} + \begin{bmatrix} 0.0022 \\ 0.0011 \\ 0.0754 \end{bmatrix} * SQ1 \\ & + \begin{bmatrix} 0.0043 \\ 0.0020 \\ 0.0383 \end{bmatrix} * \Delta_4 \ln(BINV\_PRC - GINV\_PRC) + \begin{bmatrix} 0.0606 \\ 0.0115 \\ 0.1235 \end{bmatrix} * [\Delta_2(P\#P\_PRC\_1) - \Delta_2(P\#C\_PRC\_1)] \\ & - \begin{bmatrix} 0.0032 \\ 0.0010 \\ 0.1646 \end{bmatrix} * \Delta^2( IRL\%\_PRC) + \begin{bmatrix} 0.0465 \\ 0.0048 \\ 0.0882 \end{bmatrix} * \Delta[(BINV\_PRC\_1 + GINV\_PRC\_1) / GDP\_PRC\_1 \\ & + (BINVc\_PRC\_2 + GINV\_PRC\_2) / GDP\_PRC + (BINV\_PRC\_3 + GINV\_PRC\_3) / GDP\_PRC\_3 \\ & + (BINV\_PRC\_4 + GINV\_PRC\_4) / GDP\_PRC\_4] - \begin{bmatrix} 0.4861 \\ 0.0233 \\ 0.0822 \end{bmatrix} * P\#INVECM\_PRC\_2 \end{aligned}$$

B65

$$P\#INVECM\_PRC = \ln(P\#INV\_PRC) - 0.35 * \ln[0.25(VA2\_PRC/VA2c\_PRC + VA2\_PRC\_1/VA2c\_PRC\_1 + VA2\_PRC\_2/VA2c\_PRC\_2 + VA2\_PRC\_3/VA2c\_PRC\_3) - 0.05 * \ln(P\#M\_PRC\_1) + 0.003 * IRL\%\_PRC]$$

P#INV_PRC	=	Price index of investments in Fixed Assets (1992Q1=1)	
BINV_PRC	=	Business Sector Investment	
GINV_PRC	=	Government Budgetary Investment	
P#P_PRC	=	Ex-Factory Price index of Industrial Products (1992Q1=1)	B62
P#C_PRC	=	Consumer Price Index (1992Q1=1)	B61
VA2_PRC	=	Value Added from Secondary Sector	B53
VA2c_PRC	=	Value Added from Secondary Sector in 1992Q1 price	B54
P#M_PRC	=	Import Price Index (1992Q1=1)	B64
IRL%_PRC	=	One-year Interest Rate on Deposits (%)	B77

### Residual Diagnostics

sigma	0.0029	
R <sup>2</sup>	0.9915	
No autocorrelation	F(3,31)	= 2.0645 [0.1252]
No ARCH	F(3,28)	= 0.6056 [0.6169]
Normality test	Chi <sup>2</sup> (2)	= 1.9081 [0.3852]
Homoscedasticity	F(13,20)	= 0.48945 [0.9056]
RESET	F(1,33)	= 0.3151 [0.5783]
Sample Period 1993(3) to 2003(4)		

### Stability

variance	0.1805
joint parameter constancy	1.2004

### 6.6 GDP Deflator

$$\Delta \ln(P \# GDP\_PRC) = - \begin{matrix} 0.0027 \\ 0.0004 \\ 0.2530 \end{matrix} + \begin{matrix} 0.0023 \\ 0.0008 \\ 0.0882 \end{matrix} * SQ2 + \begin{matrix} 1.01892 \\ 0.0065 \\ 0.1008 \end{matrix} * \Delta \ln[(VA1\_PRC + VA2\_PRC + VA3\_PRC) / GDPc\_PRC]$$

$$- \begin{matrix} 1.49945 \\ 0.1357 \\ 0.5280 \end{matrix} * P \# GDPECM\_PRC\_1$$

B66

P#GDPECM\_PRC = ln(P#GDP\_PRC) - ln[(VA1c\_PRC + VA2c\_PRC + VA3c\_PRC)/GDPc\_PRC]

- P#GDP\_PRC = GDP Deflator (1992Q1=1) B51
- VA1\_PRC = Value Added from the Primary Sector B53
- VA2\_PRC = Value Added from the Secondary Sector B55
- VA3\_PRC = Value Added from the Tertiary Sector I401
- GDPc\_PRC = Gross Domestic Product in 1992Q1 Price

#### Residual Diagnostics

sigma	0.0017	
R <sup>2</sup>	0.9992	
No autocorrelation	F(3,33)	= 0.5620 [0.6439]
No ARCH	F(3,30)	= 0.1049 [0.9565]
Normality test	Chi <sup>2</sup> (2)	= 19.821 [0.0000]*
Homoscedasticity	F(8,27)	= 2.6285 [0.0286]
RESET	F(1,35)	= 0.5725 [0.4543]
Sample Period 1994(4) to 2004(3)		

#### Stability

variance	0.2816
joint parameter constancy	1.7739*

### 6.7 Wages: Urban

$$\Delta \ln(WAGEu\_PRC) = - \begin{matrix} 0.3056 \\ 0.1364 \\ 0.2345 \end{matrix} * \Delta \ln(WAGEu\_PRC\_1) + 0.1130 - \begin{matrix} 0.5418 \\ 0.0512 \\ 0.6877* \end{matrix} * SQ1 - \begin{matrix} 0.4748 \\ 0.0513 \\ 0.2218 \end{matrix} * SQ2 - \begin{matrix} 0.3699 \\ 0.0188 \\ 0.1821 \end{matrix} * SQ3$$

$$+ \begin{matrix} 0.0593 \\ 0.0124 \\ 0.2717 \end{matrix} * DST1999Q1 - \begin{matrix} 0.28266 \\ 0.0104 \\ 0.2001 \end{matrix} * WAGEuECM\_PRC\_1$$

B67

WAGEuECM\_PRC = ln(WAGEu\_PRC) - ln[(VA2\_PRC + VA3\_PRC) / (EMP2\_PRC + EMP3\_PRC)]

- WAGEu\_PRC = Average Earnings of Urban Employed Persons B53
- VA2\_PRC = Value Added From the Secondary Sector B55
- VA3\_PRC = Value Added From the Tertiary Sector B83
- EMP2\_PRC = Number of Employed Persons in the Secondary Sector B84
- EMP3\_PRC = Number of Employed Persons in the Tertiary Sector

#### Residual Diagnostics

sigma	0.0429	
R <sup>2</sup>	—	
No autocorrelation	F(4,35)	= 0.5219 [0.7202]
No ARCH	F(4,31)	= 0.3452 [0.8453]
Normality	Chi <sup>2</sup> (2)	= 2.6989 [0.2594]
Homoscedasticity	F(8,30)	= 0.9935 [0.4609]
RESET	F(1,30)	= 0.2220 [0.6402]
Sample Period 1992(2) to 2003(3)		

#### Stability

variance	0.0433
joint parameter constancy	1.6388

## 7. Monetary Sector

### 7.1 M0

$$\Delta \ln(M0\_PRC) = \frac{0.9593}{(0.0828)} * \Delta \ln(M1\_PRC) - \frac{0.0666}{(0.0076)} * SQ2 - \frac{0.28425}{(0.01718)} * MOECM\_PRC\_1 \quad T71$$

$$MOECM\_PRC = \ln(M0\_PRC) - \ln[0.59 - 0.08 * \ln(TIME)] * M1\_PRC\_1$$

$$M0\_PRC = \text{Cash Issue}$$

$$M1\_PRC = \text{Narrow Money} \quad B71$$

### 7.2 M1

$$\begin{aligned} \Delta \ln(M1\_PRC) = & \Delta \ln(P\#GDP\_PRC) + \begin{bmatrix} 0.20675 \\ 0.0622 \\ 0.0512 \end{bmatrix} - \begin{bmatrix} 0.1900 \\ 0.0140 \\ 0.2139 \end{bmatrix} * SQ1 + \begin{bmatrix} 0.2300 \\ 0.0365 \\ 0.3714 \end{bmatrix} * SQ2 + \begin{bmatrix} 0.2689 \\ 0.0559 \\ 0.5319 \end{bmatrix} * \Delta \ln(GDPc\_PRC\_1) \\ & + \begin{bmatrix} 0.1100 \\ 0.0530 \\ 0.0661 \end{bmatrix} * \Delta_2(MBS\_PRC\_2 / MB\_PRC\_2) - \begin{bmatrix} 4.7700 \\ 1.5790 \\ 0.0378 \end{bmatrix} * \Delta_4 \ln(P\#C\_PRC\_1) - \begin{bmatrix} 0.1634 \\ 0.0551 \\ 0.0447 \end{bmatrix} * M1ECM\_PRC\_1 \quad B71 \end{aligned}$$

$$M1ECM\_PRC = \ln(M1\_PRC / P\#GDP\_PRC) - \ln(GDPc\_PRC) + 0.3 * [IRDD\%\_PRC - 100 * r_4 \ln(P\#C\_PRC)]$$

$$M1\_PRC = \text{Narrow Money}$$

$$P\#GDP\_PRC = \text{GDP Deflator} \quad B66$$

$$GDPc\_PRC = \text{GDP, in 1992Q1 Price} \quad I501$$

$$MBS\_PRC = \text{Base Money Supply} \quad B74$$

$$MB\_PRC = \text{Base Money} \quad I602$$

$$IRDD\%\_PRC = \text{Demand Deposit Interest Rate} \quad B75$$

$$P\#C\_PRC = \text{Consumer Price Index (1992Q1=1)} \quad B61$$

#### Residual Diagnostics

<i>sigma</i>	0.0190	
<i>R</i> <sup>2</sup>	0.9462	
No autocorrelation	<i>F</i> (3,34)	= 0.2834 [0.8370]
No ARCH	<i>F</i> (3,31)	= 0.2945 [0.8290]
Normality	<i>Chi</i> <sup>2</sup> (2)	= 1.5510 [0.4605]
Homoscedasticity	<i>F</i> (10,26)	= 0.6276 [0.7769]
RESET	<i>F</i> (1,36)	= 1.0501 [0.3123]
Sample Period 1994(1) to 2004(4)		

#### Stability

<i>variance</i>	0.1262
<i>joint parameter constancy</i>	1.4399

### 7.3 M2

$$\begin{aligned} M2\_PRC = & M1\_PRC + 2 * M2\_PRC\_1 - 2 * M1\_PRC\_1 - M2\_PRC\_2 + M1\_PRC\_2 - \begin{bmatrix} 172577 \\ 24010 \\ 0.0850 \end{bmatrix} - \begin{bmatrix} 116978 \\ 29520 \\ 0.1138 \end{bmatrix} * SQ1 \\ & - \begin{bmatrix} 7541.42 \\ 1585 \\ 0.1643 \end{bmatrix} * \Delta^2(100 * UEMP\%\_PRC\_1) - \begin{bmatrix} 173463 \\ 759700 \\ 0.2408 \end{bmatrix} * \Delta \Delta_4 \ln(P\#C\_PRC\_1) + \begin{bmatrix} 26928.2 \\ 8229 \\ 0.0701 \end{bmatrix} * \Delta_4 IRD\%\_PRC \\ & - \begin{bmatrix} 0.7933 \\ 0.0654 \\ 0.0643 \end{bmatrix} * M2ECM\_PRC\_1 \quad B72 \end{aligned}$$

M2ECM_PRC	=	$\Delta(M2\_PRC - M1\_PRC) - 1.5*PSAV\_PRC - 13300*IRD\%\_PRC$	
M2_PRC	=	Broad Money	
M1_PRC	=	Narrow Money	B71
UEMP%_PRC	=	Unemployment Rate (%)	I701
P#C_PRC	=	Consumer Price Index (1992Q1=1)	B61
IRD%_PRC	=	One-Year Interest Rate on Deposits	B76
PSAV_PRC	=	Potential Savings Deposit	I601
<b>Residual Diagnostics</b>			
<i>sigma</i>		79879.9	
<i>R</i> <sup>2</sup>		0.8503	
No autocorrelation	<i>F</i> (3,34)	= 0.8149 [0.4946]	
No ARCH	<i>F</i> (3,31)	= 0.7819 [0.5131]	
Normality	<i>Chi</i> <sup>2</sup> (2)	= 0.7778 [0.6778]	
Homoscedasticity	<i>F</i> (9,27)	= 0.7238 [0.6833]	
X-Homoscedasticity	<i>F</i> (19,17)	= 1.2210 [0.3419]	
RESET	<i>F</i> (1,36)	= 1.4466 [0.2369]	
Sample Period 1993(3) to 2004(1)			
<b>Stability</b>			
<i>variance</i>			0.7482*
<i>joint parameter constancy</i>			1.9646*
<b>7.4 Reserve Money</b>			
$RSV\_PRC = (M2\_PRC - MO\_PRC) * [0.01 * RR\%\_PRC + (RSV\_PRC\_1 / (M2\_PRC\_1 - MO\_PRC\_1) - 0.01 * RR\%\_PRC\_1) + 0.172183 - 0.0224647 * (SQ1 + SQ2 + SQ3) + 0.006276 * \Delta IRCB\%\_PRC - 0.719737 * RSVECM\_PRC\_1] + 0.03$			
		$\begin{bmatrix} 0.0211 \\ 0.0707 \end{bmatrix} \begin{bmatrix} 0.0024 \\ 0.0956 \end{bmatrix} \begin{bmatrix} 0.0016 \\ 0.0481 \end{bmatrix} \begin{bmatrix} 0.1001 \\ 0.0739 \end{bmatrix}$	B73
RSVECM_PRC	=	$[RSV\_PRC / (M2\_PRC - MO\_PRC) - 0.01 * RR\%\_PRC] + 0.0055 * IRL\%\_PRC + 0.074 * (M1\_PRC / MB\_PRC)$	
RSV_PRC	=	Foreign Reserves	
M2_PRC	=	Broad Money	B72
MO_PRC	=	Cash Issue	T71
RR%_PRC	=	Required Reserves Ratio	E
M1_PRC	=	Narrow Money	B71
MB_PRC	=	Base Money	I602
IRL%_PRC	=	One-Year Interest Rate on Lending	B77
IRCB%_PRC	=	Central Bank Rediscount Rate	
<b>Residual Diagnostics</b>			
<i>sigma</i>		0.0066	
<i>R</i> <sup>2</sup>		0.8419	
No autocorrelation	<i>F</i> (3,35)	= 0.0434 [0.9878]	
No ARCH	<i>F</i> (3,32)	= 0.3751 [0.7715]	
Normality	<i>Chi</i> <sup>2</sup> (2)	= 2.0238 [0.3635]	
Homoscedasticity	<i>F</i> (5,32)	= 0.6814 [0.6408]	
X-Homoscedasticity	<i>F</i> (8,29)	= 1.2524 [0.3057]	
RESET	<i>F</i> (1,37)	= 7.0841 [0.0114]*	
Sample Period 1993(3) to 2003(4)			
<b>Stability</b>			
<i>variance</i>			0.1539
<i>joint parameter constancy</i>			0.5285

### 7.5 Net Foreign Assets

$$\Delta^2 NFA\_PRC = - \begin{matrix} 1189.50 \\ \left[ \begin{matrix} 249.10 \\ 0.3590 \end{matrix} \right] \end{matrix} * 0.1 * SQ2 + \begin{matrix} 0.725529 \\ \left[ \begin{matrix} 0.2752 \\ 0.1724 \end{matrix} \right] \end{matrix} * 0.001 * \Delta_2 (X\_PRC - M\_PRC) + \begin{matrix} 0.7990 \\ \left[ \begin{matrix} 0.3921 \\ 0.0311 \end{matrix} \right] \end{matrix} * \Delta FDI\_PRC$$

$$- 0.441646 * NFAECM\_PRC\_2 \quad T72$$

$$NFAECM\_PRC = rNFA\_PRC - X\_PRC/1000 + M\_PRC/1000 - FDI\_PRC/1000 - 250/10$$

NFA_PRC	=	Net Foreign Assets	I301
X_PRC	=	Exports	I301
M_PRC	=	Imports	I302
FDI_PRC	=	Foreign Direct Investments	I106

#### Residual Diagnostics

<i>sigma</i>	612.84	
<i>R</i> <sup>2</sup>	—	
No autocorrelation	<i>F</i> (3,32)	= 0.7010 [0.5584]
No ARCH	<i>F</i> (3,29)	= 1.0783 [0.3737]
Normality	<i>Chi</i> <sup>2</sup> (2)	= 0.3341 [0.8462]
Homoscedasticity	<i>F</i> (7,27)	= 1.3551 [0.2641]
X-Homoscedasticity	<i>F</i> (13,21)	1.0749 [0.4277]
RESET	<i>F</i> (1,34)	0.1154 [0.7362]

#### Stability

<i>variance</i>	0.2010
<i>joint parameter constancy</i>	0.9056

### 7.6 Domestic Credit

$$\Delta \ln(DC\_PRC) = -0.029 + \begin{matrix} 0.6258 \\ (0.1337) \end{matrix} * \Delta \ln(M2\_PRC / 1000 + NFA\_PRC - FD\_PRC) + \begin{matrix} 0.1462 \\ (0.0201) \end{matrix} * DSH2002Q1$$

$$- 0.1733 * DCECM\_PRC\_1 \quad T73$$

$$\begin{matrix} (0.0844) \end{matrix}$$

$$DCECM\_PRC = \ln(DC\_PRC) - \ln(M2\_PRC/1000 + NFA\_PRC - FD\_PRC)$$

DC_PRC	=	Domestic Credit	
M2_PRC	=	Broad Money	B72
NFA_PRC	=	Net Foreign Assets	T72
FD_PRC	=	Foreign Debt	

#### Residual Diagnostics

<i>sigma</i>	0.0170	
<i>R</i> <sup>2</sup>	0.6260	
No autocorrelation	<i>F</i> (3,35)	= 1.6227 [0.2017]
No ARCH	<i>F</i> (3,32)	= 0.5728 [0.6370]
Normality	<i>Chi</i> <sup>2</sup> (2)	= 1.4263 [0.4901]
Homoscedasticity	<i>F</i> (5,32)	= 1.0112 [0.4272]
X-Homoscedasticity	<i>F</i> (6,31)	= 1.0681 [0.4025]
RESET	<i>F</i> (1,37)	= 0.0033 [0.9545]
Sample Period 1993(2) to 2003(3)		



### 7.7 Base Money Supply

$$MBS\_PRC = MB\_PRC * MSP\_PRC * \begin{bmatrix} 0.5573 \\ 0.1440 \\ 0.1545 \end{bmatrix} * (MBS\_PRC\_1 - MB\_PRC\_1) / MB\_PRC\_1 + \begin{bmatrix} 1.0965 \\ 0.0189 \\ 0.1628 \end{bmatrix} - \begin{bmatrix} 0.2242 \\ 0.0760 \\ 0.1436 \end{bmatrix} * \Delta_4 \ln(P\#C\_PRC\_3)]$$

B74

MBS\_PRC = Base Money Supply  
 MB\_PRC = Base Money I602  
 MSP\_PRC = Money Supply Policy E  
 P#C\_PRC = Consumer Price Index (1992Q1=1) B61

#### Residual Diagnostics

sigma 0.0266  
 R<sup>2</sup> 0.7660  
 No autocorrelation F(3,32) = 1.2208 [0.3181]  
 No ARCH F(3,29) = 0.1634 [0.9201]  
 Normality Chi<sup>2</sup>(2) = 5.7741 [0.0557]  
 Homoscedasticity F(5,29) = 0.7931 [0.5634]

#### Stability

variance 0.5770\*  
 joint parameter constancy 0.9007

### 7.8 Interest Rate on Demand Deposits

$$\Delta IRDD\%\_PRC = \begin{bmatrix} 0.18515 \\ 0.0552 \\ 0.0989 \end{bmatrix} - \begin{bmatrix} 1.1400 \\ 0.3531 \\ 0.4273 \end{bmatrix} * \Delta \ln[(M2\_PRC\_2 - M1\_PRC\_1) / M1\_PRC\_2] - \begin{bmatrix} 0.25826 \\ 0.0570 \\ 0.1110 \end{bmatrix} * IRDD\%ECM\_PRC\_1$$

B75

IRDD%ECM\_PRC = IRDD%\_PRC - 0.05\*IRCB%\_PRC\_3 - 9\*r<sub>d</sub>ln(P#C\_PRC\_2)

IRDD%\_PRC = Interest Rate on Demand Deposits  
 IRCB%\_PRC = Central Bank Rediscount Rate  
 M2\_PRC = Broad Money B72  
 M1\_PRC = Narrow Money B71  
 P#C\_PRC = Consumer Price Index (1992Q1=1) B61

#### Residual Diagnostics

sigma 0.1022  
 R<sup>2</sup> 0.4951  
 No autocorrelation F(3,32) = 0.8551 [0.4743]  
 No ARCH F(3,29) = 0.0704 [0.9753]  
 Normality Chi<sup>2</sup>(2) = 14.476 [0.0007]\*\*  
 Homoscedasticity F(4,30) = 1.0739 [0.3868]  
 X-Homoscedasticity F(5,29) = 0.9018 [0.4932]  
 RESET F(1,34) = 10.686 [0.0025]\*\*  
 Sample Period 1994(4) to 2004(1)

#### Stability

variance 0.1101  
 joint parameter constancy 1.1126

### 7.9 One-year Interest Rate on Deposits

$$\Delta(\text{IRD}\%_{-}\text{PRC}) = \begin{matrix} 0.5517 \\ \begin{bmatrix} 0.2216 \\ 0.0679 \end{bmatrix} \end{matrix} + \begin{matrix} 2.277 \\ \begin{bmatrix} 0.2731 \\ 0.0288 \end{bmatrix} \end{matrix} * \Delta(\text{IRDD}\%_{-}\text{PRC}) + \begin{matrix} 1.0550 \\ \begin{bmatrix} 0.5146 \\ 0.0319 \end{bmatrix} \end{matrix} * \Delta_4 \ln(\text{P}\#\text{C}_{-}\text{PRC}) + \begin{matrix} 0.0970 \\ \begin{bmatrix} 0.0432 \\ 0.0625 \end{bmatrix} \end{matrix} * \Delta(\text{RR}\%_{-}\text{PRC}_{-}2) \\ - \begin{matrix} 0.2230 \\ \begin{bmatrix} 0.0776 \\ 0.0534 \end{bmatrix} \end{matrix} * (\text{IRD}\%_{-}\text{PRC}_{-}1 / \text{IRDD}\%_{-}\text{PRC}_{-}1) \quad \text{B76}$$

IRD%_PRC	=	One-Year Interest Rate on Deposits	
IRDD%_PRC	=	Interest Rate on Demand Deposits	B75
P#C_PRC	=	Consumer Price Index (1992Q1=1)	B61
M1_PRC	=	Narrow Money	B71

#### Residual Diagnostics

sigma	0.2225		
R <sup>2</sup>	0.7284		
No autocorrelation	F(3,32)	=	2.3658 [0.0894]
No ARCH	F(3,29)	=	0.6847 [0.5686]
Normality	Chi <sup>2</sup> (2)	=	12.602 [0.0018]**
Homoscedasticity	F(8,26)	=	2.0756 [0.0762]
RESET	F(1,34)	=	4.9420 [0.0330]*
Sample Period 1994(1) to 2003(4)			

#### Stability

variance	0.3366
joint parameter constancy	0.9851

### 7.10 One-year Interest Rate on Lending

$$\Delta(\text{IRL}\%_{-}\text{PRC}) = \begin{matrix} 0.6200 \\ \begin{bmatrix} 0.0919 \\ 0.0932 \end{bmatrix} \end{matrix} * \Delta(\text{IRD}\%_{-}\text{PRC}) - \begin{matrix} 0.2510 \\ \begin{bmatrix} 0.0833 \\ 0.1068 \end{bmatrix} \end{matrix} * \text{IRL}\%\text{ECM}_{-}\text{PRC}_{-}1 \quad \text{B77}$$

IRL%_PRC	=	IRL%_PRC - 0.75*IRD%_PRC - 4	
IRL%_PRC	=	One-Year Interest Rate on Lending	
IRD%_PRC	=	Interest Rate on Deposits	B76

#### Residual Diagnostics

sigma	0.2258		
R <sup>2</sup>	0.6507		
No autocorrelation	F(3,29)	=	0.5017 [0.6840]
No ARCH	F(3,26)	=	0.1815 [0.9080]
Normality	Chi <sup>2</sup> (2)	=	39.092 [0.0000]**
Homoscedasticity	F(4,27)	=	2.6446 [0.0553]
X-Homoscedasticity	F(5,26)	=	2.0478 [0.1049]
RESET	F(1,31)	=	2.7912 [0.1049]
Sample Period 1995(1) to 2003(3)			

#### Stability

variance	0.3681
joint parameter constancy	1.1284

## 8. Labour and Employment

### 8.1 Labour Force/Supply

$$\Delta_4 \ln(\text{LF}_{-}\text{PRC}) = \begin{matrix} 0.5840 \\ \begin{bmatrix} 0.0707 \\ 0.2016 \end{bmatrix} \end{matrix} * \Delta_4 \ln(\text{LF}_{-}\text{PRC}_{-}1) + \begin{matrix} 0.263117 \\ \begin{bmatrix} 0.0888 \\ 0.2247 \end{bmatrix} \end{matrix} - \begin{matrix} 0.7800 \\ \begin{bmatrix} 0.1186 \\ 0.2243 \end{bmatrix} \end{matrix} * \text{LFECM}_{-}\text{PRC}_{-}4 \quad \text{B81}$$

LFECM_PRC	=	ln(LF_PRC) - 0.91*ln(POP_PRC) + 0.36*(POP_PRC/POP_PRC)
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LF_PRC	=	Labour Force	
POP <sub>r</sub> _PRC	=	Rural Population	I802
POP_PRC	=	Population	E
<b>Residual Diagnostics</b>			
<i>sigma</i>	0.0009		
<i>R</i> <sup>2</sup>	0.8889		
No autocorrelation	F(3,29)	= 8.3721 [0.0004]**	
No ARCH	F(3,26)	= 7.3234 [0.0010]**	
Normality	Chi <sup>2</sup> (2)	= 25.094 [0.0000]**	
Homoscedasticity	F(4,27)	= 0.5817 [0.6785]	
X-Homoscedasticity	F(5,26)	= 1.6762 [0.1757]	
RESET	F(1,31)	= 0.2808 [0.5999]	
<b>Stability</b>			
<i>variance</i>		0.4492	
<i>joint parameter constancy</i>		1.2275	
<b>8.2 Employment</b>			
$\Delta \ln(EMP\_PRC) = 0.6244 * \Delta \ln(EMP\_PRC\_1) + 0.13817 - 0.035464 * EMPECM\_PRC\_1$			B82
	(0.1063)	(0.0475) (0.0122)	
EMPECM_PRC	=	$\ln(EMP\_PRC) - 0.2 * \ln(GDPc\_PRC + GDPc\_PRC\_1 + GDPc\_PRC\_2 + GDPc\_PRC\_3) + 0.043 * \ln(WAGEu\_PRC + WAGEu\_PRC\_1 + WAGEu\_PRC\_2 + WAGEu\_PRC\_3)$	
EMP_PRC	=	Number of Employed Persons	
GDPc_PRC	=	Gross Domestic Product in 1992Q1 Price	I401
WAGEu_PRC	=	Average Earnings of Urban Employed Persons	B11
<b>Residual Diagnostics</b>			
<i>sigma</i>	0.0002		
<i>R</i> <sup>2</sup>	0.7643		
No autocorrelation	F(3,29)	= 0.3272 [0.8057]	
No ARCH	F(3,26)	= 0.0000 [1.0000]	
Normality	Chi <sup>2</sup> (2)	= 9.9952 [0.0068]**	
Homoscedasticity	F(6,25)	= 2.1131 [0.0875]	
X-Homoscedasticity	F(9,22)	= 1.9317 [0.1002]	
RESET	F(1,31)	= 6.4345 [0.0164]*	
Sample Period 1993(2) to 2003(4)			
<b>8.3 Secondary Sector Employment</b>			
$\Delta \ln(EMP2\_PRC) = 0.8199 * \Delta \ln(EMP2\_PRC\_1) + 0.1595 + 0.0096 * DSH2003Q1 - 0.01156 * \Delta^2(UEMP\%\_PRC)$			
	(0.0939)	(0.0731) (0.0020)	(0.0034)
$- 0.0234 * 0.25 * \{\ln[WAGEu\_PRC\_1 / (VA2\_PRC\_1 / VA2c\_PRC\_1)]$			
	(0.0107)		
$+ \ln[WAGEu\_PRC\_2 / (VA2\_PRC\_2 / VA2c\_PRC\_2)] + \ln[WAGEu\_PRC\_3 / (VA2\_PRC\_3 / VA2c\_PRC\_3)]$			B83
$+ \ln[WAGEu\_PRC\_4 / (VA2\_PRC\_4 / VA2c\_PRC\_4)] - 0.08836 * EMP2ECM\_PRC\_1$			
		(0.0416)	
EMP2ECM_PRC	=	$\ln(EMP2\_PRC) - \ln(VA2c\_PRC + VA2c\_PRC\_1 + VA2c\_PRC\_2 + VA2c\_PRC\_3)$	
EMP2_PRC	=	Number of Employed Persons in the Secondary Sector	
UEMP%_PRC	=	Unemployment Rate	I701
WAGEu_PRC	=	Average Earnings of Urban Employed Persons	B11
VA2_PRC	=	Value Added from the Secondary Sector	B53
VA2c_PRC	=	Value Added from the Secondary Sector in 1992Q1 price	B54

**Residual Diagnostics**

<i>sigma</i>	0.0016		
<i>R</i> <sup>2</sup>	0.9148		
No autocorrelation	<i>F</i> (3,29)	=	0.0165 [0.9970]
No ARCH	<i>F</i> (3,26)	=	0.4812 [0.6982]
Normality	<i>Chi</i> <sup>2</sup> (2)	=	16.970 [0.0002]*
Homoscedasticity	<i>F</i> (9,22)	=	1.2199 [0.3327]
RESET	<i>F</i> (1,31)	=	0.2353 [0.6310]
Sample Period 1994(3) to 2003(4)			

**8.4 Tertiary Sector Employment**

$$\Delta \ln(\text{EMP3\_PRC}) = 0.092887 + 0.0049 * \text{DSH2002Q1} - 0.552527 * \Delta \ln(\text{EMP1\_PRC\_1} - \text{EMP3\_PRC\_1})$$

$$\begin{matrix} \left[ \begin{matrix} 0.01346 \\ 0.03590 \end{matrix} \right] & (0.0012) & \left[ \begin{matrix} 0.0179 \\ 0.0500 \end{matrix} \right] \end{matrix}$$

$$+ 0.01778 * \Delta^2 \ln[(\text{VA3\_PRC} / \text{VA3c\_PRC}) / (\text{VA2\_PRC} / \text{VA2c\_PRC})] - 0.0294 * \text{EMP3ECM\_PRC\_1}$$

$$\begin{matrix} \left[ \begin{matrix} 0.0024 \\ 0.2859 \end{matrix} \right] & & \left[ \begin{matrix} 0.0044 \\ 0.0393 \end{matrix} \right] \end{matrix} \quad \text{B84}$$

$$\text{EMP3ECM\_PRC} = \ln(\text{EMP3\_PRC}) - \ln[(\text{VA3\_PRC} / \text{VA3c\_PRC}) / (\text{VA2\_PRC} / \text{VA2c\_PRC})] + 0.15 * \ln(\text{VA3c\_PRC}_1 + \text{VA3c\_PRC}_2 + \text{VA3c\_PRC}_3 + \text{VA3c\_PRC}_4)$$

EMP3_PRC	=	Number of Employed Persons in the Tertiary Sector	I702
EMP1_PRC	=	Number of Employed Persons in the Primary Sector	
VA3_PRC	=	Value Added from the Tertiary Sector	B55
VA3c_PRC	=	Value Added from the Tertiary Sector in 1992Q1 Price	B56
VA2_PRC	=	Value Added from the Secondary Sector	B53
VA2c_PRC	=	Value Added from the Secondary Sector in 1992Q1 Price	B54

**Residual Diagnostics**

<i>sigma</i>	0.0011		
<i>R</i> <sup>2</sup>	0.9732		
No autocorrelation	<i>F</i> (3,32)	=	0.9338 [0.4357]
No ARCH	<i>F</i> (3,29)	=	0.1874 [0.9041]
Normality	<i>Chi</i> <sup>2</sup> (2)	=	5.0918 [0.0784]
Homoscedasticity	<i>F</i> (7,27)	=	1.7163 [0.1473]
X-Homoscedasticity	<i>F</i> (10,24)	=	1.4165 [0.2322]
RESET	<i>F</i> (1,34)	=	0.3040 [0.5850]
Sample Period 1994(1) to 2003(4)			

**Stability**

<i>variance</i>	0.2325
<i>joint parameter constancy</i>	0.9734

Note: All variables are named by their English abbreviation. Special letters and characters used and added to variable names denote the following: \$ - US\$; c - at constant price. PC as the first 2 letters of a variable means per capita; u means urban; r means rural. When the variable name is Y, ln(Y) means the logarithm of Y, Y<sub>1</sub> means the first lag of Y, ΔY means the first difference of Y, i.e., ΔY=Y-Y<sub>1</sub>, Δln(Y) means first take the logarithm and then take the first difference, i.e., Δln(Y)=ln(Y)-ln(Y<sub>1</sub>); YECM means the long run equilibrium in the behavior equation, where Y is the explained variable. SQ1, SQ2, and SQ3 are seasonal dummies. DSHYYYYQX denotes a one-off (shock) dummy in quarter (Q) X of year YYYY. DSTYYYYQX denotes a one-step dummy from quarter (Q) X of year YYYY onwards. DSTYYQXYQX denotes a one-step dummy from quarter (Q) X of year YY to quarter(Q) X of year YY. In the equations, (SE) stands for standard error of the parameter estimate, which is below each parameter estimate. There are three types of equations: behavioral or structural equations, technical or linking equations, and identities. In the equation numbering system, B is used for behavioral equations, T for technical equations, I for identities, and E for exogenous variables.

## APPENDIX 2B IDENTITIES

Investment	
<b>INVc_PRC = INV_PRC/P#INV_PRC</b>	<b>(I101)</b>
INVc_PRC = Gross Fixed Capital Formation, in 1992Q1 price	
INV_PRC = Gross Fixed Capital Formation	(T21)
P#INV_PRC = Fixed Investment Price Index (1992Q1=1)	(B65)
<b>UCC%_PRC = (P#INV_PRC/P#GDP_PRC) * [IRL%_PRC/4 - 100 * (P#INV_PRC/P#INV_PRC_4 - 1) + DEPK_PRC] * / (1 - TAX%_PRC/100)</b>	<b>( I102 )</b>
UCC%_PRC = User Cost of Capital	
P#INV_PRC = Price Index of Investment in Fixed Assets (1992Q1=1)	(B65)
P#GDP_PRC = GDP Deflator	(B66)
IRL%_PRC = One Year Interest Rate of Lending	(B77)
DEPK%_PRC = Annual Depreciation Rate of Fixed Assets (%)	Exogenous
TAX%_PRC = Tax Rate	Exogenous
<b>K_PRC = K_PRC(-1) * (1 - DEPK_PRC/400) + INV_PRC</b>	<b>(I103)</b>
K_PRC = Stock of Fixed Investment Assets	
DEPK_PRC = Annual Depreciation Rate of Fixed Assets (%)	Exogenous
INV_PRC = Gross Fixed Capital Formation	(T21)
<b>BINV_PRC = BINVc_PRC * P#INV_PRC</b>	<b>(I104)</b>
BINV_PRC = Business Sector Investment	
BINVc_PRC = Business Sector Investment, 1992Q1 price	(B21)
P#INV_PRC = Price Index of Investment in Fixed Assets (1992Q1=1)	(B65)
<b>GINV_PRC = GINVc_PRC * P#INV_PRC</b>	<b>(I105)</b>
GINV_PRC = Government Budgetary Investment	
GINVc_PRC = Government Investment	(B22)
P#INV_PRC = Price Index of Investment in Fixed Assets	(B65)
<b>FDI_PRC = FDI\$ _PRC * ER_PRC</b>	<b>(I106)</b>
FDI_PRC = Foreign Direct Investments	
FDI\$ _PRC = Foreign Direct Investments (100 million US\$)	(B23)
ER_PRC = Exchange Rate	Exogenous
<b>INVc_PRC = INV_PRC/P#INV_PRC</b>	<b>( I206 )</b>
INVc_PRC = Fixed Capital Formation, in 1992Q1 price	
INV_PRC = Fixed Capital Formation	(T21)
P#INV_PRC = Price Index of Investment in Fixed Assets	(B65)
Government Sector	
<b>GDEF_PRC = GREV_PRC - GEXP_PRC</b>	<b>( I201 )</b>
GDEF_PRC = Government Deficit	
GREV_PRC = Government Revenue	(T31)
GEXP_PRC = Government Expenditure	(T32)

Exports and Imports	
<b>X_PRC = X\$_PRC*ER_PRC</b>	<b>(I301)</b>
X_PRC = Export	
X\$_PRC = Export	(B41)
ER_PRC = Exchange Rate	Exogenous
<b>M_PRC = M\$_PRC*ER_PRC</b>	<b>(I302)</b>
M_PRC = Imports	
M\$_PRC = Imports	(B42)
ER_PRC = Exchange Rate	Exogenous
The GDPs	
<b>GDPc_PRC = VA1c_PRC + VA2c_PRC + VA3c_PRC</b>	<b>(I401)</b>
GDPc_PRC = Gross Domestic Product, in 1992Q1 price	
VA1c_PRC = Value Added from the Primary Sector, in 1992Q1 price	(B52)
VA2c_PRC = Value Added from the Secondary Sector, in 1992Q1 price	(B54)
VA3c_PRC = Value Added from the Tertiary Sector, in 1992Q1 price	(B56)
<b>GDP_PRC = GDPc_PRC*P#GDP_PRC</b>	<b>(I402)</b>
GDP_PRC = Gross Domestic Product	
VA1_PRC = Value Added from the Primary Sector	(B51)
VA2_PRC = Value Added from the Secondary Sector	(B53)
VA3_PRC = Value Added from the Tertiary Sector	(B55)
<b>GDPe_PRC = PCON_PRC+INV_PRC+GCON_PRC+X_PRC-M_PRC</b>	<b>(I403)</b>
GDPe_PRC = Effective Domestic Demand	
PCON_PRC = Private Consumption	(T11)
INV_PRC = Investment in Fixed Assets	(T21)
GCON_PRC = Government Consumption	(B32)
X_PRC = Exports	(I301)
M_PRC = Imports	(I302)
<b>GDP\$_PRC = GDP_PRC/ER_PRC</b>	<b>(I404)</b>
GDP\$_PRC = Gross Domestic Product	
GDP_PRC = Gross Domestic Product	(I402)
ER_PRC = Exchange Rate	Exogenous
<b>PCGDP_PRC = GDP_PRC/POP_PRC</b>	<b>(I405)</b>
PCGDP_PRC = PCGDP_PRC= Per Capita Gross Domestic Product	
GDP_PRC = GDP_PRC= Gross Domestic Product	(I402)
POP_PRC = POP_PRC= Total Population	Exogenous
<b>PCONc_PRC = PCON_PRC/P#C_PRC</b>	<b>(I406)</b>
PCONc_PRC = Private Consumption, in 1992Q1 price	
GCONc_PRC = Government Consumption, in 1992Q1 price	(T11)
P#C_PRC = Consumer Price Index (1992Q1=1)	(B61)

<b>GCONc_PRC = GCON_PRC/P#C_PRC</b>	<b>( I407 )</b>
GCONc_PRC = Government Consumption, in 1992Q1 price	
GCON_PRC = Government Consumption	(B32)
P#C_PRC = Consumer Price Index (1992Q1=1)	(B61)
<b>Xc_PRC = X_PRC/P#C_PRC</b>	<b>( I408 )</b>
Xc_PRC = Exports, in 1992Q1 price	
X_PRC = Exports	(I301)
P#C_PRC = Consumer Price Index (1992Q1=1)	(B61)
<b>Mc_PRC = M_PRC/P#C_PRC</b>	<b>( I409 )</b>
Mc_PRC = Imports, in 1992Q1 price	
M_PRC = Imports	(I302)
P#C_PRC = Consumer Price Index (1992Q1=1)	(B61)
<b>STK_PRC = GDP_PRC-GDPe_PRC</b>	<b>( I410 )</b>
STK_PRC = Inventories	
GDP_PRC = Gross Domestic Product	(I402)
GDPe_PRC = Effective Domestic Demand	(I403)
<b>STKc_PRC = GDPc_PRC - (PCONc_PRC + INVc_PRC + GCONc_PRC + Xc_PRC - Mc_PRC)</b>	<b>( I411 )</b>
STKc_PRC = Inventories, in 1992Q1 price	
GDPc_PRC = Gross Domestic Product, in 1992Q1 Price	(I401)
PCONc_PRC = Private Consumption, in 1992Q1 Price	(T11)
INVc_PRC = Investment in Fixed Assets, in 1992Q1 Price	(I406)
GCONc_PRC = Government Consumption, in 1992Q1 Price	(I101)
Xc_PRC = Exports, in 1992Q1 Price	(I408)
Mc_PRC = Imports, in 1992Q1 Price	(I409)
<b>Banking</b>	
<b>PSAV_PRC = (PCINCu_PRC - PCCONu_PRC)*POPu_PRC/10000 + (PCINCr_PRC - PCCONr_PRC)*POP_r_PRC/10000</b>	<b>(I601)</b>
PSAV_PRC = Potential Savings Deposit	
PCINCu_PRC = Per Capita Income of Urban Households	(B12)
PCCONu_PRC = Per Capita Living Expenditure of Urban Households in Cash	(B14)
POPu_PRC = Population, Urban	(I801)
PCINCr_PRC = Per Capita Income in Cash of Rural Household	(B13)
POP_r_PRC = Population, Rural	(I802)
<b>MB_PRC = MO_PRC+RSV_PRC</b>	<b>( I602 )</b>
MB_PRC = Base Money	
MO_PRC = Currency in Issue	(T71)
RSV_PRC = Foreign Reserves	(B73)

<b>Labor/Employment</b>	
<b>UEMP%_PRC = 100*(1 - EMP_PRC/LF_PRC)</b>	<b>( I701 )</b>
UEMP%_PRC = Unemployment Rate	
EMP_PRC = Total Number of Employed Persons	(B82)
LF_PRC = Labor Force	(B81)
<b>EMP1_PRC = EMP_PRC - (EMP2_PRC + EMP3_PRC)</b>	<b>( I702 )</b>
EMP1_PRC = Total Number of Employed Persons in the Primary Sector	
EMP_PRC = Total Number of Employed Persons	(B82)
EMP2_PRC = Total Number of Employed Persons in the Secondary Sector	(B83)
EMP3_PRC = Total Number of Employed Persons in the Tertiary Sector	(B84)



## REFERENCES

- Asian Development Bank. 2004. *ADO 2004 Update*. Manila.
- Cai, F. and Y.-F. Lin. 2004. *The Chinese Economy*. Beijing: China Finance and Economics Press (in Chinese).
- Doornik, J. A., and D.F. Hendry. 2001. *Empirical Econometric Modelling Using PcGive*. London: Timberlake Consultants Ltd.
- He, X.-H., H.-Y. Wu, Y.-F. Cao, and R. Liu. 2005. *China\_QEM: A Quarterly Macroeconometric Model of China*. Beijing: Social Sciences Academic Press (in Chinese).
- He, X.-H., and D. Qin. 2004. "Aggregate Investment in the People's Republic of China: Some Empirical Evidence." *Asian Development Review* 2(1):99-117.
- Hendry, D. F. 1995. *Dynamic Economics*. Oxford: Oxford University Press.
- Hendry, D. F., and H-M. Krolzig. 2001. *Automatic Econometric Model Selection Using PcGets*. London: Timberlake Consultants Ltd.
- Liu, B. 2003. *Development and Application of Econometric Models by the Central Banks*. Beijing: China Finance Press (in Chinese).
- Pierse, R. 2001. *Winsolve Manual*. Department of Economics, University of Surrey, UK.
- Polak, J. J. 1957. Monetary Analysis of Income Formation and Payments Problems. IMF Staff Papers 6, International Monetary Fund, Washington, DC.
- Polak, J. J. 1997. The IMF Monetary Model at Forty. IMF Working Paper No. 97/49, International Monetary Fund, Washington, DC.
- Qin, D., and H.-Y. Song. 2003. "Excess Investment Demand and Efficiency Loss during Reforms: The Case of Provincial-level Fixed Asset Investment in China." In Chinese. *China Economic Quarterly* 2:807-31.
- Qin, D., M.A.T. Cagas, X.-H. He, and P. Quising. 2005. "How Much Investment Drive Economic Growth in the PRC?" Paper delivered in the Contribution to EcoMod2005 Conference on Policy Modeling, Istanbul.
- Qin, D., M.A.T. Cagas, G. Ducanes, and X.-H. He. 2005. "Income Disparity and Economic Growth: Evidence from China." Paper presented in the Contribution to EcoMod2005 Conference on Policy Modeling, Istanbul.
- Qin, D., X.-H. He, S.-G. Liu, and P. Quising. 2005. "Modeling Monetary Transmission and Policy in People's Republic of China." *Journal of Policy Modeling* 27:157-75.
- Shang, M. 2000. *Fifty Years of New China Financing*. Beijing: China Finance and Economics Press (in Chinese).
- Wang, Y. 2002. *Twenty Years of Price Reform: Retrospect and Prospects*. Beijing: China Planning Publishing House (in Chinese).
- Xu, X.-C. 2000. *National Accounting in China*. Beijing: Peking University Press (in Chinese).

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