

A macroeconometric model of the Chinese economy[☆]

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Abstract

This paper describes a quarterly macroeconometric model of the Chinese economy. The model comprises household income and 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. Great efforts have been made to achieve the best possible blend of standard long-run theories, country-specific institutional features and short-run dynamics in data. 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. © 2007 Elsevier B.V. All rights reserved.

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1. Introduction

This paper outlines key features of the ADB China model, which is adapted and augmented from China_QEM, a quarterly macroeconometric model built by the Institute of World

[☆] The model was developed while the first author was heading the macroeconometric modeling project at the ADB. We owe our thanks to PC Baysa, M Tang, J-P Verbiest, Y-D Yu, J Zhuang and many of our colleagues at the ADB as well as the IWEP of CASS for their valuable comments and constant support.

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Economics and Politics (IWEP), the Chinese Academy of Social Sciences (CASS).¹ First started in early 2004, model adaptation and augmentation have taken more than a year due primarily to the inherent difficulty in modeling such a highly vibrant economy as well as major revisions in China's historical data, in particular the revision on the GDP sectoral components in early 2005. To facilitate the need for forecasting and policy simulation, the modeling is guided by the main criteria that all behavioral equations should be economically meaningful, all parameter estimates relatively robust and time invariant, that dummy variables should be used as rarely as possible, and that variables representing policy instruments ought to have valid properties of exogeneity. The model has the following main characteristics:

1. *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 (Gross Domestic Product) plays a central role in the real-sector part of the model, a feature absent in most of the existing macroeconometric models in China.
2. *Econometric methods*: the Equilibrium/Error Correction Model (ECM) 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.

Section 2 sketches the Chinese macroeconomy, the data, and the literature on the existing models. Section 3 describes the main behavioral equations of the model. Section 4 summarizes the model performance results. Section 5 concludes.

2. The economy, data and existing models

2.1. The Chinese economy

The Chinese 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, and 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 \(2004\)](#) and [Wang \(2002\)](#); the Law of the People's Bank of China (PBC) and the Law of Commercial Banks of China were 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.²

¹ China_QEM was first built in 2002 and became relatively mature in 2004, see [He et al. \(2005\)](#).

² See [He et al. \(2005\)](#), chapter 3 for a detailed review of the Chinese economic dynamics during the last two decades.

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