Essays on Business Cycle Fluctuations

BY

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THESIS

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Abstract

This thesis consists of three essays on business cycle fluctuations that are based on the market-clearing dynamic general equilibrium framework. The first two essays examine the ultimate source of economic fluctuations in Thailand and Australia, respectively. The tool of study is the Business Cycle Accounting (BCA) method developed by Chari et al. (2002; 2007a). The third essay investigates the relation between capital-labour substitution and sectoral externalities in self-fulfilling expectation equilibria. It employs a two-sector competitive model proposed by Benhabib and Farmer (1996).

The BCA method examines the transmission mechanisms of shocks within an economy. These transmission mechanisms are called wedges which are responsible for the deviation of aggregate variables from a competitive equilibrium. Four categories of wedges are defined in the BCA: 1) the efficiency wedge represents the input-financing frictions in production; 2) the labour wedge is the frictions between consumption-leisure trade-off and marginal product of labour; 3) the investment wedge is the frictions between the intertemporal marginal rate of substitution in consumption and the marginal product of capital; and 4) the government consumption wedge indicates the frictions in international borrowing and lending.

Chapter 2 applies the BCA method with deterministic wedges to examine the output variations in Thailand between 1971-2003. The efficiency wedge is found to be the most important driving force behind the output variations during episodes of boom and bust in Thailand over the studied period. In particular for the 1997 economic downturn, the evidence shows that the cost of credit intermediation for some firms was relatively high. This altered an acquisition of working capital and labour in these firms when compared to others, which likely caused inefficient reallocation of inputs across the economy. As such, the efficiency wedge appears to fall at aggregate level during the economic downturn.

Chapter 3 applies the BCA method with stochastic wedges to examine the variations in output and investment in Australia. Although the efficiency wedge alone can account for these variations, it predicts much more volatility in output than the actual data. Upon allowing for the combination of efficiency and labour wedges, the model can replicate the amplitude of output variations better. The negative cross correlation between these two wedges suggests their interference.

Chapter 4 examines the effect of capital-labour substitution on the existence of indeterminacy in two-sector models and check whether the corresponding returns to scale are still empirically plausible. The main finding is that a higher requirement of sectoral externalities for indeterminacy is needed when capital and labour are less substitutable.

Intuitively, the low substitutability implies that capital and labour are complementary factors of production. This retards the mobility of factors between the consumption and investment sectors. In the belief driven equilibria, the consumers' optimistic expectation on returns is fulfilled as long as the rate of returns is sufficiently high such that current consumption is given up for investment. The rate of returns hereby indicates sectoral externalities. In such a production environment, the minimum requirement of externalities for indeterminacy therefore becomes larger so that it can successfully break the tightly coupling factors within sector, and raises the production of investment goods effectively. As a result, the current relative price of investment goods falls. In the next period, consumers enjoy more consumption goods and the relative price of investment good rises. The ascending pricing sequence yields capital gains and the consumers' belief is finally fulfilled. Based on the logarithmic utility in consumption and the elasticity of substitution of 0.5 as suggested in Klump et al. (2007) and Chirinko (2008), the minimum requirement of returns to scale for indeterminacy is 1.1236, and it still lies within the range in most empirical studies.

Declaration

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution to Nopphawan Photphisutthiphong and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to this copy of my thesis, when deposited in the University Library, being made available for loan and photocopying, subject to the provisions of the Copyright Act 1968. I also give permission for the digital version of my thesis to be made available on the web, via the University's digital research repository, the Library catalogue, the Australasian Digital Theses Program (ADTP) and also through web search engines, unless permission has been granted by the University to restrict access for a period of time.

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