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Preface

Economists, economic policymakers and other economic agents often assume that higher taxation means lower production and employment, and reduced cyclical sensitivity of the aggregate economy due to a dampening of its business cycle fluctuations. This is seen as being due to the ‘automatic stabilisers’ in tax systems. Relevant recent macroeconomic research, particularly that which combines labour market search friction with dynamic

Wage income tax reforms may increase the cyclical sensitivity of the economy

In his study ‘Labour taxation and shock propagation in a New Keynesian model with search frictions’ (DP 12/06) Juuso Vanhala examines the effects of wage income taxation on the cyclical sensitivity of the economy. Although economic researchers have studied the macroeconomic effects of taxation relatively actively over the years, Vanhala’s work is in many respects a novelty. To begin with, his analysis of the problem is based on modern theoretical tools of quantitative business cycle analysis, or, more precisely, on a New Keynesian dynamic stochastic general equilibrium model. However, the real novelty of Vanhala’s analysis lies elsewhere.

From other contexts, we know that the ability of dynamic macromodels used in business cycle and monetary analysis to replicate the main time series features of observed macroeconomic factors depends sometimes critically on the characteristics of the labour market and the expected behaviour of labour market participants in these models.

macromodels that otherwise represent the mainstream models of monetary policy research, has aimed to challenge and partly question this conventional wisdom concerning the macroeconomic effects of taxation. At the same time, modern research has strongly emphasised its characteristic focus on the quantitative analysis of macroeconomic problems.

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Low wage flexibility in particular seems to be important from the angle of, on the one hand, slow macroeconomic adjustment, and, on the other hand, monetary policy actions that have a long-term, and to some extent delayed, effect on the real economy. Aware of this, Vanhala uses the modern research approach of the effect of real labour market inflexibilities on the business cycle by combining labour market search with a New Keynesian monetary business cycle model.

The primary effect of including labour market search in an otherwise conventional business cycle model is that, instead of variation in hours worked, it is variation in the number of employees that generates employment fluctuations in the economy. This characteristic, along with the search frictions that reflect transaction costs in the labour market, creates unemployment and also in other ways slows the adjustment of employment in the business cycle model. To be more precise, in search-theoretic labour market models unemployment is determined by the difference between the speed of destruction and speed of creation of jobs, and

thus all factors that have an impact on companies' incentives to destroy and create jobs result in changes in unemployment in the economy. Therefore, if jobs are destroyed rapidly but created slowly and there are no changes in the labour force or its participation rate, unemployment in the economy will decrease slowly.

Vanhala calibrates the model he has constructed and uses simulations to analyse the effects changes in the marginal tax rate on wage income, the replacement ratio and employment subsidy have on the dynamics and long-term equilibrium of key macroeconomic variables. The addition to the macromodel of search frictions highlights the key role the operating principles of the labour market have in the transmission mechanism for the effects of changes in the tax system. In Vanhala's model, the decisive factor determining the effect of taxes is specifically the speed with which job destruction reacts to changes in wages. The speed of job creation and job destruction together dictate the tightness of the labour markets and the destruction productivity threshold, ie the minimum productivity required of viable jobs.

The results are interesting and highlight the importance of the initial state of the labour market in determining the macroeconomic effects of tax reforms. In the first place, even if the effects of long-term increases in the marginal tax rate, employment subsidy and unemployment benefits are conventional, meaning that the first and third decrease and the second increases economic output and employment, the results analysed by Vanhala in relation to revenue-neutral increases of tax progression are at least partly novel. In Vanhala's study, simulations of revenue-neutral increases of progression have been tailored so that the effects of the increased progression have been balanced by increases in employment subsidy to keep government tax revenue constant. According to Vanhala's results, a revenue-neutral increase in tax progression increases employment and production in the long term,

if taxation at the outset is not progressive. Such a reform can be interpreted most naturally to mean an increase in the marginal tax rate combined with the introduction of an employment subsidy to hold tax revenues constant, ie without raising the aggregate tax rate.

Looked at another way, a revenue-neutral increase in progression will have the same impact on production and employment as an increase in the marginal tax rate when taxation at the outset is sufficiently progressive. According to Vanhala's simulations, the level of progression at the outset is similarly important for the dynamic effects of taxation. Whether we are dealing with unexpected productivity shocks or interest rate shocks, a revenue-neutral increase in progression will increase the cyclical sensitivity of the economy – ie strengthen the production and employment effects of the shocks – when taxation at the outset is sufficiently progressive.

Explanations for the results of Vanhala's study can be found in the effects of employment subsidy on productivity and employment. Increases in employment subsidy have the strongest effect at low levels of the subsidy, specifically when the subsidy is introduced to offset increases in the marginal tax rate. Hence the favourable effect of increased employment subsidy on productivity and employment is stronger than the negative effect of increased marginal tax rates when the employment subsidy is low at the outset. However, where higher initial levels of employment subsidy are concerned, the negative effects of marginal tax rate increases on production and employment are dominant. All in all, Vanhala's analysis clearly indicates the important role of the labour market with regard to the macroeconomic effects of tax reforms. The inclusion of labour market search frictions in a standard dynamic macromodel is technically challenging, but it provides a new and interesting viewpoint on the dynamic effects of economic policy. Thus, work to improve the structure of the

mainstream macromodels used in quantitative monetary policy analysis should continue, specifically in regard to the role of the labour market, and such work should in fact be strongly encouraged.

Central bank liquidity operations and market rate stability

Central bank monetary policy operations have an immediate influence on very short interest rates. The macroeconomic effects of monetary policy depend largely on how central bank monetary policy operations feed into the term structure of interest rates, ie broadly speaking, long-term and other short-term interest rates. There has been fairly active discussion in economics on the effects of monetary policy on the term structure of interest rates in the context of more general discussion on the transmission mechanisms of monetary policy. In contrast, there has been less discussion of how the characteristics of central banks' liquidity management systems affect, on the one hand, the dynamics of short-term market rates, and, on the other hand, the behaviour of the term structure of interest rates and the ability of central banks to communicate their monetary policy objectives.

In his theoretical study 'Money market volatility – A simulation study' (DP 13/2006), Michal Kempa explores the interdependencies between central bank liquidity provision policy and volatility in the money markets, and particularly the question of whether central banks would sacrifice the stability of money market rates if they were to cut the frequency of their liquidity operations. And how does the averaging of banks' reserves during the reserve maintenance period or different lengths of the reserve maintenance period affect fluctuations in money market rates and the use of central banks' standing facilities? The relevant background literature sets out from the assumption that it is sufficient for the steering and stability of

money market rates that central banks target their operations on the overall liquidity of the money markets. Thus, even if central banks had access to data on the distribution of bank-specific liquidity shocks, this would not enhance their ability to steer money market rates.

Kempa's model describes profit-maximising banks and a central bank that seeks to hold money market rates at target levels through its provision of liquidity. Provision of liquidity is based, on the one hand, on open market operations and, on the other hand, on the central bank's standing facility. The central bank uses open market operations to hold the money market rate at the same level as the interest rate used in its main refinancing operations. Banks, in turn, can manage the effects of uncertainty through the credit and deposit services that are part of the central bank's standing facility. The daily events of the model are scheduled by starting from the banks' debt position vis-à-vis the central bank, which may change as a result of the central bank's liquidity operations or liquidity tenders. After the central bank's operations, an unexpected shock affects all banks and changes their liquidity, whereafter the banks trade in the money market among themselves. After the money market has closed, the banks' liquidity varies randomly due to bank-specific shocks, which describe trading between the banks during the day. Thus, shocks also have an effect on the size of the banks' central bank debt position at the end of the day.

The simulation results of Kempa's study seem to confirm the view that fluctuations in money market rates increase when the central bank decreases the frequency of its liquidity operations. In fact, the results indicate that fluctuations in the money market interest rates disappear altogether in a situation where banks are not subjected to any reserve requirements, liquidity shocks can be precisely foreseen and the central bank is prepared to provide enormous amounts of liquidity to the markets through both open market operations

and the standing facility. The results would also seem to support the view that in promoting the stability of money market rates central banks should, in addition to overall liquidity, also make use of whatever information they may have about the distribution of liquidity within the banking sector. On the other hand, the study suggests that the averaging of banks' reserve requirements decreases the use of the central bank standing facility every day of the reserve maintenance period with the exception of the final day. In addition, the volatility peaks in money market interest rates would disappear if banks had different lengths of reserve maintenance period. However, this would require an increase in later intraday interventions every day during the reserve maintenance period. All in all, Kempa's study increases our understanding of the effects of the operational framework of monetary policy on the dynamics of short-term money market interest rates and liquidity, and complements well the valuable research previously conducted at the Bank on the same issue.

Research on transition economies

Forecasting business cycles in emerging markets has proven to be very problematic. As a starter, the unreliability of statistics presents a formidable challenge for any forecasting exercise. Moreover, business cycles in emerging markets are typically much more volatile than in the more mature market economies. In this regard, China is something of an exception. Its GDP growth rate has been consistently high for more than a decade, in the neighbourhood of 10% pa. However, Chinese statistics are apparently still unreliable. In December 2005, China's statistics office revised the national accounts for 1993-2004. The revision was fairly extensive – eg 2004 GDP was raised by 17% – and comprised mainly upward revisions of service sector activities.

In BOFIT Discussion Paper 6/06 Declan Curran and Michael Funke present a new composite leading indicator of economic activity in mainland China, estimated via a dynamic factor model. The leading indicator is constructed from three series: exports, a confidence indicator for the real estate market, and the Shanghai Stock Exchange index. These series are found to share a common unobservable element which enables identification of the new indicator. It is noteworthy that the stock exchange price index can be used in forecasting GDP growth, since most analysts feel that Chinese equity prices are not closely related to economic performance.

This indicator is incorporated into out-of-sample one-quarter forecasts of Chinese GDP growth. Recursive out-of-sample accuracy tests indicate that the small-scale factor model approach produces a successful representation of the sample data and provides an appropriate tool for forecasting Chinese business conditions. Therefore, the model can be a useful tool for monitoring the Chinese economy.

Events

The Research Unit of the Bank of Finland and CEPR (Centre for Economic Policy Research) are organising a joint international conference for the seventh time at the Bank of Finland on 2–3 November 2006. The topic of this year's conference is 'Credit and the Macroeconomy'. The conference looks into the relationships between the financial system and the macroeconomy, and particularly into the macroeconomic impacts of the imperfections of the credit and capital markets.

On 21–22 September 2006, the Institute for Economies in Transition (BOFIT) is organising the fourth workshop of the European System of Central Banks on research into emerging economies. This workshop provides ESCB researchers an

opportunity to present their research on the subject. The focus of the studies to be presented in the fourth workshop is the relationships between the financial markets in emerging economies and the international

capital markets, but the topics of the presentations vary from forecasting Chinese economic growth to the equilibrium exchange rate for the Czech currency.

Recent Bank of Finland research publications

Bank of Finland Discussion Papers

Terhi Jokipii – Brian Lucey: Contagion and interdependence: measuring CEE banking sector co-movements, BOF DP 15/2006.

Jan Toporowski: Open market operations: beyond the new consensus, BOF DP 14/2006.

Michal Kempa: Money market volatility – A simulation study, BOF DP 13/2006.

Juuso Vanhala: Labour taxation and shock propagation in a New Keynesian model with search frictions, BOF DP 12/2006.

Markku Lanne – Timo Vesala: The effect of a transaction tax on exchange rate volatility, BOF DP 11/2006.

Mikael Bask – Jarko Fidrmuc: Fundamentals and technical trading: behaviour of exchange rates in the CEECs, BOF DP 10/2006.

Mikael Bask – Tung Liu – Anna Widerberg: The stability of electricity prices: estimation and inference of the Lyapunov exponents. BOF DP 9/2006.

Mikael Bask: Exchange rate volatility without the contrivance of fundamentals and the failure of PPP, BOF DP 8/2006.

Mikael Bask: Adaptive learning in an expectational difference equation with several lags: selecting among learnable REE, BOF DP 7/2006.

Mikael Bask: Announcement effects on exchange rate movements: continuity as a selection criterion among the REE, BOF DP 6/2006.

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model of the Finnish economy, BOF DP 5/2006.

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Konstantin Gluschenko – Darya Kulighina: Assessing a feasible degree of product market integration. (A pilot analysis), BOFIT DP 3/2006.

Laura Solanko: Coping with missing public infrastructure: An analysis of Russian industrial enterprises, BOFIT DP 2/2006.

Tuuli Juurikkala – Olga Lazareva: Lobbying at the local level: Social assets in Russian firms, BOFIT DP 1/2006.

E research publications

Aaron Mehrotra: Essays on Empirical Macroeconomics, E:34, 2006 (doctoral thesis).

Forthcoming publications

Bank of Finland Discussion Papers

Terhi Jokipii: Forecasting market crashes: further international evidence

Terhi Jokipii – Alistair Milne: The cyclical behaviour of European bank capital buffers

Patrick Crowley – Douglas Maraun – David Mayes: How hard is the euro area core? An evaluation of growth cycles using wavelet analysis

Eliina Rainio: Osakeyhtiölain vaikutukset sijoittajan suojaan ja rahoitusmarkkinoiden kehitykseen

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Zuzana Fungálová – Jan Hanousek: A castle built on sand: The effects of mass privatization on stock market creation in transition economics

Jiao Wang – Andy G. Ji: Exchange rate sensitivity of China's bilateral trade flows

E series research publications

Heli Snellman: Automated Teller Machine network market structure and cash usage

Katja Taipalus: Bubbles in the Finnish and US equities markets