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### EDITORIAL:

#### Sovereign credit risk and global macroeconomic forces

The ongoing apparently contagious public or sovereign debt crisis in Europe represents the third phase of the financial crisis since it really gained momentum after the collapse of Lehman Brothers in 2008. The notion that an initial financial collapse, either in the form of a balance of payments or banking crisis, or both, is followed by a severe economic recession which, in turn, is generally followed by a public debt crisis is fairly robust and can be backed by empirical evidence from relevant crisis periods. However, given the importance of the implied sovereign credit risk in financial markets, surprisingly little systematic research has been done on the potential *common sources* of global macroeconomic risks that drive sovereign credit. As also argued by some leading economic researchers,<sup>1</sup> this issue is important, and understanding the nature of the underlying sovereign credit risk is critical, because sovereign debt markets are large and rapidly increasing in size. Furthermore, the nature of sovereign credit risk has a direct effect on the ability of financial market participants to diversify the risk of global debt portfolios, and it may also play a central role in determining both the cost and flow of capital across countries.

Recent research efforts have taken up the issue of explaining the determination of sovereign credit risk from a novel perspective. To elaborate briefly, instead of using sovereign bond data, we could use new sets of sovereign default credit swap (CDS) contracts on the external debt of a number of developed and less developed countries to extract information on the likely determinants of sovereign credit risk. Sovereign CDS contracts function as insurance contracts that allow investors to buy protection against the event that a sovereign defaults on or restructures its debt. Sovereign CDS data has the advantage over sovereign bond data that it allows one to identify directly the investment returns generated exclusively by changes in sovereign credit risk.

<sup>1</sup> See in particular F. A. Longstaff, J. Pan, L. H. Pedersen and K. J. Singleton, 'How Sovereign is Sovereign Credit Risk?', August 2009, <http://www.anderson.ucla.edu/x1924.xml>.

Recently obtained research results<sup>2</sup> suggest that there is a surprisingly high degree of *commonality* in sovereign credit spreads. Decomposing the underlying sources indicates that two thirds of the variation in sovereign credit spreads can be accounted for by a single underlying factor in a sample of countries over the first ten years of the new millennium. The contribution of this single factor is even higher during 2007–2009, ie during the first three years of the most recent crisis. Moreover, sovereign credit risk seems to be driven more by global market factors, risk premia and investment flows than by country-specific fundamentals. Although explanations based on local economic factors, global financial market factors, global risk premia measures and global market liquidity factors all appear statistically important for explaining sovereign credit risk, the most significant factors are US stock and high-yield markets, the volatility risk premium embedded in the VIX index and flows into global fixed income funds. Furthermore, evidence indicates that there are significant risk premia in sovereign credit returns. These risk premia are first and foremost compensation for bearing the risk of the global macroeconomic factors that drive sovereign credit. Once these global macroeconomic risk premia are controlled for, there is little if any country-specific risk premium.

Importantly, these results suggest that the market is dominated by global investors and, in particular, that the commonality is consistent with the idea that the marginal investor prices risk with a global portfolio. Furthermore, the effect of global liquidity on the market is consistent with the view that funding shocks faced by large institutional investors translate into shocks to the liquidity of financial assets. Overall, the evidence seems to point to the view that commonality in sovereign credit spreads may have its roots in the sensitivity of these spreads to the funding needs of major investors in the sovereign credit markets.

These new results are very important and more research on them is clearly worth the effort. This new perspective on sovereign credit risk has been overshadowed by the almost single-minded emphasis in the previous literature on the incentives faced by sovereign debtors to repay their debt. This latter point is, of course, important, but it may miss the potentially more important policy point that the real policy problem lies elsewhere.

***Jouko Vilmunen***

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<sup>2</sup> See F. A. Longstaff et al. (op. cit.).

## Limited asset-market participation, sticky wages and prices, and the nature of optimal monetary policy

Many of the modern New Keynesian dynamic macro models of the stochastic general equilibrium variety build on the assumption that household (and other relevant dynamic decision-makers in those models) have full and unrestricted access to (well-functioning) financial markets. Access to financial markets helps households smooth their consumption over time and states of the economy, thus contributing to the lifetime welfare of said households, who are generally assumed to be risk averse and hence seek to avoid (excess) fluctuations in their consumption.

The empirical validity of assuming that households have unrestricted access to financial markets is debatable. The empirical evidence persistently indicates that a nontrivial fraction of households in various countries do not or are not able to smooth their consumption, reflecting the possibility that they face binding restrictions on their access to sources of finance for the purpose of consumption smoothing. Consequently, Mankiw and Zeldes<sup>3</sup> introduced the idea that limited asset-market participation matters for consumption and asset returns. This idea has been formalized in the mainstream New Keynesian dynamic macro models by assuming that a fraction of households are constrained to consume out of their current disposable income.<sup>4</sup>

One particular feature of the resulting model deserves special attention, not least because the debate over the robustness of this feature is still going on. This is the issue of equilibrium determinacy under (simple) monetary policy rules: that is, whether the resulting model is able to determine, under a specified monetary policy rule, a unique rational expectations equilibrium.

Limited asset-market participation seems to affect equilibrium determinacy mainly because the effects of monetary policy no longer depend solely on decisions by unconstrained households concerning consumption allocation over time, but also on the behaviour of constrained agents. Equilibrium determinacy hinges upon the balance between two effects of monetary policy. On one hand, determinacy depends quantitatively on the share of unconstrained households, so that a fall in the number of unconstrained households weakens the ability of monetary policy to sustain equilibrium determinacy. On the other hand, monetary policy has stronger effects via the Keynesian channel of changing the current disposable income of constrained households.

This issue is sufficiently interesting and important to warrant

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<sup>3</sup> Mankiw, N. G. and Zeldes, S.P. (1991), 'The Consumption of Stockholders and Nonstockholders', *Journal of Financial Economics*, 29:1, 97–112.

<sup>4</sup> Gali, J., López-Salido, D. and Vallés, J. (2004), 'Rule-of-Thumb Consumers and the Design of Interest Rate Rules', *Journal of Money Credit and Banking*, 36:4, 739–764.

closer scrutiny, not least because a non-linearity in the share of non-participating households introduces a subtle division of the effects of monetary policy into 'Keynesian' and 'non-Keynesian' varieties.

In the standard, full-participation economy, an increase in interest rates leads to an immediate fall in aggregate demand. Asset-holding households are willing to work more at a given real wage, but because of sticky prices – labour demand depends now on aggregated demand – labour demand falls. The new equilibrium displays lower output, consumption, hours and real wages. Suppose, now, that our economy is one with limited participation. If the degree of non-participation is not too high, or if the labour supply is sufficiently inelastic, the fall in real wages brought about by the intertemporal reallocation by asset-holding households now means a further fall in demand, since non-asset-holders merely consume their wage income. This generates a further fall in labour demand, so the new equilibrium is one with even lower output, consumption, hours and real wages than in the full-participation economy. Consequently, the 'Keynesian' effects of an interest rate increase are strengthened.

If, on the other hand, the share of non-participating households is sufficiently large, the standard 'Keynesian' effects of an increase in interest rates on aggregate demand can be overturned. In the case of a (sufficiently) inelastic labour supply, the fall in real wages implies an increase in firms' profits. These profits are distributed to asset-holding (ie participating) households. This counteracts the initial effect of higher interest rates on consumption by asset-holding households. The effect can be strong enough to result in an actual increase in consumption by asset-holding households, thus increasing aggregate demand and, by implication, labour demand. The increase in labour demand has to be large enough to generate an increase in real wages sufficient to make non-asset-holding households demand the extra output produced, and low enough not to generate an overly strong fall in profits. The resulting ('non-Keynesian') equilibrium is one where consumption, output, hours and real wages *increase*.<sup>5</sup>

It turns out that these two cases correspond to differently signed interest elasticities of aggregate demand and, interestingly, to the role of the Taylor principle<sup>6</sup> in ensuring determinacy in an economy where the central bank sets the interest rate as a function solely of the expected rate of inflation. In the former, 'Keynesian' case, aggregate demand depends negatively on the real interest rate and the Taylor principle is sufficient to ensure determinacy. In the latter, 'non-Keynesian' case, on the other hand, aggregate demand depends *positively* on the real interest rate and the central bank should follow an 'inverted Taylor principle'<sup>7</sup> to ensure determinacy.

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<sup>5</sup> See eg Bilbiie (2007), 'Limited asset market participation, monetary policy and (inverted) aggregate demand logic', *Journal of Economic Theory* 140:1, 162–196.

<sup>6</sup> The Taylor principle requires central banks to ensure an increase in the real interest rate after an increase in the inflation rate, ie to raise the nominal interest rate more than one-for-one for an increase in inflation.

<sup>7</sup> The term comes from Bilbiie (2007).

In other words, only passive policy, whereby the real interest rate falls after an increase in the inflation rate, is consistent with a unique rational expectations equilibrium. The role of the Taylor principle is restored under the more conventional Taylor rule, where the interest rate set by the central banks depends also on the output gap, but only if the response of the interest rate to fluctuations in the output gap is strong enough.

These results are also interesting because they may provide a new perspective on eg the US monetary policy followed by the Fed in the 1970s and from the early 1980s onwards. An oft-cited argument concerning US monetary policy in the 1970s suggests that the Fed failed to contain inflation in the economy because its interest rate policy did not satisfy the Taylor principle. On the basis of the above results, one could make the argument that the degree of non-participation by US households was high enough in the 1970s for the Taylor principle to have been insufficient to ensure low and stable inflation in the US economy. Only by deregulating the financial markets and thereby making it easier (ie less costly) for US households to participate in the financial markets did the authorities introduce an economic environment where the control of inflation using an interest rate rule satisfying the Taylor principle would produce the desired result.<sup>8</sup>

This is an interesting argument and a very nice application of the logic of the results outlined above. Naturally, this interpretation of recent US monetary policy history has not gone unchallenged. Most interestingly, in a forthcoming Bank of Finland discussion paper entitled 'Limited Asset Market Participation: Does it Really Matter for Monetary Policy', G. Ascari, A. Colciago and L. Rossi study the design of monetary policy in an economy characterized by staggered wage and price contracts together with limited asset-market participation. The authors model limited asset-market participation in the usual way of assuming that a portion of households face binding borrowing constraints preventing debt accumulation so that they spend their current labour income in each period. The rest of the households are asset holders and, consequently, are able to smooth their consumption over time.

As the authors note, this heterogeneity breaks the Ricardian equivalence. Hence, the model is sufficiently general to encompass commonly used environments in the literature on monetary policy, ranging from limited asset-market participation with frictionless labour markets to full asset-market participation with staggered price and wage contracts.

With the help of the model, Ascari, Colciago and Rossi analyse both monetary policy determined by a benevolent social planner as well as optimal monetary policy rules and conclude, basically, that, once wage rigidity is allowed for, the Taylor principle is a necessary condition for equilibrium determinacy for any empirically plausible degree of limited asset-market participation. Their results furthermore

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<sup>8</sup> See eg Bilbiie, F. and Straub R. (2008), 'Asset Market Participation, Monetary Policy and the Great Inflation', *Working Paper*, <http://sites.google.com/site/florinbilbiie/home>.

suggest that limited asset-market participation does not impose any major constraints on optimal monetary policy, and that optimal monetary policy rules always require central banks to behave aggressively against inflation, ie to ensure that real interest rates increase after an increase in (expected) inflation. Consequently, the result alluded to above – that, if central banks wish to ensure equilibrium determinacy, limited asset-market participation could force them to adopt an inverted Taylor principle – may in fact be fragile, ie not survive the introduction of wage stickiness. Then again, optimal monetary policy does not seem to depend strongly on the degree of asset-market participation.

The intuition for the basic result derived by Ascari, Colciago and Rossi is that wage stickiness greatly dampens fluctuations in real wages and, hence, in profits, thereby effectively shutting down the channel through which increases in real interest rates could possibly have expansionary aggregate demand effects. The analysis provided by Ascari, Colciago and Rossi is very elegant and plausible. They also explain the key underlying mechanism in a clear and understandable way.

Needless to say, the result is very important. However, in the context of this particular approach to modelling monetary policy, the contribution of US monetary policy to the high inflation era of the 1970s and the subsequent low inflation era from the 1980s onwards remains an open question. On one hand, if the US economy cannot be characterized as (having been) an economy with high wage stickiness, then the results by Bilbiie and Straub (2008) suggest that increased asset-market participation, driven by financial deregulation, explains the introduction of aggressive anti-inflationary monetary policy by chairman Volcker in the early 1980s. On the other hand, Ascari, Colciago and Rossi flag against this explanation, arguing that understanding the full macroeconomic implications of wage rigidity is the key to explaining the observed changes in US monetary policy at the time Volcker took over in the Fed.

The result is an interesting horse race between competing explanations, which means that frontier macroeconomic research on monetary policy will keep returning to the issue of equilibrium determinacy under (simple) monetary policy rules and its role in accounting for observed monetary policy history.

***Jouko Vilmunen***



Zuzana Fungáčová

## More capital hampers bank's liquidity creation?

The theory of financial intermediation suggests that – in addition to their role in risk transformation – banks also fulfil a function in liquidity creation. Despite this theoretical background and policy interest, however, liquidity creation by banks was not studied empirically until Berger and Bouwman (2009). They developed comprehensive measures of bank liquidity creation, introducing four different measures that take into account alternative classifications of loans and also off-balance-sheet items. A bank creates liquidity if it provides liquid items to the economy and holds illiquid ones. Thus, as an example, liquidity is created when a bank grants loans, but destroyed when it holds cash.

Using data for US banks, the authors investigate how much liquidity these banks have created and which banks create the most liquidity. In addition, they also study the role of bank capital in liquidity creation by US banks.

The same authors have continued their research by investigating how monetary policy influences bank liquidity creation and if this effect changes in times of financial crisis. Berger, Bouwman, Kick and Schaeck (2010) use German data to study bank liquidity creation and risk taking during distress. Meanwhile, Rauch, Steffen, Hackethal and Tyrell (2009) employ data on German savings banks to study how macroeconomic factors influence liquidity creation by banks.

BOFIT is contributing to this strand of the literature by investigating liquidity creation in an emerging market – Russia. Our current research (Zuzana Fungáčová, Laurent Weill and Mingming Zhou: Bank capital, liquidity creation and deposit insurance, [BOFIT DP 17/2010](#)) deals with the relationship between bank capital and liquidity creation, which is particularly important with respect to policy on the setting of bank capital requirements.

Two hypotheses largely frame the current discussion of the relationship between bank capital and liquidity creation. The 'risk absorption' hypothesis predicts that higher capital will enhance the ability of banks to create liquidity. In contrast, the 'financial fragility/crowding-out' hypothesis predicts that greater capital will hamper liquidity creation. Theory further indicates that deposit insurance plays a significant role in the relationship between bank capital and liquidity creation.

The introduction of a deposit insurance scheme in an emerging market, Russia, provides a natural experiment to investigate this issue. The authors study three alternative measures of bank liquidity creation and perform estimations on a large set of Russian banks. The findings suggest that the introduction of the deposit insurance scheme exerts a limited impact on the relationship between bank capital and liquidity creation and does not change the negative sign of the relationship. The implication is that better-capitalized banks tend to create less liquidity, which supports the 'financial fragility/crowding-out' hypothesis.

This conclusion has important policy implications for emerging countries, as it suggests that bank capital requirements implemented to support financial stability may harm liquidity creation.

**Zuzana Fungáčová**

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## Conferences and seminars

The Bank of Finland will organise a 200th Anniversary Conference "Monetary policy under resource mobility" in Helsinki 5–6 May 2011.

The international conference will cover three key policy issues concerning central banks: "Global shifts – lessons from the past", "Monetary Policy" and "Financial Markets". At the end of the event there will be a panel discussion around the theme "Finance and Economic Growth".

Participants at the conference include internationally renowned central bankers as well as leading academics. The programme is available at the [conference website](#).

### Bank of Finland Research Seminars

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Prof. [Panu Poutvaara](#)

University of Munich

Preferences for Redistribution among Emigrants from a Welfare State

#### Thursday 1 September 2011

Ph.D. [Tianxi Wang](#)

University of Essex

[Is the Banking Sector Too Big?](#)

#### Thursday 3 November 2011

Ass. Prof. [Christian Matthes](#)

Universitat Pompeu Fabra

TBA.

Research seminars organized by the Bank of Finland's research unit are held on the first Thursday of the month at 13.30–15 in Rauhankatu 19, 3rd floor big meeting room (unless indicated otherwise). Research seminars are open to all interested parties. Please register in advance at [seminars@bof.fi](mailto:seminars@bof.fi) by noon of the preceding day. For further information please visit the [seminar site](#).

### BOFIT seminars

#### Wednesday 4 May at 10:30-11:30

Dr [Fuad Aleskerov](#)

National Research University 'Higher School of Economics'

[Is it so bad that we cannot recognize black swans?](#)

#### Thursday 26 May 2011 at 14:00.

Zuzana Fungáčová

Like China, the Chinese banking sector is in a class of its own

BOFIT seminars, open to all interested parties, are held on Tuesdays at 10.30 in Rauhankatu 19, 3rd floor big meeting room (unless indicated otherwise). Please register in advance via Liisa Mannila (firstname.lastname@bof.fi, + 358 10 8312268). For further information please visit the [seminar site](#).

## Recent Bank of Finland research publications

### Bank of Finland Research Discussion Papers

10/2011

Ilkka Kiema – [Esa Jokivuolle](#): **Leverage Ratio Requirement, Credit Allocation and Bank Stability**

This paper shows that high and low risk credit rates would remain practically unchanged under the current Basel III leverage ratio of 3 %, but that for sufficiently high ratios the spread between these rates would be reduced. The paper also suggests that the current ratio could be too low to ensure bank stability in the face of a severe 'model risk' concerning low-risk loans.

9/2011

[Seppo Honkapohja](#) – Arja H Turunen-Red – Alan D Woodland: **Growth, expectations, and tariffs**

This paper reviews the role of expectations in modern macroeconomics and puts a lot of emphasis on adaptive learning approaches, in which agents revise their forecasting model, or their choice of models, over time as new data become available. It also develops several applications of learning relevant to macroeconomic policy.

8/2011

George W Evans – Seppo Honkapohja: **Learning as a rational foundation for macroeconomics and finance**

We develop several applications of learning with relevance to macroeconomic policy: the scope of Ricardian equivalence, appropriate specification of interest-rate rules, implementation of price-level targeting to achieve learning stability of the optimal rational expectations equilibrium and whether, under learning, price-level targeting can rule out the deflation trap at the zero lower bound.

7/2011

Yiwei Fang – [Iftekhhar Hasan](#) – Katherin Marton: **Market reforms, legal changes and bank risk-taking – evidence from transition economies**

We find that banks' financial stability in transition countries has increased substantially subsequent to the institutional reforms in respect of law and legal institutions, banking liberalization, and enterprise restructuring in privatization and corporate governance.

6/2011

Arturo Bris – Yrjö Koskinen – Mattias Nilsson: **The euro and corporate financing**

We show that improved access to capital markets in the euro area has enabled increased external financing, especially debt financing, for firms from euro area countries that previously had weak currencies.

5/2011

Yiwei Fang – [Iftekhhar Hasan](#) – Katherin Marton: **Bank efficiency in transition economies: recent evidence from South-Eastern Europe**

This study examining the cost and profit efficiency of banking sectors in six transition countries of South-Eastern Europe over a decade shows that foreign banks are associated with higher profit efficiency but moderately lower cost efficiency while government banks are associated with lower profit efficiency. The efficiency gap between foreign banks, domestic private banks and government banks, however, has narrowed over time.

4/2011

Yiwei Fang – Bill Francis – Iftekhar Hasan – Haizhi Wang: **Product market relationships and cost of bank loans: evidence from strategic alliances**

We find that non-financial firms with active alliance involvement experience a lower cost of debt from banks and are less likely to use collateral and covenants in their loan contracts.. Moreover, a borrowing firm positioned at the centre of an alliance network enjoys a lower cost of bank loans.

3/2011

[Harry Leinonen](#): **Debit card interchange fees generally lead to cash-promoting cross-subsidisation**

Collection of debit card interchange fees by issuers results in subsidisation of cash. For merchants, interchange fees increase payment costs and thus reduce the possibilities to pass through to customers the cost savings flowing from card efficiency. The recent actions of authorities to increase transparency and reduce cross-subsidisation seem to point in the right direction – towards more efficient resource allocation in payments.

2/2011

Marko Melolinna: **What explains risk premia in crude oil futures?**

This paper studies the existence of risk premia in crude oil futures prices and the importance of three main risk premia models in explaining and forecasting the risk premia in practice. The study establishes the existence of highly time varying risk premia, as well as a model, based on speculative positions in the futures markets, which has some predictive power for future oil spot prices.

1/2011

[Hanna Freystätter](#): **Financial factors in the boom-bust episode in Finland in the late 1980s and early 1990s**

A small open economy DSGE model is developed and used to simulate three key events in the Finnish boom-bust episode. A key contribution is incorporating unconventional shocks into the model: domestic financial market shocks to capture the deregulation of the financial market; a capital obsolescence shock to model the sudden redundancy of Soviet-oriented manufacturing; and a shock from the international financial market to capture the collapse of the fixed exchange rate regime.

### **BOFIT Discussion Papers**

5/2011

[Aaron Mehrotra](#) – Riikka Nuutilainen – Jenni Pääkkönen: **Changing economic structures and impacts of shocks — evidence from a DSGE model for China**

The paper centers on the impact of technology and monetary policy shocks for different structures of the Chinese economy. The findings suggest that a rebalancing of the economy from investment-led to consumption-led growth would reduce the volatility of the real economy in the event of a technology shock, which provides support for policies aiming to increase the consumption share in China.

4/2011

Rajeev K Goel – Aaron Mehrotra: **Financial settlement modes and corruption: Evidence from developed nations**

The results suggest that the choice of payment instruments has a bearing on the prevalence of corruption in a country. Paper credit transfer transactions and cheques are associated with corrupt activities, while credit card transactions tend to reduce them and direct debits are without significant effects on corruption.

3/2011

Sabine Herrmann and Dubravko Mihajlek: **The determinants of cross-border bank flows to emerging markets: New empirical evidence on the spread of financial crises**

This paper studies the nature of spillover effects in bank lending flows from advanced to emerging market economies in Asia, Latin America and central and eastern Europe. Greater global risk aversion and expected financial market volatility have been the most important factors behind the decrease in cross-border bank flows during the crisis of 2007–08.

2/2011

Marco Lo Duca and Tuomas Peltonen: **Macro-financial vulnerabilities and future financial stress - Assessing systemic risks and predicting systemic events**

This paper develops a framework for assessing systemic risks and for predicting periods of extreme financial instability. Our results highlight the importance of considering jointly various indicators in a multivariate framework. In addition to predicting the last financial crisis, our model would have issued an early warning signal for the United States before the emergence of money markets tensions in August 2007.

1/2011

[Aaron Mehrotra](#) and Jenni Pääkkönen: **Comparing China's GDP Statistics with Coincident Indicators**

Factor analysis is used to summarize information from various macroeconomic indicators, effectively producing coincident indicators for the Chinese economy. We compare the dynamics of the estimated factors with GDP, and compare our factors with other published indicators for the Chinese economy. The indicator data match the GDP dynamics well.

### **Forthcoming Bank of Finland Research Discussion Papers**

Guido Ascari – Andrea Colciago: Limited asset market participation: does it really matter for monetary policy?

Peter Nyberg – Mika Vaihekoski: Descriptive analysis of Finnish equity, bond and money markets

Matti Virén: Is the housing allowance shifted to rental prices?

Andrea Colciago – Lorenza Rossi: Endogenous market structures and labor market dynamics

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