This is a report on Branka Matyska's PhD dissertation entitled "Macroeconomics with Financial Sector Risk Constraints," which consists of three chapters. Overall, I have very positive impression about the dissertation. I find the analysis in the dissertation well executed and with sufficient contributions made for the PhD in Economics degree. Thus, I recommend the dissertation for a defense. Below, I provide a more detailed evaluation of the three chapters.

Chapter 1

Summary. This paper examines the effect of bank risk-based capital requirements on systemic risk in a model a la Brunnermeier and Sannikov (2014). The paper considers various spectral risk measures including the benchmark Value at Risk (VaR). The main result of the paper is that the risk-based capital requirement can help to mitigate systemic risk and improve welfare as it effectively provides insurance against (left) tail risk, thereby, reducing the likelihood of a systemic crisis.

Contribution. The paper's main contribution is the analysis of the risk-based capital requirement in a general equilibrium model with endogenous risk. This analysis is interesting and important as it provides an argument in favor of risk based-capital requirements. Since the introduction of the risk-based capital regulation in Basel II in 2004, there has been a lot of debate on the potential welfare-reducing effect of this regulation due to its procyclical effect on lending. A typical argument goes in the following way: the deterioration of the aggregate risk tightens the risk-based capital requirement, which constrains the bank lending capacity and may lead to a credit crunch. The analysis in Chapter 1 suggests that such policy can nevertheless be welfare-improving as it provides insurance for left tail risk thereby reducing the risk of a systemic crisis.

Shortcomings of the analysis. First, the paper's contribution is on a marginal side. The original analysis by Brunnermeier and Sannikov (2014) discusses some welfare-improving policies within their model, which is the model used in the analysis of Paper 1. These policies include insurance tail risk insurance and leverage constraints. Brunnermeier and Sannikov (2014) show that tail risk insurance is beneficial because it helps to reduce consumption volatility in bad states of the world. They further argue that leverage constraint (i.e., non-risk-based capital requirements) can sometimes provide welfare benefits. By imposing a risk-based capital requirement, Branka effectively combines the tail risk insurance policy and leverage constraint. In this sense, the result is quite predictable. Nevertheless, it is a good reminder that the risk-based approach of Basel III (and II) to the minimum capital regulation works in the right direction. Nevertheless, it is not clear from the analysis how well the risk-based capital requirement performs relative to the tail risk insurance policy from Brunnermeier and Sannikov (2014).

Second, the paper spends some time discussing not only the left tail risk but also the right tail risk. I think that in general talking about the upside risk of bank assets does not make much sense. Banks' assets primarily consist of loans. A loan is a debt claim and by construction it restricts the upsides leaving the bank exposed only to the downside risk. Of course, it is not the case in the model, since for simplicity it is assumed that the bank effectively holds productive capital (or rather claims on it) as assets, which can generate an unboundedly high or low return. In reality, the upside risk is limited by the promised repayment rate, while the downside risk is limited by the loan loss default rate, which could be zero

Finally, quantitatively the model and the analysis do not seem to be well disciplined. For example, in Figure 6.1 Panel 7 "Capital requirements" the minimum capital requirement under VaR is higher than 0.6 implying that banks must finance their lending with at least 60% in equity. This is an extremely high number. For example, under the Internal Risk-Based approach of Basel III, which effectively is based on the VaR method and forces the bank to provide sufficient equity capital to cover 99% of its losses within a year, the equity requirement would typically be less than 8-9%.

Overall Impression. This is a very nice paper. Overall, the contribution is there albeit not very strong one. Nevertheless it is an interesting and relevant contribution. I know that this paper has been

already accepted to publication. Therefore, I would refrain from giving any suggestion on potential improvements.

Chapter 2

Summary. Chapter 2 examines the macroeconomic consequences of using the risk-based capital requirements that are based on the VaR approach on bank lending, loan pricing, and stability. The paper further presents the analysis of the optimal deposit insurance scheme under the risk-based capital requirements.

Contribution. The risk-based capital regulation has been in place since 2004, when Basel II was first issued. The primary objective behind risk-based capital regulation was micro-prudential—that is, to condition capital requirement on bank-specific risk. At the same time, the full macroeconomic implications of such regulation were and still are not fully understood. The analysis in Chapter 2 tries to fill this gap. The main contribution of the paper is the analysis of the optimal deposit insurance when the bank is subject to the risk-based capital requirements. This is a very interesting and important research question.

Shortcomings of the analysis. First, the paper does not provide a clear micro foundation for the minimum capital requirement. In the original Gertler and Kiyotaki (2010)'s model bankers can divert funds—that is, there is a moral hazard problem. The optimal contract between depositors and bankers then implies a market-induced capital requirement. Gertler and Kiyotaki (2010) mention in their paper that the regulatory capital requirement will affect banks only if it is tighter than the requirement implied by the optimal incentive-compatible contract. In Chapter 2, the minimum capital requirement is introduced into an otherwise frictionless environment to decrease the default probability of the bank. But it is not clear why bank failure needs to be kept under control in the model. It is assumed in the model that bank failure is costly because it results in the bank's asset value (dead) loss. However, this should not be a sufficient reason for capital regulation as this should be taken care of in ex-ante pricing of deposits. On the other hand, if the model had a mispriced deposit insurance, a common assumption in the literature, then the bank in the model would hold a (socially) sub-optimally high leverage (as it would not internalize the cost of its failure). In this case, having the minimum capital requirement could discipline the bank's leverage and could be socially beneficial because it would minimize the explicit cost of the deposit insurance scheme. While one can still examine trade-offs induced by the risk-based capital requirements in a model without a micro foundation for this policy tool, any welfare-related statements, however, cannot be made.

Second, the objective of the deposit insurance in the model is not very clear. Typically, deposit insurance is introduced as a policy against bank runs (Diamond and Dybvig (1983)). However, there are no bank runs in the model. Although one often assumes the presence of the deposit insurance in the model to either rule out bank runs or to introduce inefficient borrowing (provided that the deposit premium is flat—that is, mispriced), it is more problematic in this model because the objective of the analysis is to derive the optimal deposit insurance. To derive the optimal deposit insurance, one needs to micro-found the need to have it in the first place. As of now, deposit insurance seems to just provide consumption to the risk-averse depositors in the state in which the bank fails, which looks much more like a bail-out.

Finally, the paper is missing an important reference to the existing literature on the effect of risk-based capital requirements on loan pricing. It would be great to connect the results of Chapter 2 on loan pricing to Repullo and Suarez (2004).

Overall Impression. This is a nice paper with a very interesting research question. To really get a nice contribution from it the analysis should be polished better. The analysis in the paper can be improved by providing micro foundation for the minimum capital regulation and the deposit insurance in the model. Also, the paper is very long and hard to read. Next, the paper should (and

certainly can) provide a better connection to the existing banking literature, especially on such topics as capital regulation and deposit insurance design. It would great to shorten it substantially and leave out derivations from its main body by placing them to the relevant appendix.

Chapter 3

Summary. Chapter 3 examines the effects of the decrease in the corporate tax rate in the US on the labor market. First, the paper presents empirical evidence on the positive effect of corporate income tax cuts on employment through firm entry and exit. Second, the paper presents a DSGE model with endogenous firm entry and exit that produces the patterns observed in the data.
Contribution. The main result of the paper is that the positive effect of the tax cut on firm entry is observed with a substantial delay, while the benefit in terms of lower firm exists materializes immediately.

Overall Impression. I think this is a very interesting and well-executed paper on an important topic. It is hard for me to make any statement on how well this fits into the literature because this research question does not lie in the domain of my expertise. But I did like the paper very much.

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