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Financial structure, financial instability, and inflation targeting

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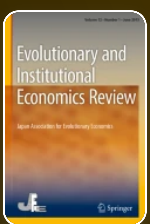
Published: 09 February 2016

Volume 13, pages 23–36, (2016) Cite this article



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Kenshiro Ninomiya [1]

Abstract

Minsky, the first to propose the financial instability hypothesis, stressed the importance of the lender-of-last-resort for preventing financial instability. Overall, however, most of the research on financial instability has focused little on measures to prevent instability. Japan was trapped in a prolonged recession after the collapse of the bubble economy. The government promoted market-oriented economic reforms to cope. The recent international monetary crisis, triggered by the subprime loan crisis of 2007 in the US, cast a dark shadow over the world economy. Some developed nations, most notably New Zealand have been successful in implementing inflation-targeting policies. The Bank of Japan and the US Federal Reserve have adopted the inflation-targeting measures after the crisis. The main purpose of this paper is to examine financial instability, financial cycles, and the effects of inflation targeting in a mixed competitive–oligopolistic system. The results of this paper demonstrate that inflation targeting stabilizes an economy in both competitive and oligopolistic systems.

Notes

1. New Zealand adopted an inflation-targeting policy in 1990, and other developed countries such as the UK and Canada have followed New Zealand’s example. The Reserve Bank of New Zealand and the Bank of England both set explicit inflation targets.

2. The macroeconomics is called “new consensus macroeconomics”, It has been studied extensively by many heterodox economists. See, for example, Lavoie (2006), Rochon and Setterfield (2007), Setterfield (2009), Ninomiya (2010) and Nabeshima (2012).

3. He assumed the rate of interest of risky asset i as follows:

   $$i = \rho + \xi (d) \equiv i(\rho ,d),\;\;\;\xi (d) \ge 0,\;\;i_{d} = \xi^{\prime}(d) > 0\;{\text{for}}\;d > 0,\;i_{d} < 0\;{\text{for}}\;d < 0 ,$$

   where ρ is nominal rate of interest of interest-bearing safe assets and *d* is debt–capital ratio.

   Ninomiya (2007a) formulated a macrodynamic model that incorporates dynamic equations debt burden and inflation. The “lender’s risk” of commercial banks has an important role in his model. However, he did not examine the effect of monetary policy. Ninomiya and Sanyal (2009) examined the effect of the inflation-targeting policy. However, they did not consider the financial structure.

4. Ninomiya (2007b) and Ninomiya and Tokuda (2012) also examined the financial instability and structural change in an open economy.

5. Dalziel (2002a) pointed out that the central banks no longer use the quantity theory of money, the cornerstone of monetarism, in practice. In other words, inflation targeting is not based on the quantity theory of money. Ninomiya (2002) examined the effect of inflation targeting in a Keynes–Goodwin model.

6. The Bank of Japan adopted an inflation-targeting policy in 2013 and also announced new quantitative and qualitative monetary easing measures, including the doubling of high-powered money within 2 years. The *x* percent rule indicates a quantitative monetary easing measure without the inflation targeting. Therefore, the *x* percent rule is different from Friedman’s *k* percent rule.

7. When β is large and γ is small, the central bank adopts an interest rate targeting policy.

8. Rose (1969) maintained that $i_{y} < 0$ is an important factor for 'credit instability'. Taylor and O'Connell (1985) hypothesized that an increase in the expected profit rate reduces the interest rate. Okishio (1986) presented *IS*-*BB* analysis.

9. The mark-up principle is written as $p = (1 + \tau)Wn$, where τ is the mark-up ratio. If the ratio is stable we obtain $\pi (\equiv \dot{p}/p) = (\dot{W}/W) + (\dot{n}/n) = (\dot{W}/W) - \sigma_{2}$.

10. At the steady-state equilibrium, $\dot{h}/h = 0$ and $\dot{K}/K = \sigma$. This, in turn, can give us $\pi^{ * } = \mu - \sigma$.

11. The equilibrium value of *y* is $y^{ * } = \sigma /s$. This is the familiar Keynesian formula. This means that the equilibrium income is the product of the long run equilibrium investment and the Keynesian multiplier (1/*s*). This property is exactly the same as Asada (1991).

12. See Ninomiya (2007b) for details on this point.

13. We think that this case is consistent with "new consensus macroeconomics".

14. New Zealand adopted an inflation-targeting policy and market-oriented economic reforms to cope with stagnation after the oil crisis (see Dalziel and Lattimore 2001). The stagnation was not a financial instability. However, the effect of the inflation-targeting policy is independent of the financial structure in the oligopolistic economy. Dalziel (2002b) criticized the market-oriented economic reforms. Conversely, the US adopted an explicit inflation-

targeting policy just after the subprime mortgage crisis. If the financial structure of the US is fragile and the US economy is competitive, this policy could be effective.

15. See Keen (1995), Asada (2006), Ninomiya (2007a), Ninomiya and Sanyal (2009) and Ryoo (2010).

16. The method of the proof is based on Asada (1991) and Ninomiya (2007b).

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Acknowledgments

The author is grateful to anonymous referees for the valuable comments. The author would like to extend his gratitude to the Grant-in-Aid for Scientific Research (23530325) from the Japan Society for the Promotion of Science and the Ishii Memorial Securities Research Promotion Foundation for the financial supports. Any remaining errors in this work are the responsibility of the author.

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Appendix

The proof of Proposition 3

Assume that $m_{y} < m_{y0}$ and β is sufficiently small, such that $a_{2} > 0$. The proof of Proposition 1 demonstrates that $a_{1} a_{2} - a_{3} < 0$ if ε is sufficiently small, while the proof of Proposition 2 demonstrates that $a_{1} a_{2} - a_{3} > 0$ if ε is sufficiently large.

Given that $a_{1} a_{2} - a_{3}$ is a smooth and continuous function with ε, we find at least one value ε_{0} at which $a_{1} a_{2} - a_{3} = 0$ and $\partial (a_{1} a_{2} - a_{3})/\partial \varepsilon |_{{\varepsilon = \varepsilon_{0} }} \ne 0$. Furthermore, it also follows that $a_{2} > 0$.

One of the conditions of the Hopf bifurcation theorem is satisfied when $a_{2} > 0$ and $a_{1} a_{2} - a_{3} = 0$. The characteristic equation of dynamic system (S) has a pair of purely imaginary roots $\lambda_{1} = \sqrt {a_{2} } i$ and $\lambda_{2} = - \sqrt {a_{2} } i$ at $\varepsilon = \varepsilon_{0}$.

From the Orlando formation, we obtain

$$a_{1} a_{2} - a_{3} = - (\lambda_{1} + \lambda_{2})(\lambda_{2} + \lambda_{3})(\lambda_{3} + \lambda_{1}) = - 2h_{1} (\lambda_{3}^{2} + 2h_{1} \lambda_{3} + h_{1}^{2} + h_{2}^{2}) ,$$

where h_{1} is the real part of two complex conjugate numbers and h_{2} is the absolute value of the imaginary part. By differentiating this equation with ε, we obtain

$$\frac{{\partial (a_{1} a_{2} - a_{3})}}{\partial \varepsilon } = - 2\left[{\frac{{\partial h_{1} }}{\partial \varepsilon }(\lambda_{3}^{2} + 2h_{1}$$

$$\lambda_{3} + h_{1}^{2} + h_{2}^{2}) + h_{1} \frac{{\partial (\lambda_{3}^{2} + 2h_{1} \lambda_{3} + h_{1}^{2} + h_{2}^{2})}}{\partial \varepsilon }} \right]$$

When $h_{1} = 0$ and $h_{2} = h$ are substituted into the above equation, we obtain

$$\frac{{\partial (a_{1} a_{2} - a_{3})}}{\partial \varepsilon }|_{{\varepsilon = \varepsilon_{0} }} = - 2(\lambda_{3}^{2} + h^{2})\left[{\frac{{\partial h_{1} }}{\partial \varepsilon }|_{{\varepsilon = \varepsilon_{0} }} } \right]$$

Therefore, if

$$\frac{{\partial (a_{1} a_{2} - a_{3})}}{\partial \varepsilon }|_{{\varepsilon = \varepsilon_{0} }} \ne 0$$

then

$$\frac{{\partial h_{1} }}{\partial \varepsilon }|_{{\varepsilon = \varepsilon_{0} }} \ne 0$$

From the above discussion, all of the conditions in which Hopf bifurcation occurs are satisfied at the point $\varepsilon = \varepsilon_{0}$. Q.E.D.

About this article

Cite this article

Ninomiya, K. Financial structure, financial instability, and inflation targeting. *Evolut Inst Econ Rev* **13**, 23–36 (2016). https://doi.org/10.1007/s40844-016-0029-2

Published	Issue date
09 February 2016	June 2016

DOI

https://doi.org/10.1007/s40844-016-0029-2

Keywords

Financial structure Financial instability Inflation targeting Degree of competition

JEL Classification

E19 E31 E43 E52