Risk-Aversion and the Bifurcated Interest Responses of Corporate Investment: Theory and Evidence

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Research Questions

• In a liquidity trap, is the real interest rate always negatively related to corporate investment so that the AD curve must be upward sloping?

• Does U.S. investment in the 2008-09 Great Recession and its aftermath respond to an interest-rate increase differently from responding to a rate decrease over time? What is the short-term vs. long-term pattern in this regard?

In a Nutshell

• A leveraged risk-averse firm prefers a riskless return to risky investment project unless both the real interest rate and investment return are sufficiently high (Figs. 1 and 2), which generates a bifurcated aggregate investment schedule and a kinked AD curve (Figs. 3 and 4).

• Risk-averse corporate investment can be positively related to the interest rate and therefore the AD curve can still be downward sloping in a liquidity trap. Hence, while QE is ineffective, laissez faire can help increase investment through a disinflation process (Figs. 5 and 6).

• By estimating a NARDL model (Table 1) for the post-crisis era in the U.S., I find an asymmetric cointegration pattern in which investment increases with a higher interest rate more than its decrease with a lower interest rate in the long run, and an asymmetric adjustment pattern in which investment decreases with a lower interest rate more than its increase with a higher interest rate in the short run (Fig. 7).

Comparing Laissez Faire with QE When AD is Downward Sloping

Figure 1: Safety Preference and Threshold for Risk Taking
Figure 2: Corporate Investment Profile
Figure 3: Aggregate Investment
Figure 4: The Kinked Aggregate Demand (AD)
Figure 5: Ineffectiveness of QE
Figure 6: Effectiveness of Laissez Faire
Figure 7: Asymmetric Cumulative Dynamic Multiplier
Figure 8: Stability of Parameters and Residual Variance

Table 1: The Estimated Linear and Nonlinear ARDL Models for the Investment-Interest Rate Relation

Co-integration Equation for ARDL Model

Co-integration Equation for NARDL Model

Conclusions

• The evolution of a liquidity trap can be analytically dichotomized into two regimes that generate the bifurcated investment response to interest rates and kinked aggregate demand curve:
  • A phase of severe recession with extremely low real interest rate and investment return
  • Risk averse firms prefer financial investment (savings) to capital investment
  • QE helps stimulate investment by lowering financial friction and raising inflation expectation
  • A phase of mild recession and its aftermath with higher real interest rates and investment return:
  • Investment activities increase
  • QE tends to regulate the market forces that favor investment to corporate saving

• Empirically, I identify the dynamic process of regime switching by the nonlinearity of accumulative investment response to an increase vs. a decrease in the real interest rate.
  • In the short run, investment decreases with a lower interest rate more than increases with a higher interest rate.
  • In the long run, investment increases with a higher interest rate more than decreases with a lower interest rate
  • The regime switching from a severe to mild recession occurred within a year after a real interest rate shock

• The asymmetry results well echo my theoretical prediction of a positive relation between investment and the interest rate in a liquidity trap.
• The policy implication of this study supports a timely exit from QE and necessary increases in the policy interest rate in due course.