貨幣政策目標與執行策略 (part 2)

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1 貨幣政策策略來自全球金融危機的體驗

- the GFC suggests four basic lessons for economists and policy-makers on how the economy works
  - (1) *Developments in the financial sector have a far greater impact on economic activity than was earlier realized*
  - (2) *The zero lower bound on interest rates can be a serious problem*
    - …forced the Fed to use nonconventional monetary policy tools
  - (3) *The cost of cleaning up after a financial crisis is very high*
    - …followed by deep recessions …recoveries from financial crises are very slow
    - in the aftermath …, government indebtedness almost always sharply increases and can lead to defaults on government debt (如歐洲)

1

- (4) *Price and output stability do not ensure financial stability*
  - the success of central banks in stabilizing inflation and the decreased volatility of business cycle fluctuations before 2007, which became known as the "**Great Moderation**," did not protect the economy from financial instability
  - 「太平盛世」… leading (市場參與者) to take excessive risks, which in turn helped to fuel the global financial crisis

1-1 對通膨目標制的意涵與影響

- … these lessons do suggest that inflation targeting may need to be more flexible and also may need to be modified on several dimensions

1-1.1 通膨目標水準

- The seriousness of the zerolower-bound problem raises the question of whether this target level (通常設為2%) is too low
  - Olivier Blanchard (當時為IMF首席經濟學家), suggested that the inflation target might be raised from the 2% level to the 4% level
    - 如此… by lowering the nominal interest rate to zero, the real interest rate, … could be decreased to as low as -4% (= 0 - 4%)
    - In other words, the zero lower bound on the policy rate would be less binding with a higher inflation target
  - 但該建議的缺點是
    - the costs of higher inflation in terms of the distortions it produces in the economy … these costs may not be that large in any given year, they add up over time and may outweigh the intermittent benefits of a higher inflation target when the zero lower bound occurs

1-1.1

- Another problem with a higher inflation target is that the history of inflation suggests that it is more difficult to stabilize the inflation rate at a 4% level than at a 2% level

  if a 4% level of inflation is okay, then why not 6%, or 8%, and so on?

  when inflation rose to that level, the policy authorities could not contain it at that level, and it kept on rising …

1-1.2 通膨目標制的彈性

- 危機前所謂“flexible inflation targeting” 是表示 …allowing some short-run deviations of inflation from the inflation target in order to promote output stability as well as price stability
- 但… achieving price and output stability does not ensure financial stability
- 因此… central banks need to pay more attention to financial stability, not only in designing inflation-targeting regimes but also in any monetary policy framework
  - Particularly important in this regard is the issue of how **central banks should respond to asset-price bubbles** …

2 央行是否應試圖刺破資產價格泡沫

- (What are) asset-price bubbles…?
  - … pronounced increases in asset prices, or “bubbles,” that depart from fundamental values and that eventually burst resoundingly
- 泡沫破滅成本高： The bursting of the asset-price bubble in the housing market brought down the financial system, leading to an economic downturn, a rise in unemployment, and direct hardship for families who were forced to leave their homes after foreclosures (法拍)

2

- The high economic cost of asset-price bubbles raises the following questions: What should central banks do about them? Should they use monetary policy to try to pop the bubbles? Are there regulatory measures they can take to rein in asset-price bubbles?
- … whether there are different kinds of bubbles that require different types of responses?

2-1 兩種類型的資產泡沫

- 2-1.1 信用驅動的泡沫(credit-driven bubbles)
  - When a credit boom begins …Easier-to-get credit can be used to purchase particular assets and thereby raise their prices
  - in turn, encourages further lending for these assets, either because it **increases the value of collateral** or because it **raises the value of capital** at financial institutions, which gives them more capacity to lend
  - The lending for these assets can then further increase demand for them and hence raise their prices even more. This feedback loop—in which a credit boom drives up asset prices, which in turn fuels the credit boom, which drives asset prices even higher, and so on

2-1.1

- When asset prices come back down to earth and the **bubble bursts**, the collapse in asset prices leads to a reversal of the feedback loop: loans go sour, lenders cut back on the credit supply, the demand for assets declines further and prices drop even more
- 情境如the global financial crisis
  - The resulting losses on subprime loans and securities eroded the balance sheets of financial institutions, causing a decline in credit (deleveraging) and a sharp fall in business and household spending, and therefore in economic activity

2-1.2 非理性榮景所驅動的泡沫

- 聯準會(Fed)前主席葛林史班在1996年12月以「非理性榮景」(Irrational Exuberance)一詞，示警股市上漲由不理性所推動
- Bubbles that are driven solely by overly optimistic expectations, but that are not associated with a credit boom, pose much less risk to the financial system
  - For example, the bubble in technology stocks in the late 1990s was not fueled by credit, and the bursting of the tech-stock
    bubble was not followed by a marked deterioration in financial institutions' balance sheets
  - The bursting of the tech-stock bubble thus did not have a very severe impact on the economy, and the recession that followed was quite mild

2-2 央行是否應戳破資產價格泡沫的爭議

- Because asset prices are a central channel of monetary policy and directly affect its outcomes , monetary policy certainly needs to respond to asset prices in order to obtain good outcomes in terms of inflation and output
  - Hence, the issue **is not** whether monetary policy should respond to asset price movements at all, **but** whether it should respond at a level over and above the level called for in terms of the objectives of stabilizing inflation and employment
- ***leaning against*** asset-price bubbles versus ***cleaning up*** after the bubbles burst (事前逆風派vs.事後清理派)

2-2

- Should monetary policy try to pop, or slow, the growth of potential assetprice bubbles to minimize damage to the economy when these bubbles burst?
- Alternatively, …should the monetary authorities respond only to the asset-price declines that occur after a bubble bursts, to stabilize both output and inflation?

2-2.1 反對方－事後清理派

- Why Central Banks Should Not Try to Prick Asset-Price Bubbles but **Should Just Clean Up After They Burst**？ Alan Greenspan's argument…
  - (1) Asset-price bubbles are nearly impossible to dentify … Unless central bank or government officials are smarter than market participants, an unlikely situation given the savvy of especially talented (and high-earning) market participants, they will be unlikely to identify when bubbles of this type are occurring
  - (2) … raising interest rates may be very ineffective in restraining bubbles because market participants expect such high rates of return from buying bubble-driven assets

    Furthermore, raising interest rates has often been found to cause a bubble to burst more severely, thereby increasing the damage to the economy

2-2.1

- (3) Many different asset prices exist, and at any one time a bubble may be present in only a fraction of asset markets. Monetary policy actions are a very blunt instrument in such a case, as such actions would be likely to affect asset prices in general, rather than the specific assets that are experiencing a bubble
- (4) …as arguments (2) and (3) suggest, the rise in interest rates necessary to prick a bubble may be so high that it can be done only at great cost to workers and the economy

  This is not to say that monetary policy should not respond to asset prices per se

  Monetary policy should react to fluctuations in asset prices to the extent that they affect inflation and economic activity

2-2.1

– (5) As long as policymakers respond in a timely fashion, by easing monetary policy aggressively after an asset bubble bursts, the harmful effects of a bursting bubble can be kept at a manageable level

Indeed, the Greenspan Fed acted in exactly this way after the stock market crash of 1987 …

Aggressive easing after the stock market bubbles burst in 1987 and 2000 was highly successful

The economy did not enter a recession … and the recession that followed the tech bubble burst in 2000 was very mild

2-2.2 贊成方－事前逆風派

- Why Central Banks Should Try to Pop Bubble
  - The recent financial crisis clearly demonstrated that the bursting of credit-driven bubbles can be not only extremely costly but also very hard to clean up
  - Furthermore, credit-driven bubbles can occur even if price and output stability exist in the period leading up to them (參見反方(4))
    - price and output stability might actually encourage credit-driven bubbles because they lead market participants to underestimate the amount of risk present in the economy
  - The global financial crisis has therefore provided a much stronger case for leaning against potential bubbles than for just cleaning up after they burst

2-2.2

- …the lean versus clean debate may have been miscast
- Rather than leaning against potential assetprice bubbles, which would include both credit-driven and irrational exuberancetype bubbles, the case is much stronger for leaning against **credit *booms*** (信貸氾濫之榮景)
  - It is much easier to identify credit booms than asset-price bubbles (因後者尚須就2類型加以辨別區分)
  - When asset-price bubbles are rising rapidly at the same time that credit is booming, … central bank or government officials are more likely to identify that a boom is in progress
  - this was indeed the case during the housing market bubble in the United States, when central banks and government officials were aware that lenders had weakened lending standards and that credit extension in the mortgage markets was rising at abnormally high rates

2-3 防範措施

- The case for leaning against credit-driven bubbles seems strong, but what policies would be most effective in restraining them?
- 2-3.1 總體審慎政策(macroprudential policies)
  - First, it is important to recognize that the key principle to consider in designing effective policies to lean against credit booms is that such policies must curb excessive risk taking. Only when risk taking is excessive are credit booms likely to develop
  - Regulatory policy to affect what is happening in credit markets in the aggregate is referred to as **macroprudential regulation** (總體審慎措施), and it does seem to be the right tool for reining in credit-driven bubbles

2-3.1

- 運作有效的審慎措施應有的要素包括
  - adequate disclosure and capital requirements
  - prompt corrective action
  - close monitoring of financial institutions' risk management procedures
  - close supervision to enforce compliance with regulations
  - More generally, regulation should focus on preventing leverage cycles (槓桿循環)

2-3.1

- "In the absence of intervention, leverage becomes too high in boom times, and too low in bad times. As a result, in boom times asset prices are too high, and in crisis times they are too low. This is the leverage cycle"¶
  - Leverage is the use of a small initial investment or borrowed money to gain a high return (例如抵押房貸)
  - A highly leveraged economy is one where a few investors have borrowed a lot of cash from its lenders*
- Capital requirements that are countercyclical, that is, adjusted upward during a boom and downward during a bust, might help eliminate the pernicious feedback loops that promote credit-driven bubbles

¶Mark Thoma (2010) "Leverage Cycles," Economist's View, January 19

2-3.1

- A rapid rise in asset prices accompanied by a credit boom provides a signal that market failures or poor financial regulation and supervision might be causing a bubble to form
- Central banks and other government regulators can then consider implementing policies to rein in credit growth directly (如信用管制) or can implement measures to make sure credit standards are sufficiently high (如嚴審信貸條件與降低信貸成數LTV)

2-3.2 (預防性)貨幣政策

- The fact that the low interest-rate policies of the Federal Reserve from 2002 to 2005 were followed by excessive risk taking suggests to many that overly easy monetary policy might promote financial instability
  - low interest rates can encourage excessive risk taking, in what has been called the "risk-taking channel of monetary policy" (貨幣政策的風險承擔(傳遞)管道)
  - Low interest rates may increase the incentives for asset managers in financial institutions to search for higher yields and hence increase risk taking
  - Low interest rates may also increase the demand for assets, raising their prices and leading to increased valuation of collateral, which in turn encourages lenders to lend to riskier borrowers

2-3.2

- 若已具備有效的總體審慎措施，何需貨幣政策?
  - leaving monetary policy to focus on price and output stability?
- However, there are doubts on this score…
  - Prudential supervision is subject to more political pressure than monetary policy… institutions have greater incentives to lobby politicians to discourage macroprudential policies
  - In addition, financial institutions are often very good at finding loopholes to avoid regulation (… so macroprudential supervision may not be effective)
- The possibility that macroprudential policies may not be implemented sufficiently well to constrain credit booms suggests that monetary policy may have to be used instead

2-3.2

- 雖然具相當的挑戰性… central banks and other regulators should not have a laissez-faire attitude and let credit-driven bubbles proceed without any reaction

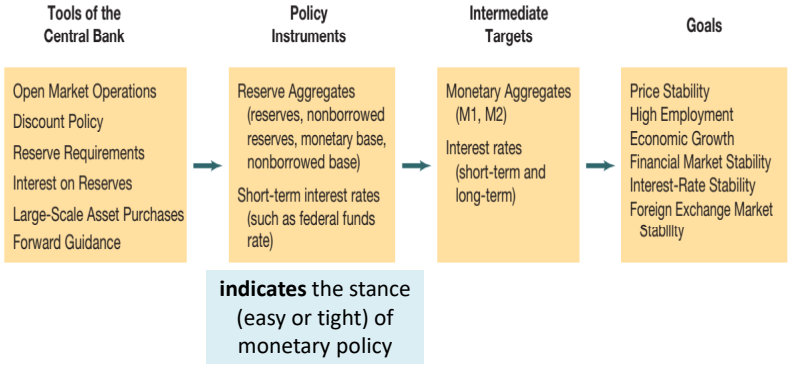
3 戰術面－政策工具的選擇

- knowing the tools and the strategies for implementing a monetary policy does not tell us whether that policy is easy or tight
  - To ascertain whether policy is easy or tight, we can observe the **policy instrument** (also called an **operating instrument**，操作工具), a variable that responds to the central bank's **tools** and indicates the stance (easy or tight) of monetary policy
    - 如Fed has at its disposal two basic types of policy instruments: **reserve aggregates** (total reserves, nonborrowed reserves, the monetary base, and the nonborrowed base) and **interest rates** (the federal funds rate and other short-term interest rates)
    - 有的小型國家的央行則採匯率作為操作工具

3

- The policy instrument might be linked to an intermediate target (中間目標), such as a monetary aggregate like M2 or a long-term interest rate
  - Intermediate targets stand between the policy instrument and the goals of monetary policy (e.g., price stability, output growth)
  - they are not as directly affected by the tools of monetary policy but might be more closely linked to the goals of monetary policy (如次圖所示)

央行操作工具(tools)、政策參考指標(policy instruments)、中間目標與最終目標之間的關聯

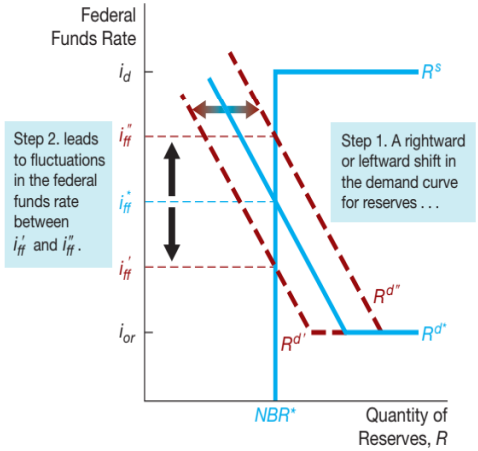


3-1 政策參考指標的抉擇

- 在政策參考指標間的選擇，能否量、價兼顧(亦即同時**釘住**或固定住量與價)？
- 換言之，Can the central bank choose to target both the nonborrowed reserves (非借入準備) and the federal-funds-rate policy instruments (政策參考指標) at the same time? The answer is **no**
- 想像準備金需求不時受外來干擾而波動(如次圖上的*Rd'* and *Rd''*)

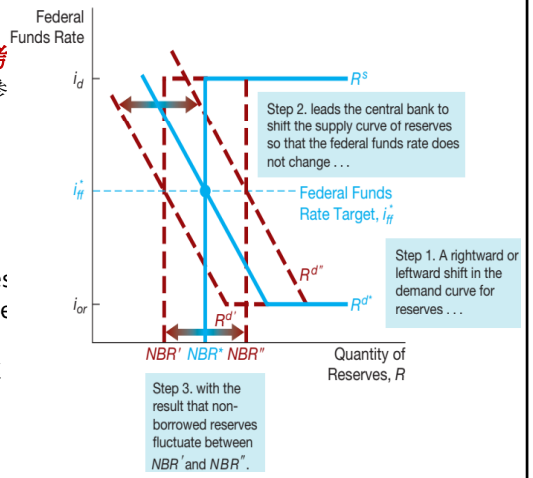
釘住非借入準備的結果

- (1) 假設央行採**量的參考指標**，並將非借入準備(參考)目標訂為NBR*(容或是為維持某個貨幣供給成長目標)
- 其結果為a fluctuation in the federal funds rate (即同拆利利率) between *i'ff* and *i''ff*
- Pursuing an aggregate target (數量目標) implies that interest rates will fluctuate



釘住同拆利率的結果

- (2) 假設央行採**價的參考指標**，並將同拆利率(參考)目標訂為 *i*ff*
- 若準備金需求增為 *Rd''*, 同拆利率上揚並高於利率目標 *i*ff* and the central bank will engage in open market purchases of bonds until it raises the supply of nonborrowed reserves to *NBR''* 讓利率回到目標水準
- 反之若準備金需求減為 *Rd'*...



3-1

- (2) (*cont*.)
  - The central bank's adherence to the interest-rate target thus leads to a fluctuating quantity of nonborrowed reserves and the money supply
- The conclusion from our supply and demand analysis is that interest-rate and reserve (monetary) aggregate targets are incompatible
  - A central bank can hit one or the other, but not both
- (但若可以採區間目標例如利率走廊，則又如何?)
- 無論如何，對於各種政策操作工具到底應如何取捨?

3-2 政策參考指標與目標的選擇標準

- The instrument must be observable and measurable, it must be controllable by the central bank, and it must have a predictable effect on the goals
- (1) Observability and Measurability (可測性)
  - Quick observability and accurate measurement of a policy instrument are necessary because such an instrument is useful only if it signals the policy stance rapidly
  - it seems that interest rates are more observable and measurable than reserves and are therefore a better policy instrument

3-2

- (2) Controllability (可控性)
  - A central bank must be able to exercise effective control over a variable if the variable is to function as a useful policy instrument
  - 因數量工具中的組成份子相對難以掌握(如通貨甚至銀行準備金)… 故short-term interest rates would dominate reserve aggregates on the controllability scale
  - 但因不易掌控通膨預期，央行也未能真的鎖定實質短期利率
  - a clear-cut case cannot be made that short-term interest rates are preferable to reserve aggregates as a policy instrument, or vice versa

3-2

- (3) Predictable Effect on Goals (相關性)
  - The most important characteristic of a policy instrument is that it must have a predictable effect on a goal such as high employment or price stability
  - 例如容易控制但跟最終目標無有意義的關係(如口罩售價高低並無助改善就業情況)
  - 量、價何者相關性高…has been the subject of much research and debate
  - 但…central banks throughout the world now generally use short-term interest rates as their policy instrument

4 泰勒法則(The Taylor Rule)

- 若採短期利率作為**政策參考目標**(policy instrument)，how should this target be chosen?
- John Taylor of Stanford University has come up with an answer, called the Taylor rule
- This rule can be written as follows:

  Federal funds rate target (同拆利率(參考)目標) = inflation rate + equilibrium real fed funds rate + $\frac{1}{2}$(inflation gap) + $\frac{1}{2}$(output gap)

4

- For a numerical example of the Taylor rule
  - suppose the inflation rate is at 3%, leading to a positive inflation gap of 1% (= 3% -2%), and real GDP is 1% above its potential, resulting in a positive output gap of 1%
  - Then the Taylor rule suggests that the federal funds rate should be set at 6%
  - [= 3% inflation +2% equilibrium real fed funds rate + 0.5*(1% inflation gap) + 0.5*(1% output gap)]

4

- An important feature of the Taylor rule is that
  - the coefficient on the inflation gap, 0.5, is positive
  - If the inflation rate rises by 1 percentage point, then the federal funds target is raised by 1.5 percentage points, and so it is raised by more than a one-to-one ratio
  - In other words, a rise in inflation of 1 percentage point leads to an increase in the *real* federal funds rate of 0.5 percentage point
- The principle that the monetary authorities should raise nominal interest rates by more than the increase in the inflation rate has been named the **Taylor principle** (泰勒原則), and it is critical to the success of monetary policy

4

  - 若無泰勒原則
    - the rise in nominal rates is *less* than the rise in the inflation rate, so that real interest rates *fall* when inflation rises
    - Serious instability then results, because a rise in inflation leads to an effective easing of monetary policy, which then leads to even higher inflation in the future
- Some economists take the view that the presence of an **output gap (產出缺口)** in the Taylor rule indicates that the Fed should care not only about keeping inflation under control but also about minimizing business cycle (景氣循環) fluctuations of output around its potential level

4

- An alternative interpretation of the presence of the output gap in the Taylor rule is that the output gap is an indicator of future inflation, as stipulated in **Phillips curve theory** (菲利浦曲線理論)
  - Phillips curve theory states that changes in inflation are influenced by the state of the economy relative to its productive capacity, as well as by other factors (通膨不只是貨幣現象)
  - This productive capacity can be measured by potential GDP, which is a function of the natural rate of unemployment, defined as the rate of unemployment consistent with full employment

4

- A related concept is the NAIRU, the nonaccelerating inflation rate of unemployment (非加速通膨(的)失業率), defined as the rate of unemployment at which there is no tendency for inflation to change
  - Simply put, the theory states that when the unemployment rate is above NAIRU, with output below potential, inflation will fall, but when it is below NAIRU, with output above potential, inflation will rise
- 但…Phillips curve theory is now highly controversial, and critics question whether it should be used as a guide in the conduct of monetary policy
  - Phillips curve theory just doesn't work any more or,
  - … believe that great uncertainty exists about the value of NAIRU