Monetary Policy Proposal

An Ideal Monetary Policy Regime

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Abstract

This paper explores historical data and current literature on monetary policy. It addresses questions and concerns such as: What is the objective of monetary policy? What is the current monetary policy? What are the challenges of policy decisions? Should we utilize inflation targeting or price-level targeting? How should the central bank go about communicating with the public? What should the central bank do during a financial crisis? This paper begins by addressing price-level targeting, then interest rate rules, followed by communications and financial stability. In summary, the ideal monetary policy regime:

- Targets Chain-Weighted CPI to an optimized and stabilized price level

- Uses a hybrid of instrument rules and targeting rules, following a carefully formed formula, but not blindly — adjusting to need and backing up all decisions with ample and publicly-transparent reasoning

- Provides detailed reports of the central bank's course of action, explaining each policy decision and how it brings the economy closer to a committed goal

- Takes caution in preventing and during a financial crisis, providing a stable environment where financial markets can recover and maintaining public confidence in the central bank to achieve its announced goals

- Monitors financial stress indexes and asset prices carefully to prevent future financial crises

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Chapter 1

Introduction

1.1 Framework

Many, and in fact maybe even all models of monetary policy regime currently in existence contain some sort of truth or optimality. Each monetary policy regime that had already been posed in the past contains some element that is essential to the ideal, perfect monetary policy regime. This paper aims to accumulate policy suggestions from various sources, filtering out the unnecessary and retaining the essential, filtering out the outdated policies and retaining those that are ideal for today's economy. In an effort to create the ideal, perfect monetary policy, and if not then be a step closer to it, this paper pieces together past and current suggestions on monetary policy. In order to define an ideal monetary policy regime, the Bank should address the following areas:

- Price-level targeting

- Interest rate rules

- Communications

- Financial stability

We will look at each of these areas individually, beginning by examining the current literature, and then through theory and/or empirical evidence, decide upon the ideal policy for the modern economy.

1.2 2018 Semiannual Monetary Policy Report

In the Semiannual Monetary Policy Report to the Congress, Chairman Powell addresses a continued support for monetary policy upheld by previous Chair Yellen. Powell clearly states that the objectives of monetary policy are to maximize employment and price stability through transparent policies and programs. He emphasizes transparency as a foundation for accountability, trustworthiness,

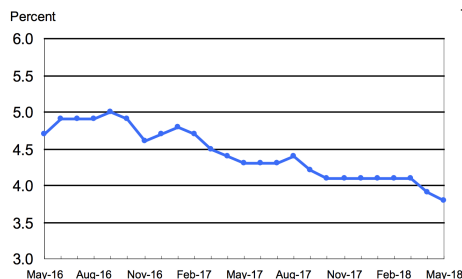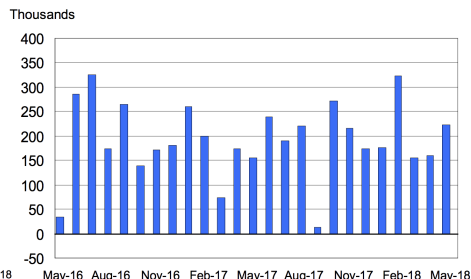**Chart 1. Unemployment rate, seasonally adjusted, May 2016 – May 2018**

Chart 2. Nonfarm payroll employment over-the-month change, seasonally adjusted, May 2016 – May 2018

Percent

Thousands

and ultimately essential for communication between the Federal Reserve and the people of the United States.

1.3   Current Economic Situation

Over the second half of 2017, the U.S. economy grew steadily and continued through 2018. There was significant job growth, averaging 179,000 in July through December. Unemployment rate during this period dropped down to 4.1 percent, which is about 3/4 percentage point lower than the year prior, and in fact the lowest level since December 2000[1]. Labor force participation rate has remained unchanged. Wages have seen continued growth, but the lack of productivity growth in recent years suggests a potential slow down in the near future. GDP rose 3 percent in the second half of 2017, whereas only 2 percent in the first half. Solid increases in consumer spending, rising household incomes and wealth both contributed to economic growth. Business investments have risen sharply and forecast future productivity growth. The housing market and international trade activity alike have seen solid strengthening and growth in demand and support. Inflation has hovered below the 2 percent rate and PCE has increased by 1.7 percent. Powell emphasizes as well that inflation developments will be monitored closely.

1.3.1   Current Monetary Policy

Again, Congress currently sets the goal for monetary policy to promote maximum employment and stable prices. The FOMC has recently been reducing monetary policy accommodation. More specifically, they raised the target range for the federal funds rate by percentage point, so that it currently is 1- to 1- percent. The FOMC will continue to aim for a balance between avoiding an overheated economy and bringing PCE price inflation to 2 percent. Financial

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[1]Source: www.federalreserve.gov/newsevents/testimony/powell20180226a.htm

conditions will continue to be accommodative[2].

Economic activity is expected to expand moderately as the labor market remains strong. Inflation is expected to increase to 2 percent and stabilize at that target level. The federal funds rate will be adjusted based on incoming data. Actual and expected inflation developments will be carefully monitored.

The balance sheet was also normalized to reduce the Fed's securities holdings. The goal of these changes is to sustain the strengthening labor market while maintaining 2 percent inflation.

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[2]www.federalreserve.gov/monetarypolicy/2018-02-mpr-summary.htm

Chapter 2

Price Level Targeting

2.1 Considerations

2.1.1 The Phillips Curve

Before we dive too deep into the discussion of price-level targeting, let's first clarify what has confused economists for years hitherto. First, what is the difference between monetary and real problems? Take a look at the Phillips curve. We will use the original data from the United Kingdom 1913 - 1948, where the Phillips curve was discovered by William Phillips. The Phillips curve suggests a long-run inverse relationship between inflation and unemployment. Its convexity suggests that a greater decrease in inflation volatility accompanies an even greater increases in output volatility, and vice versa for greater decreases in output volatility. It has already been established in past literature that monetary policy could not lower the unemployment rate permanently, but it seems obvious that monetary policy should affect the price of risk — nevertheless, that idea is just as mistaken. Many markets today (i.e. insurance market) allow for the trade and sharing of risk — so in the long run, real quantities and prices of risk are independent of the value of money. Therefore, we should not believe that price stability or financial stability could easily be achieved through monetary policy, simply by reducing the high price of risk.

2.1.2 The Taylor Curve

Price stability enhances the standard of living without facing a choice against high and sustainable growth in standard of living. However, monetary policy faces a tradeoff between variability of inflation and the variability of real economic activity, as summarized by the Taylor curve. Specifically, the Taylor curve shows the inverse relationship between inflation variability and GDP variability. It's like the Phillips curve, except it uses standard deviation instead of means. As shown in the figure, the Taylor curve can be used to measure the effectiveness and achievements of monetary policy.
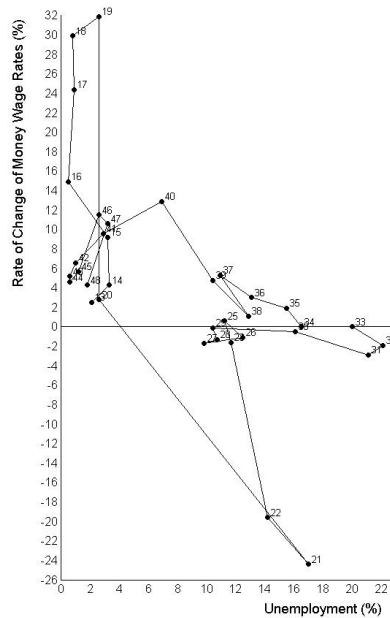
Figure 2.1: The Phillips Curve

2.2 Measure of Price Level

The price level is an index of the prices of current consumption goods and services. It's also the inverse of the value of money. There are three different measure of current consumption: the CPI, the core CPI, and the C-CPI. The figure above uses C-CPI. The most basic CPI presents an average of prices, but faces two weaknesses:

- volatility from its high standard deviation in data

- bias from substitution effect

The CPI uses a fixed basket of goods and therefore does not account for the possibility of a different basket of goods being consumed. More specifically, the CPI cannot account for the introduction of new goods to the market, and improvements in the quality of existing goods.

The core CPI reduces the first problem: volatility, by omitting volatile prices. Based on historical data, the core CPI is indeed a better predictor of future inflation, however it still faces problems:

- bias from substitution effect still remains, though smaller

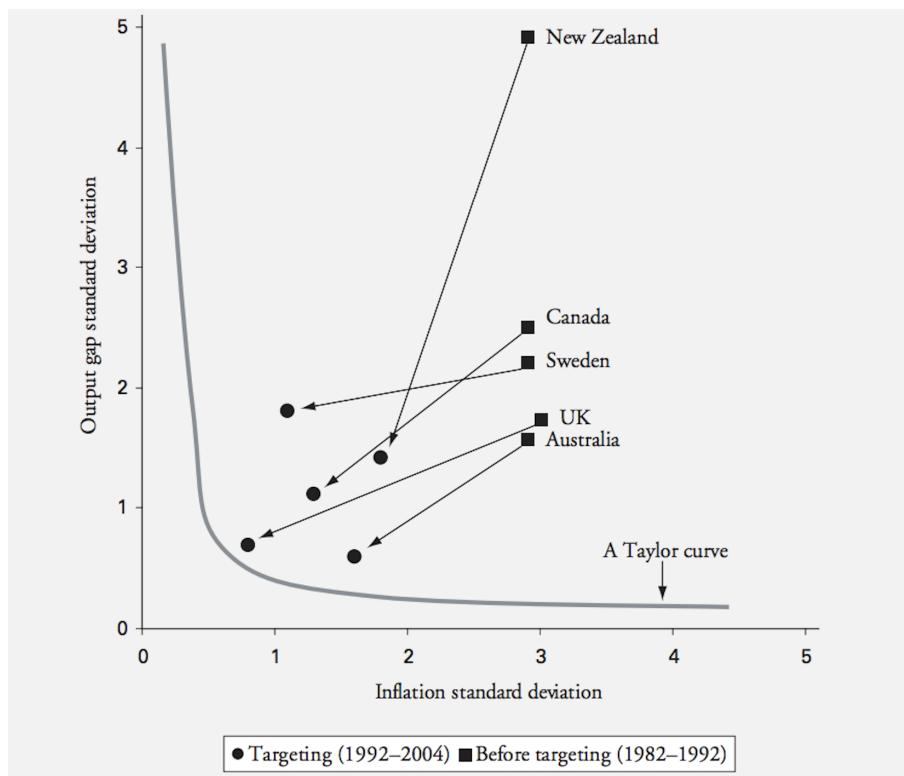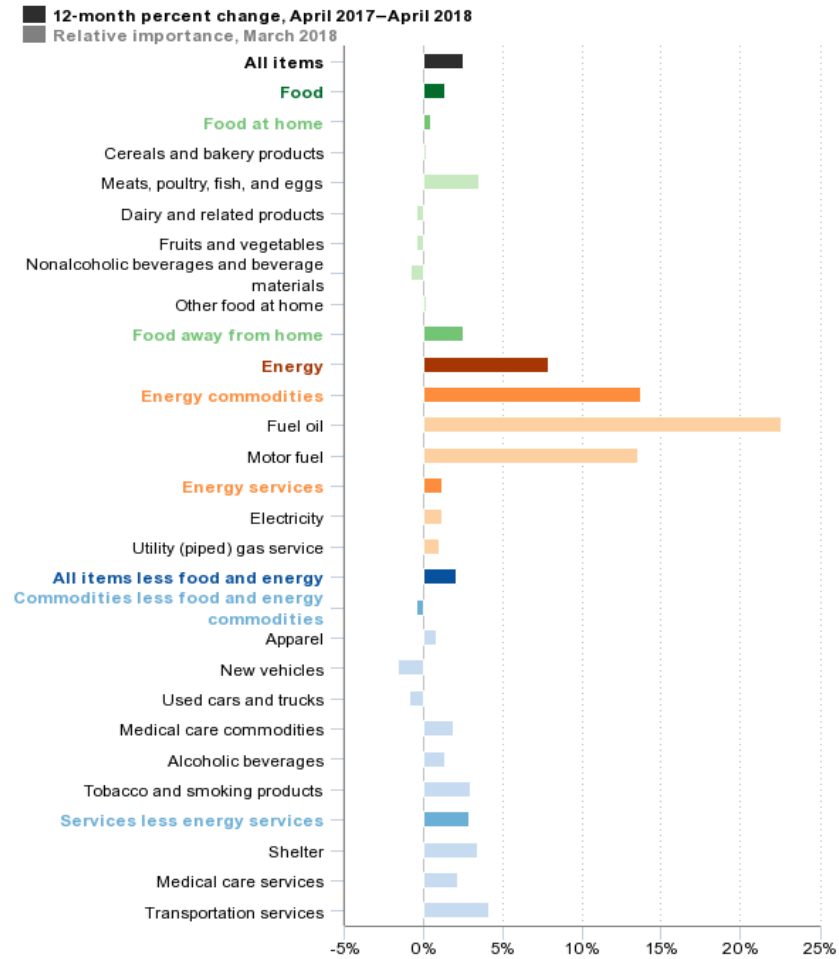- the volatile prices that it omits are also prices that induce public concern

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Figure 2.2: The Taylor Curve

Consumer Price Index for All Urban Consumers, 12-month percent change, by expenditure category, April 2018

Figure 2.3: Consumer Price Index

In other words, it turns a blind eye to a certain category of goods — a category, unfortunately, not to be easily neglected.

The C-CPI is the chained CPI based on the Fisher Ideal index, which eliminates the bias originating from the substitution effects, despite still facing bias from quality improvement and new goods. It's weakness is that the value is difficult to calculate and is not available immediately.

Alternatives to measuring the price level? We could use the GDP deflator, but that shares the same strengths and weaknesses as the C-CPI. We could also try to measure the cost of living, as Reis (2005) does, building upon Alchian and Klein's measure of DPI, but it is not as transparent as CPI and has an even higher volatility — targeting this highly volatile index would give an unfavorable tradeoff, as seen in the Taylor curve.

2.3 Inflation-Rate Targeting vs Price-Level Targeting

Obvious in its name, inflation-rate targeting aims to maintain inflation rate within a target range, and price-level targeting aims to maintain the price-level within a target range. To put their differences simply, in inflation-rate targeting, if we miss the target, there is nothing we can do except try to improve our aim for the next period. However, in price-level targeting, missed targets are not bygones and, for example, if we aimed too high last period, we must aim lower this period to recover back within the target.

2.3.1 Long Term

In the long term, price-level targeting is much more predictable, making it easier for consumption smoothing. Households can more easily decide how much money to save and plan their retirement. Oftentimes, retirement can be one of the most difficult things to plan because of both economic and health risks, but on top of that, there is uncertainty in the future value of money. However, we can increase this certainty by targeting the price level rather than the inflation rate.

The cost of inflation protection, given data from 1998 - 2008, is a little under half a percent a year, more specifically 0.45%. This means, that considering wealth at retirement 40 years later, someone who avoided risk and invested in real bonds would end up with 10% less than someone who invested the same amount in nominal bonds. Where wealth is measured by

$$\sum_{i=0}^{40} S(1+r)^{(T-i)}$$

Overall, we can conclude that:

1. The promise of a strict price-level path would definitely result in significantly increased welfare.

2. Price-level targeting brings us nearer to that promise.

2.3.2   Short Term

Zero Lower Bound

Ambler (2014)[1] Shows us that "price-level targeting can lead to improved macroeconomic stabilization and economic welfare compare to inflation targeting, [especially] when short-term nominal interest rates are stuck at or near their lower bound of zero." Whereas under inflation targeting, the interest rate will remain at the lower bound for some time and aggregate demand may remain depressed, under price-level targeting, a credible commitment to restore the price level to its target path will increase expected inflation such that "the ex ante real interest rate is negative, potentially giving a boost to aggregate demand and output." The model provided by Ambler (2014) shows that under rational expectations, price-level targeting helps to avoid the zero lower bound. Thus, with a reduction in the frequency of reaching the ZLB, the stochastic mean of output, consumption, and hours worked improve.

Inflation Expectations

Price-level path targeting anchors the long-term expected inflation rate. All departures from the path are temporary. In the short term, the expected inflation rate moves opposite of the actual inflation rate. In other words, an unexpected increase in the actual inflation rate lowers the expected inflation rate, since the price level has to return to the target path. As a result, a key factor of inflation volatility is removed — inflation expectations move one for one in the actual inflation rate.

As a result of smaller fluctuations in expected inflation, real GDP experiences decreased volatility as well. Note that these changes are only present when the central bank establishes credible commitment.

2.4   Setting the Target

I believe that a constant price level is ideal in order to strictly anchor the long-term expected inflation rate and maximize welfare from consumption smoothing. Nevertheless, I also believe that we should gradually approach the target constant price level, treating it as the steady state of our price-level path target, as opposed to jumping directly to the constant price level in a single step. Ide-

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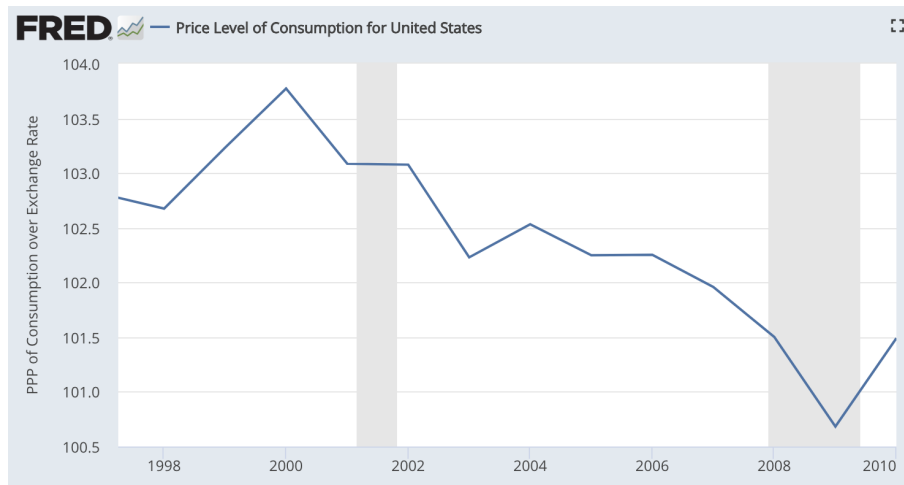[1]www.steveambler.uqam.ca/papers/lowerbound.2014.pdf

Figure 2.4: U.S. Price Level of Consumption

ally, with price-level targeting in use, we would see more flatter trends on the price-level consumption graph and up-down fluctuations that represent efforts to return to the target price-level.

Chapter 3

Interest Rate Rules

3.1 Key Questions

What is the best policy instrument? Should the Central Bank use the overnight rate, the monetary base, or the exchange rate? Clearly, fixing the exchange rate is not a good idea for the large U.S. economy, as doing so may resurrect problems from the age of the gold standard. This means that the best we can do is to leave the market to determine the exchange rate. This leaves us with two options: the interest rate or the monetary base.

3.2 Interest Rate vs Monetary Base

Poole (1970) concluded that unpredictable demand for real GDP in parallel with a fixed quantity of money results in interest rate fluctuations that reduce fluctuations in real demand for goods and services. On the other hand, if the demand for money is unpredictable, fixing the monetary base results in fluctuations that actually increase fluctuations in real demand. Therefore, in this theory, we would want to fix the interest rate.

However, fixing the interest rate does not pin down the price level, yet fixing the quantity of money does — so under this theory, we should fix the monetary base to increase price stability.

3.2.1 Taylor Principle

Nevertheless, given the condition that it follows the Taylor principle, Woodford (2003) tells us that interest-rate setting actually works because, accordingly: if the inflation rate rises, then the real interest rate must rise. Interest-rate setting opposes the change in inflation rate, helping to bring back inflation to its target level. We need to be careful though, since interest rate setting that violates the Taylor principle will result in severe unwanted price-level changes. We set rules

on interest-rate decisions in order to make sure that the interest rate follows the Taylor principle.

Woodford tells us that "monetary policy is fundamentally about managing inflation expectations." We will discuss the rules that govern monetary policy in two categories: instrument rules and targeting rules.

3.3   Instrument Rules

An instrument rule oftentimes uses a formula to translate the economic status quo into a policy decision. The Taylor rule can be expressed as:

$$R = R^* + \pi + 0.5(\pi - \pi^*) + 0.5G$$

where:
R = overnight rate
R^* = neutral real overnight rate, the level where monetary policy does affect aggregate demand, most commonly set at 2%, based on historical average
π = inflation
π^* = target inflation rate
G = output gap

Raising R restrains aggregate demand when R > R* and weakens degree of stimulation when R < R*. Similarly, lowering R when R < R* stimulates aggregate demand and weakens degree of restraint when R > R*. G and pi may be actual values or predicted values, as long as there is transparency on their method of origin such that their values are reproducible. As a more general guideline for the coefficients, the rule satisfies the Taylor principle when the interest rate reacts enough to the inflation rate. These coefficients should be varied to reflect the confidence in predicted variables.

3.4   Targeting Rules

Following a targeting rule, put simply, means the central bank pursues a publicly-announced target and uses discretion constrained by certain requirements to pursue that target. Clearly, a targeting rules allows for more freedom for the central bank and requires more discretion. As a result, Svensson (2005) argues, with what I believe to be overconfidence, that the central bank will make better decision under discretion rather than following simple mechanical rules. Others like Taylor (1993) argue against discretion with historical data that demonstrates the unsatisfactory results of central bank decisions.

I would actually argue for a rule in between the two. I believe that we should follow mechanical rules until special situations arise. That is, we should closely

monitor inflation and price levels and, in the event of an economic situation unaccounted for by our model, we should clarify the situation and 1) justify another policy decision or 2) extend our model to deal with the new situation. In short, I believe that there should be a strict rule in place, but our final decision should be clear and rationalized.

Chapter 4

Communication

4.1 Transparency

In order to be transparent to the people in a clear and concise manner, there should be a standard method of communication for the central bank. Since the central bank can either follow a targeting rule or an instrument rule, this section will be broken up into those categories, explaining the ideal communication process in each of the two cases.

4.2 Targeting-Rule Decisions

Inflation-targeting central banks, as they do already, should provide detailed reports on current and forecasted macroeconomic situations. Specifically, they need to provide forecasts of the inflation rate, the output gap, and nominal interest rates, in order that individuals may make informed decisions. Note that the forecast of the inflation rate should be the target. However, to avoid confusion of objectives, the central bank should also make very clear their goals and their process of achieving those goals. Furthermore, the central bank should instill additional confidence by stating what policy action they would take, should certain, unforeseen shocks occur.

4.3 Instrument-Rule Decisions

Overall, there should be less needed explanation for instrument-rule decisions, since the nature of the rule removes the necessity of forecasting the interest rate. It provides current forecasts of inflation and real GDP, which is enough for individual observers to predict the next policy.

If my recommendation is taken and the central bank makes decisions deviating from the instrument rule or augments the rule, then the bank should clearly

state its reasoning behind the decisions, explaining how their goals have not changed, to maintain transparency and commitment confidence.

Chapter 5

Financial Stability

5.1 Maintaining Stability

This section deals with monetary policy's role during or preventing a financial crisis.

5.2 Prevention

Primarily we examine literature from Crockett, 2003, discussing reactions to signs of a future credit crisis and taking pre-emptive measures in monetary policy to tighten the economy. At first such an action appears to be contradictory to the goal of an inflation target. However, Crockett notes:

"It should be recalled that even in strict inflation targeting regimes concerns with output performance are incorporated through the length of the horizon and the trajectory chosen to return the inflation rate to within its target range, following an external shock." (2003)

Here Crockett notes that pre-emptive tightening does not contradict our inflation or price-level targeting goals. Furthermore, if the central bank chooses to apply expansionary monetary policy, they "could be promoting an insidious form of 'moral hazard', which could actually contribute to generating the problem in the first place" (2003). Therefore, we note again the importance of caution when using monetary policy for pre-emption.

5.3 Curing a Financial Crisis

Bernanke and Gertler (1999) warns that monetary policy should not be neutral or deflationary during asset price crashes. They recommend lower interest rates and additional liquidity to hold up the credit markets.

The safest and more reliable course of action for the central bank to take during financial crisis is to continue to focus on inflation and the output gap. In other words, the interest rate should be set to reflect the actual and forecasted variables, and in this way, financial markets are provided a stable, more predictable environment that they can recover in. Central banks should also work to prevent bank failures by limiting risky actions and instilling public confidence in the banks.

Chapter 6

Conclusion

In summary, the ideal monetary policy regime:

- Targets Chain-Weighted CPI to an optimized and stabilized price level

- Uses a hybrid of instrument rules and targeting rules, following a carefully formed formula, but not blindly — adjusting to need and backing up all decisions with ample and publicly-transparent reasoning

- Provides detailed reports of the central bank's course of action, explaining each policy decision and how it brings the economy closer to a committed goal

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