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The Fed-Strategy: Successful but Out-of-Date?

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1 Introduction

Opinion about the American monetary policy of the past 10-15 years is divided. On the one hand several economists are convinced that the wise policy of the Federal Reserve (Fed) has mainly contributed to the exceptional performance of the US economy in the 1990s.[1] This performance has been especially great in the second half of the 1990s with real growth rates of more than 3.5 % and low inflation rates of about 2 %. This is why some economists call the 1990s the "Fabulous Decade".[2]

On the other hand the strategy of the Fed is strongly criticized. While other central banks like the *Bank of England* or the *European Central Bank* (*ECB*) have made intensive efforts to present the general public with a clear and comprehensible strategy the Fed is – according to these critics – lacking such a clear framework.[3] Instead of a well-articulated strategy the Fed has its "Magician" *Greenspan*. Some economists have meanwhile described the Fed as one of the most opaque and unclear central banks (among the most prominent ones).[4] This paper will attempt to examine if these reproaches against the Fed-Strategy are justified and if the Fed should revise its policy concept.

The paper firstly describes the current framework of the Fed, especially its targets and its operational procedure and shows possible deficits. The result of this theoretical analysis suggests in fact that the Fed's behavior is neither rule-orientated nor transparent. But as can be shown in the second part of the paper this academic and critical view of the Fed policy contradicts the market's opinion about the Fed policy. From the markets' perspective the Fed-Strategy seems to be highly transparent and credible.

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1 "Monetary policy is the key factor behind 'The Long Boom'." (Taylor [1998b], p. 5). See also Mankiw (2001), or Blinder/Yellen (2001).

2 See Blinder/Yellen (2001).

3 See e.g. Cecchetti (1999), Svensson (2001), or Mishkin (2000).

The paper proceeds as follows: The second section touches briefly on the issue as to why it might be important for a central bank to present a clear monetary policy strategy. Section 3 takes a close look at the targets of the Fed. Section 4 describes the current procedure of the Fed in monetary policy and tries to assign the Fed-Strategy to a common framework such as Inflation Targeting or the Taylor-Rule. Section 5 looks at the Fed-Strategy from the markets' perspective, especially the markets' judgment about the credibility and transparency of the Fed as being of central interest.

2 The Rationale for a Clear Monetary Policy Strategy

Since a central bank cannot directly control its final targets (usually inflation and output) it is necessary to formulate a plan or program to achieve these targets. In other words, a central bank needs a monetary policy strategy.[5] Such a strategy has an internal and external function:[6]

- Internally the strategy should structure the process of decision-making and therefore provide the basis for an efficient information processing.
- Externally the strategy takes the role of a communication instrument that should help to explain monetary policy decisions to the public.

Here the external function is at the centre of attention because there is no doubt that the Fed carries out an efficient information processing.[7] The deficits are seen in the external presentation. The two main arguments that are put for-

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4 *Goodhart* called the Fed as "the perhaps most unclear central bank" (FAZ [2001d], p. 14; translation D.H.) when presenting a case study about the transparency of several central banks.

5 "The monetary policy concept is nothing else than a plan or program to achieve the targets of monetary policy." Roth (2002), p. 9 (translation D.H.). See for alternative definitions of the term "monetary strategy" e.g.: Issing (1996), p. 254, or ECB (2001b), p. 40.

6 See e.g. ECB (1999a), pp. 47/48, Winkler (2000), pp. 15-18, or Bofinger et al. (1996), p. 243.

7 The detailed and extensive data analysis can be regarded as one of the main features of the *Greenspan* era, see Mankiw (2001), p. 49.

ward in favor of a transparent strategy are: Enhanced credibility and predictability:

Credibility: Even if the famous model of time inconsistency (see Barro/Gordon [1983], Kydland/Prescott [1977]) that originally opened the debate is increasingly questioned, central bankers and academics agree therein that credibility is an important matter for monetary policy.[8] The announcement of a strategy can be seen as one means to build credibility.[9] It is an effort to capture the systematic behavior of monetary policy. It describes to the public how monetary policy reacts to the arrival of new information. The strategy therefore assures the public that the central bank will react to similar economic situations in the same (predictable) manner. Later the central bank can not easily deviate from this systematic description of its behavior without losing public confidence. This is why the announcement represents a form of commitment.

Predictability: Until quite recently opacity and secrecy were characteristics of monetary policy.[10] In the mean time a lot of central banks prefer to be predictable for the markets. Some central bankers even argue that monetary policy is most effective when the markets correctly anticipate monetary policy decisions.[11] They emphasize the central role of market expectations in the monetary transmission process. A transparent and open central bank can improve the influence on market expectations and bring them into better alignment with central bank intentions. For example if financial markets anticipate a monetary eas-

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8 In a study which was carried out by *Blinder* all questioned central bankers and academics considered credibility as very important, see Blinder (1999), pp. 3/4. High credibility guarantees for example stable private inflation expectations despite a negative supply shock. Therefore credibility can improve the trade-off between output and inflation variability, see Clarida et al. (1999), pp. 1675-1683.

9 See Issing et al. (2001), pp. 38 and 45, as well as Bofinger et al. (1996), pp. 242/243.

10 See e.g. Goodfriend (1986).

11 "…monetary policy works best when Fed policy actions are completely anticipated by the time they occur. " Poole (2001). See also Blinder pp. 70-73, Blinder et al. (2001), p. 11, Roth (2002), pp. 2-4, Ferguson (2002).

ing (series of short-term interest rate cuts) long term interest rates will drop and support the intentions of the central bank to stabilize economic growth.

A strategy is an instrument to improve the predictability of the central bank. One task of the strategy is to translate the often very complex decision-making process into a comprehensible "language" for the public.[12] A strategy should provide a "common understanding"[13] between the central bank and the public. For this some central banks use simple rules or indicators as a means of communication. Even if a rule oversimplifies (and is not strictly followed) it is still a reference point around which the communication can be structured.[14]

A central bank that manages to present a systematic and understandable strategy gains in credibility and transparency. This contributes to an improved efficiency in monetary policy since such a bank acts on the basis of low inflation expectations and stable market reactions.

There are some elements that central banks increasingly use to improve the transparency of their monetary strategy:

Targets: Most central banks have announced explicit numerical inflation targets.

Models: Central banks begin to publish their centrally used macroeconometric models.[15] This reveals the central bank's thinking about the monetary transmission process.

Indicators: Some banks (e.g. *ECB, Suisse National Bank*) emphasize the role of the money supply for monetary policy and use this indicator preferentially to explain their decisions.

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12 See Winkler (2000), pp. 23-25, and Spahn (2001), pp. 8-11.

13 Winkler (2000), pp. 8, and 23.

14 The *German Bundesbank* has for example used a monetary target as a communication instrument that simplified the communication process. However, it did not strictly follow the rule.

Forecasts: Quite a lot of central banks meanwhile publish their estimates of future inflation and output development.

Simple rules: A few banks use simple rules to support their arguments. The Sveriges Riksbank for example explains its basic actions with a "simple rule of thumb".[16]

In the following sections we will examine if the Fed also uses these elements to communicate with the public and if the Fed has succeed in being transparent and credible.

3 The Targets of the Federal Reserve System

3.1 The Dual Mandate: Price Stability *and* Full Employment

The monetary policy targets are the basis of each strategy. The Fed's targets are predetermined by the *Federal Reserve Act.* According to this act the Fed should seek to promote effectively the goals of:[17]

1) maximum employment
2) stable prices
3) moderate long-term interest rates

The second goal – stable prices – is not a controversial objective. There is a great consensus among the monetary policy profession that price stability is an indispensable part of the monetary goals. Fed officials also see price stability as the primary long-run goal of monetary policy.[18] They mention again and again

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15 See e.g. Bank of England (1999b).

16 „… if the inflation forecast … is in line with the target at the time horizon of twelve to twenty-four months, then the monetary stance is appropriate." Berg (1999), p. 48.

17 Quoted from Board of Governors (1994), p. 17.

18 "... price stability ... is elevated to the status of the primary long-run goal of monetary policy." Ferguson (1998), p. 2. "... we have kept our focus firmly on the ultimate goal of achieving price stability." Greenspan (1997). "This ... makes price stability (in some

that central banks could quite well control inflation in the long term and that price stability is a major perquisite for a good economic performance.[19]

More problematic and misleading is the first goal "maximum employment". It certainly does not mean an unemployment rate of zero percent because this would lead to accelerating inflation.[20] Maximum employment is rather interpreted as the highest possible level of employment that is compatible with price stability. This is for example the interpretation of the former Fed Governor *Meyer*:

"... the goal of maximum employment is usually interpreted as maximum sustainable employment – meaning the highest level of employment that can be maintained without upward pressure on inflation."[21]

The unemployment rate that corresponds to this level of employment is also called the NAIRU[22]. This is why some interpret the goal of "maximum employment" as stabilization of the unemployment rate around the NAIRU.[23] There is also a consensus that the NAIRU itself is not controllable by the Fed, but is instead mainly determined by the labour market conditions and structures.[24]

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shape or form) the direct, unequivocal, and singular long-term objective of monetary policy." Meyer (1998), p. 2.

19 "A stable level of prices appears to be the condition most conducive to maximum sustained output and employment ..." Board of Governors (1994), p. 17. "... a central bank's vigilance against inflation is more than a monetary cliche; it is, of course, the way we fulfil our ultimate mandate to promote maximum sustainable growth." Greenspan (2001b).

20 "In the presence of a price stability objective, it [maximum employment] cannot possibly mean the largest number of jobs that the economy can generate." Blinder (1997), p. 4.

21 Meyer (2001), p. 2.

22 NAIRU = Non-Accelerating Inflation Rate of Unemployment.

23 See Blinder (1997), p. 4.

24 "This rate [NAIRU] - ... – is a fact outside the control of the FOMC." Meyer (1998), p. 2. According to *Yellen* hysteresis effects might be relevant for the European but not for the American monetary policy, see Yellen (1996), pp. 2/3.

So the general attitude of the Fed towards the connection between monetary and employment policy might be summarized in the following way:

1) In the long-term monetary policy is neutral. A permanently expansionary policy does not lead to higher growth rates or to a higher level of employment.

2) In the short run however deviations from the maximum sustainable level of employment are possible. A central bank should make use of its ability to smooth these deviations.

The third objective of the target list – moderate long-term interest rates – is usually not viewed as an independent one.[25] Instead it is normally assumed that it will be automatically achieved with price stability. Therefore the Fed has a dual mandate. It should provide for price stability and full ("maximum") employment and full employment is regarded as achieved when the unemployment rate equals the NAIRU.[26]

Such a dual mandate that equally values full employment and price stability is unusual today.[27] Most laws of central banks mention only a price stability objective or give price stability clear priority. In this case we speak of a hierarchical mandate with price stability at the top of hierarchy.[28] The outsider role of the Fed will become clear with the following table.

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25 See Meyer (2001), p. 2, and Svensson (2001), p. 3.

26 "The mandate is therefore interpreted as a dual mandate: full employment and price stability." Meyer (2001), p. 2. "The Federal Reserve Act mandates that we promote price stability and maximum employment." Fergusen (1998).

27 "... among the OECD central banks, the Fed stands out as being the only one with such a broad mandate." Wyplosz (2001), p. 5.

28 See Meyer (2001), p. 1.

Table 1: „Dual“ versus „Hierarchical Mandate“

CENTRAL BANK	MANDATE		QUANTITATIVE INFLATION GOAL
	Dual	Hierarchical	
Federal Reserve	X		No
European Central Bank		X	< 2 %
Bank of Japan		X	No
Bank of England		X	2.5 %
Reserve Bank of Australia	X		2-3 %
Bank of Canada		X	1-3 %
Swedish Riksbank		X	2 %
Suisse National Bank		X	< 2 %
RB of New Zealand		X	0-3 %
Bank of Korea		X	2.5 %

The Fed's dual mandate seems to be antiquated but most Fed Governors accept and defend it. When they are talking about policy goals they always emphasize that apart from price stability the second rather short-term goal is stabilization of output and employment. Mitigating economic swings is naturally seen as a task of monetary policy:

Greenspan*: "... we have attempted not only to lean against the potential for an overheating economy, but also to cushion shortfalls in economic growth."*[29]

Ferguson*: "..., in the shorter run, monetary policy can play an important role in stabilizing the economy from undesired fluctuations in economic activity and inflation."*[30]

Yellen*: "In my view, monetary policy is needed, and has succeeded, in smoothing the ups and downs of the business cycle ... It thus follows that stabilization of output and employment is a second appropriate goal for the Federal Reserve."*[31]

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29 Greenspan (1997).
30 Ferguson (1998).
31 Yellen (1996), p. 3.

The Fed mentions explicitly that a conflict between the two goals is possible and that in some situations the employment target is at the centre of attention while the inflation target has to step back. Examples for this could be periods of demand weakness or a negative supply shock. It is said in an official publication of the Federal Reserve Board for example:

"... in the short run, some tension can arise between the efforts to maximize employment and output. ... In these circumstances, makers of monetary policy must decide the extent to which they should focus on defusing price pressures or on cushioning the loss of output and employment."[32]

Such a situation occurred in 2001 when the Fed worried more about weak employment and growth development than about the danger of inflation and this already at a time (January 2001) when the actual inflation and employment data suggested rather a violation of the inflation target.[33] The FOMC finished each of its *Press Releases* after an open market meeting with the following comment:

"The Committee continues to believe that, against the background of its long-run goals of price stability and sustainable economic growth ... the risks are weighted mainly toward conditions that may generate economic weakness in the foreseeable future."[34]

The Fed knows that its policy is not able to provide permanent full employment and cannot eliminate each economic cycle. *Greenspan* again emphasized this point a short while ago.[35] But this does not change the fact that the Fed

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32 Bord of Governors (1994), pp. 17/18. „Even after price stability has been attained, there will remain some tradeoff between the volatility of real outcomes and reducing the volatility of inflation ..." Yellen (1996), p. 4.

33 In the fourth quarter 2000 the inflation rate (CPI) was above 3 %, while the unemployment rate was clearly below the common estimations of the NAIRU (5 – 5.5 %).

34 *Press Releases* of the FOMC statement: 03.01.01, 31.01.01, 20.03.01, 18.04.01, 15.05.01 etc.

35 "But do we [the central bank] have the capability to eliminate booms and busts in economic activity? ... The answer, in my judgment, is no ..." Greenspan (2001b).

at least tries hard to reduce fluctuations in output and employment. *Blinder* in particular pointed out that the criticism of "fine-tuning" in monetary policy should not lead to a complete abjuration of any stabilization policy.[36]

If we compare this attitude of the Fed towards the goals and tasks of monetary policy with the view of the *European Central Bank* on these issues we can see a clear difference. European (especially German) policy makers have a different philosophy of monetary policy from American central bankers.[37] The *German Bundesbank* for example which dominated the European monetary policy before 1998 has always refused to act as an economic stabilizer and focused its attention on price stability.[38]

This is way the *Bundesbank* always justified interest rate cuts with arguments such as "monetary expansion weakens", "inflation rates are declining" or "the price climate relaxes" but not with the need to improve the economic demand.[39] The *ECB* seems to continue with this tradition. Just after the beginning of the monetary union *Duisenberg* pointed out that the attempt to steer the economy in the short run would be *"overambitious and therefore risky"*.[40] This is why the *ECB* explained its interest rate cuts in the year 2001 (until September 11) with the declining inflation pressure and not with the need to strengthen economic demand.[41]

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36 See Blinder (1997), p. 12. Yellen argues similarly: "I recognize the difficulty of conducting monetary policy over time in a way that will damp business cycles ... The record [of monetary policy] to me indicates that within limits 'tuning' works, even if it's not fine." Yellen (1996), pp. 3/4.

37 See e.g. Hüther (2001), p. 35, Barbier (2001), p. 13, or Fehr (2001), p. 13.

38 A statement that the *Bundesbank* used to justify its very cautious monetary easing in the recession year 1993 is typical for this thinking: „ A more forceful monetary easing that is motivated by the exchange rate or the economic situation risks to have a counterproductive effect on the economy at a whole." Deutsche Bundesbank (1993), p. 63 (translation D.H.).

39 An overview of the explanations for reductions in German prime rates in 1993 and 1994 gives Bofinger et al. (1996), pp. 274-276.

40 Duisenberg (1999), and see Bofinger (1999), p. 6.

41 The *FAZ* commented the *ECB* decision of Mai 2001 in the following way: "Duisenberg explained the interest rate cut of the ECB – certainly in explicit contrast to the Fed – ex-

However the Fed has not been willing so far to state more precisely its general targets of price stability and full employment with the help of numerical quantities. According to *Greenspan* price stability is reached when: *"inflation is so low and stable over time that it does not materially enter into the decisions of households and firms."* Greenspan (2001c).

To sum-up, we can say that the Fed has got the legal mandate to promote price stability and full employment. Full employment is not interpreted as an unemployment rate of zero percent but as the maximum level of employment that is compatible with price stability. This dual mandate that equally values both targets is today rather an exception. In new modern central bank laws price stability is normally given the highest priority. But for American policy makers it is natural to fight not only against inflation but also against an economic slump. At some times (weakening demand, negative supply shock) it is even possible that the Fed mainly concentrates on the full employment goal. The limits of monetary policy are also clear for the Fed. Monetary policy is neither able to eliminate completely economic cycles nor is it able to bring the US economy onto a higher growth path. However, the Fed does not specify the exact level of its targets.

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clusively with the reduced inflation pressure in the medium-term and not with reference to the economic downturn." FAZ (2001b), p. 1 (translation D.H.).

3.2 The Criticism of the Fed's Target Definition

If we consider the criticism of the Fed's legal mandate and its interpretation we can distinguish two sides. On the one hand there are complaints about the unclear target definitions (the missing quantification, the vague employment target); on the other hand some economists disapprove principally of the dual mandate.

At first it is conspicuous that the Fed is one of only a few central banks that does not possess a numerical inflation target (see table 1). In some respects this can be disadvantageous:

- At times with low inflation – e.g. 3 % – it is unclear for the public if price stability is achieved in the Fed's sense or if the Fed is more ambitious and will carry out further restrictive actions in the near future.

- It is also unclear as to which price index the Fed gives primary consideration. There are some indications that the Fed does not pay most attention to the commonly used consumer price index but instead to the index of personal consumption expenditure (PCE).[42]

- Without an explicit inflation target the Fed lacks a nominal anchor and therefore inflation expectations have no point of orientation when inflation rises temporarily.[43]

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42 "..., there has been little, if any acceleration in the index of core personal consumption expenditure prices, which we consider to be a more reliable measure of inflation [than the CPI]. " Greenspan (2001b). Since February 2000 the FOMC measures the inflation forecasts which are presented in the *Congressional Reports* on the basis of the PCE-index instead of the CPI-index; see Board of Governors (2000a), p. 37 (footnote).

43 "... this strategy makes it harder for the Fed to contain the medium-term effects of a supply shock because the absence of a nominal anchor makes inflation expectations more susceptible to rise when this occurs. " Mishkin (1999), p. 600.

- An official, numerical inflation target would also help to improve the internal decision-making process since the Fed Governors obviously have different opinions about the appropriate inflation level.[44]

For these reasons even some Fed Governors have already approved a concrete inflation target.[45] But we could also make some points against a precise numerical definition or rather the issue of target definitions could also be regarded more calmly:

- If the public looks at the inflation development of the previous years it can easily deduce a target range for the inflation rate of 1-4 %. Since 1998 we can recognize that private inflation expectations stabilized – without a clear target definition – at a level of 2.5 % (see chapter 5).

- Some Fed Governors emphasize that in a time of rapid technological change and a lot of intangible goods (e.g. software) it becomes more and more difficult to measure inflation exactly. For this reason the specification of a numerical inflation target *"would represent an unhelpful and false precision"*. Greenspan (2001c).[46]

- The benefit of a quantitative inflation target as a means of gaining higher credibility is rather limited in the case of the Fed since it already has quite a high reputation in inflation fighting.[47] Even if the Fed does not have a precise nominal anchor it is only scarcely conceivable that inflation fears would increase spontaneously after a negative supply shock in the USA.

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44 See Cecchetti (1999), p. 3, and Blinder (1997), p. 5.

45 The former Fed Governor *Meyer* has proposed an inflation target of 2 % (CPI) for the Fed. One percent point should take measurement errors into account and the other percent point should be a cushion of flexibility for the Fed, see Meyer (2001), pp. 12/13.

46 See also Ferguson (2002).

47 See Ferguson (2002).

To sum-up, it might not be absolutely necessary for the Fed to publish a numerical inflation target. But if we weigh up the pros and cons we can rather see a gain (at least no loss) in transparency for the Fed in announcing a numerical inflation target. This is particularly the case if we consider that an inflation target is normally only an orientation point of the medium-term so that measurement errors hardly count.

The criticism of the second (growth and employment) goal starts with the verbal definition. The term "maximum employment" is certainly misleading and should be clarified in an official Fed publication. The Fed could provide additional transparency with a numerical definition of the employment target. The announcement of a natural unemployment rate or a target rate for real growth that equals estimated potential growth would be possible ways of achieving a numerical definition.[48]

Apart from the criticism of the unclear target definition there is a more fundamental criticism that principally rejects the dual mandate. According to this line of criticism the equal value of the two goals weakens the Fed's credibility. This is why these critics demand a clear mandate with price stability as the overriding, long-run goal. This would focus public debates on what monetary policy can do, namely maintaining price stability and lessen the pressure on the Fed to engage in expansionary policy.[49]

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48 If we consider the problems of estimating the NAIRU (see e.g. Staiger/Watson [1997]) it is certainly even more difficult to correctly measure the employment goal than the inflation goal. For this reason *Ferguson* rejects categorically the quantification of employment targets, see Ferguson (2002).

49 See Mishkin (2000), p. 8. An additional point of criticism is that the dual mandate lessens the accountability of the Fed: " … with its broad mandate, the Fed can always escape criticism – and possibly hide its mistakes – by explaining that it had been working hard at confronting its many and occasionally conflicting obligations." Wyplosz (2001), p. 5.

But there are also some arguments in favor of the maintenance of the dual mandate:[50]

- Several investigations meanwhile support the thesis that monetary policy is able to smooth output and employment volatilities.[51]

- A central bank with a hierarchical mandate would always be forced to decide in favor of lowering the inflation variability in situations where monetary policy is confronted with a trade-off between output and inflation variability. However this does not correspond to public preferences. The public not only favors stable prices but also full employment.

We can recognize that in the practice of monetary policy even central banks with a sole legal mandate to pursue price stability also consider output goals.[52] But obviously it is a widespread tactical procedure to mention publicly only one target – price stability. With this, any doubts about the credibility of the inflation target should be dispelled from the outset.[53] However, if we take the demand for high transparency seriously then the dual mandate should be welcomed and the Fed be praised for its openness in view of the output goal.

To sum-up, the Fed has kept some secrecy in the field of the definition and interpretation of its targets. The Fed's monetary policy could probably become

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50 See Meyer (2001), pp. 5-7, and Yellen (1996), pp. 3/4.

51 Research studies in the field of monetary policy rules show that those rules are most efficiently which attempt to reduce both price and output variability, see Taylor (1993), pp. 200-202.

52 It is frequently emphasized that Inflation Targeting central banks do not carry out "strict" but "flexible" Inflation Targeting in practice, i.e. they pay also attention to output goals, see e.g. Svensson (1999), pp. 625/626.

53 Two foreign central bankers once "lectured" Fed Governor Meyer in the following way: "a disciplined central banker would never admit to having a stabilization objective ... Such admission ... would only undermine the public's confidence in a central banker's commitment to price stability." Meyer (2001), p. 8. *Poole* argues in a similar way: "... it is important that the Fed not overemphasize any of the short-run objectives because doing so may create expectations in the market that ... will be inconsistent with the inflation objective." Poole (2000).

more transparent for the public with a quantification of the inflation target and an official clarification of the term "maximum employment". The general complaints about the dual mandate are less convincing. Virtually all central banks consider employment goals. So the Fed expresses openly what others only admit in confidence.

4. The Operating Procedure of the Fed

4.1 From Monetary Targeting to a Multi-Indicator Approach

Since a direct steering of inflation and employment is not possible (owing to monetary lags) the Fed needs an operating procedure to achieve its final targets. Commonly used operating procedures of other central banks to achieve the primary goal of low inflation are: Monetary Targeting, Inflation Targeting or Exchange Rate Targeting. Can we assign the Fed policy to one of these popular strategies or can we even recognize other rule-like behavior?

Between 1979 and 1982 the Fed quite strictly carried out a strategy of Monetary Targeting.[54] However the announced monetary targets were mostly missed because of an unstable money demand.[55] This is why the Fed soon gave up its *"experiments in practical monetarism"* (Volcker [1977], p. 26). Thereafter the Fed still closely considered the wider monetary aggregate M2. However the signals from this aggregate also became more and more unreliable owing to a rise in the velocity of M2.[56] Therefore since about 1993 the Fed has disre-

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54 In this period the Fed did not only announce monetary targets what was already the case before 1979 but also tried to use the monetary base instead of the short-term interest rate as an operating target. See for an overview of this period Meulendyke (1998), Bofinger et al. pp. 279-284, or Bernanke/Mishkin (1992), pp. 11-17.

55 The instability of the monetary demand referred especially to the narrow monetary aggregate M1 which was at that time the primary goal variable. The yearly monetary targets (with regard to M1) have been exceeded in 1980 and 1982 and fell below in 1981, see Bernanke/Mishkin (1992), p. 13.

56 See Greenspan (1997), p. 2, and Board of Governors (1994), pp. 27-29.

garded for the most part monetary aggregates when deciding monetary policy.[57] *Mankiw* concluded that against the background of the exceptional economic performance in the 1990s this procedure of ignoring the monetary aggregates has been quite successful.[58]

Following Monetary Targeting no other intermediate target has been found which would have been appropriate to take over the leading function of the monetary aggregates. Instead of a paramount indicator, the Fed nowadays uses a broad range of indicators to assess the stance of monetary policy. Therefore the Fed approach is called a "multi-indicator" strategy.[59] With this approach the US monetary policy became more discretionary and eclectic as the Federal Reserve Board admitted itself.[60]

The following table presents some examples of indicators the Fed used to justify its monetary policy decisions in the period from June 1999 to August 2001. They are taken from the *Press Releases*, the *Monetary Policy Reports to the Congress* and the *Minutes* of the FOMC meetings.

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57 Until February 2000 the Fed was legally forced to announce target ranges for the monetary aggregates M2 and M3. However, the Fed always emphasized that it does not pay much attention to these targets. In July 2000 the Fed stopped formulating monetary targets, see Board of Governors (2000b), p. 62.

58 "If ... the performance of the economy is any guide, this policy of ignoring data on the monetary aggregates has proven a remarkably effective operating procedure." Mankiw (2001), p. 35.

59 Others call it a "just do it"-strategy (Mishkin [1999], p. 601) or a "looking at everything"-strategy (See Issing [1998], p. 6, or SVR [1999], p. 236).

60 See Board of Governos (1994), p. 32. "Thus, as the historic relationship between measured money supply and spending deteriorated, policymaking, seeing no alternative, turned more eclectic and discretionary." Greenspan (1997).

Table 2: Explanations for Interest Rate Decisions
(June 1999 - August 2001)

June to November 1999:	**Interest rate hikes: 4.75 → 5.5 %**
General situational description	Inflationary risks
Domestic demand	Strong consumer and business demand
Supply side	Tight labour markets
Price developments	Prices of imports↑ (in particular commodity prices)
International Development (After the Asian crises)	Recovery of foreign economies
	Relaxation on international financial markets

February to Mai 2000: Interest rate hikes: 5,5 → 6,5 %	
General situational description	Growth rate of demand > Growth rate of production potential
Domestic demand	Extensive consumption expenditures (consumer confidence↑, wealth effects)
	High business spending in high-tech capital goods
Supply side	Taut labour markets (indications of increasing labour costs)
	Large trade deficit (further imports are limited)
Financial markets	Expectation of restrictive policy actions

June to November 2000:	**Constant federal reserve rate of 6.5 %**
General situational description	Aggregate demand moderates toward a more sustainable pace, slight inflation risks
Domestic demand	Consumer demand ↓ (stock markets↓, household dept↑, signs of saturation in the markets for durable goods)
Supply side	Taut labour markets (but also high productivity growth)
Financial markets	Tighter financial market conditions
Price developments	Energy prices↑ (Risk of increasing inflation expectations)

January to May 2001: Interest rate cut 6,5 → 4 %	
General situational description	Danger of recession, inflation contained
Economic activity	Production ↓ (Excess inventories)
	Retail sales ↓
Consumer demand	Consumer confidence ↓
	Purchasing Power ↓ (Energy costs ↓)
	Stock prices ↓
Business demand	Business confidence ↓
	Business profit margins ↓
	Tight financial market conditions
External demand	Global economic weakness
Inflation Perspectives	No signs of abating gains in productivity
	Sluggish demand (resource utilization↓, firms are not able to raise prices, well-anchored inflation expectations)

June to August 2001: Reduced interest rate cuts 4 → 3,5 %	
General situational description	Still danger of recession, but first signs of a turnaround
Restraining factors	Forecasts of business profits and sales ↓
	Low business and consumer confidence
	Stock prices ↓
	Real income ↓ (unemployment rate ↑)
	Weak external demand
Stimulative factors	Stimulative financial market conditions (low real rates)
	Energy prices ↓
	Tax cuts
	Continued high rates of technological progress expected

It is conspicuous that real economic, rather than monetary indicators dominate in explaining decisions. With the help of these indicators the Fed analyses the supply and demand side of the economy and judges if aggregate demand is in balance with aggregate supply. If there are convincing indications of an output gap the Fed tries with corresponding interest rate movements to bring aggregate demand again in line with potential supply. Two examples should explain this way of proceeding:

- At the beginning of the year 2000 the Fed was sure that aggregate demand exceeded the expansion of production potential (see also the table of indicators). Interest rate hikes should therefore moderate aggregate demand:

  "The Committee's decision to tighten its policy stance was intended to help bring growth of aggregate demand into better alignment with the expansion of aggregate sustainable supply ... Relatively high real interest rates would be required to accomplish this objective." Board of Governors (2000b), pp. 207/208.

- At the beginning of 2001 we had the opposite situation. It was rapidly clear that the economic growth would soon be below the potential growth and it followed interest rate cuts.

  "... the economy appears to be on track well below the ... rate of growth of its potential." Greenspan (2001a).

It is an ideal situation for the Fed when the economic growth rate corresponds with the growth rate of potential supply. The Fed can then realize both targets – maximum employment and price stability.

The Fed carries out a thorough investigation of the current economic situation to diagnose a positive or negative output gap. It presents this situational description of the economy to the public in the *Congressional Reports* and the *Minutes*. In particular the development of the different components of demand

(consumer, business, public and export demand) is described therein in detail. Another emphasis is put on the analyses of the labour market which should show limits or scopes on the supply side. Of course price developments and different price indexes (producer prices, energy prices) are regarded carefully to early discern other sources of price pressure than labour costs. With the help of this economic description presented in the *Minutes* and the *Congressional Reports* the public knows what the Fed thinks about the current economic situation.

But this in itself does not lead to transparency in monetary policy. Up to now the Fed neglected to explain the transfer of the economic analysis in monetary policy decisions. There is a wide gap between the extensive description of the economic situation and the rather paltry explanation of policy decisions. The Fed always mentions only some indicators to justify its decisions as can be seen from the table of indicators. It does not present a complete overview of the individual indicators and their monetary policy signals. The public can only guess what priority or weight the Fed assigns to the different factors.

Advocates of Monetary Targeting in particular therefore heavily criticise the Fed's multi-indicator approach which is lacking a clear hierarchical structure of the indicators:[61]

- The American general public may soon get the impression that monetary decisions are randomly justified since the Fed always chooses only some of the relevant indicators to explain its decisions.

- In addition the different indicators will often send out opposing signals and the Fed will frequently be able to give a convincing justification for interest rate hikes and cuts at the same time. That is why this approach grants the central bank enormous discretionary scope.

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[61] See for a general critic of the multi-indicator approach: Issing (1998), p. 6, SVR (1999), p. 236, and Deutsche Bundesbank (1995), pp. 67/68.

- Owing to the various indicators the approach is very complex. This might lead to disorientation and uncertainty in the markets. Because of this, it will be difficult for the markets to predict future monetary policy moves.

For these reasons a part of the monetary policy profession does not consider the approach as being suitable in promoting credibility and predictability in monetary policy. They recommend that the Fed should follow a more rule-oriented approach.[62] But we can also mention two other possibilities for enhancing the transparency without changing the whole strategy.

One way to structure the approach more clearly could be the drawing of a raster which sorts the various indicators into some categories. Such categories could be: "labour market", "consumer demand", "business demand" etc. Each category could then produce its own policy recommendation (neutral, expansive, restrictive). In times with low unemployment rates and rising unit labour costs a category "labour market" would send for example a restrictive signal and therefore recommend a monetary tightening. Additionally the individual categories should be weighted according to their importance for monetary policy.

A second way to illustrate more clearly the monetary policy thinking of the Fed could be the publication of the centrally used macroeconometric model. The staff of the Fed has developed such a model to estimate the economic consequences of different monetary policy options (e.g. an interest rate increase by 25 or 50 basis points). Because of the incorporated assumptions this so-called FRB/US model belongs to the class of "New Keynesian" models.[63] Among other things it presumes that prices adjust only gradually so that markets do not quickly clear after disturbances. Owing to these price rigidities the central bank

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62 "The Fed should examine the reintroduction of Monetary Targeting." Tigges (2001), p.13 (translation D.H.). See also Mankiw (2000), p. 12.

63 See for an overview of the model e.g. Reifschneider et al. (1999), or Brayton/Tinsley (1996).

is able to make an influence on the real interest rate and hence on the inflation and output development. The model is in accordance with the Fed's philosophy because it assumes that monetary policy can mitigate output volatilities by altering financial market conditions.[64] But for different reasons the FRB/US model also gives no clear indication to the general public about US monetary policy:

- It is only one among many inputs for the decision-making process and by no means the most important one.[65]
- The Fed-staff has developed the model without the cooperation of the Federal Reserve Board. Therefore the model does not necessarily represent the opinion of *Greenspan* and his colleagues.

To sum-up, whereas in the 1970s and 1980s monetary aggregates dominated in assessing the stance of monetary policy, today the Fed uses a broad range of real economic indicators as the basis for the decision-making process. With the help of these indicators the US central bank analyses the supply and demand side of the economy and judges if aggregate demand is in balance with aggregate supply. In the case of a supposed positive (negative) output gap the Fed increases (decreases) the real federal funds rate to bring aggregate demand again in line with potential supply. With the help of different sources (*Minutes*, *Congressional Reports*) the Fed gives the public an extensive insight into its assessment of the current economic situation. But the link from economic analysis to monetary decisions is less transparent in the American policy. The Fed explains its decisions quite selectively with only a few suitable indicators. It does not present a general overview of the stance of monetary policy. Critics consider the complex "looking at everything" approach used by the Fed as not suitable in promoting credibility and predictability in monetary policy.

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64 See Reifschneider et al. (1999), pp. 1/2.

65 See Blinder et al. (2001), p. 35.

4.2 The Fed – an Inflation Targeter?

In the 1990s several central banks have (like the Fed) abandoned a strategy with an intermediate target and switched to a multi-indicator approach. But in contrast to the Fed some central banks (e.g. *Bank of England*) developed this approach further to the new strategy of Inflation Targeting. In this framework an inflation forecast that the central bank produces itself plays the central role. This forecast can be seen as a condensation of the multitude of indicators. It summarizes the different and partly inconsistent signals about the future inflation development to a clear overall picture.[66] Therefore the inflation forecast is a sort of an artificial intermediate target and interest rate decisions are made on the basis of a comparison between the inflation forecast and the inflation target.[67] This procedure should make monetary policy more rule-like. At the same time it should become easier for the public to comprehend monetary policy decisions since the central bank is forced to summarize its view about the future inflation development in one sole figure.

Certain similarities of the Fed policy to Inflation Targeting can not be denied. *Mankiw* for example describes the proceeding of the Fed in the 1990s as "covert 'inflation targeting'" (Mankiw [2001], p. 51).[68] In particular the attempt of the Fed to act in a forward-looking and pre-emptive way resembles an Inflation Targeter. Besides, *Greenspan* emphasizes at every opportunity the central role of forecasts in US monetary policy.[69]

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66 "The inflation forecast which is estimated by the National Bank is used as a concentrated summarize of the current situation." Roth (2002), p.10 (translation D.H.).

67 *King* was the first person who introduced the idea of an inflation forecast as an intermediate target (see King [1994], p. 118). *Svensson* theoretically underpinned this notion (see Svensson [1997]). In the mean time it is also adopted by central bankers (see e.g. Goodhard [1999], p. 104, or Berg [1999], p. 47). Therefore it would be more precise to speak of "Inflation Forecast Targeting" instead of "Inflation Targeting", see Svensson (1997), or Haldane (1998), p. 5.

68 See also Bernanke et al. (1999), p. 310.

69 "... expectations about future economic developments nonetheless inevitably play a crucial role in our policymaking. " Greenspan (2001b).

Correspondingly enormous resources are devoted to the activity of forecasting.[70] Two forecasts play a particular role in the policy-making of the Fed:

- *The economic forecasts in the Monetary Policy Reports to the Congress:* Twice a year each member of the *Federal Reserve Board* and each President of the Federal Reserve district banks makes an independent forecast about employment, growth and inflation. The ranges and "central tendencies" of these forecasts are published in the semi-annual *Monetary Policy Report to the Congress*.

- The *Greenbook forecasts* (named after the colour of its cover): Before each FOMC meeting (which means eight times a year) the staff of the Fed makes a forecast which is discussed intensively. It obviously plays a crucial role in the internal decision-making process.[71] But this *staff forecast* is not disclosed to the public.

One can see clear similarities between the Fed and an Inflation Targeter in the use of these forecasts for interest rate decisions. An Inflation Targeter increases (decreases) interest rest rates if the inflation forecast is above (below) the inflation target and hence aims to equalize the inflation forecast with the inflation target.[72] The Fed's decisions are obviously also strongly based on a comparison between forecasts and targets. A statement of Vice-President *Ferguson* for example could also come from an Inflation Targeter:

"Based on these forecasts we can then take steps to adjust the stance of monetary policy as necessary, in accordance with our objectives." Ferguson (1998).

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70 See Blinder (1997), p. 10.

71 This is the impression one gets from the verbatim transcripts which are released with a five year lag.

72 See Svensson (1997), p. 1120.

Like an Inflation Targeter the Fed not only considers a point forecast but also the probability distribution of its projections:[73]

"Because accurate point forecasts are extraordinarily difficult to fashion, we are forced also to consider the probability distribution of possible outcomes." Greenspan (2001b).

Two points should be kept in mind when we compare the Fed with an Inflation Targeting central bank. Firstly, quantitative targets of the Fed are at best implicitly given. Secondly, owing to the dual mandate not only the Fed's inflation forecast but also its growth and employment forecast is of importance.

The interest rate cuts in the first half of 2001 are a good example to show the similarities of the Fed's decision-making process to those of an Inflation Targeter. *Greenspan* explicitly justified the several downward fed funds movements with regard to the Fed's growth and inflation projections:[74]

- At the beginning of the year all growth forecasts of the Fed assumed that the weakness of aggregate demand will persist for a longer time.

- The risk of a worse growth development than assumed was seen higher than the chance of a better growth development than mainly projected ("downside risks").

- The inflation forecasts have rather shown a downward tendency.

To sum-up, it was quite probable that economic growth as well as inflation would fall below the implicit Fed targets. A monetary easing seemed to be necessary. The following table should illustrate this judgment of the monetary situa-

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73 The *Bank of England* has for example used the famous "fan charts" to draw possible future inflation outcomes; see Bank of England (1999a), p. 52.

74 See Greenspan (2001b).

tion in July 2001. An inflation target of 2.5 % and a growth target of 3.5 % are assumed. These targets are confronted with the forecasts of the July-*Report to the Congress.*

Table 3: The Assessment of the Monetary Policy Situation in July 2001

	Forecast 2002	Risks	Implicit Targets	Forecast versus Target	Conclu-sion
Inflation	1.75 – 2.5 %		2.5 %	Forecast < Target	i ↓[75]
Growth	3.0 – 3.25 %	„down-side“	3.5 %	Forecast < Target	i ↓

Despite these similarities the Fed can not be considered as a real Inflation Targeter because of at least two reasons:

- The Fed does not have explicit inflation and growth targets with which the forecasts could be compared.

- There are no official inflation and growth forecasts of the FOMC – the decision-making committee of the Fed.

An inflation and growth forecast can only take the role of an intermediate target if it expresses the common opinion of the decision-making committee. This perquisite is met in the case of the *Bank of England.* The *Monetary Policy Committee* (MPC) has the final decision-making powers about the exact shape of the published inflation forecast. The forecast normally reflects the judgment of all *MPC* members.[76] This is different in the case of the Fed.

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[75] i = federal funds rate (interest rate)

[76] In the preamble to each “Inflation Report” it is said: “… the fan charts represent the MPC’s best collective judgement about the most likely paths for inflation and output …“

The *Greenbook* (or *staff*) *forecast* is prepared without the participation of the members of the FOMC. As a result *"the forecast is clearly the staff's, not the FOMC's, and FOMC members frequently take issue with it at meetings."* (Blinder et al. [2001], p. 32.)

The forecasts in the *Congressional Reports* are published but they are made separately by each member of the FOMC. There is no coordination between the FOMC members or any agreement about the forecast method.

In addition neither the *Greenbook forecast* nor the forecasts in the *Congressional Reports* are used as an external communication instrument to justify monetary policy decisions. The *staff forecast* is treated as a secret and the semi-annual forecasts in the *Reports to the Congress* are often only mentioned by the way when Fed members justify decisions.

To conclude, it would have been possible for the Fed to develop further its multi-indicator approach to Inflation Targeting. Similarities to Inflation Targeting are perceptible. The Fed tries hard to act foresightedly and pre-emptively. Therefore forecasts play an important role in the decision-making process. This has in particular become clear at the beginning of 2001. At that time all growth and inflation projections of the Fed have pointed downward and hence the Fed begun a series of interest rate cuts. However, the Fed lacks both explicit quantitative targets and official inflation and output forecasts of the FOMC. Since there are only implicit targets and secret or varied forecasts, the FOMC is not forced to compare regularly official forecasts with explicit targets.

4.3 Does the Fed follow the Taylor-Rule?

The reflections of the two previous chapters suggest that the Fed is carrying out a fairly discretionary policy. The US central bank considers a multitude of indicators without giving the public an exact reaction pattern. Some economists have tried to estimate the Fed's reaction function to find out if the Fed follows a certain system. Until the beginning of the 1990s they failed to build a stable fairly long-term reaction function. [77]

However, in 1993 the economist *John B. Taylor* showed in a meanwhile very famous article that the Fed policy of *Greenspan* could at least be described quite precisely by a very simple interest rate rule (see Taylor [1993]).[78] This is nowadays called the Taylor-Rule which has in its original version the following shape:

$$i_t = 2 + \pi_t + 0{,}5\ (\pi_t - 2) + 0{,}5\ (y_t)$$

where i denotes the federal funds rate, π is the inflation rate and y denotes the output gab. The two essential elements of the rule are an inflation gap (difference between the current inflation rate and an inflation target of 2 %) and an output gap (percent deviation of real GDP from a target). In the case of price stability (here π = 2 %) and full employment (zero output gap) the rule recommends an equilibrium nominal interest rate of 4 % which corresponds to a real level of 2 %. The rule recommends a rise in the fed funds rate if either the inflation increases above the target or the real GDP rises above trend GDP.

Taylor discovered that his simple rule captures quite exactly the movements of the federal funds rate in the period from 1987-1992. Thereafter the

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77 See e.g. Khoury (1990), or McNeess (1992).

78 *Taylor* itself pointed out that his rule "was not fit to the data in the sense of a regression" (Taylor [1998a], p. 14). Hence *Taylor* originally did not attempt to develop a reaction function. The purpose of its rule was rather normative than positive.

connection became a little bit loose but all in all one can say that the Taylor-Rule describes reasonably well the *Greenspan*-Fed.[79] Distinct deviations of the factual interest rate policy from the Taylor-Rule have been limited to two cases:[80]

1) Financial market crises (stock market crash 1987, the credit crunch 1992, the Asian and Russian crises 1998).

2) Periods when the Fed acted especially pre-emptively (1994, 2001).

These quite synchronous movements of the Taylor interest rate and the fed funds rate are not surprising if we recall the policy procedure of the Fed that is described in chapter 4. The Fed raises the real fed funds rate above a neutral level if the different considered economic indicators suggest a positive output gap or if other sources of inflation pressure occur. The Taylor-Rule propagates nearly the same procedure. The two main components of the rule – Inflation and Output gap – are so to say the essence of the Fed's monetary policy.[81]

Some "Fed-Watchers" already make use of this narrow correlation between the Fed's interest rate policy and the Taylor-Rule. They try to predict the Fed's future interest rate movements with the help of the (partly modified) Taylor-Rule.[82]

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79 This in particular becomes clear if we apply the comparison between the Taylor interest rate and the fed funds rate to former periods. In former times the deviations between the two rates have been more distinct, see Taylor (1999), and Judd/Rudebusch (1998), pp. 5/6. The Taylor-Rule can be better fitted to the fed funds rate in the second half of the 90s if firstly, one uses the output gap instead of the NAIRU as a measure of economic slack and if secondly, one assumes a declining NAIRU in the late 90s. Obviously the Fed has considered this shift in the NAIRU in its interest rate policy. See Ball/Tchaidze (2002).

80 See Hartmann (2001), pp. 44-47.

81 "...the two variables determining the policy stance under the [Taylor-] rule clearly are of central concern to the Federal Reserve." Yellen (1996), p. 8.

82 Examples are: HSBC, Merrill Lynch, DB Research, Goldman Sachs: See Shepherdson (1997), Lucas/Quek (1998), Dallmeyer/Gräf (2000), FAZ (2001e), p. 27.

The Taylor-Rule also got attention inside the Federal Reserve System. There are some indications of this interest:

- Some Fed Governors have expressed an explicitly positive attitude towards the Taylor-Rule and praised its positive qualities.[83]

- During each FOMC meeting the Fed-staff presents the recommendations of different monetary policy rules (among them the Taylor-Rule) for the Fed's interest rate policy.[84]

- The *Federal Reserve Bank of St. Louis* depicts the development of a Taylor interest rate (under consideration of different inflation targets) in its publication "Monetary Trends".

Nevertheless, there is no real commitment to a rule in the case of the Fed. An official commitment to a policy rule would contain the obligation to justify for deviations of the rule. The Fed is far away from such a procedure:

- Until now the existing instruments (*Congressional Reports*, *Minutes*), which are used to justify monetary policy decisions, do not say a word about the Taylor-Rule.

- The Taylor-Rule can only function as a benchmark for the Fed's interest rate policy if it is possible to calculate an official Taylor interest rate. But this would require that the Fed firstly fixes a numerical inflation target, secondly publishes its estimation about the output gab and thirdly announces its estimation about a neutral level of the real interest rate.

At the moment there is no indication of an attempt to commit more strongly to a rule inside the Fed. Even those American policymakers who consider the

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[83] See e.g. Meyer (1998), Gramlich (1998), and Yellen (1996), p. 10.

Taylor-Rule as a useful instrument speak at best of it as a rough guide.[85] *Greenspan* is quite unambiguous in the rejection of a commitment to a rule.[86] In any case it would be necessary to modify the original Taylor-Rule to use it in the practice of American policy since the Fed frequently acts more pre-emptively as this is possible with the original Taylor-Rule. Hence the predicted values of the Output and Inflation gap should be taken instead of the actual ones.[87]

To sum-up, the procedure of the Fed indeed contains some similarities to the modern framework of Inflation Targeting and can quite well be described by the popular Taylor-Rule. But the Fed uses none of these strategies as a public instrument of communication. The Fed justifies itself neither regularly for deviations from an official Taylor interest rate nor does the Fed explain deviations from an official inflation forecast made by the members of the FOMC. The Fed-Strategy is therefore rightly devoted as a purely multi-indicator approach.

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84 See Taylor (1998a), p. 15.
85 See Gramlich (1998), or Yellen (1996), p. 10.
86 See Greenspan (1997).
87 In this case Ex-Governor *Meyer* speaks of a "forward-looking version of the Taylor-Rule". Meyer (1997).

5 Credibility and Transparency of the Fed-strategy from the Markets point of View

5.1 The Development of the Inflation Expectations

The theoretical analysis up to now suggests that the Fed policy should be revised since the current procedure does not seem to be suitable in promoting credibility and transparency to the public. To sum-up, the arguments are as follows:

- The Fed's goals are not clearly defined.
- Price stability is not given the highest priority.
- The Fed is carrying out a pure multi-indicator approach which is less transparent and rule-based than strategies which use simple rules of thumb or intermediate targets in their centre.
- The Fed publishes neither its internal inflation forecast (*Greenbook forecast*) nor does it have a central macroeconometric model.

However, the academic criticism of the Fed-Strategy will only be plausible if we can see it in corresponding market reactions (volatilities, inflation premiums). In the following section the judgment of the markets regarding the credibility and transparency of the Fed is examined on the basis of three questions:

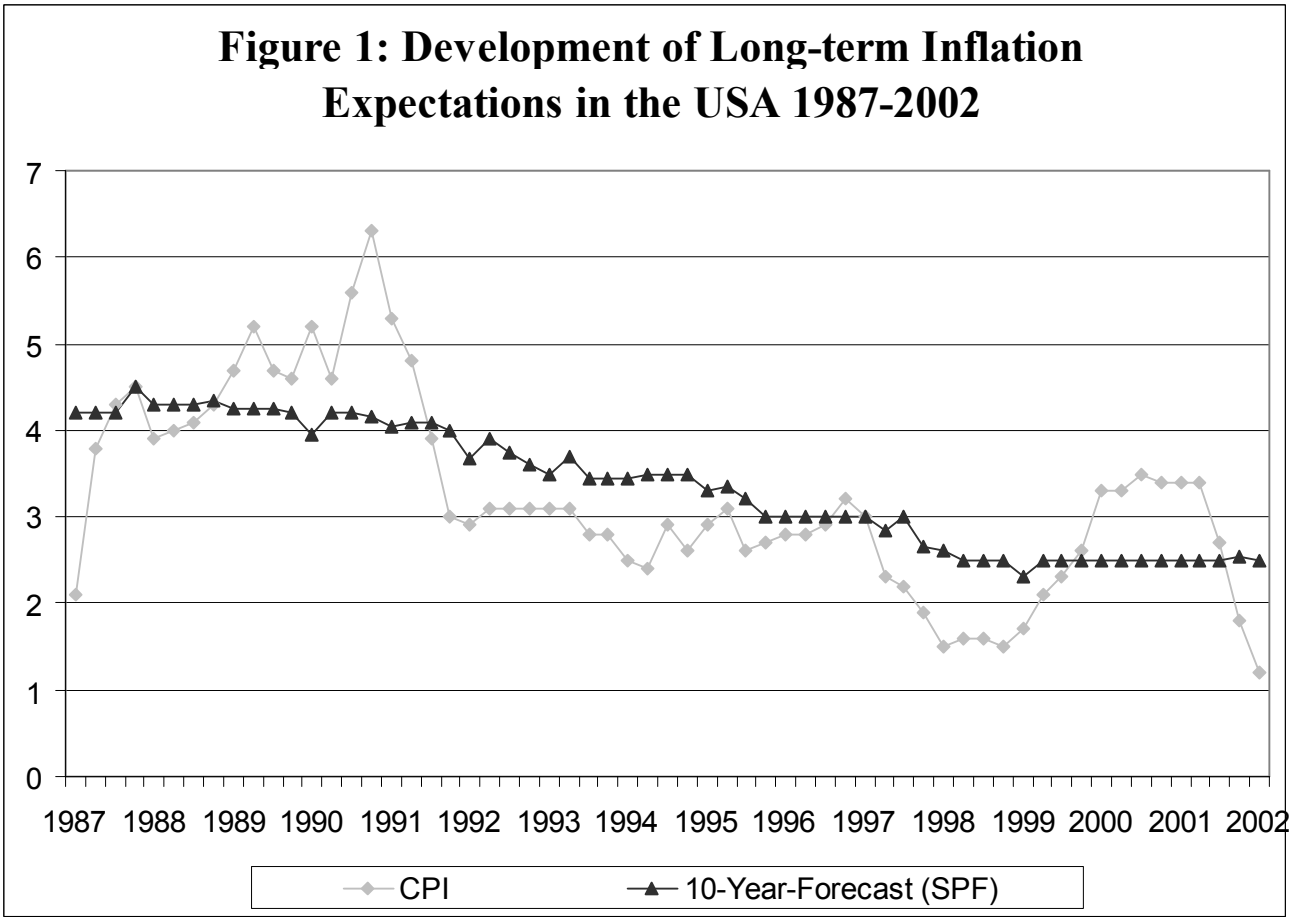
- How have private inflation expectations developed in the last 10-15 years?
- How did the markets react to the relatively employment friendly monetary policy of the year 2001?
- How well do the markets anticipate the monetary policy actions of the Fed?

The development of the private inflation expectations should give a first impression of the public credibility of the Fed and show us if the assessment of

the Fed policy has changed over time. High and strong fluctuating inflation expectations would be an indication of low confidence in a consequent policy of inflation fighting.

A commonly used instrument to measure the private American inflation expectations is the "Survey of Professional Forecasters" of the Federal Reserve Bank of Philadelphia. Within this survey different private and public institutions (such as banks, consulting firms or research facilities) are asked for their inflation assessments. Among other things they should also give a 10-year inflation forecast.[88] In the following graph the long-term inflation expectations are compared since 1987.

Figure 1: Development of Long-term Inflation Expectations in the USA 1987-2002



Source: Bureau of Labor Statistics, Federal Reserve Bank of Philadelphia.

[88] See for a more detailed description of the procedure Croushore (1993).

From this we can draw the following conclusions:

- Long-term private inflation expectations have dropped steadily from over 4 % to about 2.5 % since the end of the eighties.
- Although the current inflation rate has fluctuated since 1998 in a range of 1.5 – 3.5 %, the inflation expectations remained stable.
- Obviously the public interprets an inflation rate of 2.5 % as an implicit inflation target of the Fed.

Financial market prices are a second source (apart from surveys) for deducing private inflation expectations. This means of assessing inflation expectations has been facilitated since 1997 with the issuing of inflation-protected bonds by the US Treasury (TIPS, Treasury Inflation Protected Securities). The difference between the nominal yields of conventional bonds and the real yields of inflation-protected bonds of the same maturity is called "break-even inflation rate" and can be seen as a benchmark for private inflation expectations.[89] Figure 2 describes the development of the "break-even inflation rate" since 1997 (for ten-year and thirty-year Treasuries). The outcomes are similar to the survey results. Private inflation expectations are quite low and stable. They fluctuate in a narrow range of 1.5 - 2.5 %.[90]

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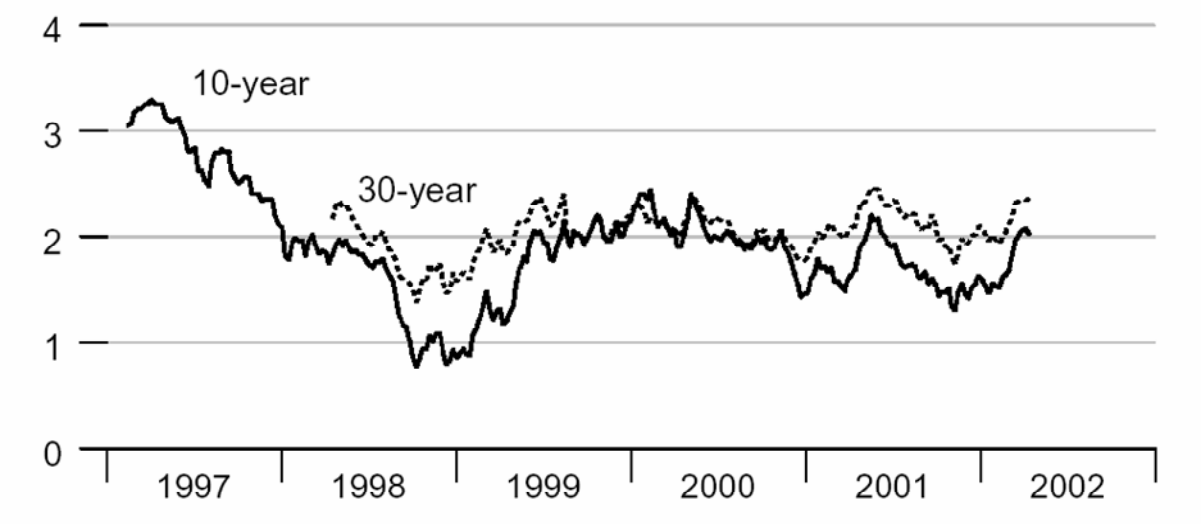
89 The "break-even inflation rate" reflects the inflation expectations only distorted in particular for two reasons: While indexed securities contain a risk premium (protection against unanticipated changes in inflation), conventional bonds contain a liquidity premium (the level of liquidity is normally higher). The risk premium of TIPS overestimates the break-even inflation rate. The liquidity premium works in the other direction. It normally is assumed that the first effect (risk premium) is of greater magnitude and therefore the break-even inflation rate slightly overstates the inflation expectations; see ECB (1999b), p. 16, and Sack (2000), pp. 5/6.

90 It is a little bit surprising that the level of estimated inflation expectations is even lower than in the case of the SPF. It is usually supposed that the break-even inflation rate slightly overestimates the factual inflation expectations (see previous footnote).

Figure 2: "Break-even inflation rate" since 1997



Source: Federal Reserve Bank of St. Louis, Monetary Trends May 2002, p. 11.

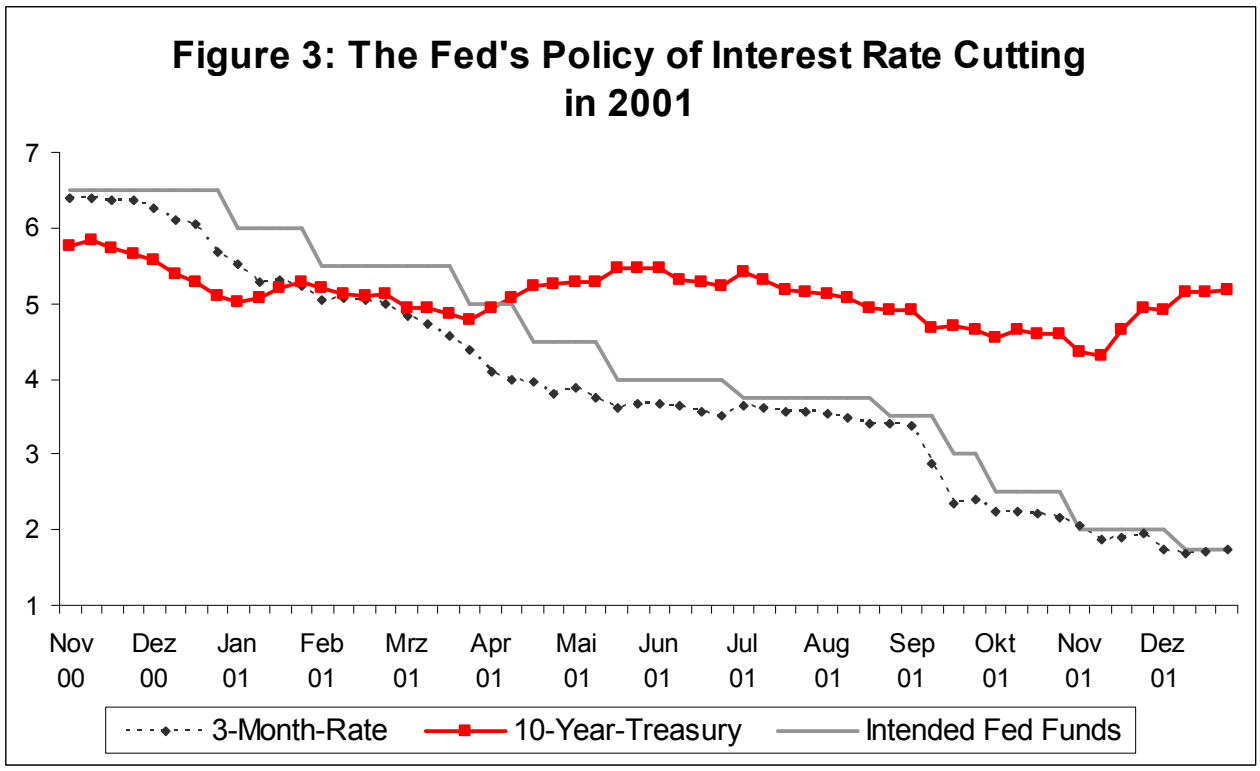
To sum-up, private inflation expectations give no indication of a decline in the Fed's credibility which could be caused by a confusing strategy. Rather the drop in inflation expectations and the increasing independence of expectations from real inflation development suggest a gain in reputation in the 1990s.

5.2 Market Reactions to the Policy of Interest Rate Cutting in the Year 2001

A test for the credibility of the Fed has been the strongly growth-orientated monetary policy of the Fed in the year 2001. Such an anticyclical policy can only be carried out without causing higher inflation expectations by a central bank with a high credibility.[91] The success of this policy is a controversial area. Figure 3 should explain why this is the case. It describes parallel to the development of the federal funds rate the development of long-term and the short-term interest rates.

[91] See e.g. Spahn (1999), pp. 301/302.

The short-term interest rates closely followed the decreasing federal funds rate, but the long-term interest rates only initially. Since April 2001 at the latest the long-term interest rates moved upwards and reached a level comparable to the time before the interest rate cuts of the Fed began. But it is precisely the long-term interest rate which is seen as one crucial factor for the recovery of the economy.



Date source: Federal Reserve Board

We can distinguish three explanations for this interest rate development:

(1) Critics of the Fed policy claim that rising inflation fears are responsible for the increase of capital market interest rates.[92] They think that the Fed has gone too far with the monetary policy easing and, instead of the intended

[92] After the interest rate cut in May 2001 the mood at the security markets was described in the following way: "Traders at capital markets are the more and more afraid that the Fed has overshot the mark with its interest rate movement and that the expected cyclical swing will be accompanied by a distinct price push. Some economists even warn that the Fed risks its credibility in inflation fighting." FAZ (2001c), p. 33 (translation D.H.).

improvement has caused a deterioration of the investment climate. A statement of the *ECB* expresses this thinking:

"The main factor behind the continued increase in US nominal long-term bond yields in the second quarter of 2001 seemed to be raising inflation expectations and inflation uncertainty on the part of investors." ECB (2001a), p. 30.

But as we have seen before there is no clear indication of an increase in inflation fears in the year 2001. Survey results as well as financial market prices show that price expectations have been quite stable. From the "break-even inflation rate" you could perhaps deduce a slight increase of inflation expectations of 0.25 – 0.5 percent points.[93]

(2) This is why an alternative explanation seems to be more realistic: It is not higher inflation expectations but higher real interest rates that have caused the increasing bond yields. According to this view the interest rates cuts have raised the hope in the markets that the slump will soon be overcome and that in the near future company gains and capital yields will recover. Obviously this is also the interpretation of the Federal Reserve:

"The increase in longer-term Treasury yields in the second quarter appears to have been the result of a number of factors. The main influence seems to have been increased investor confidence that the economy would soon pick up." Board of Governors (2001), p. 520.[94]

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93 From the Fed's point of view this slight increase of expectations has rather been a correction of the extremely low expectations at the end of the year 2000, see Board of Governors (2001), p. 520.

94 According to *Greenspan* this interpretation is at least possible: "... it is difficult to judge whether long-term rates have held up because of firming inflation expectations or a belief that economic growth is likely to strengthen, spurring a rise in real long-term rates." Greenspan (2001b).

(3) Finally the supply side of U.S. Treasuries plays a role in explaining the development of the term structure of interest rates. With the announcement of tax cuts in April 2001 it was clear for the public that the U.S. budget surplus – and therefore the expected shortage in long-term bonds – was smaller than originally supposed.[95]

To sum-up, the second and third argument seem to be quite persuasive and suggest that only a small part of the increase in bond yields could be attributed to temporary higher inflation fears. We can therefore conclude that the reputation of the Fed has been sufficient to carry out an anticyclical stabilization policy. The supposed increase in real interest rates even indicates a very high confidence in the Fed in overcoming the economic slump.

5.3 The Predictability of the Fed's Interest Rate Decisions for the Markets

Since – as the critics claim – the US central bank does not possess a clear conceptual framework we must assume that the policy of the Fed is rather non-transparent for the markets. In the following section we will examine if it is true that the markets have difficulties in predicting the Fed's behaviour and whether they are in the main surprised by policy actions.

An instrument that best reflects the expectations of the markets about future monetary policy actions are the futures on the federal funds. From the prices of these futures the expected federal funds rate can easily be deduced.[96] To examine the quality of the markets expectations one can compare these expected in-

[95] Some economists suppose that the drop in long-term bond yields in the year 2000 can not be attributed to lower inflation expectations but to the announced shortage in long-term Treasuries, see Wheelock (2000), p. 1.

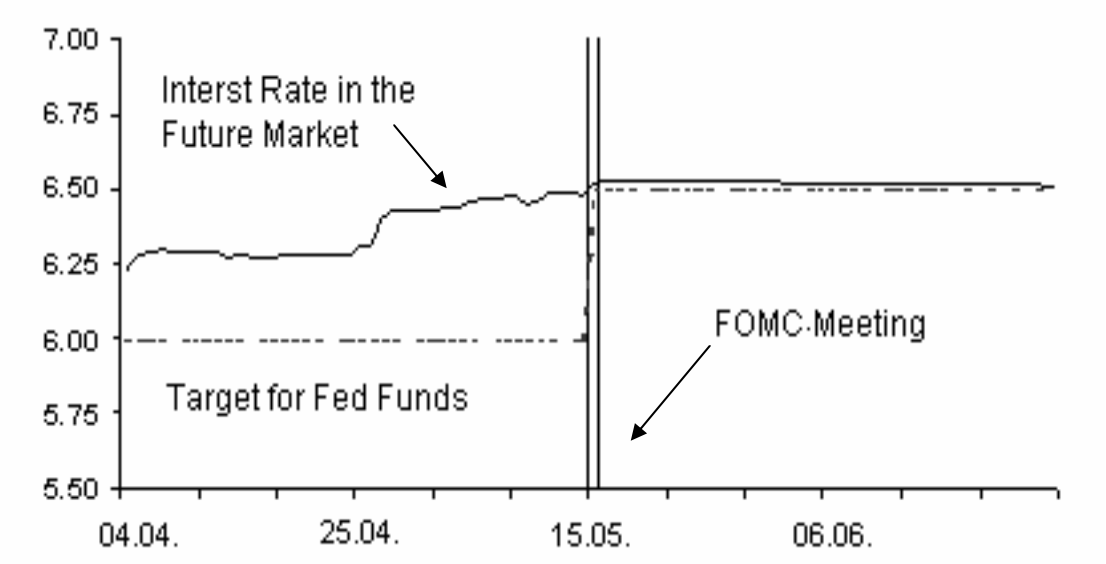
[96] The settlement price of a federal funds future is 100 minus the effective average funds rate in the expiry month. If the future price of the January contract is for example 95 we can suppose that the average expected fed funds rate for January is about 5 %.

terest rates (deduced from the future markets) with the factual interest rate decisions of the Fed. The result of this comparison is that the markets have anticipated most decisions of the Fed quite exactly especially since 1994.

An example of this was the Fed's interest rate decision on May 16th 2000. On this day the Fed raised the intended fed funds rate by 50 basis points from 6 to 6.5 %. It was the last step in a series of interest rate increases since June 1999. Although it was an unusually strong interest rate increase by 50 basis points it was completely predicted by the markets.[97]

The markets expectations regarding the interest rate decision on May 16th are best reflected in the June (and not the May) future contract. This can be explained in the following way: One can assume that interest rate decisions are normally made at the regular open market meetings which take place every 6 weeks on average. It is then quite probable that an interest rate decision made in mid-May is prevailing in the whole of June.[98]

Figure 4: Fed Funds Futures and the Fed's Interest Rate Target



Source: Poole (2000).

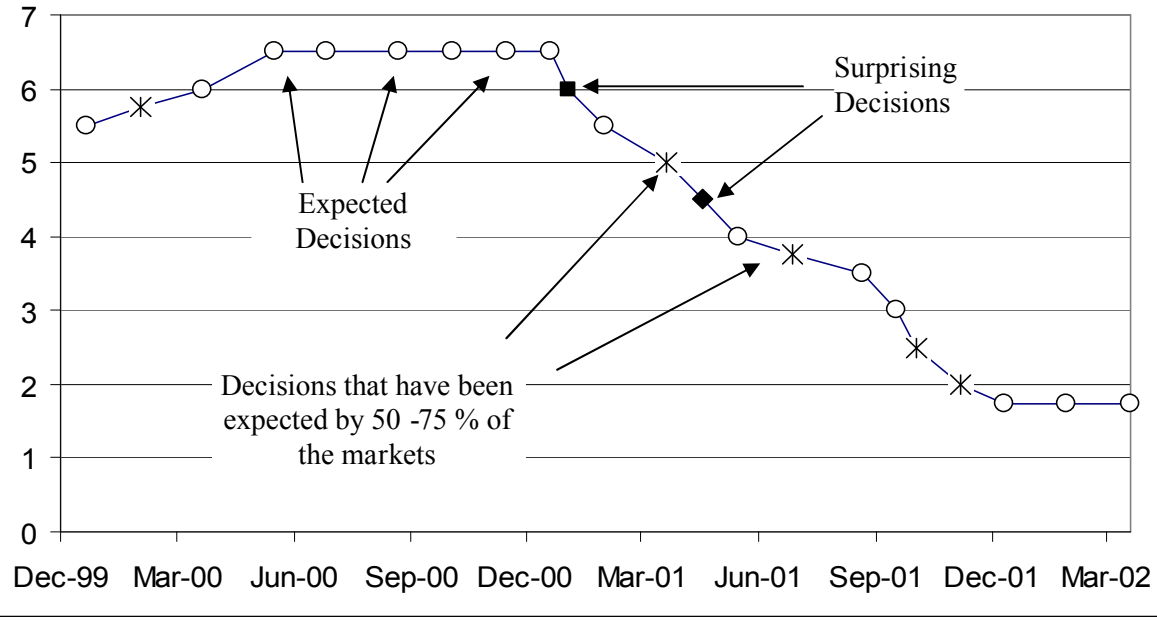
97 The Fed normally moves more cautiously and prefers small steps of 25 basis points. The last fed funds rate increase by 50 basis points has taken place in February 1995.

98 In the year 2000 the FOMC meeting which followed May 16 was announced for June 27.

Figure 4 shows at first that the intended federal funds rate stayed before May 16th at 6 %. The expected interest rate of the markets which results from the future price of the June contract has however risen from about 6.25 % at the beginning of April to 6.49 % just before the meeting. Therefore the markets have completely anticipated the Fed's interest rate move of 50 basis points.

But the period of May 2000 is by no means the only case in which the markets succeeded in anticipating quite exactly the interest rate decisions of the Fed. The conclusion of an examination by *Poole* and *Rasche* (carried out in 1999, see Poole/Rasche [1999]) is rather that precision in foreseeing the Fed's monetary policy decisions has dramatically improved since 1994. For the years after 1999 this outcome can be confirmed as can be seen by figure 5.[99]

Figure 5: Fed-Decisions and Financial Markets



In the year 2000 the financial markets anticipated all decisions of the FOMC with a probability of more than 50 %, in particular the three steps of an

[99] The circles, quadrants and crosses represent the interest rate decision between 21.12.1999 and 19.03.2002. The circles describe decisions which have been anticipated by (nearly) 100 %, the black quadrants depicts surprising decisions and the crosses represent decisions with varied expectations.

interest rate increase at the beginning of the year and also the end of monetary policy tightening in June. In the year 2001 some surprises for the markets occurred. This was the case because the Fed acted also on three additional occasions between the regularly scheduled meetings. However the markets again anticipated quite well the decisions that were taken at regular meetings. In June only about the half of the market participants foresaw the slowing down of monetary easing and at the end of the year there was also some uncertainty about the further speed of monetary easing.

Several reasons can be put forward to explain the success of the markets in guessing interest rate decisions:

1. *The Fed simply follows the markets:* The *Minutes* of the FOMC disclose that the Fed also considers the market expectations regarding the next policy move of the Fed and prefers to be in line with the markets.[100] On the other hand the Fed did not hesitate to ignore market expectations in situations where it seemed to be necessary from the Fed's point of view. Examples of this are the sudden and forceful interest rate cut in January 2001 as well as the reaction on the Asian crises 1998. So the Fed certainly does not only follow the markets.

2. *The Fed leaks out the decisions: Poole* and *Rasche* reject this assumption. According to their examination most of the financial market reactions have been caused by newly released economic data and not by statements of Fed officials.[101] We can therefore again consider the period of May 2000. The decisive jump in interest rate expectations from 25 to 50 basis points took place at the end of April when new economic data had been published. The

[100] The interest rate decision on May 16 2000 was justified inter alias in the following way: "The members saw little risk in the relatively aggressive policy move, given the strong momentum of the expansion and widespread market expectations of such a move." Board of Governors (2000d), p. 224.

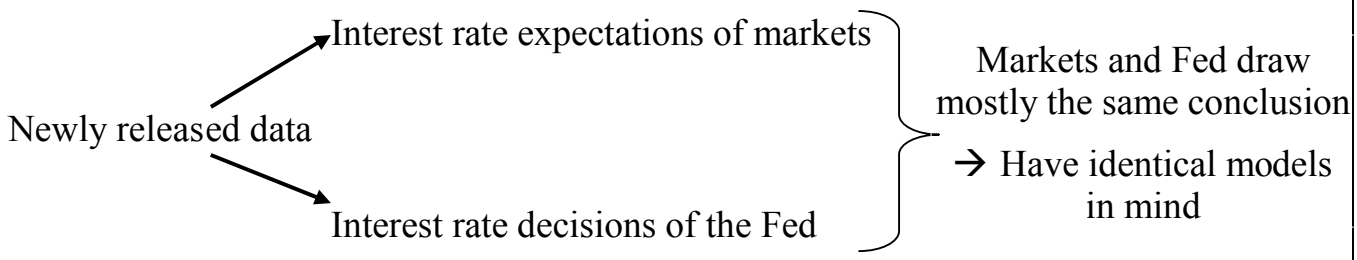
released growth rates of GDP, consumption expenditures and employment costs clearly exceeded the expectations. It was therefore supposed that the US economy was still overheated and a forceful response of the Fed would be necessary.

3. *The markets know the implicit model of the Fed:* This is the only possible explanation that remains if the first two assumptions are rejected. Until now we can say (see also figure 6):

- Firstly, the markets adjust their interest rate expectations particularly in response to newly released data and the Fed adjusts its interest rate decisions of course also in response to new information.

- Secondly, markets draw the same conclusion from the data as the Fed since market expectations correspond normally with Fed decisions (the markets predict most interest rate movements of the Fed).

Figure 6: Do the markets know the implicit model of the Fed?



From this we can conclude that the markets and the Fed have the same model in mind or rather the markets know the theoretical model of the Fed: „*... the market acts as if it pretty closely understands the policy model the Fed uses.*" Poole (2000).

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[101] In the period 1989 – 1999 only 7 of the 101 examined large changes in future prices could be attributed to statements of Fed officials, see Poole/Rasche (2000), pp. 19/20.

However this is inconsistent with the fact that the Fed did not formulate a clear monetary policy strategy and does not posses a common macroeconomic model.

How can we explain this paradox: Secrecy about the monetary strategy on the one hand and high predictability on the other hand?

- Firstly, the tenure of *Greenspan* has already lasted quite a long time. The markets have gained experience in his way of carrying out monetary policy and they know meanwhile which indicators and information are particularly important for *Greenspan* (for example data from the labour market).

- Secondly, although the Fed was not willing to commit to a rule or to formulate a specific strategy it started an offensive to be more transparent for the markets. Important actions among others have been: (1) Interest rate decisions are made mostly at regular scheduled meetings of the FOMC (and not between the meetings which was frequently the case before). (2) Since 1999 the FOMC has explained every monetary policy action directly after its meetings in a short *Press Release.* (3) Each of these communiqués include a tendency statement about future interest rate policy.

- Thirdly, although we can not assume that Fed officials signal in advance their monetary policy decisions, a certain steering of market expectations by *Greenspan* nevertheless takes place. From time to time he tries to steer the market expectations in a desired direction with well-directed statements about the economy. For example, in January 2001 he mentioned during a speech about the current economic situation that the growth rate of the economy had dropped to nearly zero percent. Before the speech most market participants expected only an interest rate cut of 25 basis points. After-

wards the majority assumed a cut of 50 basis points which then was carried out by the Fed.[102]

- Fourthly, *Greenspan* often stresses in speeches some indicators which should be regarded more closely the next time. At the moment he emphasizes for example that the strength of the economic recovery depends especially on consumer expenditure.[103] Therefore the markets concentrate their attention on indictors of consumer demand. This is *Greenspan*'s way of making the multi-indicator approach more transparent.

To sum-up, we can say that the Fed was to a high degree predictable for the markets in the last years. Financial markets anticipated most interest rate decisions. It was only in some special situations that the Fed carried out a surprising interest rate step. Therefore a very astonishing result has appeared: The public and the Fed interpret new economic data commonly though the Fed has never announced a clear conceptual framework. This can be explained by the very long tenure of *Greenspan*, the diplomatic behavior towards the markets and an improved information policy of the Fed. The latter, however, does not refer to the policy framework but to the common assessment of the economic situation by the Fed. All in all we can say that despite the multi-indicator approach the Fed acts more predictably and comprehensibly than a lot of other central banks which possess a quantitative inflation target and a well formulated strategy.

Therefore the markets' judgment about the American monetary policy gives no reason to change the Fed's policy concept. Obviously it only remains one argument that could be used to justify a policy change: The fear that the current confidence in the Fed depends exclusively on *Greenspan* and hence the re-

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102 See FAZ (2001a), p. 31.
103 See e.g. Greenspan (2002).

tirement of *Greenspan* will cause uncertainty in the markets.[104] But this fear could be moderated by the appointment of a candidate for Fed presidency with high reputation in monetary policy. *John B. Taylor* who is discussed as a possible successor of *Greenspan*[105] would certainly meet this prerequisite. He would also guarantee a certain continuation in the Fed policy since the Taylor-Rule describes quite well the monetary policy of the *Greenspan* era.[106]

6 Summery and Conclusion

More and more central banks go over to present the public a clear monetary policy strategy. They announce quantitative targets and publish the indicators, models and forecasts which are used for monetary analysis. This high degree of transparency should enhance credibility and predictability and hence lead to a more efficient monetary policy.

The Fed resisted in some parts the current trends in monetary policy. This already starts with the formulation of monetary targets. The price stability objective has no priority over the employment goal in contrast to most other central banks. Both targets are equally weighted and the Fed policymakers put this dual mandate into practice. Smoothing business cycles is naturally seen as a task of monetary policy. However, it could be criticized that the Fed does not have precise target definitions. The inflation goal is not quantified and the term "maximum employment" gives room for interpretation.

While the criticism of the insufficient target definitions might be justified the general criticism of the dual mandate can not be followed. The quite em-

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104 Several economists complain about the Fed's strong dependence of the Fed chairman, see e.g. Mishkin (1999), p. 600, Checchetti (1999), Tigges (2001), p. 13, and Barbier (2001), p. 13.

105 See Tigges (2002), p. 15.

106 The fear that Fed policy would become too mechanical with *Taylor* as a Fed president is unfounded. He interprets the Taylor-Rule rather as a rough guideline or prominent indicator than a mechanical rule which should be followed in each situation, see Taylor (1993).

ployment friendly monetary policy in the 1990s did not harm the Fed's credibility. The private inflation expectations even decreased at this time and stabilized around a level of 2.5 %. The Fed also managed the extremely anticyclical policy of the year 2001 without greater loss in confidence. Therefore the Fed can be seen as a central bank that used its reputation in an appropriate fashion as an instrument to promote employment.

The Fed uses a multitude of indicators which describe the supply and demand situation in the US economy to explain and justify its decisions. This judgment of the current economic situation is extensively presented to the public. However, an exact evaluation of the individual indicators with regard to its monetary policy consequences is missing. The Fed's perception of the monetary policy transmission process also remains unclear. All in all the Fed leaves the markets to a large extent in the dark about the macro model which forms the basis of its actions. This is criticized heavily by academics which in general reproach the Fed for its lack in systematic behavior.

Financial market reactions contradict this academic view. The markets anticipated most of the Fed's interest rate decisions quite exactly, in particular since the mid-1990s. Instead of a clear framework the Fed uses others ways to obtain this credibility: In speeches and statements *Greenspan* and his colleagues refer the markets to indicators which are important for monetary policy in the next time and therefore should be closely regarded. Besides, after each FOMC meeting the Fed publishes a tendency statement about future monetary policy.

The Fed gets in strong dependence of the acting persons with this kind of monetary policy. A clear strategy that integrates the present features (e.g. dual mandate) could provide a greater continuation in the US monetary policy. Two alternative strategies (Inflation Targeting and the Taylor-Rule) are available which already show today some similarities to the current Fed approach. The

Taylor-Rule captures the Fed's interest rate movements in the 1990s quite well and like an Inflation Targeter the Fed extensively uses forecasts when deciding about its actions. But there are at best similarities. The Fed uses none of these strategies in the real sense of their academic "inventors". The Fed justifies itself neither regularly for deviations from an official Taylor interest rate nor does the Fed explain deviations from an official inflation forecast made by the members of the FOMC.

The Fed approach could certainly be developed further to Inflation Targeting and in this way monetary policy would perhaps become less dependent of the persons in charge of the FOMC. On the other hand a new Fed chairman would in this case no longer have the possibility to react as flexible to new structural changes ("New Economy") as *Greenspan*. Therefore the appointment of a chairman with high reputation in monetary policy should perhaps be preferred to a conceptual change.

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