

Instruments, procedures and strategies of monetary policy: an assessment of possible relationships for 21 OECD countries

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Introduction

There is a wide variety in the choice of instruments, operating procedures and strategies of monetary policy by central banks (see Borio, 1996). This raises the questions whether there is a relationship between these aspects of monetary policy and whether the specific choice of instruments and procedures affects the central bank's ability to attain its operational target. For example, does the choice of monetary strategy imply a high or low frequency of open-market operations? Has the choice of monetary strategy a bearing on the precision with which short-term market interest rates are controlled by the central bank? Does a country's inflation history make it easier for the central bank to control short-term market interest rates? These questions are at the heart of this paper, which is organised as follows. Section 1 gives a brief overview of the monetary strategies, instruments and operating procedures used by the central banks in 21 OECD countries. Section 2 tries to uncover the operational target of the central banks in these countries. In Section 3, possible reasons for the existence of a relationship between the instruments, procedures, strategy, interest rate control of the central bank and its track record in terms of inflation performance are considered. Section 4 tries to find out whether the above-mentioned relationships can be inferred from a small and simple data set which is indicative of monetary policy procedures, strategies, interest rate control and the inflation performances for the group of OECD countries. The final section concludes.

1. An overview of monetary policy aspects in 21 OECD countries

It is common practice to make a distinction between monetary strategy (i.e. the way in which a central bank aims at achieving its final objective(s)), operating procedures and instruments. In practice, four *monetary strategies* can be distinguished. The first is monetary targeting, in which monetary policy is geared to a publicly announced intermediate monetary target. This strategy was adopted by many countries in the second half of the seventies. However, during the eighties, monetary targeting was burdened, in a number of countries, by instability of money demand functions due to financial deregulation and innovation (Goodhart, 1989). In recent years, some of these countries switched to a strategy of direct inflation targeting, in which explicit inflation targets are publicly announced (New Zealand, Canada, Australia, the United Kingdom, Sweden, Finland and Spain). Other countries adopted a strategy based on a wide range of monetary indicators (the United States and Japan). The strategy of monetary targeting is still in use in Germany, Greece, Italy and Switzerland. In most smaller European countries, the central banks focus on exchange rates as intermediate targets (see Table 1).

The monetary policies of central banks also show marked differences in the use of operating procedures and instruments. *Operating procedures* refer to the choice of the operational target, the frequency of open-market operations, the use and width of a corridor for market interest rates, and the way of signalling policy intentions. Most central banks focus on a short-term market

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Table 1
Instruments, procedures and strategies of monetary policy in 21 OECD countries

	Monetary strategy	Interest rate corridor (distance +/-)	Frequency of operations (every x days)	Averaging facility
Australia.....	p		1	
Austria.....	er	+/- (1.25-2.25%)	7	X
Belgium.....	er	+/- (2.5-4.0%)	1	
Canada.....	p	+/- (0.5%)	1	
Denmark.....	er	-	7	X
Finland.....	p/er	+/- (4.0%)	4	X
France.....	er	+	1	X
Germany.....	M	+/- (1.0-2.0%)	7	X
Greece.....	M	+/- (3.0-4.0%)	1	X
Ireland.....	er	+/- (3.25%)	1	
Italy.....	M	+/- (1.0-1.5%)	4	X
Japan.....	E		1	X
Netherlands.....	er	-	4	X
New Zealand.....	p		1	
Norway.....	er	+/- (2.0%)	2	
Portugal.....	er	+/- (2.25-3.00%)	2	X
Spain.....	p/er		1	X
Sweden.....	p/er	+/- (1.5-2.0%)	1	
Switzerland.....	M	+/- (2.0-3.0%)	1	
United Kingdom.....	p		< 1	
United States.....	E		2	X

Notation: p: inflation targeting; M: monetary targeting; er: exchange rate target; E: eclectic strategy; +: ceiling for market rates; -: floor for market rates.

interest rate as operational target, although it is often unclear which specific interest rate (overnight or 1-month) performs that role. Neither does there exist a clear connection between the interest rate targeted and the maturity of open-market operations carried out by the central bank. Interest rate steering can be done, at one extreme, through a narrow interest rate corridor, bounded by the interest rates on the central bank's standing facilities or, at the other extreme, by relying on open-market operations exclusively. The first alternative tends to result in a low level of market activity, as market participants are deprived of an incentive to trade in markets. In the second alternative, on the other hand, a high frequency of central bank intervention in the money market is called for so as to avoid large fluctuations in short-term market interest rates.

As is well-known, there is a general tendency towards greater market orientation and greater monetary policy flexibility in the Western industrialised countries (Laurens (1994), p. 3). As a result, in most of these countries, open-market operations have become the major instrument for providing liquidity and controlling short-term market interest rates. This is sometimes combined with a wide interest rate corridor.² In other countries, only an upper or a lower limit for short-term market interest rates is set. The use of both intervention rates (on open-market operations) and official rates (on standing facilities) increases the central bank's scope for signalling its strategy. The desire for greater flexibility in interest rate steering has been ascribed to the integration of financial markets and the responses of market interest rates to changes in expectations and developments in economic fundamentals and policy (Kneeshaw and van den Bergh (1989), p. 9). A more recent trend is that

² Canada is the only country with a narrow interest rate corridor.

central banks become more and more transparent in signalling the desired level of interest rates. For example, the United States and the United Kingdom have started to announce their target short-term market interest rates, while the Bundesbank makes more frequent use of fixed rate tenders for open-market operations. As appears from Table 1, the frequency of open market operations varies from a couple of times a day (the United Kingdom) to only once a week (Germany).

For the group of countries considered, the following instruments of monetary policy and their functions can be distinguished:

- Reserve requirements, obliging institutions to hold an amount of money on an account with the central bank, with the aim of absorbing liquidity in the money market and/or augmenting control over money growth (monetary control).
- Standing facilities for the (automatic) provision or withdrawal of liquidity at the end of the day at rates forming the ceiling and the floor, respectively, for short-term market interest rates.
- Open-market operations; i.e. transactions effected by the central bank at its own initiative to steer interest rates, possibly within a corridor formed by the rates on the central bank's standing facilities.
- Averaging provisions for the automatic stabilisation of short-term interest rates. In most countries, these provisions are embedded in reserve requirements. An averaging provision attached to reserve requirements offers institutions the opportunity to vary the daily amount held on a reserve account at their own discretion, so long as the requirement is met on average for the period as a whole. The averaging provision absorbs fluctuations in liquidity needs both at an individual and at the macroeconomic level; in effect, it widens the scope for banks to actively manage their liquidity and thereby smoothes (very) short-term interest rates over the greater part of the maintenance period.

2. The revealed operational target

The operational target can be defined as the objective variable which is not directly steered by the central bank but which it can control with relatively great precision. It is obvious that this variable is somewhere at the beginning of the monetary transmission process; that is, somewhere between the central bank's intervention rate (on open-market operations) and its intermediate target (if any) such as, for example, the exchange rate or a monetary aggregate. Since nowadays the majority of central banks in the OECD-region pursue interest-rate operating procedures (Kasman (1992)), the typical operational target is a short-term market interest rate. While most of these central banks are not very specific about the precise short-term market interest rate they are targeting, this issue can be examined in an ex post sense; that is, by looking at the differences central banks have actually allowed to occur over a certain period of time between their intervention rates, on the one hand, and alternative short-term market interest rates, on the other.

Judging from Figure 1 and the standard deviations in Table 2, about half of central banks tend to focus on the overnight market rate and half of them have a revealed preference for targeting the 1-month rate, although it is fair to say that the differences between the two standard deviations are not always substantial. Notable overnight-rate targeters are the central banks of Australia, Belgium, New Zealand, Spain and Sweden, all of which happen to intervene quite frequently in the open market.³ Moreover, reserve requirements (with averaging provisions) are absent in these countries, except for Spain, implying that overnight market rates do not tend to peak at the end of maintenance periods. The central banks of Austria and the Netherlands manage to have close control over both the

³ New Zealand is a special case in that the Reserve Bank of New Zealand (RBNZ) pursues a reserves operating procedure, so that the RBNZ's intervention rate naturally tends to be close to market rates.

Chart 1
Differential of the intervention rate with the overnight and 1-month interest rate

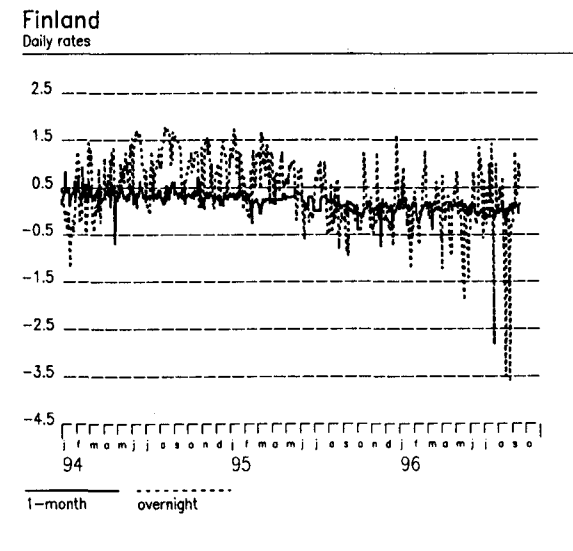
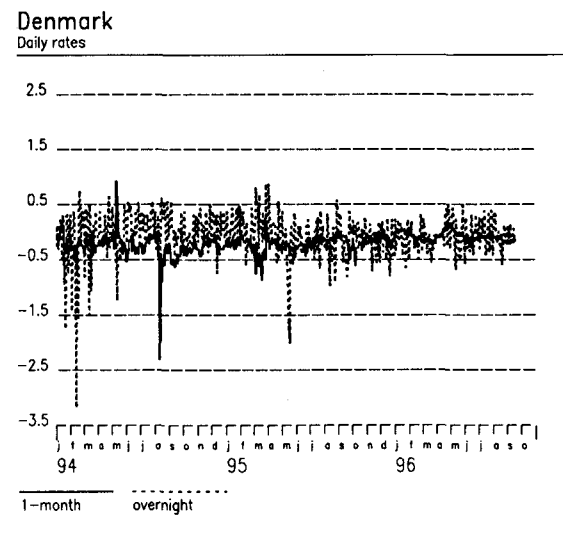
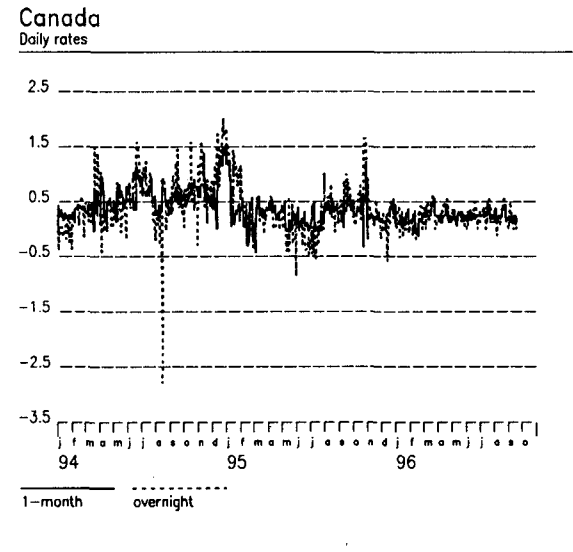
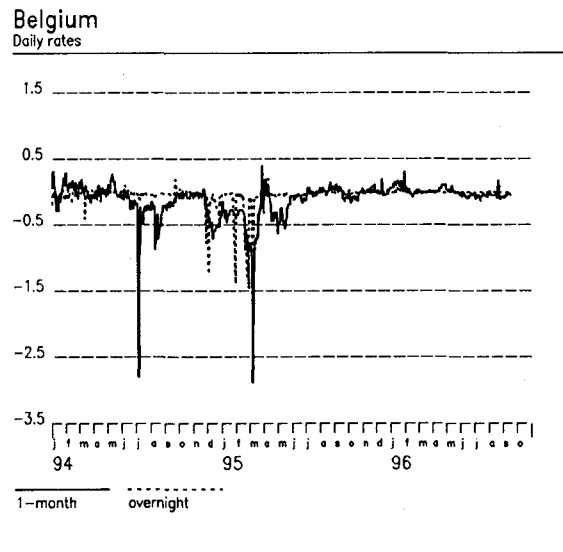
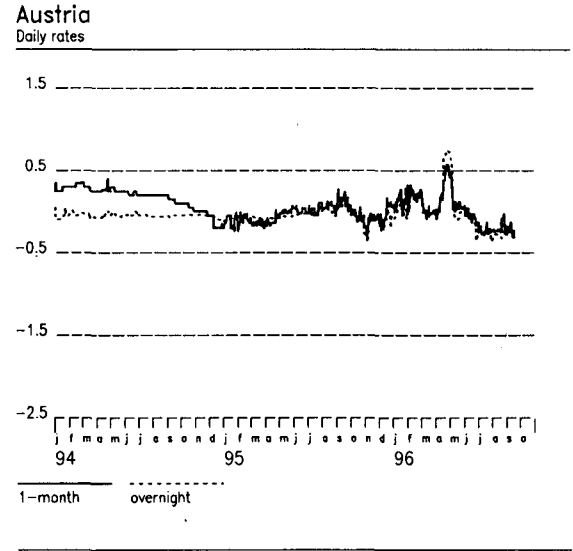
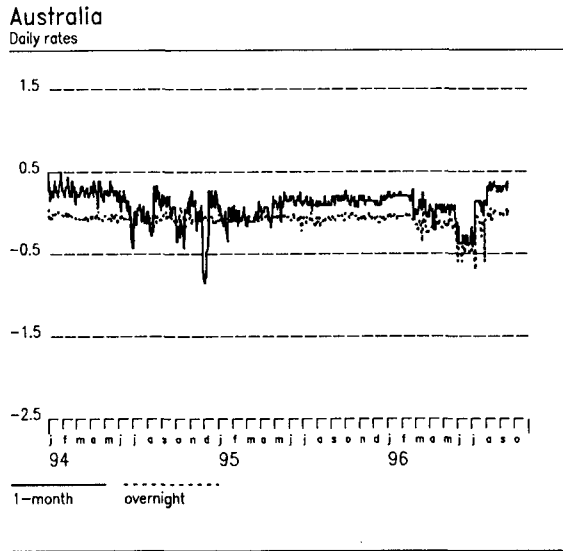
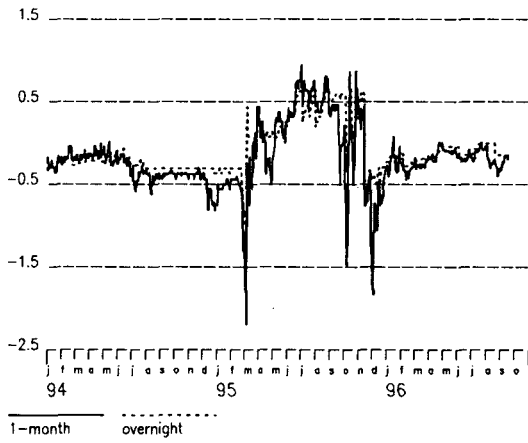
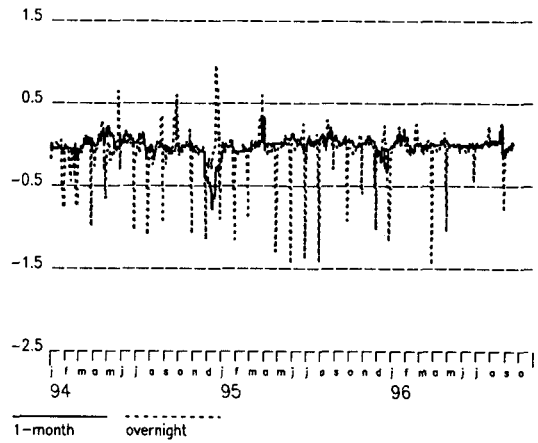


Chart 1 (cont.)
Differential of the intervention rate with the overnight and 1-month interest rate

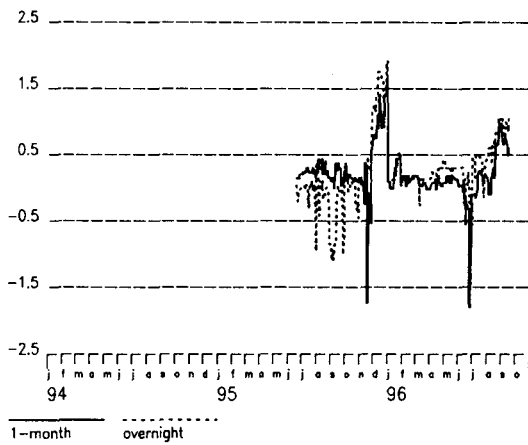
France
 Daily rates



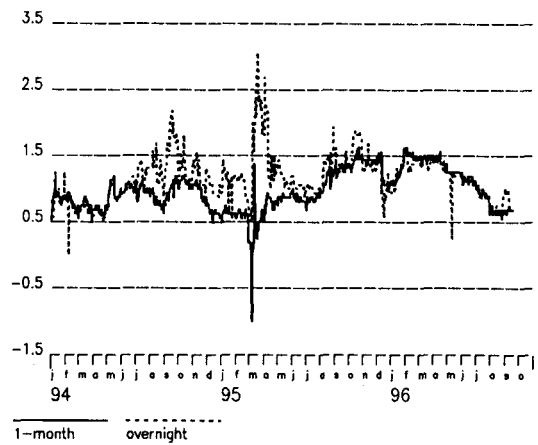
Germany
 Daily rates



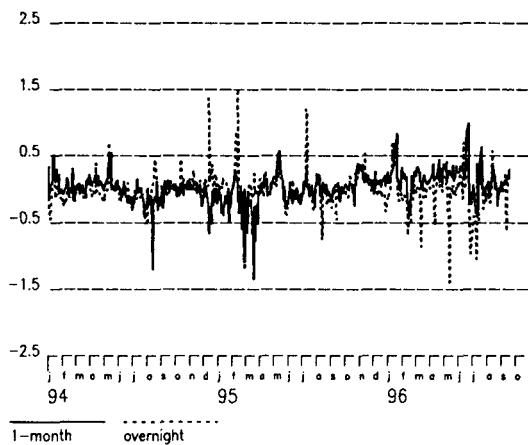
Greece
 Daily rates



Ireland
 Daily rates



Italie
 Daily rates



Japan
 Daily rates, vis a vis Discount rate

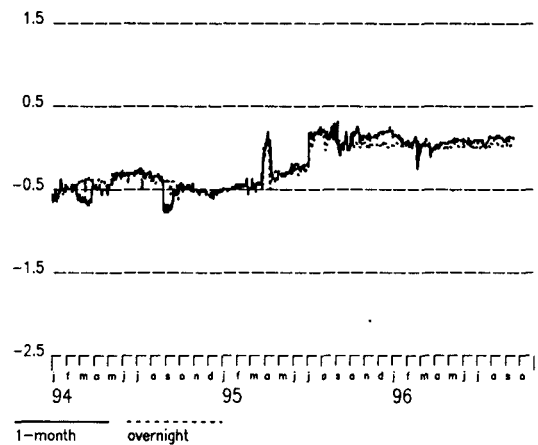
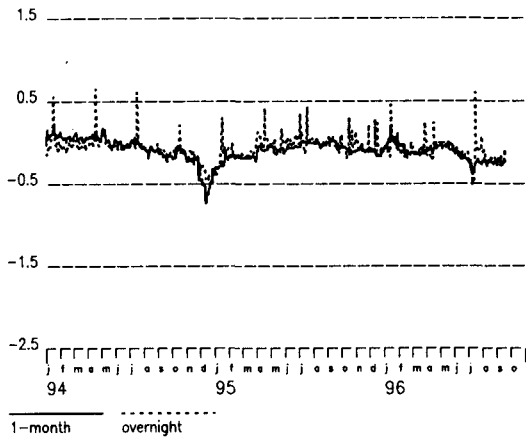
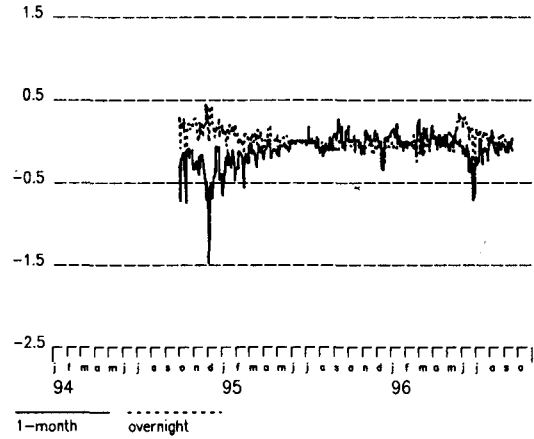


Chart 1 (cont.)
 Differential of the intervention rate with the overnight and 1-month interest rate

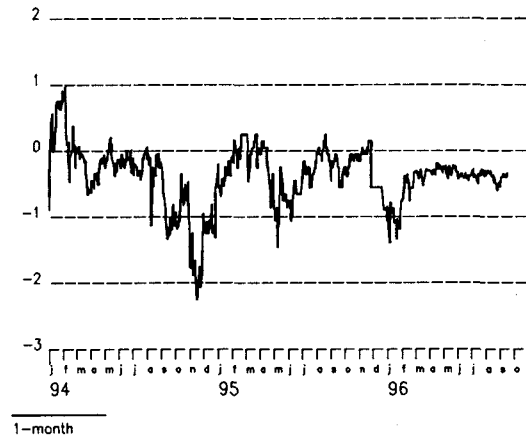
Netherlands
 Daily rates



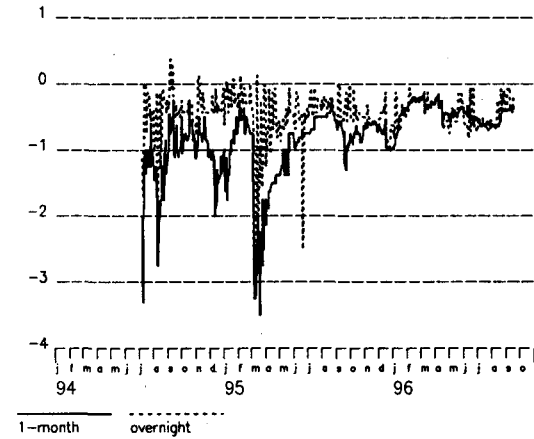
New Zealand
 Daily rates



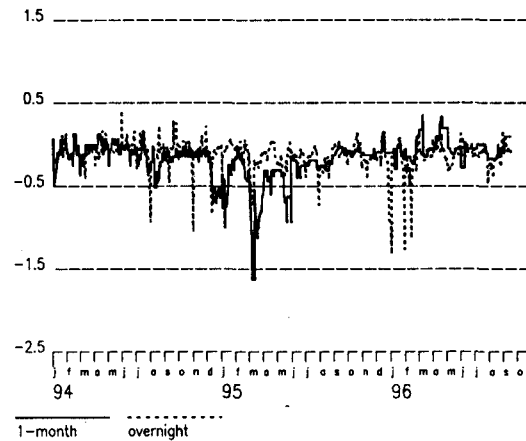
Norway
 Daily rates



Portugal
 Daily rates



Spain
 Daily rates



Sweden
 Daily rates

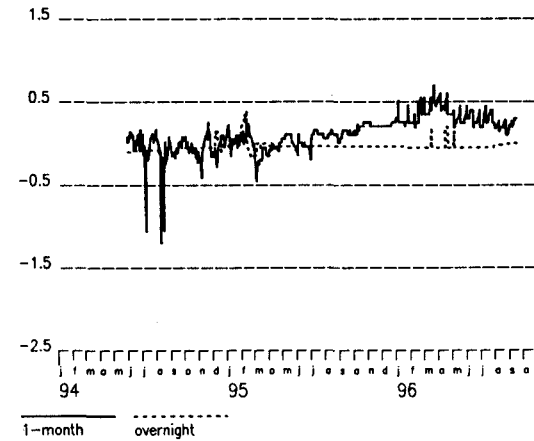
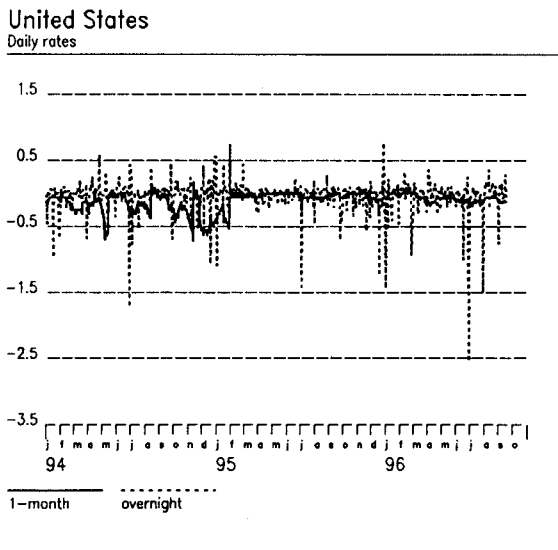
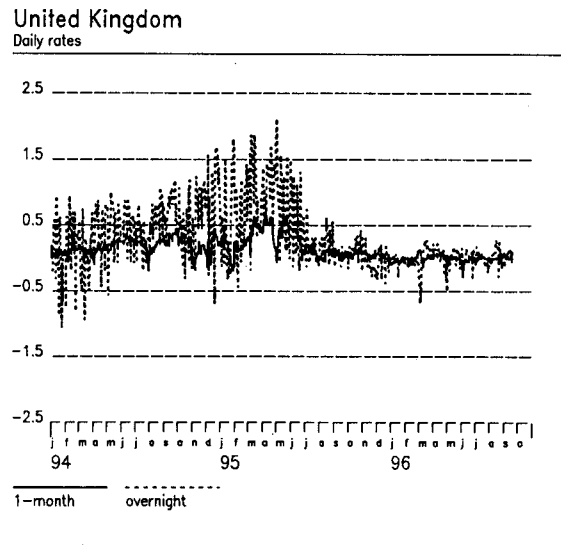
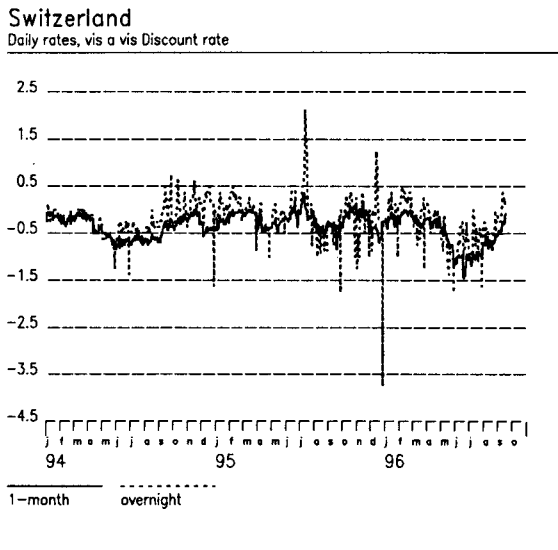


Chart 1 (cont.)

Differential of the intervention rate with the overnight and 1-month interest rate



overnight market rate and the 1-month rate. A tentative explanation of this finding is that the exchange rate policies of both countries have been highly successful for years now, so that the interest rate signals of the two central banks are perhaps more credible and, hence, more directional to interbank rates than in other countries.

Another interesting observation is that the revealed operational target for some countries does not coincide with the operational target on which central banks say they are focusing. For example, the revealed operational target of countries like the United States, Switzerland, Italy and Germany is the one-month rate, while they focus on the overnight rate. For some countries, our findings could perhaps be explained by the fact that the liquidity in the overnight market is considerably larger than in the market for one month maturities. Furthermore, changes in the overnight rate which are considered to be of a technical and short-term nature will not influence longer-term rates.

Table 2
Short-term interest rate control and inflation performance in 21 OECD countries

	Standard deviation of differential between intervention rate ¹ and the		Average inflation rate 1990-93
	overnight rate	1-month rate	
Australia	0.096*	0.188	3.336
Austria	0.142*	0.177	3.563
Belgium	0.162*	0.272	2.963
Canada	0.430	0.258*	3.436
Denmark	0.379	0.176*	2.100
Finland	0.697	0.179*	3.898
France	0.299*	0.389	2.721
Germany	0.250	0.112*	3.482
Greece	0.515	0.378*	17.562
Ireland	0.365	0.316*	2.762
Italy	0.246	0.229*	5.547
Japan ²	0.244*	0.293	2.330
Netherlands	0.137	0.130*	2.940
New Zealand	0.117*	0.185	2.768
Norway	—	0.452	3.039
Portugal	0.377*	0.519	10.054
Spain	0.168*	0.234	5.792
Sweden	0.056*	0.203	6.692
Switzerland ²	0.427	0.287*	4.653
United Kingdom	0.484	0.158*	5.652
United States	0.244	0.139*	3.907

* denotes the lowest of the two standard deviations.

¹ For Japan and Switzerland the discount rate is used as the intervention rate. ² Standard deviations are calculated on the basis of daily figures for the period January 1994-October 1996. For Greece, New Zealand, Portugal and Sweden, shorter periods are used because of changes in instruments or operating procedures.

3. Some preliminary notions on the relationship between instruments, procedures, strategies and interest rate control

The following relationships between monetary strategy, instruments, procedures, short-term interest rate control and inflation performance are conceivable:

- If daily money market operations are uncalled for, the set of instruments may need to include facilities which are activated at the initiative of the banks, such as standing facilities and averaging provisions, in order to smooth short-term market interest rates in an automatic way. However, the chosen frequency of open-market operations may also depend on the volatility and predictability of the autonomous factors affecting money market liquidity (banknotes in circulation, Treasury balance), the likelihood of misinterpretation of signals in case of frequent operations and the extent to which the central bank wants to contain interest rate volatility. Bernanke and Mishkin ((1992), pp. 36-37) state that "interest rate stability has also in many cases been an independent objective of policy". It is suggested that central banks view interest rate stability as important for maintaining orderly financial markets free from excessive speculation. In this respect, a distinction should be made between short-term market interest rates and longer-term market interest rates. A high volatility in the very short-term rates does not necessarily imply a high volatility in the longer-term rates, which tend to be more relevant

to the stability of the financial system (Bernanke and Mishkin (1992), p. 49). The desirability of low volatility in interest rates may also be one of the reasons why central banks prefer gradual interest rate changes (Goodhart (1995)). Goodhart (op. cit., p. 16) finds in his sample of major countries that the pattern of interest rate adjustments by central banks involves a sequence of small changes in interest rates of the same sign, occurring with relatively small durations between such changes. Although Goodhart (p. 20) describes the interest rate policies of the major countries as "too little too late" to hold inflation on a desired path, one of his empirical findings is that this behaviour does not seem to be closely related to overall counterinflationary success. One possible explanation is that the predictability of long continued sequences of changes in short-term interest rates allows longer-term rates to adjust more rapidly, because longer-term rates reflect the expected future central bank and short-term market rates. And output and prices mainly respond to these longer-term rates.

- Central banks pursuing a strict exchange rate target have to attune their interest rates quite closely to the interest rate of the anchor country and might therefore have to operate more frequently in the money market than central banks with a monetary target, which tend to have a medium-term orientation of monetary policy. Also, central banks in countries where short-term interest rate changes are transmitted quickly to the real economy (the United Kingdom, Finland and Italy) may be expected to have a desire to control short-term market interest rates quite closely. Finally, if central banks apply an eclectic strategy without announcing indirect or direct targets, this may increase the need for transparency of monetary policy through a closer steering of interest rates.
- One might conjecture that there is a relation between a central bank's choice of operating procedures, on the one hand, and its strategy and track record, on the other. For example, the extent to which a central bank is able to control variables further on in the monetary transmission process on a day-to-day basis determines, *inter alia*, the precision and the success with which intermediate and final objectives can be realised.
- The extent to which short-term market interest rates are controlled may depend on the central bank's track record in keeping inflation low. The idea is that the market is more receptive to the central bank's interest rate signals if the central bank is more credible and credibility depends on past inflation performance.

4. Empirical evidence on the relationship between instruments, procedures, strategies and interest rate control

The aim of this section is to find out whether the relationships described in Section 3 can be inferred from a small and simple data set which is indicative of monetary policy procedures and the inflation performances of 21 central banks in the OECD region (see Tables 1 and 2). The following questions are raised:

- What is the relation between instruments, procedures and strategies of monetary policy (monetary policy aspects)?
- What is the relation between the aspects of monetary policy and the control over short-term market interest rates?
- What is the relation between the control over short-term market interest rates and the central bank's track record in terms of inflation performance?

4.1 Instruments, procedures and strategies

There seems to exist a relationship between the inclusion of an averaging provision within the set of instruments and the frequency of open-market operations. All the central banks intervening every four days or less frequently, have included an averaging provision in their sets of instruments. On the other hand, countries like Spain, Portugal and France have averaging provisions as well but are still active on a daily basis. Probably, in these countries the room for manoeuvre the averaging provisions provide to the banking system is limited because of a relatively short averaging period or a low level of reserve requirements.

All countries pursuing a monetary targeting strategy set an interest rate corridor for market rates. This may be explained by the medium-term orientation of such a strategy. By means of the official rates for the floor and ceiling the medium-term stance of monetary policy can be signalled.

All the inflation targeters operate in the market every day, except for Finland which pursues both an exchange rate target and an inflation target and operated on a daily basis before the introduction of an averaging facility into the set of instruments in May 1996. However, there does not seem to be a relationship between the strategy of direct inflation targeting and the high frequency of operations, because most countries did not change their operating procedures when switching to this strategy.

For the group of countries pursuing an exchange rate target, the frequency of intervention varies from daily to once a week. So, the proposition that exchange rate targeters operate more frequently does not emerge from empirical evidence.

4.2 Monetary policy aspects and the control over the operational target

A comparison of Tables 1 and 2 does not reveal a clear relation between a central bank's control over short-term market interest rates, on the one hand, and its set of instruments and operating procedures, on the other. For example, judging by the huge differences in standard deviations between Australia and Greece a high frequency of open-market operations does not tell a lot about the central bank's control over short-term market interest rates, nor does the presence of an interest rate corridor or an averaging provision.⁴ Other factors are perhaps more relevant, one of which may be central bank credibility, as the standard deviations for Germany seem to indicate.

4.3 Short-term interest rate control and the strategy of monetary policy

Recalling the brief discussion on monetary policy strategy in Section 3, we would expect exchange rate targeters to have close control over short-term market interest rates, whereas money targeters, for example, could permit themselves to leave some scope to the market in the determination of short-term interest rates. As appears from Table 3, this conjecture does not seem to be supported by the empirical evidence. While there are a number of exchange rate targeters which closely control at least one short-term market interest rate (Austria, Belgium, Denmark and the Netherlands), others, such as Ireland and Portugal, tend to have larger differences between intervention and market interest rates. It should be noted in passing, though, that the first group of exchange rate targeters includes countries which have tightly linked their currencies to the Deutsche mark for years now. Hence, there might be a significant relation between the precision with which the exchange rate target is hit and the precision with which short-term market interest rates are controlled, but this is beyond the scope of the present paper.

⁴ Regressions of the respective standard deviations on the frequency of open-market operations and a dummy capturing the presence of an averaging facility did not point to a significant relationship.

Table 3
Short-term interest rate control according to monetary policy strategy

	Lowest and highest standard deviation of differential between intervention rate and the	
	overnight rate	1-month rate
Money targeters	0.25 - 0.52	0.11 - 0.38
Exchange rate targeters	0.14 - 0.38	0.13 - 0.52
Inflation targeters.....	0.06 - 0.70	0.16 - 0.26
Eclectic central banks	0.24	0.14 - 0.29

Another conclusion that emerges from Table 3 is that both inflation targeters and eclectic central banks tend to have close control over the 1-month rate. This would suggest that this rate plays a more prominent role in the monetary transmission process in these countries than in countries where the central bank pursues a monetary or exchange rate target.

4.4 Short-term interest rate control and inflation performance

We have tried to test the proposition that the extent to which short-term market interest rates are controlled depends, *ceteris paribus*, on the central bank's track record in keeping inflation low. The idea is that the market is more receptive to the central bank's interest rate signals when the central bank is more credible, with credibility measured by past inflation performance. It is rather difficult to capture the *ceteris paribus* clause, since data on the frequency of open-market operations, averaging provisions, monetary policy strategies, etc., are not measured on similar scales. Our test, which simply consists of correlation coefficients between the standard deviations in Table 2 and average inflation rates over the period 1990-93, is therefore a very crude one.

Table 4
Correlation coefficients between measures of short-term interest rate control and inflation performance

	Standard deviation of differential between intervention rate and the	
	overnight rate	1-month rate
Average inflation rate over 1990-93.....	0.31	0.49

Table 4 shows that there does seem to exist a relationship between interest rate controllability and the central bank's inflation record. However, only the correlation coefficient for the 1-month rate is significant (at the 5%-level). This seems quite plausible, since variations in the overnight rate vis-à-vis the intervention rate are also due to a number of other, probably more important, factors, falling under the *ceteris paribus* clause. It should be noted, though, that the significance of the latter correlation coefficient is contingent on the inclusion of Greece and Portugal in the sample, which are the countries with the highest inflation rates.

Conclusions

In this paper, the relationship between instruments, operating procedures, monetary strategies and the central bank's ability to control the operational target is considered. Our results, based on a small and simple data set, indicate the following tentative conclusions:

- There exists no clear relation between a central bank's monetary strategy, on the one hand, and its set of instruments and operating procedures, on the other. Presumably, differences in instruments and operating procedures employed by central banks stem not so much from differences in monetary strategy as from differences in tradition and financial structure (type/number of credit institutions, degree of market concentration, the existence and liquidity of particular financial markets, etc.).
- Differences in control over short-term interest rates cannot be explained by differences in instruments, procedures and strategies. A more relevant factor might be central bank credibility.
- Both inflation targeters and eclectic central banks tend to have close control over the 1-month rate, which suggests that this rate plays a more prominent role in the monetary transmission process in these countries than in countries where the central bank pursues a monetary or exchange rate target.
- As expected, a number of central banks targeting exchange rates have close control over at least one short-term market interest rate. This group includes countries which have tightly linked their currencies to the Deutsche mark for years. Apparently, the precision with which the exchange rate target is hit has a bearing on the precision with which short-term market interest rates are controlled.
- There is some evidence of a significant relationship between controllability of the 1-month interest rate and the central bank's inflation record.

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