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Monetary policy in Switzerland: The performance during the seventies

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Monetary Policy in Switzerland

The Performance During the Seventies

von

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I. Introduction

This paper deals with some questions concerning monetary policy in Switzerland. Switzerland is an interesting case to study because the country is relatively small and correspondingly the total amount of Swiss franc holdings in the Swiss commercial banking system and in the Euromarkets is small in comparison to the same figures for some other currencies.

The Swiss franc, however, appears to be subjected to remarkable changes in its appreciation by foreigners. Periods of strongly rising demand for the Swiss franc were followed by much more constricted views of the international community of wealth holders on the potential to gain from holding Swiss francs. Periods of sharp real appreciations were followed by intervals of time during which the Swiss franc depreciated even in nominal terms. Thus the central bank of Switzerland has to perform a rather difficult task because it faces obstacles which appear magnified when compared to other countries.

¹ If a) two countries have a similar foreign trade share but are of different size, or if b) two countries are of similar size and have a different foreign trade share it seems that the bigger country under a) and the country which is less open under b) suffers less from flexible exchange rates when a shift in demand towards its currency occurs. Since Switzerland is relatively small and very open the advent of flexible exchange rates, *ceteris paribus*, was not to its advantage (in terms of the necessity to undergo structural changes).

This study sorts out the goals of Swiss monetary policy, and it also provides some normative statements which will be put forward hesitatingly, and with due caution because the relevant monetary theory still is in a process of being created.

II. The early floating rate period: January 1973 - September 1978

Under a regime of fixed exchange rates any individual country has only very little influence over the rate of expansion of its monetary aggregates. The central bank is obliged to buy or sell foreign money at a fixed price against its own currency. The central bank therefore loses control over the changes in the price level. Price level stability, however, is the traditional goal of monetary policy. This holds true in particular for the monetary authorities in Switzerland.

Based on misleading economic advice in the 1960s the US monetary authorities had allowed the process of money creation in the United States to expand by much more than would have been compatible with internal stability. Consequently the international community of dollar holders diversified away from dollars into other currencies, predominantly the Deutsche Mark and the Swiss franc. The inflow of foreign money into Switzerland was mounting during the late 1960s and continued in 1971 and 1972. The Nationalbank reacted to this danger to the stability of the Swiss national price level by declaring in January 1973 that it would let its currency float indefinitely. It was the first central bank to take this step in the 1970s. The rate of inflation was high in 1973 due to the expansion of monetary aggregates which had occurred before. The inflation of 1974 to some

extent also was unavoidable for the same reason¹. From 1974 onward until 1979 Switzerland had a low rate of inflation by international standards. In the three years from 1976 to 1978 the price level was almost constant and thereafter accelerated in 1979. At present² it is running at approximately 4 to 5 percent on an annual comparison.

From 1974 until 1978 the Nationalbank had announced a desired rate for the expansion of the money supply. It did not make such an announcement for 1979. In December 1979 it resumed this practice. For 1980, however, for the first time the announcement was not for M1 but for the monetary base.

During most of the floating rate period the Nationalbank has had a target variable which had very high priority over any other theoretically possible variable, namely the domestic price level. Therefore monetary policy can well be described as if deviations from price level stability was the only thing which mattered.

II.1. Monetary policy as if only price level stability mattered

If the constancy of the price level was the ultimate goal of monetary policy, in a closed economy it would be trivial to devise. In this case it suffices to follow a fixed rule type of monetary policy, the rate of expansion being determined by the trend value in the growth rate of the economy and some measure of changes in the institutional framework

¹ Compare Leutwiler in the Neue Zürcher Zeitung of May 23, 1980 who estimates the lead of changes in monetary aggregates on changes on the rate of inflation to be in the neighbourhood of 6 to 8 quarters.

² In May 1980.

of the commercial banking system. Changes of this kind tend to be small and occur slowly¹. They are therefore no real threat to a near constancy of the price level if they are not anticipated absolutely correctly.

In an open economy monetary policy would not be trivial but very simple indeed. It would also follow a k-percent rule; the k being determined in a similar fashion as in the closed economy case. The only problem here is the influence of import prices on the domestic price level in case exchange rates fluctuate a lot and in particular by more than is warranted by diverging price level developments in different countries. In order to illustrate the problem assume that for some reason the exchange rate of the home country is under downward pressure. It falls because international demand for the domestic currency has increased. If foreign prices did not rise as of yet there is the possibility of downward pressure on the domestic price level because imported goods have become less expensive in domestic currency. For the present context it is assumed that the domestic monetary policy has been following the preannounced path. The demand for domestic currency went up because of a change in the expected supply conditions of the foreign currency.

Two cases are possible. In the first case expectations are correct². The foreign central bank as is revealed in the course of time did switch to a more expansionary policy and thus established a higher rate of inflation in the foreign

¹ This holds in particular exactly if monetary policy is totally predictable.

² Using all available information both about the past and the present which is embodied in the relevant time series and the variations thereof the economic subjects did a good forecasting job.

country. In the second case expectations are frustrated¹. The foreign central bank sticks to the old rate of inflation. To begin with the second case, the domestic central bank may not need to do anything because it may rely on a reversal in foreign demand for the domestic currency when it is realised that expectations had been wrong. At the very most there will be a small deviation from constancy in the price level for a short period of time which will be considered negligible. In the first case the deviation will not be much bigger and will also be temporary because imported goods will rise in price in foreign currency. The deviation of the exchange rate from a path determined by purchasing power parity corrected for an estimate of the trend value of real exchange rate changes² will therefore be also temporary. If the central bank wishes to diminish the impact of import prices on the domestic price level it may react with a partial adjustment. Under this scenario the domestic central bank expands the money supply for a certain interval of time by more than it would have done in the absence of a change in the foreign monetary policy. The extra amount of money creation depends on the quantity of imports from the foreign country, the duration is

¹ The foreign central bank's behaviour does not fit its historical pattern. The permanent component of the monetary policy was overestimated.

² Some authors are excluding other than real forces for permanent real exchange rate changes, see Niels Thygesen, "Exchange Rate Experiences and Policies of Small Countries: Some European Examples of the 1970s", Essays in International Finance, No 136, December 1979, says on page 7: "In any case, purely monetary disturbances may lead to temporary, but not to permanent, changes in the real exchange rate."

determined by the seizes of time lags between changes in monetary policy abroad and changes in prices in the foreign country as well as in the domestic country¹.

In the real world one mostly observes a mishmash of these two cases. Expectations go in the correct direction but are exaggerated. It then happens that the depreciation of a currency² expected to be inflated by a yet higher rate than the present one goes beyond what is necessary to compensate a potential money holder for the expected higher loss of purchasing power in the future. What is inexplicable with the current state of the overshooting literature happens once in a while, namely high interest currencies revalue with respect to low interest currencies in nominal terms. Spot rates do not follow the path predesigned by forward rates and thus an open position in the forward market offers rather safe gains^{3,4}.

¹ For more details on the algorithm see Reinhard Fürstenberg, "Reaction Pattern for Central Banks to Some Foreign Disturbances", 1979, unpublished mimeo, and on the predictability of price level changes (under a do-nothing policy) see Reinhard Fürstenberg und Joachim Scheide, "Ansätze zur Inflationsprognose", Kieler Arbeitspapier Nr. 104, May 1980. On a first analysis the empirical relevance of such endeavours to fine tune seems to be small because a) it will be overshadowed by other irregularities in the economy which are not amenable to monetary policy and b) the resulting changes of the money supply in percent of the changes according to a k-percent rule will be small (with the possible exception of economies with extremely high import shares).

² This currency is assumed to enter the present time with both a higher rate of inflation and interest rate than the other currency.

³ This observation, namely the occurrence of situations which offer safe gains, cannot meaningfully be integrated in any theory which a) assumes rational behaviour and b) claims more than temporary relevance.

⁴ For a more detailed analysis see below, paragraph IV.

II.2. Other targets of monetary policy

The prime target variable for Swiss monetary policy from January 1973 through September 1978 clearly was the rate of domestic inflation. However, monetary policy was a little more complex than in the pure case described above because the Nationalbank intervened heavily in the foreign exchange markets presumably in order to bring the exchange rate closer to a level which was deemed more appropriate for a smooth functioning of the real activity of the economy than the exchange rate established by the other participants of the market. Price levels are fluctuating less relative to exchange rates if the comparison is based on rather short intervals of time like 30 or 90 days. Therefore rather expressed fluctuations of exchange rates almost always coincide with real exchange rate changes. It is hard to tell whether the Nationalbank initiated her interventions in the foreign exchange markets with the goal of permitting a maximal real exchange rate change in a certain interval of time or whether it concentrated on nominal exchange rate changes. Because of the above mentioned simultaneity it would make little difference anyway with respect to smoothing sharp fluctuations. From the calculation of correlation coefficients between changes in interventions and changes in the rate of change of the effective exchange rate and the real effective exchange rate Vaubel¹ in a recent study believes to have detected that the Nationalbank reacted less to the latter than to the former. This conclusion is based on weak evidence, however, because the result is statistically insignificant at the five percent level and the relative size of the correlation coefficients is reversed when a lag of one quarter is applied to the exchange rate variables. At any rate the

¹ Roland Vaubel, "West Germany's and Switzerland's Experience with Exchange Rate Flexibility", unpublished paper, January 1980.

Nationalbank seems to attach some importance to the nominal level of bilateral exchange rates irrespective of relative price trends in Switzerland and the corresponding other country. Evidence which points to this conclusion is the statement of the Nationalbank that it would not allow the Swiss franc to appreciate beyond 80 Swiss francs for 100 Deutsche Marks¹. This statement was not made conditional on movements of price indices which would have been necessary in case the real exchange rate with the Deutsche Mark was to be given some limit. On the other hand there are various verbal statements by senior servants of the Nationalbank which indicate that it is the real exchange rate of the Swiss franc which is at the center of attention. Nevertheless there seems to be some remnants of exchange rate illusion as is testified by the above mentioned observations².

III. The floating rate period of October 1978 to December 1979

One could have imagined the Nationalbank to have followed the general line of its policy as it was described in the above paragraphs also in the more recent past. But it did not. There was a marked swing in priorities. The Nationalbank decided to give up the expansion of the money supply within the preannounced margin. This important new stance was obviously triggered by a very strong demand for the Swiss franc pushing the exchange rates for the US dollar and the

¹ With another statement along the same lines of April 1980 the Nationalbank declared that it would not allow the Swiss franc to devalue against the Deutsche Mark beyond 95 sfr per 100 DM. According to the Nationalbank, therefore, the Swiss franc must stay within a band around 87,50 sfr per 100 DM the width of which is less than 9 percent to either side.

² The public does seem to suffer from exchange rate illusion of a yet higher degree. In September 1978, e.g., there were demonstrations in Switzerland asking for the immediate establishment of a certain nominal exchange rate, in particular for the US dollar.

Deutsche Mark to very low levels. Since all the attempts to cut the demand for the Swiss franc by administrative means had more or less failed the Nationalbank turned to the supply side and offered some extra 10 billion sfrs within three months. This pushed the expansion rate for the monetary base beyond the 20 percent range, the corresponding figure for M1 being 16.2 percent which is strongly at variance with the targeted value of 5 percent for 1978. In the foreign exchange markets soon after this decision the rally of the Swiss franc came to an end. First the Deutsche Mark appreciated against the Swiss franc. The US dollar started climbing only a little later. The turning point came with some announcements of the US monetary authorities on November 1, 1978 to seriously combat inflation with a new and more restrictive type of monetary policy. Apparently a large number of market participants believed that actions would follow these declarations and was willing to hold more dollars.

There is a set of problems connected with giving priority to one monetary policy over a competing different monetary policy. The Nationalbank has certainly dealt with them and must have arrived at certain conclusions which were thereafter used as theoretical underpinning for the new monetary policy. In the following paragraphs some of these questions are raised. There is a short theoretical discussion of the issues involved. Then the attempt is made to develop a mutually consistent pattern of answers which in our view has a high likelihood of mirroring the beliefs of the Nationalbank.

The Nationalbank is not constrained by law¹ to concentrate all its effort on the attainment of a constant price level. There is room enough to also follow other goals. Monetary

¹ See Press Review of Bank of International Settlement, no. 25, February 5, 1980, page 3; the prime objective of the Nationalbank is laid down in the Constitution and defined by law: "it is to protect the overall economic interest in the widest sense of the term."

policy has the duty to provide an economic environment which allows the economic subjects to develop activities in such a way as to come as close as possible to the realisation of their desired goals. These goals traditionally are characterised by maximal growth rates of the domestic economy or of per capita income or some similar variable¹. In this set of goals price level stability is usually absent. It is but a tool to attain an environment favourable to economic activity. The bridge which connects price level stability with, say, a maximal growth rate for the domestic economy is the interpretation of economic theory by the Nationalbank.

III.1. The goals of Swiss monetary policy

It is clear that in the pursuit of its duties the Nationalbank has tried to monitor more than the price level. It is clear that also the level of unemployment or the level of real output and the real exchange rate have been variables which the Nationalbank uses in the decision making process for the formulation of its policy.

Prior to October 1978 the monetary policy can be described by the following equation:

$$(1) \quad \dot{M} = f_1 (\dot{CPI}_{\text{actual}} - \dot{CPI}_{\text{desired}})$$

¹ A caveat emptor: With the advent of a higher sensitivity for the maintenance of certain equilibria in nature there may soon come the necessity to reformulate these goals. The consequences for monetary policy, e.g., in case a maximal growth rate should not be desired any longer are drastic. The economic adviser would then find himself in a difficult situation. Should he provide his theoretical knowledge in the fulfillment of his inherited duties to design a monetary policy leading to a maximal growth rate if, given the economic structure, he believes that further growth leading to intensified pollution should not be promoted? I owe this point to discussions with Karla Börnig.

A rate of inflation (\dot{CPI}_{actual}) considered to be too high and thus too far away from the desired rate of the Nationalbank leads to a relatively tight monetary policy. The \dot{M} stands for the change in a monetary aggregate like M1 or the monetary base.

This comparatively simple scenario becomes distinctly more complex with the new monetary policy. Changes in the monetary aggregate are now determined by more than one variable:

$$(2) \quad \dot{M} = f_2(\dot{CPI}_{actual} - \dot{CPI}_{desired}, \dot{RE}_{actual} - \dot{RE}_{desired}, \dot{RO}_{actual} - \dot{RO}_{desired})$$

\dot{RE} is the change in the real exchange rate, \dot{RO} is the change in real output. RO was chosen as a proxy for the level of real activity in the economy. One might conceivably also approximate it by the level of unemployment.

In equation 1 monetary policy is so much more simple than in the latter case because there is no need to consider the influences of the variables exogenous to monetary policy on each other after \dot{M} has changed. In the first case, if \dot{M} is reduced it will lead to a lower level for \dot{CPI}_{actual} with some lag¹. This reduction is desired because of an easier attainment of the ultimate goal of economic policy, namely, say the maximisation of the growth rate of the domestic economy. The process which leads from a lower rate of inflation to more growth is not discussed here. Equation 2 indicates that the Nationalbank desires to minimise the fluctuations not only of the CPI but also of the real exchange rate RE and the real output RO . The Nationalbank assumes implicitly the existence of the following relationships.

¹ The lag in Switzerland appears to be somewhat larger than in Germany. In Germany it stayed within 4 to 8 quarters. For Germany compare Fürstenberg, Scheide, opt.cit., for Switzerland see Dr. Fritz Leutwiler as quoted in footnote 1, page 3.

$$(3) \quad \dot{CPI} = f_3(\dot{RE})$$

$$(4) \quad \dot{RO} = f_4(\dot{RE})$$

$$(5) \quad \dot{RE} = f_5(\dot{M})$$

These relationships reveal the importance of the real exchange rate for both the domestic price level and the level of real output. The transmission of a change in the real exchange rate into an (undesired) change in the domestic price level goes via the contribution of the prices of imported goods which are included in the basket of goods used for the definition of the CPI.

A change in the real exchange rate also changes the terms of trade. A worsening in the terms of trade leads to an undesired change in real output. An important variable in this context is a change in orders for the Swiss export industry. This statistic¹ can be expected to serve the Nationalbank as an early warning indicator for a future change in real output.

The observation of these relationships leads to changes in the money supply in order to influence the real exchange rate. This reaction based on relationship (5), however, is not without problems. The reason is that a change in the money supply has an impact on both the CPI and the real output². The lag which is involved with the normal transmission mechanism is longer in general than via the more direct influence of real exchange rate changes. Another difference is that over the longer run the change in the price level due to a change in import prices will whither away. It is a transient phenomenon.

¹ When it dropped drastically in 1978 this de facto did have an impact on the decision making process of the Nationalbank. I owe this point to discussions with Prof. Dr. Jürg Niehans.

² The transmission mechanism is shortly described in Fürstenbert/Scheide, *opt.cit.* It is also implicit, e.g. in Brunner, Cukierman and Meltzer, "Money and Economic Activity, Inventories and Business Cycles", unpublished manuscript, March 1980.

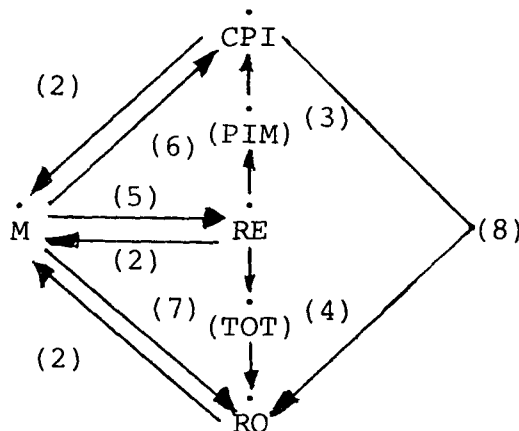
The change in the price level coming from an expansion in the money supply is of a permanent nature¹.

These observations can be summarised by the following two relationships:

$$(6) \quad \dot{CPI} = f_6(\dot{M})$$

$$(7) \quad \dot{RO} = f_7(\dot{M})$$

The relationships (2) through (7) are summarised in the diagram (1) below for a better overview.



The arrow (8) refers to a long run relationship between the level of the rate of inflation and the level of the average growth rate of the economy. It says that the higher the average level of the rate of inflation the lower is the

¹ With respect to the change in real output the change in the money supply has only a transient effect.

average growth rate. This statement is probably the basic motive, it seems, for monetary policy to strive for the constancy of the price level. It can be made plausible on the following grounds: if there is no inflation price tags have to be rewritten much more rarely, i.e. only in the case that a relative price change occurs. The arithmetics of all sorts of investments and transactions become easier. This saves the economy resources which may be utilised elsewhere. Another line of arguments is familiar from the decision making process leading to internationally diversified currency holdings. The lower the level of inflation the lower is the expected variability in the rate of inflation. If a negative rate can be excluded and the closer the rate of inflation is to zero, the more skew are the changes in the rate of inflation, enhancing the above argument. A small expected variability in the rate of inflation thus dwarfs the problem of interpreting changes in nominal demand for commodities¹ and increases planning abilities of economic subjects.

Also it may be that normative convictions are pointing in the same direction. Even if the rate of inflation is correctly anticipated by everybody in the absence of indexing a positive rate may lead to undesired changes in the distribution of income and wealth due to barriers to entry for the markets of certain assets.

III.2. An Interpretation of Monetary Policy

This general framework is now utilised in order to explain monetary policy since the autumn of 1978. In July the Swiss franc exchange rates against DM and US \$ started to fall. This movement culminated in October and November of the

¹ Compare the analysis of Brunner, Cukierman, Meltzer, opt.cit.

same year. All administrative attempts¹ to stop the Swiss franc from appreciating ever more failed. In this situation the Nationalbank got into what it must have perceived as a dilemma situation. On the one hand it felt committed to stick to the expansion of the money supply by the preannounced rate. On the other hand it observed the Swiss franc appreciate ever more. Simultaneously a deterioration of the Swiss terms of trade occurred. These two developments gave rise to the fear that the level of economic activity in Switzerland would be unduely endangered via the following channels Swiss exports would become very expensive for an extended period of time due to the real appreciation. This would entail drastic reductions in expected sales abroad. The expectation for such a development was apparently compatible with the observation of already dramatically falling orders from abroad. Furthermore the Swiss franc prices of imports were falling and were contributing towards the prospect of a falling domestic price level. A falling domestic price level, however, was associated with negative growth rates or more generally the advent of a depression. The cost in terms of employment and production foregone from not counteracting the developments on the foreign exchange markets must have appeared very high. At the same time the Nationalbank must have considered the problem of laying the basis for later acceleration of the speed of price level changes as either non existant or negligible. It may have appeared negligible because of the prospect of a likely continuation of a near constancy of the price level

¹ Pierre Languetin, "De la politique de stabilité en Suisse: appréciation critique de la pratique en vigueur jusqu'ici et de l'ensemble de mesures nouvellement conçu du point de vue de la politique économique", Schweizerische Zeitschrift für Volkswirtschaft und Statistik, September 1979, writes on page 292: "la tourmente monétaire mondiale, ..., a démontré l'impossibilité de résister aux forces d'un marché débridé par de simples mesures de caractère administratif."

because of falling prices for industrial products, imports, rents, etc. Another reason may have been the hope that there would be an occasion in the near future to sell a good share of the dollars back to the market and thus bring about a reduction of the monetary base to normal levels. The Nationalbank actually did manage to get rid of the larger part of the dollars in the course of time. Taking an average over four years from February 1975 to February 1979 the circulation of Swiss franc notes increased by an average rate of 3,8 per cent per year only¹. It is thus tempting to say that the increase in the monetary base has been fully reduced and probably did not leave any serious traces in the economy².

¹ Jürg Niehans, "Geldpolitik bei überschliessenden Wechselkursen", Aussenwirtschaft, 34, 1979, 3.

² It is yet more tempting to argue that in case the Nationalbank had done nothing (stick to a k-percent rule) the appreciation of the Swiss franc would have possibly gone further but would certainly not have lasted for so long. The dropping of the exchange rate was hindered by the interventions and thus produced three effects:

- a) The private participants of the market realised that "the market" wanted the Swiss franc to appreciate further, only it could not. This offers the opportunity of rather safe gains from selling US dollars to the Nationalbank with the warranted expectation that others will follow and force the Nationalbank to let its currency move down a little more. Such a game has worked many times and is much less dangerous as compared to dealing with a private party because the intentions of such parties are much less known.
- b) Had the Swiss franc been left to the market and had it dropped faster, it is likely that private parties would very rapidly have arrived at the opinion that the Swiss franc is overvalued now. The market would have ended the downward movement of the exchange rate much faster then and would have taken it back to higher levels.
- c) What matters for the impact of exchange rate changes on the level of real activity, it seems, is not the absolute seize of the movements of the exchange rate, but, say, the area between a hypothetical path which represents PPP corrected - may be - for some trend value of real exchange rate changes, and the actual path. It can be argued (see above) that this integral would have been smaller had the Nationalbank not changed its policy.

It cannot be excluded, however, that the Nationalbank considered an expansion of the money supply as a reaction to the increased international demand for Swiss francs as neutral with respect to the domestic price level. The argument here is that an expansion of the money supply in order to keep the (real) exchange rate constant in order to satisfy the higher international demand has no impact on the price level because foreigners just hold the Swiss money but do not use it to buy goods and services on the domestic market. Should the international demand decline the Central Bank would buy its money back and supply the foreign money, leaving the (real) exchange rate constant again. The only marked consequence of such a policy is an increase in seignorage gains from issuing money to foreigners which might be used to finance e.g., the federal budget. Arguments along these lines can be found in the literature. Schelbert¹ writes on page 286: "Bei einer richtigen Dosierung der Angebotsausweitung wird die exogene Wechselkursänderung genau vermieden, während die zusätzlichen Franken in den Portefeuilles der Ausländer verschwinden. Diese Geldmenge hat für den internen Markt eine Umlaufgeschwindigkeit von Null und ist ohne Einfluß auf das Preisniveau in der Schweiz". Vaubel² characterises such a policy even as an ideal solution to the problem of dealing with international shifts in the demand for money. He writes on page 25: "Given that price-level stability is preferable to inflation or deflation in terms

¹ Heidi Schelbert, "Stabilisierungspolitik in kleinen offenen Volkswirtschaften: das Beispiel Schweiz", Schweizerische Zeitschrift für Volkswirtschaft und Statistik, September 1979.

² Roland Vaubel, "International Shifts in the Demand for Money, Their Effects on Exchange Rates and Price Levels, and Their Implications for the Preannouncement of Monetary Expansion", Weltwirtschaftliches Archiv, Band 1, 1980.

of allocative efficiency, irrespective of whether expectations are rational or not, the "ideal" solution might be to pre-announce target rates of monetary expansion only net of international shifts in the demand for the national money and to offset all such shifts through compensatory money-supply adjustment." To Vaubel the problem is not whether or not a central bank should react to an international shift in demand for its own money. It is taken for granted that it should. The problem is to isolate such a shift quantitatively. On the other hand there are writers on the same subject who are much more cautious as to the neutrality of the price level with respect to such manoeuvres of central banks. Languetin¹ leaves room for doubt when he writes: "... la méthode appliquée depuis le 1^{er} octobre 1978 ... laisse subsister des inconnus quant à ... ses répercussions endogènes sur le niveau des prix." In our view it is exactly about this point that the theoretical foundation should be as solid as possible. This issue has priority over the identification of international shifts in demand², because even if detected, the central bank does not know what to do if it has not cleared its mind on the potential repercussions of its actions on the domestic price level.

¹ Pierre Languetin, *opt. cit.*, page 293.

² The very important indicator problem is bypassed here, although it is a very major problem. How does the National-bank discriminate between incipient real exchange rate changes which constitute some trend and others which do not? In our view it cannot rely exclusively on the observation of foreign exchange markets. It does need a superior theory and reliable, empirically tested indicators. To our knowledge there is no such reliable empirical evidence available whatsoever. It is our opinion that any economist who is suggesting to the central bank to leave the pre-announced k-percent rule policy should have mastered the indicator problem in a convincing manner. In this context it is not satisfactory to speak of "exceptionally large and intolerably disruptive real exchange rate changes" (Vaubel, *opt.cit.*, p. 35) to warrant a policy change. This can hardly be a base for policy reactions because there are good reasons that under certain circumstances (see page 23f.) the real exchange has to undergo large changes.

In order to arrive at a first idea on how this question might be answered the ensuing analysis is suggested. Clearly the following paragraphs cannot be interpreted as a well founded base for certain aspects of monetary policy. This analysis needs being developed further but at the present stage it can potentially serve the purpose of throwing shadows on ready to use policy advice developed elsewhere.

It seems useful to distinguish between money demanded by domestic economic subjects for the purpose to make transactions and other purposes. Since the demand for the first purpose appears to be rather stable¹ it is not analysed altogether. It is assumed that it is satisfied according to a fixed rule type monetary policy. The other purposes include demand for domestic money as a financial asset. Wealth holders develop some algorithm to determine the proportions of different types of assets in the total portfolio. Money of different central banks are such assets. The demand for money from this source is not distinguished as to whether it comes from foreigners or not. Presumably the strategies to develop optimal portfolio proportions are similar or even identical across economic subjects of different nationalities.

Now assume that the demand for a foreign currency (the dollar) goes down because there is a new piece of information which leads to the expectation that over the relevant future the foreign currency will be inflated by more than was expected up to now. This will lead to a new relative price for these two stocks of money. The foreign currency will depreciate. The demand for money for transactions purposes is not influenced and therefore does not change. The price level will not be at a level different from the level that would have been obtained in the absence of the international shift in demand for money after relative prices have reached a new equilibrium. Relative prices change because imports become

¹ As a function of real income and nominal interest rates.

cheaper and are likely to temporarily lower the price level (since the restructuring of consumption patterns will not occur simultaneously with the relative price changes). If the new exchange rate is assumed to be permanent there will be some structural changes in the domestic economy because, again, imports have become cheaper and exports are more expensive now in foreign currency¹. So far the domestic central bank did not change its policy. Now assume it does. The money supply is expanded by an extra amount. If this money is issued in the form of notes which are put in private safes or if demand deposits are held directly with the central bank² it seems that no other variable than the exchange rate would be influenced by this operation. However, if the additional money is issued to the banking system and the demand deposits are placed in commercial banks some variables

¹ This price change of exports in foreign currency is exogeneous to demand for these products. Therefore this deterioration of the terms of trade must be distinguished from the normal case, namely, a shift in international demand in favour of domestic products leads to a real appreciation of the domestic currency. In this case an increased competitive edge goes along with a deterioration in the terms of trade.

² As a third alternative one may think of an increased rôle of a certain currency at the expense of another currency as a means of payment for international trade. Further analysis of the mechanisms involved with holding such balances of vehicle currency both with respect to the behaviour of international merchant banks and the other central bank are necessary prior to any premature judgement on this issue. Compare the literature on changes in currency areas and the like, in particular the changes involved when central banks misuse the argument and base it on weak or false or no empirical evidence. See also the contributions in the monthly report of the Bundesbank for November 1979, and the German Sachverständigenrat, 1978/79, paragraphs 403 and 404.

change which do have an impact on the price level. In the view of the commercial bank these new deposits are indistinguishable from any other new deposit (consisting of monetary base money) stemming from a more expansionary monetary policy¹. The only difference de facto is that these deposits will by assumption not be used by their owners to make purchases. But that is something the commercial bank cannot know and that is not of vital interest to her. It will use the extra deposits in the usual way to make loans. The credit creation process is set in motion. The interest rate must fall now² in order to increase the volume of credit. Then the money supply is expanded, ultimately all prices will rise. Also demand for money for transactions purposes goes up because the interest rate has fallen. The central bank in principle would have to make a correction for this change in its preannounced rate of expansion of the money supply.

Summing up, if the demand for money goes up and the supply follows suit and if the above analysis is valid it is not correct to conclude that the price (interest rate) remains unchanged. Such an observation may be valid for apples but it is not for money.

IV. Speculations on future problems for monetary policy - an implicit evaluation of past strategies

Monetary policy in Switzerland has been very tight during recent months. Beginning with the fourth quarter of 1979, over the last three quarters, provided it did not change in the second quarter of 1980, the monetary base as well as M1 were shrinking with double digit rates by an annual comparison. If, first, the lead in the monetary policy with respect to

¹ For the qualitative result this argument need not being made conditional on whether or not commercial banks know that these deposits belong to foreigners and may be withdrawn again.

³ at least temporarily.

price level changes which was observed in the past is still valid¹ and second the tight monetary policy is continued for another couple of quarters² at the very latest in the third quarter of 1981 the rate of inflation in Switzerland will fall. It cannot be excluded that prices in the United States will be rising ever faster then provided the intermezzo of a tight monetary policy there has come to an end in the second half of 1980³. The expected slowdown in the rate of inflation in the US. would be but a temporary phenomenon. In this scenario - to make it yet a little worse - assume that OPEC countries' willingness to hold dollars for political reasons in spite of financial losses has partially come to an end. Assume that they will be demanding 10 percent of every oil bill being paid in DM or sfr. They are selling dollars in the open market in order to reduce their stocks and they sell a large share of newly acquired dollars in order to approach new desired portfolio ratios. In this situation assume that the sfr gets under pressure to appreciate in the international exchange markets. What are the Swiss monetary authorities going to do?

What should they do?

It is our prejudice that the confidence of the average internationally diversified wealth holder in any sort of statement concerning intended actions of central banks is shrinking. If slowly, he is learning and increasingly considers actions

¹ There are no indications to the contrary.

² The Frankfurter Allgemeine Zeitung of June 9, 1980 reports that Dr. Fritz Leutwiler, the President of the Nationalbank has opted against a gradual reduction of the money supply in the fight against inflation at the International Monetary Conference in New Orleans. He favours a sharp recession given the social and political consequences of continued inflation. This statement backs the prospect that monetary policy in Switzerland will remain to be very tight indeed.

³ For this scenario we do not claim a high probability. By adding some possible developments we simply construct a situation which we believe will be considered a difficult one to optimally react to by the Swiss monetary authorities. This scenario is used to shed light on hidden problems of past policies. After all, it is not impossible either to actually occur.

and not words. Therefore any press conference of the President and/or the Fed like in November 1978 will have much less impact than it had then. Is the Nationalbank going to supply 50 or 80 or 100 billion sfr if they are demanded at a certain exchange rate?

In our judgement it should not. Leutwiler¹ has made it quite clear that the highest task for the tuning of monetary aggregates is the attainment of stability of the price level. There should not be any exaggerated attention for the exchange rate. The creation of many extra billion Swiss francs in 1978 did lead to more inflation in Switzerland². This happened although the Swiss francs could be bought back against dollars some time later without rocking the exchange rate by too much. In our judgement this is a happy coincidence and need not occur again in the above scenario. As a reason we offer the following explanation.

From the overshooting literature we know that some of the variability of exchange rates can be explained with the (imperfect) analogy to shares³ in stock markets. If on a certain share there is a reduced dividend payment for a certain interval the price of it will have to fall in order to offer the market yield as the sum of expected capital gains and dividends to the potential investor. Assume that both the rate of interest and the rate of inflation are higher in the US than in Switzerland (as in fact they were in 1978) in 1981. Assume that wealth holders are reaching the conclusion that the dollar will be inflated by more in the future than was assumed until now. Whether or not they actually sell dollars it will depreciate. By how much? Assume that

¹ Leutwiler, Neue Zürcher Zeitung, 23.5.80.

² After the rate of inflation had been below 1% for an extended period of time it reached much higher (up to 5%) levels in 1979 and 1980. This seems a remarkable development after a long period with almost no price level changes.

³ Bomhoff and Korteweg, "Exchange Rate Variability and Monetary Policy under Flexible Exchange Rates: Some Euro-American Experience 1973-1978", unpublished manuscript, July 1979 and Niehans, *opt. cit.*

the expected higher inflation in the US is based on the observation of an expansionary monetary policy. This policy leads to relatively low real interest rates coupled with the expectation of recovery. For some time therefore the interest payments on dollars do not fully compensate the investor if holding dollars is compared to holding another currency. What he must expect is a real appreciation of the dollar. For some time prices in the US will have to be rising faster than the dollar depreciates. Of course, so far as this explanation goes there are no safe gains. At every moment in time the forward rate correctly predicts the future spot rate. The dollar always depreciates in nominal terms, i.e. the exchange rate always falls during the entire process. Only the real exchange rate changes are reversing their sign within the nominal depreciation. This is not what happened in historical time in 1978/79. The nominal exchange rate of the dollar went up in spite of the forward rate pointing down. Such a development offers spectacular gains to everybody. The appreciation of the Swiss franc went too far. The expectation to gain lavishly from buying dollars was mounting and in our view brought about the swing in the exchange rate. It was triggered by some statements of official authorities. It would have come anyway and would have been initiated by something else. It is dangerous for monetary policy to confuse causalities here. Ultimately it is not a presidents declaration that makes people hold dollars but

¹ If in the light of rising unemployment in the US the pressure on the Fed to run a rather expansionary monetary policy again is successful the dollar may start falling again. Consider that the very tight monetary policy in Switzerland indicates a high likelihood for such a development in its own right. Since this tight policy to some extent is a consequence of the policy change in 1978 there is the very real danger that, again, a believed to be sophisticated policy, i.e. a policy intended to be anticyclical, as a matter of fact creates the cycles it wishes to smooth. The famous forerunner is the monetary policy based on the Phillips illusion: it means to reduce unemployment and all it does is create inflation.

not be associated with a renewed real depreciation of the dollar in 1981, if this depreciation does not go too far in the above sense. Monetary policy will not serve the purpose then - unless, the supply of Swiss francs is increased so much as to create the safe expectation of more inflation in Switzerland. The Swiss people and the Swiss economy will have to live with a currency appreciating in real terms if the above scenario is realised almost no matter what monetary policy does. As long as the price level in Switzerland is rising much more slowly than in the US the sfr will attract financial wealth both from existing stocks of dollars and new savings in an ever growing magnitude.