Scheide, Joachim

Working Paper

Macroeconomic policy coordination in Europe: An agnostic view

Kiel Working Paper, No. 1174

Provided in Cooperation with:
Kiel Institute for the World Economy (IfW)

Suggested Citation: Scheide, Joachim (2003) : Macroeconomic policy coordination in Europe: An agnostic view, Kiel Working Paper, No. 1174, Kiel Institute for the World Economy (IfW), Kiel

This Version is available at:
http://hdl.handle.net/10419/3024

Standard-Nutzungsbedingungen:
Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:
Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.
Macroeconomic Policy Coordination in Europe – an Agnostic View

by

Joachim Scheide

June 2003
Abstract:
Coordination is a fundamental principle for economic policy in the EU. There is a consensus that soft coordination (exchange of information, general guidelines for economic policy) is useful. Whether stabilization policies should be coordinated is another matter. Against the background of the Broad Economic Policy Guidelines (BEPG) and the literature on macro policies it is discussed whether the conditions for such coordination are met in Europe. Commitments by policymakers are almost impossible, fiscal policies may not be effective, and negative spillovers are unlikely. Therefore, the arguments for an ex ante coordination of macro policies are weak. Nevertheless, economic policies can be successful in achieving the targets even if they are not coordinated.

Key words: International policy coordination, stabilization policies
JEL classification: F42, E610, E620

Prof. Dr. Joachim Scheide
Institute for World Economics
24100 Kiel
Phone: +431-8814 264
Fax: +431-8814 525
E-mail: jscheide@ifw.uni-kiel.de
## Contents

1. The policy framework in the European Union ........................................ 1
2. Coordination of what and for what? .................................................. 2
3. National targets for macro policies? .................................................. 5
4. Stabilization policy: central banks can do it better ......................... 6
5. Limits of discretionary fiscal policy .................................................. 8
6. Further obstacles to coordination ..................................................... 15
   a. Too many players in the monetary union .................................... 16
   b. Legal constraints for making commitments ................................ 17
7. Bad experience with commitments by European governments .......... 20
8. Negative spillovers only if rules are neglected ................................ 23
9. Success stories of non-coordination .............................................. 24
10. Clear assignment is sufficient ...................................................... 26
11. Conclusions .................................................................................. 28
12. Bibliography ................................................................................ 30
1. The policy framework in the European Union

At the European level, coordination is seen as a fundamental principle of the economic policy framework. In the Treaty, it is stated that an economic policy is to be adopted “which is based on the close coordination of Member States’ economic policy” (quoted after ECB 2001b: 53). Coordination is also one of the most often used terms in official documents and in statements by policymakers. This seems to reflect the proposition that coordination itself is a good, and that coordination is necessary and desirable for economic policy in order to improve economic conditions in the European Union (EU). However, there are only a few descriptions of precise coordination mechanisms or what is actually meant by coordination. Of course, the exchange of information and contacts between governments, the European Central Bank, the social partners and so on take place all the time and are one definition of coordination used in the European framework. Setting general rules for economic policy is another one which can also be found in the respective documents.

Beyond that, coordination is usually understood as taking into account decisions either of other policy areas or of other countries, or as a search for agreement on specific measures by two or more economic policy institutions. In a more explicit form, coordination is discussed in connection with strategic behavior; very often, therefore, the game-theoretic approach serves as a basis for discussion.1

In this paper, I will discuss the need and the possibilities of policy coordination by referring to the analysis in the literature on macroeconomic policy and by applying it to the situation in the European Monetary Union (EMU) which is characterized by a single monetary policy, a decentralized fiscal policy and also a decentralized wage setting process (“wage policy”). The main basis for the discussion is the framework for economic policy in the EU, the so-called Broad Economic Policy Guidelines (BEPG); they are accepted by the European governments as a guide for macro- and microeconomic policies and which may thus in a sense be viewed as reflecting the philosophy about economic policy of

_____

1 The debate on international policy coordination intensified at the end of the 1980s along these lines. For a discussion of the literature, see Scheide and Sinn (1989).
member countries. The Guidelines include prescriptions following from the various conferences on targets for economic policy (so-called processes)\(^2\) and are therefore the most comprehensive description of policy targets and instruments in the EU.

The assignment in the Guidelines is a clear definition of the division of labor of the various areas of economic policy. Based on the comparative advantage of the respective instruments in achieving the goals of economic policy, the BEPG are close to the neoclassical solution of the assignment problem. And it is probably fair to say that this also describes a broad consensus of the economics profession on the targets and instruments of economic policy. In short, it is stated that

- price level stability is a necessary goal and should be the prime objective of monetary policy;
- fiscal policy should achieve a balanced budget on average (as stated in the Stability and Growth Pact) and thus avoid unsustainable structural deficits; in addition, governments should promote long-term economic growth by lowering the tax burden, cutting unproductive expenditures and raising investment in physical and human capital;
- labor market reforms and wage developments should be conducive to a high level of employment; and
- structural reforms and deregulation of product markets should promote the functioning of the market economy and therefore contribute to economic growth.

2. Coordination of what and for what?

Where does coordination come in? As far as measures to improve conditions for long-term economic growth are concerned, they are desirable from a general point of view; in particular, the target stated by the European Council in March 2000 is that the EU should become the most dynamic economic area in the world economy. It is hard to see from the measures described in the BEPG or

\(^2\) For a comprehensive description see ECB (2001b).
elsewhere what the negative spillovers of such policy measures could possibly be. Therefore, the question of coordination obviously does not arise here. All changes of policy to promote long-term growth, whether taken by individual countries or by the Union on the whole, would have positive effects and thus raise economic welfare at home and possibly also abroad. So there are even positive spillovers if, for example, one country manages to raise its growth rate by structural reforms or by other measures. Those measures mentioned in the BEPG – for example, the abolishment of regulations on goods markets and of market rigidities and soon – can be interpreted as bringing the economies closer to the situation in which market solutions prevail. This is also accepted by the member states of the European Union.

The question of coordination beyond the exchange of information and the setting up of rules may be related to short-term policies of macroeconomic stabilization. This question of stabilization policy plays the most important role in the academic discussion of macroeconomic policy coordination. Commonly, macroeconomic models postulate a welfare function of an economy in which the output gap (actual output relative to normal output) and the inflation gap (actual inflation relative to the inflation target) are the most important – often the only – inputs. Maximizing welfare then is reduced to the question how macroeconomic policies can contribute to achieving these two targets. Most macro models of today focus on monetary policy, and the most extensive research has been devoted to optimal rules for central banks. There seems to be a consensus that a type of Taylor rule is a good guide according to which interest rate policy reacts to the two gaps mentioned; the “only” question is which type of rule is optimal.

The stabilization objective in Europe has changed with the introduction of the European Monetary Union. As far as the target of price level stability is concerned, there is only a single monetary policy, and the ECB has a clear mandate for the price level in the euro area as a whole. Rules for fiscal policy have not been analyzed in such detail. Nevertheless, fiscal policy can in principle also play a role in stabilizing the economy, and in fact, it does in many models of policy coordination. This may even be more relevant in the context of EMU: As the single monetary policy can only be concerned with aggregate developments in the euro area, fiscal policy is the major instrument left to
national policymakers and is therefore seen as the natural candidate to contribute to stabilization at the national level which cannot be the task of the ECB.

In the following, I will discuss the concept of stabilization in the context of the monetary union. The usefulness and efficacy of both monetary and fiscal policy for stabilization in general is discussed against the background of the literature. I will then describe what the possibilities of coordination are, whether between monetary policy and national fiscal policies, or between national fiscal policies. In addition, the example of coordination between monetary policy and wage policy is discussed. Usually, the case for coordination is made for asymmetric shocks that hit the individual countries. Another possibility why coordination may be useful is the case of negative spillovers, for example, if one government does not follow the rules of the BEPG but, for example, runs an unsustainable fiscal expansion; a similar argument is sometimes made for national wage policy which may be too aggressive. Both possibilities arise in the context of so-called club goods, i.e. the responsible policymakers ignore the rules of the club, in this case of the monetary union.

While all these points may help to identify pros and cons of coordination, the feasibility of such efforts in the real world of the monetary union must also be considered. Several reasons will be assessed to see why a coordination of macro policies, even if it was desirable in theory, may be difficult to put into practice. In part, this has to do with the uncertainty about the “true model” of the world. In addition, coordination may not be feasible in the monetary union for legal and institutional reasons. Finally, the experience with economic policies since 1999 when EMU started does not seem very promising. As the outcome will become more negative in the course of the discussion, it will be argued that a lack of ex ante coordination may not be a disadvantage at all. First of all, competition between decentralized economic policies may not be bad given also the principle of subsidiarity for many areas of policy. Second, there are many success stories of countries in which coordination of macro policies played only a minor role or was not even existent. The major conclusion is that economic

---

3 More than a decade ago, Frankel and Rockett (1988) showed that international policy coordination can be counterproductive if the two countries do not agree on the underlying model.
conditions could be improved a lot if the countries, contrary to the practice so far, followed the well-defined and useful rules laid down in the BEPG.

3. National targets for macro policies?

With the establishment of the monetary union, the national targets have become less important for economic policy. Most of the policy recommendations in the BEPG refer to the euro area aggregate, for example, as far as price level stability or economic growth is concerned. While economic policy in each country can and should also be concerned with raising economic growth, the inflation rate has disappeared as a target variable for national policies. The currently large divergence of inflation rates is largely the consequence of different economic structures (reflected in the Balassa-Samuelson effect) or of different effects of the ECB’s monetary policy. It is not desirable for, say, Ireland to bring down its currently high inflation rate to the average in the euro area; nor is it possible unless drastic restrictive measures are taken. But would anybody advise the Irish government to raise taxes drastically to abort economic growth?

Therefore, reducing the inflation gap which is one of the major targets of macroeconomic policy in most models is not relevant anymore for individual countries in the monetary union, just as nobody would care about high or low inflation in California. But what about the output gap in California or, as in our case, in the individual countries of the euro area? Reducing the output gap is the other central target of stabilization policies in standard macro models. It is true that the cyclical situation in the countries in the euro area varies due to different starting conditions and/or to asymmetric shocks. At present, there are also complaints of countries which are apparently in a relatively poor state of the business cycle. For example, the German economy is in a recession in the first

---

4 Of course, raising (or even “maximizing”) economic growth cannot be a sensible target per se. What is meant here is that countries should take measures to reduce the distortions so that the economies come closer to the allocation determined by markets and therefore to the “optimal” rate of growth. Apparently, this point of view from economic theory is not shared by the governments of the EU who define the target of growth in relation to other countries (for example “most dynamic economic area in the world”), probably not implying that the target is also met if the other economies experience a setback.
half of 2003. In contrast, other countries such as Ireland or Spain have a very high rate of capacity utilization. But does that matter? Is the national output gap a sensible target? Of course, it cannot be for monetary policy as the ECB can only be concerned with the euro area aggregate and may respond only if there is an output gap in the euro area. Usually, then, many economists argue that fiscal policy can play this role in stabilizing the output gap. Experience shows, however, that there is, at best, only a minor role for fiscal policy in that regard. For example, it is hardly important in the United States. The flexibility of fiscal policy is very limited by the fact that the individual states follow a balanced budget rule so that the room for maneuver is small or even not existent.

With the Stability and Growth Pact (SGP) in place one may identify a similar constraint for the euro area. Is this necessarily a disadvantage? Should fiscal policy have more flexibility so that it can possibly do a better job of stabilization? This aspect is discussed in the following with particular reference to the relative importance of monetary and fiscal policy for stabilization of an economy.

4. Stabilization policy: central banks can do it better

The analysis of optimal policy rules has been at the center of macroeconomic research in the past two decades. Most models used today imply that monetary policy is the best instrument for stabilizing the economy, both in terms of the inflation gap and the output gap which enter the welfare function of an economy. Commonly, the central bank follows an interest rate rule of the Taylor type, i.e. key interest rates are adjusted in response to movements of output and inflation and, possibly, other variables. However, in spite of the extensive research and the agreement on principles there is hardly a consensus on the concrete formula of the rule. Apart from that, there are monetary policy rules which do not refer to the interest rate but to a monetary aggregate. When comparing these two types, one can arrive at contradictory

---

5 There is by now a consensus not only among academics but also among central bankers that low inflation is desirable and that monetary policy should be assigned to this target. This was not the case a few years ago. The principle is also included in the Treaty and other documents which describe the policy framework in the EU.

6 Apart from that, there are monetary policy rules which do not refer to the interest rate but to a monetary aggregate. When comparing these two types, one can arrive at contradictory
that should be included (e.g. exchange rates, asset prices, actual data or forecasts, core or actual inflation), there is also a dispute about the coefficients that should apply to the various variables included in the rule even though the models are commonly of the new-Keynesian type.

The choices do make a difference when it comes to defining the optimal rule. It is obvious that such questions cannot be answered without reference to a particular model. To demonstrate this, John Taylor (1999) runs various simulations with a particular rule in a number of macro models; as a result, there are very different outcomes in terms of output and inflation stability. In other words: What the optimal rule for monetary policy is depends crucially on the specification of a model. In addition, there are many caveats which need to be mentioned. For example, in models of the new neoclassical synthesis which are based on real business cycle theory, output variability is not necessarily suboptimal, e.g. if output changes because of supply shocks. This limits the role of stabilization policy and also defines the optimal policy in a different way, namely to mimic the flexible price solution. Also, in these models (as well as in modern models which analyze the natural rate of interest) the common assumption that the real equilibrium rate of interest, which is a central input in the Taylor rule, is constant is given up. This makes the policymaker’s choice of a rule for practical monetary policy even more complex.

While all this may reflect the common uncertainty about the true model of an economy stated a long time ago by, for example, Milton Friedman, it is of highly practical importance when it comes to advising central banks. For example, in the summer of 2003, the interest rates in both the U.S. and in Euroland are substantially lower than implied by practically all formulations of the Taylor

---

judgments on the stance of monetary policy. For example, McCallum (2000) demonstrates that monetary policy in one country may be considered too tight or too loose depending on the type of rule. This underscores the general ambiguity of rules when applied to the real world; and it makes policy prescriptions which refer to two countries that should coordinate their monetary policies in practice doubtful.

7 When looking at economic welfare and the consequences for stabilization policy, the nature of shocks is essential. Therefore, the question “How much of aggregate consumption variability should be viewed as pathological” (Lucas 2003: 1) may sound provocative but is exactly the appropriate one.

8 Like the output gap, the equilibrium real interest rate is unobservable.
rule. Nevertheless, both economies have remained rather sluggish, the euro area has even experienced a decline in the output gap for three years, something that surely is to be avoided according to the philosophy of the stabilizing Taylor rule. More importantly, this casts doubts on the question of international coordination even in the field of monetary policy: Although there has been a tremendous amount of research on monetary policy rules, it would be difficult to put a rule into practice if two countries (monetary unions), say, Euroland and the United States, wanted to coordinate their policies. Because of the uncertainty about the true model, the efforts of coordination, even if they are well-intended, may not lead to the desired result or may even be counterproductive.

5. Limits of discretionary fiscal policy

What applies to monetary policy is even much more true for fiscal policy. More importantly, there is hardly a consensus about the short-run effects of fiscal policy which makes it difficult to define a role for stabilization policy. The arguments against such a role are both theoretical and empirical. Long gone seems to be the conventional wisdom that an expansionary fiscal policy is defined as an increase of government expenditures and/or a cut in taxes, and that such an impulse translates into higher real GDP via the multiplier effect as it is assumed in formerly fashionable Keynesian models. If things were this simple, then indeed it would be relatively easy to describe a policy which can be used for stabilization or even for a coordination of policies.

This simplistic approach has been questioned over and over again, especially by economists who made use of the assumption that economic agents are forward looking and that expectations are rational. In these models of the new generation, agents have to decide, for example, what the effect of a change in the fiscal variables is on permanent income. If an increase of government expenditures today is interpreted as an increase of taxes in the future, the effect

---

9 Even a long time (55 years) ago, Milton Friedman questioned the idea of discretionary fiscal policy and proposed a stable fiscal framework instead: “No attempt should be made to vary expenditures (on goods and services, J.S.), either directly or inversely, in response to cyclical fluctuations in business activity” (Friedman 1953: 136).
on consumption and output can even become negative, that is, a so-called non-
Keynesian effect can materialize. This may especially be the case if a change in
fiscal policy is viewed as unsustainable, i.e. that an increase in the deficit will
have to be corrected later, possibly by an increase of distortionary taxes which
reduce long-term income.

This is not a mere theoretical curiosity, such effects have also been observed
in reality. Therefore, even many Keynesian economists have questioned the
idea of the commonly assumed effects of fiscal policy. For example, Taylor
(2000) cites the empirical literature and concludes that there is a great deal of
uncertainty about the exact size and the timing of discretionary changes in fiscal
policy. Blinder (1997) refers to the policy of the U.S. government in the 1990s
which was characterized by a decline in the share of expenditures and an ensu-
ing reduction of the structural budget deficit. While the old-Keynesian wisdom
holds that such a policy has a negative impact on output, the performance of the
U.S. economy in that decade was exceptionally good. Therefore, “the notion that
what used to be called ‘contractionary’ fiscal policies may in fact be expansion-
ary is fast becoming part of the conventional policy wisdom” (Blinder 1997:
242). Figure 1a shows, indeed, that there was a strong positive correlation in the
U.S. between the output gap and the structural balance which is commonly used
to measure the stance of fiscal policy. The same holds for Euroland in the period
1993-2002 (Figure 1b).

This is seen as one of the reasons that “past attempts to manage aggregate
demand through discretionary fiscal policy-making – or fine-tuning – have been
widespread but often counterproductive” (ECB 2002: 36). Not only were the
effects different than intended, i.e. procyclical instead of countercyclical, they
probably also reduced economic growth because the measures were not
symmetrical: Governments typically find it easier to loosen policy in a period of
cyclical weakness than to tighten it in good times; as a consequence, the share of
government increased, and along with it the tax burden. In the end, the intended
countercyclical policy reduced economic growth (ECB 2001a).

---

10 For example, Alesina and Perotti (1997) describe such findings and relate them to the
composition of fiscal consolidation.
**Figure 1a:**

Output Gap and Structural Budget Balance in the United States (in percent of GDP)


**Figure 1b:**

Output Gap and Structural Budget Balance in Euroland (in percent of GDP)

Source: See Figure 1a.
Other systematic studies look at fiscal policy over a longer time span. For example, John Jones (2002) analyzes the experience of the postwar U.S. economy and concludes on the basis of several model specifications: “adding the postwar fiscal policy increases the variance of HP-filtered output. … I never find postwar fiscal policy to be more than weakly stabilizing” (Jones 2002: 739). In a different study, Taylor (2000) identifies major discretionary changes of U.S. fiscal policy in the past decades and concludes that the average effect on output was near zero. For a long subperiod, the coefficient implied a “perverse procyclical effect”, i.e. larger structural deficits seemed to accompany booms rather than slumps. A change in the sign seemed to take place some time in the early 1980s when the Reagan tax cut was passed and had a strong positive effect on real GDP. While this seems to be in favor of the often assumed positive effect of an intended “expansionary” policy, one has to keep in mind that this tax cut “was certainly not proposed as a demand stimulus” (Taylor 2000: 34).

The fact that fiscal policy has often not worked in the way as it is claimed11 or has even been counterproductive both in terms of short-term stabilization and long-term economic growth is one reason not to rely on this instrument. So the effects are highly uncertain not only for the national government if it wanted to use fiscal policy for domestic stabilization purposes, but even more so in the context of coordination with fiscal policies of other countries, or also for coordination with the monetary policy of the ECB.

Another major reason why most economists are critical in this respect is that there are considerable lags of fiscal policy; these are commonly split up into recognition lags, implementation lags and lags in the effect of changes in fiscal parameters (Feldstein 2002: 3).12 There are many examples also for European countries in recent years. Since the decisions on fiscal policy changes in late

---

11 Of course, the existence of so-called non-Keynesian effects is a possibility and not necessarily the rule. For example, nobody would claim that a permanent increase of distortionary taxes is good for the economy.

12 These now standard objections were also formulated by Friedman (1953: 145). Nowadays, most Keynesian economists would agree, and they “exhibit at best lukewarm enthusiasm for countercyclical fiscal policy … Even if policymakers had the hubris to think that they knew just when and how much expansionary fiscal policy to apply, the lags inherent in the institutions for setting fiscal policy are such that it never happens in either the desired quantity or the desired time frame” (Eichenbaum 1997: 237).
2002, the German government has faced big difficulties in bringing the proposed measures through the process of legislation. In the end, the package was much smaller than originally planned, raising the uncertainty that more measures would be taken to improve the budget situation. While these measures were not intended to stimulate the weak German economy, the example shows nevertheless that lags of fiscal policy are important and would prevent timely action.

The conclusion from this debate in the literature is that fiscal policy should not be designed to fine tune the economy. For stabilization purposes, monetary policy is usually regarded as the superior instrument. Central banks can react faster, interest rate changes can also be quickly reversed, and there are hardly any political or institutional constraints as they exist for discretionary changes of fiscal policy. There is just no satisfactory and practicable way to formulate and to implement a rule for fiscal policy, and here the research on monetary policy rules has led to a much broader consensus, probably also to more knowledge and to more precise conclusions. Therefore, the consensus has emerged that the best fiscal policy can do is to let the automatic stabilizers operate freely. Fiscal policy would become clearly stated and systematic: “The automatic stabilizers represent such a predictable and systematic response, setting out rule-like mechanisms for changes in taxes and spending” (Taylor 2000: 35).

This has, above all, also been accepted by the European governments in the BEPG (2002: 71): “Given the risks and uncertainties of fiscal fine-tuning, notably in regard to timing, efficiency and its irreversibility, the norm for budgetary policies should be to allow for the symmetric play of automatic stabilizers over the cycle”. Automatic stabilizers can “operate symmetrically over the economic cycle, in principle without affecting the underlying soundness of budgetary positions” (ECB 2002: 36). In addition, they are also quite sizable: According to most estimates, the automatic impact of a one percentage point change in output on the budget balance (relative to GDP) amounts to 0.3 to 0.7 percent in the member countries of the euro area. “The overall size of the actual changes … due to automatic stabilizers are frequently much larger than even the proposed discretionary changes” (Taylor 2000: 26). Most economists therefore

13 Once again, the automatic stabilizers are also proposed by Friedman (1953: 137).
agree that automatic stabilizers work quickly and therefore help to reduce business cycle fluctuations. “These features of the automatic stabilizers are almost impossible to replicate with discretionary reactions by policy-makers” (ECB 2002: 37). While the size of the stabilizers was relatively small in the U.S. since 1985 (Figure 2a), they were quite sizable in Euroland often amounting to 1 percent in relation to GDP (Figure 2b).

In recent years, fiscal policy has, in fact, hardly been used with the intention to stabilize the business cycle. In spite of the many shocks that have hit the euro area in the past years (burst of the stock market bubble, downturn in the U.S., oil price increases, uncertainty after terrorist attacks and so on), there was no major effort of any government to change the course of fiscal policy in a discretionary fashion in order to stabilize the economy. Also, there was definitely even no attempt to coordinate fiscal policies, although the coordination literature stresses the “need” for coordination especially in the case of shocks from abroad.

As the consensus about the limited role of fiscal policy obviously also holds for Europe, stabilization policy should not go beyond the automatic stabilizers. In addition, information on this particular fiscal policy rule is widespread and there are no negative spillovers, so fiscal policies need not be coordinated, be it among governments of the member countries or be it among the government of one country and monetary policy.15

Needless to say, there is more about fiscal policy than short-run stabilization. Of course, it is understood both in the academic world as well as in the BEPG that fiscal policy should contribute to long-term economic growth by reducing government consumption, cutting taxes and so on. But this is explicitly meant as a growth policy and should be seen independent of the business cycle. And again, as there are no negative spillovers from such measures, there is also no need for coordination of policies.

14 For further arguments against discretionary fiscal policy, see ECB (2002).

15 One may ask, of course, why automatic stabilizers are assumed to have an effect on output (which is stabilizing) whereas discretionary measures may not. The answer is that by following a balanced budget rule independent of the state of the cycle and not letting the automatic stabilizers work, a government would run a suboptimal policy, because a shortfall of taxes which leads to an increase of the deficit would have to be compensated by an increase of distortionary taxes.
Figure 2a:

Budget Balances and Automatic Stabilizers in the United States (in percent of GDP)

Source: See Figure 1a.

Figure 2b:

Budget Balances and Automatic Stabilizers in Euroland (in percent of GDP)

Source: See Figure 1a.
6. Further obstacles to coordination

There are obviously many arguments of doubt concerning the fine tuning of the economy by fiscal policy, so national targets for stabilization policy do not make much sense. As far as stabilization in the euro area aggregate is concerned, we may have to get used to the notion that monetary policy has a clear advantage although its power to do so is also limited for various theoretical and practical reasons. Even if the possibilities of macro policies were greater, there are further caveats one has to keep in mind when advising policymakers to act and to coordinate their discretionary policies.

The most obvious problem is that shocks cannot easily be identified as to their implications for economic activity. In some models, such as all those which relate to the RBC literature, it is not optimal to smooth fluctuations due to real disturbances, e.g. productivity shocks. In these as well as in other models the nature and the persistence of a shock has to be known because not only the effects on macro variables but also the proper response of macro policies depend on that. This is not only a major problem for individual countries; the problem becomes more complex when many countries are involved and intend to coordinate their policies in response to shocks. Since it is very unlikely that all governments and the other policymakers have a common view on the correct model, the outcome of coordination may well be suboptimal.

All this relates to the well-known problems of putting coordination to work. Policy coordination may fail because policymakers do not have enough knowledge about the true structure of their economy. The gains from coordination will be realized only if all policymakers agree on the model of the economy – in this case in the euro area – and also on the size of the spillover effects of the various policies. It is still highly unlikely that these conditions are met, as it was 15 or 25 years ago when international policy coordination was discussed most intensively.16

Apart from that, there are two major obstacles which are relevant in the context of the European Monetary Union.

---

16 See the discussion in Scheide and Sinn (1989).
a. **Too many players in the monetary union**

When discussing policy coordination in Europe, we usually do not refer to policies of just two countries but of a larger number, maybe even all member countries of EMU. There are rules of conduct laid down in the BEPG. But could policy coordination go beyond that also for stabilization purposes? Presently, there are 12 member countries in the euro area, so it would be necessary not only that the 12 governments share the same preferences and come to the same conclusions concerning policy actions – this alone would require a lot of bargaining under normal circumstances; they also would have to make commitments about their plans. In some cases, for example in Germany, this would be difficult because the central government usually cannot decide alone whether the stance of fiscal policy is to be changed. Needless to say, this problem would be aggravated if there are 25 governments involved as it will be the case in a few years from now. Experience shows that it is already extremely difficult to come to an international agreement on simple changes which are known to be welfare improving (e.g. cutting subsidies). It would be even harder to change expenditure paths or tax laws for the benefit of stabilization at home and broad.

The situation becomes much more complex if a discussion on wage developments is included as well. This relates to the goal of a “high level of employment“ which is stated in the Treaty and in the “Luxembourg Process” which calls for a formal coordination procedure. As far as general labor market policies are concerned, the governments may indeed be the main actors; however, in many cases measures of labor market reform are negotiated with social partners in the individual countries. Experience shows that this may be a controversial issue within the countries as can currently be seen in Germany. Therefore, it would be difficult for a government to make a clear commitment because the outcome of the political process at home is uncertain.17

Often it is claimed that wage developments which are essential for employment need to be coordinated among the countries either in the form of guidelines for wage increases or in the context of wage moderation which

---

17 Apart from that, it is not clear why coordination is necessary here. If labor market reform is good for the welfare of one country, there is no externality which needs to be corrected.
should be combined with more expansionary demand policies.\textsuperscript{18} In general, the labor market situation differs tremendously among the EU countries, and therefore it is hard to imagine that there should be an agreement on the outcome of the wage setting process. Unions are certainly more concerned with the situation at home than with problems of other countries. But apart from that: Who can be held responsible for the policies in the individual countries, and who could make commitments about future policies? It is not the governments but mainly the social partners who are responsible for setting wages. But the problem is that even in centralized systems like in Germany, there is a large number of persons involved in wage negotiations, not just one representative on each side of the market. Also, the degree of unionization differs substantially among the countries.\textsuperscript{19} In many other countries, the process is rather decentralized, and wages are more the result of normal market processes than in other countries (Gern et al. 2003: 22ff.). It seems impossible here to bring the responsible agents of several countries together and arrange agreements about future wages. Such efforts of “round table talks” have been tried in individual countries but they are, in general, not relevant as they mostly do not go beyond non-binding statements or, as in the case of Germany, have failed altogether.

b. Legal constraints for making commitments

It is often discussed whether the European Central Bank may take part in coordination efforts, either together with fiscal policies or with wage policies. It is natural to think that the aggregate stability of output and inflation may be increased if the monetary authority reacts to changes in these variables which may be caused by actions of other policy areas. For example, a policy of wage moderation at the European level or even only in one large country may lead to an output gap and a decline of inflation in the euro area. If the central bank is assumed to follow a Taylor rule, it would respond by lowering interest rates in

\textsuperscript{18} For a critical discussion of such proposals, see Gern et al. (2003).

\textsuperscript{19} Not only the coverage of wage settlements shows a substantial degree of variation, also the mandatory extension of bargained wages ranges from “not existent” to “significant” (Gern et al. 2003: 24).
order to meet its inflation target. Could one not go one step further and arrange an ex ante coordination of the respective policies with monetary policy? If there is a commitment by the ECB that it will follow such a course, the combination of the policies could improve welfare. However, the question is whether such commitments by the central bank are possible and whether they make sense.

The ECB participates in practically all Community fora and bodies. These contacts have been institutionalized, and the Treaty also lays down a number of formalized contacts with the various institutions at the European level. These relations are justified on functional grounds and are also “aimed at an exchange of views and policy dialogue” (ECB 2000: 53). It is probably fair to say that the ECB takes part in all discussions of economic policies at the European level. Does this also imply that the ECB can and should engage in ex ante policy coordination? Usually this question is answered by stating that the ECB is independent and therefore cannot participate in such efforts. This is quite misleading because policy coordination can only take place between independent institutions; otherwise, one institution could be forced by another to pursue a predetermined policy.

The main argument against a participation of the ECB stems from the Treaty itself. It is stated there that “neither the ECB, nor a national central bank, nor any member of their decision making bodies shall seek or take instructions from Community institutions or bodies, from any government of a Member State or from any other body” (quoted from ECB 2000: 52). This means that all other institutions of policymaking should not try to influence the ECB in any way. According to the ECB, the status of independence implies “clear limits to the degree of engagement between Community institutions and bodies on the one hand and the ECB on the other” (ECB 2000: 52). In particular, this “excludes any ex-ante policy co-ordination or joint agreements aimed at achieving a predetermined policy-mix” (ECB 2001b: 64). In the view of the central bank, “the ECB’s relations with other policy making bodies cannot go beyond a non-

---


21 Article 105 of the Treaty defines the tasks and prerogatives of the monetary authority, Article 108 defines the independence.
binding dialogue” (ECB 2000: 52). This interpretation was supported at the Helsinki European Council in 1999.

While this excludes any ex ante coordination and commitments for the monetary authority, it does not imply that the ECB does not or should not take into account what other policy areas do (Gern et al. 2003: 22). Since the ECB participates in the meetings of the European Council and in the Macroeconomic Dialogue, it would take into account the statements of governments and social partners on current and future policies. If policy measures are taken which affect crucial variables such as the inflation rate in the euro area, the ECB would – and in fact it should, given its mandate to maintain price level stability – take this into account. If measures are such that the inflation outlook improves, the ECB would lower interest rates. This, however, follows from optimal policy considerations or, for that matter, from the monetary policy strategy of the ECB, but not from considerations of economic policy coordination.

Apart from that, it would be quite a risk if the ECB committed itself to, for example, lowering interest rates even if there was a credible announcement by other policymakers.22 The reason is that it is possible that risks for price level stability emerge from other sources, e.g. the exchange rate, the oil price and so on. In such a case, the ECB would have to react according to its mandate which may then be wrongly interpreted by governments or social partners as a violation of the agreement.

The absence of ex ante coordination also does not exclude desirable policies. For example, if wage moderation is seen as a good policy,23 it will have beneficial effects independent of the reaction of the central bank. As Gern et al. (2003) show on the basis of a theoretical model and a simulation with a macroeconometric model, the long-term consequences of such a policy would materialize anyway, and even the short-run effects on output and employment are positive. The only difference therefore concerns the time lag between a

22 As mentioned above, this is quite unrealistic.

23 This discussion may seem odd on the other side of the Atlantic where the labor market functions quite normally. But wage moderation is very much discussed as an option or even a necessity in Europe, in particular in Germany. It is based on the observation that unemployment is to a significant degree caused by too high minimum wages. Because of those market imperfections, moderation seems welfare improving as wages would move towards to the market-clearing level.
change in wage policy and monetary policy. It would indeed be optimal that interest rates are reduced immediately if the central bank follows a Taylor rule. However, the central bank may not or cannot know whether the change in wage policy is permanent and would therefore probably react only with a lag. This could be prevented, however, if social partners could credibly announce a change in their policy. This may not be possible for reasons discussed above, and if it is not, then it would definitely be useless to discuss coordination. But such an announcement would bring about the positive effect of the “ideal” scenario of coordination between monetary policy and wage policy.

The possible conflicts show that clearly defined rules for the individual policy areas are useful and help to define the responsibilities for the economic targets. These rules as they are defined, for example, in the BEPG are transparent and, if followed, policymakers can take the behavior of other policymakers into account. Efforts to coordinate policies give rise to the “risk of confusing responsibilities, distorting incentives and reducing the accountability of policymakers. In the worst case scenario, if everyone is regarded as being responsible for everything, no one will take responsibility for anything” (Issing 2000: 2). The current discussion on the sluggish economic performance in the euro area clearly demonstrates that it is always easy to put the blame on somebody else. For example, the slow growth in Euroland is supposedly due to the cyclical downturn in the US and also the too high interest rates set by the ECB. As the BEPG define clear responsibilities and an efficient assignment of policy targets and instruments, they provide “the best possible contribution to the Community objectives” (Issing 2000: 4). Coordination, as far as a desired “policy mix” is concerned, is therefore not necessary.

7. **Bad experience with commitments by European governments**

The literature on policy coordination stresses the need of credible commitments. Whatever the efficacy of the policy instruments is, if economic policy is to be coordinated, the policymakers must be sure that the respective partners stick to their promises. Otherwise the outcome is negative and the “games” would
probably not be repeated. In the past, the European governments have made
announcements about policy rules and policy measures at the various meetings
and especially in the Broad Economic Policy Guidelines.

One of the central agreements is the Stability and Growth Pact which was
actually one of the preconditions for the European Monetary Union. On the
basis of the respective resolutions of the European Council in 1997, all
governments agreed on the medium-term objective of budget positions “close to
balance or in surplus”. While the Pact itself says nothing about precise dates,
these were later mentioned, for example, in the BEPG. Furthermore, the member
states are obliged to describe the path of the budget in the annual Stability
Programs. All these elements define the commitments of the governments.
These efforts are commonly understood as “coordination by restriction”.

The SGP was not designed or intended to be a fiscal strategy for stabilization
policies. Criticisms on these grounds – for example, that the Pact is “not flexible
enough” (or even “stupid”) – therefore miss the point. Rather, all governments
committed themselves to contribute to a stable fiscal policy by following a
medium-term strategy. “A sound budgetary policy is the second pillar of the
macroeconomic framework in the EU” (European Commission 2002: 71). So it
is more of a code of conduct. The main reasoning behind the medium-term
target of a balanced budget was that the debt burden and the interest payments
would be reduced, that a policy which avoids excessive deficits makes the task
of the ECB to maintain price level stability easier, and – very importantly – that
it would enhance “the capacity to deal with budgetary challenges, inter alia,
those stemming from ageing populations” (European Commission 2002: 71).
The general interpretation was – in line with the consensus in the literature – that
fiscal policies of the past reduced long-term economic growth also because they
led to a high share of government and to high government debt.

According to the BEPG, it is clear that this strategy of fiscal consolidation
favors the policy objectives. The Guidelines also do not state that the path to-
wards a balanced budget would imply a negative impact on demand or on eco-
nomic growth. If this had been the case, i.e. if there were negative externalities,
it would have probably been stated that such supposedly “restrictive fiscal poli-
cies”\textsuperscript{24} would need to be compensated by a more expansionary monetary policy. In a sense then, fiscal consolidation is seen similar to the now almost consensus view in the literature on the effects of fiscal policy. This is supported by the strategy which is described in more detail in the BEPG which can be characterized as a “true” consolidation: Not only should government budgets be balanced; also the share of government in GDP should be reduced, expenditures should be shifted away from consumption to investment in physical and human capital, and the tax burden is to be reduced. All this is certainly a recipe for faster economic growth.

In spite of all the good intentions by the governments, we have now a situation where excessive deficit procedures have been started for several countries, ironically including Germany which had actually initiated the Pact. While 11 out of the 15 EU countries have roughly balanced their budgets or reached a surplus by the year 2002, as it was originally intended, four countries have not met their repeated commitments. Remarkably, in June 2002, i.e. only one year ago, all governments once again promised to intensify their consolidation efforts in order to reach the target of a balanced budget “by 2004 at the latest” (European Commission 2002: 75). Only a few weeks later, several governments claimed that it would not be possible to meet this target. So in the fall of 2002, the procedures for a balanced budget were changed once again; the countries were then aiming at balancing the budget by the year 2006. In the meantime, the French and the German governments have announced that this may also be too ambitious, and that they expect to balance their budgets maybe in 2007 or 2008, i.e. roughly 10 years (!) after the Stability and Growth Pact took effect.

Experience shows that fiscal consolidation is possible, and that it does not necessarily lead to negative real effects. Quite in contrast, the relative growth performance of those countries that have reduced their structural budget deficits was even favorable compared to the countries which have not consolidated their budgets (Lehment 203: 107). Also, the reasoning of the respective countries for not having achieved the targets is wrong: They blame the cyclical slowdown for the high deficit; however, the interpretation of the Pact in the public and by the

\textsuperscript{24} In old models with fiscal multipliers, fiscal consolidation would indeed have a negative impact because it implies a decline in the structural balance which is restrictive by definition.
responsible institutions has always been that fiscal consolidation concerns the structural balance, not the actual deficit. The fact is, however, that the structural deficit in Germany was higher in 2002 than in 1997, i.e. the year in which the Pact was ratified. So the truth simply is that there has not been a fiscal consolidation in Germany – and in a few other countries – in spite of all the commitments as they are laid down in the BEPG or the Stability Programs of the government. Currently, there are no indications that this policy will change substantially in the coming years. Numerous other examples could be added; they relate, for example, to the guidelines which are included in the BEPG for individual countries.

All this makes it very doubtful that credible commitments of governments about future actions, whether for medium-term objectives or for the purpose of short-run stabilization, can be expected in reality. The failure to comply even with the soft version of coordination on an issue on which all governments had agreed makes it very unrealistic to assume that coordination on a greater scale and with much more ambitious targets is possible.

8. **Negative spillovers only if rules are neglected**

A strong case for coordination is made for the case that spillovers arise from unsound policies in one or more countries. This is quite obvious because in the monetary union, we now have a different situation: While formerly policy mistakes were mainly felt in the respective country, they can now affect the whole euro area. In a sense, the nations have now joined a club with special rules and “club goods”, in this case variables which had not been relevant in the individual countries before. Examples are the euro area price level, the interest rate, and the exchange rate of the euro; all these variables were of minor or no importance for policy decisions before, but now they are.

Often cited examples of misbehavior which could justify coordination are unsound fiscal policies and aggressive wage policies. If a high deficit in one country is seen as a risk for stability, the euro area interest rate may rise due to a higher risk premium and the euro may depreciate. These effects have negative consequences for all countries in the euro area, whereas they would have been
isolated before with flexible exchange rates. The same applies to wage policy: If wages increase strongly in a major country, the inflation perspectives of the euro area may deteriorate; consequently, the ECB may have to raise interest rates which would have a negative impact on all countries of the monetary union.25

Such misbehavior or negative spillovers are, however, excluded by the rules of conduct laid down in the BEPG. All government have agreed on policies to pursue common policy goals – otherwise one could not imagine why the monetary union was established in the first place! – and on joint rules “for the conduct of otherwise autonomous policies so as to reduce, or eliminate, the potential negative effects of policy spillovers” (ECB 2001b: 56). The mechanisms to prevent such policies are the frequent dialogues, peer pressure and persuasion.\[26\]

All in all, it would be quite negative and even ironic if the urge to coordinate policies in the monetary union was based on the misbehavior of policymakers in the member countries.

9. Success stories of non-coordination

The scope for ex ante policy coordination in Europe is, at best, limited or even non existing; there are cases in which it may even be harmful. Would that be a loss in terms of the targets or the visions policymakers have?

Experience shows that many countries have been successful in terms of economic growth and stability simply because of good policies, not because of coordination. The German “Wirtschaftswunder” in the 1950s and 1960s is certainly a case in point. Issues of coordination arose only in 1967 (by the way, when the miracle was almost over), i.e. after the first outright recession in the postwar period. But even in the “Law for Stability and Growth”, which is certainly based on a Keynesian concept, coordination only implied an exchange of information in spite of the ambitious name “concerted action”.

---

25 Further examples in the literature on international policy coordination are beggar-thy-neighbor policies by competitive devaluation or wage cuts, and also attempts to exploit a free rider position.

26 One may ask, however, who needs to be persuaded because the rules in the BEPG, for example, have been accepted by all member countries.
More recent examples are the United States, the Netherlands and Ireland.\textsuperscript{27} The U.S. is very often taken as a reference in the analyzes of the European Commission. In the U.S., the economy expanded at a rapid rate in the 1990s, and contrary to earlier periods of high and accelerating growth rates, there was no surge of inflation. In part, the good performance was due to the special circumstance of the “new economy”, but also economic policies were conducive to high growth although (or because?) there was no coordination of policies whatsoever. Also, there are no institutional arrangements to achieve this. A coordinated wage policy is not possible because of the highly decentralized wage bargaining system. In the latter part of that decade, there was an unusual surge in productivity also related to the new economy. Wage increases stayed below these rates and thus contributed to a strong increase of employment. As far as monetary and fiscal policy are concerned, they both stimulated the economy after the recession of 1991. In 1994, however, interest rates were raised sharply, and from that time onwards stayed on a path which is compatible with the Taylor rule. This allowed growth to continue and prevented inflation from rising. Fiscal policy shifted to a supposedly “restrictive” course already in 1993. With the start of the so-called Omnibus Budget Reconciliation Act, government spending was strongly limited. As a consequence, the structural budget deficit was sharply reduced, and at the end of the 1990s, the budget was even in surplus. All these policies seem wise and appropriate, and they are very similar to the policy described the BEPG for the European Union. Nevertheless, the policies pursued in the U.S. had nothing to do with policy coordination, neither between the three mentioned areas of policy nor between the fiscal policy in the individual states. In fact, “the various states are free to set important tax rates and decide on the level of provision of certain public services without being subject to binding common rules or extensive and constraining co-ordination mechanisms” (ECB 2001b: 54).

\textsuperscript{27} These examples are also discussed by Gern et al. (2003).
Clear assignment is sufficient

The assignment of policies and instruments described in the Broad Economic Policy Guidelines provide a consistent framework for economic policy in the European Union also because it is based on long-run relationships which we know best.28 “The clear assignment of responsibilities, together with the respect for the independence of the different policy actors, represents a fundamental feature of the relationship among European economic policy-makers. This not only implies that the individual responsibilities of each policy actor have to be respected by the others, it also means that, within its field of competence, each policy actor is clearly responsible for the successful implementation of policies in line with the established rules and objectives” (ECB 2001b: 52).

Coordination takes the form of information, and in several respects – as, for example, the Stability and Growth Pact – there is supervision or one can expect peer pressure. There is no reason to go beyond that and call for greater efforts to coordinate policies. It is true that there may be spillovers, but they are significant only when there is misbehavior, for example, if governments run unsustainable fiscal policies or if there are excessive wage increases. Since this is excluded by agreement between all governments, spillovers are minor or nonexistent. For example: If monetary policy follows its strategy of maintaining price level stability and this policy is known to everybody, why should there be negative effects on employment and economic growth? Why should monetary policy completely change its course when a policy of wage moderation contributes to more employment? Or if governments cut unproductive expenditures, as it is stated in the BEPG, why should we expect demand to drop and claim that this drop needs to be compensated by a positive demand shock created by monetary policy? In other words: “If each economy keeps its ‘house in order’, i.e. if all areas follow well defined rules … what is there to be mixed or coordinated?” (Scheide 2003: 41f.).

One should also remember that the European Union consists of member states with possibly different preferences and institutions. Therefore, the decentralized character of the Union offers scope for a competition between the member

---

states: “The insight that open competition provides the most appropriate incentives for optimisation and stimulates continuous innovation is applicable not only to firms and industries, but also to the realm of public policies” (ECB 2001b: 55).\(^{29}\) In a sense, the defined guidelines for policymaking follow from the principle of subsidiarity.

As far as stabilization policy is concerned, there are considerable risks which relate to the lack of knowledge about the effects of macroeconomic policies, especially discretionary fiscal policy. Also, trying to stabilize output fluctuations is not at the core of the BEPG. In fact, in the economic literature there are serious doubts whether such attempts are worth taking. Robert Lucas argues that the welfare gains from optimal stabilization policies are minimal: “Based on what we know now, it is unrealistic to hope for gains larger than a tenth of a percent from better countercyclical policies” (Lucas 2003: 1). Even if one does not agree with his estimate, most economists would follow him by saying that it is by far more important to focus on the question how to raise economic growth.\(^{30}\) For example, compared to the question how to raise the potential growth rate in the EU from 2 to 3 percent per year, the issue of reducing output fluctuations is in fact a minor one. Higher growth is at the top of the agenda in Europe, we have good knowledge on the factors which are relevant for achieving this\(^ {31}\), and much of what we know is actually laid down in the BEPG. As far as the policies for faster growth are concerned, there is no need for one country to wait until everybody agrees on what to do and when. It can simply go ahead and do it as there are no negative spillovers which might call for a coordination of efforts.

---

\(^{29}\) See also Scheide and Sinn (1989: 419): “International competition among economic policies can benefit all countries because authorities can learn from their own mistakes and from good or bad examples of other countries.”

\(^{30}\) Lucas (2003) mentions that supply side reforms are much more important; compared to stabilization policies, they have a potential of raising welfare by an amount which is two orders higher. If applied to the situation in Europe, this would mainly call for reforms of the labor market and for reducing distortionary taxes, i.e. measures which are also mentioned in the BEPG.

\(^{31}\) See, for example, Siebert (2001) on this discussion.
11. Conclusions

There is widespread agreement that policy coordination is useful if it is defined as an exchange of information between policymakers and if it means that there are certain rules for economic policy. Both aspects are given at the European level. Whether coordination can and should go much further and should, for example, also include efforts of short-run stabilization depends most of all on three conditions: One, the agreement on a specific model; two, the efficacy of stabilization policies; and three, the ability to make commitments. The discussion of these conditions is often neglected in theoretical models of international policy coordination, or it is simply assumed that these conditions are met. There are, however, serious doubts that are raised in the literature especially on the effectiveness of fiscal policy. Furthermore, there have been many occasions when policymakers in Europe have not followed their commitments, even though they had all agreed that the policies are beneficial. Apart from that it can be questioned whether targets on, say, the national output gap make any sense in a monetary union. All in all, the potential gains of coordination are minimal whereas the risks and the costs are high. Another reason why coordination would be limited is the fact that the status of the ECB does not allow the central bank to make commitments.

All this does not imply that economic policies cannot be good or that the targets at the European level cannot be achieved. First of all, most countries which have shown a strong performance have not relied on policy coordination. And second, the Broad Economic Policy Guidelines describe a consistent assignment which is conducive to sound economic growth and stability, the targets which are much more important than short-run stabilization issues. The Guidelines focus more on “soft coordination” which is not backed by strong enforcement mechanisms. In addition, the BEPG define general principles and do not rely on specific models, i.e. they also do not pretend too much knowledge but rather describe sound economics which are based on well-known relationships. If policymakers follow such rules, the European economies would already go a long way towards a good economic performance. Negative spillovers which are commonly seen as a major reason for policy coordination can be avoided. What seems to be lacking, however, is the willingness of
policymakers to accept the guiding principles. Because of this, and not because of a lack of coordination, economic policy in Europe is not as sound as it should be and, as a consequence, the economic performance is not as good as it could be.
12. Bibliography


