European State Aid Control: an economic framework*

by

Hans W. Friederiszick
Lars-Hendrik Röller
Vincent Verouden

November 18th, 2005

* This paper is forthcoming in Advances in the Economics of Competition Law, Paolo Buccirossi (ed.), MIT Press. Röller is Chief Economist at the European Commission, Directorate-General for Competition and Friederiszick and Verouden are members of the Chief Economist Team. We like to thank our colleagues at DG COMP A. Alexis, T. Deisenhofer, T. Kleiner, B. Gurba, N. Pesaresi, M. Salto, O. Stehmann, B. Tranholm-Schwarz, M. Van Hoof, H. Drabbe for helpful discussions. The paper has also benefited from discussions with Mathias Dewatripont and Paul Seabright. Finally, we like to thank seminar participants at a number of public events, in particular the Wilmer, Cutler, Pickering, Hale and Dorr conference on State Aid 2005, the UK Presidency Event on State Aid 2005, the European Economic Association Annual meeting in Amsterdam 2005, as well as the Beesley Lecture in London. As usual, the views expressed are those of the authors and do not necessarily reflect those of the European Commission.

I INTRODUCTION **1**

II THE LEGAL FRAMEWORK - ROOM FOR ECONOMIC ASSESSMENT? **3**

JURISDICTION – THE LEGAL DEFINITION OF STATE AID 4
COMPATIBILITY CRITERIA 7

III THE ECONOMICS OF STATE AID (CONTROL): BASIC CONCEPTS **11**

RATIONALE FOR STATE AID 11
Efficiency rationales *12*
Equity rationales and potential trade-offs *15*
THE LIMITS OF STATE AID 18

IV THE RATIONALE FOR EUROPEAN STATE AID CONTROL **20**

CROSS-BORDER EXTERNALITIES 21
NATIONAL COMMITMENT PROBLEMS 23
INTERNAL MARKET RATIONALE 25

V THE POLICY STANDARD FOR ASSESSING STATE AID AT THE EUROPEAN LEVEL **26**

POLICY STANDARDS IN OTHER FIELDS OF COMPETITION POLICY 27
THE POLICY STANDARD IN THE FIELD OF STATE AID CONTROL 29

VI ELEMENTS OF A GENERAL FRAMEWORK – TOWARDS AN EFFECTS-BASED APPROACH 34

A STRUCTURED ASSESSMENT OF STATE AID MEASURES: THE BALANCING TEST 35
Assessing the benefits – legs (a) and (b) of the test *37*
Assessing and balancing the negative effects – leg (c) of the test *40*
THE ARCHITECTURE OF STATE AID: PRECISION AND PREDICTABILITY 46

VII CONCLUDING REMARKS **50**

VIII REFERENCES **52**

I Introduction

European state aid control is currently at a turning point. Europe faces low economic growth and increasingly recognizes a need to rethink the balance between the various objectives of state intervention. Similarly, constraints on state budgets and concerns about the effectiveness of state aid have increased the political pressure towards a more economics effect-based approach in state aid and state aid control. An economically sound approach is called for by politicians as well as policy makers, both at the national and the European level. The political mandate is for "*less and better targeted state aid*", which has recently been announced by Commissioner Kroes in the State Aid Action Plan.[1]

The economics of state aid control is related to several areas of economics. First, public economics, since state aid is a form of public intervention in the economy. Second, the economics of competition, as state aid confers an advantage to some firms, which has the potential to affect the competitive process. Third, state aid control is related to international trade, as state aid can affect trading conditions. This aspect creates incentives for national governments to use state aid to pursue national economic or political goals, which in turn justifies a system of European state aid control.

Although state aid control is related to these well-developed fields of economics, most of the analysis in the practice of European state aid control is not firmly rooted in economic principles. There are a number of reason for this state of affairs. One factor for the relative lack of economics in state aid control (relative to other areas of competition policy) is that the economic and legal principles underlying state aid control are by their very nature more challenging. For example, European state aid control involves more than a single objective: economic efficiency as well as equity objectives. Another example is that there are several relevant theories of harm at work, including some that are more dynamic – such as keeping inefficient rivals in the market. There is also the added complication that the cost of the aid to the tax payer needs to be included.

[1] The political mandate for an "economic approach towards less and better targeted state aid" has been expressed in various conclusions of the European Council since the launch of the Lisbon agenda in 2000, as well as in the Commission's *State Aid Action Plan, less and better targeted state aid: a roadmap for state aid reform 2005 to 2009*, available at http://europa.eu.int/comm/competition/state_aid/others/action_plan/saap_en.pdf.

Another reason that might explain the underdevelopment of economic-based analysis in state aid control is that the field is invariable more political. As a result, state aid procedures reflect largely the desire to limit political influence, rather than economic effectiveness.

A final argument often made against a more effect-based analysis is that the legal framework as enshrined in the Treaty does not allow for it. State aid is illegal, unless certain criteria are met. As a result of this strict legal tradition it is argued that a more effect-based approach, which includes the balancing of positive and negative effects, is inappropriate. A related view – which has also been expressed in other areas of competition policy - is that predictability is better served by a stricter form-based approach.

This paper addresses these issues and suggests elements of an economic framework for European state aid control. In the end, we conclude that the time is right for a more effects-based approach as this is an important aspect to increase the effectiveness of state aid control. As a result, we believe that the proposed approach in this paper would contribute towards the policy goal of "less and better targeted aid". We also conclude that an effects-based approach does not necessarily lead to overall softening of state aid control, assuming that it is properly implemented, and that more predictability as well as more precision appear possible. Moreover, it is likely, as well as intended, that an effect-based approach will shift the argumentation from legal and accounting battles towards a battle over the impact of the aid on markets and ultimately on consumers. Again, after some adjustment, such a change would not only greatly contribute towards precision and effectiveness of European state aid control, but in fact enhance predictability. Finally, we argue that an effect-based approach holds the potential to reduce – at least to some extent - the scope for politics in the field of state aid control and that it has the potential to increases cooperation across Member States.

This paper is organized as follows. Section II provides a brief overview of the current legal context of European state aid control and discusses possible entry points for more economic analysis. Section III summarizes the most relevant economic concepts applicable to state aid control from a national perspective, while Section IV focuses on the international aspects. The debate surrounding the relevant standard is summarized in Section V. Finally, a framework for state aid control is proposed in Section VI. The paper ends with some concluding remarks, which will return to some of the broader issues discussed in the introduction.

II The legal framework - room for economic assessment?

The main provision in the EC Treaty[2] dealing with state aid control is Article 87. Article 87 EC specifies a two stage approach. First, with a view to establish *jurisdiction*, it is assessed whether a specific state measure constitutes "state aid" within the meaning of Article 87(1). Only state measures which constitute "state aid" within the meaning of Article 87(1) are subject to EU state aid control. Second, there is the assessment of *compatibility*, to assess whether the aid measure can be allowed under the provisions of the EC Treaty.

The Treaty applies a negative presumption to all forms of state aid, declaring those measures incompatible with the common market[3]. The Commission may grant an exemption, however, and declare state aid "compatible" under Article 87(2) or Article 87(3) EC. Measures falling under Article 87(2) are compatible as such[4]. Measures falling under Article 87(3), which are in practice more important, can be declared compatible under the discretion of the Commission. In order to enable the Commission to exercise its control, all measures covered by EU jurisdiction have to be notified to the Commission *ex ante*, and then approved by the Commission before they are being implemented.

The way in which the Commission exercises its discretionary powers is outlined in a number of Regulations and in so-called *soft law* provisions, such as Guidelines and Communications. Specific categories of training aid, employment aid and aid to SMEs are exempted by the so-called block exemption regulations. These measures have to be notified *ex post* and notification requirements are reduced. In addition, specific soft law provisions exist providing criteria to assess compatibility for aid measures of a horizontal (i.e. non-sectoral) nature, for certain sectoral measures, for rules in relation to public enterprises and with respect to specific types of state aid (state aid "instruments").[5] Smaller amounts of aid are considered to fall

[2] The legal framework of the European Union is based on a number of treaties. In the economic domain, the 1957 Treaty of Rome establishing the European Community takes central position.
[3] In the European context, the term "common market" stands for the European (EU) market.
[4] These measures primarily relate to social issues which are granted to individuals, as well as to measures addressing damage due to natural disasters.
[5] See Hancher et al. 1999 and Biondi et al. (2003) for comprehensive overviews. A brief description of the main soft law provisions is provided in the Vademecum on Community Rules on State Aid, 2003, available at http://europa.eu.int/comm/competition/state_aid/others/vademecum/vademecumen2003_en.pdf

outside EU jurisdiction and, hence, do not have to be notified (*de minimis* approach). Measures which do not fulfil the criteria outlined in the soft law provisions or Regulations can, in exceptional circumstances, be approved by direct application of Article 87(3).

We next briefly outline the criteria for assessing jurisdiction - the "legal" definition of state aid, followed by the approach to assess compatibility. We also address to what extent economic analysis is currently undertaken and the indicate scope for further economic analysis.

Jurisdiction – the legal definition of state aid

Article 87(1) of the EC Treaty states: "*Save as otherwise provided in this Treaty, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, insofar as it affects trade between Member States, be incompatible with the common market.*" The case law identifies four conditions to be fulfilled jointly for a measure to constitute state aid in the meaning of Article 87(1) EC: [6]

(i)	Transfer of state resources -	there must be an intervention by the State or through State resources;
(ii)	Economic advantage -	it must confer an advantage on the recipient;
(iii)	Distortion of competition -	it must distort or threaten to distort competition;
(iv)	Effect on trade -	it must be liable to affect trade between MS.

It is interesting to note that in most cases the last two criteria are considered to be fulfilled if the measure is "selective" in terms of granting an advantage. A measure can be selective in terms of favouring certain companies, the production of specific products or the development of a specific region. Under this approach, the assessment of the criteria "distortion of competition" and "effect on trade" under Article 87(1) is rather rudimentary. In addition, it is

[6] See judgment of the European court of 24 July 2003, case C-280/00 ("Altmark judgment"), paragraph 75.

left unclear whether both the competition and the trade criterion have a separate relevance in assessing jurisdiction.[7]

There are three areas in which economic analysis plays, or could play, an important role in the assessment of jurisdiction. First, economic analysis is relevant for establishing the extent to which an aid measure confers an economic advantage to the recipient of the aid. In practice, this is the most important entry point for economic analysis. In many cases, it is fairly straightforward to determine the size of the economic advantage, i.e. for direct subsidies granted to firms. In many other situations, however, it is much less straightforward - in particular, in the context where governments invest in companies or provide loans or guarantees. In such cases, the "Market Economy Investor Principle (MEIP)" (or one of its derivatives, like the "Private Creditor Principle") may become relevant. The MEIP is relevant in cases where the State intervenes by means comparable to private investors[8]. The credit approved or the investment undertaken are only considered state aid in the meaning of Article 87(1) if the (monetary) compensation the State receives in exchange for the investment or loan is lower than what a private investor would have requested under such circumstances.[9]

Second, economic analysis has a potential role to play in determining whether a measure is "selective" or not. State aid must be selective in terms of the recipient firms for it to be capable of affecting the balance between the recipient firms and their competitors.[10] "Selectivity" is what differentiates state aid measures from so-called *general measures*, which apply equally to all firms in all economic sectors in a member state (e.g. most nation-wide fiscal measures). A scheme is considered selective, if the authorities administering the scheme enjoy a degree of discretionary power. The selectivity criterion is also satisfied if the scheme applies to only part of the territory or a specific industry of a member state (this is the case for all regional and sectoral aid schemes). Measures which are *de jure* not selective may *de facto* have a highly divergent economic impact on firms, sectors or regions. Economic analysis can help identifying the *de facto* impact of an aid measure on specific firms or industries.

---

[7] See for instance the Commission's *Vademecum: Community Rules on State Aid* (2003), p. 3, referring to the two criteria as one criterion.

[8] This relates to the distinction between 'economic' and 'non economic' activity. See for instance opinion of the Advocate General, 14th of January 2003, C-280/00 ("Altmark"), paragraph 18-27.

[9] Note that the exact quantification of the economic advantage received becomes relevant in particular when the aid is found unlawful and has to be repaid by the aid beneficiary to the aid granting State authority (so called 'recovery').

Third, economic analysis may be relevant in analysing whether the selectivity of the aid translates into actual or likely distortive effects on competition or trade. For instance, even where the aid is selective, it is possible that the aid does not affect trade between member states, as might be the case when the aid supports the provision of non-tradable goods or services. In view of the Commission's expertise in other areas of competition policy (merger control, antitrust), this area seems to be a natural candidate for economic analysis. Case law, however, requires a rather low "intervention threshold" as regards the criteria of distortion of competition and effect on trade under Article 87(1).[11] For instance, the Court of First Instance has held that *"(…) there is no requirement in case-law that the distortions of competition, or the threat of such distortion, and the effect on intra-Community trade, must be significant or substantial."*[12] In practice[13], it appears that distortions of competition and effects on trade are assumed to be present when the measure is selective, that is when the market position of the aid beneficiary vis-à-vis its competitors is improved by the aid.

In certain areas, the Court has adopted an approach which is more sophisticated and geared towards the economic circumstances of a particular case. For example, in the context of public service obligations, the Court has held that subsidies given to a company providing the public service do not constitute state aid in the sense of Article 87(1) when specific conditions are met relating to, among other things, the amount of the subsidy and the way in which it has been granted.[14]

---

[10] Commission's *Vademecum: Community rules on state aid* (2003), *supra* note […], p. 3.

[11] Cf. Frédéric Louis, *EC State Aid Control*, presentation at the conference "EC State aid control: the case for reform", Brussels, 14.06.2005 (referring to the Judgment of the Court of 13 March 1985 in Joined cases 296 and 318/82, *Kingdom of the Netherlands and Leeuwarder Papierwarenfabriek BV v Commission of the European Communities*).

[12] Judgement of the CFI, 29th September 2000, Case T-55/99 ("CETM case"). Similarly, the Court of First Instance has held that: *"(…) the Commission is not required to carry out an economic analysis of the actual situation on the relevant market, of the market share of the undertakings in receipt of the aid, of the position of competing undertakings and of trade flows of the services in question between Member States, provided that it has explained how the aid in question distorted competition and affected trade between Member States."* Judgement of the CFI, 29th September 2000, Case T-55/99 ("CETM case"), paragraph 7.

[13] *See* Opinion of Advocate-General Capotorti delivered on 18 June 1980, Case 730/79, *Philip Morris Holland BV v Commission of the European Communities*. It should be mentioned that the Commission has taken the view that very small amounts of aid (*de minimis* aid) do not have a potential effect on competition and trade between Member States. It therefore considers that such aid falls outside the scope of Article 87(1).

[14] Judgement of the ECJ of 24 July 2003, Case C-280/00, *Altmark Trans GmbH and Regierungspräsidium Magdeburg v Nahverkehrsgesellschaft Altmark GmbH*, paragraph 95. Public subsidies compensating public service obligations are not caught by Article 87(1) when: "*first, the recipient undertaking is actually required to discharge public service obligations and those obligations have been clearly defined; second, the parameters on the basis of which the compensation is calculated have been established beforehand in an objective and transparent manner; third, the compensation does not exceed what is necessary to cover all or part of the costs*

Compatibility criteria

As pointed out before, despite the negative presumption of Article 87(1), measures can be declared compatible if one of the exemptions of Article 87(2) or 87(3) are fulfilled. Article 87(2) provides an automatic exemption; Article 87(3) gives certain discretion to the Commission in assessing compatibility. We will focus on the latter as it is, the more important legal basis for approving state aid measures. Article 87(3) states:

> *"The following may be considered to be compatible with the common market:*
>
> *(a) aid to promote the economic development of areas where the standard of living is abnormally low or where there is serious underemployment;*
>
> *(b) aid to promote the execution of an important project of common European interest or to remedy a serious disturbance in the economy of a Member State;*
>
> *(c) aid to facilitate the development of certain economic activities or of certain economic areas, where such aid does not adversely affect trading conditions to an extent contrary to the common interest;*
>
> *(d) aid to promote culture and heritage conservation where such aid does not affect trading conditions and competition in the Community to an extent that is contrary to the common interest;*
>
> *(e) such other categories of aid as may be specified by decision of the Council acting by a qualified majority on a proposal from the Commission."*

Paragraphs (a) and (c) constitute the legal base for approving regional investment aid[15], where paragraph (a) is interpreted to refer to regions with income levels per head significantly below

---

incurred in discharging the public service obligations, taking into account the relevant receipts and a reasonable profit for discharging those obligations; fourth, where the undertaking which is to discharge public service obligations is not chosen in a public procurement procedure, the level of compensation needed has been determined on the basis of an analysis of the costs which a typical undertaking, well run and adequately provided with means of transport so as to be able to meet the necessary public service requirements, would have incurred in discharging those obligations, taking into account the relevant receipts and a reasonable profit for discharging the obligations." (paragraph 95).

[15] Community guidelines on national regional aid, Official Journal C 74, 10.03.1998, pages 9-31. The Regional Aid Guidelines stipulate under which conditions member states can give aid to finance investments by companies setting up in particular regions.

the EU average and paragraph (c) to regions with income and employment levels below the average of the particular member state concerned. Paragraph (c) is also the basis for most other soft law provisions, like for instance the R&D framework[16], the Rescue & Restructuring Guidelines[17], the rules applicable to Services of General Economic Interest[18] and the Environmental Guidelines.[19] It is also provides the basis for the existing block exemption regulations in the field of training aid, employment aid and aid to SME's.

The general principle behind the Commission's compatibility assessment is to balance the positive impact of the aid measure (pursuing an objective of common interest) against its potential negative effects (distortions of trade and competition).[20] In most cases such a balancing will not be carried out explicitly. The approach taken in most soft law provisions is to define a set of "eligible costs" on the basis of which companies may receive state aid. The amount of subsidy is specified in terms of maximum aid intensities of the eligible costs (e.g. 50% of R&D expenditure at the stage of industrial research can be covered by state aid). The implicit balancing inherent in this approach is to obtain the positive impact of the aid measure by declaring expenses eligible which target objectives of common interest (like specific R&D expenditure) while restricting the possible distortions of competition by limiting the aid intensity (e.g. to 50%).

The various "soft law" provisions have typically been applied in a rather strict, formalistic way. There is little scope for approving state aid measures which do not meet the conditions set out in the provisions but which would very likely be benign. Alternatively, disallowing state aid measures which meet the conditions, but which are likely to be ineffective or distort competition is not envisaged. The resulting approach – while arguably being relatively simple to administer – does not seek to identify the actual impact on markets. In combination with a rather broad approach taken when considering whether a measure constitutes state aid or not

[16] Community framework for state aid for research and development, Official Journal C 045 , 17.02.1996, p. 5-16.
[17] Community guidelines on State aid for rescuing and restructuring firms in difficulty, Official Journal C 244, 01.10.2004, p. 2-17.
[18] Community framework for State Aid in the form of public service compensation, *available at* http://europa.eu.int/comm/competition/index_en.html.
[19] Community guidelines on State Aid for Environmental protection, Official Journal C 37, 03.02.2001, p. 3-15.
[20] See, for instance, the Commission's *State Aid Action Plan, supra* note […].

(see above), the state aid approval system bears the risk of being overly broad (to look at too many measures) and at the same time to be too imprecise.[21]

Over the years, the Commission's approach has been to fine-tune the soft law provisions in order to improve their precision. Such fine-tuning has, for instance, been applied to the regional aid guidelines, which stipulate under which conditions member states can give aid to finance investments by companies setting up in particular regions. The traditional criteria applied in regional aid cases are the level of GDP per capita relative to the EU average and, in certain cases, relative employment figures. In order to limit the distortions of competition and trade, a complementary set of rules has been introduced[22]. The current rules define lower maximum aid intensity levels for large investment projects and specify that firms cannot receive regional aid when they hold a market share above 25% or when they are active in a sector which is in relative decline. Another example is given by the R&D Guidelines, which distinguish between different types of R&D, according to whether the R&D activity relates to fundamental research or rather to R&D activity "close to the market". Furthermore, R&D aid to large firms has to induce an expansion of research activity (so-called "incentive effect"). A special approach is taken in the guidelines on risk capital, which support equity funds that provide risk capital to smaller firms.[23] In this context higher amounts of risk capital aid are approved if it is shown that the aid is proportional to the size of the market failure addressed (the problem of insufficient access to funds due to asymmetric information problems).

Certain exceptional measures which are not covered under existing soft law provisions are assessed "directly under Article 87(3)".[24] These cases remain however very limited in number and scope.

---

[21] Economists usually measure the precision of a test by assessing type I and type II errors. A Type I error is the prohibition of a welfare increasing State intervention. A type II error is the approval of a welfare decreasing state interventions. Due to this lack of precision (to which we will come in later chapters of the paper), recent attempts have been taken to prioritize aid measures according to their potential impact on competition and their effect on trade.

[22] Multisectoral framework on regional aid for large investment projects , Official Journal C 70, 19.03.2002, pages 8-20.

[23] Commission communication on State aid and risk capital, Official Journal C 235, 21.08.2001, p. 3-11.

[24] Examples of the latter are for instance the broadband cases (Competition Policy Newsletter 2005, 1, page 8; http://europa.eu.int/comm/competition/publications/cpn/) or the recent Dutch-German propylen pipeline case (see http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/04/760&format=HTML&aged=0&language=EN&guiLanguage=en).

Despite the increased fine tuning of soft law provisions, EU state aid rules remain rather form-based and do not leave much room for assessing the impact of the measure on competition and trade. Explicit economic analysis of state aid measures has been of minor importance for compatibility assessment.

In the few cases which undertook a more explicit analysis of the competitive impact of the state aid measure, the following principles emerge. First, state aid is more distortive in markets which are more competitive[25]. The underlying idea is that in markets where profit margins are already rather slim (due to competition) or where market shares are fairly volatile, state aid granted to a specific firm (or group of firms) may have a greater impact.[26] Second, operational aid is almost always distortive, more than aid to finance investment[27]. Operational aid is directed towards the variable costs, which may significantly affect firms' ability to compete and capture market share.

In sum, the current legal context of European state aid control is based on relatively simple to administer indicators, primarily the transfer of state resources, the existence of an economic advantage and the criterion of selectivity. The competition analysis and the assessment of the negative effects on trade are rudimentary. Economic analysis is limited mainly to the assessment of the "economic advantage" of an aid measure.

As far as compatibility is concerned, a balancing of the benefits of the aid with the distortive effects of aid is in principle foreseen. In practice, however, the approach taken rests on defining eligible cost and aid intensities – as well as some additional criteria depending on the type of aid. An explicit competition analysis or assessment of the effect on trade is done only in the few cases directly assessed under Article 87 (3) or is limited to a partial analysis. As a

[25] So the Court of First Instance stated that *"it is settled case-law that even aid of a relatively small amount is liable to affect trade between Member States where there is strong competition in the sector in which the recipient operates"*. Case /-288/97 *Regione Autonoma Friuli-Venezia Giulia v Commission* [2001] ECR II-1169, para 44.

[26] In the above cited case *Regione Autonoma Friuli-Venezia Giulia v Commission*, para 46, the Court of First Instance explains*: "Moreover, because of the structure of the market, a feature of which is the presence of a large number of small-scale undertakings in the road haulage sector, even relatively modest aid is liable to strengthen the position of the recipient undertaking as compared with its competitors in intra-Community trade."* See also Case 259/85 *France v Commission* (para 24).

[27] Court of First Instance has held that*" operating aid, that is to say aid which, like the aid in question, is intended to relieve an undertaking of the expenses which it would normally have had to bear in its day-to-day management or its usual activities, in principle distorts competition."* Case T-214/95 *Het Vlaams Gewest v Commission* [1998] ECR II-717, para 43.

result, an effects-based economic analysis does not play a substantial role in the compatibility assessment of aid measures.

III The economics of state aid (control): basic concepts

The economic underpinnings of European state aid control draws on three fields of economics: (i) public economics (to analyse state intervention directed at efficiency and/or equity objectives), (ii) the economics of competition (to analyse the impact of state aid on competition), and (iii) international trade (to study policy coordination in an international context).

In this section we first focus on the public economics perspective of state aid policy: why do national authorities resort to state aid to intervene in the economy? It is important to understand the motives for state aid policy. If and when member states adopt state aid measures, they are likely to do so for a reason. The more state aid policies are used in pursuing (national) welfare objectives, the more likely it is that these national policies are also in line with EU objectives (for example, those described in Article 87(3) EC), provided that negative spill-overs in the EU are small. As a result, appropriate state aid policies at the national level should be a "positive" in the EU appraisal of state aid.

A proper assessment of the economic costs and benefits of state aid control also has to address the effectiveness and potential policy biases. The remainder of this section reviews a number of limitations of state aid, in terms of its effectiveness in achieving public policy objectives, as well as its exposure to political influences by specific stakeholders.

Rationale for state aid

At the beginning of the 20th century, economists developed, the analytical tool of a *social welfare function*.[28] A social welfare function maps the utilities of single individuals into an aggregate measure of social welfare, using a system of weights representing the importance

[28] The concept of the social welfare function goes back to Bergson (1938). It goes beyond the scope of this paper to discuss the critics on the concept of a social welfare function. See, for instance, Stiglitz (2000) for a discussion.

attached to the utility of the respective individuals. The individual utility itself depends on the amount of products consumed. Consumers are restricted by their initial endowment (income) and, assuming rationality, maximize utility given prices and income.

The fundamental theorems of welfare economics postulate conditions under which the market mechanism results in a Pareto efficient allocation[29]: the first welfare theorem defines the conditions under which any competitive economy results in a Pareto efficient allocation of goods; the second theorem says that any Pareto efficient allocation may be decentralized by a suitable choice of lump-sum transfers. The welfare theorems thereby allow to separate the two elements of efficiency and redistribution. The notion of market failure has increasingly come to be linked to the conditions under which the first welfare theorem is not fulfilled.[30]

Following this line of reasoning there are two – even though not necessarily independent – ways of increasing social welfare through state intervention. The first is by increasing the efficiency of an economy and thereby "pushing the welfare frontier outward" (one can think of it as "making the cake bigger"). The second way is to redistribute the available resources in a way that maximizes the preferences of society for equity and redistribution. This is about "moving along the welfare frontier" (one can think of it as "dividing the cake better"). Note, that in the latter case interpersonal utility comparisons become necessary while for the former case interpersonal utility comparisons can be avoided by applying the Pareto criterion: the utility of every citizen is (weakly) increased. We next discuss the two dimensions of increasing social welfare in more detail.

Efficiency rationales

Economic efficiency (or "Pareto efficiency") can be analyzed by assessing the effect of a public intervention on a representative consumer and firm: a public intervention should be

[29] Pareto (1896) observed that social welfare is unambiguously increased by a change that makes at least one individual better off, without making anybody else worse off. From this principle economists have derived the concept of "Pareto improvement", "Pareto optimality" or "Pareto efficiency". A situation is considered Pareto-efficient if it is impossible to make further changes that satisfy the Pareto principle.

[30] See, for example, Stiglitz (2000), p.77: "The first fundamental theorem of welfare economics asserts that the economy is Pareto efficient only under certain conditions. There are six important conditions under which the market is not Pareto efficient. These are referred to as market failures, and they provide a set of rationales for government activity".

implemented when the sum of consumer surplus[31] – that is the difference between customers' willingness to pay and the actual price – and firm's profits increases by more than the cost of the intervention.[32]

When can government intervention be efficiency enhancing? State intervention may improve the functioning of markets (and thereby pass the welfare test) when competition is unlikely to produce efficient outcomes, that is when the conditions of the first welfare theorem fail.[33] Sound public policy should be directed at improving the efficient functioning of markets by correcting such market failures. Economists (backed by the first welfare theorem) have pointed to a number of situations where such market failures exist. In fact, much of the literature in microeconomic theory is concerned with the existence of markets that are not perfectly competitive. The most important in the field of state aid are[34]:

Externalities - Externalities exist when actions by one agent have consequences for other agents. This "side effect" may be negative ("negative externalities") or positive ("positive externalities"). An example of a negative externality is the situation where environmental side effects are not taken into account by producers. An example of a positive externality can be found in the sphere of R&D. When a company undertakes R&D, this activity may have positive spill-over effects for other companies (diffusion of knowledge; technological breakthroughs). Such side effects drive a wedge between the private benefits of a given action (to the actor) and the overall economic benefits of the action, which will lead to an inefficient market outcome.

Public goods (form of externality) - Public goods are goods for which it is difficult or impossible to exclude anyone from using the goods (and hence making them pay for the goods)[35]. Here one can think of national defence, public broadcasting services, but also of

[31] Note, that the exact measure is the equivalent or compensating variation, which takes into account income effects. The consumer surplus corresponds only under the restrictive assumption of quasilinear utility functions to those concepts, but is applied in most applications for practical reasons (see Varian, 1992, p. 160).
[32] The weights assigned to consumer surplus and producer surplus imply a certain value judgment as well. We abstract from that issue in this subsection.
[33] A perhaps more intuitive definition of market failure is that markets fail when the market (based on private actors) does not provide a good or service even though economic benefits outweigh economic costs. This happens when the private benefits (or costs) are not equal to the public benefits (or costs).
[34] For summaries of the arguments regarding market failures see Stiglitz (2000), Meiklejohn (1999) or Gual (1998).
[35] In addition, public goods are non-rivalrous in that the use or consumption of the good by one person does not reduce the possibilities of others persons to use or consume it.

services of general economic interest. In a sense, public goods represent an extreme case of externalities, as suppliers of such goods cannot appropriate the benefits to other people. As a result, public goods are not normally provided by the market. According to the first welfare theorem, the public financing of such goods or services may then be an efficient response to correct the problem of underprovision of public goods and to achieve a more efficient outcome.

Information asymmetries/ missing markets - In certain markets, there is a discrepancy between the information available to one side of the market (e.g. the supply-side) and the information available to the other side of the market (the demand-side). A well-known example is the financial market, where the company demanding finance (loans or equity) is typically better informed about the state and prospects of the company than banks or investors. If companies have little scope for credibly transmitting this type of information (as is often thought to be the case for SME activity in innovative industries), it is difficult for banks or investors to distinguish "good" from "bad" loans or investments. As a result, the market may not come off the ground, even where there is a considerable group of SME's with projects worth the investment. According to the first welfare theorem then, providing incentives to the financial sector to increase SME investments can be an appropriate response from the viewpoint of efficiency.

Coordination problems - Markets may also not function efficiently when there is a coordination problem between market actors. This aspect plays a key role in standards setting. While state intervention can play an important role in providing for better coordination, the specific role for state aid is less clear in this context.

Market power - Another reason why the market may not lead to an efficient outcome is the existence of market power ("failure of competition"). Notably, market power leads to prices that are too high from society's point of view, thereby not achieving efficiency. State aid measures may, in principle, reduce market power (for example by fostering entry into a given market which would not occur without the state aid). State aid measures may, of course, also create market power. State aid may lead to a build-up of market power in the hands of some firms, for instance when companies that do not receive state aid (e.g. non-domestic firms) have to cut down on their market presence, or where state aid is used to erect entry barriers.

Equity rationales and potential trade-offs

Governments may wish to intervene for purposes of creating a more equitable outcome of the market process. Functioning markets establish an efficient allocation of goods. They also provide opportunity to individuals to engage in an open and fair competitive process. However, the outcome of this process might be perceived as inequitable. This provides a rationale for state intervention, for example in the form of social or regional aid[36].

Economic theory is not decisive in identifying the "optimal" redistribution as this depends on the citizens' preferences.[37] In fact, in most textbooks on the application of economic theory to antitrust and regulation, a utilitarian welfare approach is taken, so as to focus on efficiency considerations.[38] A representative quote can be found in the industrial organization textbook by Jean Tirole (1993, p.12): *"In this book, I will treat income distribution as irrelevant. In other words, the redistribution of income from one consumer to another is assumed to have no welfare effect. (The marginal social utilities of income are equalized.) I certainly do not feel that actual income distributions are optimal, even with an optimal income-tax structure (because there are limits and costs to income taxation, as is emphasized by the optimal-taxation literature). Market intervention does have desirable or undesirable income-redistribution effects. But I will focus on the efficiency of markets, using Musgraves' (1959) framework in which the distribution branch of government worries about distribution and the allocation branch (the one considered in this book) deals with efficiency. …"* Accordingly, Laffont and Tirole employ a utilitarian regulator maximizing the sum of the individual utilities.[39]

---

[36] Also a policy aimed at cultural diversity and pluriformity of the media may be viewed under the heading of equity, as it relates to society's perception that the market outcome – though efficient – is not satisfactory in preserving or promoting cultural and democratic values.

[37] See, however, the concept of 'efficient redistribution' discussed later on.

[38] Two classical concepts put forward in this regard by economists are in particular the utilitarian approaches of putting equal weight on individual utilities and the Rawlsian approach of putting all weight on the individual with lowest utility. However, an infinite amount of possible preference functions are possible.

[39] See Laffont and Tirole (1993). A comparable position is expressed in the text book by Viscusi/ Vernon/ Harrington (2000, page 9): *"Ideally, the purpose of antitrust and regulation policies is to foster improvements judged in efficiency terms. We should move closer to the perfectly competitive ideal than we would have in the absence of this type of intervention…. Put somewhat differently, our task is to maximize the net benefits of these regulations to society. Such concern requires that we assess both benefits and the cost of these regulatory policies and attempt to maximize their differences. If all groups in society are treated symmetrically, than this benefit-cost calculus represents a straightforward maximisation of economic efficiency."* They proceed by saying: *"Alternatively, we might choose to weight the benefits to the disadvantaged differently or make other kinds of distinctions, in which case we can incorporate a broader range of concerns than efficiency alone."*

In principle, integrating equity consideration into the analysis undermines the normative strength of the concept of "perfect competition", the idea of Adam Smith's invisible hand. The criterion of efficiency offers a neutral concept allowing economists to identify situations off the social welfare frontier – independent of political distributional concerns. Is it therefore appropriate, one might ask, to extend this approach to the area of state aid?

In the area of state aid control, redistribution concerns are often among the main objectives of state aid measures. Social and regional cohesion policy is explicitly mentioned in the Treaty as a possible ground for allowing state aid measures. In fact, equity oriented state aid measures – in particular regional growth measures and, often linked, aid for sectoral adjustment - account for roughly 40% of all state aid granted.[40] Therefore, redistributional concerns have to be taken into account in the approval of state aid and cannot be dismissed in an overall assessment.

On the other hand, it has to be recognised that state aid is only one of many instruments governments have at their disposal to address redistributional issues. General transfers to individuals, in particular lump sum, income or consumption related, are not subject to the EU state aid control. In addition, a broad set of measures - partially targeting efficiency objectives - have also strong distributional effects, and are not covered by the notion of state aid either. This is the case for most measures in public education, healthcare and general infrastructure. Therefore, one might question whether an individual state aid measure (or state aid as such) is the appropriate instrument to address redistributional concerns or whether other – less distortive – instruments exist for redistributional objectives.[41]

More generally, the role of economic analysis is to identify and balance the *trade-off* between equity and efficiency. Many policy measures which focus on efficiency have strong redistributional side-effects and vice-versa.[42] These side-effects may result in a trade-off between equity and efficiency objectives. For instance, when redistribution is expensive in view of the shadow costs of taxation, no "cost-free" redistribution is possible. More generally,

[40] See State aid Scoreboard, available at http://europa.eu.int/comm/competition/state_aid/scoreboard/.

[41] An argument related to that is that in an environment of vested political influence a restriction to efficiency considerations may be appropriate given the availability of redistributional instruments outside the set of state aid instruments.

[42] Trade-offs are also present in the world of antitrust. Consider the example of perfect price discrimination mentioned in Tirole (1993). Introducing perfect price discrimination by a monopolist enhances efficiency. At the

the reason why redistributive transfers are not optimal is linked to the incentive problems they tend to create. Regions may reduce their effort to balance their budget or to eliminate structural rigidities in their economies if the negative implications of budget deficits and slow growth performance are compensated by higher aid receivables.

Other examples of the trade-off are: providing R&D aid for large scale research projects in order to tackle market failures may imply additional resources to already well equipped research centres in the "core" regions to the detriment of the "periphery"; allowing financial compensations from richer regions to poorer may induce moral hazard problems, and thereby decrease efficiency; both environmental problems (due to congestion and concentration of industries) and income may be largest in cities, making them the main beneficiary of environmental aid schemes. When such a trade-off exists, limiting state aid assessment to efficiency alone may not be appropriate.

Sometimes the trade-off is positive – either due to side-effects or because redistribution itself is an instrument to solve market failures. An example of the latter is when credit and insurance markets are imperfect. Consider two countries with an equal endowment of a specific input factor. Suppose that the production function is concave in this input factor. The country with a more equal distribution of the input factor will exhibit a higher output than the other country. If perfect capital markets exist, those agents with a higher input endowment would lend resources to agents with lower endowments, and output in the country with less equally distributed income would rise to the level of the other country. If capital markets are imperfect, a government redistribution policy with respect to the input factor, could at least partially replicate the perfect market equilibrium.[43] In such a scenario, redistribution may increase welfare, allowing to rank different regimes under a efficiency criterion. In fact, one can derive the level of "efficient redistribution", the amount of redistribution which maximizes welfare.[44]

---

same time it has a strong (negative) distributional side-effect on consumers: the entire consumer rent is appropriated by the monopolist.

[43] See Przeworski (2003, page 185).

[44] Note, however that in richer theoretical settings (incorporating in particular the political system to vote for redistribution, and the inclusion of individual leisure) the property of Pareto rankability might get lost in general. Benabou (2000) for instance concludes: "*This leads to two stable steady states, the archetype for which could be the United States and Western Europe: one with high inequality yet low redistribution, the other with the reverse configuration. These two societies are not Pareto rankable, and which one has faster income growth depends on the balance between tax distortions to efforts and the greater productivity of investment resources (particularly in education) reallocation to more severely credit-constrained agents.*"

In this context, Sleuwaegen argues that relocalisation of firms between assisted regions is often welfare decreasing due to "subsidy-shopping motives"[45]. By contrast, relocalisation between non-assisted and assisted regions would increase efficiency on average, and can be considered "efficient redistribution".

Similarly, the efficiency property of regional investment subsidies pointed out by Seabright and Besley (1999) only holds when countries are not resource constrained or, as they put it, "the willingness to pay is covered by the endowment".[46] If this assumption is not fulfilled, poor countries will easily be outbid by rich countries independent of whether the investment is most efficient in the region or not. Redistribution may then improve the efficiency of the process of attracting regional investment. [47]

As a result it seems appropriate and – in contrast to merger control or antitrust – necessary to include redistributional concerns in the assessment of state aid measures, e.g. by explicitly addressing the trade-off between equity and efficiency in the general welfare test. In most cases, however, the weighting can only be of a qualitative nature as the pecuniary value of social benefits is often not measurable and entails a social judgment. Nevertheless, those judgements are necessary on a political level. De Graaff formulated, referring to Lionel Robbins, already in 1957: *"…economists do not really mean that interpersonal comparisons are "impossible". All that they mean is that they cannot be made without judgements of an essentially ethical nature."*

The Limits of state aid

More controversial is the issue of how to correct for market failures. There are several significant problems to addressed before one can be sure that state aid is effective and leads to a welfare enhancing outcome.

[45] Sleuwaegen et al. (2000, page 75)
[46] Besley and Seabright (1999, page 48)
[47] Another important example why equity consideration may become relevant is the situation of a country being hit by a demand shock in one of its sectors resulting in unemployment. If employment in the particular sector would go down without state aid, the wage cost becomes part of the total welfare assessment. See for instance Brander and Spencer (1987) or Lahiri and Ono (2004), p.85.

The first issue is measurability. The existence and magnitude of a particular market failure is hard to measure. Consider, for example, granting an R&D aid to a firm in order to create the "right" incentive to innovate. The market failure associated with this kind of aid may be due to the fact that the social return to R&D investment is higher than the private return. The amount of aid needed to correct for the market failure would depend on the difference between the social and the private returns, which in turn depends on a large number of other factors such as market structure, the ability to appropriate intellectual property, the patent system, the importance of the innovation, the R&D production function, to name just a few. In other words, in practice it is almost impossible to determine the precise amount and form of state aid needed. Nevertheless, it is certainly possible to investigate whether a market failure is likely to exist at all and whether it is significant. In other words a qualitative assessment is possible, while a quantitative approach will not be very reliable in most cases.

A second related issue is that the intended benefit of state aid is indeed larger than the costs. State aid is costly and even if one assumes that it is employed in the right kind of situations and in the right manner, it may still not be worth it, especially if its impact is smaller than anticipated (presumably because the market failure is small).[48]

Thirdly, there may be undesirable side effects of state aid. Much of state aid has an impact on the functioning of the market. This may create anti-competitive side effects[49], which may ultimately hurt the consumer. Some of these side effects affect national market participants only; others affect firms or customer in neighboring countries as well. The latter – so called international spillover - will be discussed in more detail in the following section on European state aid control as they provide one of the strongest justifications for a European state aid control system.

A final area of difficulty is termed "government failures". A prominent example is the claim that Governments are not good at "picking winners" either because they lack the relevant information, and/or because they are passing out favors to further their own goals. The literature on political economy has produced a number of insights as to when these informational or commitment problems lead to ineffective policy decisions. [50] The argument

[48] The traditional way to formalize this is to introduce the shadow cost of taxation.
[49] For anti-competitive side effects see also the survey by Fingleton, Ruane and Ryan (1999).
[50] A comprehensive introduction into this literature is provided by Persson and Tabellini (2000).

is based on politicians or regulators pursuing their private goals, which in some circumstances do not coincide with the public goals. For instance, in the so-called "representative democracy model" politicians strive to be reelected and choose their policies accordingly. In this set-up, policies are not always effective in raising social welfare. A particular concern is the existence of commitment problems of governments.[51] To achieve an effective policy, design issues such as accountability and transparency of government become important parameters.[52]

The above discussion suggests that although market failures may be the economic rationale for state aid, the effectiveness of state aid is determined by many other factors. Only in a world where "perfectly informed and benevolent dictator" decide on state aid policies, would one expect state aid to be perfectly effective.

IV The Rationale for European state aid control

This section analyzes the rationale for (supranational) state aid *control*, which is different from the rationale of national state aid. National intervention relates to a situations where there is a wedge between private benefits and social benefits. EU state aid control is needed when "private" (country-specific) benefits of state intervention are not aligned with "social" (EU-wide) benefits. In other words, state aid is about the behaviour of (national) market participants, whereas state aid control is about the behaviour of national governments.

In principle, there are two justifications for a supra-national state aid control. First, cross-border externalities may drive a wedge between national and international interests. Second, insofar as there are national commitment problems, delegating state aid control to a supra-national authority may be beneficial. We will discuss both of them in turn.

[51] Such commitment problems may, for instance, be due to the election cycle: governments may be willing to renegotiate contracts agreed upon by their predecessors, resulting in dynamic inefficiencies.
[52] See for instance Neven and Röller (2000) and Duso (2002) for some empirical evidence. Neven and Röller (2004) provide a model analyzing the design of merger control policy in a political economy framework. See Vickers (2005) for similar views.

Cross-border externalities

Cross-border externalities occur when national governments do not take into account the (negative) side-effect of there intervention on other European states.[53] In the field of European state aid control the literature on 'strategic trade policy' (Brander and Spencer 1985, 1987) provides the most supportive theoretical framework within which such externalities tend to arise. In this literature countries compete with each other in an individual rational, but collectively wasteful subsidy competition, with the prospect to appropriate a larger share of international oligopoly profits. While this concept was originally put forward in relation to export-subsidies, comparable prisoners' dilemma type of situation are common to a broad set of situations involving various forms of state aid, from launch aid in the aviation industry or other types of R&D aid to the attraction of FDI or rescue and restructuring aid.

To give an example,[54] consider a situation in which rescue and restructuring aid is given to a failing firm in one member state producing products for a non-European market and facing competitors located in other European countries. Assume that the industry is in decline, forcing a gradual exit of certain producers. In such a situation exit will typically depend on firms' ability to commit to stay in the industry. A unilateral commitment to subsidize one of the firms can alter the order of exit, and induce the immediate closure of other (non-domestic) firms.

[53] In principle, the same type of reasoning holds for positive externalities like international information spillover. In this case governments may provide insufficient funding from a European perspective or may not support those projects which maximize European welfare (even though they may be regarded as positive).

[54] The classical reference on such type of exit models are Tirole and Fudenberg (1989) and Ghemawat and Nalebuff (1985, 1990). For a survey of the literature, see Neven et al. (2004), pp. 16.

The insights of the strategic trade literature point to the importance of imperfect competition. Under imperfect competition the reaction function of aid beneficiaries is shifted outwards, resulting in less foreign output and higher price levels. On the other hand, in perfectly competitive markets aid to individual firms will affect profits of individual firms but not change the competitive price level and output. Finally, at the other extreme, export subsidies to a monopolist tend to expand output and lower prices towards efficient levels. Overall, we thus have an inverted-"U"-relationship in terms of the most distortive effects in the various market structures.

The second insight is that negative spillovers are a necessary precondition for prisoners' dilemma situations to emerge.[55] Three particular caveats/ extensions should be mentioned when applying this doctrine to European state aid control. First, the strategic trade literature does not take into account the specificities of a highly integrated European market and the general prohibition of export subsidies within the EU. Second, if the externalities become location specific subsidy races may not result in prisoners' dilemma situations. Finally, the literature does not consider other market failures besides imperfect competition.

As regards the first point, Collie (2005, 2002, 2000) extends the traditional strategic trade framework to an integrated economy, that is the subsidized product is not exported to a third non-producing country but produced for consumption in an unsegmented common market between several identical countries. Within such an environment it is no longer firm profits which stir national (and European) interest, but consumers' interest as well: consumers benefit from expanded output and, hence, from lower prices induced by export subsidies. In such an environment Collie shows that the prohibition of state aid is still welfare enhancing if the opportunity costs of funding are sufficiently high and products are close substitutes. These results hold both for Bertrand and Cournot settings (Collie, 2002). Collie therefore extends the result of the strategic trade literature – suggesting a prisoners' dilemma type of situations – to the conditions of an integrated economy. However, if products are highly differentiated the negative impact on competing firms is reduced while the beneficial effects on consumers is increased, resulting in state aid becoming optimal.

[55] See Besley and Seabright (1999, 21).

In sum, negative cross-country externalities are thus a strong justification for a supra-national control system of national state aid measures. So for instance Fingleton et al (2001, p76) advocated an approach emphasizing international spillovers: "*We conclude that a supra-national system of state aid control might be appropriate in order to prevent countries giving aids that have strongly negative externalities on other countries without sufficient positive effects in the home country*."

This conclusion has to be seen inlight of an important argument put forward by Besley and Seabright (1999) in an FDI setting: if countries are heterogeneous and therefore the benefits to attract investment vary over regions, intergovernmental competition to attract FDI can result in an efficient allocation of investment across regions. This result is established within a multi-auction approach (à la Bernheim and Whinston 1986a) where regions can provide 'bids' contingent on firms' investment decision. Despite the existence of negative externalities between regions intergovernmental subsidy competition may induce an efficient outcome. The broader policy conclusion drawn by the authors is the relevance to focus on the institutional particularities of intergovernmental subsidy competition – issues like accountability, commitment capability in a dynamic context or institutional restriction on bidding come into the focus of assessment. Those issues will be addressed further below.

National commitment problems

A second justification for European state aid control is based on a potential commitment problem faced by national governments. Kornai (1980) called this problem the "*soft budget constraint*". The idea is that Governments cannot commit to a fixed budget *ex ante*. In this situation firms have smaller incentives to become efficient, due to the commitment problem of the government. In other words, they know that the Government will have no choice but to bail them out, which is exactly what will happen in equilibrium. As a result efficiency and welfare is reduced.[56].

[56] See Kornai et al. (2003) and Dewatripont and Maskin (1995). An example of this is the Hungarian economy in the 1970s. Hungary, at that time still a socialist economy, was experimenting with the introduction of market reforms. Despite the introduction of incentives for State owned firms to maximize their profits, firms were always bailed out when exhibiting long term losses. This "insurance against bankruptcy" resulted in severe dynamic inefficiencies.
As another example, consider a bank providing a credit for a private investment project (for instance the expansion of a national firm into a neighboring EU market). The project could be of two types – a less profitable one which exhibits a negative net present value and a profitable one exhibiting a positive net present value. The

Dynamic commitment problems of such a type induce important economic inefficiencies – not only for transition economies. They are common problems in rescue and restructuring cases, but equally important for regional measures where national governments "bail-out" regional governments, under R&D schemes where inefficient start-ups or R&D projects receive on-going funding due to such dynamic commitment problems. Similarly, it has been reported that many projects that start off as public-private partnerships (PPI) continue, after some years, as fully public entities.

An important question in this context is whether national commitment problems justify intervention by a supra-national authority. Are they not a purely national problem and – perhaps even more importantly – can a supranational control authority solve the problem?

Assume for a moment that the economic effects are de facto national, that is, the aid beneficiary operates on a local national market. Kornai (1980) defined two conditions for commitment problems to arise in such a context: first, the possibility for the beneficiary to renegotiate the terms of the funding ex post and second, the existence of a close administrative relationship leading to some form of regulatory capture. Whether these conditions are met in the context of European state aid control is a matter of debate. It may be argued that the European Commission is less able or possibly even less willing[57] to enter into ex post renegotiation than national governments would. The closeness of the administrative relationship, relates to the issue of whether national governments are more prone to lobbying than the European Commission, which may be more distant from national firms' interests.

---

bank cannot observe the profitability of the project when deciding about the credit approval. After the investment the bank observes the project's profitability. In case the project is not profitable the bank has two options. It can close down the firm or grant a second credit. Depending on the parameters it is profit maximizing for the bank to provide a second credit in case of a bankruptcy of the company and thereby recover some of its losses on the first credit. In a dynamic context this is fatal, however. Managers (who know the profitability of the project ex ante and have some private benefits in keeping the project alive) are willing to propose unprofitable projects taking into account that the bank will bail them out later, if need be. Thereby ex ante inefficient projects are implemented. Note that this commitment problem may arise in a purely profit-maximizing environment, but will be exaggerated if the funding source is not a profit maximizing entity.

[57] A supra-national authority may have higher reputation losses inducing potential welfare gains. This may be the case as the Commission has to approve measures such as rescue and restructuring aid on a regular basis while national governments provide those means less often. Furthermore, a negative European precedent results in dynamic inefficiencies across Europe changing the relation of short term benefits (which are national only) and long term losses in dynamic incentives (which are Europe-wide).

Another aspect to consider is that a supra-national institution may be better placed to spread "best-practice", or even ensure consistency across jurisdictions, thereby increasing the efficiency of aid funding authorities.

In sum, a supranational institution may in principle be an instrument to solve national commitment problems. The extent to which national commitment problems are a justification for supranational state aid control remains controversial, however. While the Commission may be better placed so resolve commitment problems, it may also be less well informed about national circumstances.

Internal market rationale

The internal market is one of the pillars of the European Union. It is based on the rationale that a more integrated European market will - by increasing competition and by allowing companies to restructure and achieve scale - promote economic growth.[58] Given this view, national state aid measures are counterproductive, because they not only directly harm other countries (the basic externality argument) but also undermine the functioning of the European internal market.

Supranational state aid control can be thought of as a commitment device to a principle – the internal market principle – which is in everybody's interest ex ante, but difficult to abide by ex post. Inefficient national industries or firms often go hand in hand with a slower liberalisation process. Member states are reluctant to open-up their markets when national incumbents are not "fit" for competition. State aid control can play a vital role in breaking such cycles. The internal market objective provides a justification for the Commission to intervene into such.

In line with this reasoning, Biondi and Eeckhout (2004) point to the priority of internal market considerations: "….. the assumption upon which the entire reasoning is based is the recognition that both sets of rules *[internal market v state aid rules]* are pursuing an identical

[58] See also Midelfart-Knarvik et al (2002), page 325.

aim, namely that of ensuring the free movement of goods under normal conditions of competition."[59]

V The policy standard for assessing state aid at the European level

The first step towards a more refined economic approach is to define a relevant policy standard in the assessment of state aid measures. Recall that Article 87(1) EC prohibits state aid measures which distort competition, insofar as they affect trade. Article 87(3) EC identifies a number of conditions under which state aid measures are compatible, which relate to both economic development and social and regional cohesion objectives. The common element underlying these conditions is that the measure should be in line with the "common interest". The crucial question is what interpretation should be given to the concept of common interest, i.e. what is the relevant standard for assessing whether an aid measure is in the common interest?

In this section we argue that maximizing total (European) welfare, subject to redistributional objectives, is the proper interpretation of the concept of "common interest". As a result, we advocate an approach which differentiates between a total welfare approach – defined as the sum of consumer and producer surplus - and a "social welfare function" approach, which takes redistributive concerns into account. In other words, we propose to separate efficiency and equity objectives. Much of what economists can say is about efficiency (e.g. that state aid has the potential to increase efficiency if and only if market failures are addressed). With respect to distributional objectives, economics can provide certain guidance, while minimizing the cost in terms of efficiency (or even to identify measures which can contribute to both). To be clear about this trade-off is an important element in properly identifying measures that are on the common interest.

The remainder of this section will address the appropriate policy standard for assessing economic efficiency. We do not assess the relevant standard under equity considerations. This does not imply that the equity considerations are less important. In developing our

[59] Biondi and Eeckhout (2004), page 108.

arguments, we begin by commenting on the "consumer welfare standard" approach in the context of other areas of competition policy (in particular in Article 81 and merger control) and then focus on state aid.

Policy standards in other fields of competition policy

Let us begin by recalling that other fields of competition policy – notably antitrust and merger control – have converged in recent years to what is, by and large, a consumer welfare standard. In the context of Article 81, the Commission holds that "[t]he objective of Article 81 is to protect competition on the market as a means of enhancing consumer welfare and of ensuring an efficient allocation of resources"[60]. The reference to "efficient allocation of resources" could be interpreted in terms of total welfare. However, given that Article 81(3) explicitly refers to "consumer benefit", it appears that the Commission is to focus on consumer welfare[61].

In merger control, the emphasis is now firmly on consumer welfare. The recently adopted Merger Guidelines indicate that "[e]ffective competition brings benefits to consumers, such as low prices, high quality products, a wide selection of goods and services, and innovation. Through its control of mergers, the Commission prevents mergers that would be likely to deprive customers of these benefits by significantly increasing the market power of firms. By 'increased market power' is meant the ability of one or more firms to profitably increase prices, reduce output, choice or quality of goods and services, diminish innovation, or otherwise influence parameters of competition"[62]. In the context of the analysis of efficiencies claimed by the merging parties, the Guidelines specify that the "relevant benchmark in assessing efficiency claims is that consumers will not be worse off as a result of the merger"[63].

---

[60] Guidelines on the application of Article 81(3) of the Treaty, Official Journal C 101, 27.04.2004, pages 97-118, at para 13. See also Lars Kjoelbye (2004).

[61] It should be mentioned that the overall EU "market integration" objective plays a role in the application of Article 81, especially in the context of territorial restraints. In addition to not reducing consumer welfare, agreements between companies should not add to segmentation of national markets. To a certain degree, the two objectives are aligned (*see* Luc Peeperkorn (1999), p. 65).

[62] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings [Merger Guidelines], at para. 8.

[63] Merger Guidelines, at para. 79.

It is worth reflecting on the rationale put forward in support of a consumer welfare standard in these areas (as opposed to a total welfare standard). In principle, economists advocate a *total* welfare standard – an approach going back to Williamson's analysis in the late 1960s – which encompasses a balancing of rents to producers and consumers. Nevertheless, there are several arguments in support of a consumer approach. These are based on the following considerations: (i) informational advantages (ii) merger selection bias, (iii) and lobbying activities. In addition, a consumer standard is considered to be easier to implement.[64] It is important to emphasized that none of the rationales for a consumer standard are normative. Instead, it is the presence of regulatory imperfections or regulatory failures, which can justify the consumer standard. In particular, such imperfections can turn a consumer standard into the standard that in fact maximizes total welfare.

We now review the arguments briefly in more detail, starting with informational advantages by firms. Besanko and Spulber (1993) argue that consumer welfare should have more weight in merger assessments in order to counterbalance an underenforcement-bias due to asymmetric information (in particular, the authority has less information regarding efficiencies). The basic idea is a commitment problem that emerges under a total welfare standard, as firms propose mergers that exhibit relatively large efficiencies. As a result of the asymmetric information, a lower probability to block mergers becomes optimal *ex post*, leading to under-enforcement from a total welfare perspective. The underenforcement can be avoided by the agency committing to a consumer standard *ex ante*.[65]

The second line of argument - a selection bias - starts from the observation that competition authorities can only assess mergers that are notified (see Lyons (2002)). Under a total welfare standard, firms will put forward mergers which meet the total welfare test only marginally but maximize firm profits. Inasmuch as profits and consumer rent are negatively correlated, it will not be the total welfare maximizing mergers which will be put forward by firms. Implementing a consumer welfare standard may counterbalance this bias.

[64] Werden (1996), for instance, argues that the assessment of a differentiated product merger by the enforcement agency is made much easier under a consumer standard because an estimation of firms' profits requires additional, strong assumptions about the functional form of demand. Ilzkovitz et al (2001) mention the problems in assigning the European part of firms' profit under a (European) total welfare standard.

[65] A related argument is put forward by Lagerlöf and Heidhues (2004). They analyse the incentives of firms to deliver verifiable but costly information on efficiencies under different merger control regimes. As it is the firm which decides on whether to collect the information or not, efficiency assessments is carried out in favourable cases only. They conclude that an efficiency defence is optimal from a total welfare perspective in case of (high) efficiencies resulting in price reductions post-merger (so that the merger would meet a consumer standard).

Finally, Neven and Röller (2005) analyze a political economy environment using a common agency framework (see Bernheim and Whinston, 1986b) where firms (both merging firms and non-merging competitors but not consumers)[66] can provide inducements to the enforcement agency (the common agent) which are contingent on the outcome of the merger review. They show that - under certain institutional settings - a consumer standard maximizes total welfare. In particular, an institutional environment of low transparency (which allows effective lobbying) and low accountability of the agency implies that a consumer standard is superior to a total welfare standard.

In sum, there are a number of arguments that support a consumer approach in merger control. Whether these arguments carry over to the field of state aid control is an open question, which we now turn to.

The policy standard in the field of state aid control

As we have mentioned above, total welfare is the appropriate standard as far as economic efficiency is concerned. Nevertheless, in certain political and institutional environments, a consumer standard may maximize total welfare. Before investigating this issue in state aid, let us note that in contrast to other areas of competition policy, total welfare in state aid does not only include the sum of producer and consumer surplus, but also the cost to tax payers. This is an important difference to other of competition policy and we will return to this later.

We begin by asking whether the standard in state aid should be based on a total or a consumer welfare. Given the above discussion the answer will depend on whether there is a potential bias (as under merger control) inherent in the welfare standard that is likely to be reduced or avoided by a consumer standard.

[66] The assumption that consumers are underrepresented in merger proceedings is supported by two arguments. First, consumers may not be well informed about the consequences of proposed mergers and accordingly may not be able to formulate their interest appropriately. Second, consumers may face prohibitive transaction costs in representing their interests. These costs could be associated with the traditional problems of free-riding and collective action with numerous agents.

As we mention above, one of the distinguishing features of state aid control is that the Commission deals with member states and not with firms. Information as well potential lobbying efforts run from the aid beneficiary (the firms or the industry favoured by the measure) via national government to the Commission. To the extent that state authorities are prone to be captured by individual interest groups, the Commission is confronted with governments supporting vested interests (the beneficiaries of the aid). Moreover, given the institutional architecture of the European Union, it is likely that governments influence and bargaining powers *vis-à-vis* the Commission is not smaller than individual firms. Hence, there is an institutional risk that distorted interests are carried forward, via national governments, to the Commission.

In terms of systematic empirical evidence there are not many studies to our knowledge that investigate the political economy of European state aid control. One example is the study by Neven and Röller (2000), who investigate the political economy of state aid allocation. They find that the allocation of state aid can be explained to a very large degree with political and institutional variables. Even though the evidence provided is not based on any structural estimation, it is nevertheless striking that most of the variation is due to non-economic factors.

A related question is then whether national governments are more likely to support certain types of vested interests. The OECD roundtable on subsidies and state aid in 2001 concluded that domestic opposition to subsidies is relatively low, while domestic support is relatively large as long the negatively affected firms are located in a foreign country. Furthermore, as in other fields of competition policy, the aid beneficiaries tend to be concentrated, while the negative externalities tend to be spread widely over the population. All this suggests that national governments are more likely to support national producers.[67]

Overall, we believe that there is significant evidence that the political pressure in state aid is substantial, and certainly not lower that in other areas of competition policy. In addition, it appears that national governments are more like to support domestic producers, rather than domestic consumers (and obviously not foreign interests). Moreover, it is also unlikely that non-domestic rivals are underrepresented in the political process. Given this bias, we argue

[67] OECD (2001), p.8

next that decision making at the EU level can benefit from more emphasis on consumers for similar reasons as in merger control: informational disadvantages, selection, and lobbying.

With regard to the informational disadvantages, the Commission investigative powers to collect market information are rather limited in state aid. In the first phase of the investigation – before opening of the "formal investigation procedure" – information exchange is purely channelled through the aid granting member state by the notification process (it may be triggered by a third party complain, however). After opening the formal investigation procedure the consultation of third parties is carried out by publication in the EU's Official Journal asking for third party comments. A more direct exchange (as in hearings) or a proactive market inquiry is not envisaged, even though not excluded either.[68] In any case, a legal instrument to facilitate the collection of market information through third parties does not exist. As far as selection bias is concerned, note that the Commission can only assess state aid measures that are notified.[69] Hence, under a total welfare standard member states would select measures which marginally meet the total welfare standard, yet maximize domestic producer surplus.

Finally, with respect to the lobbying bias, recall that the political economy literature shows that a government takes efficient decisions either when the government is benevolent itself (i.e. it is immune to lobbying) or when *all* affected parties are represented by a lobby.[70] Given that consumers are not fully represented, it follows that a total welfare standard would be biased.

In sum, the main arguments put forward in the literature on merger control in favour of a consumer standard appear also valid in the context of state aid control. As a result a consumer

[68] Paragraph 8, Council Regulation (EC) No 659/1999 of 22 March 1999 states: *"…the formal investigation procedure should be opened in order to enable the Commission to gather all the information it needs to assess the compatibility of the aid and to allow the interested parties to submit their comments…"*

[69] Note that a selection bias can justify European funds, as the Commission proposes and selects measures which maximize European welfare.

[70] In the latter case, a balanced lobbying process results in an "efficient lobbying equilibrium", where national interests are neutralized by the other parties' lobbying effort For instance, a recent working paper suggests that the "empirical puzzle in the literature concerning the apparently nearly "welfare-maximizing" behavior of the US government in setting trade policy" can partially be explained by efficient lobbying competition. See Gawande and Krishna (2005). An introduction to this literature is provided by Persson and Tabellini (2000), 172pp. The standard common agent model – on which most lobbying models build upon - was developed by Bernheim and Whinston (1986); an application to trade issues is developed by Grossman and Helpman (1995).

standard - rather than a total welfare approach – seems more prudent. In other words, a consumer surplus approach is better suited to increase total welfare than a welfare standard.

A possible criticism of the consumer standard might be that state aid measures always affect consumers positively. For example, a production subsidy will result in an output expansion and a reduction in prices. In other words, assuming some market power *ex ante*, output moves towards the welfare optimum, thereby increasing allocative efficiency.[71]

However, note that the positive correspondence between aid and consumers does not hold when tax payers are included in the standard. As a result we propose that the opportunity costs of funding, that is, both the direct cost of the subsidy and the deadweight loss due to distortionary taxes, need to be included in the standard for state aid. Collie (2005, 2002, 2000) has shown that within such an environment, state aid control enhances total welfare for reasonable estimates for the opportunity cost of funding. Note that Collie's results are derived under a total welfare standard, but apply equivalently under a consumer standard.

By including tax payers, a consumer standard ensures that state aid is effective in changing firms' behaviour, increasing allocative efficiency, and not simply a windfall profits. This issue (also called the "incentive effect") is crucial in many areas of state aid – for instance, in state aid directed towards firms' location decisions or whether R&D aid results in crowding out or crowding in of private investment. In all these cases, a consumer standard is a significant safeguard to ensure the effectiveness of aid measures.

A further aspect of the effect of aid on consumers relates the anticompetitive conduct that the aid might trigger. As a result, the short-run and the long-run impact on consumers may be very different. As in other areas of competition policy, short-run benefits might translate into long-run losses, if aid leads to exclusionary conduct. If aid is used to predate rivals or to prevent exit, short term lower prices have to be compared to possible future increases. Even in the short-run, aid may not always benefit consumers if it leads to anticompetitive

[71] In case of a monopoly setting, these arguments converge into the classical regulation literature on 'natural monopolies'. A production subsidy driving prices down to marginal cost minimizes the deadweight loss associated with monopoly and is welfare enhancing as long as the benefits to the customers exceed total cost. See for instance Viscusi et al. (2000), Chapter 11, for an introductory discussion. For an analysis within an oligopoly setting see Garcia and Neven 2004.

behaviour, such as when aid forecloses or marginalizes foreign competitors. Incumbents that cross-subsidize competitive segments may deter entry and harm consumers in the short run.

A related question is whether a consumer standard in state aid is tougher than a total welfare standard. In general this will depend on how the aid affects firms' profits. Firms' profits are composed of two groups: beneficiaries and rivals. Under most standard assumptions, it stands to reason that the beneficiary benefits, while the rivals are being harmed. Whether aggregate industry profits are increasing depends on the precise circumstances. Nevertheless, to the extent that subsidies increase industry profits, a consumer standard would be tougher, i.e. all aid that is compatible under a consumer surplus standard would also be compatible under a total welfare standard, but not the reverse.

Let us briefly turn to two other possible standards often cited in state aid: the effect-on-rivals and the internal market standard. The effect-on-rival standard is closely linked to the idea of a level playing field.[72] The idea of a 'level playing field' strives to achieve *ex ante* fairness: a measure is not distortive if it leaves the market position of all competitors unchanged. From a conceptional perspective this approach could essentially lead to all aid being bad, since the inherent objective of most aid measures (and in fact the legal definition of it) is to change the relative market position. In this sense, the effect-on-rivals standard is consistent with the presumption that state aid is illegal.

However, the effects-on-rivals standard does not directly assess the effect of an aid measure, on either markets, competition or consumers. On the other hand, an effect-on-rivals standard might be closely linked to a consumer standard in more dynamic settings. At this point one can not help but mention the similarities with the debate of "competition on the merits" as well as "protecting competitors vs. the competitive process" surrounding the Article 82 reform. There are, however, important differences here[73]. The conduct in question in state

[72] Biondi and Eeckhout (2004, p.105) summarize the internal market jurisprudence by stating that "in a nutshell, the language of free movement is one of discrimination, obstacles, and market access". These are the same elements one would assess under an 'effect on rivals' approach trying to establish an equal, non-discriminatory level playing field. Due to the closeness of the two concepts we will use the two terms interchangeably.

[73] Furthermore, in those situations where the relative positions of competitors are strongly affected, lobbying efforts of firms may be high, justifying a more careful assessment by the European Commission. The argument was put forward by Garcia and Neven 2004, page 10. Note that in contrast to a welfare reducing horizontal merger, rivals' interests are not aligned with the aid beneficiary's interests. Unlike in those mergers, profits of competitors not benefiting from the aid measure are usually always negatively affected. Hence, the criticism that has been made in the context of merger control, namely that the Commission protects competitors at the expense of comsumers, can not apply in state aid.

aid is not by private firms, but by Governments. In this sense, an approach that minimizes the impact on competitors might be more justified. An advantage obtained through state intervention (and not through superior performance) is likely to reduce incentives to compete. In other words, the effect-on-rivals is can be a proxy for the negative impact on consumers in a dynamic sense. The greater the negative impact on rivals, the more likely it is that consumers will be negatively affected in the longer run.[74]

Finally, the internal market standard. This standard is usually not associated with balancing positive versus negative effects of a particular regulation. Rather, it is often interpreted as one where any obstacle to the internal market is prohibited.[75] This *per se* approach makes it difficult to use the internal market standard as an overarching standard in the field of state aid, as it does not recognize potential benefits of aid both at the national and the European level.

In sum, we see merit in a standard that emphasises consumers and tax payers as the ultimate objective of state aid. The effect on rivals could play a role in terms of understanding the dynamic effects of state aid (such as keeping inefficient firms alive). However, as a final objective we do not think that the effect on rivals standard should be emphasized, since it is unlikely that rivals are under-represented in the political process.

VI Elements of a general framework – towards an effects-based approach

In this section we outline some elements of a framework for the assessment of state aid measures. State aid control is about functioning of markets as an essential element in providing consumers with better products at low prices. There is a particular concern with state aid measures, which give firms advantages that are not rooted in superior skills. Such state aid measures may prevent or delay market forces, thereby decreasing dynamic efficiency. Furthermore, state aid may lead to market power, which may be used to foreclose rivals (often non-domestic firms), or erect entry barriers. In addition, state aid may adversely

[74] This correspondence has led Martin and Strasse (2005) to propose a consumer welfare standard for assessing state aid. Under their approach, a positive impact on consumer welfare in the long run is taken as an indication that the aid measure benefits the competitive process and is unlikely to harm rivals in a significant way.
[75] See Biondi and Eeckhout (2004, p.108).

affect the trading conditions in the EU by artificially shifting trade flows or influencing location decisions to the detriment of other member states. As a consequence, wasteful subsidy competitions may arise.

Recall that state aid that affects trade between member states and distorts competition is prohibited under Article 87(1), unless the European Commission declares the aid compatible with the common market under Article 87(3). As mentioned above, we propose to interpret the meaning of "common interest" as encompassing two fundamental aspects, efficiency and equity. As a result, an appropriate starting point in any assessment of state aid is to ask whether there is a market failure or an equity objective. This transparency vis-à-vis the objective of the aid measure is needed to assess the effectiveness or necessity of the aid. Moreover, transparency between efficiency and equity is essential in order to assess possible trade-offs between the two objectives.

An important question is whether the concepts of "distortion of competition" and "effect on trade" are necessarily identical under Article 87(1) and Article 87(3). Article 87(1) has an important *jurisdictional* dimension, which is based on spillovers across member states. In particular, the mere *existence* or likelihood of an effect on non-domestic rivals is relevant under Article 87(1). Such an approach may be reasonable, as long as the *magnitude* and *importance* of these effects are assessed under Article 87(3).

A structured assessment of state aid measures: the balancing test

We propose an effects-based approach in state aid through a "*balancing test*". In particular, we suggest a 3-step test for assessing the compatibility of a state aid measure under Article 87(3):[76]

- *(a) Is there a market failure or another objective of common interest? (e.g. social or regional cohesion)*
- *(b) Is the aid measure targeted, i.e. does the proposed aid address the market failure or other objective? In particular,*
    - *i. is the aid measure an appropriate instrument, i.e. are there other, better placed instruments?*

[76] See also the Commission's *State Aid Action Plan*, Less and better targeted state aid: a roadmap for state aid reform 2005-2009 (Consultation document), http://europa.eu.int/comm/competition/state_aid/others/action_plan

ii. *is there an incentive effect, i.e. does the aid change the behaviour of firms?*

iii. *is the aid measure necessary, i.e. could the same change in behaviour be obtained with less aid?*

(c) *Are the distortions of competition and effect on trade limited, so that the overall balance is positive?*

Fundamentally, the test balances the positive and negative effects of state aid. This can be done by first analyzing the "benefits" of a state aid measure through (a) and (b). Finally, the "cost" or negative effects of an aid measure are assessed under (c), including the balancing.

Before commenting on the three legs in more detail, let us mention one other issue. It may be argued that when state aid is properly used to solve a market failure (parts (a) and (b)) then there is no "real" distortion of competition anymore (there may be a distortion of competition in the strict sense of Art. 87(1), but not in the sense that there are concrete negative effects against which the positive effects of the aid measure have to be balanced). In other words, some form of "integrated" approach would seem more appropriate, leading to a two legged test rather than a three legged test.

We believe that the idea of balancing two sides under the compatibility criteria - that is, to distinguish positive and negative elements in the sense of a cost-benefit analysis - is a more practical approach.[77] The notion of "distortion of competition/ effect on trade" are legal terms describing the negative side of aid, with "common interest" the positive side. Solving market failures or addressing cohesion objectives adds to the positive side, while introducing (new) distortions is a negative. Moreover, in practice the two sides are often separable and the 'integration' can be done under the balancing in (c). Consider the following example:[78]

Example: Environmental Aid

A pipeline for the transportation of a chemical product A is built with public support. Suppose that state aid is justified because the pipeline reduces the risk of environmental damage relative to other means of transportation, such as motorways. Consider two types of distortion of competition. Suppose product B, which is a close substitute for product A in the downstream market, can not use the pipeline for technical reasons. The public funded pipeline

[77] See for instance Stiglitz (2000), Chapter 11.

[78] These stylized facts are derived from a case concerning aid for the construction of a propylene pipeline between Rotterdam, Antwerp and the Ruhr, see Commission decision of 16 June 2004, case C67/03, OJ L56/15 2005. The example is, however, not to discuss the merits of this particular case but to explain the general idea.

therefore puts producers of product B at a competitive disadvantage, which is the first distortion. A second distortion comes in because the pipeline competes with other modes of transportation, such as waterways.
The first type of distortion is separable from the issue of the market failure. As a result, whether one chooses an integrated approach or not is irrelevant. The second distortion, however, is closely linked to the market failure. If one chooses and integrated approach, one would not call the second "distortion" distortive, since it simply corrects a market failure. If one chooses our balancing approach, one would call it distortive, but it would be balanced against the possible positive environmental benefits. Again, the end result is the same

The example illustrates that some distortions are inevitably linked with market failures, while others are a side-effect (new market failures). However, it also shows that there is no problem in identifying both effects as a distortion in the legal sense of Article 87(1) and leave it up to the final balancing under Article 87(3) to decide on compatibility.

We now discuss the individual legs of the test in more detail.

Assessing the benefits – legs (a) and (b) of the test

An obvious starting point in any case assessment is to ask whether there is a market failure or an objective of common interest (leg (a) of the balancing test). Only if there is a market failure, can a measure the ability to increase economic efficiency. Furthermore, addressing efficiency and equity upfront, clarifies possible trade-offs between the two. Most importantly, the existence of a market failure or a cohesion objective, is *necessary but not sufficient* condition for state aid to be effective and appropriate. This is why leg (a) of the test is only a necessary condition and that is why it makes sense to ask this equation before proceeding.

Leg (b) ensures that the aid targets the market failure or achieves another common interest objective, i.e. it asks whether the aid solves the problem. This issue is also often referred to as the problem of Government failure. Specifically, building on past practice in state aid control, the test addresses three aspects. The first part of leg (b) asks whether the aid instrument is the *appropriate instrument*. In other words, it asks whether there are other, better placed instruments, which are either more effective or less costly in reaching the objective chosen. Clearly, a certain type of state aid measure may not be the most effective way at achieving the stated goal. There are other government instrument – inside and outside state aid – that might

be better placed to improve the functioning of markets or achieve a social objective. From an economic point of view, many different policies outside state aid can be thought of, such as infrastructure provision, education, labour market policy and product market regulation. Similarly, problems of regional or social cohesion can be addressed through state aid, but also through other, possibly more generic policies. How far the net should be spun in terms of a search for better placed instruments is a matter of policy decision. At a minimum alternative measure inside state aid should be assessed.

The second part of leg b. asks whether there is an *incentive effect*, i.e. does the aid change the behaviour of firms. Without an incentive effect, firms behaviour is not affected and consumers are not affected either, since the aid is simply transferred from the tax payer to the firms. Note the crucial role that a consumer standard plays in this context. If there is no incentive effect, there can not be any benefit to consumers, hence the necessity of the incentive effect. In this sense, the consumer standard (as operationalized by the incentive effect) is a safeguard against windfall profits to firms.

The issue of the incentive effect is related to, but not identical to, the third part of leg (b), While the second part asks whether the aid measure will result in the company adopting the required behaviour, the third part asks whether the same change in behaviour be obtained with a lower amount of aid. The second question thus relates to the *impact* of the state aid measure, the third to the *efficiency* of the state aid measure.

When assessing the benefits of an aid measure, different questions will arise depending on the objective that is pursued. An example under the risk capital guidelines might be instructive at this point.

Example: Risk Capital Scheme

Consider a risk-capital fund (created with public money) which is financing the earliest phase of enterprise formation, the seeding phase. Why could public funding of such type of activity be justified from a market failure perspective? Assume that the expected return on investment is very low, or even negative. By contrast, suppose that the provision of risk capital at later stages is highly profitable. If firms cannot write complete contracts committing themselves to stay with venture capitalists throughout the different stages of development, there may be cream skipping: private venture capitalists provide funding for later stages only and free-ride on early fund providers.

Based on this market failure, an in-depth assessment of the measure is possible. First, it has to be assessed whether there are other, better placed instruments than state aid available. Could, for instance, a relatively simple change in financial market regulations solve the problem due to "incomplete contracts"? Second, it does the aid measure change the behavior of private investors, so that the objective is reached, that is, does the measure attract ("crowd-in") additional private funds by solving the bottleneck in the seeding phase of funding? Past examples of successfully implemented schemes can be useful evidence in support of the case. Finally, it has to be assessed whether the same change in behavior could have been obtained with less aid. This involves questions relating to the endowment of the fund, as well as the financial conditions under which funding is provided to start-ups.

Another example might be a regional development scheme. The objective here is on whether the scheme leads to higher levels of economic activity in the region, an objective which is in principle not a market failure objective. Nevertheless, even when one is concerned with regional or social cohesion, it is possible that targeting market failures is the best way forward, as certain state aid measures may well be capable of pursuing both efficiency and equity rationales at the same time. Using state funds to resolve market failures in disadvantaged regions has the effect of both increasing economic efficiency and fostering regional cohesion within the country.[79]

Example: Risk Capital Scheme (continued)

Consider a risk-capital fund set up in a less prosperous region of Europe[80]. Assume that due to exogenous factors - such as political instability- both the amount and the conditions at which private risk capital is provided are less favorable than in other regions. The number of start-ups and fast growing SMEs is smaller than in regions of comparable size. In such circumstances, providing public funds to develop the regional risk capital market can be a sensible policy instrument for more economic activity and growth in this region. Experience of other regions with comparable shortcomings could give some guidance.

Three further points should be emphasized when assessing the benefits of aid measures: First, the concept of market failure is still a relatively broad concept. There are several market failures that can be argued. State aid control should however concentrate on a small set of well-defined market failures and specify those clearly in its guidelines.

[79] Another concern is that regional aid does not go against regional comparative advantages. See the work done by Middlefart-Knark (2002) who argue – based on an empirical analysis of European and national regional aid measures – that those measures did not become effective as they went against regional comparative advantages.
[80] These stylized facts are derived from two UK risk capital cases. See note […] above

Second, market failures are difficult to measure. We therefore suggest that the empirical assessment should focus on whether the underlying conditions for a particular market failure do exist (such as, doe'incomplete contracts' exist? Is the return on investment for seed capital negative?) and whether the market outcome is consistent with the existence of a market failure (for instance, whether the private market for seed capital is underdeveloped as compared to regions not affected by this market failure).

Third, as already mentioned, the focus and depth of analysis depends on the particular area of state aid. For instance, the incentive effect is a particular concern in cases of environmental aid, regional investment aid, and R&D. Appropriateness of the aid is of particular concern in the context of regional investment aid. For instance, some labour market policies, infrastructure development, or improved stability of the regulatory and legal environment are in most cases more important elements of an effective policy to attract regional investments.

Assessing and balancing the negative effects – leg (c) of the test

Even if a state aid measure targets a defined market failure (leg (a) and (b) of the test), it may cause significant distortions of competition in the EU (in other words the aid may introduce other types of market failures). For this reason, the overall balance needs to be assessed, which is done under leg (c). A proper balancing would seek to identify and analyse the effects on competition and on trade. Not all forms of state aid are likely to distort competition in an appreciable way. This insight is particularly important in the context of Article 87(3), where the balancing is to take place.[81] We begin by defining a typology of theories of harm and then mention possible criteria that can be used in the assessment.

A typology of the distortions of competition

We propose to differentiate between two main types of distortions of competition. First, aid may be distortive by reducing *effective competition* between firms, which can be done in three

[81] As indicated above, the mere *existence* or likelihood of an effect on non-domestic rivals is the relevant criterion under Article 87(1). Under Article 87(3) it is not the existence but rather the *magnitude* and *importance* of these effects in terms of welfare which becomes relevant for the analysis of whether the aid measure is in the "common interest" of the EU or not.

different ways: supporting inefficient firms, distorting dynamic incentives, and increase market power. Second, aid may distort competition *between* Member States in that it *shifts production or influences location decisions* of firms. We will address these in turn.

(i) Reducing effective competition by supporting inefficient production

The first and potentially very harmful effect is that state aid keeps inefficient firms or sectors alive. Consequently, it negatively effects productive efficiency, as well as on consumer welfare. Examples include state aid to rescue firms in financial difficulty, financial arrangements in the electricity sector whereby state bodies purchase power at inflated prices which cements incumbency independent of effective competition, sector specific aid (e.g. to outdated technologies), as well as aid to particular regions which may be used to allocate production factors inefficiently across regions.

(ii) Reducing effective competition by distorting dynamic incentives

State aid may alter the investment incentives of firms, thereby decreasing dynamic efficiency and consumer welfare in the long run. For example, "soft budget constraints" problems might erode firms' incentive to become efficiency. If investments are strategic complements, non-assisted rivals may react to the lower investment level of the aid beneficiary by decreased investment as well. As a consequence, overall investment level in the industry will decline to the detriment of consumer. Alternatively, the state support may increase investment levels by the recipient firm and, if investments are strategic substitutes, lead to a reduction of investment levels by rivals.

(iii) Reducing effective competition by increasing market power - exclusionary practices

State aid measures can be used to increase market power by a single firm (or a group of firms). As a result, firms may use the market power to charge higher prices, erecting entry barriers and foreclose actual or potential competitors. For instance, if funding of public R&D is done through large incumbent firms, R&D competition may be significantly impeded, subsidizing firms in their "home market" may trigger that the resulting monopoly profits are used for expansion into foreign markets; the provision of subsidized products may reduce the production cost of non-subsidized products, and finally state aid may create entry barriers for competitors active in the non-subsidized market.

(iv) Distorting production and location decisions across Member States

By supporting domestic production and in attracting foreign investors, member states directly intervene in the international allocation of resources, thereby affecting trade flows and potentially inducing a shift in the localisation of economic activities across Member States. In principle, two main concerns can be identified: First, trade may be affected in that the aid measure affects trade flows in goods and services in the EU, taking location choices as a given. Second, aid measures may alter the location of productive assets in the EU.

In both instances, national governments may have an interest in supporting domestic production and in attracting foreign investors, because of the positive implications for employment, tax revenues and business environment in the Member State. These measures may result in an inefficient production structure throughout Europe. In addition, these measures may create negative spillovers for other Member States when the good or service is traded. Such type of negative international spillover may induce subsidy races between member states. Subsidy races are in many instances socially wasteful – in particular if the distortionary effects of taxation are taken into account.

Criteria for assessing the negative effects of state aid

After having identified the distortions of competition - or if one likes the "theories of harm" - we need to assess the significance of these negative effects. It should be emphasized that the distortions of competition becomes relevant only to the extent that they significantly affect trade in the EU. In other words, state aid measures that increase market power but distort effective competition only at a local or regional level, should be assessed positively at the EU level.

We now describe a number of potentially relevant elements for assessing the significance of the distortive effects of aid measures and their effect on trade. We identify three main groups of criteria: procedural aspects of the granting process, market characteristics and criteria linked to the amount and type of aid.[82]

[82] For a similar list of indicators see OFT (2005); for a discussion of the criteria within a theoretical framework see Garcia and Neven (2004).

(i) procedural aspects of the granting decision

The level of distortion of an aid is likely to depend on procedural aspects of the granting process such as:

- selectivity of the process
- aid schemes vs. ad hoc aid
- open tender procedure

Aid measures may have strong potential to distort competition insofar as the granting process is not transparent and does not follow an open and non-discriminatory procedure. In such cases there is potential that aid measures may be designed to support national champions. Accordingly, aid schemes tend to be less distortive than ad hoc aid measures. Open tender procedures are to be regarded less distortive as well.

Even though aid schemes may be on average less distortive than ad hoc aid, they are not without effect. Specific selection factors may exist, which result in de facto selectivity for a small group of firms with significant market power or potential to obtain significant market power as a result of the measure. This may in particular be the case if the measure addresses only a small number of beneficiaries, or when there are no safeguards to exclude firms with significant market power. Again, aid measures provided under an open tender procedure may reduce the risk of "picking winners". Sometimes, schemes may have a serious impact on the location of production within Europe. In particular, when the scheme is de facto industry specific. For instance, high intensity aid schemes may de facto direct a large share of the scheme budget to a small group of firms. In such cases, the aid scheme may need to be assessed under the same criteria as individual aid measures.

(ii) market characteristics

Market characteristics are important elements to assess the negative effects of an aid measure both with respect to its impact on effective competition and production shifts between different jurisdictions. A list of such market characteristics includes[83]

- size or market share of recipient; asymmetry of market shares
- entry barriers, R&D intensity of the beneficiary's markets
- the degree of product differentiation; complementarity with neighbouring markets
- segmentation of markets between Member States
- tradability of the goods/impact on location choices

[83] See Garcia and Neven (2004), OFT (2004) and Nitsche et al (2005) for a detailed account.

For individual aid measures, market share of the beneficiary in the affected markets may indicate market power.[84] Distortions are more likely to arise if the aid measures increase the asymmetry between competitors – making large firms even larger. Other relevant factors for assessing the capacity of aid to increase the beneficiary's market power include the level of product differentiation, entry barriers, as well as buyer power.[85]

When firm specific information is not available, general information about the concentration in the affected markets may still be relevant. An existing track record of competition problems in the affected markets (for instance, past or on-going anti-trust cases or the fact that the beneficiary is a strong national incumbent in a recently liberalized sector) may provide additional evidence.

Market characteristics are important to asses the potential of a measure to significantly influence trade flows, either by shifting production between jurisdictions or by influencing localisation decisions by firms. The degree to which goods or services are tradable is important in this respect. The potential to affect trade may also be higher if the aid beneficiary is a large firm with economic activities in several member states. Furthermore, the potential to shift rents between jurisdictions depends on the concentration in the affected markets.

Significant negative effects may also exist even when the targeted product is non-tradable, yet it may have an impact on upstream, downstream or complementary markets. In particular, a price increase of an input may adversely effect the production in other member states by increasing the cost of production. Aid measures in important input markets (like banking) or in large markets with a European dimension (like markets in the automotive sector) have a higher potential to affect trade flows in a significant way than aid to niche segments.[86]

---

[84] For instance, market shares are implemented as criterion in the Multisectoral Framework on Regional Aid for Large Investment Projects (MSF). In the MSF it is established that individually notifiable projects will not be eligible for investment aid if the beneficiary has a market share of more than 25% (before or after the aid granted). These thresholds are applied only for aid measures related to relatively large amounts of eligible cost (investment projects of more than €100 Mill.). See MSF (2002), paragraph 24, accessible at http://europa.eu.int/comm/competition/state_aid/legislation/aid3.html#F.

[85] Market shares may only partially reflect the market power of a particular firm in a differentiated industry. Closest competitors of the aid beneficiary may be affected significantly stronger, increasing for instance the possibility of exit of those competitors to the detriment of consumers.

[86] Careful reflections are, however, necessary on the aid amount relative to the size of the affected sector. High aid amounts in niche markets may distort the market conditions less than small amounts in emerging markets (e.g. biotechnology).

Moreover, aid measures in markets characterized by structural over-capacity or stagnation at EU level are of particular concern, especially when capacity is kept alive or even expanded as a result of the aid measure.

(iii) amount and type of aid

In addition to the procedural aspects of the granting process and the market characteristics, the amount and type of aid instrument is of importance. Criteria in this category include,

- the absolute amount of aid; aid intensities
- 'one time last time principle', repetition; duration
- aid to variable cost, aid to investment cost affecting entry or quality
- granted as direct subsidy, tax reduction or guarantee

In general, the larger the amount of aid, the higher the potential to significantly impede effective competition and affect location decisions. The same logic also applies to aid measures repeatedly given to the same beneficiary in order to preserve a market position, such as aid granted to a (large) firm in financial difficulties.[87]

In terms of the *type of aid*, one can differentiate between operational aid and investment aid. Operational aid tends to have a direct impact on the level of variable cost, and thus on the price level and consumers. As a result operational aid also has a stronger impact on the flow of goods and services. Investment aid can also affects trade and consumers, but it is more long-term, such as through the location decision of firms.

In sum, we like to perhaps state the obvious, namely that the effect of the all above criteria - procedural aspects, market characteristics, as well as the amount and type of aid - are interrelated. For example, consider an investment aid to an individual large firm. Such a measure has a clear potential to distort competition and affect trade in the European market. Moreover, this effect is even larger when the granting process is not transparent and does not follow an open and non-discriminatory procedure. On top, if the beneficiary is a significant player in the relevant market concerned, then the investment will further affect trading conditions, as well as likely induce a shift in the localization of economic activities across Member States.

[87] In some instances, this is of less concern, however, for example in the context of second round risk capital financing to start-up companies.

Analyzing all these interdependencies will require a certain amount of sophistication. On the other hand, this should not lead towards less effective state aid control, as well as less predictability. The next section picks up on these concerns and addresses the architecture of state aid control.

The architecture of state aid: precision and predictability

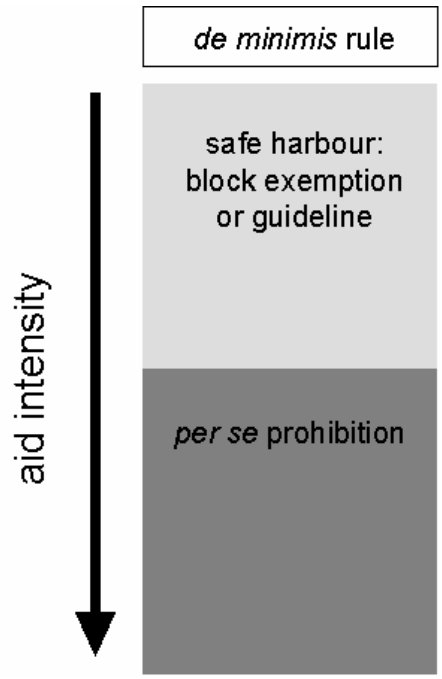
A more effects-based approach in state aid control – as envisaged by the balancing test proposed in the previous section - should lead to more precision. At the same time there is a need for a sufficient level of predictability. In this context, it is important to note that an economic approach does not necessarily mean *less* rules - the focus should be on *better* rules, thereby preserving predictability. Moreover, besides better rules, a stronger emphasis on the *economic effects* of aid measures on markets and consumers *in certain cases* is needed. This requires that it is clear under what conditions a more effects-based analysis is triggered. It also implies that the effect-based analysis is clearly spelled out in guidelines and other soft law provisions, including the theories of harm and the empirical evidence required to assess them. How all this can be done is further addressed in this section.

An economic approach is relevant for a number of stages. First, it can be helpful for designing appropriate *per se* provisions (such as safe harbours identifying measures which are allowed and prohibition regions identifying measures which are prohibited). Second, and related, it can be used for priority setting. Third, it can be applied to provide an analytical framework (which may include the formulation of presumptions) to assess individual aid measures where this is appropriate.

It is useful to start by looking at the current approach (see Figure 1). The assessment is largely based on defining aid intensity *thresholds*, below which the aid measure is allowed (safe harbour region) and above which it is prohibited (prohibition region) – both within the context of guidelines and block exemptions. Detailed rules have been devised which specify the cost categories which are eligible for state support, the maximum aid intensities to be applied and a number of criteria which, if they are met, allow for higher maximum aid intensities ("top-ups").

For the majority of cases, the case handler's assessment accordingly concentrates on evaluating the proper classification of the costs covered by the measure and whether the criteria for higher aid intensities are met. Hence, the assessment is in most cases of a 'black and white' type: for instance, if a measure is found to target investment in an 87.3 (c) region and the aid intensity is below x%, it is declared compatible; if a measure is found to target industrial research and is restricted to SMEs it is declared compatible as long as the aid intensity is below y%, otherwise it is declared incompatible.

Figure 1: Current Architecture



The current approach concentrates largely on the correct categorization of aid measures by member states: is the measure an R&D aid or in fact a restructuring aid, etc. Clearly this must continue to be an important element of any effective state aid control system. However, it falls short of an effects-based appraisal of the economic justifications of a measure.

In general, the appropriateness of such a *per se* approach depends on whether (i) the rules in general are designed correctly and (ii) the degree to which the individual measures and the circumstances in which they are implemented vary.

Take for example a rule applied in the R&D Framework. Industrial research activities are considered as not less distortive and relatively prone to market failures. As a result, industrial research may get up to 50% state support, which is more than pre-competitive research, which

can only get up to 25%. The implicit rule "State aid for industrial research is less distortive than pre-competitive research" may be right on average, yet it may be wrong in individual, but important cases. Allowing for further economic analysis when the average is not met, is at the root of the effects-based approach that we propose in this section.

Only in very few cases is an effects-based analysis - at least in principle - part of the current practices. For example in the R&D Framework, an effects-based analysis is foreseen by assessing what is called the 'incentive effect'.[88] Commentators have pointed out, however, that the assessment of those factors in practice (in past decisions) has been applied in a rather rudimentary form.[89]

What would an effects based approach look like. As indicated above, an economic approach does not mean a full economic assessment in all cases. The obvious solution - like in all other areas of competition policy, such as mergers and antitrust - has to be a sensible combination of safe harbour thresholds and prohibition thresholds and a more complete economic assessment for those cases (limited in number) which fall in between these two thresholds.

Figure 2 outlines the general architecture. Under such an approach one could choose to keep the *per se* prohibition region unchanged. At the other end of the spectrum strict safe harbour regions may be identified for measures for which one is confident that no substantial distortions of competition and effects on trade will arise. Those could be block-exempted.

For intermediate levels of aid intensity[90], i.e. above the strict safe harbour threshold but below the per se prohibition region, guidelines should outline the analytical framework applied for

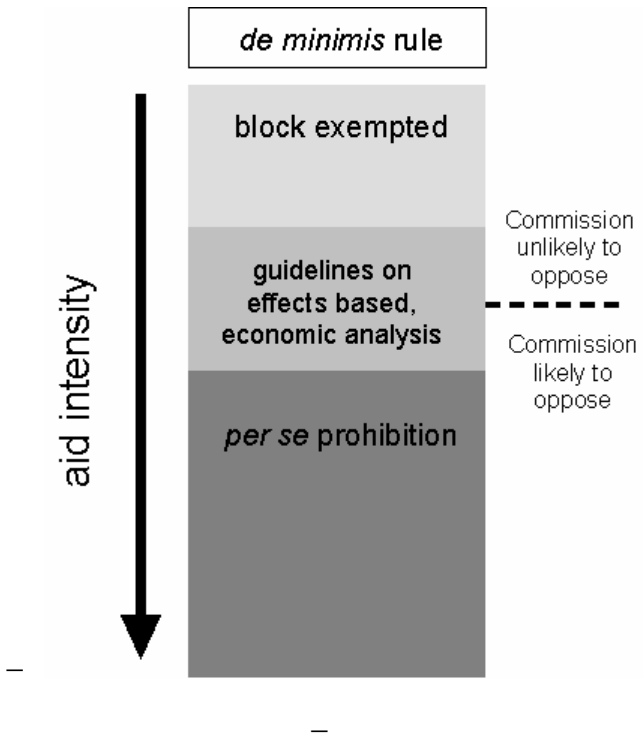
[88] The R&D Framework foresees an assessment of the 'incentive effect' particular in two cases: "*in the case of individual, close-to-the-market research projects to be undertaken by large firm; in all cases in which a significant proportion of the R&D expenditure has already been made prior to the aid application.*" Under the incentive effect it is assessed whether "*planned aid will induce firms to pursue research which they would not otherwise have pursued*" by taking into account *inter alia* changes in quantifiable factors, market failures, additional cost connected with cross-border cooperation.

[89] See for instance, the DG ECFIN study on "methods to analyse the impact of State aid on competition", which draws the following conclusion with respect to the R&D cases analyzed (case studies part, page 2): "The R&D cases we examined applied only the R&D framework with its general market failure typology (proximity to the market, regional disparities, SME) they did not go into the details of each case or evaluated the individual market failure as well as the question of how targeted State aid was to that failure."

[90] In principle, the choice of thresholds could involve aid intensity; aid amount; size of the aid beneficiary; market share of aid beneficiary or other specific (e.g. sectoral) measures. In our opinion, however, a reasonable approach to trigger an effects-based approach could be based on aid intensity levels, possibly in combination with aid amounts, as most of the existing guidelines already define aid intensities.

an effects based, economic assessment of the individual measures. Within these guidelines, the Commission could make use of soft safe harbour regions, indicating, for instance, that below certain aid intensity thresholds or when certain specific criteria are met, the Commission would be *unlikely* to take a negative decision on the aid measure. In Figure 2 the soft safe harbour threshold is indicated by a dashed line.

Figure 2: Possible Architecture



It should be noted that the "burden of proof" of the evidence if the thresholds are not met, should lie with the Member State. In other words, Member States should come forward with the evidence why the aid meets the economic test, as they are best placed regarding the relevant information needed, for example evidence for market failures. This also creates the right incentives (similar to efficiencies in merger control), since it is the Member State that should know when the economic test is likely to justify higher amounts of aid.

In sum, the proposed approach implies two aspects of design. First, the level of the safe harbour thresholds (both 'strict' and 'soft' ones) and the thresholds for *per se* prohibition need to be assessed. Are the current strict safe harbour thresholds too generous, given that member

states will be able to get higher amounts if they meet the balancing test? If the new approach is to avoid an overall softening of state aid control, thresholds need to be lower. Second, the effect-based analysis has to be clearly spelled-out in Guidelines and Block Exemptions..

VII Concluding Remarks

An effects-based approach is an important aspect to increase the effectiveness of state aid control. As a result, we believe that the proposed approach in this paper would contribute towards the policy goal of "less and better targeted aid".

In closing we like to restate that we do not believe that an effects-based approach will lead to overall softening of state aid control, assuming that it is properly implemented. Many of the economic indicators and fact-based assessments can be rigorously implemented. This includes the assessment of market failures, as well as the distortions of competition.

We also like to emphasize that predictability of the state aid regime does not have to suffer by going to a more effects-based approach. It is far from obvious that the current form-based approach provides optimal predictability. In other words, the current regime has not even reached the point where the often cited trade-off between precision and predictability emerges. As a result, more predictability and more precision appear quite possible. Moreover, it is likely, as well as intended, that an effect-based approach will shift the argumentation from legal and accounting battles towards a battle over the impact of the aid on markets and ultimately on consumers. Again, after some adjustment, such a change would not only greatly contribute the precision and effectiveness of European state aid control, but also be more predictable.

A further advantage of an effect-based approach – if done successfully – holds the potential to reduce the scope for politics in the field of state aid control. To be sure, we do not believe, or even advocate, that political factors will or should not play a role in state aid control. However, it might be argued that de-emphasizing politics somewhat is helpful in terms of increasing effectiveness. Besides, by focussing on the economics of state aid, less politics might even mean more predictability.

Finally, an effects-based approach has the potential to increase the scope for cooperation across Member States. As far as economic objectives are concerned, similar cost-benefit analysis – as implicit in our proposed economic test – needs to be done at the Member State level, assuming that Member States adopt a similar economic approach to state aid. In this sense, an effect-based economic approach could be complementary to the recent proposal by Commissioner Kroes to create a European State Aid Network.

VIII References

Ahlborn, Christian and Claudia Berg (2004): Can state aid learn from antitrust? The need for a greater role for competition analysis under the state aid rules. In Andrea Biondi, Piet Eeckhout and James Flynn: The law of state aid in the European Union, Oxford, UK.

Bator, F.M. (1958): Anatomy of Market Failure. Quarterly Journal of Economics, August, 1958: 351-379.

Benabou, Roland (2000): Unequal Societies: Income Distribution and the Social Contract, AER, 90,1 , 96-129.

Besley, Timothy and Paul Seabright (1999): The Effects and Policy Implications of State Aids to Industry: an Economic Analysis. Economic Policy, 15-53.

Bishop, Simon (1997): The European Commission"s Policy towards State Aid: A Role for Rigorous Competitive Analysis. ECLT, Vol 2.

Bernheim, D. and M. Whinston (1986a): Menu Auctions, Resource allocation and Economic Influence, Quarterly Journal of Economics, 101, 1-31.

Bernheim, D. and M. Whinston (1986b): Common agency, Econometrica, 54 (4), 923-942.

Brander, J.A. and B.J. Spencer (1985): Export Subsidies and International Market Share Rivalry. Journal of International Economics, 18, 83-100.

Collie, David R. (2000): State aid in the European Union: The prohibition of subsidies in an integrated market. International Journal of Industrial Organization, Vol.18, 867-884.

Collie, David R. (2002): Prohibiting State Aid in an Integrated Market. Journal of Industry. Competition and Trade, Vol.2, Issue 3, 215-231.

Collie, David R. (2005): State Aid to Investment and R&D. European Economy, Economic Papers, 231, 1-22.

Dewatripont and Maskin (1995): Credit and Efficiency in Centralized and Decentralized Economies. Review of Economic Studies, 62, 541-555.

Duso, Tomaso (2002): The Political Economy of the Regulatory Process: An Empirical Approach, Humboldt-University Dissertation, Berlin.

Ehlermann, Claus-Dieter and Michelle Everson (2001): European Competition Law Annual: 1999. Selected Issues in the Field of State Aid, Oxford.

Fingleton, John, F. Ruane and V.Ryan (1998): A Study of Market Definition in Practice in State Aid Cases in the EU. Report to DG ECFIN.

Fingleton, J., F. Ruane, and V. Ryan (1999): Market Definition and State Aid Control, European Economy 3, 65-88.

Friederiszick, Hans W., Damien Neven and Lars-Hendrik Röller (2003): Evaluation of the Effectiveness of State aid as a Policy Instrument, Report to DG ECFIN.

Fudenberg, D. and J.Tirole (1989): A Theory of Exit in Duopoly. Econometrica, 54, 943-960.

Garcia, José-Antonio and Damien Neven (2004): Identification of sensitive sectors in which State aid may have significant distorting effects. Report for the HM Treasury, UK.

Gawande, Kishore and Pravin Krishna (2005): Lobbying competition over US trade policy. NBER Working Paper 11371

Glowicka, Ela (2005): Rescue and Restructuring Subsidies in the European Union. WZB, mimeo.

Grossman, G.M and Elhanan Helpman (1994): Protection for sale. American Economic Review 84,833-50.

Ghemawat, J.J. and B. Nalebuff (1985): Exit. The RAND Journal of Economics, 16, 2, 184-94.

Ghemawat, J.J. and B. Nalebuff (1990): The devolution of declining industries. Quarterly Journal of Economics, 105, 1, 167-86.

Graaff, Jan de V. (1957): Theoretical Welfare Economics, Cambridge University Press, London.

Gual, Jordi et al. (1998): State Aid and Convergence in the European Union, Report to DG ECFIN.

Hancher, Leigh, Tom Ottervanger and Piet J. Slot (1999): E.C. State Aids. Sweet&Maxwell, 2nd edition.

Ilzkovitz, F. and R. Meiklejohn (2001): European Merger Control: Do We Need an Efficiency Defence? European Economy, 5, 3-29.

Kornai, János (1980): The Soft Budget Constraint. Kyklos, 39, 1, 3-30.

Kornai, János, Eric Mascin and Gérard Roland (2003): Understanding the Soft Budget Constraint. Journal of Economic Literature, XLI,1095-1236.

Laffont, J.-J. and J. Tirole (1993): A Theory of Incentives in Procurement and Regulation. 1st edition, MIT press.

Lagerlöf, Johan, and Paul Heidhues (2004): On the Desirability of an Efficiency Defense in Merger Control. International Journal of Industrial Organization, forthcoming.

Lahiri, Sajal and Y. Ono (2004): Trade and Industrial Policy under International Oligopoly, Cambridge University Press.

Lyons, Bruce R. (2003): Reform of European Merger Policy. CCR Working Paper CCR 03-5, 1-29.

Lyons, B R (2002): Could Politicians Be More Right Than Economists? A Theory of Merger Policy, Centre for Competition and Regulation, UEA, Working Paper 02-01

Martin, S. and C. Strasse (2005): La politique communautaire des aides d'Etat est-elle une politique de concurrence?, Concurrences 3, 52-59.

Meiklejohn, R. (1999): The Economies of State Aid. European Economy 3, 25-31.

Midelfart-Knarvik, K. H. and H.G. Overman (2002): Delocation and European Integration: is Structural Spending Justified. Economic Policy. 323-359.

Mitchell, W.C., and M.C. Munger (1991): Economic Model of Interest Groups: An Introductonary Survey. American Journal of Political Science 35, 512-546.

Neven, Damien J., and Lars-Hendrik Röller, eds. (2000):"The Political Economy of State Aids: Econometric Evidence for the Member States" by Damien J. Neven and Lars Hendrik Röller in The Political Economy of Industrial Policy: Does Europe have an Industrial Policy?, Edition Sigma, Berlin.

Neven, Damien J, and Lars-Hendrik Röller (2005): "Consumer Surplus vs. Welfare Standard in a Political Economy Model of Merger Control," International Journal of Industrial Organization, forthcoming

Nitsche, R. et al. (2005): Methods to analyse the impact of state aid on competition. Report prepared for the European Commission, DG ECFIN.

OECD (2001): Competition Policy in Subsidies and State aid. DAFFE/ CLP(2001)24

OFT (2004): The effects of public subsidies on competition. Report prepared by Frontier Economics.

Pareto, V. (1896), Cours d'économie politique, 2 volumes, Lausanne 1896-1897.

Peeperkorn, Luc (1999) The Commission"s Radical Overhaul of EC Competition Policy Towards Vertical Restraints, in The EC Law of Competition (Jonathan Faull & Ali Nikpay eds.), Oxford, UK.

Persson, Torsten and Guido Tabellini (2000): Political Economics. Explaining Economic Policy. MIT press.

Plender, Richard (2004): Definition of Aid. In Andrea Biondi, Piet Eeckhout and James Flynn: The law of State aid in the European Union, Oxford, UK.

Przeworski, Adam (2003): States and Markets. A Primer in Political Economy. 1st edition, Cambridge University Press.

Rehbinder, Maria (2004): Recent Developments in Commission State Aid Policy and Practice. In Andrea Biondi, Piet Eeckhout and James Flynn: The law of State aid in the European Union, Oxford, UK.

Sleuwaegen, L., E. Pennings and I. De Voldere (2000): Public Aid and Relocation within the European Community. Report to the European Commission, DG III.

Stennek, Johan, Lars-Hendrik Röller and Frank Verboven (2001): Efficiency Gains from Mergers. European Economy, No 5, 31-128.

Stiglitz, Joseph E. (2000): Economics of the Public Sector. 3rd edition.

Tirole, Jean (1993): The Theory of Industrial Organization. MIT Press, Cambridge, 3rd edition.

Varian, Hal R. (1992): Microeconomic Analysis. 3rd edition.

Vickers, John (2005): State Aid and Distortion of Competition. Paper for the UK Presidency conference on state aid, London, 14 July 2005.

Werden, G. (1996): A Robust Test for Consumer Welfare Enhancing Mergers among Sellers of Differentiated Products, Journal of Industrial Economics, 44, 4 , 409-13.

Williamson, O (1968): Economies as an Antitrust Defense: the Welfare Trade-Offs, AER, 58, 18-36.