

Impact of the Community Framework for State Aid for Research and Development and Innovation on European Union Competitiveness

Summary of the study done by Technopolis
At the request of the Directorate General of Enterprises,
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1. Introduction

During the French Presidency of the Council of the European Union, from 1 July 2008 to 31 December 2008, the French authorities plan to work with all Member States to explore the “external aspects of European Union competitiveness”. The Technopolis study commissioned by the French General Business Directorate¹ was intended to help prepare for these discussions by assessing the impact of the Community Framework for State Aid for Research and Development and Innovation² on the European Union’s competitiveness³. This document contains a summary of the major conclusions drawn by this study, which was carried out between September 2007 and May 2008.

The aim of the study was to identify the specific effects of the RDI Framework on the European Union’s competitiveness, as compared with that of the EU’s main established and emerging competitor regions. The primary purpose of the Framework is to make certain forms of State aid compatible with the Treaty, which, *a priori*, prohibits them. However, although the purpose of the rules is to ensure healthy competition within the EU, they can also affect the ability of public decision-makers to support the innovation capacity of firms located in their countries. Furthermore, in an increasingly globalised knowledge-based economy, it is important to consider the rules which govern State aid practices in the competitor regions mentioned above. Although the Community’s rules on State aid need to be stringent enough to prevent serious distortions of competition within the EU, the existence of wide disparities between the State aid practices of European countries and those of their competitors also represents a threat to the Union’s external competitiveness.

The two main questions asked by the study were as follows:

- (i) Does the RDI Framework enable public authorities to effectively support firms that want to develop research and innovation projects within the EU?
- (ii) Does the State aid offered by the EU’s main traditional or emerging competitor regions exceed the limits set by the Community Framework?

The study thus tries to inform the constantly shifting balance between internal competition and external competitiveness. A subtle trade-off between these two requirements is necessary in order to give Europe the best possible chance of reaching the ambitious target set by the Lisbon European Council in March 2000, namely, becoming “*the most competitive and dynamic knowledge-based economy in the world*”. In response to the slow progress being made towards this objective by the EU countries, the European Parliament has asked the Commission to “*systematically assess the impact of the EU’s internal policies and regulations on global competitiveness and to give due weight in its regulatory policy-making processes to the competitive position of EU enterprises inside and outside Europe*”⁴.

These discussions form part of a wider effort to reform the rules on State aid, in particular where its purpose is to support research and innovation activities. The new Community Framework for State Aid for Research and Development and Innovation⁵, adopted by the Commission in 2006, marked a significant step forward in this reform process. This study offers reasoned, experience-based feedback on the new RDI Framework following its first year of application.

¹ Innovation and Competitiveness Policies Department in the General Directorate for Enterprises of the Ministry of the Economy, Finance and Employment.

² Hereinafter the “RDI Framework”, for convenience

³ The opinion expressed in this study are the sole responsibility of the authors and do not reflect those of the French authorities

⁴ European Parliament Resolution of 22 May 2007 entitled, “Global Europe: External Aspects of Competitiveness” (2006/2292(INI)).

The Competition DG plans to assess the impact of the RDI Framework in 2010; this study does not aim to replace or pre-empt that initiative. Nevertheless, the information collected and the analyses developed for the purposes of this study, and above all the discussions which follow during the French Presidency, will help prepare for this impact assessment⁶.

2. Study Outline: Lines of Argument and Methods Used

There is no direct, unambiguous relationship between the RDI Framework and the EU's external competitiveness. It was therefore essential to first establish a working framework to direct the investigations and structure the argument.

2.1 Working Framework and Methodology

The framework used for this study was both simple and pragmatic. Schematically (Figure 1), State aid is part of a cycle which begins when one or more public or private stakeholders, who intend to develop innovation projects within the EU, express a need for official support. This may or may not be forthcoming, and the features of said support will depend on the strategy applied by the relevant public body, acting strictly in accordance with the RDI Framework. The amount of official aid received, as well as a multitude of other internal and external factors, will determine whether or not the projects are implemented, under what conditions and on what scale. In the medium to long term, these projects will affect the supply of goods and services in the country concerned. The same cycle is repeated outside the EU, with the official support available in these countries.

The EU's external competitiveness is measured by what happens when supplies of goods and services from the EU are placed alongside those of its competitors on the international markets. Even before competing for goods and services, countries compete to attract innovative firms and innovation projects. In both cases, competitiveness gains will have a long-term impact in terms of job creation and economic growth.

⁶ A meeting with the relevant department from the Competition DG took place in March 2008 in order to facilitate the appropriation of the study's results by the Commission.

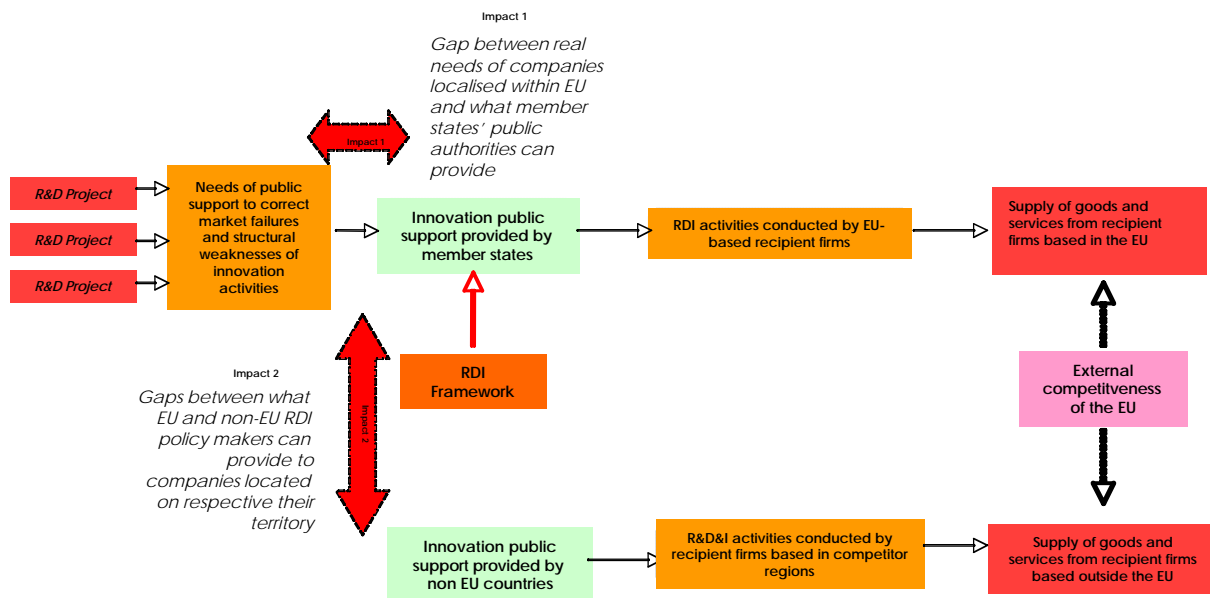


Figure 1 Flow diagram showing the impact of the RDI Framework on the EU's external competitiveness

This basic diagram identifies two main types of impact that the Framework could have on the EU's external competitiveness:

- The first relates to the difference between firms' real needs (excluding windfall effects) in terms of official support for R&D and what is permitted under the RDI Framework.
- The second relates to the difference between the effectiveness of the official support mechanisms permitted by the RDI Framework for companies located in the EU and those put in place by competing countries for the companies based on their territory.

These two types of impact are reflected in the two main lines of argument pursued by the study, namely international benchmarking and case studies on the notification procedure, which provide answers to the two key questions asked above:

- Does the RDI Framework allow public bodies to provide effective support for firms that wish to develop research and innovation projects, while still ensuring healthy competition within the EU? To answer this question, the decision-making processes used by the public and private decision-makers who apply the RDI Framework must be analysed in-depth, using interviews and notification case studies.
- Does the State aid offered by public decision-makers in the EU's main traditional and emerging competitor regions – who are not subject to the RDI Framework – exceed the limits set by the Framework? To answer this question, the study will identify the major features of the official support mechanisms used in the United States, Japan, China and Korea, and compare them to those permitted in Europe under the RDI Framework.

While this study focused on two major issues, academic research into the theoretical basis of the Framework is also being conducted by Stan Metcalfe from the Manchester Business School, an internationally recognised researcher in the field of evolutionary economic theory. Professor Metcalfe is analysing the text of the RDI Framework and its underlying reasoning to see, in particular, if it reflects developments in the field of evolutionary economics. This school of thought is opposed to the dominant theory of economics, which, being based on the concepts of balance and optimum, cannot capture the true nature and role of innovation processes, or their contribution to economic growth.

This study involved extensive documentary research and more than 90 interviews with public decision-makers and firms, both within the EU and in competitor regions.

2.2 Added Value and Limitations of the Study

The chain of causation shown in Figure 1 demonstrates that the relationship between the RDI Framework and the EU's external competitiveness is extremely indirect. It depends on a multitude of different parameters and is influenced by various factors which go far beyond the scope of the study.

When reading this report, therefore, it is important to bear in mind that the study did not examine all the determinants of competitiveness. It focused, rather, on a single variable, namely, the Community rules on State aid for RDI.

- Official support for R&D is not limited to the forms of "State aid to RDI" which are regulated by the Framework. Other mechanisms are not governed by the RDI Framework (in particular public contracts and generic tax incentives), despite their growing importance in most of the countries covered by this study.
- The effectiveness of the available State aid also depends on factors which are not controlled by the Framework, such as project incentives and selection methods, the existence and relevance of an aid strategy, assessment techniques, opportunities to commercialise the results, etc.
- Official aid is only one of the many determinants which influence the decision to invest in R&D and the form of such investment. Other factors, mainly linked to the structure of each national innovation system (in particular the availability of the necessary qualified skills, the research equipment, the relationship between research and industry and the culture of entrepreneurship), also affect businesses' ability to invest and to innovate.
- The link between R&D activities and performance in terms of supplying goods and services is also far from direct and clear-cut. The transformation of an R&D project into an innovation success requires complex alchemy, and nobody, despite the voluminous literature on the subject, has yet discovered the magic formula.

Although the study was limited in scope, the approach taken presented a number of advantages which justified this choice. In particular, it focused attention on two key areas where information is sorely lacking, as demonstrated by the interest generated by the study among the various people consulted and in the workshops held to present its conclusions. To the best of our knowledge, this study was the first to focus on this particular issue. There are numerous studies on State aid for RDI and the factors which determine competitiveness, but very few have examined the regulations on such aid, and none had looked at the effect such regulations can have on competitiveness.

3. Community Innovation Performance and the External Competitiveness of the EU

A country's competitiveness is based on the ability of the firms located on its territory to compete successfully in national and international markets. Although the EU is the world's largest exporter, its competitiveness is under threat because of slowing productivity gains, an inability to keep pace with technological competition and an economic environment in some Member States which does not do enough to stimulate business development. Therefore, whereas ten years ago the EU accounted for 29% of global R&D spending, in 2007 it represented just 25%. The market shares of other major competitors have remained stable.

Five years after the Lisbon European Council, the feedback on the Lisbon Agenda has been mostly negative. In June 2005, a group of respected innovation economists painted a bleak picture of Europe's innovation performance, saying, "*If our diagnosis is correct, this state of affairs is bad for*

research, wasteful for society and also bad for business”⁷. Wim Kok came to a similar conclusion in his report⁸, describing a “mixed picture” for the Lisbon Strategy at its halfway point. Only two countries had met the target of spending more than 3% of GDP on R&D. The “Wim Kok Report” also identified two international threats to European Union competitiveness, from Asia and the United States.

3.1 Stagnation in Innovation Capacity Weakens the EU’s External Competitiveness

This conclusion is borne out by various statistical sources. For example, according to the OECD, growth in public spending on R&D within the OECD area is unevenly spread. Official spending on R&D within the EU grew by less than 2% annually between 2000 and 2005, whereas the OECD average is just over 4%. The United States has a growth rate of 6%, and Korea of around 9%. European companies invest less in R&D (1% of GDP) than their Japanese (2.4% of GDP) or American counterparts (1.6% of GDP). In addition, the private sector funds nearly 75% of R&D in Japan and 65% in the United States, but only 54% in the European Union. Since 2000, the share of private sector R&D funding has fallen overall in the United States, increased slightly in Japan, grown significantly in China, but remained stable within the EU. It has been suggested that, at this pace, China’s R&D intensity will equal Europe’s by 2009.

The results of the European Innovation Scoreboard⁹ (EIS), which was developed by the European Commission to monitor the effects of the Lisbon Strategy, clearly show that the innovation gap between Europe, the United States and Japan shrunk very slightly in 2006 but has otherwise been stable for a decade. The total amount invested in R&D in the EU is almost a third less than in the United States, and the EU has been unable to make up much of this lost ground. At the same time, emerging countries such as China and India are rapidly becoming first-class research and innovation centres.

These results have been confirmed by the Global Innovation Scoreboard¹⁰ (GIS), a new instrument developed by the Commission to work alongside the EIS, which compares the performance of the 27 EU Member States to that of other major R&D stakeholder countries on the world stage. Global innovation performance is measured using a composite index (GSII). The GSII of the EU-25 is 0.50, China has a score of 0.27, South Korea 0.57, the United States 0.67 and Japan 0.70.

The World Economic Forum¹¹ has designed a Global Competitiveness Index, based on nine pillars, including innovation, technological readiness and market efficiency.

Overall, the Global Competitiveness Report places the United States at the top of the ranking, followed by Switzerland and the Nordic European countries. Excluding the innovation component of the index, the United States are ranked 6th and Japan 7th. China moves up six places, while the cumulative scores of all the Member States would place the EU-27 in between 10th and 20th position.

⁷ Dosi, Giovanni, Llerena, Patrick & Sylos Labini, Mauro, *Evaluating and Comparing the Innovation Performance of the US and the EU*, Expert Report prepared for the TrendChart Policy Workshop 2005, 29 June 2005.

⁸ Report from the High Level Group chaired by Mr. Wim Kok, *Facing the Challenge: the Lisbon Strategy for Growth and Employment*, November 2004.

⁹ Parvan, Sergiu-Valentin, *Community Innovation Statistics, Fourth Community Innovation Survey (ECI4) and the European Innovation Scoreboard (EIS) 2006, Statistics in Focus*, Eurostat 2007.

¹⁰ Hollanders, Hugo & Arundel, Anthony, *2006 Global Innovation Scoreboard (GIS) Report*, MERIT, TrendChart, December 2006.

¹¹ *The Global Competitiveness Report 2007-2008*, World Economic Forum, 2007 – available at www.weforum.org

3.2 An Initial European Response: Moving Towards a European Industrial Policy

The expression “sectoral industrial policy”, which evolved during the 1960s but disappeared in the 1990s, appears to be making a return to Community vocabulary. The purpose of this industrial policy, which is based on Article 157 of the EC Treaty, is to create a solid and dynamic industrial base which promotes growth and strengthens the EU’s technological and economic leadership in an increasingly globalised environment¹².

The Commission has identified 27 priority action areas, including seven horizontal and cross-sectoral policy initiatives and seven sector-specific initiatives (for pharmaceuticals, chemicals, life sciences and biotechnologies, defence, mechanical engineering and ICT). According to the European Commission’s mid-term review of this policy in July 2007¹³, the integrated approach adopted for these initiatives has helped to shape Europe’s industrial policy. It also advocates a stronger political framework in order to make the policy more sustainable.

The European Commission has also launched the “*Lead Market Initiative*”¹⁴, which aims to encourage the emergence of markets that generate a high added value for the economy and society. Six markets have already been identified. They are eHealth, protective textiles, sustainable construction, recycling, bio-based products and renewable energies. Action plans have already been drawn up for the next three to five years and European citizens should start to see the benefits by 2012. The target sectors could represent nearly three million jobs and be worth EUR 300 billion in 2020.

4. The RDI Framework: Facts and Stakeholder Perceptions

4.1 The Community Regulatory Framework for State Aid for RDI

The European Union’s founding Treaty (EC treaty) contains a general prohibition on the official aid granted by Member State governments to particular economic stakeholders, known as “State aid”. Nevertheless, the Treaty does allow Member States to grant aid in certain cases. State aid can be compatible with the Treaty if it meets one of the clearly-defined public interest objectives and does not distort competition to an extent contrary to the common interest. The fundamental rules set out in the Treaty have therefore been supplemented by various pieces of legislation which create exceptions. Where no exemption exists, the Member States must follow the notification procedure for aid given to firms, in accordance with the rules laid down by the applicable frameworks. One such framework, the RDI Framework, governs aid for R&D and innovation. The European Commission has drawn up an ambitious 2005-2009 Action Plan for State aid reform, which contains the following guiding principles:

¹² Commission Communications “Industrial Policy in an Enlarged Europe”, COM (2002) 714; “Key Issues in Europe’s Competitiveness – Towards an Integrated Approach”, COM (2003) 704; “Fostering Structural Change: An Industrial Policy for an Enlarged Europe”, COM 2004 (274).

¹³ Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, “*Mid-term Review of Industrial Policy; A Contribution to the EU’s Growth and Jobs Strategy*”, SEC(2007)917.

¹⁴ Communication “*A lead market initiative for Europe*”, COM(2007)860, 2007.

- Less and better targeted State aid.
- A refined economic approach.
- More effective procedures, better enforcement, higher predictability and enhanced transparency.
- A shared responsibility between the Commission and Member States.

The Action Plan also encourages Member States to focus their official aid on achieving the objectives set by the Lisbon Strategy. In order to achieve these goals, State aid policies need to be able to target market failures. In terms of innovation and R&D, the Plan states that the rules on State aid should encourage industry investment in R&D, and take account of the growing importance of public-private partnerships.

The Commission decided to revise the regulations on State Aid for RDI when it became clear that the level of RDI was not sufficient for the purposes of the Lisbon Strategy. Following consultations in 2006, the new Framework came into force in 2007, replacing the previous version which dated from 1996.

The new Framework draws a distinction between the following categories of aid:

- Aid for research-development projects;
- Aid for technical feasibility studies prior to industrial research or experimental development activities ;
- Aid for young innovative enterprises ;
- Aid for process and organisational innovation in services (SMEs and large enterprises working in collaboration with SMEs);
- Aid for advisory services and innovation support services (SMEs);
- Aid for the loan of highly qualified personnel seconded from a research organisation or a large enterprise to an SME.

4.2 Wide-Ranging Opinions on the RDI Framework

Public consultations on the reform of the Framework for State aid for R&D showed that there were significant differences of opinion within the European Union. Respondents were particularly divided over the following issues:

- State aid for large enterprises. Some countries, such as the United Kingdom and Germany, were not in favour of such aid. In contrast, the “*Cercle de l’Industrie*” (a French body representing the manufacturing industry), UNICE and Philips believed that it was inappropriate to draw a distinction between SMEs and large enterprises, because all businesses would have the same funding needs.
- Differential treatment based on project size. Some bodies, such as MEDEF (the French Employer’s Federation) or the “*Association française d’étude de la concurrence*” (the French Competition Research Association), felt that the detailed assessment procedure used for “large projects” placed too much emphasis on the need to prove the existence of a market failure. Others believed that carrying out a comprehensive review of such projects was justified because of the volume of aid involved.
- Many concerns were raised about the “matching clause”, which is also included in the new Framework. One argument was that this clause, which has never been used, should be either removed and replaced with a more effective method of ensuring some level of equality between State aid practices within and outside Europe, or at least made easier to implement (for example, by creating an RDI State Aid Observatory). Others believed that the effectiveness of the provision was not dependent on its actual use; the deterrent effect of the matching clause was highlighted several times during the consultations.

The only real point of consensus related to the need for shorter notification waiting periods. The Competition DG was criticised for its overly bureaucratic approach to reviewing applications, which meant that it took longer for aid to be approved. Some believed that the absence of a legal deadline could distort competition, to the detriment of European Union countries.

The interviews carried out with “State Aid Correspondents” within the Member States during this study, a few months after the new rules came into force, confirmed the existence of a wide range of views. All the respondents emphasised that the new Framework had changed considerably (with, for example, a broader definition of innovation), at least in principle, and that the European Commission had made a real effort to improve it.

Beyond this initial comment, however, opinions on the practical application of the Framework differed greatly:

- The toughest critics pointed to a fundamental inconsistency between what had been said by the Commission about prioritising research and innovation, in particular in the Lisbon targets and the subsequent Communications, and what was available to companies engaged in these risky activities under the Framework on aid. One view suggested that this stemmed from a failure to understand the true nature of the innovation process within firms. Others saw it as the result of an ideology that was opposed to any truly effective forms of State aid, on the pretext that they would distort competition.
- Other respondents were generally satisfied, and suggested that the regulatory Framework permitted significant or even “very generous” levels of official support. The bonuses for very small enterprises, for example, were seen as excellent. The special attention given to young innovative enterprises was also seen as a very positive point.

The interviews showed that it is important to distinguish scheme notifications from individual notifications. Comments about the former were mostly aimed at particular provisions (definition, intensity, etc.). The criticism of the latter was much more widespread and intense. It should be noted that at the time the interviews took place, only France, Belgium and Spain had submitted any individual notifications.

5. International Comparison of State Aid for RDI

The WTO plays only a marginal role in regulating State aid, which means that the regulatory frameworks that apply to countries outside the EU are national, not supranational. This section will examine the forms of RDI support available in the United States, Korea, Japan and China (which are equivalent to those regulated by the RDI Framework in Europe).

Comparisons will be drawn at two levels:

- The existence or lack of a legal framework similar to the European Framework on State aid in the non-EU countries.
- The countries' State aid practices, as against the criteria set by the RDI Framework, e.g. ceilings on the amount of aid, aid intensity, and eligible spending. A related question concerns the implementation times for aid policies.

5.1 State Aid for RDI in the United States

According to recent figures, 30% of the RDI national expenditures are supported by the Federal State, 65% by the Industry and 5% by the States. The share of the industry has been growing at a fast pace since the 1960s. The same trend applies to the States but the rate of growth is lower and the levels are smaller. Besides, the States seem to concentrate their efforts on actions in favour of Universities even if public/private partnerships have been receiving a greater focus over the past years. The Federal State remains therefore the main public support to public funding for R&D activities. This justifies the reason why this study focuses on the Federal AIDs.

5.1.1 The Institutional Framework for State Aid in the United States

There is no regulatory equivalent of the European Framework for State Aid for RDI in the United States. However, this does not mean that there are no regulations or restrictions on State aid.

Small firms are not subject to the same regulatory system as larger ones. For small enterprises, the Small Business Administration (SBA) has established a single set of rules to be applied by all agencies (*infra*). The Small Business Innovation Research programme (SBIR) is discussed in more detail below. For large firms, which are not covered by SBIR, the various official agencies have their own rules and procedures. In these situations, it is the Codes of Federal Regulations which provide the general framework on State aid and which define the terms and conditions applicable to the various programmes (in 50 fields), most of which are associated with a particular agency or department. These rules give public decision-makers considerable room for manoeuvre.

Congressional earmarks, a form of official aid that is directly negotiated with Congress and which represents an exception to the normal rules (in particular those on requests for proposals), constitute a special case because of the large sums involved and the highly strategic areas concerned. As above, once the sums to be granted have been agreed, public decision-makers have significant room for manoeuvre when deciding what terms and conditions to apply to this aid.

5.1.2 Review of a Selection of the Main Types of Aid for R&D in North America

The following types of aid were reviewed:

- SBIR – Small Business Innovation Research Program (Multi-Agency)
- Small Business Technology Transfer Program (STTR)
- Advanced Technology Program (ATP)
- Technology Innovation Program (TIP)

The major conclusions were as follows:

- Aid for innovation projects. Problems of comparison aside, there are no significant differences between European and North American aid to R&D projects. The American aid would “pass the test” of the RDI Framework (see Table 1).
- Aid for technical feasibility studies. SMEs are eligible to receive Phase 1 grants for technical feasibility studies under SBIR and STTR. However, this aid is limited to a maximum grant of \$100,000, i.e. under EUR 69,000, for a maximum period of one year. It is difficult to compare this initiative with the aid available under the Framework, which sets a maximum intensity of between 50% and 75% according to the type of R&D being conducted by an SME.
- ATP grants fund the initial stages of RDI, e.g. writing a business plan, feasibility (assessed by peer review) and R&D. The grant can also be used to cover the cost of obtaining and registering patents and other intellectual property rights, although this is not its primary purpose.

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- Aid for young innovative enterprises. To our knowledge, there is no specific American programme for young innovative enterprises. Since its inception, the ATP programme has provided 50% funding for small, start-up companies, but in practice the programme is also open to SMEs and large enterprises. The TIP programme (which will replace the ATP programme in the future) will be exclusively for SMEs, but it should be noted that, in the United States, an SME is defined as any company with no more than 500 employees.

To the best of our knowledge, the United States has no equivalent of the other forms of EU aid.

Table 1 Comparison of State Aid Programmes in the United States and in Europe

	Amounts	Intensity
SBIR – Small Business Innovation Research Program (Multi-Agency)	Around \$1.6 million per project, per firm, including Phase 1 grants for feasibility studies and Phase 2 grants, i.e. approximately EUR 1.1 million	100% of eligible costs, i.e. staff and research equipment costs
Small Business Technology Transfer Program (STTR)		
Advanced Technology Program (ATP)	The ATP programme awarded an average of \$19 million per project between 1990 and 2002, i.e. about EUR 13.1 million per project	A maximum of 50% for ATP joint-ventures, 60% for large enterprises and 100% for SMEs

5.2 State Aid for RDI in China

It is important to exercise caution when describing State practices which differ greatly from those accepted in more developed countries, especially where the information available is limited and extremely variable. Furthermore, it can be difficult to discover the true nature of a national innovation system due to the political regime. There is typically a lack of transparency surrounding funding mechanisms.

5.2.1 The Institutional Framework for State Aid in China

The RDI Framework has no Chinese counterpart. However, since the late 1990s, the central government has been attempting to regulate (to protect intellectual property, in particular). On 29 December 2007, President Hu Jintao signed a decree which will bring the Science and Technology (S&T) Advancement Law into force from 1 July 2008. This Law should make it possible, *inter alia*, to improve investment in S&T activities, in particular through the introduction of financial, banking and taxation policies which benefit Chinese firms. The Law also aims to make the distribution and integration of S&T resources more efficient. Finally, it seeks to encourage industry to play a larger role in technological innovation by creating a package of preferential policies to promote Chinese innovations.

5.2.2 Review of a Selection of the Main Types of Aid for R&D in China

The following types of aid were reviewed:

- Torch programme
- Innovation Fund for Small Technology-Based Firms (Innofund)
- National High Technology R&D Programme – Programme 863
- Basic Research R&D Programme – Programme 973

Specific comparisons are impossible due to a lack of reliable, detailed information. The main provisions of the mechanisms studied show, however, that the average sums granted per project (and thus even more so per company) remain low. The aid intensity is also low, and would therefore be compatible with the RDI Framework.

The *Torch programme*, launched in 1988, is one of China's largest innovation and high-tech product industrialisation support programmes. In 1999, it provided funding for 2,743 projects at a total cost of EUR 2.7 million, i.e. an average of nearly EUR 730,000 per project (and not per company). The share of public funding, however, remains very low. In 2004, the Torch Programme raised a total of nearly EUR 6.7 billion, of which 2% came from the government, 72% from companies and 21% from bank loans. The programme also provides aid for innovative enterprises, primarily in the form of preferential rate loans.

Innofund was launched in 1999 under the authority of the Ministry of Science and Technology (MOST) in order to support innovation in SMEs. Eligible companies can receive subsidies equal to the amount of their capital, which can be used to commercialise research or to partially support innovation in SMEs. The fund also offers zero or preferential rate loans. Between 1999 and 2005, Innofund approved 7,962 projects at an approximate overall cost of EUR 489 million. The fund's average yearly budget is EUR 65 million. Between 1999 and 2004, the average grant per project was EUR 60,000. Even when adjusted for purchasing power parity (nearly EUR 180,000), this figure remains lower than the sums permitted under the Framework.

The purpose of Programme 863, which was created in 1986, is to promote high-tech development in China. In the fifteen years from 1986 to 2001, the Chinese State is said to have invested EUR 530 million in civilian projects under this Programme. In 2004, Programme 863 generated EUR 882 million in R&D investment, nearly half of which came from the central government.

Programme 973, which was created by MOST in 1997, focuses on providing support for fundamental research. Between 1997 and 2006, the Programme has funded 300 projects, worth a total of EUR 580 million in public investment. In 2004, Programme 973 raised nearly EUR 97 million, of which 88% was provided by the government.

5.3 State Aid for RDI in Japan

5.3.1 The Institutional Framework for State Aid in Japan

In Japan, the law does not lay down any general procedures on State aid. It is up to each funding body to decide both the content of the programmes and how they will be undertaken. There is however a law on the proper implementation of State subsidy budgets, which has been in force since 1958. This law governs the implementation of all State subsidies. Its purpose is to prevent fraud and embezzlement and to ensure that budgets are correctly spent. It is the only law on this subject.

However, the maximum amount of aid a firm can receive is set in advance, as each ministry submits its budget proposals to the government. During the implementation phase, there is no opportunity for the implementing agencies to adjust these maximum sums, which are set by the government and approved by the parliament. In contrast, each programme is free to decide the intensity of the aid.

5.3.2 Review of a Selection of the Main Types of Aid for R&D in Japan

The aid programmes reviewed included 12 R&D aid programmes, most of which provided aid for R&D projects. These included:

- Research and Development of Nanodevices for Practical Utilization of Nanotechnology [Project]
- Support Project for Industries for Increasing the Efficient Use of Energy
- Field Test Projects on New Photovoltaic Power Generation Technology
- Grant for Application of Industrial Technology Innovation

In terms of aid for innovation projects, the amounts granted per project and per stakeholder fall far below the thresholds which trigger the detailed assessment procedure under the European Framework. For example, the maximum amount of aid that can be granted under the *Research and Development of Nanodevices for Practical Utilization of Nanotechnology* programme (EUR 12.1 million for the three types of research activity for the duration of the project and for all participants) does not reach the European thresholds for detailed assessment.

The largest projects, in terms of total funding, are linked to the policy of encouraging the adoption of environmental technologies. Funding provided under the *Support Project for Industries for Increasing the Efficient Use of Energy* programme covers one third of the costs incurred by an independent operator for a one-year project, up to a maximum of EUR 30 million per project. This sum can reach up to EUR 92 million per year for independent operators working on collaborative projects. The intensity of the aid is compliant with the Framework, but the sums involved are very large and would cross the detailed assessment threshold. However, it is not clear whether this type of official funding is in fact equivalent to the forms of aid covered by the RDI Framework, because the focus is not on research but on acquiring efficient technologies. According to a 2005 TAFTIE report, non-competitive funding can involve very large sums, “up to a few hundred million dollars”.

Unfortunately, the report does not give any examples and this study found no evidence of such aid.

The *Grant for Application of Industrial Technology Innovation* is intended exclusively for start-up SMEs and is also fully compatible with the European Framework (as regards both the provisions on aid for innovative projects and the aid for young innovative enterprises) because the amount of aid is capped at EUR 615,000 per year, as compared with EUR 1 million in aid for young innovative enterprises under the Framework.

In most cases, the intensity of aid ranges from 100% to 50%. This level of intensity is similar to that which exists under the Framework, with fundamental research projects receiving the highest levels of funding. However, it appears that higher aid intensities, of between 50% and 66%, for all stakeholders, are permitted in the more upstream phases of R&D, related to experimental development.

Japan also seems particularly keen to encourage innovation clusters, which receive nearly EUR 12 million per year and per cluster (not including projects). Under the European Framework, innovation clusters can receive subsidies of up to EUR 5 million per cluster (to cover operating, support and investment costs).

5.4 State Aid for RDI in Korea

5.4.1 The Institutional Framework for State Aid in Korea

The “*State R&D Business Management Regulation*”, based on Chapter 11 of the “Science Technology Basic Law” controls the planning, assessment and management of State aid for R&D. Congress may vote to allow exceptions, but this requires an in-depth debate on the proposal. According to the “*State R&D Business Management Regulation*”, public decision-makers must inform firms of their R&D aid mechanisms exactly 30 days before they enter into force.

It appears from this data there is no ad hoc project funding that can be granted to individual programmes. Projects can only receive funding via pre-existing mechanisms which have been reviewed by the Budget Planning Office and by Congress.

5.4.2 Review of a Selection of the Main Types of Aid for R&D in Korea

The following types of aid were reviewed:

- Growth Engine Technology Development
- New Technology Development for Next Generation
- New Growth Engine Core Information Technology Development
- KOSBIR (Korea Small Business Innovation Research)
- Aid for experimental innovation clusters

The types of RDI project aid reviewed share similar characteristics with those available in the EU in terms of aid intensity, ceilings on aid and eligible costs. Thus, the aid intensity differs according to the type of stakeholder involved in the project, with 75% intensity for SMEs, and an aid intensity of 50% for large enterprises. These figures are in line with the European aid intensities, albeit with a more marked emphasis on support for SMEs.

Nevertheless, the sums involved do not correspond to those permitted under the European Framework, and fall far below the threshold for detailed assessment. Although the texts contain no ceiling on aid, the examples given show that project funding does not in fact exceed EUR 7.5 million.

Korean innovation clusters are 100% State-funded. Each cluster received EUR 3 million in 2005 and EUR 4 million in 2006.

5.5 Sectoral Analysis of State Aid for RDI

More specific comparisons can be drawn by focusing on two sectors, biofuels and pharmaceuticals. This sector-based approach is particularly helpful when it comes to identifying ad hoc aid, which is often difficult to spot because it falls outside known programmes and schemes.

5.5.1 State Aid for Biofuels in the United States

Support for biofuels research in the United States is based on a very active policy aimed at promoting new energy technologies, motivated by concerns about energy independence, the rising price of oil and a growing awareness of problems linked to the greenhouse effect.

Federal support for R&D on biofuels comes in a variety of forms:

- Aid for large projects that have been “handpicked” by Congress (\$385 million);
- Official funding granted following traditional requests for proposals (over \$200 million);
- Funding for fundamental research (\$400 million);
- Funding awarded to SMEs under the SBIR programme. SBIR will provide up to \$18 million in funding for SME research during the 2008 financial year.

The funding of large projects merits special attention. These projects receive the highest levels of funding, some of which recently crossed the detailed assessment thresholds set by the European Framework. This funding is often granted to upstream activities which go far beyond the scope of the Commission’s definition of experimental development, such as the construction of biorefinery pilot and demo plants. In 2002, the construction of an initial series of biorefineries was partly funded by the Department of Energy (DOE), at a cost of over \$20 million for pilot plants, and a second series received significant funding in 2007. Six firms have been awarded \$385 million (EUR 249 million) to build plants that demonstrate the commercial application of integrated biorefineries. The sums granted to each consortium range from \$33 million to \$80 million, far above the detailed assessment threshold laid down by the Community Framework. The total investment in the construction of plants amounts to \$1.2 billion, and, on average, public funding represents 32% of the total cost of the plant. In comparison, the total amount invested in the development of biorefineries under the 2009 Research and Development Framework Programme was between €50 million and €65 million for the whole of the EU. Only the projects supported by France’s Industrial Innovation Agency (AII) received anything like the funding granted by the DOE. Even then the sums in question were lower, at EUR 43 million for the BioHub (Roquette) project and EUR 31 million for the Osiris (Soufflet) project.

Following an application to Congress, it can take between six months and a year for aid to be allocated to firms. The procedure involves a three to six month assessment, followed by an additional three to six months for contract negotiations. These time periods are also contained in the 2005 Energy Policy Act (EPAAct).

It is noteworthy that the main difference between the new biorefineries is that their raw materials come from different sources.

The uncertainty over which concept was best led the DOE to systematically explore the various options, so that they could all be tested on a large scale.

Strategic projects are seen as being in the public interest; the primary concern here is the country's energy independence. In this case, the national interest is given precedence over any considerations concerning regulation and competition.

5.5.2 State Aid for the Pharmaceuticals Sector in the United States

This section will focus on State aid for research into and production of vaccines against the H5N1 strain of the avian influenza virus in the United States. The specific characteristics of the disease are not known, but the need to produce sufficient vaccines against a virus which could put American lives in danger led the US government to invest \$1 billion in research into and production of millions of doses of vaccines in the 2006 financial year.

A large part of the aid given to the pharmaceuticals sector comes from public contracts which provide funding for research activities. However, this sector-based study showed that industrialists can sometimes receive large repayable advances, which exceed the threshold for detailed assessment set by the RDI Framework, but which are not subject to the Framework's waiting periods and other restrictions.

In April 2005, the Department of Health and Human Services (DHHS) awarded Sanofi Pasteur (Lyons) \$97 million to develop advanced technologies for the production of an avian flu vaccine using cells, rather than eggs. The contract will run for five years.

In November 2006, the DHHS awarded a total of \$200 million to three vaccine manufacturers for the production of 5.3 million doses of a vaccine against the H5N1 strain of influenza.

- Sanofi Pasteur received \$117 million to produce 3.7 million doses
- Novartis received \$41 million for 800,000 doses
- GlaxoSmithKline received \$41 million for 800,000 doses

In June 2007, the DHHS granted two repayable advances worth a total of \$132.5 million to allow existing equipment to be upgraded.

- Sanofi Pasteur received a repayable advance of \$77.4 million
- Medimmune received \$55.1 million

It should be noted, further, that:

- There is no requirement to engage in partnership activities. This can be seen in the light of the reluctance of major pharmaceutical companies to take part in the European Commission Framework Programme's partnership activities.
- The companies are given ownership of the results and infrastructure when the contracts expire

6. The Framework in Practice: Notification Case Studies

The study reviewed the notifications that have been made to the Commission and their impact on the parties involved in this process, namely the public decision-makers who notify the Commission and the potential recipients of the aid notified.

6.1 Scheme Notifications

Impact of the Community Framework for State Aid for Research and Development and Innovation on European Union Competitiveness -Summary

This section will look at two scheme notifications and present the major lessons learned from these case studies.

6.1.1 Scheme Notifications: Introduction to Case Studies

6.1.1.1 The French “Young Innovative Enterprise” (JEI) Initiative

This mechanism was born in 2000 out of a recognition, supported by several studies, that an innovation deficit among start-ups was one reason for France’s falling competitiveness. Robust measures, the first of their kind in Europe, were therefore introduced alongside the aid available for projects in order to address the structural problems faced by young innovative enterprises.

These included providing a specific status for young and innovative firms, based on the nature of the company rather than on its projects. This status would entail a temporary exemption from employers’ contributions and taxes on profits.

It was initially thought that this initiative would be classified as a general measure, rather than as State aid. In fact however this was not the case, and the mechanism had to be notified to the European Commission. The application process involved negotiations at various levels, involving both the French Prime Minister and the highest European authorities.

During an official meeting with the Commission, the Director of the General Directorate in charge of Industry highlighted the lack of consistency between the Community’s competition policy and its business policy. She noted that it is essential for competition rules to be applied in a way that is compatible with the Lisbon targets.

The French authorities eventually decided to remove the controversial sections of the initial version of the scheme in order to ensure that it could be approved by the Commission within a reasonable time.

6.1.1.2 The German “Theseus” Programme

Theseus is a research and experimental programme which focuses on developing new integrated technologies for the next-generation Internet and which is intended play a crucial role in ensuring firms’ future competitiveness. Germany’s aim is to create integrated services and new fields of application which will generate new economic activities.

Theseus was born in 2006 when France and Germany ended the cooperation agreement that they had signed in order to enhance the competitiveness of their respective economies. In France, the Quaéro programme, funded by the AII, is seeking to establish an industrial network that will develop new multimedia digital content management systems for general and professional use.

The French and German programmes have adopted different strategies. Quaéro is a Programme to Promote Industrial Innovation (PPII), an integrated AII programme worth nearly EUR 200 million, which was notified to the Commission as an individual project following a detailed assessment. Theseus is an aid scheme that can be used to fund a variety of projects, rather than a single large one.

During its initial phase, subsidies worth EUR 34 million will be allocated to four projects run by large German businesses which have been instructed to explore opportunities for new potential R&D activities. SMEs will then receive aid to enable them to exploit the results of this work.

6.1.2 Scheme Notifications: Lessons Learned

Problems caused by excessive bureaucracy, waiting periods and uncertainty.

The Theseus notification procedure lasted a total of one year, and, according to those interviewed, required considerable effort on the part of the Ministry for the Economy. As regards the JEI programme, the French authorities eventually agreed to remove the contentious parts of the project in order to speed up the procedure and bring it to a successful conclusion. 11 months elapsed between the first contacts with the Commission and the final decision. It should however be noted that, under the new Framework, the vast majority of scheme notifications take less than six months.

Problems due to the confidential nature of the information provided. The Competition DG demands large quantities of information. Some Theseus firms were surprised to see that the DG was making sensitive information available to the public under the “principle of transparency”. This had a negative impact on the relationship of trust between these firms and the European Commission.

Uncertainty and self-censorship by Member States. The uncertainty and the lengthy waiting periods caused the French authorities to censor their own proposals. Even before the JEI mechanism was notified, the authorities withdrew all measures that were likely to be seen as problematic with the Framework. According to the interviews conducted, this was not an isolated incident. Sometimes a scheme which is notified to the Commission is already a scaled-back version of the original project. If this practice becomes too widespread, there is a danger that Member States will prioritise minimalist schemes which can be adopted easily and on time. The end result will be that public decision-makers become less innovative.

Excessive complexity in the Framework. Interviews with the Member State officials responsible for “re-notifying” old aid or notifying new forms of aid under the new Framework show that there are no fundamental problems with the Framework’s main provisions on scheme notifications. In general, the new Framework appears more permissive and open. In fact, however, it is very restrictive when it comes to designing new forms of aid. The procedures applicable to aid schemes are intended to prevent unjustified forms of aid, as well as anything that is liable to distort competition, but this has caused them to become too complicated. The Framework seeks to provide a very precise description of the scope of acceptable aid, but in so doing it has created too much complexity, with multiple variants, terms and conditions. The analytical structure of the Framework, based on different types of market failure (each with a corresponding type of State aid that is capable of resolving the market failure without unduly distorting competition) is attractive in theory but often ineffective in practice. As a result, the procedures which apply to aid schemes have come to be seen as a “ready-made, enshrined-in-law” formula for detailed assessment. The criticisms of the detailed assessment procedure itself are therefore equally valid here.

Rules which draw on practical experience. The JEI case shows that discussions with the Commission can bear fruit in the longer term. The JEI scheme was the inspiration for the aid for young innovative enterprises found in the new Framework.

6.2 Individual Project Notifications

Where State aid exceeds the thresholds set in the Framework for each primary activity¹⁵, the Commission requires a detailed assessment because of the increased risk of it distorting competition and trade.

6.2.1 Individual Project Notifications: Introduction to Case Studies

6.2.1.1 Bernin 2010 (Lead Partner: Soitec; Aid Source: French General Business Directorate (DGE))

The aim of the Bernin 2010 project is to overcome the technical challenge of extending Moore's Law by increasing the miniaturisation of components while maintaining conductivity and enhancing substrate functionality.

The Bernin 2010 scheme involves EUR 14.3 million in subsidies over three years. The total cost of the programme is EUR 60 million, EUR 30 million of which is expenditure that is eligible for aid.

The notification process began in December 2006. The French authorities were asked sets of questions in February 2007, March 2007 and May 2007. In May 2007 the Commission rapporteurs gave a positive opinion. However, the Chief Economist asked that the decision be delayed. This led to further questions, before the positive answer given in September 2007.

During the intervening period, all expenditure had to be recorded under liabilities, which had a serious negative impact on the company's operating account. In order to mitigate this effect, the project did not operate at full capacity and only really got off the ground when it received the Commission's approval.

6.2.1.2 Osiris (Lead Partner: Soufflet; Aid Source: AII)

The Osiris project aims to develop a ground-breaking technique known as Solid-State Fermentation, in order to find new biocatalysts that are produced by micro-organisms when in a solid state. One potential application for this technology lies in the area of biofuels. The project's ambition is to create a new biotechnology industry.

The project will receive EUR 31 million (including EUR 12.7 million in repayable advances) over eight years. The total cost of the project is EUR 77 million, so the aid intensity is under 50%. Around 60 public and private-sector researchers will be involved in the programme, which should create about 40 new high-level jobs.

The pre-notification forms were filed in April 2007. In June 2007 the notification application was submitted to the Commission. The Competition DG asked sets of questions in May, July and September, and the final decision, which was positive, was taken in October 2007.

¹⁵ Fundamental research: EUR 20 million
Industrial research: EUR 10 million
Experimental development: EUR 7.5 million

6.2.1.3 Neoval (Lead Partner: Siemens; Aid Source: AII)

The purpose of the Neoval project is to develop an automatic modular transport system for Siemens tyres.

The project's development costs have been estimated at approximately EUR 62 million, EUR 26.5 million of which will be provided by the AII.

The French authorities notified the Commission of this aid project in October 2006. Following this meeting, an initial series of questions was asked in November 2006. A second series of questions was sent to the French authorities in January 2007. The Commission's positive decision was finally given in February 2007.

6.2.1.4 Hybrid Diesel Vehicle (Lead Partner: PSA; Aid Source: AII)

The Hybrid Diesel Vehicle (HDV) project aims to develop a medium-range vehicle with an HDi hybrid diesel powerchain. The project's biggest challenge is to develop a vehicle that is suitable for the general public. The goal is to commercialise 225,000 vehicles in 2018.

The total cost of the project is EUR 471 million, spread over 2006-2011, plus EUR 400 million for industrialisation, which is not eligible for State aid. Out of the total cost of EUR 471 million, EUR 247 million has been held to be eligible. The project should receive EUR 97 million in aid.

Two series of questions were asked during the pre-notification period, before the French authorities decided to proceed to notification, and there were several discussions with the Competition DG. In November 2007, however, a fourth set of 40 questions was sent. Faced with the prospect of starting the notification procedure, PSA chose to withdraw its notification application in December 2007.

6.2.2 Individual Notifications: Lessons Learned

The harshest criticisms from respondents, from across all categories, were directed at the detailed assessment procedure. This was the case both for those who had actually been involved in making notifications and for those judging the procedure "on paper".

Excessively long notification waiting periods. The time interval between the notification and the decision does not accurately reflect the length of the waiting period, which in fact begins with the decision taken by the national authorities and ends when the Commission takes its final decision. The average wait is one year, or longer for more difficult applications. The various attempts to reduce waiting periods have proved disappointing, as the hoped-for time savings have not materialised.

Waiting periods and competitive risks. Notification waiting periods may reduce a firm's lead time advantage over its competitors. This risk is increased by the fact that as soon as the national authorities' decision is made public, competing firms will be aware that the recipient of the aid is developing a highly innovative product or process. The waiting periods will therefore have major implications for projects in areas where there is rapid technological progress and which have short product cycles.

Waiting periods and industrial risks. The notification waiting periods mean that firms are in danger of losing staff whose recruitment is pending, partners whose involvement has not been formalised and, finally, internal personnel who have to wait for the word "go". Excessive delays and uncertainty about the outcome of the process also make the project very vulnerable within the firm itself. Long-term, high-risk projects are usually fiercely debated within businesses, and delays and uncertainties tend to benefit a project's opponents.

Major uncertainty over decision dates. Even if there are sometimes hints which suggest that the Commission's final decision is likely to be positive, there is no way of knowing when this decision will be made, which makes it hard for firms to plan their commitments.

Difficulties linked to starting projects prior to the decision. In most cases, the industry representatives interviewed said that they had not made projects fully operational, at their own risk and expense, prior to the Commission's decision. However, it is often impossible to scale a project down because it is indivisible, inflexible or subject to other critical mass phenomena. Firms therefore face a binary choice between an all-out commitment and doing nothing at all. Only the largest companies were able to incur relatively significant expenses at their own risk. Paradoxically, the greater the need for aid, the harder it will be for a firm to begin work before the decision is made.

Unreasonable demands for information. The amount of information requested by the Commission during the notification process is seen as very high. Preparing an application can require several full time equivalents, sometimes for up to a year. This is in addition to the effort required to prepare the earlier application to the national authorities.

Unreliable information. Some of the information requested is seen as highly unreliable because of the inherent uncertainty found in the sort of ground-breaking innovations pursued by large projects.

Highly confidential information. The information requested is highly confidential. Businesses have concerns about how it will be distributed.

Reasoning which is sometimes unfounded. The Framework seems very distant from the strategic decision-making processes used within firms. In fact, the criteria and calculation models used to imitate the receiving firm's strategic planning processes do not always accurately portray the way in which decisions are taken when there is uncertainty or, more generally, the research and innovation activities that take place within firms.

A useful exercise, overall. The promotion of healthier competition between companies within the EU was not the only positive aspect identified by respondents. It should also be noted that even the firms which had encountered the most difficulties with the Framework admitted that the process had enabled them to improve the structure of their projects and to create more developed business plans and strategies towards their competitors. The exercise can also help to clarify relations between partners by enhancing compatibility between their respective business plans.

Finally, it should be noted that in almost all the individual notification cases studied, the final decision was positive, and the long waiting periods did not affect the content of the scheme or project. Any areas of controversy, which would lead to additional questions, were always resolved by means of a transfer of information from the national authorities to the Commission, and not by any modifications to the aid itself. In this light, the Framework can be seen simply as a tool for developing applications in support of aid that prevent anyone from challenging the Commission's decisions. This can sometimes make the exercise appear rather false and formalistic.

7. Major Conclusions of the Study

7.1 Major Conclusions from the International Comparison of State Aid for RDI

The results of the international benchmarking exercise can be summarised as follows:

1. There was no equivalent of the RDI Framework in any of the countries studied, which had no predefined rules on the creation of schemes or the review of aid applications. The only rules applied by these countries at this level were less specific and gave public decision-makers more room for manoeuvre.
2. The main rules governing the terms and conditions applicable to aid were not laid down *ex ante* or at a general level. Instead, they were developed at the level of the particular field, programme and/or administrative body responsible. They could therefore take each sector's specific characteristics into account.
3. Nevertheless, this lack of *ex ante* regulation on aid had not led to any serious excesses on the part of the relevant administrative bodies. Most aid for R&D projects in the United States, Japan, and especially Korea, much of which is awarded competitively through requests for proposals, would be perfectly compatible with the RDI framework. The research intensities and the sums involved were also generally consistent with, if not less generous than, the provisions of the Framework.
4. Aid for major strategic projects, however, was a completely different story. Although the large consortia formed by the American DOE or the Japanese Ministry of Economy, Trade and Industry (METI) in the 1970s-1990s were no longer commonplace, the strategic nature of some sectors was still being used to justify granting private companies sums of money, and levels of eligible expenditure, that far exceeded what would be permitted under the detailed assessment procedure. This was clear from the United States' aid for biorefineries and pharmaceuticals. Although the information on Japan was less specific, there was a suggestion that major projects in strategic areas, in particular new energy technologies, which have always been heavily supported, had also received very large amounts of aid.
5. Although there was no equivalent of the Community detailed assessment procedure, major strategic projects were still subject to review before they were granted funding. The project review and selection procedures and criteria used in the United States, Japan, and especially Korea, were similar to the national assessments performed by the EU Member States. The main differences were that (i) in these countries, there was no "second assessment" similar to the individual notification process in Europe; (ii) the national assessments were based mainly on the aid's strategic relevance and not on the existence of market failures or distortions.
6. The waiting periods for acceptance of a programme or project, once set, were lower in the United States, Japan and Korea than in Europe. This was particularly evident upon comparison of the detailed assessment procedure for individual projects with that used for large projects in the United States (which lasted a maximum of six months).
7. Investigations in China did not provide any detailed information about the aid granted. Significant question marks remain, especially concerning the relationships between the State and publicly-owned companies, and between companies and research centres. This made it difficult to draw comparisons with the Framework. It should nevertheless be emphasised that the Chinese R&D industry is growing rapidly, both in terms of R&D spending and in terms of results.

7.2 Major Conclusions from the Notification Case Studies

The individual and scheme notifications studied provide similar examples of the limits of the procedure, in particular as regards red tape, complexity and waiting periods. Although both the reasoning behind the Framework and the importance of regulating State aid within the EU are universally accepted, both can have harmful consequences if taken too far.

The following points were raised in connection with scheme notifications:

- Problems caused by excessive bureaucracy, waiting periods and uncertainty.
- Problems due to the confidential nature of the information provided.
- Problems caused by uncertainty over the final outcome and decision date, creating a tendency towards self-censorship among public decision-makers.
- Excessive complexity in the Framework.
- Rules that draw on practical experience.

The following points were raised in connection with individual notifications:

- Overly long waiting periods which increased project vulnerability. The lengthy waiting periods not only created competitive and industrial risks, but could also affect a firm's internal dynamics and relations with partners.
- A quasi-obligatory project freeze prior to the Commission's decision.
- Requests for information that were disproportionate, given the issues at stake.
- Requests for information that is not reliable or robust.
- Use of models and concepts which were too vague or too far removed from the true nature of the innovation process to assess the impact of aid.
- Distinctions between the different phases of research (fundamental research, industrial research and experimental development) that were not always relevant.
- Practical applications of the balancing test which treated it like a check-list.
- Uncertainty over the scope of the Framework, and very detailed assessment even in cases where there was no Community competition.
- A useful exercise, overall.

8. Recommendations

These recommendations are based on the conclusions of the study.

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|------------------|---|
| Recommendation 1 | Aid for sectors and areas that have been designated as strategic by the European Commission (for example through the Lead Markets Initiative) should receive special treatment. |
| Recommendation 2 | The practical application, if not the wording, of the detailed assessment procedure should be changed in order to make it shorter and simpler. |
| Recommendation 3 | The regulations applicable to schemes which fall below the detailed assessment thresholds should be simplified so as to reduce the number of types of aid and to make them more effective. |
| Recommendation 4 | The conditions applicable to certain forms of aid should be reviewed and then amended appropriately. In particular, the aid for innovation clusters (where the maximum intensity does not provide a sufficient incentive) and the aid for process and organisational innovation in services (where the definition of innovation, which is reduced to its ICT component, is unduly restrictive) should be revised. |
| Recommendation 5 | As is already the case for mergers and acquisitions, the Commission should commit to a maximum time period within which it will make its decisions. |
| Recommendation 6 | The conditions under which work can begin on activities which form part of projects subject to the individual notification procedure should be made clearer and more flexible. |
| Recommendation 7 | The bonuses provided for SMEs should also be granted to medium-sized enterprises. |
| Recommendation 8 | The implementation conditions for the matching clause should be clarified so that it can actually be used. |
| Recommendation 9 | An economic intelligence network should be created at the level of the leading countries in the field of research and innovation activities, so that they can systematically share information about State aid in key sectors. |

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