

**Paying for an asset
funding university research**

Report 61

1. Aim and focus of the report

There is a widespread debate underway about university research funding. Many parties are calling for changes in the way in which university research is funded (see Appendix 1 for an outline of recent contributions to the debate). The AWT takes these opinions seriously and is therefore issuing this advisory report on its own initiative in response to the following question:

‘How should university research be funded in order to ensure that it meets its aims in the best possible way?’

Aim of the report

The AWT’s aim in publishing this report is to add to and deepen the debate about university research funding. Whereas many contributions to the debate suggest concrete solutions and measures, the AWT is taking a step back by considering university research funding in the light of the aims of the research. By extension, the AWT then analyses the challenges facing university research funding. Based on this analysis, we make recommendations for changes in the funding of university research.

Focus of the report

This report concerns the organisation of university research funding, in other words, what university research is funded for and how it is funded. These questions are separate from questions about the extent of funding. Regardless of the total extent of the funding of university research, the government will always have to make statements about how the funding is organised, which is what this report is about.

This report centres on the organisation of basic funding (which comes direct from the government), indirect funding (which comes from governmental organisations) and contract funding. These different flows of funds are connected to and affect each other. This is why the AWT makes statements in this report about the organisation of *all* flows of funds going into university research.

In this report we consider university research in relation to the other tasks of universities: education and transfer of knowledge. In practice, these tasks are closely related to each other, which means that the funding of university research automatically has consequences for the performance of the education and knowledge transfer tasks. The funding of those two other tasks is not considered in this report.

2. Context of this report

The funding of university research has drastically changed in recent decades (see Appendix 2 for an overview). The biggest change is that indirect and contract funding have become much more important. Half of all university researchers are now paid from indirect and contract funding. At the same time, the basic funding has not increased. Allowing for inflation, the state's contribution to research and education combined in 2003 was at the same level as it was in 1983.

However, the organisation of the basic funding has changed. Until 1983 the government did not allocate separate funding to universities for research. In effect, universities funded their research activities at the time from education funds. In 1984 the government introduced a separate research compartment in the basic funding.¹ After a number of experiments with the conditional funding, the research funds started to be more and more distributed according to performance. This was the case for approximately 35% of all research funding from the basic flow of funds in 2003.

The changes in the three flows of funds have resulted in almost 60% of the total university research funding now being performance-based (see Table 1). Approximately 40% of the current total funding of university research is therefore not directly related to performance; this is the so-called Strategic Considerations Component (SCC). The distribution key for this SCC over the different universities has changed repeatedly over time. With the introduction of the so-called *smart mix* in 2006 the performance-related part will increase further to approximately two thirds of the total funding of university research.

Table 1: Composition of total university research funding in 2003.²

| | | Size | Share | } per- formanc |
|------------------|------------------|--------|-------|-------------------|
| Basic funding | SCC | M€ 926 | 42% | |
| | Diplomas | M€ 213 | 10% | |
| | Doctorates | M€ 174 | 8% | |
| | Research schools | M€ 91 | 4% | |
| Indirect funding | | M€ 238 | 11% | |

¹ This was originally allocated as earmarked funding. In the 1990s the government changed to a system of lump sum funding but still with a separate allocation for research. Incidentally, this compartment in the state's contribution was significantly larger than the funds that were earmarked for research prior to 1993. This was because the heading 'research' covered a lot of direct funding that had previously been earmarked for very different tasks (management, transfer of knowledge). In that sense the 'research' compartment in the basic funding has looked a lot larger since 1993 than the amount that is actually available for research.

² B. Jongbloed and C. Salerno, *De bekostiging van het universitaire onderwijs en onderzoek in Nederland. Modellen, thema's en trends* ['Bearing the cost of university education and research in the Netherlands. Models, themes and trends'], p. 43 (Dutch only; published as an AWT working document in 2004; posted on www.awt.nl). NWO, *Jaarboek 2003* ['Yearbook 2003'] (The Hague, 2004), p. 85. The figures about the size of the contract funding come from Statistics Netherlands (CBS). They relate to 2002 and include the WUR contract income.

| | | | | |
|-----------------------|--|---------|------|--|
| Contract fund- ing | | M€ 587 | 26% | |
| Total | | M€ 2229 | 100% | |

Apart from the funding, the practice of university research has also changed in recent decades (see Appendix 3). A lot of measures have been taken to improve programming (research schools), increase quality (inspections) and improve training for researchers (research schools). Between 1980 and 2001 the number of researchers rose by almost 70%. Much of this growth was achieved through indirect and contract funding. At the same time, the productivity of university research has increased. In 2001 university researchers produced one and a half times more publications than in 1980. This increase was not at the cost of quality. The impact of scientific publications by Dutch researchers is among the highest in the world. Measured against this criterion, Dutch universities are among the best in Europe.

The above-mentioned developments form the background to the current fierce debate about the funding of university research. At the centre of this debate is the question as to whether, and if so how, the funding of university research should be made more dynamic, i.e. less dependent on allocations made on a historical basis.

3. Discussions about funding

In preparing this report the AWT spoke to a lot of different parties that are involved in the funding of university research (see Appendix 4). These conversations showed that opinion differs sharply on this subject. The various parties disagree as to whether and how the funding of university research should be made more dynamic. These differences of opinion relate in particular to three issues:

- the wish to further 'horizontalise' funding;
- the wish to provide better rewards for quality;
- the wish to introduce more incentives into the system.

Should funding be more horizontalised?

The university obtains research funding from two directions: from above (from the Ministry to the Board of Governors) and from the side (from other financiers to research groups). The vertical funding of university research forms the basic funding, which is paid out to the institutions as a lump sum. The institutions can use the basic funding to choose their own profile and follow their own strategy into the long term. The indirect and contract funding is the horizontal funding. Individual groups within the institutions receive this funding based on (contractual) agreements made by research groups with third parties. As a consequence, there is little strategic freedom in the allocation of expenditure: the funds involved must be used for specific projects and programmes.

The AWT has not met anyone who felt that one or the other form of funding should be used exclusively. However, opinion differs about what the balance should be between the two forms of funding. A number of parties believe that university research is too vertically funded. In their view, more project-based or programme-based funding is needed because that would increase the responsiveness, quality and efficiency of university research. On the other hand, there are parties who believe that funding has become too horizontal. In their view, institutions cannot choose an adequate profile nor pursue their own strategy if the greater part of their income can vary significantly over time. They also point to the amount of basic funding that is taken up by matching obligations, which leaves little room to allocate expenditure in the basic funding.

Should quality be better rewarded?

All parties in the Netherlands unanimously agree that quality is an important aspect of scientific research. However, opinion differs greatly about the whys and wherefores of quality. Parties have differing views about what the quality is that should be promoted and about how it should be promoted.

- What quality should be promoted?

For some parties, good university research is research that is published in high-impact scholarly journals. Accordingly, the quality of the research stands or falls depending on the quality of the academic publications in which it is published. The written word is the focus here, as it contributes to the *global stock of knowledge*. Other parties define quality more broadly. They judge research not only on its scholarly content, but also on quality criteria as regards anticipating social issues, entering into networks and transferring knowledge. In this view, good research does just as well in the outside world as in the academic world.

- How should quality be promoted?

Some parties believe that the quality of university research should be promoted by linking it to financial incentives. Researchers who do good work should become eligible for research funding ahead of researchers whose work is not as good. This system obviously applies to indirect and contract funding, but these parties believe that it should be extended to include basic funding as well. The system they have in mind resembles the *Research Assessment Exercise* in the United Kingdom.

Other parties believe that the effect of financial incentives would be too one-sided. They expect more from the results of inspections and the ensuing learning curve. After all, quality is not one-dimensional but takes many different forms. Therefore, quality can only be determined on a case-by-case basis, which means inspections to provide the necessary insight and the incentive to further improve the quality of the research.

Should there be more incentives in the system?

Almost 60% of current university research funding is performance-based (basic, indirect and contract funding combined). Universities receive the remainder of their research income on fixed terms (basic funding only). Assessments of this situation vary. Some parties believe that funding of university research should be more performance-based because, in their view, fixed allocations of basic funding do not provide researchers with enough incentive to perform excellent research and as a result the quality and efficiency of research in the Netherlands is less than what it could be. Other parties point out that indirect funding and contract funding already provide a lot of incentives to perform well. Furthermore, the effect of these incentives is not limited to indirectly funded and contract-funded projects; matching means that these incentives also affect basic funding. However, regardless of this aspect, these other parties also point out that the prospect of a financial reward is not the main motivation for researchers to perform well. Researchers are particularly driven by the desire to achieve scholarly recognition and thereby prestige. The scientific community is very competitive in this regard, which means that there are already sufficient incentives built into university research.

4. Position of the AWT

In the previous chapter we described three issues that play a central role in the debate about the funding of university research. In our view, a meaningful discussion of this subject is only possible if we know what we actually expect from university research. That is why this chapter addresses that key question first and only afterwards do we give our position on the aforementioned debate.

What do we want from university research?

In this section we go 'back to basics' because university research funding should be in line with society's wishes. In order to clearly identify what these wishes are, we first need to look at all the public knowledge institutions. In addition to universities, there are also institutes of the Netherlands Organisation of Scientific Research (NWO) and of the Royal Netherlands Academy of Arts and Sciences (KNAW), universities of professional education (*hogeschole*) and all kinds of intermediate knowledge institutes, such as the knowledge organisation TNO and the large technological institutes (GTIs). Society has different expectations of these various knowledge institutions: it is not advisable to group them all together.

In the public knowledge infrastructure, universities have two main tasks: to turn out well-educated professionals (researchers and graduates) and to carry out groundbreaking, risk-taking research. Other knowledge institutions cannot systematically carry out either of these tasks. Universities are the engine that drives our country's knowledge infrastructure. They provide the brainpower – well-educated professionals and groundbreaking ideas – on which the rest of the knowledge infrastructure (both public and private) depends. Supplying this brainpower is the most important task of university research.³

In order to carry out these tasks properly universities must concentrate particularly on 'knowledge as an asset': strengthening the capacity to understand new knowledge-related developments and to build on that basis to develop new knowledge. Obviously it is important to answer specific research requests – i.e. 'knowledge as a product'. However, in the spectrum formed by all knowledge institutions, universities should concentrate on maintaining the capacity to perform research in response to society's demands. The specific task of university research is not to come up with new inventions but to maintain inventiveness. The Netherlands can reap, but it must also sow, and it must sow particularly in the universities.

³ See also A. Salter et al., *Talent, not technology – the impact of publicly funded research on innovation in the UK* (Sussex 2000). R. Florida and W.M. Cohen, 'Engine of infrastructure? The university role in economic development.' In L.M. Branscomb, F. Kodama and R. Florida, *Industrializing knowledge* (Cambridge MA, 1999), pp. 589-610. D.E. Stokes, *Pasteur's quadrant – basic science and technological innovation* (Washington 1997).

The AWT points out that there are two ways of viewing the importance of (university) research: one that focuses on ‘knowledge as a product’ and one that puts the emphasis on ‘knowledge as an asset’.

In the ‘knowledge as a product’ view, the focus is mainly on the specific results of research projects – the substantive contributions made by research programmes to increasing our insight. According to this view, university research should above all provide theories and facts that teach us how things really work. These theories and facts can then be used as input for follow-up research and innovations. Knowing whether and how a particular enzyme works, discovering which new elements are still stable, describing how the grammar of unknown languages works, clarifying the interactions that occur in a classroom – these are all examples of ‘knowledge as a product’, which is mainly expressed in articles and books.

In the ‘knowledge as an asset’ view, the emphasis is precisely on the ability to develop new insights. According to this view, university research should do more than increase our stock of knowledge. In particular, it should develop and maintain the abilities required to understand new knowledge-related developments and build on that understanding to develop new knowledge. Being able to tackle new situations with familiar resources and to take a new view of familiar situations is the crux of knowledge as an asset. That ability is only possible as part of and a result of the combination of well educated people, well equipped infrastructures and the *global stock of knowledge*.

Both views have their own merits and they are not mutually exclusive. Even in the approach where the emphasis is on ‘knowledge as a product’ it is clear that the product can only be supplied if the required abilities are present. At the same time, the supply of knowledge products helps to increase and strengthen the knowledge asset. The same applies the opposite way around: if the emphasis is on ‘knowledge as an asset’ it is clear that the asset cannot exist without the results of research done in the past. Equally, in the view of ‘knowledge as an asset’ there are obviously always substantive results from research projects.

Although the two approaches are not mutually exclusive, the view does make a difference when translating the approach into policy. Do we want as many high-quality research products as possible, whether or not they are demand-driven? Or do we want to develop and strengthen top-level intellectual brainpower? For university research the AWT argues that the focus should be strongly on ‘knowledge as an asset’.

In this report the proposition that university research should above all lead to knowledge as an asset plays a pivotal role. The standpoints developed by the AWT in this chapter and the next follow from that proposition. The common thread is that the funding of university research should above all contribute to the formation of knowledge as an asset. In the first instance, universities must be treated as seedbeds, places where the seeds are sown to grow new talent and new ideas. This harvest does not necessarily need to be gathered in the universities themselves – that can be done

elsewhere. With this thought in mind we will now indicate the main requirements for university research funding.

Solid foundation from basic funding

The AWT agrees with all of the parties involved in the field when they say that both horizontal and vertical funding of university research are required. However, our position is that a solid foundation in the basic funding is necessary. In order to sustain funding of the production of knowledge as an asset, universities must have a lump sum at their disposal. There are three reasons why this cannot be done in projects or programmes:

- First of all, research lines need a long time to mature. This is why research groups are set up, people are appointed and equipment is bought. Funding research over a number of shorter periods can damage this growth process;
- In addition, it is not known what research will be really valuable in future – scientific or social. The necessary space must therefore be reserved for ‘free’ research;
- Finally, research is a creative process of which the outcome is not always predictable. Wherever there appear to be new opportunities there must be sufficient space available within research lines for new ideas and substantial changes of direction.

For these reasons the universities need funding that offers long-term certainty. The AWT believes that the government should play the role of investor that provides universities with this working capital. The government must enable universities to sustainably fund the production of knowledge as an asset. That requires substantial lump sum funding of university research.

Plateau with some peaks

The AWT believes that the funding of university research should promote the emergence/retention of a plateau with some peaks. The university research landscape should offer sufficient quality across the board with real peaks in individual areas.

A broad plateau is required because the Netherlands is a small, open country. Of all the new knowledge developed every year, no more than 2% comes from the Netherlands. The remaining 98% comes from abroad. Therefore the Netherlands is not strong enough on its own to produce (social) innovations and (scientific) breakthroughs. It is essential to link up well with the worldwide production of knowledge and to properly unlock and use that knowledge. This means that scientific research must be performed in the Netherlands across the full width of the spectrum. The Netherlands will only be able to reap the benefits of the foreign production if we have sufficient ability at home to gather in that harvest. To do so, the quality of research must be undeniable.

On the plateau the Netherlands will have to strive for development, maintenance or expansion of a small number of peaks. It is not possible and also

not necessary to strive for excellence across the board. Peaks need to emerge in those areas that are crucial for the Netherlands – think, for example, of knowledge that is strategically important for key economic areas or for social issues.⁴ In disciplines that are driven by scientific curiosity, excellence must also be developed, maintained and expanded. Examples include research in areas where the Netherlands is already very strong, such as (theoretical) physics, astronomy, life sciences and economics.

Rewarding the correct performances

The AWT believes that there are already a lot of incentives in university research. It is no exaggeration to say that the (university) research sector is one of the most competitive sectors of Dutch society. It is a sector where the non-financial incentives in particular prove to be very effective: researchers are extremely sensitive about their status in the scientific community and the judgement of their peers. However, having said that, there is still the question of how the total annual state contribution to university research should be distributed among the institutions. The AWT considers it reasonable for institutions that are performing well to receive a larger share of the state contribution than institutions that are performing less well. However, the trick is to reward the correct performances.

As it believes that the focus in university research should be on knowledge as an asset, the AWT concludes that the state contribution should in any event reward performance in the area of human resources. This means that it is advisable to partly fund university research based on the number of doctoral students and graduates. It would also be advisable to reward universities for their contribution to the plateau with peaks, i.e. according to their strategic choices in putting together and breaking up research groups (portfolio management). However, it is difficult to translate this into measurable performance criteria that can be used when allocating funding streams. Other ways – especially consultations – are more suited to encouraging universities in this regard.

Transparent and simple

Every system of funding university research should be simple and transparent. It needs to be simple in order to restrict the administrative burden and prevent misuse, and it needs to be transparent to maintain or increase the funding base.

⁴ See AWT, *Dutch compass for the European Research Area. Strategic framework for the internationalisation of research and innovation policy* (The Hague, 2003), pp. 32-36.

5. Assessment of current funding

In this chapter we assess the entire funding system for university research (basic, indirect and contract funding combined) in the light of the wishes that we set out in the previous chapter. In order to give this assessment more depth we have included a brief comparison of university funding systems internationally (see Appendix 5).⁵

The AWT feels that parts of the current overall system of funding university research are outdated. The current system was designed for a time when there was little international competition in research, the size of indirect and contract funding remained limited and the universities were not expected to make a major contribution to our innovative power. Allowing for that, the current system of funding university research has performed well, as is shown by the excellent performances. However, the world has changed. Dutch research groups are now competing more and more with foreign colleagues instead of with each other. Indirect funding and contract funding are now almost at the level of the basic funding. Furthermore, universities are expected to make a demonstrable contribution to our innovative power.

This and other developments mean that there are a number of challenges facing university research funding. However, before discussing these challenges we would like to stress that not everything is doom and gloom. It is good that the existing system of funding of university research provides for a solid foundation in the basic funding. This allows universities to fund their research lines for the long term and in so doing maintain research as an asset. In addition, the variable parts of the basic funding encourage universities to perform in the area of human resources. In contrast to a lot of other parties, the AWT therefore considers the composition of basic funding to be well thought through generally speaking, and appropriate for what we want from universities.

⁵ This comparison shows that it is very difficult to make a sound international comparison of the funding of university research. There are all kinds of statistical problems. First of all, no data is known about the size of the funding streams for university research alone. The available data relates to all university tasks combined: education, research and knowledge transfer. Furthermore, the estimation of the basic funding for university research in the Netherlands is systematically too high. Our basic funding for research includes money allocated to other university tasks (administration/management and knowledge transfer) and is intended to cover all forms of overheads (pensions, buildings, etc.). In other countries these items are often not part of the basic funding. In addition, the size of the indirect funding in the Netherlands is systematically underestimated. In other countries, subsidies that encourage innovation are often considered part of the indirect funding. In the Netherlands that is not the case. Finally, it is not known what proportion of the contract funding pertains to income from contract research and what proportion from other income (contract teaching, publishers, catering facilities, etc.). This can result in income from contract research being greatly exaggerated.

Challenge 1: *more focus and mass*

More focus and mass is needed in university research. The main reason is to safeguard the quality and vitality of education and research in those areas where there is fragmentation or sub-critical mass. Furthermore, as science becomes increasingly international and the interaction between researchers and users becomes increasingly important, the need for research groups to be recognisable and visible becomes greater and greater. If the Netherlands wishes to continue to count internationally, then selective application of significantly more focus and mass is needed.

The AWT is aware that steps are already being taken to apply more focus and mass in university research. The natural sciences sector plan, the science & technology sector plan, the themes of the NWO, Bsik, Genomics, ACTS – these are all initiatives intended to apply more focus and mass in university research. The AWT acknowledges the value of all of these initiatives but observes that further steps are necessary. There are few incentives in the current university research funding system to achieve targeted focus and mass. The AWT considers this an undesirable situation. In our view, the encouragement of focus and mass should be a part of the funding of university research more than in the past.

Challenge 2: *more use*

The Netherlands wishes to develop into a great knowledge-based society. Doing so will require the relationship between university research and Dutch society to be strengthened. All the parties have a contribution to make to this end. Users (or potential users) of knowledge can be expected to ensure high-quality formulation of long-term issues and to keep or bring their capacity to absorb knowledge up to standard. Universities should be expected to be accountable and reliable partners who are able to adequately translate social questions into research questions. Universities should develop explicit strategies to promote the exchange and dissemination of knowledge. Obviously these strategies should be in line with the aims of the universities.

The AWT notes that universities currently do a lot of contract research. In 2001 approximately 30% of their research income came from contract funding. Furthermore, the institutions develop strategies separately as well as collectively to directly or indirectly improve society's use of scientific knowledge. The AWT heartily welcomes this type of initiative. At the same time we note that the use of scientific knowledge in the Netherlands is less than what is desirable. The responsibility for making good this shortfall cannot and must not be assigned to the universities alone. Other parties – companies, social organisations and knowledge institutions – also have an important role to play in this regard. Universities can and indeed must be challenged to make even better contributions to the use of scientific knowledge. Financial incentives may help.

Challenge 3: maintaining research capacity in fields where there are a lot of students

Research in fields where there are a lot of students is not easy in the Netherlands. In parts of the arts and humanities and social sciences there is a very heavy educational burden with high student to staff ratios. This puts the research capacity in the disciplines concerned under great pressure. The situation is worsened by the fact that the funding possibilities – outside of basic funding – are usually limited. Indirect and contract-based funding subsidise three to four times more researchers in technical, medical and natural science subjects than in the arts/humanities and social sciences. This is why university research is in danger of being eroded in parts of the arts and humanities and social sciences: education must continue at all times, so the room for manoeuvre is found in research time.

The AWT considers this to be an undesirable situation. The funding of university research should be organised such that the capacity to produce new knowledge and transfer it across the board is maintained. This is not sufficiently guaranteed under the current funding system.

Challenge 4: a usable scope for matching

It is estimated that 50% of the income that universities receive for research in 2005 will come from indirect or contract funding. This income will not cover the total costs of the research that it funds. As a rule, research subsidies cover only 54% of the total costs.⁶ This means that universities have to add 84 eurocents to every euro of research subsidy that they receive. This is called 'matching'. For matching, universities have to use the only other source of income that they have – the basic funding.

The AWT has already stated in the past that the principle of matching has its advantages. Matching offers research financiers the certainty that universities will not simply apply for subsidies: the fact that they have to add money themselves means that universities will have to be selective in the projects for which they try to get subsidies. However, in recent years the amount of money in indirect funding and contract funding has increased enormously. This has also greatly increased the amount of the basic funding that is taken up by matching. This trend will certainly continue in the future. In this situation the universities are tempted to choose between two possibilities:

- They continue to meet their matching obligations and pay those costs out of their investment capacity. This scenario represents a serious danger to the continuity of the university infrastructure. In its advisory report *The price of success* the AWT expressly warns against this scenario;⁷

⁶ See Ernst & Young Accountants, *The scope of matching. A study of the effects of matching of subsidies (indirect funding) and contract funding on the room for strategy development in Dutch public knowledge institutions* (AWT Background Study, 2004) (This study is in Dutch only).

⁷ See AWT, *The price of success. Matching research subsidies in knowledge institutions* (The Hague, 2004).

- They bring down their matching obligations by reducing the amount of income from indirect and contract funding. In reality this scenario is very difficult to achieve because universities draw a considerable amount of their prestige and continuity from income from indirect and contract funding. However, if this scenario is achieved, socially desirable research will not be carried out and focus and mass will not be created.

The AWT does not consider either of these options to be a desirable situation. No one has anything to gain from the eroding of the university infrastructure or from socially desirable research not being carried out. We therefore believe that the problems surrounding matching need to be tackled quickly. The AWT considers that the roundtable discussion with financiers and knowledge institutions, which was organised by the State Secretary for Education, Culture and Science (OCW) at the end of January 2005, was a first step in the right direction.

Challenge 5: more transparency

The current system of university research funding is greatly lacking in transparency. It is difficult to get a clear picture of precisely the amount of money that comes from contract funding. In addition, it is not clear to the outside world what ratio is used to allocate a significant portion of the basic funding. In the past, a lot of the SCC money was allocated based on long-term agreements (for example, to maintain inter-university facilities in one place). The Ministry of Education, Culture and Science (OCW) does not make it clear enough what these long-term agreements entail and what effect they have on the distribution of the SCC money among the universities. As a result, the SCC is like a 'black box' for the outside world. The AWT feels that this is an undesirable situation. Public resources for research should be allocated transparently in any event. Without such transparency the support from society for the funding of university research will quickly erode. The funding streams into university research therefore need to be more transparent – both inside the institutions (size of contract funding) and inside the Ministry of OCW (composition of the SCC).

Quality is not a challenge

Finally, the AWT wishes to expressly state that the academic quality of university research in the Netherlands does not give any reason to change the funding system. Measured by the impact of scholarly publications, the Netherlands is already one of the leading research countries in the world (see Appendix 3). In order to improve their scholarly position in the world, some countries (United Kingdom, Hong Kong, New Zealand, Israel) have made university funding dependent on judgements about the academic quality of their performances. The AWT does not consider this an example to follow. The AWT considers that such linkage would not achieve its aim and might have undesired side effects such as an increase in the administrative burden, a reduction in the use of knowledge, underinvestment in new and risky lines of research and a limitation of the spectrum across

which research is carried out.⁸ That is why the AWT considers performances in terms of academic quality (e.g. high impact scores) to be too narrow a basis for determining the funding of university research.

⁸ See A. Geuna, 'The changing rationale for European university research funding – are there negative unintended consequences?' In *Journal of economic issues*, vol. 53 (2001), pp. 607-632.

6. Recommendations

Based on the challenges that we pointed out in the previous chapter, intervention is required throughout the entire system of university research funding. This observation is not new – a lot of parties believe that the university research funding system should change (see Appendix 1). Most of these parties look to reorganising basic funding as the solution. We are explicitly not doing that. The AWT believes that the basic funding, indirect funding and contract funding should be considered together with the basic funding being the working capital that gives universities the chance to develop knowledge as an asset. This means that the basic funding must be a stable and reliable flow of funds that only changes over a longer period – with a cycle of 10 to 20 years. We believe that the best way of achieving this aim is to use a substantial fixed rate for part of the funding and to allocate the remainder on a parameter basis. The current basic funding system is therefore well organised in this regard.

The AWT considers indirect funding and contract funding to be particularly well suited for giving shape to the desire or need for more content-related management of university research. The managing power of indirect funding and contract funding is then not limited to the projects and/or programmes funded by those income flows. Income from indirect funding and contract funding rewards as it were the success of the strategy that universities launch with their basic funding ('you have to sow before you can reap'). This means that indirect funding and contract funding have a considerable influence on the use of the basic funding because universities can only acquire that income if they make strategic use of their basic funding and offer quality.

All in all, the AWT opts for an approach where we give each of the different flows of funds its own function:

1. The basic funding should enable the development of knowledge as an asset. It provides universities with the working capital on which to base their strategy (without them being able to fully pay for the strategy from this flow of funds). This flow of funds should be allocated partly on a fixed basis and partly according to performance-related parameters.
2. Indirect funding is intended to ensure the creation of focus and mass in university research and in so doing to stimulate both scientific and social quality. There should be less of a link between indirect funding and tendering and matching in order to reduce the burden on the basic funding.
3. The aim of contract funding is to allow university research to address society's questions and desires. Financiers other than research councils can use this route to place research projects that can vary from more basic to more applied research and from knowledge as an asset to knowledge as a product. The burden of matching and tendering will also have to be lightened in this flow of funds.

Recommendation 1

Use indirect funding such that it promotes focus and mass in university research to a greater degree.

The AWT advises the Minister of Education, Culture and Science (OCW) to use indirect funding such that it provides greater stimulus for the creation of focus and mass in university research. The Minister should clearly task the national research council NWO (including the technology foundation STW) with promoting focus and mass and should call the organisation to account accordingly. This is why the promotion of focus and mass should be given a prominent place in NWO's new strategy memorandum.

At the moment the NWO already has a number of initiatives along these lines, such as ACTS and the Darwin centre. The AWT's recommendation is to strongly develop these initiatives and give or allow the NWO to take up a directing task in more cases. These can be just as much socially relevant as scientifically relevant cases. The areas where direction is needed should be determined in a dialogue between the NWO, universities, local and national government, the business sector and social organisations. A properly functioning system of social and scientific foresight could play an important role in this process. The space to allow proper performance of the directing task targeted at focus and mass needs to be found by reducing the number of open NWO programmes. This is also possible because there is now a lot less need to have the NWO promote quality than there was in the past. In the meantime, the many measures implemented by NWO and others to promote research quality have borne fruit. The AWT believes that the NWO should now put extra effort into achieving focus and mass in university research. Still, it would be advisable to keep some space available for open programmes because they continue to fill the important function of bringing flourishing areas to the attention of those who direct research.

In order to promote the creation of focus and mass, the directing role of the NWO should be accompanied by a change in the allocation of research subsidies. Future research subsidies should be more substantial than they have been to date and they should be guaranteed for a longer period than is currently the case. Subsidies should be granted based on track record with clear accountability after the fact. In future, there will have to be less use made of tendering, which will drastically reduce the administrative burden on university research.

Recommendation 2

Ensure more cohesion in the Ministry of Economic Affairs' portion of contract funding so as to better stimulate the use of university research.

The AWT advises the Minister of Economic Affairs (EZ) to apply his part of the contract funding in such a way as to stimulate the use of university research. At the moment there are already lots of programmes and projects intended to ensure that university research responds better to economic questions. This money is already available and can be used more effec-

tively by applying more direction to it. With this in mind, the Innovation Platform has proposed extending Senter/Novem to create a powerful task-based organisation with greater policy freedom. The AWT endorses this proposal and adds that transforming Senter/Novem into a co-programmer of research will take some doing. We therefore advise that the organisations that already have ample experience in this area, such as STW, be closely involved in this change.

Recommendation 3

Increase the size of the compartment in the research part of the basic funding that depends on the number of diplomas granted.

The AWT advises the Minister of OCW to make the allocation of basic funding for research more dependent on the number of diplomas granted. This will prevent further erosion of the research capacity in disciplines where there are a lot of students. We suggest increasing the current compartment in the basic funding (at present 15%) by a few percentage points.

Since the macro-budget for the basic funding is limited, this recommendation would result in the transfer of research funds within and between institutions. More specifically, a limited amount of the basic funding for research will be shifted from the technical disciplines to the arts and humanities and social sciences. The AWT realises that this may involve painful choices. At the same time we note that the growth in indirect funding and contract funding has particularly benefited the technical and medical disciplines and the natural sciences.

The AWT further advises that the size of the compartment in question be increased in stages to prevent large impacts in the technical universities in particular, leading to an abrupt breakdown of research infrastructure.

Recommendation 4

Revise the matching system so that financiers assume that they need to pay all the costs unless there is a public scientific interest involved.

The AWT advises the Minister of OCW to make changes to the system of research funding as part of his responsibility to ensure a properly functioning research system. The issue here is the admissibility of matching of research projects in indirect funding and contract funding with funds from the basic flow of income. The AWT recommends that the Minister adopt the principle that research financiers pay the entire costs of research unless there is a question of strengthening the public knowledge infrastructure and there is a public scientific interest. This principle can only be put into practice if all parties involved are convinced of its usefulness and the need for it. The AWT therefore calls on the Minister of OCW to take the initiative and set up a so-called Financiers Forum in which all financiers and knowledge institutions must reach clear agreements and agree on clear rules of conduct for the funding of university research.

In addition, the AWT would like to repeat its previous recommendation to universities to improve how they deal with their matching obligations.⁹ Universities should place matching obligations in the framework of a clear strategy and act accordingly. They should develop local 'rules of conduct' with regard to matching as well as effective management information systems to monitor and control financial obligations.

Recommendation 5

Make the composition of the strategic considerations component more transparent.

The AWT advises the Minister of OCW to make the composition of the basic funding – in particular the strategic considerations component – more transparent. At the moment interested parties have very little insight into the reasons behind the arrangement of the Strategic Considerations Component (SCC). The AWT considers this to be an undesirable situation and advises the Minister to make the composition of the basic funding more transparent for the outside world.

Recommendation 6

Do not take any steps to make the basic funding more dynamic.

The AWT has made five recommendations above regarding revising the funding system for university research. These recommendations are in addition to the introduction of the smart mix in 2006 and in addition to a predicted growth in indirect funding and contract funding. In the AWT's opinion, this package of measures provides sufficient incentives to tackle the challenges that were pointed out in the previous chapter. It is therefore not necessary to make the basic funding more dynamic, and it would even be undesirable to do so because that would put tremendous pressure on the production of knowledge as an asset and that could have serious effects as regards the continuity, vitality and quality of the Dutch knowledge infrastructure. The AWT therefore advises the Minister of OCW not to take any steps to make the basic funding more dynamic.

In conclusion

The AWT would like to conclude this advisory report by urging that the funding tool be used with moderation. It is very tempting for financiers to try to use funding to achieve all their wishes with regard to university research. However, funding is only one of a number of ways in which the government can influence universities. The AWT points out in particular that it is impor-

⁹ See AWT, *The price of success. Matching research subsidies in knowledge institutions* (The Hague, 2004).

tant to conduct a committed dialogue on policy with the universities¹⁰ in which the abovementioned challenges can be addressed.

¹⁰ See AWT, *Wise after the event. Accounting for university research* (The Hague, 2003).