

THROUGH THE LOOKING GLASS



A self-assessment
of
CPB Netherlands Bureau for Economic Policy Analysis

March 2003

...So, to punish it, she held it up to the Looking-glass, that it might see how sulky it was--

...Oh, Kitty! how nice it would be if we could only get through into Looking- glass House!
I'm sure it's got, oh! such beautiful things in it!

(Lewis Carroll, 1872, *Through the Looking Glass: and what Alice found there*, Chapter 1;
Front page illustration by John Tenniel).

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Introduction

CPB follows a broad strategy to assess and improve the quality of its work, based on feedback generated from various circles. An overall evaluation of CPB's work was provided in 1997 by an external Review Committee of international reputation. In 2001 an assessment of CPB's work was made from the perspective of national policy-makers, by a committee of national experts well versed in the process of policy preparation at the Ministerial level and in related circles (Social-Economic Council, Dutch Central Bank).

Now, a new Review Committee¹ has been asked to evaluate the quality of CPB's work and to help identify areas for improvement. The Committee will focus on CPB's research activities as well as on its forecast and policy analysis. In addition, the Committee may give recommendations with respect to CPB's culture, organisation and human resource management.

To prepare for the work of the Review Committee, CPB has prepared this self-assessment, which details the Bureau's work, tasks, activities and plans, and formulates a number of questions to the Committee.

During the Committee's visit to the Bureau (which is scheduled at the beginning of April 2003) the Committee will meet with management and employees of CPB, as well as customers of CPB products, including high-ranking civil servants, politicians and representatives from social economic consultancy bureaus and some independent observers.

CPB employees participate in the strategic discussions in two stages. In October 2002, two round-table discussions were held: 'Vision and mission' and 'Culture: values and principles'. The points of departure for vision and mission, and values and principles as mentioned in this self-assessment also reflect opinions and suggestions put forward during these discussions. Comments by the works council and individual employees on the draft assessment, made available on Intranet, have also been considered.

Following the presentation of the Review Committee's findings, a Strategic Consultation will be held in Autumn 2003, after which the CPB Directors will release a Strategic Document 2004-2010. This document, outlining bureau-wide priorities with their possible consequences for capacity, organisational structure, the arrangement of working processes and HRM policy, will also lay down strategic actions.

¹ See Annex A..

2 Position and tasks of CPB

2.1 Genesis

CPB Netherlands Bureau for Economic Policy Analysis was founded directly after the second World War. The intention of the then socialist government was to establish an agency that would regularly prepare a national economic plan to coordinate economic, social and financial policies. Before the bill was put forward in parliament, a new Cabinet came into force that consisted of non-socialist parties that were not sympathetic to central economic planning. Nevertheless, the bill went unchanged to parliament. But it went accompanied by a memorandum stating that CPB would be a strictly advisory body, charged with compiling information on the current and the prospective economic situation as relevant for the economic policy decisions of both government and business. In early 1947, the bill and the memorandum were adopted by both houses of parliament. Today, the law still refers to a central planning bureau that should prepare a *Central Economic Plan* containing estimates and guidelines for the national economy. It further says that the government decides on the final contents of the Plan. Yet, in line with the memorandum, CPB has emphasized macroeconomic analysis and forecasting. The annual *Central Economic Plan* has never contained guidelines. Instead, it regularly discusses some alternative policy scenarios to help the decision-making process of the government.

2.2 Formal position

The Dutch government is always formed by coalitions of political parties, which implies the need for power sharing. This has contributed to a distribution of responsibilities for economic policy decisions across various ministries. Thus, the Minister of Finance is responsible for fiscal policy, and the Minister of Social Affairs and Employment handles income policy, social policy and labour market policy. The Minister of Economic Affairs, charged by law with the coordination of macroeconomic policy, is politically responsible for CPB.

The Bureau's work is confined to the field of economics. Other aspects of government policy are covered by three other agencies, the Social and Cultural Planning Bureau (SCP), the National Institute for Public Health and the Environment (RIVM) and the Netherlands Institute for Spatial Research (RPB). The formal positions of CPB and the other agencies with a "planning bureau" function are defined in a protocol², which is endorsed by the Cabinet. CPB cooperates with these fellow agencies – in particular in the field of longer term studies. Another publicly

² See annex C.

funded independent think-tank that draws on the work of the above-mentioned agencies is the Scientific Council for Government Policy (WRR). This Council takes a broader view, bringing together expertise from different disciplines and focussing on strategic and longer term issues. The Cabinet defines economic policy and submits its policy measures for approval to parliament. The Cabinet's macroeconomic policy is normally prepared in the Central Economic Commission (CEC), which advises either on request or on its own initiative. Its Presidium consists of high-ranking civil servants from the Ministries of Economic Affairs, Finance, Social Affairs and Employment, Home Affairs, General Affairs (the prime minister's office), and the director of CPB, and (as a permanent adviser) a director of the Dutch Central Bank. The Commission is chaired by the Secretary-General of the Ministry of Economic Affairs, and its reports are drafted by that ministry.

CPB's forecasts and analyses provide important input in the CEC discussions. *Ad hoc* working parties are regularly organised to discuss and develop policy proposals, and to coordinate assessments and forecasts. Usually, experts from CPB participate in these meetings.

Political parties, from the opposition parties as well as from the ruling coalition, and interest groups often present their own policy proposals, in order to influence the Ministers, parliament and public opinion. CPB is frequently asked to evaluate such proposals, and to assess their likely effects on the economy. This procedure filters out many ill-founded ideas. In the run-up to the general elections, CPB analyses the economic effects of the election platforms of the main political parties, at their own request. The analysis focuses on the different choices that parties make in their election platforms in order to arrive at a consistent programme of public spending, taxation and reduction of public debt.

The unbiased judgements of CPB discourage (politically-motivated) wishful thinking about the economy, and confront decision-makers with the trade-offs they should face. CPB analyses also greatly limit the time that negotiating parties spend on discussions about "the right numbers". Disagreement on that score could easily harm mutual trust within a typical Dutch coalition Cabinet. Moreover, CPB's independent position allows it to serve as a countervailing power wherever the government is confronted with one-sided economic analysis of pressure groups.

2.3 CPB's tasks

The tasks of CPB are twofold. While it operates as the central source of economic information within the central government, it also acts as an independent centre for forecasting and applied economic analysis. A substantial part of the analysis is aimed at monitoring and forecasting economic developments, signalling potential bottlenecks and revealing the pros and cons of various policy measures. Other important activities concern institutional analyses (e.g., competition, knowledge economy), and cost-benefit analyses. Often the Bureau itself takes the

initiative for analyses. Other studies are conducted at the request of the Cabinet, ministries, political parties and organisations of employees and employers.

Every Summer, CPB prepares the *Macroeconomic Outlook* (in Dutch *Macro Economische Verkenning*, or MEV). This document's forecasts help the Cabinet in preparing the budget for the coming calendar year. Updated with the final decisions on fiscal policy, the MEV is published in September, simultaneously with the Cabinet's Budget memorandum, which is based on the macroeconomic forecasts of the MEV. Half a year later, the *Central Economic Plan* (in Dutch *Centraal Economisch Plan*, or CEP) is released, providing a more detailed survey of the economy and containing forecasts for the current year and the next. Both publications include special topics³. In between, updated forecasts are presented in the quarterly *CPB Report*. The articles in *CPB Report* also highlight completed, current and future research at the Bureau, and announce up-coming seminars.

Current and potential economic problems and policy proposals (e.g. those included in the election programmes of the major political parties) are mainly analysed in a medium- and long-term framework. About every two years, CPB updates its medium-term scenarios (one cautious and one more favourable scenario) that look some four years ahead. Long-term scenarios, which extend 25 years or more into the future, are elaborated less frequently. In addition to the regular publications, CPB publishes its analyses in CPB Discussion Papers, CPB Documents and Special Publications.

2.4 CPB's independence

CPB's mission of undertaking independent economic analyses and forecasts seems to be at odds with the Law on the Central Economic Plan, stating that the Minister of Economic Affairs is responsible for CPB and that the government decides on the final contents of the *Central Economic Plan*, which is one of its major publications. However, tradition and practice developed in Dutch socio-economics in more than fifty years have defined CPB's independent position. The founding father and first director of CPB, Jan Tinbergen, contributed greatly toward establishing the independent role of the Bureau, by pursuing a scientific and independent (eclectic) approach to the practical questions of economic policy.

³ Special subjects in the 2000-2002 issues are: Shortages on the labour market, Accuracy of the world economy forecasts, Renewing economy, Employment in the 1990's, Consequences of EU enlargement, Competition in education, Obstacles in climate policy, Corporate taxation, Reexports and market position, Business services, EU policy after the enlargement, Project appraisal in practice.

In a recent television interview (October 2002), CPB's director Henk Don stated that he would resign if the Minister of Economic Affairs would force him to adjust CPB's analysis (in particular, its econometric models) against his professional judgement. This hypothetical situation had some relevance because the Minister of Health had sent CPB a letter with some methodological questions and was known for his criticism of CPB's work before he became a Minister. However, the Minister of Economic Affairs publicly proclaimed his confidence in the quality of CPB's work.

From the start, the work of Tinbergen and his staff was characterised by open-mindedness and quality, and both factors have remained vital in sustaining CPB's independence.

CPB is free to publish its analyses without political interference. Although the government is legally responsible for the content of the *Central Economic Plan*, this seldom leads to ministerial directives. Drafts of the *Central Economic Plan* and also of the *Macroeconomic Outlook* are discussed in the Ministerial Council for Economic Affairs, of which the managing director of CPB is a member. He notes the comments on the draft publication made by the Ministers and other members, but as a rule is given a free hand in dealing with the comments and in finalizing the publication.

CPB's openness also contributes to its independence. The Bureau publishes not only the results of its analysis, but also the assumptions made, and the models and data used. This enables

CPB's assessment of the advice of the Social Economic Council on the Disability Insurance Act was not received with enthusiasm by the social partners.



outsiders to verify the analysis, thereby facilitating open discussions about the Bureau's work. Another factor contributing to CPB's independence is the fact that the three members of the Board of Directors are not selected on the basis of their political preferences, but rather on their professional capabilities in the fields of applied economics and management of the Bureau. They are appointed by the Minister of Economic Affairs in consultation with seven other Ministers. Hence, those appointments have a broad support. The non-political attitude of the CPB directors is an unwritten rule. It reflects the long-term interest of all political parties in a government agency providing independent quantitative information and serving as a trusted anchor for policy discussions.

CPB is in a rather special position. On the one hand, CPB has major comparative advantages. It has free access to a lot of public and confidential information, and benefits from frequent contacts with policy-makers of the different ministries (e.g. by knowing at an early stage about pressing new questions). Other comparative advantages can be found in its integral approach (results of special research are integrated in consistent macroeconomic analyses) and in the continuity and the profoundness it can offer (given its large and up-to-date knowledge base of the Dutch economy). On the other hand, to safeguard its independence, CPB should abstain from political advice. CPB's analysis of the pro's and con's of policy measures may initiate measures, and assessments and forecasts may reveal bottlenecks and problems that should be faced. Putting policy proposals on the agenda, however, is not a primary task of the Bureau: such a mission would soon give CPB an unwanted political profile, endangering its current role. Defining policy goals and deciding on policy plans is of course the Cabinet's responsibility. CPB is responsible only for assessing the effects of the proposed measures, and for projecting the resulting economic developments.

This division of responsibilities is not always as clear as it may seem. CPB has to be responsive to fair arguments, but must not yield to political pressure. Orderly procedures may require a certain timing of publication, but censorship is never acceptable. Of course, words and emphasis in publications and press contacts must be carefully chosen. Several pitfalls should be avoided: excessive cautiousness renders the message ineffective, while oversimplification harms the political debate rather than helping it.

Regularly, critical remarks are voiced about the functioning of CPB, and the quality of its analyses (see, e.g., the quotes in the box). CPB takes an open stance with respect to criticism. As a rule, CPB tries to respond to all serious criticism. Constructive criticism is welcomed and unjustified criticism is met. The latter is done by presenting the actual results of CPB research, the methodology used and the general principles we apply in safeguarding our quality and independence. This will not convince everybody, but a calm, and factual approach with respect

to criticism will in the longer run hopefully increase the trust in the Bureau's competence and integrity.

Recent critical remarks on CPB's work and position

.. 'The horror of that moment,' the King went on, 'I shall never, NEVER forget!' 'You will, though,' the Queen said, 'if you don't make a memorandum of it.'

Lewis Carroll, *Through the Looking Glass*, Chapter 1

General remarks

CPB and (Ministry of) Economic Affairs must have known all those years that in the period of wage moderation the export market share has fallen. There are no two ways to see it. But I believe, that they kept the thing quiet because it was not convenient. The fact is, that they constantly had to supply material to convince the unions about the need for wage moderation.

Alfred Kleinknecht, University of Delft, *Intermediair* magazine, 17 October 2002.

CPB is far from independent – this ought to irritate the media and the opposition.

... The Minister grumbles - CPB listens.

Eduard Bomhoff, *Blinde Ambitie*, (Eng: Blind ambition), Uitgeverij Balans, December 2002.

For many years, Central Planning Bureau has maintained that there is a relationship between wages and economic growth or decline. This reasoning, however, is built on quicksand.

Uwe Becker, Amsterdam School for Social Scientific research, as quoted in *NRC*, 12 April 2002.

Economists and politicians are frustrated with CPB because the Bureau seems to be fighting the previous war.

CPB models often do not react to new far-reaching measures.

Ferry Haan, editor *Volkskrant*, 11 November 2002.

The Bureau is entering the political danger zone. It should show some backbone and clearly say: this is what we can and cannot research. As it is, elements are too often missing in the analyses.

Ad Kolnaar, Crown member Social Economic Council, quoted in *Forum*, 4 April 2002.

For a long time now, we have not had any central wage control. Look at that foolish CPB with its maximum wage increase of 1.75 percent, and the Cabinet that never wanted to consider other possibilities than those 1.5 to 2 percent; they can't sell that.

Sweder van Wijnbergen, University of Amsterdam, *Intermediair* 51, 21 December 2000.

Analysing election platforms

“The analysis of CPB tends to impoverish the political debate. Creativity is nipped in the bud by CPB; it narrows the political spectrum.

Eduard Bomhoff, quoted in *NRC*, 25 March 2002.

The calculation exercise has a limited significance. .. One thing that is clear from the assessment of the election platforms is that political margins are small.... Parties are seriously miscalculating when they think that they can score in the election campaign with the CPB paper in hand.

Financieele Dagblad, 29 March 2002.

Project analysis

CPB hardly suggests any policy improvements. (on Major cities policy)

Ronald van Kempen, *Het einde van het grotestedenbeleid?* (Eng: *The end of the Major Cities Policy?*), *Tijdschrift voor de Volkshuisvesting*, May 2000.

The way CPB deals with the issue of the value of an economic activity, is in my opinion an intellectual escape (or evasion). It is almost literally a bromide. (CPB analysis on Joint Strike Fighter)

Ad Kolnaar, Crown member Social Economic Council and aircraft industry, *Financieele Dagblad*, 10 December 2001.

Disability Insurance plan of SER

CPB, however, seems to be playing two roles: on the one hand, CPB is a fellow player in the commission, but now it appears also to be the public, or should I say the political referee of the advice.

FNV Trade Union chairman Lodewijk de Waal, at the Social Economic Council meeting of 15 February 2002.

CPB works from experience, with historical data. We (SER) expect a substantial impact of the WAO plan from a cultural change, a new zest. It's a question of faith.

Herman Wijffels, chairman Social Economic Council, 15 February 2002.

If CPB had been charged with the evaluation of the (possible consequences of) the invasion of Normandy, those ships would still be floating out by the coast.

Employers' chairman Jacques Schraven at the Social Economic Council meeting on 22 March 2002.

2.5 International networks

On the international scene, CPB participates in OECD working groups (short-term economic prospects, country examinations, Working party 1 and Working party on ageing), in expert meetings of the European Commission (short-term prospects and medium-term prospects) and in numerous AIECE (Association of European Conjunctural Institutes) working groups (on raw materials prices, on international trade, and on longer-term prospects and structural change).

CPB cooperates in the EUROFRAME group with eight other European research institutes⁴ in order to provide quantitative analysis and policy recommendation for the European Union and to identify necessary steps to be taken by national decision makers. CPB also participates in the ENEPRI network (European Network of Economic Policy Research Institutes)⁵. This network brings together institutes from EU member states and accession countries. Its aim is to foster the international diffusion of existing research, to help to co-ordinate research plans, to conduct joint research and to increase public awareness of the European dimension of national economic policy issues (through the exchange of information by way of workshops and conferences, and by offering a common platform for publications). Among other things, CPB participates in the related international research programme AGIR (costs and financing of health care and pensions in the light of ageing), DEMWEL (Demographic uncertainty and the sustainability of social welfare systems) and Reviser (Research Training Network on Health, Ageing and Retirement). CPB is a member of the LINK project and of the IPCC (International Panel on Climate Control). It also participates in GTAP and a number of smaller projects.

2.6 CPB's organisational structure

The organisational structure of CPB is as follows: 5 departments, which each form the umbrella for 3 to 5 relatively small units. The supporting units are: Internal affairs, Information technology and Modelling and data support. In 2002, two project groups started (Innovation, and ICT and labour productivity), and in 2003 a third one (Structural modelling). These groups work outside the traditional line structure, but have been placed under one of the departments. Depending on the results of this pilot, CPB will decide whether to use this construction on a wider scale in future.

Unit managers have two tasks: leading the unit and working on matters concerning content. These executives have to be both leaders as well as scientists. The same goes for the higher

⁴ DIW, Deutsches Institut für Wirtschaftsforschung, Berlin, Germany; ESRI, Economic and Social Research Institute, Dublin, Ireland; ETLA, the Research Institute of the Finnish Economy, Helsinki, Finland; IfW Institut für Weltwirtschaft, Kiel, Germany; NIESR, the National Institute for Economic and Social Research, London, U.K. ; OFCE, Observatoire Français des Conjonctures Economiques, Paris, France; Prometeia, Bologna, Italy and WIFO, Österreichisches Institut für Wirtschaftsforschung (Vienna).

⁵ CEPII, the Centre d'Etudes Prospectives et d'Informations Internationales, Paris, France; CEPS, the Centre for European Policy Studies, Brussels, Belgium; CPB Netherlands Bureau for Economic Policy Analysis, The Hague, the Netherlands; DIW, Deutsches Institut für Wirtschaftsforschung, Berlin, Germany; ETLA, the Research Institute of the Finnish Economy, Helsinki, Finland; FEDEA, the Fundacion de Estudios de Economia Aplicada, Madrid, Spain; FPB, the Belgian Federal Planning Bureau, Brussels, Belgium; ISAE, Istituto di Studi e Analisi Economica, Rome, Italy; NIESR, the National Institute for Economic and Social Research, London, U.K.. and NOBE, Niezależny Ośrodek Bada Ekonomicznych, Lodz, Poland.

management: the director, two deputy directors and five heads of department. The organisational scheme can be found in annex B.

2.7 Finance, planning and control

2.7.1 The budget

CPB's budget for personnel and other expenditures is determined by the (deputy) secretary-general of the Ministry of Economic Affairs. In addition to this budget, CPB is allowed to employ a number of persons on the basis of additional financing obtained from outside assignments. A maximum of 17 fte (full time equivalents) can be financed in this manner. Such assignments are restricted to (parts of) the national government or international public bodies such as the EU and the OECD.

The nature of assignments with additional financing varies widely. The common denominator is the fact that such assignments concern temporary projects that meet a demand of one or several departments or government institutions. For example, one recent project explored the fixed book price. Current paid assignments are "Incentives for semi-public services" and "Space for the rivers". In general, the work results in a publication and often also a presentation or workshop. Sometimes part of the research is put out to a subcontractor or subcontractors, under coordination and responsibility of CPB.

2.7.2 Work plan procedures

How does CPB select its research projects? There are two aspects: the *selection process* and the *selection criteria*.

Each year (around October), all units of CPB make their annual programme. These programmes feature a selection of research projects. How does CPB choose these projects? CPB uses a mix of demand-driven and supply-driven research. Sometimes a Ministry comes with a request, sometimes CPB decides to initiate research on its own. In practice, the distinction between these two polar cases can be rather small. In the demand-driven case, CPB still checks whether the research satisfies the criteria set out below. The supply-driven case does not imply that there is no policy interest for the research. The main reason for being pro-active is to protect policy-makers from opportunistic or myopic behaviour. Thus, what is supply-driven today should be demand-driven tomorrow. It follows that also in the supply-driven cases there is active communication with policy-makers.

The result of the process is often a long list of topics. From that long list, a selection has to be made. CPB does the selection itself, and asks policy-makers and the academic world for feedback. The selection criteria are set out below.

Apart from the actual project selection, CPB also has a process for streamlining the annual programmes of the units. The management discusses strategy early in the year, so that they can guide the units when they set their research agenda. The combination of a bottom-up and a top-down approach ensures that projects are feasible, have support, and fit within broader strategic choices of CPB.

For research to be carried out, CPB has formulated three criteria:

- policy relevance
This should be interpreted as “relevant for Dutch policy-makers, now or in the future”.
- comparative advantage
This should be interpreted with care. CPB can do something because no one else can do it in the same amount of time, with the same quality, with the same impact or in an independent way. This interpretation may imply that CPB invests in a knowledge field to obtain a comparative advantage tomorrow. CPB should try to avoid potential distortion of the commercial research market here.⁶
- research feasibility
If a topic is policy relevant, and CPB already has a comparative advantage, it may still be difficult to obtain really useful results in a certain area of research. This is not always evident in advance, but CPB must be sufficiently confident that something useful can come out of the proposed research.

In addition to these crucial criteria, there are other important criteria, such as the continuity of the knowledge base, the extent to which a project fits within broader strategic choices, and the possibility for scientific spin-off.

In the end, the selection of projects and activities should (naturally) be based on (explicit) cost-benefit analyses.

CPB takes advice concerning its work through informal as well as formal contacts. Formally, CPB gets feedback on the contents of its work plan from two committees. The first is the Central Planning Commission (CPC), in which experts from the scientific community and the business community provide formal advice on the work of the Bureau. This commission meets on a regular basis to discuss the annual work plan, the research methods of CPB and the strategy of the Bureau. The second commission that comments on CPB’s work plan is the Central Economic Commission (see above). The feedback of both commissions helps to safeguard CPB’s independent position.

⁶ There are guidelines for the assessment of market/government distortion.

The draft annual work plan of CPB is submitted to the (deputy) secretary-general of the Ministry of Economic Affairs. Having heard the advice of his personnel and finance staff, the secretary-general approves the work plan. This approval is restricted to matters regarding personnel, finance and the organisation in general. The secretary-general has no say in issues concerning the contents of CPB's work. This construction has been a tacit agreement from the start, in order to make a clear distinction between planning and control related to the budget, and the research and analyses done by CPB. The director of CPB decides on the final version of the work plan.

Besides meetings about the work plan, the (deputy) secretary-general and the director of CPB also have regular talks about work in progress. These meetings take place once CPB has published its annual report, and in the summer when CPB reports on the first six months of the year. As with other meetings on the work plan, only matters of operational management are discussed – not subjects related to the contents of CPB's work.

2.8 Vision, mission and culture

2.8.1 Introduction

What is CPB's *raison d'être*? What is its ambition in the medium- and long run? What qualities are required for their realisation? What does this demand from its values and principles, its culture? It is good practice to check from time to time whether the existing vision, mission and organisational set-up are still adequate, as the demands of the environment may have changed, and new opportunities may present themselves. In June 2002, CPB's management met at a retreat at Loosdrecht to discuss the foundations of the organisation. This was the first step of a new round of bureau-wide reflection on vision, mission and culture that will result next Autumn in the Strategic Document 2004-2010.

The vision refers to the identity of the Bureau and is more or less timeless. The mission refers to the medium-term objective: what position does the bureau want to achieve in the coming years? The mission should be ambitious, but must also reflect a realistic view on possible future achievements. Culture should reflect CPB's key values and they should guide our professional conduct, both within CPB as in our contacts with politicians, civil servants, scientists and the broader public.

At the Loosdrecht session, the management made a SWOT-analysis of the Bureau (see box). This paragraph describes the current vision, mission and culture of CPB.

The management's SWOT - analysis of CPB, June 2002

Strengths

CPB acknowledges the following strengths in the organisation:

- Scientific and intrinsic quality of CPB analyses
- informal culture: a constructive atmosphere
- integration of knowledge: connections are made between various research areas
- influence on the social and political debate: CPB's contribution to policy discussions is taken seriously

Weaknesses

The following weaknesses were recognized:

- fragmentation of research, which leads to relatively slow progress on larger themes
- lack of flexibility: employees are not always easily reallocated on a temporary basis
- extent of quality control: the transparency and reproducibility of work processes could be improved
- project management: progress control and intrinsic (re)prioritisation are not always sufficient

Opportunities

CPB sees the following opportunities at this time and in the near future:

- demand on areas of policy that are relatively new to CPB, such as security, enlargement of the European Union, immigration
- growing importance of international networks in which CPB can take part
- growth in the use of the Internet, which can contribute to tailor-made distribution of information

Threats

The following threats were identified:

- shift to new areas of policy, in which CPB is more vulnerable due to lack of experience
- critical attitude of press and network partners, who sometimes regard CPB as dominant and/or arrogant, and who may overemphasize possible mistakes CPB has made
- declining availability of economists and econometricians, who form the primary target group for staff recruitment

2.8.2 Vision

A widely trusted source of independent policy-relevant economic analysis.

CPB seeks to be widely trusted by working independently and impartially, by reporting in a balanced and complete way, and by maintaining a constant high quality. Naturally, **widely trusted** refers to the judgement of others. It is the judgement of quality and **independence** made by our clients (the politicians and the civil service and interested groups within society) and our colleagues in the academic world. There should be a general confidence in CPB's impartiality and quality, even though clients with vested interests will not always be content with the

outcome of certain research activities. The supply of **policy-relevant** economic analysis is CPB's key activity. Quality refers not only to the contents of the analysis and its (scientific) accountability, but also, for instance, to the timeliness for the social/political debate. The word **source** indicates that the information is given both on demand and as a result of its own initiative.

2.8.3 Mission

The top institute for policy-relevant economic analysis in the Netherlands, and as such one of the leading institutes in the international playing field.

CPB seeks the first position in the Netherlands by setting high quality standards for all products, by excellent performance in a number of fields, and by becoming the employer of choice for economists interested in research and government policy. **Internationally leading** means that also institutes abroad appreciate and have confidence in CPB, and that CPB's choices for themes and analytical methods find their followers. Naturally, this is a two-way street. As we learn from others and others learn from us, mutual appreciation for each others work will increase. In this capacity, we may also be able to absorb knowledge from our international counterparts and as such bring interesting international experiences into the national policy debate.

The mission defines CPB's strategic priorities for the medium term, and has consequences for investment in personal development and elaboration of the quality strategy and HRM policies. A strong international position will not be feasible in all fields, but there are several opportunities. CPB's starting position in various fields is promising; for instance, in the research areas of potential growth, ageing, energy and agriculture a leading role can be established or reinforced.

2.8.4 Culture

CPB as an organisation has explicitly formulated a number of values which should guide our professional conduct. These principles are relevant for the way we work together within the bureau and for the way we address, cooperate and exchange with our clients and partners. Values and principles are worked out in a list of values and codes of conduct, that was discussed at the Loosdrecht meeting (see below).

The outcome of this self-evaluation of the management of the Bureau suggests that CPB's current culture has strong principles in terms of analytical orientation, integrity and heart for the public cause. On the other hand, current principles do not yet sufficiently reflect the openness, the flexibility and to some extent also the (conceptual) ambition that are required to achieve the vision and mission of the Bureau.

Firstly, a more active approach towards organizing feedback both within and outside the Bureau is required. We can learn much from the outside world and from our colleagues within the Bureau. This requires an open mind towards critical remarks and a genuine desire to actively seek critical comments in order to increase the quality of the work. Defensive behaviour, e.g. putting up a virtual wall of technique and independence in order to avoid difficult issues, is to be strongly discouraged and the open and honest debate must be the general rule of conduct. This also requires the ability to critically assess each others work from a feeling of joint responsibility for the quality of the work of the Bureau.

This principle of openness and genuine interest in the work of others and what that can contribute to our knowledge and quality is – of course – vital, in order to successfully work with others. In recent years, CPB has worked more closely together with other research institutions. This is the case at three levels: concerning issues which require an international viewpoint and/or country-specific information, issues which require a multi-disciplinary approach (e.g. issues in transport and environment), or issues which are simply better or faster covered in cooperation with other economic bureaus in the Netherlands.

In order to move on along this line, the principles of openness and flexibility need further strengthening. In addition, flexibility also requires staff that can be employed in more than one direction, both in the short-term as unexpected policy questions emerge, as in the medium term as the Bureau shifts its priorities towards new fields of research.

Secondly, a more ambitious approach towards conceptual issues is required. This is at least partly a matter of ‘culture’, as the problem is partly caused by ‘supply-driven thinking’. The approach towards research and policy questions cannot (only) be determined by what instruments are easily available at short notice. Instead, various ways should be looked into in order to find the best way to serve the information needs of clients. This may be more difficult, involve more risk and effort, but this type of ambition and flexibility are clearly needed for an organisation such as CPB.

The principles of the organisation can and should be observed by all staff. Culture is easy to adjust on paper, but it will require a strong sense of importance and acceptance to be successful. This requires open and effective communication, and the management must provide the good example and provide adequate and instant feedback on the professional conduct of all staff members under their managerial responsibility.

Key values of CPB's culture with related codes of conduct

Socially relevant

- we work in the public interest
- we ask what customers want
- we dare to make choices
- we anticipate what is coming

Trustworthy

- we say what we do and we do what we say
- we take an impartial position
- we search for arguments both pro and con

Open *

- we share our knowledge with others
- we show our cards
- we organise feedback

Ambitious *

- we demand high quality from our work
- we stimulate input of new ideas
- we always aim at improvement
- we invest in personal development

Mutually responsible

- we work together
- we take responsibility
- we ask for and offer help
- we give each other feedback

Flexible *

- we think in terms of opportunities
- we dare to reconsider our choices
- we are versatile (widely employable)

Analytical

- we want to know how things are
- we give analyses, not value judgements
- we test our compliance with professional standards

* : Values where CPB's ambition is not yet satisfied.

3 Review 1997 and the Bakker Committee

3.1 Review 1997

The 1997 Review Committee⁷ observed that CPB has built a reputation of solidity and independence, and that it plays a very important role in policy preparation and consensus building. CPB has been able, in the Committee's view, to react to changes in the economic environment by shifting emphasis to micro and institutional research. CPB has been successful in maintaining vitality. The Committee sees the (then) recent opening to the outside world (peer reviews, network building, *CPB Report*) as both a sign and a help to stay up-to-date. This strategy, however, might be developed somewhat more systematically. After giving a number of positive remarks by theme, the Committee offered the following recommendations⁸:

General recommendations:

- A more systematic approach to human resource management is needed. The existing off-the-job-schooling and employee training are insufficiently used because of lack of adequate incentives. The appointment of a special human resource manager may be useful.
- The formulation of clear conditions for congress participation.
- External and internal mobility of the staff can be pursued more systematically, which will enable to maintain the flexibility to adapt to new developments.
- Research management can be improved in certain respects. It might be a good thing to appoint a project manager for projects that pertain to several departments and projects that are undertaken together with other institutions.
- Post-mortem analyses should be done more systematically. We (the Committee) recommend that this should be done by an internal auditor.
- CPB should strive for more external financing.

Its main recommendations with respect to specific projects concerned:

On the world economy:

- CPB should actively promote greater use of WorldScan for both Dutch and international clients. This should provide additional resources needed to further enhance the model. We (the Committee) are not convinced that the investment in WEB is likely to yield sufficient value for

⁷ The Committee consisted of Prof. Dr. A. Barten (chairman, Leuven), Dr. R. Blundell (IFS, London), Prof. Dr. F. den Butter (Free University Amsterdam), Dr. J. Martin (OECD, Paris), Prof. Dr. S. Proost (Catholic University Leuven) and Prof. Dr. F. Scherer (Harvard University, Cambridge Mass.).

⁸ Statement of the chairman of the Committee on the 25th of April 1997. The Committee worked out its recommendations in '*Scanning CPB - A view from the outside*', October 1997.

money and we suggest that the Bureau considers adapting an existing model from another institution to fill its needs for policy relevant simulations in this field.

On macro- and meso-economics:

- CPB should reconsider its investments in short-term sectoral forecasts.
- CPB should continue building the annual model for short- and medium-term policy analysis (OFK-model). Interpolate the annual forecasts made by the model using quarterly indicators; when this turns out to be a satisfactory procedure, there will no longer be any need to build a quarterly model for quarterly forecasting purposes.
- CPB should encourage applications of modern methods from macroeconomic theory in order to analyse cyclical and structural developments.

On industrial and institutional economics:

- Further studies of deregulation, competition policy and economic institutions should emphasise in-depth analyses of specific industries and policy questions.
- International comparisons of industrial policy approaches are valuable, but require deep insight into local institutions that can be achieved intramurally only at high cost. CPB should therefore become skilled in working cooperatively with experts in other nations.

On the analysis of the welfare state and the labour market:

- More attention should be given to the private provision of pensions and saving.
- Sensitivity of the MIMIC model to alternative parameter values needs more emphasis.

On energy, the environment, space and transport:

- CPB should invest in the development of a cost-benefit analysis methodology that is macro-economically consistent. This methodology should be able to address pricing and investment issues. In this way they can reinforce their important coordination function in the public infrastructure and environment debate.

Strategy Memorandum 1998

In November 1997, as a follow up to the external review, CPB organised bureau-wide Strategic Consultations. The discussions formed a basis for the *Strategy Memorandum 1998*, which charted the course for CPB in the coming five years. Annex D highlights the main elements from this Memorandum. Priorities established in that document include the following:

On human resource management:

- HRM plan for CPB, individual development plans for all employees, tailor-made mobility, facilitation of more flexible input of employees.

On research and project management, and internal organisation:

- systematic investment in project planning, establishing and testing of a professional standard, peer review groups for larger projects, reconsideration of organisational structure, more homogeneous grouping of activities.

On the implementation of the mission and the research agenda:

- starting the work-plan cycle in Spring with brainstorm groups, selection of the spearheads of investment in new applied research.

On data management:

- all CPB employees must have easy access to the relevant available data and accompanying documentation.

On internal management and communication:

- implementation of several concrete proposals of the Strategic Consultations, organisation of the conceptual management of the Intranet, the use of standard software, annual CPB day-out.

On external communication:

- the conceptual management of the external website, the accessibility and layout of publications, and the evaluation of internal and external support.

3.2 The Bakker Committee

In November 2001, an assessment of CPB's work was made from the perspective of national policy-makers. This assessment was carried out by the 'Commission Policy Oriented Assessment of CPB' (in Dutch: Commissie Beleidsgeoriënteerde Toetsing van het Centraal Planbureau) or (in brief) the Bakker Committee⁹. Its main observations¹⁰ were the following:

General remarks

- The Committee appreciates that CPB keeps abreast with the major trends in society with respect to quality policy and outward-looking attitude. CPB could be more open, however, with the release of its publications.
- CPB's operation process and communication could be made more transparent – before, during and after the research – in order to increase the topicality and policy relevance of its products.
- The Committee observes that customers have differing views about the independence of CPB: ministries experience an insensibility for efforts to influence, while the press has the impression that CPB is influenced from time to time.

On topicality, quality and policy relevance:

- The Committee encourages CPB to continue keeping a proper relation between the content of the research agenda and CPB's policy-supporting role. This means a further shift from macroeconomic themes toward microeconomic themes (structural and institutional issues) and the analysis of economic behaviour at regime switches.
- The translation of scientific analysis into useful policy recommendations deserves more attention. The uncertainty margins surrounding the economic consequences of policy proposals could be reduced by using scenarios or a deeper analysis of behavioural effects.
- CPB should pay more attention to the impact of European developments on the Dutch economy. Closer cooperation with relevant ministries can help to bridge the knowledge gap about European policy initiatives. A wider use of benchmarking in policy analysis can help to place the national developments in an international perspective.
- Given that policy discussions are increasingly based on analyses on a European level, the Committee recommends an evaluation of the pros and cons of using European external assumptions for macroeconomic projections rather than CPB assumptions.

⁹ The Bakker Committee consisted of Prof. Dr. A.F.P. Bakker (chairman, DNB, Amsterdam), Ir. A. N. Bleijenberg (Ministry of Transportation and Water, The Hague), Drs. S. T. Duursma (SER, The Hague), Dr. B. ter Haar (Ministry of Finance, The Hague), Dr. G. J. M. de Vries (Ministry of Social Affairs and Employment, The Hague), and Prof. Dr. D. J. Wolfson (Senator).

¹⁰ *Met beleid te werk - Rapportage van de Commissie Beleidsgeoriënteerde Toetsing van het Centraal Planbureau*, November 2001.

- In the analysis of the economic effects of the Dutch election platforms, more attention should be given to non-quantifiable elements such as institutional reform, and to the uncertainties surrounding the quantified results. The Committee thinks it also would be useful to implement (post mortem) calculations of pursued policies, if possible including policy alternatives.

On independence and impartiality

- CPB should maintain and if possible enhance its independence without losing sight of the policy relevance of its products. Impartiality at all costs is not deemed necessary. (The perception of) Independence can be improved (e.g. by adding sensitivity analyses and alternative scenarios to the forecasts).
- CPB should be more open to factual comments by its customers prior to the final version of a study. CPB should also be more aware of the policy impact of its publications, not only with regard to the contents, but also to their timing, form and setting.

On the work process and communication

- CPB should encourage its major customers to give feedback on the concept of its research agenda, and should give greater publicity to the research areas in the near future.
- CPB should create more flexibility in its work programme. This makes it possible to adapt priorities to changing policy circumstances and creates room for dealing with actual questions.
- Better communication is necessary to guarantee that policy research meets the needs of the customers (e.g. by organising workshops on work in progress).
- CPB should increase the attention and the societal impact of its publications (e.g. by better timing the publications on different research activities). Inclusion of just one special subject in CEP and MEV will draw more attention. Earlier release of publications under embargo to some groups might stimulate publicity.

Final remarks

The Committee concluded its assessment by observing that CPB is an important asset for the Dutch economy, contributing to a common point of departure and thus also to broad public support for targeted and intrinsically consistent decision making. The Committee sees the main challenges in a conceptual sense in dealing with the European policy context and in the increased importance of institutional reform. The main challenge for the institution is to proceed not only in an independent and authoritative way, but also with greater openness in communication with the outside world.

CPB's response to the Bakker report

On Professionalisation of communication policy

- We must give substantial feedback, in particular at the shop-floor level. Action by unit heads (e.g. by quality plans, project plans with special attention for steering committees and peer review groups) and by department heads.
- The envisaged CPB bulletin in the Dutch language offers opportunities for further improvements in communication.

On More attention to microeconomic themes

- In macro-analysis, the welfare economic aspect deserves more attention. CPB sees no possibility for a further reduction of capacity on macroeconomic themes.
- At the meso level, some capacity for structural analysis and new approaches can be released upon completion of the renovation of the ATHENA model and the envisaged efficiency gains in the forecasting procedures of the Sectoral analysis division.

On More attention to the impact of European developments

- With respect to benchmarking, CPB intends to continue to rely primarily on the extensive work of others. CPB has to find its advantage in the use of internationally comparative material to the benefit of the analysis.
- CPB actively seeks a link with the preparation of the Dutch official policy stance in the discussion of European economic policies.

On Analysing the election platforms: more attention to non-quantifiable elements like institutional reform, and to uncertainties surrounding the quantified results

- The latest analysis on election platforms included qualitative analyses on health care reform and disability insurance. Also uncertainties have been given special attention.

On More frequent execution of evaluating calculations, including alternatives.

- A post-mortem analysis of forecasts has become standard procedure.
- Ex post analyses have been made of inter alia the first Cabinet-Kok, and Employment in the nineties.
- CPB aims for more frequent ex post analysis of research.

On Creating a more distinct profile for CPB

- CPB agrees that a more flexible wording and presentation could help to make the message more accessible. In case of doubt, however, CPB will pursue a prudent course.

On Inviting explicit feedback when formulating the research agenda

- This was implemented successfully when drafting the work plan 2002.

On Concrete recommendations to improve the societal impact of publications

- The Committee's idea to include only one special subject in CEP and MEV is not supported.
- Early information for the people most concerned is desirable and is often also practice.

4 Quality strategy

4.1 Introduction

Maintaining high quality is crucial for the existence of CPB, as loss of the trust and appreciation of target groups would erode its *raison d'être*. The aim for high quality means that CPB makes good use of its comparative advantages (close to policy, integral approach, continuity, in-depth analyses) and of its capacity (employees and supporting services). The quality strategy therefore affects all parts of CPB: human capital, available means, work processes, products and communication.

People make CPB. The quality of CPB's employees is vital for the quality of CPB's work. Apart from professional skills, this includes the culture of the organisation. Section 2.7.4 dealt with this subject.

Employees at CPB are well provided with the necessary support services: building maintenance, reception, reproduction services, library services, information and communication technology, modelling software and files documentation. CPB invests in a modern working environment, without pursuing the latest novelties (in order to limit errors). CPB guards the quality of the supporting services by periodical (internal) research on client satisfaction. Paragraph 4.4 will elaborate on quality control of library services, information and communication technology, modelling software and files documentation.

For the preparation of independent economic analyses and projections, CPB knows several competitors on different areas, like commercial and non-commercial research institutes, forecasting units of banks and international organisations. As the "royal warrant holder" of the central government, with substantial lump-sum financing, CPB feels the discipline of the market at best indirectly. Thus, CPB has to organise its own incentives for efficiency and quality, by inviting critical judgements from outside: Central Planning Commission, Central Economic Commission, review committees, peer review groups, workshops, international congresses and periodicals, etc.

The quality of the work processes includes the *ex ante* promotion of quality through adherence to high norms, by built-in guarantees in processing and through monitoring the quality of the products realised. Quality checks have to be embedded in the production process, starting with the selection of subjects and formulation of the project plan, up to the finalisation (often in the form of a publication) and the follow-through (communication and evaluation). For research projects that take longer than three months, these checks have been standardised. At the core of quality is the organisation of critical reviews in all stages of the production process. In the early

stages of the process, in particular, this deserves more attention. Another built-in quality check is that all final products have to be approved by the management.

In Spring 2001, some 50 CPB employees participated in roundtable discussions on quality. The discussions built on papers that had been distributed earlier, bundled in a publication named *Acht* (Eight), formed by the key words Ambitious, Concrete, Feasible, and Testable. CPB's work aims to meet the mark with regard to these four qualities. On the basis of the roundtable results and the comments given on the Intranet billboard, the Working group on Quality made concrete proposals for quality policy in a paper called *Time for Quality* (in Dutch: *Tijd voor kwaliteit*). The paper led to new discussions on the subject by the Management and on the Intranet. The question was raised how CPB can guarantee the maintenance of quality to its customers, since quality costs time, and the pressure of work is already high. The Working group observed that quality inevitably goes at the cost of quantity.

The combination of high quality of employees, support services and work processes must result in high quality products. CPB has determined that its products should:

- reflect the state of the art in science;
- make use of the available knowledge;
- be accessible for our target groups;
- be available on time;
- give a clear and impartial analysis, with carefully formulated conclusions from the analysis

The new quality plan still has to prove its worth. Moreover, the quality strategy does not stop after the production of high quality publications. CPB products will have their intended impact only if they are accepted.

CPB's aim to be widely trusted by its target groups (see vision statement in 2.7.2), requires a careful, balanced and professional communication, with colleagues and external persons. This is the common responsibility of all CPB workers, and as such an important element in CPB's codes of conduct. Target groups are reached by CPB publications that vary in character and target groups. CPB seeks to make these publications transparent and understandable for the respective target groups, to increase the impact of CPB work. Target groups are also reached by press contacts, via press releases, interviews and letters to the editor. CPB's Internet site offers substantial information (see 4.4.2). Questions of private persons, enterprises and journalists are answered quickly and adequately, as far as the available capacity permits.

Acknowledging the comments made in the Bakker report (that CPB needs a more professional communication policy), CPB has formulated eight action points:

- Units will show in their working plan how they will improve contact with policy-makers, social organisations, academics, companies, international organisations etc.
- Employees will strive for more friendly customer service.
- In the first six months of 2003, CPB will initiate a survey among readers of CPB Report, in order to better understand their needs.
- CPB will initiate a Dutch newsletter for Dutch members of parliament and policy-makers, in the first six months of 2003.
- CPB will improve communication on the Internet (see section 4.4.2).
- General information brochures about CPB will be made available before April 2003.
- CPB will test the readability of its publications by periodically approaching various target group.
- CPB will introduce publicity plans for research projects, leading to more systematic attention for communication.

In addition to this broad strategy to improve quality, there are three subjects in which quality is a focal point: human capital, quality focus in the working plans of units, and the information infra-structure. These subjects are described below.

4.2 Human capital

4.2.1 Staff

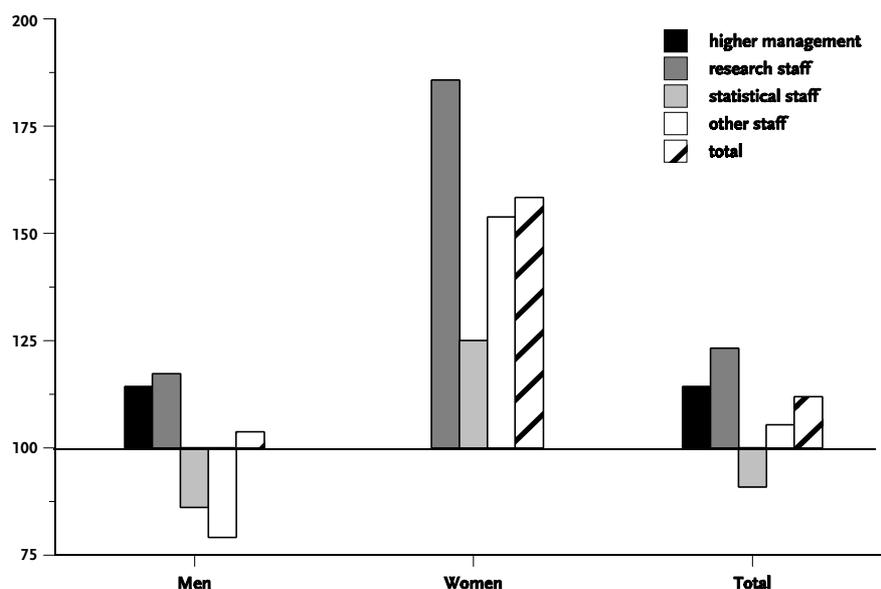
At the end of 2002, CPB employed 178 persons (corresponding to 159 full-time equivalents). The staff can be divided roughly into four categories: higher management (director, deputy directors and department heads), research staff (including unit heads), statistical staff and other staff (secretaries, communication, personnel, finance, library, technical and IT-support).

In recent years the research staff has grown considerably. The increase in research staff is the result of increased demand for research in areas such as cost-benefit analysis, health care, education, innovation and industrial organisation. The Bureau has been able to increase its research staff through separate additional funding by various ministries and through some substitution of statistical staff for research staff. This shift has not led to shortages of statistical personnel, due to productivity gains resulting from improved information technology. This trend will continue in the foreseeable future. The research staff has increased from 81 persons in 1996 to 101 persons in 2002. As a result, the share of research staff within total CPB employment has risen from 52 to 57% during this period. With regard to support staff, additional efforts in terms of human resource management, communication and information technology (help desk) have increased demand, while on the other hand, there has been some reduction in standardised work. On balance, the number of support staff has increased slightly.

	1996		2000		2001		2002	
	men	women	men	women	men	women	men	women
Higher management	7	0	8	0	8	0	8	0
Research staff	75	7	85	11	87	11	88	13
Statistical staff	29	4	26	4	26	5	25	5
Other staff	24	13	18	18	19	18	19	20
Total	135	24	137	33	140	34	140	38

The majority of CPB's staff consists of economists performing research. Of the 179 staff members (in the year 2002), 125 are university graduates, of which 107 persons hold degrees in economics, econometrics or related disciplines. 41 Of them have obtained a doctorate. Some 26 staff members have completed a higher vocational training. These are mainly statistical staff.

Figure 4.1 Staff turnover from 1996 to 2002 (1996=100)



The work force is increasing in age, both in the labour market at large and also at CPB. The average age of the research staff has risen from almost 39 years in 1996 to almost 41 years in 2002. The age structure has changed considerably. Ageing has led to a considerable increase in the 51-60 age group. On the other hand, growth has enabled an inflow of younger researchers, and the age groups between 21-30 and 31-40 have increased. In 2002, the introduction of the 'Young Professionals Programme' led to an increase in young research staff (see below).

	1996		2000		2001		2002	
	men	women	men	women	men	women	men	women
21 to 30	16	2	12	3	14	4	13	6
31 to 40	27	3	34	4	34	3	34	4
41 to 50	22	1	19	1	17	1	16	1
51 to 60	10	1	18	3	20	3	23	2
Over 60	0	0	2	0	2	0	2	0
Total	75	7	85	11	87	11	88	13

Ageing is clearly the case for the statistical staff. The declining demand for statistical staff due to productivity gains has led to very little in- and outflow in recent years. The average age of the statistical staff is now about 47 years, compared to 42 years in 1996.

	1996		2000		2001		2002	
	men	women	men	women	men	women	men	women
21 to 30	1	0	0	0	0	1	0	1
31 to 40	12	1	6	1	5	1	4	0
41 to 50	12	2	14	2	12	2	13	2
51 to 60	4	1	5	1	8	1	7	2
over 60	0	0	1	0	1	0	1	0
Total	29	4	26	4	26	5	25	5

The only staff category where the average age has dropped is the support staff, mainly due to early retirement.

Table 4.4	Age composition other staff							
	1996		2000		2001		2002	
	men	women	men	women	men	women	men	women
21 to 30	2	1	1	1	1	1	2	2
31 to 40	6	5	6	5	6	5	6	4
41 to 50	7	5	4	8	5	8	3	9
51 to 60	6	2	6	3	6	4	8	5
over 60	3	0	1	1	1	0	0	0
Total	24	13	18	18	19	18	19	20

4.2.2 Human resource management: strategy

People make CPB. The Bureau has an ambitious mission for the coming years. This mission can only be achieved by highly qualified and motivated staff, optimally using their skills and knowledge to successfully meet CPB's goals. This requires considerable efforts in terms of human resource management (HRM).

The following strategy has been adopted:

1. CPB will acquire an 'employer of choice' position for talented economists who are interested in economic policy.
2. CPB will provide excellent opportunities for further studies, training and learning on the job.
3. CPB will provide good conditions for horizontal and vertical labour mobility.
4. CPB will provide an effective and transparent system of appraisal and remuneration. This system will provide good incentives and contribute to a perception of fairness.

'Employer of choice'

CPB has a reputation as an independent and influential institution for economic policy analysis in the Netherlands. This reputation is a major asset in attracting highly skilled academics who desire a career in economic policy analysis. After all, talented academics generally want to work for prestigious institutions that produce important and challenging research. Continuously strengthening the quality and visibility of CPB's work is hence of prime importance for its labour market position. The ability to hire highly talented and skilled new staff will in turn lead to higher quality. In this way CPB virtuous circles can be introduced.

Job announcements should not make too specific demands in terms of directly available knowledge or specialisation. Knowledge can be acquired, while exceptional analytical skills and creativity are assets that are difficult to develop beyond a certain age. There are transaction costs

involved with this strategy, but as one moves closer to the status of 'employer of choice', these costs will decline (when the status is fully acquired, all demands can in principle be met). A new development in this direction is the 'Young Professionals Programme' (YPP). This programme aims at attracting very talented young academics, and is open to both economists and mathematicians and related academics. As the programme is not limited to economists, a broader pool of young academics can be reached. This may be important, because the number of graduates and PhD students in economics is rather limited. The YPP is a two-year programme enabling a limited number of people (currently there are four young professionals) to participate in three projects of three different units within the Bureau. Those lacking the necessary economic background undertake the extended Masters programme at the Tinbergen Institute. They will hence become professionally educated economists within a two-year period. Previous experience has shown that excellent academics in mathematics and related sciences who are sufficiently interested in the public debate can combine working at CPB with the successful completion of the extended Masters programme. Naturally, the YPP-programme is costly for CPB in terms of reduced working hours and tuition fees, but the ability to be very selective in hiring young people is expected to outweigh investment costs. The experience thus far has been very encouraging, with a considerable number of highly qualified applicants.

New permanent staff positions are first announced within the Bureau. This stimulates internal mobility and offers staff members career opportunities and possibilities to work in new areas. External recruitment channels focus on advertisements in national newspapers, economic journals, (university) networks and the Internet. In recent years, the importance of networks and the Internet have grown, and the role of advertisements has decreased. The Internet also appears to increase the number of open job applications. These applications and requests for internships can be met through temporary contracts. This allows CPB to get acquainted with the candidates, which has occasionally generated new permanent staff at a later stage. Another trend is the increase in temporary contracts for foreign economists. This provides an opportunity to attract specialised staff for a specific project, brings in fresh new ideas and strengthens CPB's international network for the future.

Recruitment and selection policies should aim at attracting strong candidates for CPB as a whole, rather than very specialised personnel. Naturally, the approach must vary somewhat for different staff positions, but the overall goal is to attract staff that can work in various departments within the Bureau. Candidates are typically interviewed in two or three rounds by management and co-workers. At least one member of the board of directors conducts one of the interviews. An assessment by an external bureau is typically also part of the procedure (as a last marginal test and particularly as a good starting point for a personal development plan).

For new management staff there are formal procedures. Staff members that are directly involved have the opportunity to advise on the profile of the candidates, to interview the candidates and to formally advise the director. The director will make a motivated decision and communicate this to those involved. The aim of the procedure is to make better informed decisions and to increase support for appointed managers.

Members of the board of directors are appointed by the Cabinet on proposal of the Minister of Economic Affairs. CPB personnel are involved in this process through the workers council, which formally advises the Minister of Economic Affairs. The workers council is elected every three years and consists of CPB staff – both union members and independent members. The workers council has the right to advise the director of CPB on issues concerning personnel and organisation. In some cases the council can formally approve or reject decisions of the director.

Excellent opportunities for further studies, training and learning on the job

The YPP-philosophy is one we wish to apply to all our young academics. The Bureau has recently developed a minimum standard, which implies that all research staff should reach the extended masters or equivalent level after two to three years of CPB-employment. The Bureau, in turn, offers excellent facilities (by providing time and support and by covering costs) to achieve this goal.

Attracting excellent new staff is of great importance, but it is clearly only a part of total human resource management policy. Judging by past experience, the majority of CPB's staff in 2010 is currently already employed at the Bureau.

CPB's staff is generally strongly motivated by intrinsic factors. Most staff members are proud of the organisation and what it stands for. A recent survey among the staff concerning work-related strain clearly points in this direction. As a consequence, CPB staff members seldom choose to leave the Bureau within two years of their appointment. This situation provides solid ground for an active role for human resource management. The benefits of investments in the upgrading of skills and knowledge of our staff can be derived from well-trained and motivated people during a longer time period.

Prompted by the 1997 Review Committee, CPB took a more systematic approach to human resource management. The 1998 Strategy Memorandum (see box in section 3.1) defined the targets, with personal development plans as the focal point. The process was supported by an external bureau that helped CPB to develop the relevant tools.

At the end of 1999, CPB introduced a system of personal development plans. All staff members are encouraged to develop such a plan, which states personal development objectives and the

means (studies, training, on-the job-training) they wish to apply in order to achieve these goals. Personal development objectives are derived by confronting career or job objectives with personal talents and skills. The latter are determined by both self-assessment and through feedback from others (close colleagues are asked to assess each others' talents).

As a result, CPB's expenditure on education and training increased from 1.7% of the salary bill in 1999 to 1.9% in 2000 and reached a peak of 2.7% in 2001. In 2002, however, expenditure dropped to 1.6% of the salary bill. Although the decline was somewhat less than the figures suggest – the Ministry of Economic Affairs covered some training costs for CPB directly – and some decline in expenditure after the sharp rise in 2001 is perhaps not surprising, this development could also point to a loss of momentum of the new system. A point of attention is the effectiveness of the expenditure on education and training. So far there has been no systematic monitoring of the results. At the least, a systematic evaluation of the experiences of participants with the various external programmes is warranted.

In Autumn 2002, CPB evaluated the system of personal development plans through a survey among all employees. The general outcome suggests that those who work on their personal development generally reach most of their goals and attach positive value to the system. However, the results also suggest that the process has lost momentum and that new incentives are required to increase participation (currently 109 of the 178 staff members have a personal development plan). Particularly, a more active and stimulating management approach is required. The following decisions have been made. First, management must set a good example, and all managers are obliged to participate themselves. Second, personal development of the employees will be a regular topic of evaluation discussions between middle and higher management. Third, managers will provide information with respect to the number of participants within their unit. Fourth, all CPB staff will make an individual work plan for each calendar year stating the main projects/activities, development actions and the time-planning involved.

It remains to be seen if these measures will prove to be sufficient. In general, CPB staff tends to look sceptically at procedures, which are often considered to be bureaucratic. Positive personal experience and positive feedback from colleagues must in the end provide the right incentives.

Good conditions for horizontal and vertical labour mobility

As stated above, internal mobility is stimulated through attracting broadly focussed staff and by providing preferential opportunities in applying for vacancies within the Bureau. Personal development plans, which also aim at stimulating staff to increase their employability within the Bureau as a whole, may very well increase external mobility. This type of external mobility is a natural consequence of our policies. If CPB attracts highly skilled staff and invests considerably in its people, these people will be assets both for CPB and for others. The fact that highly valued

staff members leave the Bureau to accept important academic positions, important positions within the civil service or join the OECD, IMF or World Bank is not considered to be a major drawback. Naturally, their valued contributions to the work at CPB will be missed, but there are important gains in terms of demonstration effects and network. The fact that CPB proves to be a launching point towards such positions strengthens its employer status. The fact that the Bureau has easy access to people in important positions – whom we know well and who appreciate our work and organisation – is a vital element of our network. Finally, outflow in general provides opportunities of attracting new people with fresh ideas, and attracting young people in a time of ageing of the overall workforce.

Table 4.5 Mobility

Mobility: inflow				
	2000	2001	2002	
Higher management	1	1	0	
Research staff	15	7	10	
Statistical staff	2	1	0	
Other staff	2	2	3	
Mobility: outflow				
	2000	2001	2002	
Higher management	1	3	0	
Research staff	11	3	5	
Statistical staff	0	0	1	
Other staff	2	4	2	
Internal mobility				
	2000	2001	2002	
Higher management	1	3	1	
Research staff	7	7	11	
Statistical staff	2	2	0	
Other staff	1	2	1	

Labour mobility seems to be at quite an acceptable level for the research staff. The average length of employment (12 years) is high enough to make long-term investments in human capital worthwhile, while the average job duration (5 years) reflects sufficient dynamics. Internal mobility prevents routine from gaining the upper hand and is also useful in terms of diffusion

of knowledge. Labour mobility for statistical staff and other supporting staff, on the other hand, is low. Retirement is still the most common cause of outflow. Internal mobility has in the past been stimulated through more comprehensive job-rotation, but additional efforts to improve mobility are needed.

Labour mobility of higher management has been exceptionally high in recent years. All five division heads and one of the two deputy directors hold their current positions for less than three years.

An effective and transparent system of appraisal and remuneration.

Intrinsic motivation is an important driving force for working at CPB. The satisfaction derived from the intellectual content of the work, the ability to make independent analyses that are not judged on the desirability of the results, and the informal and open work environment are of great importance. In terms of financial rewards, CPB hence does not have to be the highest bidder. To be an employer of choice does, however, require the ability to offer competitive salaries and secondary benefits. Within the government (including public research institutions), CPB offers competitive remuneration. Gross annual salary is around 27.000 euro for young academics, which can rise to a maximum of 58.000 euro for highly qualified senior research staff. The maximum gross annual salary for statistical staff is 45.000 euro. The gross maximum annual pay for unit managers is 72.000 euro. On an individual basis, the maximum salary can be increased by one extra scale topping up the maximum salary by about 10% for all categories involved.

Individual performance is rewarded in three ways. First of all, during the first eight to ten years of employment considerable differentiation can be applied in terms of annual salary growth. High performers are awarded extra steps within the scale-structure during these years. Second, when arriving at the top of the structure, high performers can (as stated above) obtain an extra scale that increases the overall salary by 10%. Finally, CPB has a budget to reward exceptional individual achievements and efforts through a lump-sum payment.

CPB wishes to move on to introduce more flexibility and differentiation in staff remuneration. To this end, CPB has agreed to become a pilot for the government for flexible function remuneration. The basis of this new system is to broaden the scale structure. The new system will provide larger differentials in rewards on the basis of individual skills and performance within each broad function category.

The system of secondary benefits is determined by the central government. The government has generous secondary benefits, which include 46 working days of compensatory leave (due to labour time shortening) and holidays. There are special arrangements for child-leave, compensation for travel expenses and opportunities for teleworking.

CPB provides benefits to employees who have the ambition to earn a doctoral degree. These employees are entitled to a special type of leave intended for study time used toward a doctoral degree. Furthermore, CPB covers part of the publishing costs of the dissertation. In 2002 (December), seven employees made use of the facilities for doctoral study leave.

At the heart of any solid remuneration system lies a proper appraisal system. The appraisal system must be as transparent as possible. This requires clear criteria and sufficiently motivated appraisals. Critical elements in appraisals must have been communicated by the management well in advance of the official appraisal each Fall. When aspects of the appraisal come as a surprise to the person involved – denying the person the feedback which could have enabled improvement at an earlier stage – then management has slipped.

While clear criteria are essential, they cannot prevent subjectivity. People assess other people. This is inevitable, but some important safeguards can be used to avoid arbitrary appraisal:

- Appraisals are never made by one person. There is always a first and a second referee, who both have to sign the appraisal. Furthermore, all individual appraisals are to be approved by the director of CPB. The director thus has the task of enforcing and enhancing a systematic application of the criteria and its weights across all personnel. In practice, this leads to additional questions to either the referees or the deputy-directors if doubts arise regarding an appraisal.
- Values and principles of CPB must be applied. This is one of the advantages of explicitly stating the key values of CPB. The staff member who only reluctantly accepts new, unplanned activities, can be assessed according to the flexibility CPB asks of its staff. On the other hand, the staff member who is confronted with criticism for not completing all the planned projects can rightfully bring forward the flexibility she or he has shown in addressing new things on behalf of other superiors. It is the task of the higher management to see that the values of CPB are adequately taken into account in the appraisal.
- All CPB staff may formally object to the appraisal of their performance to the director, who can – and sometimes does – correct the appraisal.

4.3 Quality plans of units

Quality plans are to become a fixed part of the yearly work plans of the units. All units have written a quality plan for the work plan of 2003. The quality plans have a more or less fixed structure, with a description of the products and the mission of the unit, a SWOT-analysis and action points to improve quality. Recurring quality concerns in this years' SWOT-analyses were the need to organise feedback, reproducibility, the knowledge base and communication of the work. This section describes the action points of the different units.

Organise feedback

Work quality benefits from feedback, both from (international) academics and policy-makers. Although only a few units view organising feedback as a weakness, most units see room for further improvement. Units differ in their ambition to organise feedback.

- Most units aim to get feedback on their (finished) products through presentations at seminars and workshops, and through cooperation with other institutes.
- A few units aim to take additional measures to organise feedback through a more systematic use of peer review groups. A specific point is to use the review groups already from the start of the project – for instance, to brainstorm about the formulation of a problem.
- One unit organised a quality audit for its models.

Reproducibility

Reproducibility is important to enable others to check CPB's products. To achieve this requires a good documentation of the economic models, of the data used and of the calculations made. To assure the continuity of work, there should always be at least two persons who are familiar with a certain economic model.

Most of the units that work with economic models are not satisfied with the reproducibility of their work, and blame the shortcoming on a lack of time or changes of staff. In accordance with this observation, most units that work with economic models have formulated action points to improve reproducibility. One unit has even made reproducibility its main focus in 2003. In the work plans, four different routes are mentioned to improve reproducibility. Some units follow just one route, others follow several routes:

- improve the work process by more transparency, more standardisation, more use of software for handling data.
- reserve time in the work plan for drafting complete and up-to-date documentation.
- make reproducibility a special task when the model is being revised.
- turn the documentation tasks into specific projects, resulting in publications.

Knowledge base

Most units see their knowledge base as a strength. Some of them recognize specific elements, however, that need improvement, such as knowledge on microeconomic theory, the adoption of economic theory into policy practice, or the theoretical foundation of their economic model. A few units consider their knowledge base as a point for improvement, due to changes in staff. All units have announced steps to improve their knowledge base. Most of them focus on one or two of the following routes:

- unit members will improve their economic knowledge – through economic courses, seminars, reading clubs or on-the-job training, for example.
- unit members will improve their personal skills through courses – project management, English language or writing courses, for example.
- the unit will specialise in a few broad topics.
- the unit will cooperate with other (units or) organisations.

Communication

Units communicate their work through publications, press releases, web pages, articles, presentations, workshops and contacts with networks of policy-makers and academics. A small majority of the units sees its communication as a strong point. Some of them mention, nevertheless, that they need to improve their communication towards a certain target group, for instance policy-makers or academics. Several units mention that they need to strengthen their international contacts. Some units see communication of their work as a weakness, because too little of their work finds its way into publications.

All units intend to improve communication of their work, with their approaches depending on their weaknesses. Most units mention one or more of the following routes:

- write more publications, or improve coherence between publications.
- give presentations about their research at seminars or for certain target groups (policy-makers, academics, international contacts), organise workshops.
- reserve time in project plans for the writing of articles. Some units have the objective to publish refereed articles.
- improve the unit's web page.

It should be noted that intentions to improve quality and communication are easily written down, but realisation of the goals depends much on the conviction of staff members that these are matters of priority. Past experience has shown that investments in quality and efforts in terms of communication tend to be crowded-out by basic production work. Although this is sometimes required (as CPB must be flexible in meeting important demands from its customers), it must not become an obstacle towards reaching its strategic goals in terms of quality. Management has an important role to play in this area and must provide sufficient time and appreciation for these activities that do not result in immediate output.

4.4 Information infrastructure

4.4.1 Introduction

The information architecture of CPB consists of the following elements:

- distribution of information via the web (Internet)
- distribution of information via the internal web (Intranet)
- information and communication technology (including standard software)
- modelling software (special software)
- library services
- files (documentation)
- data management

The next subsections describe in detail each of the abovementioned items, including its current state and ambitions for the future. A development that influences all these elements is the growing availability and therefore importance of electronic information. CPB employees don't work in a paperless office, but the strong growth of the use of e-mail and the Internet has changed the daily routine, especially when compared to the situation during the previous assessment of the Review Committee in 1997. In general, the changes have improved the Bureau's efficiency. At the same time, they have increased the risk of complications, such as worries about long-term filing of electronic information and information stress due to the large amount of data that is available but not always easy to find.

4.4.2 The Internet

CPB's website (*www.cpb.nl*) has become more important in recent years. CPB uploads all of its printed publications to the Internet. Furthermore, all press releases are published on the site. Interested parties can subscribe to an e-mail service that will regularly send them all press releases. Everything CPB offers on the Internet is free of charge. Part of the website is reserved for information on job opportunities, working at CPB, etc. The experiences with this tool for recruitment have been positive. Several current employees applied for positions that they saw advertised on *www.cpb.nl*. This is especially the case with relatively young candidates.

Search possibilities on the website are still under development. For example, it is not yet possible to search full text in PDF files. This is a handicap, since most of the information is offered in that format. The structure of the site also leaves room for improvement. The organisation of the work and the publication lines have been chosen as a basis for the categorisation, while users probably would be better served with a classification that is based on the content of the work and publications of CPB. The capacity to work on further development

of the site is limited. CPB has given priority to the aim of putting all information on the Internet above the wish to present the information in a more user-friendly way.

Allocation of labour

Three persons are involved in the work related to the website. Because these employees also have other tasks, the actual amount of time spent on the website amounts to 1 fte. This number includes work on the Intranet, which is described further on in this chapter.

It is difficult to specify the indirect hours spent by other employees on products that appear on the website, because a lot of this work would also have been done even if *www.cpb.nl* did not exist.

Plans

CPB has the aim to make background documentation, models and data available via the Internet; this type of information is greatly in demand with users of the site.

The website increasingly serves as primary channel of distribution, while printed publications are used as reference books. This development is expected to continue and to grow. CPB is planning to create a location on *www.cpb.nl* especially for students and pupils. During their school years quite a number of students request information from CPB. The number of questions asked is extensive and growing. A special website would serve two purposes:

- provide this group with tailor-made information
- decrease the work load of the CPB employees who currently answer the questions

Finally, CPB aims to make better and more frequent use of *www.cpb.nl* as a means of reaching suitable job applicants and advertising the organisation as an attractive employer.

4.4.3 The Intranet

All dissemination of internal information is done through the Intranet, which is extensively used in the organisation. Most recent information can be found with a few mouse clicks. A powerful search engine is available to assist in finding the information. All units are responsible for placing important information on the Intranet and keeping that information up-to-date. Some units maintain an internal web page for that purpose.

Supporting units also use the Intranet heavily to disseminate information to employees. Some examples:

- All HRM (human resources management) information including frequently used forms
- All IT information
- All library services are accessible through the Intranet

- Minutes of meetings of the management team, works council, working groups
- Manuals and internal guidelines
- Project schedules, project plans, plans of work of units, etc.
- Up-to-date telephone list with photo and logon information

Plans

CPB plans to continue using the Intranet as its primary means of communication for information related to personnel, organisation and other internal matters. Extensive handbooks and documents will be reshaped into a form that is more suitable for electronic use (short texts with linked headlines).

4.4.4 Information and Communication Technology

CPB employees are equipped with an up-to-date ICT infrastructure that allows them to make the best quality economic policy analysis and forecasts. The ICT infrastructure includes all computer hardware and software (office software as well as econometric and statistical applications), networking facilities, statistical databases and IT-support.

Computer systems and network

On every desk a personal computer is available. The desktop pc is connected to a Local Area Network, which supports quality laser printers (at least two on every floor) and access to central servers like a file server and several application servers. The local network is based on TCP/IP and is connected to the Internet by way of a leased line.

Central systems include two HP9000 K-class servers with the Unix operating system. One is the file server for all systems in the network, the other is an application server.

Computer software

Microsoft Windows is the standard operating system on the desktop pc's. Microsoft Office is now available to all users. Problems with compatibility and exchangeability using Corel recently led to CPB's switch to Microsoft Word as the standard for word processing.

The most important econometric software tools on the pc are Isis, Simpc, Presim, Eviews, PC-TSP, GAMS, Stata and Gauss. SAS is available on an application server, and SPSS is used incidentally.

IT Support

A help-desk service, available for all sorts of problems with hardware, software and the network, enables a high level of personal assistance. E-mail support is the favourite means of assistance. Support by a specialised economist is available for econometric and statistical problems,

generally in relation to software products. In addition, advice and support are provided in the field of general model usage and mathematical techniques.

Every night a backup of all central systems is made to an ATL DLT tape library. Backup tapes are stored in a data safe. Quarterly, a copy (disaster backup) is stored in a bank safe outside the building. CPB employees are supposed to store all important information on the file server.

Allocation of labour and budget

Eight persons (7.1 fte) are involved in the work of the IT unit. The yearly budget for ICT expenses is approximately 700.000 euro, which amounts to approximately 4000 euro per employee. This includes hardware, software, network, maintenance, costs of external databases and information services. It does not include the labour costs of the IT unit.

Plans

A new Windows environment on the desktop (Windows 2000 professional) will be introduced in the beginning of 2003. In addition to providing better network performance and more secure operations, this move will enable CPB to keep up with the new generation of pc software. A new set of office productivity tools will be offered in the course of 2003. Several new servers will be installed to make it possible to work from home. The HP9000 application server will be replaced by several application servers of the HP ProLiant type, based on Intel technology. CPB's renewal policy is to replace all desktop equipment simultaneously every 3 years. Servers will be kept in phase with the performance needs, within the limits of technical and financial possibilities.

4.4.5 Modelling software

The primary aim in the field of modelling software is to provide CPB staff with integrated software for solving models and handling associated data. The Modelling Software unit (MSU) also performs research related to solving models.

Currently, the main effort is channelled into developing and supporting the Isis programme. In a joint project with Aarhus University, this software package was developed many years ago in response to a demand for more integrated software for model usage and data handling. The software has been tested extensively using a suite of test programmes. Isis is currently available on PC's running the Windows operating system.

In recent years research has focussed on an algorithm for efficiently solving dynamic equilibrium models. Research has also been done into speeding up the calculation of a Jacobian matrix of large models within the framework of MSU's method of solving models with a Newton or Quasi Newton algorithm.

Allocation of labour

Five persons (4 fte) are involved in the work of the unit.

Plans

CPB will keep investing in research in the field of relevant mathematical and numerical methods. At the same time, the MSU unit will continue to extend support to users through courses, personal assistance and documentation. Changes will be made in the software in accordance with user demands.

4.4.6 Data management

The Strategy Memorandum 1998 established as a priority that data management should be improved so as to offer easy access for all CPB employees to the relevant available data and accompanying information. After consultations both inside and outside the Bureau, CPB decided to implement a data catalogue that would serve two aims: providing a who-what-where system for newcomers (i.e. providing information regarding which unit has certain data and the contact person) and serving as a tool for CPB staff for easy and fast access to data and documentation. A test version of the data catalogue was finished in 1999. It contained the who-what-where system, but few data. To implement the data part, the strategy was to add successively the data files of the separate units to the data catalogue, starting with the units with the largest and most important data sets. Unfortunately, this strategy failed, since collecting the data and documentation in the required format from the units proved rather difficult – it conflicted with other, more urgent, tasks. At the same time, doubts arose about the urgency of the ‘data catalogue’. In practice, problems with data acquisition proved to be less serious than argued earlier, since all units in need of data have standard arrangements to get them from outside CPB or from other units within CPB. Moreover, the development of Intranet provided good alternatives for the ‘data catalogue’, viz. unit web pages that contain the most important data and project directories and document all data used and exchanged between units preparing the *Central Economic Plan* and the *Macroeconomic Outlook*. Therefore, CPB decided to stop the ‘data catalogue’ project.

4.4.7 Library services

The CPB library accumulates, manages and makes accessible literature and bibliographical and documentary information. The services offered by the library are mainly aimed at CPB employees. However, the library also provides services to external customers. These are mainly companies, political parties, embassies, research institutes and government departments. Students also regularly use the library.

The type of services offered by the library has changed considerably during the past few years. More and more information has become available in electronic form - as a database, via

the Internet, and via CD-ROM, for example. Library employees spend much time searching for new sources of information, negotiating with suppliers and making electronic information available to CPB employees.

Collection and acquisitions

The CPB library book collection comprises around 20,000 titles in the fields of economic theory, economic policy, econometrics, statistics, etc. About 350 subscriptions to professional journals are offered to the employees. Around 80 of these subscriptions are full text available on-line. The library provides access to (amongst others):

- Opmaat: database of Dutch official publications
- Europmaat: database of European Union official publications
- Wettenbank: database of Dutch legislation and jurisprudence
- NBER Working Papers
- CEPR Discussion Papers
- CentER for Economic Research (University of Tilburg) Discussion Papers
- ESB database (CD-ROM)
- EconLit: database of recent economic literature
- OLISnet, which contains all OECD publications
- Journal STORage, a service that makes old editions of scientific journals available via the Internet
- Statline, database with information from Statistics Netherlands

Allocation of labour and budget

Three persons work at the library, two of which are fulfilling a part-time post (in total 2 fte). The budget of the library (labour costs excluded) is about 100,000 euro per year.

Plans

The library is planning to extend its services in the field of disclosing electronic information. It is expected that paper publications and subscriptions to journals will gradually become a less important part of the service. The library aims to gear its collection to the needs of CPB employees. These needs are articulated by the library committee, which sets policy concerning acquisition of publications, subscriptions to databases, etc. This committee could operate in a more structured and professional way.

4.4.8 Documentation

CPB must comply with official regulations regarding documentation within government agencies. Furthermore, there is the (legal) requirement to publish information used in the

preparation of government policies. Finally, the requirement that CPB's work should be scientifically sound implies that CPB's analyses and forecasts must be verifiable and reproducible. Within the Bureau, responsibility for documentation is to a large extent explicitly delegated to the departments and individual units. Existing guidelines are two lists (made up in 1991 and 1998 by the official archives agency) of conservation periods and selection criteria for the different documents published by CPB. Furthermore, units know from experience (through requests from outside or from other units within CPB) what kind of documentation is needed. In general, much work is documented in internal papers and background information regarding published forecasts and research activities. These types of files are preserved for a number of years on paper (spreadsheets etc.). Furthermore, model outcomes are preserved by saving model versions and model inputs for a number of years (most units have some automated systems in the form of catalogue structures).

Allocation of labour

The filing unit is relatively small (0,5 fte).

Plans

CPB is planning to explore the possibilities of keeping files in a system of electronic archiving (digital archives). A feasibility study will be done in 2003 in order to decide whether the benefits of setting up and maintaining such a system would exceed the costs. If this leads to a positive conclusion, further decisions will be made on what type of documentation should be stored in this manner. This could vary between selecting only files that need to be stored according to legal requirements and selecting a wide range of documentation related to the work process of the organisation.

5 CPB work by theme

5.1 Allocation of labour by theme (in fte)

Table 5.1 Allocation of labour by theme (in fte)	2001	2002	2003 ¹¹
<i>Theme A:</i> World economy and European integration	11.8	12.6	9.5
<i>Theme B:</i> Domestic economy: macro and meso	27.7	27.2	25.0
<i>Theme C:</i> Technology, education and research, innovation and productivity	8.1	7.3	9.7
<i>Theme D:</i> Industrial economics	14.1	13.2	13.7
<i>Theme E:</i> Welfare state and labour market	11.4	9.4	12.2
<i>Theme F:</i> Physical and regional aspects	<u>13.7</u>	<u>12.7</u>	<u>15.1</u>
Total direct input	86.9	82.5	85.3
Absence through illness	4.1	2.9	4.2
Leave	17.1	17.4	17.0
Other ¹²	<u>10.1</u>	<u>14.2</u>	<u>10.0</u>
Subtotal of operational units	118.2	117.1	116.5
Subtotal of supporting units	<u>37.4</u>	<u>38.3</u>	<u>37.3</u>
Total	155.6	155.4	153.8

The table indicates how available capacity is allocated to the different themes of work. There are no major reallocations across themes in 2001-2003, but the table does show the effects of large efforts in 2001-2002 on long-term scenarios for Europe (theme A) and a relatively large increase in capacity allocated to theme C. The fluctuation in capacity for theme E reflects extra efforts on Ageing in 2001 and 2003. Theme B had a relatively high share in 2001 and 2002, due to medium-term activities related to changes of government.

Over a longer period, comparable allocation data are not available because of changes in the internal accounting system. A rough comparison with the data presented in the 1997 self-assessment indicates that since then theme B has lost capacity, while themes C, D and F have gained. The other themes claim roughly the same capacity as in 1996. Within most of the themes major reallocations have been effected since 1996, as will become clear in the following sections.

¹¹ Works plan 2003

¹² The category 'Other' consists of a variety of indirect activities that contribute to the work process in an indirect way. For example, participation in meetings, following training courses and performing tasks for the orks. The category also includes time not available for direct labour due to vacancies.

5.2 Theme A: World economy and European integration

5.2.1 Introduction

The work on international issues comprises short-term macroeconomic analysis used for forecasting and the analysis of structural international issues. The latter focuses on economic integration and policy coordination.¹³

Short-term analysis

Given the openness of the Dutch economy, short-term international economic analysis resulting in projections of international key variables (GDP, world trade, import prices, interest rates and competitiveness) is of vital importance for making short-term analysis and projections of the Dutch economy, a core business of the CPB.

To that end, the International cyclical analysis unit monitors economic developments in the main trading partners (especially foreign trade) and closely monitors the projections of international organisations (OECD, European Commission, IMF). The role that can be played by the projections of international organisations (and of national authorities elsewhere) depends on their age (the shelf-life of forecasts is rather short). Moreover, their international trade projections and analyses are insufficiently detailed for CPB purposes. (As part of its increased focus on structural issues, the Economics Department of the OECD has abolished its International Trade Division, and has simplified its trade monitoring and analysis.

Policy analysis of structural issues

Our structural analysis concentrates on two broad topics: integration and coordination. Projects on economic integration refer to (global) trade liberalisation, EU enlargement, and labour mobility in the EU. Projects on policy coordination refer to the analysis of climate change policies, tax harmonisation in the EU, cohesion policy, and wage coordination among countries. In a recent study on the future of Europe, CPB performed a broader analysis of integration and coordination. Four 'European' scenarios have been developed and quantified for this study, which contains a normative analysis on EU competences and pressure on EU welfare systems.

CPB's international research thus concentrates on a limited set of policy issues. This implies that CPB pays less attention to a number of other issues. For instance, analysis and assessment of monetary and macroeconomic policy in the EU is only conducted to the extent that it is of direct use for short-term projections. Moreover, CPB carries out limited research activity on specific European markets (e.g. the automobile sector, government procurement) or on a number of particular EU policies (competition and merger policy; state-aid regulation).

¹³ Other projects have an international dimension as well (e.g. in agriculture and energy). CPB is also involved in international research projects on ageing, health and welfare state. These activities are discussed under other themes.

5.2.2 **Ambition**

CPB's ambition is to be an expert in the Netherlands on a limited number of core areas of policy-relevant international economic analysis. CPB should also be regarded as such by Dutch policy-makers. Research at CPB should coincide with their needs.

The international issues addressed by CPB often require up-to-date information on matters in the EU or other international organisations. Moreover, the issues are also subject to analysis in foreign research institutes. To be well-informed about policy discussions and research activities elsewhere, CPB aims to participate actively in relevant international networks. By organising meetings, our institute serves as an intermediary between the research community and Dutch policy-makers; through multiple publication outlets, we aim to serve a broad readership consisting of Dutch policy-makers, the general public, international organisations, other research institutes (including foreign ones), and the academic community.

Regarding short-term analysis, our ambition is to make the best possible projections of those international key variables, coupled with high quality analysis. Furthermore, we aim to be an influential partner in international networks relevant for short-term international economic analysis.

Concerning structural international analysis, becoming a renowned player in the international arena calls for conducting research with a sufficient amount of value-added for the international research community. CPB's ambition for the coming years is to enhance its network with policy makers in Brussels and to intensify contacts with Dutch policy-makers in international affairs.

Recent effort and improvements

Following the recommendations of the previous Review Committee, CPB no longer uses comprehensive international economic models for short-term analysis, while allowing indicator-based output forecasting to play an increasingly important role (a role to be made more transparent and to be extended in the future). Furthermore, partial mostly non-behavioural models are applied for the analysis of world trade, import prices, exchange rates, interest rates and competitiveness.

The computable general equilibrium model "WorldScan" has been re-structured – providing it with solid micro-foundations, a simple and transparent structure, and improved flexibility in terms of sectors and countries to be included (see the box on WorldScan). As a result, it has been fruitfully applied in the analysis of world scenarios for climate change, as well as EU enlargement.

WorldScan

An important instrument is WorldScan: a dynamic, sectoral general-equilibrium model for (regions in) the world economy. The model is useful for constructing scenarios, as it allows projection of future economic developments in a consistent and comprehensive manner. WorldScan is also an important tool for policy analysis. In particular, it makes it possible to study the consequences of introducing energy taxes or emission trade, tearing down trade barriers and, perhaps in the near future, changes in corporate taxes. In 2003, a revised publication of the WorldScan model is planned.

The Global Trade Analysis Project (GTAP), of which CPB is a consortium member, offers the consistent and comprehensive data set to calibrate the model. It covers numerous sectors and countries and includes data on, among other things, bilateral trade flows and trade taxes, and volumes and prices for different types of energy use. In WorldScan the level of aggregation is flexible and most often project-specific. But the model typically distinguishes the United States and several European countries, including the Netherlands.

We seek to combine a strong theoretical foundation with an empirical approach. The theoretical foundation is relatively simple and fairly standard, but we try to give the model realistic properties by adding empirical information. Some strong (optional) features are:

- estimated non-tariff barriers to international trade;
 - estimated international spillovers from R&D investment;
 - different energy markets (oil, coal, gas, electricity and more);
 - a calibrated system of consumption demand;
 - an empirical measure for imperfect capital mobility.
-

The European dimension of CPB's research has been given a strong impulse by the establishment of the new research unit on European comparative analysis in 2000. The unit adopts a project-based approach to a limited number of policy areas. It cooperates with other units of CPB, especially the International economic analysis unit, and with a number of external researchers. Projects usually combine economic theory with institutional knowledge and empirical (or meta) analysis.

Instruments

As CPB does not have an operational comprehensive international model for short-term international analysis, partial mostly non-behavioural models are applied for the analysis of world trade, import prices, exchange rates, interest rates and price competitiveness.

Furthermore, analysis of leading indicators plays an important role.

Research on structural policy issues is typically in the form of projects that aim to combine theoretical insights with institutional knowledge and, if possible, empirical analysis. Some

Main recent publications on theme A: World economy and European integration

Gorter, J., and R. A. de Mooij, 2001, 'Capital income taxation in Europe; trends and trade-offs', The Hague, Sdu Publishers & Centraal Planbureau.

This research provides an overview of the debate among economists on tax harmonisation. It discusses a number of recent proposals to harmonise company taxation in the EU on the basis of a simple analytical framework based on the literature.

Bollen, J., H.L.F. de Groot, T. Manders, P.J.G. Tang, H.R.J. Vollenbergh and C. A. Withagen, 2002, 'Climate policy and European competitive positions' (in Dutch), CPB Document 24, The Hague.

Through a review of economic literature and simulations with WorldScan the study tries to assess the impact of climate change policies of macro-economic performance and relocation of industries. It presents relevant trade-offs to policymakers.

Lejour, A.M., R.A. de Mooij and R. Nahuis, 2001, 'EU enlargement: implications for countries and industries', CPB Document 11, The Hague.

This paper explores the economic implications of the next enlargement of the EU. It simulates a number of changes associated with enlargement and includes a new method to assess the implications of enlargement of the Single Market. The analysis focuses on the consequences for different countries and different industries.

Ederveen, J.P., J. Gorter, R.A. de Mooij and R. Nahuis, 2002, 'Funds and Games, The economics of European cohesion policy', CPB Special Publication 41, The Hague.

Funds and Games provides an overview of European cohesion policy and discusses it from an economic point of view. It contains a meta analysis on the literature on the effectiveness of cohesion policy for stimulating regional growth and presents further empirical results. Moreover, the publication elaborates on directions for reforming cohesion policy in light of the next enlargement of the EU.

projects make use of the WorldScan model. In other projects, CPB aims at an in-depth analysis of the existing literature, sometimes in the form of meta analysis. This analysis is then combined with an analysis of existing institutions and alternative proposals for them. If appropriate, CPB conducts also its own empirical analysis. This usually provides important value-added for policy-makers and is often essential in obtaining a position in international research networks. Moreover, scientific publications are frequently drawn as a spin-off from these efforts.

CPB's international short-term projections are published twice a year in MEV/CEP and more succinctly four times a year in *CPB Report* and the report to the Parliament.

5.2.3 Plans

Future research focuses on areas in which CPB has already gained expertise: economic integration and policy coordination. In economic integration, upcoming projects are the economic implications of accession of Turkey to the EU, and the consequences of the next WTO round for the Dutch economy. Also planned is a more in-depth analysis of the developments in the economic geography of Europe. With respect to policy coordination, CPB has planned projects on level playing fields in an international context, a further analysis on the harmonisation of company taxes in Europe, coordination of energy taxes and emission trading systems, and migration policy in the EU.

5.3 Theme B: Domestic economy: macro and meso

5.3.1 Introduction

Macroeconomic and meso-economic assessment and forecasting of the domestic economy and macroeconomic policy analysis are core activities of the Bureau. Government, parliament and societal organisations (such as labour unions and employers organisations) use the CPB short-term forecast and medium-term scenarios as a starting point for discussions. Moreover, they turn to CPB for the estimated effects of policy measures – not only for the effects on macroeconomic variables, but also the effects on the government budget and the income distribution.

For the short term (up to two years ahead), CPB's work traditionally focuses on monitoring the business cycle and key policy variables and on keeping the short-term macroeconomic forecast (published every quarter) up to date and consistent with information from many sources. A multi-sectoral forecast is presented once a year in CPB's *Central Economic Plan*. The medium-term forecast is updated roughly every two years and extends four or five years into the future. This medium-term outlook often serves as the framework to study current economic problems and as the benchmark for the analysis of policy proposals. Since 1993, CPB employs a scenario approach for the medium-term outlook. Since 2001, this scenario analysis is based on a structural analysis of economic growth, using a production function approach. The medium-term outlook contains a macroeconomic as well as a meso-economic analysis. Long-term scenarios are used to structure our thinking about particular long-term issues, to discuss the fundamental uncertainty around them and to test the robustness of relevant policy alternatives.

Macroeconometric models have traditionally been used as an important tool for the macroeconomic analysis of the domestic economy, for both the short- and medium term. These models have continuously undergone improvements and adaptations. This is in response to actual developments in the economy (e.g. the growing importance of re-exports), new policy regimes (e.g. a new tax system), and new policy questions (e.g., CO₂ emissions). Also, new scientific insights (e.g. the modelling of the NAIRU and the output gap) and technical possibilities (the development of computers, databases, etc.) have contributed to model development. These models serve as instruments to integrate information from many different sources and to safeguard the consistency of the forecasts for different (sub)sectors in the economy.

One of the recommendations of the 1997 Review Committee concerned the short-term forecasting process. CPB was advised to investigate whether it would be satisfactory to interpolate the annual forecasts made by the model using quarterly indicators. If so, CPB would no longer need to build a quarterly model for quarterly forecasting purposes. This procedure was seriously considered in 1997. However, it was concluded that the recommended procedure was not satisfactory. The main reason was that interpolating the annual forecasts using recent realisation figures and leading indicators does not provide a quarterly forecast that is fully consistent. It would be possible to use the recommended procedure for some key variables, but for a consistent quarterly forecast for a large number of variables a quarterly model is indispensable. CPB therefore decided in 1998 to build a new quarterly model, called SAFE, which was put into service in 1999.

5.3.2 Ambition

CPB aims to make the best possible projections for the Dutch economy, including sound assessments of current policies. CPB aims to be leading in macro- and meso-economic analyses of the Dutch economy – particularly on issues that relate to government policy. CPB's macro- and meso-economic projections and analyses should be timely, state-of-the-art and both logically and economically coherent. They should also be effectively communicated to policy-makers, fellow researchers and the general public.

5.3.3 Recent efforts and improvements

CPB regularly analyses the quality of its projections using 'forecasts versus realisations' analyses. This was done for the last time in December 2002 (for 13 variables in the period 1971-2000). This kind of analysis is useful because it indicates 'weak spots' in the model. At the same time, it informs the public about the uncertainties around the CPB point-estimates. In order to monitor forecasting errors on a more regular basis, CPB decided to publish a 'forecasts versus

realisations' analysis every year, and recently developed a new database and accounting programme for this purpose.

In short-term forecasting, CPB uses a leading indicator system for GDP and its components (private consumption, investments, exports). This system was renewed (in cooperation with the University of Groningen) in the last months of 2002. The relevance of new leading indicators and different filtering techniques (HP-filter, BP-filter and CF-filter) were analysed.

CPB attaches importance to a sectoral decomposition of the forecasts of the national economy. The sectoral forecast checks, improves and fleshes out the national forecast, and it is important information for the employers organisations and unions, for example. In addition, the sectoral empirical knowledge also supports research in several areas. However, the costs of such a sectoral decomposition in terms of time and effort is considerable. In order to improve the cost-benefit ratio of this activity, CPB has recently streamlined its sectoral forecasting procedure. In particular, CPB has discontinued the use of its large sectoral model ATHENA for short-term forecasting. Instead, CPB uses a much simpler framework to combine the macro forecast with sectoral information of the sector units. The time saved is used to broaden the research agenda of the units involved to issues like (de)regulation, competition, productivity and innovation. In addition, important macro issues that benefit from a sectoral line of approach, such as exports and competitiveness, will be given more attention. In this way a cross fertilization is achieved between the empirical knowledge base maintained by the sectoral specialists and the theoretical knowledge developed elsewhere at CPB. In terms of major themes, this effort establishes links between the domestic economy, industrial economics and productivity.

The growth of re-exports was significantly higher in the nineties than the growth of domestically produced exports. To get a better understanding of this phenomenon and also to improve forecasts, CPB estimated separate equations for domestically produced exports and re-exports and included these in the macro models. The consumption function has also been re-estimated in order to get a better grip on wealth effects.

In the past few years, CPB has substantially revised the way it drafts the medium-term outlook. The new approach is explicitly based on an analysis of the expected evolution of the fundamental supply factors that determine the growth prospects of the Dutch economy (labour supply and technology). This analysis leads to an estimate of the "potential" growth of the Dutch economy. This growth estimate is combined with an analysis of the size of the output gap between actual production and potential production at the equilibrium unemployment level. The assumption that the output gap closes in four years yields a path for actual output that can be used as a basis for the medium-term growth prospect of the Dutch economy. In comparison with the method previously used, the new approach offers the advantage of a better theoretical foundation, and provides a clear decomposition of the sources of growth that can be communicated to policy-makers and the general public.

The JADE model, which was on the brink of completion at the time of the previous review, is now fully operational, and has been used on numerous occasions to analyse the impact of policy proposals on the Dutch economy. Highlights are the recurrent use of JADE for the analysis of the election platforms, and for the successive Coalition Agreements. The equilibrium unemployment concept, which is central to JADE, has found wide acceptance in policy circles, and is a key element of CPB's long-term and medium-term projections.

The production and market structures in the sectoral model ATHENA have been revised and are founded on modern economic theory. The revision has significantly improved the long-run properties of the model. The first practical test of the renewed model is its performance in supporting the long-term scenario study for the Dutch economy in 2003.

5.3.4 Instruments

All units involved employ a number of instruments for the macro and sectoral economic analysis of the Dutch economy. The models SAFE (quarterly macro-model for the short term), JADE (yearly macro-model for the medium term) and ATHENA (sectoral model for the medium- and long terms) are described in the annex.

The short-term sectoral forecasts are based on expert information, detailed sectoral models and spreadsheet programmes. These forecasts are made mutually consistent by the Sectoral analysis unit, which attempts to close the gaps between forecasted deliveries and receipts for intermediate and investment goods, while maintaining plausible developments for each and every sector. The implied macroeconomic forecasts are tuned (in close collaboration with the Cyclical analysis unit) with the most recent macroeconomic forecasts available.

All units involved use separate models to monitor and analyse particular elements of the forecast. Also data management (monthly, quarterly and yearly macroeconomic data for the Dutch economy) requires a substantial amount of time. Data are documented and made available for all units.

On the basis of the *Macroeconomic Outlook*, a consistent picture of income and expenditure of the public sector (central and general) is constructed, presenting an independent assessment of government finances. For the short- and medium terms, this picture is the starting point for the Dutch government in formulating fiscal policy. Real growth of government expenditure is largely derived from budgetary data. The units for Government finance, for Social security and for Health care maintain almost daily contact with the Ministries of Finance, Social Affairs and Health Care, respectively. These units are responsible for translating economic policy decisions into terms understood by users of the macro model. The real growth of social benefits is linked to macroeconomic development (unemployment benefits) and to demographic factors (old-age pensions and disability programmes) and is analysed by means of the MOSI model.

Main recent publications on theme B: Domestic economy: macro and meso

CPB, 2002, Macroeconomic Outlook 2003 (in Dutch)

The *Macroeconomic Outlook* is published annually in September, only in Dutch. An English summary of the economic outlook contained therein is published in the September issue of *CPB Report* of that year. In Dutch, the name is Macro Economische Verkenning, abbreviated MEV. The MEV serves as a guide for the Cabinet in the preparation of the budget for the next year by providing the latest economic and budgetary forecasts for that year. Updated with final decisions on government policy, the MEV presents a forecast of the Dutch economy for the next year. It is published simultaneously with the government budget, which is based on these forecasts. In year t , the "*Macroeconomic Outlook $t+1$* " is published.

CPB, 2001, Medium-term outlook 2003-2006 , CPB Special Publication 33 (in Dutch)

As a starting point for the election platforms and the Coalition Agreement, CPB prepared a macroeconomic outlook for the next cabinet period, at the end of 2001. This outlook presents the economic development if no new policy initiatives would be taken by the government. The outlook is based on a potential growth analysis. The outlook distinguishes two scenarios, a cautious one and an optimistic one. In line with the advice of some external bodies, the outlook focusses on the cautious scenario, which has been given a sectoral underpinning. Because of the national elections that were held on 22 January 2003, CPB prepared a new medium-term outlook at the end of 2002. The forecasting period for this new outlook is 2004-2007.

CPB, 2002, Charted choices 2003-2006: Economic effects of eight election platforms, CPB Special Publication 39 (in Dutch)

In 2001, all eight political parties then represented in Parliament asked CPB to analyse the economic effects of their election platforms. The analysis of the economic effects of the election platforms has been a tradition since the run-up to the general elections in 1986. Election platforms deal with proposed choices. Of course, everyone wants to take measures that cost nothing or have no down-sides. But, in practice, everything has a price tag. With this analysis, CPB wants to set out the choices that the political parties propose in their election platforms. Important elements of the analysis are the summaries of the budgetary, macroeconomic and income distribution effects of the election platforms. The publication also offers a qualitative analysis of proposals to reform the health care sector, and a more detailed analysis of the proposals related to the Disability Insurance Act (WAO).

Don, F.J.H., 2001, Forecasting in macroeconomics: A practitioner's view, *De Economist*, vol. 149

In this article, CPB's director Henk Don developed some thoughts about forecasting in macroeconomics. The following questions were analysed from a practitioner's point of view: Why do we make forecasts, what are the best criteria for forecasting quality and, against this background, what is the optimal forecasting technique and how do we cope with uncertainty in macroeconomic forecasting? The author attacks the relevance of common statistical criteria for forecasting quality and stresses three non-statistical criteria: logical coherence, economic coherence and stability. The author concludes that the relevant criteria for forecasting quality are best served by using structural models in preparing these forecasts.

Broer, D.P., D.A.G. Draper and F.H. Huizinga, 2000, The Equilibrium Rate of Unemployment in the Netherlands, *De Economist*, vol. 148

This article delves deeper into two of the core blocks of the JADE model (i.e. the production model and the labour market model). It develops a description of equilibrium unemployment in terms of the replacement rate, the wedge and the real rate of interest.

Using the macroeconomic development of wages and consumer prices and the policy plans on tax rates and social security contributions (including health care costs and premiums for pension schemes), CPB analyses the effects on the income distribution using a micro-simulation model (MIMOS₂). This model, based on a representative sample of 40,000 households covering some 80% of the households in the Netherlands, enables us to calculate not only average effects on disposable income, but also the variation in income effects, which are shown in scatter plots.

5-3-5 Plans

CPB is strongly positioned in the Netherlands on macroeconomic and sectoral forecasting and policy analysis. One could even say that CPB has monopoly power, as no other institution has access to the same (government) information at the same time. The strong position is due to CPB's knowledge base of econometric modelling and, especially, to its long experience in using large models and integrating knowledge from different fields (macro, sectoral, public finance, income distribution). To maintain, and if possible to improve, the quality of this work, continuous investments are necessary. In periods of high demand (such as the past two years), there is the danger that these necessary investments will be crowded out by new forecasts or analyses of new policy measures. Moreover, the capacity of the units involved is at a critical minimum in busy periods. This calls for transparent instruments so that others can take over the work if necessary, and for cooperation between the economists working on the various models. These are priorities in CPB's plans for the near future.

'Different models for different purposes' is an important guideline at CPB. The models should, however, not diverge on aspects that have nothing to do with the different purposes. At the end of 2002, CPB initiated a project to coordinate the work on the empirical models that are in use at CPB. The idea is to strive for more uniformity in the theoretical structure and empirical specification of the models, and, as a result, to achieve a better agreement of the reduced-form properties of the models. In addition, the coordination should lead to lower operational costs of model use, by sharing between models the results of new specifications of equations or complete building blocks. The models involved in the coordination are the macroeconomic models SAFE, and JADE, the sectoral model ATHENA, and the applied equilibrium model MIMIC.

The present leading indicator system for GDP can only indicate whether the growth rate will be above or below the structural growth rate. In the first months of 2003 a project will be carried out to investigate the possibilities of deriving from the leading indicator point estimates of GDP growth rates for the current and next quarter. For this project, CPB's Cyclical analysis unit works together with the University of Groningen.

Making sectoral projections is liable to trail behind the macroeconomic projection work because of the extra reconciliation step that is needed to make sectoral proposals mutually consistent. In order to speed up this process for the short-term outlook 2003, the Sectoral analysis unit aims to replace the big sector model ATHENA by a simpler model that enables quick disaggregation of the macroeconomic projections to plausible projections at the sectoral level. These first-round sectoral forecasts are updated by the sectoral specialists. Gaps between the second-round sectoral forecasts and the macroeconomic forecast are filled through an optimisation procedure that closes the gaps while keeping certain target values of the sectoral projections within prespecified band widths.

In the current version of JADE, the absorption of additional labour supply into employment is possible only through wage adjustment. This introduces more sluggishness into the working of the labour market than appears to be empirically justified. In 2003, CPB plans to develop a new structural block of labour market adjustment that explicitly takes into account the interaction between labour market flows, employment, and wage formation. This project will use insights from both modern labour market theory and empirical VAR studies about labour market flows and employment dynamics.

Fiscal-related research focuses on budgetary rules, the role of automatic stabilisers and cyclical characteristics of the budget.

5.4 Theme C: Technology, education and research, innovation and productivity

5.4.1 Introduction

Over the last decade, public and academic interest in productivity-related issues has increased substantially. The ICT hype has disappeared, but the debate about its effects on productivity is still fully alive. The slowdown in productivity growth in the eighties and nineties had led to research on the determinants and also the measurement of productivity. Endogenous growth theories support the idea that knowledge is a produced good with possibly large spillover effects that may be analysed by economic theory and influenced by policy. The Dutch Ministry of Economic Affairs has made productivity one of its main areas of interest, and the Lisbon agenda has set ambitious goals with respect to productivity for all of Europe. However, despite all this attention, our understanding of what really drives productivity growth and which policies are most effective in stimulating growth is rather limited.

5.4.2 Ambition

CPB aims to be a centre of excellence in the public policy debate on productivity. This implies that CPB wants to have a thorough understanding of the academic developments in this area, conduct state-of-the-art applied research of its own with a particular focus on how policy may affect productivity, and analyse and evaluate current policies and possible alternatives. The

research should lead to a clear overall view on productivity policy, supported by empirical studies and concrete policy evaluations that will be presented in policy circles, academic conferences and published in academic journals.

5-4-3 Recent efforts and improvements

Over the past four years, CPB has invested heavily in different areas of productivity. In 2002, CPB published a major study on the creation, diffusion and adoption of knowledge through the educational system, academic research and business innovation. This study was fairly general in nature, exploring market incentives and possible market failures related to knowledge, the reasons for and the risks involving government policy, and future trends that may favour or diminish the effectiveness of policy. Several studies explored the determinants of Dutch productivity growth through the growth accounting framework and tried to understand the reason for the rather sharp decline in Dutch productivity in the last two decades. Another line of research investigated the growth potential of the Dutch commercial services sector in general, and zoomed in on the factors that hamper productivity growth in this sector and how policy may address them.

These studies were generally well received and praised for their policy relevance. CPB was also encouraged to proceed and to go beyond the often rather general framework. It was asked to emphasize empirical research and a more in-depth analysis of the pro's and con's of certain policies and policy alternatives.

In response to this challenge, CPB decided to bring the different strands of research involving knowledge and productivity together in one theme, in order to facilitate cross fertilisation and a better overall research programme, with a strong focus on empirical content and policy relevance. In order to go beyond the general framework and to deal more adequately with more specific policies, CPB identified four sub themes: technology, education and research, innovation and productivity.

To facilitate the cross-fertilization between empirical and institutional knowledge at CPB, two special project groups have been established that are not part of a specific unit, but report directly to the department head of the Industries department. The task of these groups is to perform and initiate empirical, policy-oriented research in cooperation with other units at CPB and to bring about a stronger link between the different research units.

Main recent publications on theme C: Technology, education and research, innovation and productivity

CPB, 2002, The pillars underneath the knowledge economy (in Dutch), CPB Special Publication 35, January 2002

Knowledge is the basis for sustained economic growth. Yet little is known about how it is created. This study explores the economics of the creation, diffusion and adoption of knowledge and the role of institutions in this process. After an overview of the literature, a conceptual framework is developed to analyse the case for policy intervention and institutional change. This framework is applied to study options for institutional change in the areas of education, research in public institutions and private sector research.

Kox, H.L.M., 2002, Growth challenges for the Dutch business services industry, CPB Special Publication 40, April 2002

The Dutch business services sector has shown a very high growth rate over the last decade. This study explores the causes and the characteristic features of this rapid expansion and assesses the sector's strengths and weaknesses in an international context. What are the macroeconomic consequences of this high growth rate? Is it to be expected that this sector will remain an engine of growth for the Dutch economy in the future? Which policy options may be used to address the problems the sector faces?

Van der Wiel, H.P., 2001, Does ICT boost Dutch productivity growth?, CPB Document 16, December 2001

From an historical and international perspective, Dutch labour productivity growth rates have been lacklustre. Using a growth accounting framework, this document analyses whether ICT has recently boosted Dutch labour productivity growth, similar to developments in the US. Labour productivity growth in the Dutch market sector slightly accelerated in the second half of the 1990s. The acceleration seems to be related to the production and use of ICT. The productivity performance of the Dutch ICT sector accounts for a large share in the rebound of labour productivity growth. Strong productivity growth in the ICT sector is partly due to increased efficiency in the production of ICT products, particularly ICT-services. Users of ICT benefit from its opportunities as well. Labour productivity growth rates markedly accelerated in ICT-intensive industries in the late 1990s.

5-4-4 Instruments

For empirical research, a variety of methods is used at CPB, often depending on data availability. If possible, microeconomic research will be emphasized more. Data availability is expanding, which makes this line of research more promising.

At a conceptual level, CPB can build on the base acquired in the knowledge study, especially the identification of possible sources of market and policy failures. In evaluating policy and policy options, cost-benefit analysis may be applied. In addition, international comparison will be used, with respect to institutions and performance.

5-4-5 Plans

As indicated above, the focus is on empirical, policy-oriented research within the areas of technology, education and research, innovation and productivity. These topics are allocated to different project groups or units, which will concentrate on their subfields, but also perform

joint projects. Three of these project groups/units have just been established. They are in the process of determining suitable projects and project plans. For these projects, financial support and input regarding content has been sought and received from several ministries. It is expected that this input will increase the policy relevance of the research.

The natural first area of interest is the measurement and forecast of actual and structural productivity growth. This is a major determinant of economic growth, and hence directly relevant to the government budget. Several projects will focus on this area, performing structural, sectoral analysis and growth accounting analysis. It is hard to get a grip on productivity, in part because in some sectors (such as the fast growing services sector), it is not clear how to measure it. The approach will, therefore, be multi-faceted, combining the insights of the sectoral specialists, information from international comparisons, new methods of measuring output and productivity such as hedonic prices, and macro and sectoral models. Non-technical innovation in areas such as organisation, marketing, and design will also be included in the research.

As mentioned in the introduction, the ICT sector is often seen as an all-pervasive engine of productivity growth for the general economy. The role of ICT on productivity is, therefore, a second line of research. One focus will be on the developments of the sector itself, and of the subsectors ICT manufacturing and ICT services, in particular. Parts of the ICT sector may have inherent tendencies to non-competitive market structures, which may warrant policy attention. Possible spillover effects and their policy implications will be a special area of interest. By taking part in an OECD project on the importance of ICT for firm performance, CPB plans to pursue international collaboration with (European) institutes on similar topics. This is particularly promising, since several waves of the EU Community Innovation Survey (CIS) have become available with similar firm-level panel data for many EU countries.

Productivity growth is ultimately determined by innovation. In the area of innovation, the research focuses on the interaction between 'science' and 'industry', on the relationship between (de)regulation and innovation, on the importance of non-technical innovation, and on the evaluation of technology policy. The research will build on the conceptual framework developed in the study on the economics of knowledge, will use microeconomic techniques where possible, and will perform international comparison of institutions and their effects on innovation output.

The main condition for productivity growth and innovation is, of course, a well educated labour force. Education is a produced good with a very specific market structure, with a perceived need and also policy initiatives needed to bring about more competition. Therefore, specific attention

will be given to education and to the institutional design of the education and science sectors. The analysis will start from the framework of principal-agent theory. In order to come to more concrete policy options, the research will put more effort in empirical analysis of the Dutch situation. This will also make it easier to publish in international academic journals and to build an international network. Major themes for the next years are the effects of private contributions in higher education, the cost-effectiveness of interventions for students at risk, conditions for public funding of private schools, and incentives for research in public organisations.

5.5 Theme D: Industrial economics

5.5.1 Introduction

Policy attention for industrial problems has increased strongly in the last decade. These are the days with macro concerns, but micro policy questions. How should we reorganise the social services, health care or the school system? Should we privatise our national airport? What about the railways? Should we be worried about a looming shake-out in the telecommunications industry? Why is it so hard to auction off radio frequencies? Is the Competition Law working properly, or are we still living in a cartel paradise? This is just a small sample of policy questions that could be addressed by CPB (e.g. by analysing pro's and con's of various policy options, by debunking flawed reasoning, and by providing policy-makers with appropriate empirical information). Analysing industrial and institutional questions also helps CPB to better understand the micro foundations of markets and the public sector, and thus also contributes to CPB's traditional tasks.

CPB has therefore substantially invested in creating a knowledge base that allows it to answer (a number of) the above questions. CPB has followed a dual strategy: First, by hiring people with a background in industrial organisation and putting them together with sectoral specialists who have the institutional knowledge needed to analyse specific markets. This strategy yielded a substantial number of reports, as well as a national and international network in this – for CPB – relatively new field. Second, by drafting a book with an institutional comparison of Germany and the Netherlands ('Challenging Neighbours'). This strategy led to an important improvement in institutional knowledge throughout the CPB and provided a toolkit for analysing relevant policy questions.

5.5.2 Ambition

This is a good moment for reflection. To be able to provide good quality studies in policy-relevant research areas, the first step is to be a little bit more precise about quality in this field. For CPB, quality in industrial economics can be measured by a variety of indicators, most of which will be relevant for other topics as well, although the weights may differ.

- Quality assessment by target groups, measured by reactions of policy-makers, renewal of research requests, academic reactions and those of others.
- Number of papers in refereed journals and attendance at scientific conferences. This is important because of its objectiveness, ease of quantification and scientific impact, but publishing in journals is not CPB's main goal. For industrial economics, with its modest academic background in the Netherlands and international scope, this indicator is more important than for most of the other themes.
- National impact, measured by media attention, policy pick-up, and number of times the research is presented.

It is hard to say in advance how well one should score on these indicators, but CPB's ambition is to score better than before. In which categories CPB scored well, and where is there room for improvement? The following sections will help us to make this assessment.

5-5-3 Recent efforts and improvements

In the period 2000-2002, the theme generated 16 Documents, 6 Special Publications, 2 Discussion Papers and various memoranda, book contributions and other scientific offspring. Most of these publications concerned studies on specific sectors (housing corporations, the chemical industry, banks, telecom, the book market, publishers, health care, pensions, the airline industry, agriculture), but some studies were more conceptual in nature (yardstick competition, public-private partnerships, auctions, competition indicator, clusters). A selection of studies is attached at the end of the section.

Industrial economics at CPB can be subdivided in two subthemes. The first (called 'traditional industrial economics') is related to empirical questions on sectors. The second (called 'modern industrial economics') is more institutional in nature and focuses on the role of the government.

Traditional industrial economics addressed a number of policy relevant questions as well. In particular, in agriculture CPB has been quite active in a variety of policy areas. The scope of the research agenda is broad and touches on several other themes. For instance, the future of the European agricultural policy is a main issue for the enlargement of the EU. Hence, research on agriculture and EU expansion is linked. The agricultural sector is also a main supplier of land for various alternative uses such as preservation of nature, recreation, housing and protective measures against flooding. This fact led to joint research efforts focussing on the market for land in general. A similar development is currently going with respect to research on the housing sector. A main new research theme is the effect of institutions in the housing market and the efficiency of housing subsidies of various forms, in particular in the low income and rental sectors. Moreover, competition in the housing sector is a new focus, partly based on a recent enquiry of the Dutch parliament.

CPB intends to broaden this cross fertilization of empirical sectoral knowledge and research on more general policy themes to other components of traditional industrial economics. In this way, the (previously) mostly separate subfields of traditional and modern industrial economics will be joined. For instance, research on the services sector will have a strong additional focus on competition policies. Also, research links have been established with research on productivity and innovation policies.

On average, the studies in each of these subthemes reached a wide audience, measured by the number of requests for presentations, newspaper coverage, policy attention, and other spin-off activities (such as researchers being asked to peer review other research).

The overall quality of the publications was rather good, measured by the scientific offspring, direct reactions by the academic world and general perception by policy-makers and the public. The quality of the work is further monitored by an open stance regarding critique from both policy-makers and the academic world.

There are also some concerns, however. A number of fields in the modern industrial economics subtheme are covered by a relatively small number of people. This does not hold for the traditional industrial economics, because sectors such as agriculture, housing and manufacturing require permanent staffing for other reasons. It does hold for sectors such as network industries, banking, the cultural sector, etc. Studying these sectors is more risky. CPB does not have a strong empirical and institutional basis in these sectors. This implies that either cooperation is needed with experts outside CPB, or that the investment in knowledge has uncertain long-term returns (since it is not clear whether or not the subjects will last on CPB's research agenda). Although cooperation with outside experts can be qualified as positive, it also creates coordination problems and does not necessarily lead to a continuity of the knowledge base.

A second concern is the lack of empirical content of some publications in the modern industrial economics. Various explanations can be put forward. First, there is often a lack of appropriate data (or data acquisition is a time-consuming process). Second, the background of (part of the) staff is theoretical (although this is shifting already). Third, it was easier to build up reputation within a reasonably short time span in a new field by following the strategy explained above, rather than by investing in data collection.

A final concern for both subthemes involves the perceived modest extent of international contacts and publications in refereed journals. CPB's international investment is substantial – with foreign visitors, foreign staff, conference visits, various researchers succeeding in publishing, and international cooperation. For industrial economics, the academic background in the Netherlands is modest and its scope is international. This is why the development of international contacts and publishing papers in refereed journals is very important for industrial economics.

5-5-4 Instruments

The research instruments within this field are rather eclectic in nature. More often than not, there is no standard theory that can be empirically tested such that certain policy question can be answered. Rather, the analysis requires a combination of various empirical tools (data analysis, expert opinions, case studies, descriptive statistics, simulations) and theoretical insights (from industrial economics, institutional economics, welfare economics).

The eclectic approach often requires the creativity of researchers and has the advantage of being flexible. The drawbacks to the approach include the difficulty in finding the optimal mix of tools, and the uncertainty surrounding the quality of the conclusions.

5-5-5 Plans

The analysis given above requires a shift in strategy.

(i) specialisation versus generalisation.

In the coming years, CPB aims to specialise in (incentives for) semi-public services (health care, education, housing, social security, publicly funded R&D) and network industries. The reason for this shift is threefold: These areas are the focus of the most urgent policy debates (CPB has invested substantially in these fields to gain a comparative advantage, in particular in semi-public services), and specialisation is needed to obtain the required depth of analysis.

(ii) sectoral knowledge.

CPB is not discarding its traditional sectoral work. Sectors such as agriculture or energy require permanent monitoring. CPB nevertheless wants to allocate its staff in a more policy-oriented way (i.e. in the 'traditional sectors' CPB wants to maintain and increase its knowledge base, and with clear policy questions in mind (such as productivity or innovation policy puzzles). CPB also wants to allocate its staff in a more flexible way (e.g., sectoral specialists involved in analyses outside their own sector).

(iii) strengthening of the empirical basis

This is done in several ways: in the selection of projects (projects with empirical potential obtain priority), in the hiring of staff, in the training of staff and in cooperation with people outside CPB. This issue is explicitly addressed in all the work plans 2003 of the units involved.

(iv) international/scientific

More time is allocated to invest in scientific publication and international contacts. CPB has strengthened its ties with WIFO (Austria) and (to a lesser extent) with the Leverhulme Centre for Market and Public Organisation (CMPO) in Bristol. CPB also tendered for the European Commission on Telecommunications (2001-2002) and (together with several international partners) for the Merger Task Force (2003), and plans to continue with such tenders.

As more time and resources are allocated to subjects, this will go at the expense of the number of fields covered (the consequence of specialisation) and the number of policy publications.

Main recent publications on theme D: Industrial and institutional economics

Bijl, P. de, and M. Peitz (University of Frankfurt), 2000, Competition and Regulation in Telecommunications Markets, The Hague, Sdu/CPB

This work, commissioned by OPTA, the Dutch Telecom Regulator, involves a practical and policy-oriented version of a model *a la* Laffont and Tirole. The goal is to simulate competition by (various types of) entrants in telecommunications and to draw some policy-relevant conclusions. The research led to an academic book by the same authors, published by Cambridge University Press.

CPB, 2000, Publishers Caught in the Web?, CPB Working Paper 119, March 2000 (with related No. 120-122).

The general part of this study, commissioned by the Ministry of Economic Affairs, analyses the economics of publishing and the role of the government in light of the Internet trend. The study further contains three (separately readable) case studies on academic journals, copyright protection and commercial magazines.

Laat, E. de, F. Windmeijer (IFS, London), and R. Douven, 2002, How does pharmaceutical marketing influence doctors' prescribing behaviour?, CPB Special Publication 38, March 2002.

Do doctors let themselves be influenced by promotional activities of the pharmaceutical sector? There are a lot of stories and non-stories here. This study, commissioned by the Ministry of Economic Affairs, is the first study to empirically test the level of influence for a large class of pharmaceutical drugs. The result is that doctors are influenced by promotional activities, but it is hard to tell to which extent. The study further suggests some policy measures to counteract possible negative welfare consequences of advertisement.

5.6 Theme E: Welfare state and labour market

5.6.1 Introduction

As elsewhere in the industrialised world, long-term demographic trends point to increasing dependency rates due to an ageing population. With a narrowing tax base and increasing costs of the health care system, social transfers and old-age pensions, the sustainability of public finance has become a central policy issue. In view of the ageing problem, policies aimed at increasing the domestic supply of labour are likely to be on the socio-economic policy agenda for the years ahead. Migration, both as a potential relief for domestic labour shortages, and as a source of socio-cultural tensions, have also recently entered the policy agenda.

Several specific topics will have to be addressed. The rather large number of disability benefit recipients and long-term unemployed will have to be reduced. Those now outside the work force (elderly, female partners) will have to be encouraged to enter the labour market. Increases in (healthy) life expectancy involve both a higher pension burden and the possibility of postponing (early) retirement by the elderly. Restructuring the associated welfare state arrangements (i.e. finding a better balance between solidarity and efficiency) and getting the right (financial) incentives in place, is a central focus. Moreover, the functioning of the labour market is still very

much at stake. Institutional and financial obstacles for increased participation (child care, leave arrangements, poverty trap, replacement rates) have to be reduced. Better opportunities for low productivity workers have to be created by allowing for more flexible wage setting (wage differentiation) and by the design of suitable tax facilities aimed at such workers.

Alongside the analysis of these more structural questions, CPB tries to serve the continuous demand for operational support – concerning the effects of proposed policies on income distribution and the government budget.

Each of the remaining sections of this chapter falls in two parts. The first part focuses on policy support in the area of income distribution, wages and the government budget, taking all other institutions and welfare state arrangements as given. The second deals with issues of redesign of such arrangements in the areas of health, social transfers and pensions, as well as improvement of the functioning of the labour market. This subdivision largely coincides with the distinction between *short-run* versus *long-run* policy concerns, and/or between *operational* versus *structural* policy issues.

5.6.2 Ambition

With respect to short-run policy support, CPB aims to provide integrated assessments of the financial impact of policy proposals. In particular, effects on income distribution, replacement rates, tax wedges, wage costs and the government budget must be assessed as accurately as possible. CPB is well aware that such assessments will assist policy-makers only if they are timely, and that also the comprehensiveness of CPB output in this area is crucial.

With respect to the long-run design issues of the welfare state and the labour market, CPB aims to fuel all major policy debates with authoritative and in-depth analyses. CPB wants to play a leading role in the analysis of the ageing problem broadly, both in the Netherlands and at European level. CPB's analyses should adequately integrate existing theoretical and empirical insights, display the likely welfare costs and benefits of relevant policy options, and describe the uncertainty imminent in long-run projections in a fair and accessible way.

5.6.3 Recent efforts and improvements

Short-run policy analysis

CPB is well equipped to calculate the budgetary, purchasing power, and labour cost consequences of parameter changes in the sphere of taxes, subsidies, social transfers and pension premiums, health contributions, and labour market policies. A comprehensive set of simulation models are kept operational; together these broadly cover the public sector. These

models embed in great detail the ruling institutions as well as the composition of the Dutch population. CPB's efforts in this area are mainly dedicated to keeping these models up to date: implementing changes in the ruling arrangements, feeding in more recent underlying statistical micro data sets, re-calibrating models and filling remaining gaps. These models are kept mutually consistent, and are well adapted to provide inputs for CPB's macroeconomic and general equilibrium models (see also theme B).

The demand for support in this area is continuous, and a large number of exercises are performed each year. CPB aims to react in a timely manner to requests in this area, drawing on its elaborate set of models. Outcomes are discussed in great detail with ministries who often perform their own competing calculations. Generally speaking, CPB fares very well in such confrontations; CPB outcomes actually serve as a benchmark for the others. Knowing that the model calculations will be scrutinised extensively keeps us alert and up to date. In most cases political parties, trade unions and employers organisations will require a prior CPB assessment as a basis for entering into negotiations.

In addition to the direct budgetary or distributional effects alluded to above, the applied general equilibrium model MIMIC allows CPB to incorporate long-term behavioural feedbacks through the labour market. MIMIC analyses changes in labour-market-related fiscal or institutional arrangements. Among other things, applied work in this area has focussed on the following issues:

- i) the role of child care facilities and leave arrangements for labour market participation (of female workers and in general)
- ii) the labour market effects of various tax policy options that aim to combat the high unemployment of low-skilled workers
- iii) the labour market effects of tax shifts between employers and employees

Through its effect on output prices, the development of wage costs is a crucial determinant of (international) competitiveness. Given the degree of openness of the Dutch economy, wage formation has a direct bearing on the short- and medium-term performance. Monitoring and analysis of wage formation is therefore an important topic at CPB. The objective is to obtain good short-run forecasts of wage increases and a better understanding of the dynamics of wage formation (which feeds back into the specification of CPB economic models). In the recent past, CPB has not only re-developed its macroeconomic wage equation (see theme B), but has also investigated micro-data sets on individual wages and sectoral wage contracts. The focus of this research is on the analysis of both the wage distribution (i.e. wage inequality, nominal wage

rigidity, minimum wages) and the structure and dynamics of negotiated sectoral wage contracts (staggered wage contracts, pattern-bargaining, length of contracts, indexation clauses).

Although CPB performance is generally strong in the area of operational policy support three concerns should be mentioned. First, labour market research is generally rather fragmented. Separate research topics are often useful *per se*, but a unifying framework is lacking. Second, CPB does not have much experience in policy evaluation based on microeconomic analysis, whereas demand for such evaluation is increasing. Third, the pressure of policy support is often very high. This tends to crowd out more fundamental approaches or the exploration of new directions, thereby reducing research output. Moreover, keeping the model documentation up to date has sometimes suffered from such a pressure of demand, thus threatening the quality in terms of transparency and reproducibility of CPB's outcomes.

Ageing

'Ageing in the Netherlands' (AN) updated earlier research with generational accounting techniques on the fiscal consequences of ageing: how much will public expenditure rise on account of ageing; can current fiscal policies be maintained in the future or are they unsustainable; what measures should be taken (in case policies are judged to be unsustainable) to restore sustainability; what are the corresponding intergenerational redistributive effects? AN distinguished itself from its predecessors by including a detailed sensitivity analysis and an analysis of developments and policy options in the fields of labour market, health care and pensions.

With AN, CPB has succeeded in participating in the public debate on ageing (e.g. in the Social Economic Council). Furthermore, the project had a clear spin-off, as CPB was able to use the calculations in AN for similar projects at the OECD and EU levels. Moreover, both the OECD (country survey) and academics (University of Amsterdam) have showed interest in AN, which provided input for further discussion on the plausibility of the assumptions in AN on interest rates and equity premiums and the relevance of these assumptions for calculations on the sustainability issue.

Simultaneously with the start of the AN project, CPB launched the construction of an intertemporal applied general equilibrium model with overlapping generations of households for the Dutch economy. Compared with the generational accounting model used for the calculations in AN, the GAMMA model includes economic behaviour on the part of households, firms, and pension funds. It can therefore assess more accurately the economic and fiscal effects of ageing (and of other shocks as well), and allows the ranking of various policy options in terms of welfare effects. At the end of 2002 a first operational version of the new GAMMA model became available (see also annex).

Reference: *Ageing in the Netherlands*, CPB Special Publication 25, August 2000 (Ewijk, C. A. van, B. J. Kuipers, H. J.M. ter Rele, M.E.A.J. van de Ven and E. W.M.T. Westerhout)

Structural analysis

Labour supply is a key factor determining long-term economic growth. It is the outcome of the demographic potential of a country, on the one hand, and the willingness of its citizens to participate on the labour market, on the other hand. The demographic potential can be influenced by immigration policy, while participation can be affected by welfare state reform and associated incentive structures. This sets the stage for the research that has been performed in this area at CPB; its crucial policy relevance is undisputed in view of the ageing problem facing us in the years ahead. The long-term growth analysis, which constitutes the core of the ageing problem, starts with *long-term scenarios* for the labour force. Developed at CPB in close co-operation with Statistics Netherlands, the scenarios take account of alternative developments of population, and socio-economic and socio-cultural factors. The labour force scenarios are input not only for ageing studies, but also for policy studies in other fields (transport, energy, physical planning and the environment).

Main recent publications on theme E: Welfare state and labour market

Graafland, J.J. , R.A. de Mooij, A.G.H. Nibbelink and A. Nieuwenhuis, 2001, MIMICing tax policies and the Labour Market, Contributions to Economic Analysis 251, North-Holland Publishing Company, Amsterdam

This book documents the applied general equilibrium model MIMIC that CPB uses to analyse income and labour market policy. It combines microeconomic theory with a rich institutional detail and a firm empirical basis. The book describes the structure of MIMIC and discusses a large number of policy measures that have been proposed during the last five years. Also, it elaborates on proposals that have recently come into discussion, such as the flat tax. To ease the understanding of the model, a core version with only a few equations is also presented.

CPB, 2000, Ageing in the Netherlands, Special Publication 25, Sdu Publishers, The Hague

This study provides a comprehensive analysis of the economic consequences of ageing in the Netherlands. It focuses on the government budget, but also considers the impact of ageing on important sectors as healthcare and the pension system. See also the box on *ageing*.

CPB, 2000, Trends, dilemmas and policy: Essays about long-term developments, CPB Special Publication 24, Sdu Publishers, The Hague

What does the concept of individualisation mean and what are its consequences? Which challenges does a knowledge economy pose for policy in the field of education, science and technology? What is the relation between quality and efficiency in the welfare society? What do trends towards larger differentiation, more heterogeneity and an ageing population imply for health care, education and public order? What are the bottlenecks and opportunities in town and country planning? These are some of the questions in the essays written by SCP (Social and Cultural Planning Office) and CPB for the Dutch government. Starting from the trends that are becoming apparent in several fields, experts from both institutions have formulated qualitative views on the challenges and dilemmas for government policy in the next ten to fifteen years.

Research on the economic impact of *immigration* was only recently taken up in the Netherlands. A few years ago, CPB started a first exploration, largely based on the international literature. This was followed by a quantitative assessment of the general prospects of immigration as an instrument of economic policy in the Netherlands. In the meantime, the immigration debate in the Netherlands had taken off, and the subject is expected to remain on the agenda in the near future. Given the knowledge accumulated over the past few years, CPB aims to undertake research directed towards more specific policy questions. These concern, in particular, institutions and mechanisms that are conducive to an active role of immigrants in the economy, instead of dependency on the welfare state.

Welfare state reform is another important issue. The relation with labour supply is especially strong in the field of incentives for the transition from welfare to work. This has been the main focus over the past few years. The answer to some important questions is still not clear, though – for instance, with respect to the *effectiveness of financial incentives*. More knowledge in this field will enable CPB to give more precise answers to questions regarding, for example, e.g. the reform of the occupational disability scheme (see below). The possibilities of employing microeconomic methods are increasing with the availability of suitable data sets and staff members with skills in microeconomics.

In 2001 and 2002 several plans were put forward to reform the occupational disability scheme. The main objective of these plans was to halt the steady growth of the number of beneficiaries¹⁴. CPB extensively analysed these proposals from all angles and at all stages, focussing in particular on the financial instruments. The effects of non-financial instruments – such as intensifying medical examinations – are difficult to quantify. A survey of the international empirical literature, together with own calculations based on the composition of the existing stock of disabled persons, caused CPB to be considerably more pessimistic than the proposers themselves about the effects of the measures under consideration. CPB's point of view came under heavy criticism from the federations of employers and the unions. However, the government largely followed up on CPB's analysis. The debate still continues.

The 1997 Review Committee advised CPB to pay more attention to the analysis of the *pension system*. In line with this recommendation, CPB has performed several studies in this area, concentrating on the effects of ageing, on the increase in lifetime expectancy and on the increased vulnerability of old-age pensions to unexpected shocks. Privately funded pensions are quite substantial in the Netherlands. In the 1990s, pension funds considerably raised the share

¹⁴ The number of disabled persons reached 978,500 at the end of the year 2001 (approximately 13% of the labour force). Every recent year more than 100,000 new benefits have been awarded.

of their investments in equities. The poor returns on such investments in recent years have substantially weakened their financial position. CPB called for arrangements appropriate for dealing with higher investment risks. CPB calculated the required average increase of pension contributions to improve the solvability of pension funds. Also analysed were the effects of several other future developments – for instance, the effects of individualisation and increasing labour mobility – on risk sharing and solidarity between generations.

Dutch *health care* is in transition. In the recent past, policies aimed at cost control made health care less flexible, and problems with waiting times increased. Ageing of the population and higher demands by consumers are likely to worsen this situation in the future, thereby necessitating restructuring of the health sector and implementation of reforms that have been set in motion. According to these plans, the existing supply-driven system based upon strict central budgeting of health costs will be replaced by more of a market- (or demand-) driven system with proper (financial) incentives for all parties in place. Health insurers and health suppliers will act in a more competitive environment under side conditions of solidarity imposed by the government.

To be able to analyse the likely outcomes of health care reforms, CPB put considerable effort into the development of a comprehensive simulation model (based on sound microeconomic foundations) of the Dutch health care sector. A first complete version of the model was finished only recently, so that practical applications have been limited over the period under review. It has been used, though, to prepare scenarios for the health care sector that have become part of the medium-term macroeconomic forecast 2003-2006 (*see theme B*).

Besides the supply side, also the financing of health care will probably be reformed. Several plans have been developed to combine current public and private insurance for the costs of cure into a single general insurance scheme. CPB has analysed the impact of several proposals for reform by the Social Economic Council, political parties and the Cabinet. To be able to analyse the impact of such reforms on labour costs, purchasing power and the government budget, CPB has improved the modelling of health insurance in the models MOSI and MIMOS and has analysed the current level of contributions of employers to employees covered by private health insurance.

The development of the costs of ethical drugs is a major subject in the health policy debate in the Netherlands. CPB cooperated with its sister institutes RIVM (National Institute of Public Health and the Environment) and SCP (Social and Cultural Planning Bureau) in a background study on ethical drugs and medical devices.

5.6.4 Instruments

The main model instruments are listed in annex F. In this section we review the main new developments that have taken place with respect to these instruments¹⁵

CPB's micro-simulation models MOSI (social transfers; see annex E) and MIMOS-1/2 (purchasing power, replacement rates; see annex E) have been relatively stable over the review period. These models are indispensable in view of the strong demand for detailed calculations of budgetary and purchasing power effects of intended policies. A major update is planned for the near future, when CPB gets access to a large micro database with individual tax data. This will replace the databases now underlying these models. To increase coverage of the purchasing power computations with the MIMOS models, CPB has synthetically matched (financial) wealth data to the underlying micro data set. For the same reason CPB has also started to investigate the availability of data reporting on income-dependent subsidies at the level of municipalities. These subsidies have grown considerably, and are now deemed to have a substantial detrimental effect on the poverty trap.

As a basis for research into the dynamics of wage formation, CPB spent considerable effort in building a unique panel data set with data of about 100 collective labour agreements since 1980 (over 1500 bargaining outcomes at the sectoral or firm level negotiated between employers and trade unions). Research on this data base will start shortly.

A new model, Actuaris, was developed in the review period to analyse long-term developments for the Dutch funded pension sector. It was used to compute liabilities and contribution rates in several studies relating to the analysis of ageing issues (e.g. *Ageing in the Netherlands*; see box).

The MIMIC model is CPB's workhorse to explore the economic and fiscal effects of policy options relating to the labour market institutions and the system of social transfers. The model was fully documented in 2001 by the publication of *MIMICing Tax Policies and the Labour Market* in a first-rate academic books series. In particular, the inclusion of a detailed sensitivity analysis in this book, as recommended also by the 1997 Review Committee, helped to inform the public about the uncertainties and the robustness of the model outcomes.

Upon publication of this book, CPB decided to make a full (internal) evaluation of the MIMIC model. This evaluation concluded that the MIMIC model had become too large and too complex and had evolved too much in the direction of a black box. To get rid of these weaknesses, a core

¹⁵ For the development of the general equilibrium overlapping generations model GAMMA, please see the box on *Ageing*.

version of the model had to be built, a project which started in 2001, and still continues. Concentrating on the key mechanisms of the model, CPB will be able to put the model on more firm microeconomic foundations, while at the same time re-establishing its empirical content. This is likely to make the model more transparent and flexible, as well as to add to the interpretability and realism of the model's results. The changes made now will allow CPB to perform welfare analysis with MIMIC in the future.

During the review period, the *Health care model* was completed. It is a rather unique instrument that covers all different actors operating in the health sector, and has a sound microeconomic and empirical underpinning. Several planned changes in Dutch health care institutions can be implemented and analysed; the model can be used both for short-term policy support and the analysis of long-term structural issues concerning the redesign of the health sector.

5.6.5 Plans

CPB's efforts in the area of short-term policy support are largely directed towards the maintenance and further development of the model instruments available already (see plans listed in the preceding subsection). Accordingly, this subsection is restricted to the more structural side.

The *ageing problem* is multi faceted; it provides a link between many issues concerning the functioning of the labour market and the (re-)design of the welfare state. Although a lot of research has already taken place, the full picture of the ageing problem (macroeconomic, fiscal, intergenerational, international, empirical) is still incomplete; research in this area will thus continue to be on the agenda. Via the ENEPRI network CPB closely co-operates with a number of sister institutes in Europe.

In the area of *labour supply*, we require a better empirical underpinning of the elasticities involved in flows in and out of the work force. The focus should be on the effect of financial incentives for (non)-participation and for entering or leaving the various branches of the social security system. Econometric analysis of micro data, both cross sections and panel data, seems to be the only way to make progress in this area.

CPB will continue its research into the long-run sustainability of the Dutch funded system of *supplementary pensions*. The recent fall in stock prices has added to the urgency of such research. Focal points are the intergenerational income distribution, risk-sharing, equity premium, embedded options, and the assessment of the risks involved in holding a certain investment portfolio. Simulations and scenario analysis will be employed to cover the uncertainties in the

development of the liabilities of pension funds, and pension policy options (indexation, defined benefits vs defined contributions, retirement age) will be analysed.

More generally, CPB wants to investigate the future of the *social transfer system* as a whole. Ageing, individualisation, labour mobility within Europe, and shifts in political preferences (balance between incentives and solidarity) are important trends that are likely to call for future changes in social transfer arrangements. Optimally reshaping the welfare state system requires a rethinking of the design of semi-public services (see theme D).

A redesign of the Dutch *health care* system seems to be inevitable. CPB will use its health care model to investigate options for changing this system, jointly with the more eclectic theoretical/empirical approach mentioned in section 5.6.4 (analysis of semi-public services). In this area, CPB will focus in particular on the analysis of waiting times and the financing of hospitals and medical specialists. Some model extensions will be necessary to address these questions.

5.7 Theme F: Physical and regional aspects

5.7.1 Introduction

In a crowded and prosperous country like the Netherlands, population growth and the ambition for more material prosperity lead to increasing pressure on the physical surroundings.

Moreover, there is a growing appreciation for the environment, nature, etc. The urgent question of how to deal with these pressures and how to achieve a more sustainable economic development explains the attention in the national policy plans for the themes energy, mobility, space and environment. We refer to these themes as the ‘physical and regional aspects’ of the economy.

CPB has a distinct comparative advantage in this field, in which many other institutes and consultancy bureaus are active. Economic developments, in particular the sectoral pattern of economic activity, are an important factor determining the pressure on physical surroundings. CPB can draw on its own expertise to prepare long-term economic scenarios, which can serve as starting points for analyses in the field of physical and regional aspects. Furthermore, the analysis of the strongly interwoven theme topics and their impact on the economy requires a comprehensive (economic) framework. CPB has experience in analysing very different topics within such an overall economic framework. Other important assets are CPB’s operational and independent stance, access to policy-making circles, and continuity of research. Ministries recognize these comparative advantages of CPB.

Since the field is broad, and study of the issues requires considerable specific knowledge, CPB closely cooperates with specialised institutes and ministerial research departments, especially in

the context of major projects (evaluation of investment proposals of the government, cost-benefit studies like extension of Rotterdam harbor, Schiphol airport, etc.). Regular partners are the National Institute for Public Health and the Environment (RIVM), the Netherlands Energy Research Foundation (ECN), the Transport Research Centre (AVV) and the National Physical Planning Agency (RPD), which recently changed its name to the Netherlands Institute for Spatial Research (RPB).

CPB's first responsibility in this kind of cooperation is to deliver economic scenarios and analyses, mostly at a relatively high level of aggregation and to take care of the integration of estimates at a partial and much more detailed level than is usually delivered by other institutes. In many projects CPB is the coordinator of the study, both because an overall economic framework is often required and because ministries explicitly ask CPB to play a leading role. This position demands that CPB's own contribution is of high quality and that CPB is able to assess the quality of the contributions of other institutes.

5.7.2 Ambition

CPB's overall mission is to be the top institute in the Netherlands for policy-relevant economic analysis and to play a leading role internationally. What does this mean in the field of physical and regional aspects? Given both the policy relevance of this field and CPB's comparative advantages, the Bureau aims at a leading role in analyses in this field.

In the area of cost-benefit analyses, CPB has a special position (as explained below), requiring that it often acts as coordinator of those studies. CPB's ambition is to maintain and possibly strengthen its function as an independent assessor of important economic policy actions with the help of cost-benefit analyses, and to extend it to other policy areas. In this respect, it can be observed that there is a trend towards more research into safety issues and risk assessment (inspired by some major accidents). CPB aims to contribute to that line of research. Indeed, in CPB's current work on cost-benefit analyses, safety issues are prominent (somewhat at the cost of transport issues).

Up to now, most of CPB's work in the field of 'physical and regional aspects' has had a national focus. However, European integration continues, and policies in a growing number of areas are prepared in the EU framework. Hence, CPB intends to extend its scope to EU policies (in transport, for example). In the field of energy and environmental policy, CPB's focus is already international, and CPB aims at a leading role internationally – especially in the analysis of international energy markets.

5.7.3 Recent efforts and improvements

In the period 2000-2002, various publications were produced under the theme 'physical and regional aspects': 11 Special Publications, 38 CPB Communications, 8 CPB Documents, 5

scientific articles, 22 other articles and some (contributions to) books. In addition, many presentations were given.

Cost-benefit analysis

The 1997 Review Committee recommended that CPB should invest in the development of a cost-benefit methodology that is macroeconomically consistent. This methodology should be able to address pricing and investment issues. This investment would be necessary to enable the Bureau to maintain its function as an independent assessor of important economic policy actions (see: A view from the outside, p vi).

In line with this advice and following the 1998 Strategy Memorandum, CPB has indeed invested in the development of a cost-benefit methodology. In recent years CPB has worked together with many other Dutch economic research institutes on the 'research programme on the economic effects of infrastructure' (OEEI). This programme resulted in a guideline for cost-benefit analysis, which by Cabinet decision has become the official format for assessing major infrastructure projects in the Netherlands. CPB played a leading role in the drafting of the guideline. Furthermore, the Cabinet decided that CPB can be involved in the assessment of these projects, either by making the cost-benefit analyses itself or by giving a second opinion of cost-benefit analyses made by other institutes. This puts CPB in a special position. The Bureau bears a large responsibility for observing the guidelines for cost-benefit analysis as well as for the quality of the analysis and further improvements of the instrument of cost-benefit analysis. In practice, CPB's policy is to carry out itself cost-benefit analysis of major projects with a macroeconomic impact, that enlarge the knowledge of the field and offer a challenge for improving the CBA methodology. For projects that are analysed by other institutes or consultancy bureaus, CPB provides a second opinion on request.

Some major recent cost-benefit analyses carried out by CPB concern the expansion of Rotterdam harbour and Schiphol airport. Currently, CBA's are carried out for a package of measures to protect against floods of the main Dutch rivers, the deepening of the access to Antwerp harbour (Westerschelde) and measures to secure energy supply in both the short- and long run.

CPB has drawn several lessons from these activities. CPB has learned how to structure CBA's. The quality of its CBA's has improved, and CPB has learned that the valuation of quality improvements accompanying infrastructure investment (e.g. improved punctuality) is an important element in CBA's. Indeed, CPB aims to explore this last aspect further. On the other hand, outcomes of CPB's CBA'S regularly meet criticism and scepticism, and hence require both a critical stance towards CPB's own work, as well as better communication and exposition from CPB's side.

Energy

In the field of energy, CPB's work has shown progress in three themes, the first of which is the analysis of energy markets. The European Commission has developed a policy aimed at the liberalisation and (European) integration of electricity and natural gas markets. In line with this policy, Dutch energy markets are gradually opening up to competition like that in many other European countries. These developments raise new policy issues, both on the national as well as on the European level, and hence call for new modelling tools for analysis. CPB has therefore developed models of the European energy market both for forecasting as well as for analyses relevant for the 'new' energy markets.

The second theme is the relation between energy and the environment. Several studies have explored proposals for energy levies and systems of tradeable permits, on both the national and international level. Furthermore, together with RIVM, CPB carried out a study on energy and the environment for the period 2000-2010 (e.g. allowing an assessment of policies in the framework of climate policies, the Kyoto protocol).

The third theme is security of energy supply. This theme is rather new, and is carried out as a cost-benefit analysis of policies to secure the supply of all relevant energy carriers (oil, gas, coal and electricity) to short-, medium- and long-term risks. Both domestic and international policy options are analysed.

The overall assessment is that CPB covers many relevant aspects regarding energy with state-of-the-art instruments which reflect academic developments in this field. However, given capacity constraints, further improvements and strengthening of its (international) position will be possible only if efforts become more concentrated on specific themes. The intention is to concentrate on product markets (i.e. markets for natural gas, electricity and oil), because analysis of these markets is important both for CPB's forecasting activities (especially prices of energy and government receipts from natural gas) and for (international) energy policy issues (especially competition and security of supply). With respect to modelling of energy markets, CPB has a comparative advantage over other research institutes in the energy field.

Regional aspects

The field of regional economics is rather new for CPB, which means that the Bureau is in the process of building up a knowledge base in this field. The approach followed is largely one of 'learning by doing'. A major policy issue in regional aspects for a densely populated country like the Netherlands is the allocation of land use to the many competing economic activities.

Research efforts from several CPB sources come together here, such as housing, industry, agriculture, preservation of nature and recreation. The main line of approach is looking at national utility, including the existence of externalities. Government policy is all pervasive in the market for land, claiming land for its own projects, providing a maze of subsidies for various activities and restricting land use for specific activities. Analysing the costs and benefits of these

policies provides for a rich and integrated research agenda, linking this theme with industrial economics. For instance, one study tries to quantify the effect of zoning laws on housing prices. Another activity, separately funded by the Ministry of Economic Affairs and the Ministry of Housing, Physical Planning and the Environment, is to study the future physical demand for industrial sites and office space (Business Estates Monitor). Until now, this analysis related only to so-called 'formal locations' (i.e. business areas that were designed and planned especially for exclusive business firm accommodation), covering less than half of the working population. At the moment, the analysis has been extended to the 'non formal' locations to cover the whole labour force, allowing a clearer analysis of movements between 'non formal' and 'formal' locations.

Other issues that have been taken up are analysis of policies with respect to larger cities (Grotstedenbeleid), and qualitative analyses of spatial planning concepts like networks of cities (Stedelijke netwerken). CPB also analyses measures to cope with water problems, since the risk of floods is increasing. CPB currently conducts a cost-benefit analysis for a project meant to upgrade the existing rivers and dikes system in order to bring it in line with legal safety norms. The overall picture on CPB's activities in the field of regional aspects is that progress has been made in accumulating knowledge and that for an increasing number of issues CPB has been able to deliver policy-relevant analyses.

5.7.4 Instruments

To analyse issues in the field of 'physical and regional aspects', CPB has a number of models at its disposal. For energy, there is a series of interacting models describing the markets for gas and electricity, taking into account both national and international aspects. For regional planning, CPB has the 'Business estates monitor' model (Bedrijfslocatiemonitor), which provides estimates of the future demand for new business estates. To get a better grip on regional developments and to provide a better underpinning of other long-term projections (e.g. the business estates monitor), CPB recently started to construct a regional labour market model. This model will divide national branch employment and the labour force over the regions (26 branches, 40 regions), using economic and demographic variables to determine the regional development and economic mechanisms to balance regional supply and demand of labour (commuting, migration and location factors on employment).

In many cases CPB does not have suitable models. Sometimes forecasts and analyses of other institutes are used (e.g. forecasts of traffic flows are supplied by AVV). For many issues no formal model is available; in those cases, CPB applies qualitative analysis or simple ad-hoc models/ accounting schemes.

5.7.5 Plans

CPB's strategy is to enhance its position in the field of 'physical and regional' aspects by improving the quality of its analyses, and to broaden the scope to new policy issues that arise in this field. Both elements are necessary to maintain CPB's role in policy preparation. CPB is aware that part of its work could profit from more sophisticated research and analytical tools. This is especially the case for issues in transport and spatial analysis. These fields are broad, and CPB's capacity is limited. Indeed, research plans are sometimes thwarted by more urgent requests for analyses (e.g. CBA'S), from ministries. To enhance the (scientific) quality of its work, CPB recently formulated quality plans, which are discussed in chapter 4.

The long-term scenarios from the 1997 study 'The economy and its physical surrounding' need updating. These scenarios are widely used both by CPB in its own CBA's, and by other institutes. To maintain its position in this field, CPB is preparing a new long-term study in cooperation with other institutes. Just like its predecessor, the new study will elaborate long-term scenarios for land use, mobility, energy and environment to analyse bottlenecks in these fields and to study all kinds of policy options. New topics will be 'public safety', the problems of larger cities and 'water' (risks of flood, quality of nature). The new subject public safety (traffic, floods, dangerous substances like ammoniac and LPG, etc.) has attracted much attention in recent years. CPB wants to accumulate knowledge in this field in a more systematic way, first by surveying the literature and later by trying to formulate an operational approach that can serve as a common tool of analysis for all kinds of public safety issues.

In the field of cost-benefit analysis, CPB intends to continue its work in refining the research and analytical tools both in the framework of the OEEI programme (i.e. together with other institutes) and in its own CBA'S, preferably those which strengthen and broaden CPB's knowledge of the methodological aspects of CBA. Moreover, CPB has formulated the ambition to broaden the cost-benefit approach to other areas of government action (e.g. security of energy supply, and housing policies).

More detailed information regarding the plans is provided in annex E.

Main recent publications on theme F: Physical and regional aspects

NEI/CPB, 2002, Evaluation of infra structural projects: Guide for cost-benefit analysis (in Dutch and English)

In recent years, many Dutch economic research institutes have worked on the 'research programme on the economic effects of infrastructure' (OEI). This programme was initiated by the Ministries of Transport and Economic Affairs after discussions on the benefits of various major transport infrastructure projects. This guide describes the way cost-benefit analysis of major infrastructural projects should be made.

Lijesen, M.G., H. Mannaerts and M. Mulder, 2002, 'Will California come to Europe? A numerical simulation, *Journal of Industry, Commerce and Trade*, pp. 173-188

This article discusses under what conditions California's electricity crisis may occur in Western European countries, taking the Netherlands as an example. We use a simulation model containing the electricity generation and distribution sector. We simulate exogenous events, such as a sudden shift in demand levels, a sharp rise in world fuel prices and a cutback in foreign supply. We use the model to investigate whether supply remains secure under different regulatory regimes. Our results suggest a trade-off between a system of controlled prices and security of supply. Europe's electricity supply is vulnerable if prices are not allowed to reflect scarcity. If prices are unrestricted, however, they will reach oligopoly levels.

CPB, 2002, Selecting investment: assessing ICES proposals (Selectief investeren: ICES-maatregelen tegen het licht) Special Publication 43, (in Dutch)

CPB and various other Dutch research institutes recently made an assessment of more than 200 government investment proposals (amounting to nearly 100 bln euro). This was done at the request of the Interdepartmental Committee for Economic Structure (ICES). These proposals include transport infrastructure, policies regarding nature, water and landscape, plans to revitalise inner cities, environmental investments, investment in ICT and the knowledge infrastructure.

6 Questions to the Review Committee

The self-assessment has given rise to the following questions to the Review Committee, on subjects where CPB itself seeks advice.

General questions:

- In general, the Committee is asked to judge the performance of CPB over the last few years, in view of its task to provide independent economic analyses that are relevant for Dutch policymaking. Given the six fields (themes) distinguished in this report, what is the Committee's assessment of performance of each field? What improvements should be considered? What fields or subfields are missing?
- How does the Committee evaluate the allocation of labour over the different themes?
- How can CPB better inform its clients and the general public about the uncertainty in its outcomes? Should CPB invest more in this area?

Questions related to Chapter 2: Position and tasks of CPB

- What is the Committee's view on CPB's organisational structure and work plan procedures?
- How does the Committee evaluate the balance between ambition and realism in the current vision and mission of CPB?
- Which strategies does the Committee recommend with respect to the mission?
- What comments does the Committee have on CPB's culture, both actual and desired?
- How does the Committee assess the key principles with respect to professional conduct CPB has laid down?

Questions related to Chapter 4: Quality strategy

- How does the Committee assess CPB's quality strategy and what additional elements should be considered?
- New measures have been adopted to strengthen HRM. Are these sufficient, are other initiatives called for?
- What is the Committee's view on (actions to be taken with respect to) internal and external labour mobility for various staff categories?
- How can CPB strengthen its labour market position and move towards an 'employer of choice' position?
- How does the Committee assess the line-organisation structure with relatively small units?
- How does the Committee look at the experiments with project organisation, in which product and personnel management are separated?
- What is the viewpoint of the Committee on designating the general public as a target group for CPB and serving this group with tailor-made information via the website?

Questions related to Theme A - World economy and European integration

Concerning short-term analysis:

- What role can and should international networks play in the short-term international analysis of CPB?
- Should we aim to provide our expertise on international trade to network partners in Europe? If so, how?
- Should we expand our analysis and assessment of monetary and fiscal policy in the euro area?
- For simulation purposes a comprehensive international economic model is occasionally missed. What would be the consequences, for example, of a 10% dollar depreciation? How should we deal with this?

Concerning structural policy analysis:

- How do you view the optimal balance between a sufficiently broad scope of topics and a sufficiently in-depth analysis?
- How can CPB increase its impact in the international arena?
- What is the way to improve CPB's network with people in Brussels?

Questions related to Theme B - Domestic economy: macro and meso

- How does the Committee weigh the pro's and con's of two operational macro models (the quarterly model SAFE for short-term analysis and the yearly model JADE for medium-term policy analysis)?
- How does the Committee assess the present low-key approach to learning and expectations formation of economic agents in CPB's short- and medium-term macroeconomic models (either exogenous or a distributed lag of the actual development)?
- What is the Committee's position on using detailed sectoral information as a corrective device for macroeconomic forecasts and projections? What investments in this area would be worthwhile?
- Technical progress is largely exogenous in CPB's models. With respect to these models, which approach should be taken for incorporating endogenous growth, if any?
- CPB spends a considerable amount of its resources on the development and maintenance of its large-scale econometric models. The academic status of this type of models is rather low nowadays. Does CPB strike a right balance? Or should CPB devote more time to medium- and long-term analyses based on small stylized ad hoc models, combining firm theoretical underpinnings with a rather crude empirical content?
- CPB's models exhibit non-zero terms-of-trade effects at all time horizons. For the short- and medium term this seems to be OK, but is it appropriate to have non vanishing terms-of trade-effects in the long run as well?

Questions related to Theme C - Technology, education and research, innovation and productivity

- How does the Committee assess the comparative advantage of CPB in the areas of technology, education and research, innovation and productivity, given that so many institutions have this theme on their research agenda?
- Empirical research on this theme is fraught with data problems. CPB's response includes the following: base research agenda on data available, develop own database, cooperate with international organisations. How does the Committee assess these and other possible options?
- How does the Committee assess a possible trade-off between policy relevance and research-ability (that is, research on the most policy-relevant topics vs. research with the highest possibility of obtaining concrete outcomes)?

Questions related to Theme D - Industrial and institutional economics

- What is the Committee's advice on the trade-off between policy work and publishing in refereed journals?
- What is the Committee's advice on the specialization of the modern industrial economics subtheme in network industries and semi-public services?
- One can invest in data collection to become a sectoral specialist, or one can collect data when a policy issue requires it. What is the Committee's view regarding how CPB should divide its time between both variants of data collection?
- How does the Committee evaluate the time that CPB spends (will spend) on this theme in comparison with other themes? Is the labour spent on this theme sufficient to create a critical mass?

Questions related to Theme E - Welfare, labour market and ageing issues

- Contrary to wage formation CPB has not invested in micro data analysis of price formation; research in this area has been restricted to the estimation of aggregate price equations for CPB's macroeconomic models. What could we learn from microeconomic research in the area of pricing. What policy issues can perhaps better be addressed this way?
- Does CPB cover the ageing issue in a sufficient way? What suggestions does the Committee have for additional work in this area?
- When analysing policy proposals, CPB often calculates purchasing power effects both for a limited number of fictitious "representative" households (minimum wage, average wage earner), and for a large representative sample of real households. What method, one of these or yet another one, would the Committee prefer to report the effects of policy on the income distribution?
- What suggestions does the Committee have for broadening the scope of CPB's research in the area of welfare and ageing to the international (i.e. European) level? How does such a

broadening fit into the main focus of CPB which is, and should be, serving the *Dutch* policy arena?

Questions related to Theme F - Physical and regional aspects

- How does the Committee assess CPB's role in further improving the methodology of cost-benefit analysis in the Netherlands (e.g. quantifying the difference between general and partial equilibrium effects, introducing the real options technique)? What is the scope for using CBA in fields of public policy other than investments in infrastructure?
- In the Committee's view, what is the importance of the construction of a regional applied general equilibrium model?
- How does the Committee assess the series of new energy models built to analyse energy markets after European liberalization – from the point of view of both forecasting and policy analysis and long-term scenarios?
- How does the Committee assess the shift in attention towards issues of public safety?
- Which themes in the field of spatial and transport economics deserve more attention, given the limited capacity? What tools are required?

THROUGH THE LOOKING GLASS

Annexes

A self-assessment of CPB Netherlands Bureau for Economic Policy Analysis

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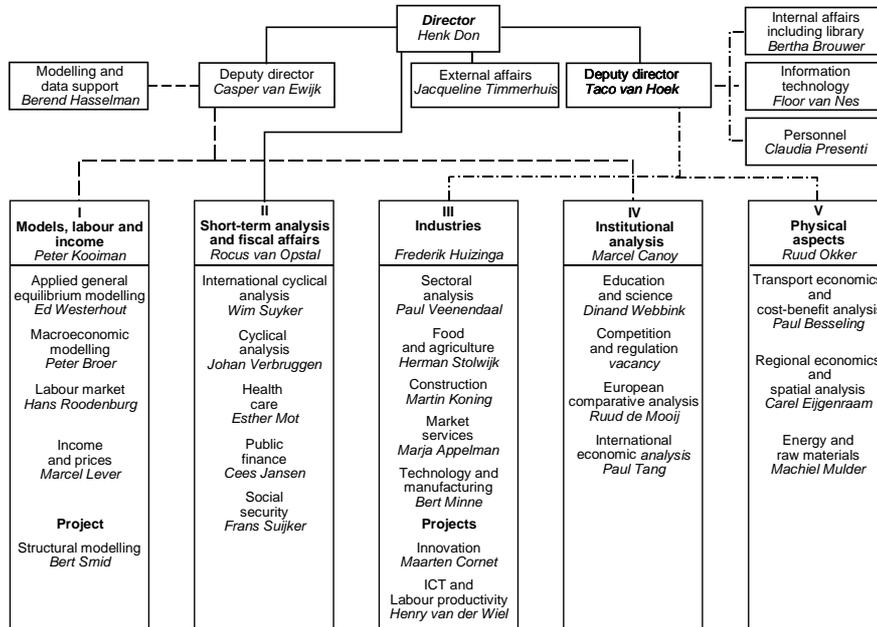
Annex A The Review Committee

Chairman: Prof. Dr. Klaus F. Zimmermann (IZA and University of Bonn,
DIW Berlin and Free University Berlin)

Members : Prof. Dr. Daniel Gros (Centre for European Policy Studies)
Prof. Dr. Robert H. Haveman (University of Wisconsin - Madison)
Prof. Dr. David Newbery (Cambridge University)
Prof. Dr. Rick van der Ploeg (University of Amsterdam, EUI
Florence)
Prof. Dr. Piet Rietveld (Free University Amsterdam)

Secretary: Dr. Bart van Riel (Social Economic Council)

Annex B Organisational scheme



Annex C Protocol for the planning office function

Protocol for the planning office function of the Netherlands Bureau for Economic Policy Analysis (CPB), the National Institute of Public Health and the Environment (RIVM), the National Physical Planning Agency (RPD) and the Social and Cultural Planning Office (SCP)

(formulated by the Planning Office Directors Consultative Committee)

Principles for the performance of the planning office function.

- The planning office function is a core function of the national government. The structuring of this function is a matter for the Cabinet.
- The planning office function encompasses the carrying out of scientific surveys, analyses and forecasts, which are relevant for the strategic policy of the Cabinet. These activities are inter sectoral in nature and are geared towards the future.
- Each of the four institutes covers a particular aspect of society, has its own scientific perspective and focuses on a fixed cluster of policy sectors.
- There is a Planning Office Directors Consultative Committee. This is a forum for the exchange of information, coordination of working programmes and formulation of cooperative frameworks for actual projects. The Committee reports annually to the Council of Ministers on task development and potential bottlenecks.
- The substantive autonomy of the planning offices is assured by the regulations governing and set by the four individual institutes and/or their planning office function, their independent position within the government service, their freedom of publication and the system of rules and guidelines which has grown up in practice. The ministers most closely involved in each case are responsible for the financial and personnel management.
- The information provided by the planning offices meets scientific standards.
- In performing their function, the planning offices distance themselves somewhat from the day-to-day business of policy implementation. The information they provide in support of policy formulation is based as far as possible on scientific analyses.
- Planning offices have a duty to preserve their good name as impartial and objective institutions which are loyal to the government.
- The planning offices receive statistical information on Statistics Netherlands and also perform research themselves. They also obtain supplementary information from departments, government agencies, other public authorities, advisory bodies, research institutes, international organisations, social organisations and institutions, companies and members of the public.

Rules for maintaining the substantive autonomy of the planning office function

Working programme

The planning offices have historically developed procedures for compiling their working programmes. There are certain fixed elements, in addition to which the offices themselves plan activities that are necessary for the performance of the tasks with which they are charged. The working programmes of the planning offices are established under the responsibility of the minister(s) concerned. Under the inauguration order for SCP, the working programme of this office is submitted to the Council of Ministers by the Coordinating minister for social and cultural policy. The programme is coordinated if necessary in the Planning Office Directors Consultative Committee.

- **Substantive autonomy**

The substantive and scientific autonomy is laid down in regulations and is further guaranteed by the installation of broadly-based advisory boards that advise the managements, as well as by the public nature of research reports.
- **Publications**

The institutes render account to the public and the scientific community via the publication of research reports and background studies, as well as through participation in the national and international scientific forum. Results of research and studies are in principle public. In practice, the moment of publication may need to be coordinated with the minister(s) most closely involved. Confidential reports may also be made to ministers, departments and community organisations, if the information is not used in the public debate.

Each of the institutes has its own publication series, in which reports are published for various target groups.
- **Information**

The institutes draw their publications to the attention of specific target groups and / or the interested public. This takes place via the sending of reports or summaries as well as the supply of information to the mass media. In addition, if requested supplementary background information and explanatory notes to the reports will be provided. These activities are carried out within the general framework of the government information system.
- **Public appearances of staff**
 - Staff who appear on behalf of a planning office follow the instructions of the relevant authority. They inform management / information offices in advance regarding contacts with the press or proposed publications. During public appearances they place the emphasis on descriptions, analyses and forecasts. They do not adopt positions in party-political debates and refrain from making statements on purely political issues or persons.

- In principle, personnel acting in that capacity are free to take part in intellectual discussions or the formation of public opinion. Because a connection can be made between publications by staff and their official duties, they must take into account the potential harm caused by their statements to their own duties or the functioning of the planning office as a whole. They must never disclose any information which they can be expected to know ought to remain secret. In case of doubt, staff are advised to submit the proposed publication to the management / information officer.
- Advisory bodies

The management and staff of planning offices participate in advisory bodies, to the extent that the legislator provides for this. If requested, they may be involved in the work of advisory bodies. In these situations the emphasis will generally lie on the furnishing of information, the carrying out of scientific analyses and the formulation of forecasts.
- Requests from third parties

In the case of requests which can be answered on the basis of public / published material, the information will be supplied via the public information services. External requests for supplementary analyses and extrapolations are passed formally via the responsible ministers. In practice, this procedure will be preceded by informal contact, or contact will have to be sought afterwards in order to specify the request precisely and to arrive at a realistic estimate of the financial and staff resources involved. Based on an assessment of the public interest and costs, the request will then be honoured or declined. In the case of standard questions from a fixed category of 'clients' such as departments, community organisations or international organisations, deviation from this formal procedure may be permitted in consultation with the minister.
- Paid assignments

As a supplement to what must be regarded as their core function and what is laid down in the working programmes, the planning offices also carry out paid assignments. The following general conditions apply here:

 - Paid assignments may never be in conflict with the general interest.
 - Clients will include departments, other government agencies or community and international organisations having a connection with the public interest. Commercial research assignments are generally seen as a threat to the credibility / independence of the planning offices.
 - The planning offices accept paid assignments if they represent a reinforcement of their public task and fit in with or are a spin-off from their current working programme. Competition with commercial institutions is avoided by only accepting assignments whose nature indicates that the institute concerned is the most appropriate party to carry them out (knowledge, data, etc.)

- Conditions are agreed with the client which safeguard the substantive autonomy of the planning offices and guarantee publication / placing in the public domain of the memorandum or report following consultation with the client. Arrangements are also made regarding ownership rights of data, intermediate products and reports.
- In the case of large-scale and complex research assignments, arrangements may be made regarding periodic reports to and supervision by the client. A scientific supervisory Committee may also be installed, which advises both client and research institute.
- The financial conditions are established in consultation with the responsible department. The fees will generally be sufficient to cover all costs.

(After adjustment 1998)

Annex D Main elements from the Strategy Memorandum 1998

CPB's market: core tasks, customers and competitors

Focus on economic aspects

Together with the other planning offices, CPB fulfils the needs of the (central) government for independent scientific analyses and projections aimed at policy options. CPB deals with the economic aspects, SCP with the social-cultural aspects and RIVM with the aspects of the environment and nature. The RPD is moving more explicitly in the direction of policy directorate; it is as yet unclear how the planning office function will function with respect to spatial policy. In recent years, CPB has developed a knowledge base focussed on the interface between economics and space. This knowledge must be preserved in order to be able to deal with the economic dimensions. A substantial enlargement of CPB with non-economic expertise would be undesirable: the focus on economics is an essential element of CPB. In other areas of expertise CPB as an organisation cannot guarantee to meet its quality standards. On the other hand, structural financing for the allotted tasks on the interface of economic and spatial issues would be desirable.

Competitors, comparative advantages and quality

For the preparation of independent economic analyses and projections, CPB knows several competitors in different areas, such as commercial and non-commercial research institutes, forecasting units of banks and international organisations. As the “royal warrant holder” of the central government with substantial lump-sum financing, CPB feels the discipline of the market at best indirectly. Thus, CPB has itself to organise incentives for efficiency and quality, by inviting critical judgements from outside: the Central Planning Commission, the Central Economic Commission, review committees, peer review groups, workshops, international congresses and periodicals, etc.

CPB's comparative advantages are related to its proximity to policy (new issues are known in detail and at an early stage), its integrated approach (partial research can be fit in a consistent macro analysis) and its continuity and depth of analysis (large and up-to-date knowledge base of the Dutch economy).

CPB's reputation of independence and quality must be carefully safeguarded. Its work processes and its external communication must meet high standards. Because the integrated approach often implies the input from neighbouring disciplines, some kind of outsourcing and/or cooperation with other institutions is often necessary. This may require a critical assessment of the quality of the inputs of others, even where CPB bears no final responsibility.

Core activities aimed at the national policy discussion

In the coming 5 to 10 years, the Dutch political process will probably remain CPB's major customer (government, parliament, political parties, but also households and enterprises). This is, however, no certainty, and a shift towards European level is conceivable. The best guarantee for the future of the office and its employees is given by a recognisable drive for quality.

CPB's core activities remain expressly aimed at the national policy discussion, in which, of course, the international dimension plays a large role. As a spin-off of the work for domestic customers, sometimes also international customers are interested (EC, OECD). Provided that they comply with the rules set for external principals, their research assignments are welcome; this gives an additional impulse to the quality drive and generates in turn a positive spin-off for CPB's core activities.

Some of CPB's comparative advantages (in particular its proximity to policy and its continuity) are closely linked to the Dutch situation. For international customers, these advantages often are less relevant than CPB's integrated approach and depth of analysis, in combination with some unique instruments (ECAM, WorldScan and MIMIC).

CPB's international position

On behalf of the Central Planning Commission, CPB will write a discussion memorandum on the Bureau's external financing and international position, in which the following points will be made:

- CPB rejects the recommendation of the Review Committee to strive for more external financing, referring to the self-assessment and to the protocol for the planning office function (see annex 3).
- The growing importance of the international dimension of CPB's work for domestic customers, as well as its urge to satisfy internationally accepted quality standards, create good opportunities for CPB to develop into a prominent European research institute. Still, this is not seen as a target as such, but as an ambition that follows logically from the standards set for the execution of its core tasks.
- For international comparative studies and for the analysis of developments abroad, CPB will appeal (even) more than before to the knowledge of other institutes. Also, for up-to-date economic knowledge CPB is seeking association with relevant networks. Foreign experts will be called in for peer reviews and possibly also sounding board groups, and as an experiment a temporary guest researcher will be stationed at the Knowledge unit human capital. Possibilities will be explored for exchange programmes with colleagues from comparable foreign institutes.

Products: form and content

Work plan cycle

The wishes of customers are an important input when selecting subjects. Their concern becomes more prominent through the discussion of CPB's work plan in the new Central Planning Commission and the Central Economic Commission. The planning office function implies that CPB bears responsibility for the choice of subjects, especially in the independent execution of its research. The work plan cycle starts with brainstorming and discussion on the outlines of the agenda for the coming 4 to 5 years, and the priorities for the year ahead. This means that already in April, CPB starts with brainstorm sessions, and that the discussion on outlines with CPC and CEC takes place in June. In Autumn, the details of the work plan can be elaborated.

Shifting and widening of activities

For well-known reasons, Dutch economic policies have shifted emphasis from budgetary policy towards structural policy. Policy successes are partly dependent on international policy competition. The accompanying move of CPB activities towards structural analysis and international comparative research can be observed in the past decade, and will receive greater accent in coming years.

An important challenge will be to get a good empirical grip on the economic significance of institutions. The economic point of view with regard to a number of societal issues is gaining importance.

Given CPB's comparative advantages (integrated approach, independence, knowledge base and proximity to policy) it is understandable that CPB is quickly called upon to provide the relevant analysis (e.g. health care, environment, space). The challenge is here to present the economic point of view of the respective themes without damaging the other aspects.

CPB must therefore acquire knowledge on relatively new fields and specialisations. This knowledge has to be acquired partly by outsourcing and/or cooperation with other institutes. CPB is able and willing to play the coordinating role, suitable for the planning office function. In addition, CPB must keep abreast with the application of relevant developments in economic thinking. There must be enough margin to invest in and experiment with new approaches. Admittedly, not all innovations will be fruitful, but the expected cost-benefit relation must be guarded by a well-defined approach and good monitoring.

Production process: methods and techniques

Professionalism

Where the above text is mainly an elaboration of the elements "up-to-date and policy relevant" of the mission statement, the choice of methods and techniques deals with the element "scientifically sound", which is an expression of CPB's professionalism.

With respect to this aspect, the (new) CPC has an advisory function, which must take shape in the discussion of the annual work programme and concrete project proposals. Next to that, experts from outside must be more systematically consulted, by arranging sounding board groups for at least the larger projects (with partially external and possibly also foreign experts), that are regularly informed and consulted about the progress.

Moreover, CPB must establish a professional standard, laying down the minimum norms of its research with respect to documentation and accountability, for example for the day-to-day work a description of procedures will also be necessary: a draft is forthcoming (handbook projections CEP/MEV). The Review Committee has suggested that CPB create an internal audit function for the quality control of the forecasts. In any case, an examination procedure would be required also for the observation of the research standards.

People: human resource management

HRM plan

People make CPB. The above shifts in tasks and methods of the Bureau call for special knowledge and skills of its employees. An important conclusion from the Strategic Consultations is that CPB needs a HRM plan in connection with the work plan. The HRM plan describes which knowledge and skills are needed for the implementation of the outlined work plan for the coming years (4 to 5 years ahead), and what concrete steps must be taken with respect to education, training and hiring of personnel. The management bears the responsibility for the HRM plan. A special work group will make preparations.

Individual development plan

Taking account of the HRM plan, CPB will ensure that an individual development plan is made and annually updated for each employee. This plan should focus on individual capacities and preferences as well as on the needs and possibilities of the organisation. The individual development plan will be approved by the next in rank, in general the department head, who cares for the proper relation with the HRM plan. Who will bear the responsibilities for drafting and carrying out of the individual plan has yet to be decided.

Standard path

As a point of departure for the individual development plan, a standard path will be made for the development of newly hired personnel. Distinction can be made between different function profiles for specialists and generalists, for example. The standard path contains a standard education programme for new entrants, in which special attention is given to writing and language skills (Dutch and English), presentation techniques, discussion and meeting techniques, introduction to CPB, computer software, etc. Moreover, the standard path describes a typical pattern of mobility (minimum and maximum stay in a function, decision moments (moments of choice) in development. Also for managers a standard path will be made as a point of orientation for the individual development plans (like management training, function mobility).

Tailored mobility

In the individual development plan the standard path gets a concrete adaptation to the individual situation with respect to background and function, and is completed with the desired development of knowledge. It contains concrete intentions for courses to be followed and an outline of the personal development and expected career. Deviations from the standard path are discussed. Tailored mobility can thus be offered: a well-reasoned control of the uncertainties in the prospects for worker as well as organisation.

Educational facilities

Educational facilities, in terms of time and money, are given according to the rules of the Ministry of Economic Affairs, after an assessment of the interest of the organisation. As a rule, no more than 5% of work time can be invested yearly in education and training. In all cases, priorities and the time spent have to be in accordance with the work plan.

Statistical work: several function profiles

The content of the function of statistical workers is changing. At some places, they develop into IT-experts, at other places into economic analysts or experts on regulations and data. While in a number of units a clear distinction between scientific and statistical work can no longer be made, in other units the demand for expert data processing and the ready knowledge of the subject matter has strongly increased.

Also in the future, CPB will certainly have a place for trained employees on HBO level, with a certain diversity in function profiles. This will be worked out in the HRM plan, at which time an appropriate name can be given to the function.

No pool, but a more uniform way of working

Given the diversity of functions and the unusually high grade of specialisation, it would make no sense to form a pool of statistical workers. However, more uniformity in work procedures is necessary (in particular with respect to the use of software) in order to support the transferability of the work and the flexibility of the worker. This is evidently also the case for the scientifically trained workers.

More flexible input of capacity

Bottlenecks in planning or implementation of the work plan and the education plan must be signalled at an early stage (by or via the department head), to allow the organisation to react flexibly where possible. Also (looming) underutilisation of capacity must be signalled early. In that case, a temporary assignment of workers to some other unit is often possible and may be to the advantage of all concerned.

Current situation

A large number of the priorities mentioned in the memorandum have since been implemented. Important steps have been made with HRM policy (with e.g. the introduction of personal development plans of the employees). A more appealing company style was also introduced. A professional standard for CPB activities was worked out in a Bureau-wide seminar, which was reflected in the progress reports and the annual work plans. Now, larger projects as a rule (but not yet always in practice) are based on a project plan, and are rounded off with an evaluation. Increasingly, knowledge is mobilised within and outside the office to enhance the quality of the work (workshops with external experts, Bureau-wide discussions of essays for the Cabinet). The widening of CPB's scope of activities is visible in reports on issues like regulation and market performance, the knowledge economy, cost/benefit analysis and institutional questions. CPB's work increasingly finds its way toward scientific journals and in articles by CPB experts in newspapers.

Annex E Overview of CPB's activities and models

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Theme A: World economy and European integration

Activity: Short-term international analysis

<i>Contents</i>	Making projections of international key variables, coupled with an analysis of international economic developments.
<i>Relevance</i>	Projections of international key variables is of primordial importance for making short-term analysis and projections for the very open Dutch economy.
<i>Resources</i>	2001: 6 fte.
<i>Methods</i>	Partial mostly non-behavioural models are applied for the analysis of world trade, import prices, exchange rates, interest rates and competitiveness. Furthermore, analysis of leading indicators play an important role.
<i>Plans</i>	To make a wider use of indicator-based GDP forecasts. To develop further the existing instruments for the projections of world trade and competitiveness and to make them more transparent.
<i>Output</i>	<ul style="list-style-type: none">• CPB, annually, Centraal Economisch Plan.• CPB, annually, Macro Economische Verkenning.• CPB, quarterly, The world economy, <i>CPB Report</i>.• CPB, 2000, AIECE Working Group Reports - Spring 2000, World Trade 2000-2001, World Commodity Prices 2000-2001; CPB Working Paper 124.• Arnold, I., and J.J.G. Lemmen, 2001, The Vulnerability of Banks to Government Default Risk in the EMU, <i>International Finance</i>, 4 (1).• Arnold, I., and J.J.G. Lemmen, 2001, Het veranderend risicoprofiel van staatsschuld in de EMU: implicaties voor het banktoezicht, <i>Tijdschrift voor Economie en Management</i>, 56 (1).• Arnold, I., and J.J.G. Lemmen, 2001, Repo-reparaties, <i>Economisch Statistische Berichten</i> 86, 14 December.

Theme A: World economy and European integration

Activity: Policy coordination

<i>Contents</i>	Research on policy coordination is essentially an application of the subsidiarity principle. In particular, we explore the fundamental reasons for EU intervention in distinct policy areas, such as company taxation, cohesion policy, climate change policy and social policy. Moreover, we intend to discuss the form of policy coordination that is most appropriate in specific circumstances.
<i>Relevance</i>	The issues are of increasing importance for Dutch policy-makers, especially in light of developments in policy coordination in the EU, and discussions on various global issues such as the WTO and global warming.
<i>Resources</i>	2001: 2 fte
<i>Methods</i>	CPB follows a project-based approach in international research in order to be flexible in providing contributions to important policy discussions. It sometimes performs simulation analyses using the WorldScan model (e.g. in climate change policies). In other cases, the units have performed meta analyses, which proved a powerful method to summarise the literature and, by adding information, to explore new policy questions. Empirical research is often performed in combination with an analysis of existing institutions and, if appropriate, a elaboration of alternative policy options.
<i>Plans</i>	Continue research on tax harmonisation and climate change policy. Keep ourselves informed about cohesion policy. New projects in the field of migration policy, social Europe and the concept of level-playing-field in an international context.

Output	<ul style="list-style-type: none"> • Kok, M., 2001, International labour and environmental standards, CPB Memorandum 7. • Lejour, A.M., and R. Nahuis, 2001, Openness, Growth and R&D Spillovers: Uncovering the missing link?, Research memorandum 168. • Gorter, J., and [A. Parikh], 2000, How mobile is capital within the European Union, CPB Research Memorandum 172. • Gorter, J., and R.A. de Mooij, 2001, <i>Capital income taxation in Europe: trends and trade-offs</i>, Sdu Publishers, The Hague. • Mooij, R.A. de, 2000, Grenzeloos bankieren, <i>Economisch Statistische Berichten</i>, 4 February. • Mooij, R.A. de, and J. Gorter, 2001, Europese coördinatie van de vennootschapsbelasting, <i>Openbare Uitgaven</i> 32, nr. 3. • Nahuis, R., and R.A. de Mooij, 2001, Cohesion policy in the EU: going beyond fiscal transfers?, <i>De Economist</i>. • Gorter, J., 2001, Geen vaste grond onder belastingvoeten, <i>Economisch Statistische Berichten</i>. • Gorter, J., and R.A. de Mooij, 2001, Beyond harmful tax practices, <i>CPB Report</i> 2001/2. • Mooij, R.A. de, 2001, Radicale fiscale verkenningen, <i>Economisch Statistische Berichten</i>. • Obstacles in the Climate change Arena, <i>CPB Report</i> 2001/2. • Cnossen, S., C. van Ewijk and R.A. de Mooij, 2001, European tax coordination in the 21st century: a brief inquiry', in: G. Kuper, E. Sterken and E. Wester (eds.), <i>Coordination and Growth</i>, Kluwer Academic Publisher. • Mooij, R.A. de, 2001, Belastingcoördinatie is geen kwestie van alles of niets, D.A. Albrechtse, A.L. Bovenberg and L.G.M. Stevens (eds.), <i>Er zal geheven worden</i>, Kluwer. • Ederveen, S., H.L.F. de Groot and R. Nahuis, 2002, Fertile soil for Structural Funds? A panel data analysis of the conditional effectiveness of European cohesion policy, CPB Discussion Paper 10. • Gorter, J., and K. Diaw , 2002, The remedy may be worse than the disease: a critical account of The Code of Conduct". CPB Discussion Paper 5. • Kok, M., R. Nahuis and A. de Vaal, 2002, On labour standards and free trade, CPB Discussion Paper 11.
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	<ul style="list-style-type: none">• Nahuis, R., and P. Tang, 2002, Strategic competition with public infrastructure: ineffective and unwelcome?, CPB Discussion Paper 8.• Ederveen, S., J. Gorter, R. de Mooij and R. Nahuis, 2002, Funds and Games: the economics of European Cohesion Policy, CPB Special publication.• Bovenberg, A.L., S. Cnossen and R.A. de Mooij, 2002, Hoe harmoniseren we de vennootschapsbelasting: linksom of rechtsom, <i>Weekblad voor Fiscaal Recht</i>.• Ederveen, S. and R.A. de Mooij, 2002, Taxation and foreign direct investment: a meta-analysis, <i>CPB Report 2002/1</i>.
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Theme A: World economy and European integration

Activity: International integration

<i>Contents</i>	Research into the consequences of international integration covers a wide variety of topics and methods. It includes analysis of long-run trends and the construction of European scenarios. It also includes more specific policy analysis like EU enlargement, the accession of Turkey to the EU and the Doha-round. Often, WorldScan is a useful instrument to arrive at a quantitative assessment.
<i>Relevance</i>	International developments and policies are extremely relevant for a small open economy like the Netherlands. Research should inform policy-makers about the consequences for the Netherlands, but should also help them to prepare discussions in international organisations.
<i>Resources</i>	2001: 2.5 fte
<i>Methods</i>	Consultation with policymakers helps CPB to define research projects. At the very least these projects should give a clear and comprehensive analysis of international developments and policies to structure policy discussions. This is complemented by empirical and quantitative research to provide better insight into relevant mechanisms and results. Often simulations with the WorldScan model prove useful, especially when it is possible to give a relevant feature of the model an empirical basis.
<i>Plans</i>	The Doha round is underway; the accession of Turkey is on the agenda, European initiatives to complete the single market (services) are relevant; international and European migration is an issue; international investment flows and capital market integration is relevant for the financing of old-age pensions; Social Europe may become more real.

<p><i>Output</i></p>	<ul style="list-style-type: none"> • Lejour, A.M., R.A. de Mooij and R. Nahuis, 2001, EU enlargement: Economic implications for countries and industries, CPB Document 11. • Mooij, R.A. de, and S. Ederveen, 2001, Taxation and foreign direct investment: A synthesis of empirical research, CPB Discussion Paper • Lejour, A.M., and P.J.G. Tang, 2001, The differential impact of the South on wage inequality in the North, Research Memorandum 167. • Nahuis, R., and [J.A.. Smulders], 2001, The skill premium, technological change and appropriability, Research Memorandum 169. • Lejour, A.M. en R. Nahuis, Openness, growth and R&D spillovers: uncovering the missing link?, <i>CPB Report 2000/4</i>, blz. 18-22. • Mooij, R.A. de, Economic consequences of EU enlargement, <i>CPB Report 2000/4</i>, blz. 27-30. • Hoen, A., and R.A. de Mooij, 2001, Polish-Dutch economic relations, <i>CPB Report 2001/4</i>. • Lejour, A., R.A. de Mooij and R. Nahuis, Enlarging the internal market: implications for countries and industries, <i>CPB Report 2001/3</i>. • Geschiere, M., 2001, Drain or gain? The consequences of migration for the countries of origin, Master's thesis. • Lejour, A., and G. van Steen, 2001, The European scenarios in VISIONS: an economic perspective and quantitative illustration. • Fidrmuc, J., 2002, Migration and regional adjustment to asymmetric shocks in transition economies, CPB Discussion Paper 7. • Nahuis, R. and A. Parikh, 2002, Factor mobility and regional disparities: East, West, Home's Best?, CPB Discussion Paper 4. • Groot, H.L.F. de, and W. Kets, 2002, De Europese Innovatie-achterstand, <i>Economisch Statistische Berichten</i>, Vol. 87, no. 4371. • Lejour, A., and G. Linders , 2002, Globalisering van de diensteneconomie?, <i>Maandschrift Economie</i>. • Mooij, R.A. de, R.Nahuis and A.M. Lejour, 2002, De vruchten van de uitbreiding", <i>ESB</i> no. 4346, 108-109.
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Theme A: World economy and European integration

Model: WorldScan

<i>Description</i>	WorldScan is a general-equilibrium model for (many regions and sectors in the world economy).
<i>Benchmarks</i>	In the world a few similar models exist, like GTAP at Purdue University in the US and MIRAGE of CEPII in France.
<i>Applications</i>	constructing long-run scenarios; welfare analysis of climate change policies and (European) economic integration; analysis of technological and other spill-overs across countries
<i>Maintenance</i>	
<i>Revisions</i>	For the European scenarios several features of the model have been revised or updated: capital mobility, consumption patterns, savings rates, energy markets. The last important revision – planned in 2003 – is to introduce monopolistic competition, increasing returns to scale and product varieties.
<i>Publications</i>	In 1999 the model was published in the book: CPB, 1999, <i>WorldScan; the core version</i> , The Hague. This book will be rewritten in 2003 to include the model revisions.

Theme B: Domestic economy: macro and meso

Activity: Short-term macroeconomic forecasting

<i>Contents</i>	<p>Preparation of short-term forecasts (each quarter) for the current and next year. This concerns a consistent set of forecasts for the main economic aggregates, sectoral developments (only in April) and public finances.</p> <p>Economic analysis of developments relevant for short-term forecasting and for public policy.</p>
<i>Relevance</i>	<p>Basis for preparation of government budget (in September) and public policy.</p> <p>Benchmark for forecasts of international organisations (OECD, EC, IMF, ECB) and business sector.</p> <p>Information for other societal organisations such as political parties, trade unions and employers organisations and for “the public”.</p>
<i>Resources</i>	2001: 14,5 fte
<i>Methods</i>	<p>All inputs are integrated in the macroeconometric quarterly model SAFE.</p> <p>Inputs consist of:</p> <ul style="list-style-type: none">• database linked to National Accounts• exogenous variables on world economy, government budget, etc.• information from system of leading indicators and monitoring systems• information from sectoral experts (only in April)• results from various detailed sub models on e.g. wage costs, government expenditures, tax receipts.
<i>Plans</i>	<ul style="list-style-type: none">• Keeping the instruments and the documentation up-to-date and transparent.• Publication of performance of forecasts on CPB website in September each year.• Continuous publication of changes in SAFE on CPB website.• Research on translation of leading indicators in point estimates for GDP growth.• Research on method of seasonal adjustment (in cooperation with Statistics Netherlands).

<p><i>Output</i></p>	<ul style="list-style-type: none"> • <i>Central Economic Plan</i> (in Dutch, yearly, April). • <i>Macroeconomic Outlook</i> (in Dutch, yearly, September) • The domestic economy, <i>CPB Report</i> (quarterly) • Economic Report to the Parliament (in Dutch, quarterly) • Sectoral developments in the Dutch economy, <i>CPB Report</i> (yearly, April) • Kuipers, B.J., and J.P. Verbruggen, 2002, Nederland hekkensluit, <i>Economisch Statistische Berichten</i>, nr. 4388, 6 December. • Kuipers, B.J., and J.P. Verbruggen, 2002, Groeiherstel dient zich aan, <i>Economisch Statistische Berichten</i>, nr. 4367, 21 June. • Kranendonk, H.C., B.J. Kuipers and J.P. Verbruggen, 2001, Motor economie sputtert, <i>Economisch Statistische Berichten</i>, nr. 4338, 7 December. • Kusters, A.P., and J.P. Verbruggen, 2001, Een tandje lager, <i>Economisch Statistische Berichten</i>, nr. 4317, 29 June. • CPB, 2001, Groei blijft stevig, <i>Economisch Statistische Berichten</i>, nr. 4289, 5 January. • Don, F.J.H., 2001, Forecasting in macroeconomics: A practitioner's view, <i>De Economist</i>, 149, No. 2. • CPB, 2000, Op volle toeren, <i>Economisch Statistische Berichten</i>, nr. 4263, 30 June. • CPB, 2000, Economie blijft goed presteren, <i>Economisch Statistische Berichten</i>, nr. 4237, 7 January. • Donders, J., and H. Kranendonk, 1999, The accuracy of CPB forecasts, <i>CPB Report</i> 1999/2.
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Theme B: Domestic economy: macro and meso

Activity: Medium-term macroeconomic analysis

<i>Contents</i>	Preparation of medium-term scenarios roughly every two years. The scenarios have a 4-year horizon and include a consistent set of detailed accounts for the main economic aggregates, sectoral developments and public finances.
<i>Relevance</i>	Basis for the preparation and mid-term review of the coalition agreement
<i>Resources</i>	2001: 4 fte
<i>Methods</i>	<ul style="list-style-type: none">• Analysis of medium-term development of supply factors (labour supply, equilibrium unemployment, labour productivity), both national and international.• Scenario for government budget in absence of new policy measures; for the health care sector this scenario is based on estimated demand for health care services.• All inputs for the scenarios are integrated in the macroeconomic yearly model JADE.• Detailed sub models produce results on sectoral developments, public finances and income distribution.
<i>Plans</i>	<ul style="list-style-type: none">• Research on the rate of absorption of labour supply shocks in the Dutch economy.• A critical review of the JADE model to obtain a better match of its properties and database with those of other CPB models.

<p><i>Output</i></p>	<ul style="list-style-type: none"> • CPB, 2002, Actualisatie van de Economische Verkenning 2003 - 2006, CPB Document 21. • Horst, A. van der, 2002, Structural estimates of equilibrium unemployment in six OECD economies, in Growth and the European Labour Market, final Report to the European Commission (Kiel-project). • Horst, A. van der, 2002, Growth and the European Labour Market, <i>CPB Report 2002/1</i>. • Huizinga, F.H., 2001, Economic Outlook 2003-2006, <i>CPB Report 2001/4</i>. • Jansen, C.L., P.J. Besseling and F.H. Huizinga, 2001, Boekhoudkundige berekening budgettaire ruimte 2003-2006, CPB Document 3, June. • Don, F.J.H., 2001, Het Nederlandse groeipotentieel tot 2006, <i>Economisch Statistische Berichten</i> 86, pp.284-287. • Don, F.J.H., 2001, Het Nederlandse groeipotentieel op middellange termijn, CPB Document 001. • Don, F.J.H., The growth potential of the Dutch economy on medium term, in: W.F.V. Vanthoor en J. Mooij (eds), 2001, <i>Reflections on Economics and Econometrics - Essays in honour of Martin M.G. Fase</i>, De Nederlandsche Bank, pp. 101-111.
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Theme B: Domestic economy: macro and meso

Activity: Long-term economic scenarios

<i>Contents</i>	The Long-Term Study for the Netherlands provides four scenarios for the economic development through 2040. The year 2020 is a main intermediate focal point. The study uses the scenarios of the long-term study for Europe as input for the external conditions. The study contains both macro and sectoral developments.
<i>Relevance</i>	The study is meant to provide challenging, plausible and internally consistent developments for the Dutch economy. They are used to structure CPB's thinking about particular long-term issues, to discuss the fundamental uncertainty around them and to test the robustness of relevant policy. In principle, the study can be applied to a wide variety of issues. The primary application, however, is to study future bottlenecks around physical infrastructure, energy and the environment in the following EFO (Economy and the environment) study. A possible second application is the ageing study.
<i>Resources</i>	2001: 0 fte
<i>Methods</i>	<ul style="list-style-type: none">• The storylines for the scenarios are based on the European study, in consultation with the National Institute for Public Health and the Environment (RIVM), a partner for the EFO study.• For demographic developments, Statistics Netherlands provides input.• Given the external developments in the European study, the quantitative developments for the Dutch economy are constructed with the newly developed sectoral model ATHENA, in consultation with sectoral experts at CPB.
<i>Plans</i>	The intended time of publication is the fall of 2003.
<i>Output</i>	<ul style="list-style-type: none">• Study results will be published in a CPB Document or a CPB Special Publication, describing the scenarios and providing tables with the main quantitative results.• The full set of quantitative scenarios will be available as base scenarios for further application.

Theme B: Domestic economy: macro and meso

Activity: Macroeconomic policy analysis

<i>Contents</i>	Short-term and medium-term analysis of policy proposals, with emphasis on the macroeconomic effects and the effects on the government budget and the income distribution. (policy proposals on specific sub-sectors are discussed in the other themes, e.g. in theme 5 Welfare, labour market and ageing issues)
<i>Relevance</i>	Most political parties ask CPB to analyse the economic effects of their election platforms. This analysis plays an important role in the negotiations between the coalition partners after the general elections. Opposition parties ask for an independent assessment of the economic effects of their alternative policy proposals, e.g. in September when the government budget is discussed in parliament. Also other societal organisations, like trade unions and employer organisations, ask similar questions.
<i>Resources</i>	2001: 3,5 fte
<i>Methods</i>	<ul style="list-style-type: none">• A uniform database (in Excel) for processing of all the inputs to all units working on the analysis.• The macroeconometric quarterly model SAFE for short-term analysis of policy proposals.• The macroeconometric yearly model JADE for medium-term analysis of policy proposals.• Detailed sub models for the government budget (e.g. the social security model MOSI and the tax-model) and the effects on the income distribution (the micro-simulation model MIMOS2).
<i>Plans</i>	Revision of the modelling of the public sector in both macroeconomic models (SAFE and JADE).

<p><i>Output</i></p>	<ul style="list-style-type: none"> • CPB, 2002, <i>Keuzes in kaart 2003-2006</i>; Economische effecten van acht verkiezingsprogramma's, CPB Special Publication 39, CPB & Koninklijke de Swart, The Hague. • Charting choices 2003-2006: economic effects of eight election platforms, 2002, CPB Document 19. • Economische gevolgen van het strategisch akkoord 2003 - 2006, 2002, CPB Document 22. • Several CPB Notes per year (in 2000: 1, in 2001: 13 and in 2002: 35). • Don, F.J.H., and P. de Kam, 2000, Een begrotingsoverschot! En nu?, <i>Schuld en Solidariteit</i>, Wiardi Beckman Stichting, pp. 7-24. • Don, F.J.H., 2002, Economische analyse van verkiezingsprogramma's: wat, hoe en waarom?, <i>Openbare Uitgaven</i> 34, pp. 106-113. • Don, F.J.H., 2002, Economic analysis of election platforms: what, how and why? in: J.J. Graafland and A.P. Ros (eds.), <i>Economic Assessment of Election Programs: Does it Make Sense?</i>, Kluwer Academic Publishers, Dordrecht.
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Theme B: Domestic economy: macro and meso

Model: SAFE

<i>Description</i>	The SAFE model is a dynamic macroeconometric model for the Dutch economy on a quarterly basis.
<i>Benchmarks</i>	The model is built in the tradition of large-scale macroeconometric models; based on time series analysis.
<i>Applications</i>	The model is used for: Short-term forecasting (up to 3 years). Policy simulation and uncertainty variants.
<i>Maintenance</i>	Keeping data and the model consistent and up-to-date by studying residuals, rewriting (institutional) equations and re-estimating behavioural equations costs about 1.5 fte (Cyclical analysis unit) per year.
<i>Revisions</i>	The SAFE model was operational in 1999. It was based on the yearly model JADE and uses the “error-correction” method for the most important behavioural equations. Since then, the model has been regularly revised. Apart from a large number of small adaptations, a new consumption function and two new export equations (one for reexports and one for domestically produced exports) have recently been incorporated, while equations for potential output, output gap, NAIRU and cyclically-adjusted government financial balance have been added to the model.
<i>Publications</i>	<ul style="list-style-type: none"> • Donders J., and H. Kranendonk, 2000, SAFE, A short-term model for the Dutch economy (in Dutch), Internal paper. • Kranendonk, H., and J.P. Verbruggen, 2001, SAFE's new consumption equation (in Dutch), Internal paper. • Kusters, A.P.K., and J.P. Verbruggen, 2001, Reexports and the Dutch market position, <i>CPB Report 2001/4</i>. • Kusters, A.P.K., M. Ligthart and J.P. Verbruggen, 2001, SAFE's new export-equations (in Dutch), Internal paper. • CPB, 2002, SAFE, A quarterly model of the Dutch economy for short-term analysis, CPB Document 27, (in Dutch).

Theme B: Domestic economy: macro and meso

Model: JADE

<i>Description</i>	The JADE model is a dynamic annual macroeconometric model.
<i>Benchmarks</i>	The model belongs to the tradition of large macroeconometric models.
<i>Applications</i>	The model is used for: Medium-term forecasting (up to 5 years) Policy simulations and assessment of uncertainties in macroeconomic developments. Structural analyses like the development over time of equilibrium unemployment.
<i>Maintenance</i>	Keeping the model up-to-date, study residuals, re-estimation of parts of the model, study properties of the model, coordinate properties with other models within CPB. Total effort about 1fte per year.
<i>Revisions</i>	Since the last evaluation report in 1997, the model has been substantially revised (as well as renamed). The production block of the market sector has been completely overhauled and is now firmly based on microeconomic foundations; the description of the labour market uses an explicit wage bargaining model, and most equations for the private sector have been re-estimated using modern time series methods. In addition, the model has been simplified by reducing the number of sectors distinguished.
<i>Publications</i>	<ul style="list-style-type: none"> • Broer, D.P., D.A.G. Draper and F.H. Huizinga, 2000, The Equilibrium Rate of Unemployment in the Netherlands, <i>De Economist</i>, vol. 148. • Draper, D.A.G., 2000, Towards an Econometric model of the Netherlands, Explaining Unemployment, thesis, Katholieke Universiteit Brabant. • Draper, D.A.G., and F.H. Huizinga, 2000, ELIS, Equilibrium Labour Income Share, <i>De Economist</i> 148, No 5. • Ewijk, C. van, and F.H. Huizinga, 2000, Nieuwe uitdagingen voor het beleid, <i>Maandschrift Economie</i>, 64. • Horst, A. van der, 2002, Structural estimates of equilibrium unemployment in six OECD economies, in the Final Report to the European Commission, Growth and the European Labour Market, (Kiel-project).

Theme B: Domestic economy: macro and meso

Model: ATHENA

<i>Description</i>	ATHENA is a dynamic multi-sectoral model for the Dutch economy on an annual basis. The model describes 19 sectors.
<i>Benchmarks</i>	The modelling approach of ATHENA is roughly comparable to that of ADAM (Statistics Denmark), MSG-6 (Statistics Norway), E3ME (Cambridge Econometrics) and ORANI (Monash University).
<i>Applications</i>	The model has been used for: <ul style="list-style-type: none">• Producing sectoral forecasts for the medium term.• Building scenarios for the long term.• Short-term forecasting of sectoral developments.• Policy analysis: e.g. environment, energy, infrastructural projects (also analysis of election platforms)
<i>Maintenance</i>	Apart from the major revision of the production structure in the model (see below), equations for export demand have been rewritten and estimated, and the wage equations have been revised.
<i>Revisions</i>	In 2000, a large project was started which aimed at improving the applicability of the model for structural policy analysis. In particular, the production and market structure in ATHENA have been revised. In the new model, firms maximise profits and charge a mark-up over marginal costs. The model allows for entry and exit of firms. The model explicitly distinguishes between the short-run cost function and the long-run cost function by using shadow costs for the fixed factors. Market imperfections are linked to the production structure by introducing fixed costs. The revision has significantly improved the long-run properties of the model.

<p><i>Publications</i></p>	<ul style="list-style-type: none"> • Vromans, M., 1998, ATHENA. The multi-sector model, <i>CPB Report</i> 1998/3, pp. 32-36. • Broer, D.P., 1999, Production and Market Structure in the ATHENA model. • Broer, D.P., 2002, Imperfect Competition and Short-Term Dynamics in a Long-Run Multi-Sector Model of the Netherlands, presentation at the Workshop on Model Based Research, Lillehammer, Statistics Norway, 8-10 April 2002. • Broer, D.P., and E.W.M.T. Westerhout, 2002, The Use of Models in Policy Making: The Case of The Netherlands, Presentation at the Workshop on Model Based Research, Lillehammer, Statistics Norway, 8-10 April. • Broer, D.P., D.A.G. Draper, A. van der Horst, F.H. Huizinga, P.A. de Jongh, A. Nieuwenhuis, V.R. Okker and M.W.A.M. Vromans, 2000, Vergelijkende variantenanalyse ATHENA, JADE en MIMIC, Internal publication I/2000/12. • Vromans, M., 2000, Lange termijn eigenschappen van ATHENA, Internal publication I/2000/6. • Lijesen, M.G., M. Mulder and M.W.A.M. Vromans, 2001, Fiscale vergroening en energie II; economische effecten van verhoging en verbreding van de Regulerende Energiebelasting, CPB Document 6. • Broer, D.P., M. Mulder and M.W.A.M. Vromans, 2002, Economische effecten van nationale systemen van CO₂-emissiehandel: nationale dilemma's bij een mondiaal vraagstuk, CPB Document 18.
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Theme C: Technology, education and research, innovation and productivity

Activity: Technology

<i>Contents</i>	Research into the role of technology and business R&D in the macroeconomy in the Netherlands, such as productivity, exports and foreign investment.
<i>Relevance</i>	Project results are used by the Ministry of Economic Affairs and the Ministry of Education, Culture and Science.
<i>Resources</i>	2001: 1 fte
<i>Methods</i>	The unit Technology and manufacturing specialises in empirical analysis. The unit disposes of unique data on R&D in the Netherlands by enterprise, long time series of patent applications in the Netherlands, and long time series of 20 manufacturing industries in the Netherlands.
<i>Plans</i>	<ul style="list-style-type: none">• The fields of innovation, productivity and technology are interrelated, and need better empirical filling. As the unit has a comparative advantage in CPB in the field of empirical analysis, and at the same time comparative disadvantages in actual theoretical/conceptual considerations, the best strategy is to cooperate in the years to come. This would bring immediate results, while building up mutual learning effects of all participants.• This strategy is specifically being followed next year in the following projects.• To what extent does public knowledge infrastructure fit the needs of the enterprises?• Dutch export performance.• The competences of Dutch ICT-services.• The R&D database of individual enterprises will be augmented by cross linking with databases of other institutions.

<p><i>Output</i></p>	<ul style="list-style-type: none"> • Cornet, M., and M. Rensman, 2002, The location of R&D in the Netherlands: trends, determinants and policy, CPB Document 14. • Cornet, M., and M. Rensman, 2002, The location of R&D in the Netherlands, <i>CPB Report 2002/2</i>, p. 48-53. • Creusen, H., and B. Minne, 2000, Falling R&D but stable investments by oil companies: why?, CPB Research Memorandum 164. • Creusen, H., and B. Minne, 2000, Falling R&D in oil companies, <i>CPB Report 2000/1</i>. • Minne B., 2001, Technology and environmental policy in a small, open economy: generic or specific? (in Dutch, Technologie- en milieupolitiek in een kleine, open economie: generiek of specifiek?), CPB Memo January, 12th 2001, presentation on a university workshop. • Minne B., and M. Rensman, 2001, The R&D strategy of the Dutch chemical industry (De R&D strategie van de Nederlandse Chemische Industrie), <i>Chemisch Weekblad</i>, nr. 3, 10 February. • Minne, B., and M. Rensman, 2001, The R&D strategy of the Dutch chemical industry: trends in the past ten years (in Dutch, R&D-strategie van de Nederlandse chemische industrie: trends in de afgelopen 10 jaar), CPB Memorandum 1. • Minne, B., and J.L. Verbruggen, 2002, The biggest 25 R&D-investors in the Netherlands' (in Dutch), De grootste 25 investeerders in R&D) CPB Memo on request of the Ministry of Economic Affairs. • Rensman, M., 2000, R&D by enterprises with the highest R&D expenditures in the Netherlands 1997-1999 (in Dutch, R&D door de ondernemingen met de meeste R&D-uitgaven in Nederland, 1997-1999) external note on behalf of the Ministry of Economic Affairs, nr 00/26). • Rensman, M., 2002, Research and development in the Netherlands by individual enterprises (in Dutch, 'Research en development in Nederland door individuele bedrijven), CPB Memorandum 33. • Rensman, M., J.L. Verbruggen and B. Minne (2000, 2001, 2002), Expenditures on R&D by enterprise in the Netherlands' (in Dutch, Uitgaven research en ontwikkeling per onderneming in Nederland), CPB-Internet publications twice a year. • Verbruggen, J.L., 2000, Databank ondernemingen: wie doet hoeveel, wat en waar?, in Dutch, Internal Note IV/2000/2. • Creusen, H.P.W.A., 2001, Four views on Dutch clusters, CPB Memorandum 22.
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Theme C: Technology, education and research, innovation and productivity

Activity: Education and science

<i>Contents</i>	Research on the design of the education and science sector and the impact on economic performance.
<i>Relevance</i>	Project results are used and financially supported by the Ministries of Education, Finance, Economic Affairs and Agriculture. Results of the knowledge study have been used in recent policy plans or are at the moment studied by special commissions. Moreover, results have also been used by advisory boards such as SER or the Dutch Educational Council.
<i>Resources</i>	2001: 5 fte
<i>Methods</i>	Surveying international literature and applying framework of principal-agent theory. Empirical analysis of national data.
<i>Plans</i>	New unit on education and science started in summer 2002. More emphasis on empirical analysis of Dutch situations. Especially evaluation of recent policies on student support and funding of students at risk. Increase publications in international academic journals.
<i>Output</i>	<ul style="list-style-type: none"> • CPB, 2002, <i>De pijlers onder de kenniseconomie: opties voor institutionele vernieuwing</i>, CPB Special Publication 34, Koninklijke de Swart, The Hague. See also: <i>CPB Report 2002/2</i>, special issue on knowledge study. • Venniker, R., 2000, Social returns to education: a survey of recent literature on human capital externalities, <i>CPB Report 2000/1</i>. • Canton, E., 2002, Onderwijs, R&D en economische groei, CPB Memorandum 24. • Webbink, H.D., and W. Hassink, 2002, Preventie van onderwijsachterstanden in de kenniseconomie, CPB Memorandum 30. • Webbink, H.D., 2002, Preventie van achterstanden, <i>Economisch Statistische Berichten</i>, 29 March. • Hassink, W., 2000, Leraren, tekorten en salarissen; een empirisch onderzoek voor het voortgezet onderwijs, CPB Working Paper 129. • Hassink, W., and M. Pomp, 2000, Lerarentekort en lerarenloon, <i>Economisch Statistische Berichten</i>, 30 June. • Hassink, W., R. van Opstal and M. Pomp, 1999, Teachers' pay: were the strikes justified?, <i>CPB Report 1999/1</i>.

- Canton, E., 2001, Should tuition fees be increased? *CPB Report 2001/2*
- Canton, E., and R. Venniker, 1999, The market for higher education, *CPB Report 1999/3*.
- CPB/CHEPS, 2001, *Higher education reform; getting the incentives right*, CPB Special Publication 29, Sdu Publishers, The Hague.
- Jacobs, B., 2002, An investigation of education finance reform, income contingent loans and graduate taxes in the Netherlands, CPB Memorandum.
- Cornet, M., and R. Venniker, 1998, Employability, Special issue in *Macro Economische Verkenning 1999*.
- Cornet, M., and R. Venniker, 1998, Employability, *CPB Report 1998/4*.
- Webbink, H.D., 2002, Scholing van werknemers: welke rol speelt de overheid?, *Economisch Statistische Berichten*, 12 April 2002.
- Beugelsdijk, S., and M. Cornet, 2000, Does proximity matter for knowledge spill-overs in the Netherlands?, *CPB Report 2000/1*.
- Beugelsdijk, S., and M. Cornet, 2001, How far do they reach? The location of industrial and academic knowledge spillovers in the Netherlands, CenteR Discussion Paper 47, Tilburg.
- Cornet, M., and B. Vollaard, 2000, Tackling the scientific journal crisis: when authors pay with money instead of copyrights, CPB Working Paper 121 .
- Cornet, M., and B. Vollaard, 2000, Tackling the scientific journal crisis, *CPB Report 2000/2* .
- Dijk, M. van, and D. Webbink, 2000, De arbeidsmarkt voor wetenschappelijk onderzoekers, CPB Notitie 2000/20.
- Dijk, M. van, and D. Webbink, 2000, Shortages of scientists?, *CPB Report 2000/4*.
- Venniker, R., 2002, Financiering van wetenschappelijk onderzoek in internationaal perspectief, CPB Memorandum 28.

Theme C: Technology, education and research, innovation and productivity

Activity: Innovation

<i>Contents</i>	Empirical research on innovation behaviour and on how this behaviour may be influenced by policy. The research focusses on the relationship between 'science' and 'industry', regulation and innovation, technical and non-technical innovation, and the evaluation of technology policy.
<i>Relevance</i>	The research products will support Dutch and possibly European innovation policy. The research is partly financed and monitored by the Ministries of Agriculture, Economics, Finance, and Education, Culture and Science. Several semi-public technology institutions will cooperate in and use the research as well.
<i>Resources</i>	2001: - fte
<i>Methods</i>	The research will build on the conceptual framework developed in the Knowledge study, use microeconomic techniques where possible and perform international comparison of institutions and their effects on innovation output.
<i>Plans</i>	Several projects will be started up in 2003. They will examine incentives for university researchers, the interaction between industry and semi-public science centres, innovation policy in the services sector, evaluation of technology policy, and the relationship between (de)regulation and innovation.

Theme C: Technology, education and research, innovation and productivity

Activity: Productivity

<i>Contents</i>	Analysis of the effect of ICT on the economy and other sources of productivity growth. Particularly, the interrelation between ICT, innovations, competition, firm turnover, and organisational changes will be scrutinised.
<i>Relevance</i>	Productivity is on top of the policy agenda in the Netherlands. Project results are used and partly financed by the Ministry of Economic Affairs.
<i>Resources</i>	2001: - fte
<i>Methods</i>	Using firm-level data and applying microeconomic techniques.
<i>Plans</i>	Through participation in an OECD project on the importance of ICT for firm performance, pursue international collaboration with (European) institutes on similar topics.
<i>Output</i>	<ul style="list-style-type: none"> • Dijk, M. van, F. Kuypers, H. Noordman and H. van der Wiel, 2002, CEP-op-maat ICT 2001-2003, CPB Memorandum 38. • CPB, 2001, MLT-op-maat ICT 2003-2006, CPB Memorandum 21. • CPB, 2001, Does ICT boost Dutch productivity growth?, CPB Document 16. • CPB, 2001, Sectorale arbeidsproductiviteitsontwikkeling op middellange termijn, CPB Memorandum 3. • CPB, 2001, Innovation and productivity in services, <i>CPB Report 2001/1</i>. • CPB, 2000, ICT important for growth, <i>CPB Report 2000/2</i>.

Theme D: Industrial economics

Activity: Semi-public services

<i>Contents</i>	Health care, education, housing, social security, publicly funded R&D.
<i>Relevance</i>	Public sector reform, incentives.
<i>Resources</i>	2001: 4.2 fte
<i>Methods</i>	Empirical, institutional, strong policy orientation.
<i>Plans</i>	Further development of empirical work, analyses across (semi) public services, international comparisons.
<i>Output</i>	<ul style="list-style-type: none"> • Appelman, M., and A. van den Broek, 2002, <i>Boek en Markt; effectiviteit en efficiëntie van de vaste boekenprijs</i>, CPB Special Publication 44, CPB and SCP, The Hague. • Appelman, M., M.F.M. Canoy, E. de Laat, R. Douven, E. Mot and J.M. Pomp, 2002, <i>Concurrentie in de Zorg</i>, CPB Document 23. • Canoy, M.F.M., M. Janssen and B. Vollaard, 2001, <i>PPS: een uitdagend huwelijk; PubliekPrivateSamenwerking bij Combinatieprojecten</i>, CPB Document 2. • CPB/CHEPS, 2001, <i>Higher education reform: Getting the incentives right</i>, CPB Special Publication 29, Sdu Publishers, The Hague. • Laat, E. de, M. van der Ven and M. Canoy, 2000, <i>Solidariteit, keuzevrijheid en transparantie: De toekomst van de Nederlandse markt voor oudedagsvoorzieningen</i>, CPB Special Publication 23, Sdu/CPB, The Hague. • Hakfoort J., M. van Leuvensteijn and G. Renes, 2002, <i>Woningcorporaties: prikkels voor effectiviteit en efficiëntie</i>, CPB Special Publication 45. • Jacobs, B., 2002, <i>An investigation of education finance reform, income contingent loans and graduate taxes in the Netherlands</i>, CPB Discussion Paper 9. See also theme B. • Laat, E. de, F. Windmeijer and R. Douven, 2002, <i>How does pharmaceutical marketing influence doctors' prescribing behaviour?</i>, CPB Special Publication 38. • Douven, R.C.M.H., 2000, <i>Regulated competition in health insurance markets</i>; November, CPB, Research Memorandum 171. • CPB, 2002, <i>De pijlers onder de kenniseconomie: Opties voor institutionele vernieuwing</i>, <i>CPB Report 2002/2</i>. See also theme C.

Theme D: Industrial economics

Activity: Network industries

<i>Contents</i>	Telecommunications, Energy, Transport, Airports.
<i>Relevance</i>	Privatisation, liberalization, investments, quality of service, incentives.
<i>Resources</i>	2001: 1.7 fte
<i>Methods</i>	Conceptual studies, telecommunications model, energy model.
<i>Plans</i>	more resources (present research is too ad hoc and fragmented).
<i>Output</i>	<ul style="list-style-type: none"> • Bennett, M., P. de Bijl and M.F.M. Canoy, 2001, Future Policy in Telecommunications: an analytical framework, CPB Document 5. • De Bijl, P., and M. Peitz, <i>Competition and Regulation in Telecommunications Markets</i>, 2000, CPB Special Publication 26, Sdu Publishers, The Hague. • Canoy, M.F.M., F. Hindriks and B. Vollaard, 2000, Yardstick competition, Theory, design, and practice, CPB Working Paper 133. • Bennett, M., and M.F.M. Canoy, 2000, Auctions and Precautions: Overbidding in spectrum Auctions and its possible impact, CPB Working Paper 127. • Kingma, D., M.G. Lijesen, H.J.B.M. Mannaerts and M. Mulder, 2002, Concurrentie op de energiemarkt, <i>Economisch Statistische Berichten</i>, February 22, pp. 156-158. See also theme F. • Lijesen, M.G., 2000, The effect of the access-pricing regime on wholesale natural gas prices, paper presented at the (IAEE) Annual European Energy Conference 2000, Bergen, Norway. See also theme F. • Lijesen, M.G., 2001, Welfare effects of vertical integration in energy distribution, paper presented at the 28th EARIE-conference, Dublin, Ireland, 30/8-2/9. See also theme F. • Kingma, D., M.G. Lijesen, H.J.B.M. Mannaerts and M. Mulder, 2002, Concurrentie op de energiemarkt, <i>Economisch Statistische Berichten</i>, February 22, pp. 156-158. See also theme F. • Kingma, D., M.G. Lijesen, H.J.B.M. Mannaerts and M. Mulder, 2002, Liberalisation of the energy markets: an outlook towards 2010, paper prepared for the 25th Annual International Conference of the IAEE (International Association of Energy Economics), Aberdeen, Scotland, UK, June 26-29. See also theme F.

	<ul style="list-style-type: none"> • Kingma, D., M.G. Lijesen and M. Mulder, 2002, Gas-to-gas competition versus oil price linkage, paper prepared for the 25th Annual International Conference of the IAEE (International Association of Energy Economics), Aberdeen, Scotland, UK, June 26-29. • Mannaerts, H.J.B.M., and D. Kingma, 2002, Green electricity production in liberalised European energy markets, paper prepared for the 25th Annual International Conference of the IAEE (International Association of Energy Economics), Aberdeen, Scotland, UK, June 26-29. See also theme D. • Lijesen, M.G., and H.J.B.M. Mannaerts, 2002, Welfare effects of national nuclear policies in Europe, paper prepared for the 25th Annual International Conference of the IAEE (International Association of Energy Economics), Aberdeen, Scotland, UK, June 26-29. • CPB, 2000, Schiphol: a normal enterprise?, CPB Working Paper 126, (various parts). See also theme F.
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Theme D: Industrial economics

Activity: Competition - other

<i>Contents</i>	Various other competition research
<i>Relevance</i>	ongoing policy demand
<i>Resources</i>	2001: 8.2 fte
<i>Methods</i>	methods vary a lot
<i>Plans</i>	Enhancing theoretical underpinning, more policy oriented
<i>Output</i>	<ul style="list-style-type: none">• Canoy, M.F.M., M.F. van Dijk, J.J.G. Lemmen, R.A. de Mooij and J. Weigand, 2001, Competition and stability in banking, CPB Document 15.• Canoy, M.F.M., 2001, Met een helikopter over mededingingsland, special subject in <i>Economische Verkenning 2003-2006</i>, CPB.• Creusen, H.P.W.A., 2001, Four views on Dutch clusters, CPB Memorandum 22.• Koning, M.A. and B. Minne, 2001, Participeren in de ontwikkeling van de Joint Strike Fighter; een globale kosten-baten analyse, CPB Document 13.• Kox, H.L.M., 2001, Exposure of the business services industry to international competition, CPB Document 10.• Boone, J., and J. Weigand, 2000, Measuring competition: how are cost differentials mapped into profit differentials, CPB Working Paper 131.• Canoy, M.F.M., and P. de Bijl, 2000, Publishers Caught in the Web? CPB Working Paper 119.

Theme D: Industrial economics

Model: CAPMAT

<i>Description</i>	CAPMAT is a recursively dynamic applied general-equilibrium model for EU agriculture.
<i>Benchmark</i>	The model is unique in the combination of covering the institutional detail of the CAP and its general equilibrium setting. CAPMAT is the successor of ECAM (Folmer et.al., 1995).
<i>Application</i>	Analysis of CAP reform.
<i>Maintenance</i>	Keeping the institutional arrangements of the CAP up to date.
<i>Revisions</i>	Does not apply since CAPMAT is a revision of ECAM and only became operational in 2002.
<i>Output</i>	A study on behalf of the European Commission, "The CAP-reform Proposal of the Mid-term Review: Decoupling with strings attached", was completed end 2002. The study is available from the website of the Commission (http://europa.eu.int/comm/agriculture/publi/reports/mtrimpact/index_en.htm).

Theme E: Welfare state and labour market

Activity: Wage formation and income distribution

<i>Contents</i>	<p>Short-term forecasts of changes in contractual wages are based on bargaining outcomes of 100 collective labour agreements. The impact of policy measures on labour costs, purchasing power, replacement rate and wedge are analysed. Empirical studies with respect to wage formation and income distribution include:</p> <ul style="list-style-type: none"> • The impact of minimum wages in collective labour agreements on the distribution of wages in the Netherlands; • The impact of demand, supply and institutional effects on relative wages for different demographic groups; • The extent of downward (nominal or real) wage rigidity in the Netherlands.
<i>Relevance</i>	<p>Investigating the impact of institutions (minimum wages, benefits, taxes) on labour costs and purchasing power contributes to insight into whether unemployment of low-skilled workers is due to the demand side (labour costs exceed productivity) or the supply side (poverty trap).</p> <p>Investigating downward flexibility of wages contributes to our knowledge of the speed of adjustment of the labour market during economic downturns.</p>
<i>Resources</i>	2001: 1.3 fte
<i>Methods</i>	<p>Applications in SAS for monitoring contractual wages, labour costs, purchasing power, replacement rate and wedge.</p> <p>Appropriate econometric techniques for micro data research.</p>
<i>Plans</i>	<p>Investigate the impact of municipal income policy and changes in health insurance on purchasing power, replacement rate and wedge; assess the impact on labour supply.</p> <p>Investigate the determinants of the adjustment lag of contractual wages to changes in economic activity.</p>

<p><i>Output</i></p>	<ul style="list-style-type: none"> • Opstal, R.M. van, and H.W. Stegeman, 2000, Beloning in de collectieve sector (Remuneration in the public sector), <i>Economisch Statistische Berichten</i>, 4245, pp. 183-185. • Stegeman, H.W., 2000, Individual Remuneration, CPB Discussion Paper 160. • Stegeman, H.W., and R.J. Waaijers, 2001, Wage inequality in the Netherlands, <i>CPB Report 2001/1</i>, The Hague. • Stegeman, H.W., and R.J. Waaijers, 2002, Collectieve loonstijgingen volgens twee statistieken; Het verschil tussen het CPB-contractloon en het cao-loon van het CBS gekwantificeerd, CPB Memorandum 3. • Stegeman, H.W., 2002, Lange reeksen voor replacement rates en wiggen, CPB Memorandum I/2002/2.
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Theme E: Welfare state and labour market

Activity: Labour market policy

<i>Contents</i>	Assess the effects of (proposed) labour market policies.
<i>Relevance</i>	Contribute to policies aiming at more flexibility of the Dutch labour market. Contribute to policies aiming at better opportunities for low-skilled labour. Contribute to analyses of the long-term development of the Dutch economy.
<i>Resources</i>	2001: 1.4 fte
<i>Methods</i>	Combination of qualitative and quantitative, model-based research. Maintenance and development of an applied general equilibrium model (MIMIC).
<i>Plans</i>	<ul style="list-style-type: none"> • Construction of a core version of MIMIC. • Continuation of the assessment of proposed or intended labour market policies. • Focus on the retirement decision and policies that aim to increase the labour market participation of the elderly.
<i>Output</i>	<ul style="list-style-type: none"> • Bovenberg, A.L., J.J. Graafland, and R.A. de Mooij, 2000, Tax Reform and the Dutch Labor Market: An Applied General Equilibrium Approach, <i>Journal of Public Economics</i> 78, pp. 193-214. • Graafland, J.J., 2000, Child care subsidies, labour supply and government finance, <i>Economic Modelling</i> vol.17, no.1. • Jongen, E.L.W., and E.W.M.T. Westerhout, 2002, Onbetaalde arbeid in de beleidsvoorbereiding, reader Integratie van onbetaalde arbeid in de sociaal-economische beleidsvoorbereiding, Ministerie van Sociale Zaken en Werkgelegenheid, blz. 23-25. • Jongen, E.L.W., M. van Gameren and J.J.Graafland, 2000, The Impact of Active Labor Market Policies: An AGE Analysis for the Netherlands, 2000, CPB Research Memorandum 166. • Koning, P.W.C., and B.J. Kuipers, 2000, Langdurig zorgverlof verkleint arbeidsaanbod, <i>Economisch Statistische Berichten</i> website. • Kuipers, B.J., E. Jongen and E.W.M.T. Westerhout), 'Parental leave', <i>CPB Report</i> 2001/2, p.30-37.

- Mooij, R.A. de, and E.W.M.T. Westerhout, 2001, Workshop report, MIMICing Tax Policies and the Labour Market, *CPB Report 2001/4*.
- Opstal, R.M. van, and H.W. Stegeman, 2000, Beloning in de collectieve sector (Remuneration in the public sector), *Economisch Statistische Berichten*, 4245, pp. 183-185.
- Stegeman, H.W., and R.J. Waaijers, 2002, Collectieve loonstijgingen volgens twee statistieken; Het verschil tussen het CPB-contractloon en het cao-loon van het CBS gekwantificeerd (Collective wage increases according to two statistics. The difference between CPB and CBS wage concepts quantified, in Dutch), CPB Memorandum 3.
- Stegeman, H.W., and R.J. Waaijers, 2001, Wage inequality in the Netherlands, *CPB Report, 2001/1*, CPB, The Hague.
- Stegeman, H.W., 2000, Individual Remuneration, CPB Discussion Paper 160.
- Graafland, J., R.A. de Mooij, A. Nibbelink and A. Nieuwenhuis, 2001, MIMICing Tax Policies and the Labour Market, Contributions to Economic Analysis, North-Holland.
- Kuipers, B.J., and F.H. Huizinga, 2000, Tien dagen zorgverlof (in A. de Grip et al. eds.), *De Nederlandse Arbeidsmarktdag 2000*, ROA/NAD, Maastricht.
- Jongen, E.L.W. and A. Nieuwenhuis, 2002, Een vlaktax voor ouderen Task Force Ouderen en Arbeidsmarkt, CPB Communication 2002/66.
- Overzicht MIMIC-varianten voor CEC-werkgroep De Jong (Arbeidsmarkt) CEC, CPB Communication 2002/43.
- MIMIC-berekeningen voor de CEC-werkgroep arbeidsmarkt CEC, CPB Communication 2002/42.
- Tijdsbesteding in MIMIC, 2002, SZW (Ministerie van Sociale Zaken en Werkgelegenheid), CPB Communication 2002/40.
- Nogmaals: Arbeidsmarkteffecten van inkomensafhankelijke regelingen, CPB Communication 2002/36.
- Langdurig zorgverlof, CPB Communication 2001/51.
- Fiscale verkenningen: de effecten van marginale drukverandering Werkgroep Arbeidsmarkt en Armoedeval, CPB Communication 2001/42.
- Economische effecten van actief arbeidsmarktbeleid IBO (Interdepartementaal Beleidsonderzoek) energiesubsidies, CPB Communication 2001/30.

	<ul style="list-style-type: none"> • Ouderschapsverlof SZW (Ministerie van Sociale Zaken en Werkgelegenheid), CPB Communication 2001/25. • Langdurig zorgverlof SZW (Ministerie van Sociale Zaken en Werkgelegenheid), CPB Communication 2001/20. • Arbeidsmarkteffecten van inkomensafhankelijke regelingen SZW (Ministerie van Sociale Zaken en Werkgelegenheid), CPB Communication 2000/3. • Jongen, E.L.W., E. van Gameren and J.J. Graafland, 2000, The impact of active labour market policies: an AGE analysis for The Netherlands, Research Memorandum 166. • Boone, J., and R.A. de Mooij, 2000, Analyzing tax policy in a model of search with training, Research Memorandum 161.
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Theme E: Welfare state and labour market

Activity: Ageing

<i>Contents</i>	Assess the long-term consequences of the ageing of the Dutch population.
<i>Relevance</i>	Explore the changes on various markets (labour, health care) and sectors (private pensions, public pensions, public sector) related to ageing. Contribute to analyses on the long-term development of the Dutch economy. Contribute to the formulation of sustainable debt policies.
<i>Resources</i>	2001: 0.8 fte
<i>Methods</i>	<ul style="list-style-type: none"> • Combination of qualitative and quantitative, model-based research. • Integration of contributions from several other programmes (labour supply, pensions, health). • Maintenance and development of two specific models: generational-accounting, GAMMA model.
<i>Plans</i>	<ul style="list-style-type: none"> • Participation in ENEPRI-projects AGIR and DEMWEL. • Comprehensive study on long-term prospects of funded supplementary pensions. • Further development of the GAMMA model.
<i>Output</i>	<ul style="list-style-type: none"> • Ewijk, C. van, B.J.Kuipers, H.J.M. ter Rele, M.E.A.J. van de Ven and E.W.M.T. Westerhout, 2000, <i>Ageing in the Netherlands</i>, CPB Special Publication 25. • Ewijk, C. van, B.J.Kuipers, H.J.M. ter Rele, M.E.A.J. van de Ven and E.W.M.T. Westerhout, 2000, Ageing in the Netherlands: A Manageable Problem, <i>CPB Report 2000/3</i>. • Ewijk, C. van, and E.W.M.T. Westerhout, 2000, In Reply, <i>CPB Report 2000/4</i>. • Ewijk, C. van, B.J.Kuipers, H.J.M. ter Rele, M.E.A.J. van de Ven and E.W.M.T. Westerhout, 2000, Vergrijzing in Nederland: een hanteerbaar probleem, in: <i>Tijdschrift voor pensioenvraagstukken 2000/6</i>.

	<ul style="list-style-type: none"> • Ewijk, C. van, 2000, When I get older... , Starter <i>CPB Report</i>, 2000/3. • Ven, M. van de, H. ter Rele, H.J. Roodenburg, and E.W.M.T. Westerhout, 2001, Ageing in the Netherlands: a manageable problem, workshop report, <i>CPB Report</i> 2001/1, pp. 61-62. • Ven, M. van de, 2001, Ageing actuarial neutrality and flexible retirement, <i>CPB Report</i> 2001/3, pp. 39-46. • Westerhout, E.W.M.T., 2000, Kosten vergrijzing vallen mee; interview, <i>Pensioen Magazine</i>. • CPB, 2000, <i>Solidariteit, keuzevrijheid en transparantie: de toekomst van de markt voor oudedagsvoorzieningen</i>, CPB Special Publication 23. • Bovenberg, A.L., and H.J.M. ter Rele, 2000, Netherlands: Financing and Ageing. In: <i>European Economy</i>, Generational Accounting in Europe. • Bovenberg, A.L., and H.J.M. ter Rele, 2000, Generational Accounts for the Netherlands: an Update, <i>International Tax and Public Finance</i>, Special issue on Public Finance and Transitions in Social Security. • Ewijk C. van, H.J.M. ter Rele and E.W.M.T. Westerhout, 2002, Lage rente niet goed voor de overheidsfinanciën, CPB website, 1 February and ESB website, 13 February. • Ewijk C. van, H.J.M. ter Rele and E.W.M.T. Westerhout, 2002, Reactie op Thio's naschrift, ESB website, 27 March.
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Theme E: Welfare state and labour market

Activity: Labour supply

<i>Contents</i>	Labour supply and the welfare state. The economic impact of immigration. Long-term labour scenarios.
<i>Relevance</i>	It explores the range of future labour force trends, signals possible bottlenecks and investigates policy options.
<i>Resources</i>	2001: 1.3 fte
<i>Methods</i>	Scenarios are based upon alternative: <ul style="list-style-type: none">• demographic projections as provided by Statistics Netherlands.• views on the future welfare state.• cross-country comparisons. Research activities include: <ul style="list-style-type: none">• surveys of the international literature.• statistical and econometric analysis, including microeconometrics (data: Income panel, survey of Labour exchange clients).
<i>Plans</i>	<ul style="list-style-type: none">• Econometric analysis of financial incentives in the disability scheme.• Econometric analysis of early retirement.• Why are immigrants in other countries more successful in the labour market?
<i>Output</i>	<ul style="list-style-type: none">• Kuipers, B. J., 2001, Model arbeidsmarkt en sociale zekerheid; met een toepassing voor de MLT 2003-2006, CPB Memorandum I/2001/9.• Roodenburg, H.J., and J.C. Rijn, 2001, Kenmerken van uittreeders, CPB Memorandum I/2001/6.• Kuipers, B.J., 2001, Arbeidsaanbod op middellange termijn, CPB Memorandum I/2001/4.• Koning, P.W.C., and B.J. Kuipers, 2001, Arbeidsparticipatie van vrouwen, CPB Communication 2001/18.

	<ul style="list-style-type: none"> • Leuvensteijn, M. van, and P.W.C. Koning, 2000, The effects of home-ownership on labour mobility in the Netherlands: Oswald's theses revisited, December, CPB Research Memorandum 173. • Leuvensteijn, M. van, and P.W.C. Koning, 2000, Duration dependence in unemployment insurance and social assistance; consequences of profiling for the unemployed, April , CPB Research Memorandum 163. • Koning, P.W.C., 2000, Arbeid en sociale zekerheid: participatie en differentiatie, Centraal Planbureau & Sociaal Cultureel Planbureau, <i>Trends, dilemma's en beleid; essays over ontwikkelingen op langere termijn</i>, The Hague, CPB Special Publication 24. • CPB, 2001, Arbeidsbemiddeling en -reïntegratie van werklozen. Welke rol heeft de overheid te spelen?, CPB Working Paper 118. • Koning, P.W.C., 2001, Financiële prikkels voor werklozen: Een sluitende aanpak voor de armoedeval, <i>Tijdschrift voor Politieke Economie</i>, 23e jaargang, nr. 2, augustus 2001. • Koning, P.W.C., 2001, Uitstroompremies: alleen maar een leuk extraatje?, <i>Economisch-Statistische Berichten</i>, jaargang 86, pp.477. • Koning, P.W.C., G.J. van den Berg, G. Ridder and K. Albæk, 2000, The Relation Between Wages and Labor Market Frictions: An Empirical Analysis Based on Matched Worker Plant Data 2000, in: <i>Contributions to economic analysis: Panel Data and Structural Labour Market Models</i>, Elsevier North Holland, H. Bunzel et al. (eds.). • Koning, P.W.C., G.J. van den Berg and G. Ridder, 2000, Semi-Nonparametric Estimation of an Equilibrium Search Model 2000, <i>Oxford Bulletin of Economics and Statistics</i>, vol. 62, nr. 3, pp. 327-356. • Koning, P.W.C., and M. van Leuvensteijn, 2000, On duration dependence and profiling for the unemployed, <i>CPB Report 2000/4</i>. • Koning, P.W.C., and B.J. Kuipers, 2000, Langdurig zorgverlof verkleint arbeidsaanbod, <i>ESB website</i>, 2000. • Koning, P.W.C., and M. van Leuvensteijn, 2000, Faseringsbeleid alleen is onvoldoende, <i>Economisch Statistische Berichten</i>, 13 October 2000, pp. 810-811. • Koning, P.W.C., 2000, Remt wachttijd WAO-instroom?, <i>Economisch Statistische Berichten</i>, 31 March 2000. • Rele, H.J.M. ter, and H.J. Roodenburg, 2001, Hoe meer zielen, hoe minder vreugd, <i>Economisch Statistische Berichten</i>, pp. 808-810.
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	<ul style="list-style-type: none"> • Roodenburg, H.J., 2001, Arbeidsmigratie; winnaars, verliezers en onbetaalde rekeningen, <i>Justitiële verkenningen</i>, jaargang 27, 2001, nr. 8, pp. 49-54 • Roodenburg, H.J., 2001, Immigratiesurplus, <i>Economisch Statistische Berichten</i>, jaargang 86, nr.4319, 2001, pp. 610-611. • Roodenburg, H.J., and L. van den Boom, 2000, Economische gevolgen van immigratie, <i>Tijdschrift voor Politieke Economie</i>, jaargang 22, nr. 3, November 2000. • Roodenburg, H.J., 2000, Immigratie in Nederland: Economische effecten in: <i>Bevolkingsvraagstukken in Nederland anno 2000</i>, rapport van het Werkverband Periodieke Rapportage Bevolkingsvraagstukken, NIDI, The Hague. • Roodenburg, H.J., 2000, Migrant kan beter thuisblijven, <i>Trouw</i>, 29 December. • Vollaard, B.A., and P.W.C. Koning, 2000, <i>Werken aan motivatie</i>, De Aanpak. • Koning, P., E.L. de Vos (editor), 2002, Scholing en bemiddeling van werklozen, Wat mag het kosten?, in: <i>Daadwerkelijk effectief-- Prestatiemeting van reïntegratie en activering</i>, TNO-rapport, Pantijn Casparie, Heerhugowaard. • Roodenburg, H.J., 1999, Het arbeidsaanbod in drie scenario's tot 2020, <i>Bevolking en Gezin</i> (28) 1999/3.
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Theme E: Welfare state and labour market

Activity: Social transfers and pensions

<i>Contents</i>	Forecasting social security and pension premiums and expenditures. Policy analysis.
<i>Relevance</i>	Basis for the calculation of most social security contributions. Inputs for CPB short-term forecasts and for medium-term and long-term scenarios. Support for policymakers through assessments of the budgetary consequences of reforms in the social security and pension fields.
<i>Resources</i>	2001: 2 fte
<i>Methods</i>	<ul style="list-style-type: none"> • Maintenance and development of models for the social security sector (MOSI) and supplementary pensions (Actuaris). • Exploiting data from social security funds, National Accounts and the pensions and insurance supervisory authority. • Literature survey, specialist information, international comparison.
<i>Plans</i>	<ul style="list-style-type: none"> • Main contributor to the Ageing study about the long-term prospects of the supplementary pension system. • Update of MOSI with the latest micro data and improving documentation. • Empirical analysis of the impact of financial incentives on the use of social transfer schemes. • Analysis of the future of social transfers.
<i>Output</i>	<ul style="list-style-type: none"> • CPB, 2002, Analysis of the basic ideas of the proposals of the Social and Economic Council on disability, CPB Communication, February. • CPB, 2002, Analysis of the advisory report of the Social and Economic Council 'Working on occupational disability', CPB Communication, March. • CPB, 2002, Ontwikkeling pensioenpremies bij bedrijfstak- en ondernemings-pensioenfondsen, CPB Memorandum 2002/39. • Jansen, C.L., P.J. Besseling and F.H. Huizinga, 2001, Budgetary Manoeuvring room during the upcoming cabinet period (2003-2006), in Dutch, CPB Document 3.

	<ul style="list-style-type: none"> • Besseling, P.J., and A.P. Deelen, 2001, Analysis of the proposals of the Advisory Committee on Disability (“Donner II’), in Dutch, CPB Document 4. • CPB, 2002, Update of the Economic Outlook 2003-2006, in Dutch, CPB Document 21. • CPB, 2002, Economic consequences of the new cabinet's plans, in Dutch, CPB Document 22. • Ewijk, van C., and M.E.A.J. van de Ven, 2002, Pension assets from a macroeconomic perspective, Paper for the Dutch Royal Economic Society, (in Dutch). • Ven, M.E.A.J. van de, 2001, Ageing actuarial neutrality and flexible retirement, <i>CPB Report 2001/3</i>. • Ven, M.E.A.J. van de, 2000, Fiscal treatment of individual retirement provisions, <i>CPB Report 2000/2</i>. • Laat, E.M. de, M.E.A.J. van de Ven and M.F.M. Canoy, 2000, Solidarity, choice and transparency: The future of the Dutch market for old-age provision, (in Dutch), Sdu Publishers, The Hague. (note: attributed with the Pension award 2002 of The Dutch Association of Industry-wide Pension Funds). • Ewijk, C. van, B.J. Kuipers, H.J.M. ter Rele, M.E.A.J. van de Ven and E.W.M.T. Westerhout, 2000, <i>Ageing in the Netherlands</i>, CPB Special Publication 25.
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Theme E: Welfare state and labour market

Activity: Health-care research

<i>Contents</i>	Construction, extension and update of the health care model. Research into: conditions for a successful introduction of regulated competition, the role of pharmaceutical marketing, trends and dilemmas considering drugs and medical devices, waiting times, DBC-system, ageing, financing medical specialist services, long-term development in health care expenditures.
<i>Relevance</i>	Results of analyses can be used to answer policy questions regarding the design of the Dutch health care sector.
<i>Resources</i>	2001: 1.6 fte
<i>Methods</i>	Model-based quantitative analysis based on the health care model, microeconomic analysis. Literature survey.
<i>Plans</i>	Research into waiting times and financing of hospitals and medical specialists. Extension and update of health care model. Analysis of health care system change.
<i>Output</i>	<ul style="list-style-type: none"> • CPB, 2002, Concurrentie in de zorg, CPB Document 23. • Folmer, K., R.Douven and E. van Gameren, 2001, Een scenario voor de zorguitgaven 2003-2006, CPB Document 7. • Douven, R., 2000, Regulated Competition in Health Insurance Markets, CPB Research Memorandum 171. • Folmer K., and E.W.M.T. Westerhout, 2002, Financing medical specialist services in the Netherlands: Welfare implications of imperfect agency, CPB Discussion Paper 6. • Douven, R., 2002, Kwalitatieve analyse zorgstelsels, CPB Memorandum 32. • Spaandonk, T. van, and R. Douven, 2001, Uitgavenontwikkelingen in de gezondheidszorg, CPB Memorandum 16. • Appelman, M.D., 2002, Improving transparency in health care: a key role for the government, <i>CPB Report 2002/4</i>.

	<ul style="list-style-type: none"> • Mot, E.S., 2001, Costs of health care, starter in <i>CPB Report 2001/3</i>. • Laats, E. de, and C. Hermans, 2001, Pharmaceutical promotion as a signal of product quality, <i>CPB Report 2001/2</i>. • Douven, R., and E.W.M.T. Westerhout, 2000, Reimbursement systems in Dutch sickness funds, <i>CPB Report 2000/3</i>. • Douven, R., and E.W.M.T. Westerhout, 2000, In reply to 'The future of the Dutch health insurance system', <i>CPB Report 2000/2</i>. • E.W.M.T. Westerhout, 1999, The future of the Dutch health insurance system, <i>CPB Report 1999/4</i>. • Bartelsman, E.J., and P.A. ten Cate, 1998, In reply to 'Competition in health care: A Dutch experiment', <i>CPB Report 1998/2</i>. • Bartelsman, E.J., and P.A. ten Cate, 1998, Competition in health care: A Dutch experiment, <i>CPB Report 1997/4</i>. • CPB, 2002, <i>Keuzes in kaart 2003-2006; economische effecten van acht verkiezingsprogramma's</i>, CPB Special Publication 39. • CPB, 2002, <i>How does pharmaceutical marketing influence doctor's prescribing behaviour?</i>, CPB Special Publication 38. • CPB, 2001, Premiehoogte en concurrentie in het nieuwe zorgstelsel, CPB Communication November 2001. • Mot, E.S., 2002, Paying the medical specialist (thesis), November 2002, ISBN 90-9016300-X. • Van den Berg Jeths, A., and G.W.M. Peters-Volleberg (eds.), 2002, Ethical drugs and medical devices: trends and dilemmas, in Dutch, CPB/SCP/RIVM. • Douven, R., E.S. Mot and E.W.M.T. Westerhout, 2001, Regulated competition, too good to be true?, in Dutch, in <i>ESB Dossier Zorgvuldig Vernieuwen</i>, 14 June.
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Theme E: Welfare state and labour market

Model: MOSI

<i>Description</i>	<p>MOSI is a simultaneous micro simulation framework, written in SAS, modelling the financial accounts of some 20 social security schemes.</p> <p>Interrelations between the financial accounts of the various schemes as well as those between allowances and contributions and (pay-roll) tax returns are accounted for. The model consists of a macro part and a part with micro income data. The micro data part derives net income from several gross income components. The macro part simultaneously derives aggregate allowances, contributions and taxes.</p>
<i>Benchmarks</i>	<p>No comparable model exists for other countries; the social security system in the Netherlands is unique.</p>
<i>Applications</i>	<p>The Social security unit uses MOSI to forecast the development of revenues, expenditures and assets of the social security funds. The model is also used to calculate the revenues of the wage and income tax (not a part of social security). Furthermore, the model is used for analysing alternative financing regimes.</p>
<i>Maintenance</i>	<p>Regular maintenance in order to keep in track of actual or planned changes in the financial regime. The data base of the macro part is updated yearly.</p>
<i>Revisions</i>	<p>The micro data base underlying the model will be updated, replacing the tax-form-based household data for 1994, which have been used until now, by a similar but larger data set for the year 2001.</p>
<i>Publications</i>	<p>-</p>

Theme E: Welfare state and labour market

Model: MIMOS-1 and MIMOS-2

<i>Description</i>	The model MIMOS-1 calculates average labour costs and the wedge (labour costs divided by net earnings of employees) for a representative sample of employees. The model MIMOS-2 calculates real disposable income for a representative sample of households (excluding self-employed). Both models can be used to compute replacement rates (net benefits divided by net earnings of employees).
<i>Benchmarks</i>	Benchmarks are the TAXSIM model of NBER, the TAXBEN model of IFS and EUROMOD of the University of Cambridge.
<i>Applications</i>	The models are used for short- and medium-term forecasting and for policy analysis.
<i>Maintenance</i>	The parameters (tax rates, social security premiums, change of contract wages and benefits, inflation, premium health insurance, change of housing rents) are updated four times a year (1 month). Once a year data from the National Accounts are updated (1 month). Once in three or four years the sample of micro data is renewed (3 months).
<i>Revisions</i>	CPB intends to include the impact of municipal income policy on purchasing power, wedge and replacement rate (6 months). For the analysis of purchasing power CPB has planned to switch from a data set that is based on a household survey (WBO) to a set of micro data that is based on tax forms (IPO) (12 months).
<i>Publications</i>	<ul style="list-style-type: none">• Verhoeve, M., 2000, Een nieuwer microdatabestand voor MIMOS-1 (A new micro data base for MIMOS-1), in Dutch, CPB Internal communication I/2000/10.• Terra-Pilaar, P.A., and R.J. Waaijers, 2002, De koopkrachteffecten van de gewijzigde belastingheffing op vermogen in 2001 (Purchasing power effects of amended tax rules with respect to wealth in 2001), in Dutch, CPB Memorandum 1.

Theme E: Welfare state and labour market

Model: Actuaris

<i>Description</i>	Actuaris is a model of the Dutch supplementary pension sector. It is deterministic and developments in interest rates, wages, labour participation, etc. are exogenously given. It contains several actuarial methods to calculate pension rights and contribution rates.
<i>Benchmarks</i>	Pre-funded supplementary pensions are in most countries of minor importance. In the Netherlands only the Pensions and insurance supervisory authority developed a model for the supplementary pension sector.
<i>Applications</i>	The model is used to analyse long-term developments in supplementary pensions.
<i>Maintenance</i>	There is no maintenance on a regular basis.
<i>Revisions</i>	On an incidental basis the model is adapted to specific policy questions related to long-term developments in supplementary pensions.
<i>Publications</i>	<ul style="list-style-type: none">• Achahboun, R., 2001, A macro forecasting model for the Dutch pension sector, in Dutch, CPB Memorandum, II/2001/18.

Theme E: Welfare state and labour market**Model: MIMIC**

<i>Description</i>	<p>MIMIC is an applied general equilibrium model for the labour market. One specific feature of the model is that it endogenizes both the (natural) rate of unemployment and the labour supply (both in hours and in persons).</p> <p>Another is that the labour supply decision is modelled on a low aggregation level (for about 40 types of households). This allows us to incorporate actual tax and premium institutions. Moreover, it enables us to explore both generic and specific policies.</p>
<i>Benchmarks</i>	<p>MIMIC combines AGE modelling methodology, as applied by Piggot and Whalley (1985), Ballard (1985) and Jorgenson and Yun (1986) with modern labour market economics developed by Pissarides (1990) and Layard, Nickell and Jackman (1991).</p>
<i>Applications</i>	<p>Analyses of policies in the field of taxation, social security and labour market institutions.</p>
<i>Maintenance</i>	<p>Keeping institutional equations up to date.</p>
<i>Revisions</i>	<p>After a model evaluation in 2001, CPB decided to scale down MIMIC into a core version, which would then serve as basis for future model extensions. The core version is expected to feature improved theoretical consistency, more room for welfare analysis of policy options, an improved empirical underpinning, greater transparency, more flexibility in tackling new policy questions, more flexibility in updating the database of the model, and fewer computational problems. In the second half of 2002 the model vision project started; work continues in 2003.</p>
<i>Publications</i>	<ul style="list-style-type: none">• Graafland, J.J., R.A. de Mooij, A.G.H. Nibbelink and A. Nieuwenhuis, 2001, <i>MIMICing Tax Policies and the Labour Market</i>, Contributions to Economic Analysis, Elsevier Scientific Publishers.

Theme E: Welfare state and labour market

Model: Health-care model

<i>Description</i>	Empirical macroeconomic model founded on microeconomic theory. Describes the major health care sectors, like hospitals, general practitioners, specialists, nursing homes etc. Special attention is given to the institutional setting of the health care sector.
<i>Benchmarks</i>	No comparable model exists in other countries. Microeconomic foundation follows international literature on health economics.
<i>Applications</i>	Medium-term forecasting and policy analysis of volume growth and costs in sub sectors of the health care sector.
<i>Maintenance</i>	The model describes the current status of the health care sector. Approximately 1 fte is used to keep the model up to date and to implement new modules.
<i>Revisions</i>	The inclusion of endogenous waiting lists in cure sectors, the planned introduction of a DRG-like financing scheme for specialists and hospitals, and the changing role of health insurers linked to the shift from a policy of supply restriction and cost containment toward a more demand-driven strategy.
<i>Publications</i>	<ul style="list-style-type: none"> • Folmer, C., R. Douven and E. van Gameren, 2001, A scenario for health expenditures 2003-2006, CPB Document 7 (inDutch). • Douven, R., 2000, Regulated competition in health insurance markets, CPB Research Memorandum 171.

Theme E: Welfare state and labour market

Model: GAMMA

<i>Description</i>	GAMMA is an intertemporal applied general equilibrium model with overlapping generations of households. It assumes exogeneity of the interest rate (small open economy concept), perfect substitutability of domestic and foreign goods and competitive markets for production factors. The population is divided into 99 cohorts, of which only the cohorts with ages between 20 and 65 participate on the labour market. The model includes public pensions (defined benefit and financed on a PAYG basis), supplementary pensions (also defined benefit but financed on the basis of a funded scheme) and private savings (defined contribution, funded scheme).
<i>Benchmarks</i>	GAMMA applies the Auerbach-Kotlikoff (1987) concept to the Dutch economy.
<i>Applications</i>	Analyses of ageing, issues that concern saving and investment flows, public debt policies, policies that interfere with capital accumulation decisions (physical as well as human capital), policies with respect to pension funds.
<i>Maintenance</i>	Does not apply.
<i>Revisions</i>	Does not apply; the first operational version of the model has just been completed.
<i>Publications</i>	<ul style="list-style-type: none">• Draper, D.A.G., and E.W.M.T. Westerhout, 2002, Ageing, the Sustainability of Public Finance and the Interest Rate: An Analysis with the GAMMA Model, <i>CPB Report 2002/4</i>.

Theme F: Physical and regional aspects

Activity: Energy

<i>Contents</i>	<p>Special studies</p> <p>Cross-country analysis of the European electricity markets: what are the similarities and differences between the various EU countries since liberalisation of the electricity markets has taken off? Will the various regional markets ever be fully integrated? Which factors hamper the development towards a competitive European market?</p> <p>Cost-benefit analysis of policies to secure the supply of energy. The research is directed to all relevant energy carriers (oil, natural gas, coal and electricity), to short, medium- and long-term risks, and to domestic and international policy options.</p> <p>Long-term energy scenarios.</p> <p>Activities on a regular basis</p> <p>Making forecasts of international energy prices and domestic energy production, consumption, exports, and imports.</p>
<i>Relevance</i>	<p>The activities done on a regular basis contribute to CPB's general commitment of making periodically forecasts of the Dutch economy. The cross-country analysis will also contribute to that goal, although in a less direct way. The results of that study will be used to improve the forecasting methodology. The cost-benefit analysis is requested by the Dutch Ministry of Economic Affairs with the aim of improving both the domestic policies on security of supply and the Dutch contribution to the international policy debate on this subject.</p>
<i>Resources</i>	<p>2001: 2 + 2 fte.</p> <p>The forecasting activities on a regular basis demand yearly nearly two full-time equivalents. The total resources needed in the special studies are about the same. A large part of the cost-benefit project will be carried out with the help of experts from outside CPB, as the internal capacity is insufficient otherwise. The Ministry of Economic Affairs has made financial resources available to CPB in order to finance the hiring of those experts (from five different institutions).</p>

<p><i>Methods</i></p>	<p>Empirical research</p> <ul style="list-style-type: none"> • Cross-country analysis of historical developments on the European electricity markets; • In-depth analysis of some major disturbances in the supply of energy occurred in various countries during the past two decades; <p>Theoretical analysis, directed to subjects such as:</p> <ul style="list-style-type: none"> • Cournot versus Bertrand competition; • Intertemporal decision-making by natural gas producers at oligopolistic markets; • Consequences of limited grid capacities on competition. <p>These results of the empirical and theoretical analysis are used in the development of the models of the European energy markets:</p> <ul style="list-style-type: none"> • ELMAR (model of the European electricity market). • NATGAS (model of the European natural gas market). <p>These models are linked: the natural gas demand by power plants is an element in the demand equation in NATGAS, while the natural gas price affects the gas demand by power plants.</p> <p>Results from all approaches are extensively discussed with experts from outside CPB, especially during CPB workshops and the presentation of papers at international conferences.</p>
<p><i>Plans</i></p>	<p>In the short term</p> <ul style="list-style-type: none"> • International workshop with representatives from official authorities (government, regulators, international institutions (EU)), multinationals active in electricity generation, and research; • Report on the cross-country analysis of European electricity markets; • Report on the cost-benefit analysis of policies to secure the energy supply; • Discussion Papers on the modelling of the electricity and natural gas market; • Several conference papers; <p>CPB's long-term ambition is to capture a role in the international debate on energy security and competition at the energy markets.</p>
<p><i>Output</i></p>	<ul style="list-style-type: none"> • Lijesen, MG., 2000, The effect of the access-pricing regime on wholesale natural gas prices, paper presented at the (IAEE) Annual European Energy Conference 2000, Bergen, Norway. See also theme D.

	<ul style="list-style-type: none"> • Lijesen, M.G., 2001, Welfare effects of vertical integration in energy distribution, paper presented at the 28th EARIE-conference, Dublin, Ireland, 30/8-2/9. See also theme D. • Lijesen, M.G., H.J.B.M. Mannaerts, M. and Mulder, 2001, Will California come to Europe?, paper presented at the EARIE 2001, special session on the California crisis, Dublin, Ireland, 30/8-2/9. • Dissers, T.H.J., and M. Mulder, 2001, Metaalmarkten en de conjunctuur, <i>Economisch Statistische Berichten</i>, nr. 4332, p.852-853, November 2. • Kingma, D., and M. Mulder, 2001, Call on OPEC bepaalt olieprijs, <i>Economisch Statistische Berichten</i>, p.969-970, December 14. • CPB/RIVM, 2002, <i>Economie, energie en milieu: een verkenning tot 2010</i>, Sdu Publishers, The Hague. • Kingma, D., M.G. Lijesen, H.J.B.M. Mannaerts and M. Mulder, 2002, Concurrentie op de energiemarkt, <i>Economisch Statistische Berichten</i>, pp. 156-158, February 22. See also theme D. • Boonekamp, P.G.M. (ECN), H.J.B.M. Mannaerts, H.H.J. Vreuls (Novem) and B. Wesselink (RIVM), 2001, Protocol monitoring energiebesparing, <i>ECN Beleidsstudies</i>. • Kingma, D., M.G. Lijesen, H.J.B.M. Mannaerts and M. Mulder, 2002, Liberalisation of the energy markets: an outlook towards 2010, paper prepared for the 25th Annual International Conference of the IAEE (International Association of Energy Economics), Aberdeen, Scotland, UK, June 26-29. See also theme D. • Kingma, D., M.G. Lijesen and M. Mulder, 2002, Gas-to-gas competition versus oil price linkage, paper prepared for the 25th Annual International Conference of the IAEE (International Association of Energy Economics), Aberdeen, Scotland, UK, June 26-29. • Mannaerts, H.J.B.M., and D. Kingma, 2002, Green electricity production in liberalised European energy markets, paper prepared for the 25th Annual International Conference of the IAEE (International Association of Energy Economics), Aberdeen, Scotland, UK, June 26-29. See also theme D. • Lijesen, M.G., and H.J.B.M. Mannaerts, 2002, Welfare effects of national nuclear policies in Europe, paper prepared for the 25th Annual International Conference of the IAEE (International Association of Energy Economics), Aberdeen, Scotland, UK, June 26-29.
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	<ul style="list-style-type: none">• Lijesen, M.G., and H.J.B.M. Mannaerts, 2002, Carbon dioxide differentiation of electricity taxes: an assessment of environmental and economic effects, paper prepared for the 25th Annual International Conference of the IAEE (International Association of Energy Economics), Aberdeen, Scotland, UK, June 26-29.• Lijesen, M.G., H.J.B.M. Mannaerts and M. Mulder, 2002, Will California come to Europe? A numerical simulation, <i>Journal of Industry, Commerce and Trade</i>, vol.2.
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Theme F: Physical and regional aspects

Activity: Guidelines for cost-benefit analyses

<i>Contents</i>	Creating, maintaining and improving a set of guidelines for cost-benefit analyses ('OEEI-leidraad').
<i>Relevance</i>	In March 2001, the Cabinet decided that for all public investment programmes a cost-benefit analysis has to be made according to this set of guidelines. In practice, CPB has been involved, in one way or another, in the analysis of all major public investment programmes. Recently, the technique has been used to analyse other types of public policies as well.
<i>Resources</i>	2001 1 fte
<i>Methods</i>	<ul style="list-style-type: none"> • Studying the economic literature. • Learning from experiences abroad. • Obtaining feedback from academics and practitioners through seminars etc. • Learning-by-doing.
<i>Plans</i>	<ul style="list-style-type: none"> • Improving the set of guidelines according to the various recommendations: a) the valuation of travel time; b) the valuation of external economies; c) the valuation of risk and flexibility; d) the valuation of quality improvements (e.g. improved punctuality). • Fostering the use of cost-benefit analysis techniques in areas of public policy outside transport, such as water management, housing, security of electricity supply and safety issues.
<i>Output</i>	<ul style="list-style-type: none"> • Presentations for groups of policymakers and for the informed public. • Conferences organised in 2000 and 2002. • CPB and NEI, 2000, <i>Evaluation of infrastructure projects: a guideline for cost-benefit analysis</i> ('OEEI-leidraad'), pp. 218, in Dutch and English. • Eijgenraam, C.J.J., C. Koopmans, P.J.G. Tang and N. Verster, 2000, <i>Evaluation of transport infrastructure</i>, <i>CPB Report 2000/1</i>, pp. 36-39. • Van Ewijk, C. van, and P.J.G. Tang, 2000, <i>Valuation of risk in public projects</i>, <i>CPB Report 2000/2</i>, pp. 35-38. • CPB, 2002, <i>Evaluating public investment programmes in practice</i>, in <i>Macroeconomic Outlook 2003</i>, pp. 148-158 (in Dutch).

	<ul style="list-style-type: none">• Commission Risk Valuation, 2002, Risk valuation and public investment programmes (with contributions by CPB staff, in Dutch).• Verkade, E.M. (ed.), 2003, <i>Proceedings of an international conference on the Dutch set of guidelines for cost-benefit analyses</i> ('OEEI') with contributions from Bröcker (Kiel), Goodwin (London), Quinet (Paris) and Rietveld (Amsterdam) Koninklijke de Swart Publishers, The Hague.
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Theme F: Physical and regional aspects

Activity: Transport analysis

<i>Contents</i>	<p>Long-term scenario analyses.</p> <p>Cost-benefit analyses of large public works programmes.</p> <p>Other types of policy analyses in the field of traffic and transport.</p>
<i>Relevance</i>	<p>Informing decisionmakers on the likely growth of transport flows and on the bottlenecks that might occur. The CPB scenarios are widely used by all kinds of institutes and authorities active in the field of transport analysis.</p> <p>CBA's are carried out upon the request of ministries, usually the Ministry of Transport, Public Works and Water Management, or other public authorities, e.g. the Rotterdam Port Authority.</p> <p>Evaluation of investment strategies, price policies and regulatory measures.</p> <p>Usually upon the request of ministries or an effort by CPB itself to put an issue on the policy agenda.</p> <p>Of special interest was the 'ICES-investment round' in 2000/2001. CPB coordinated the analysis of some 200 investment projects, totalling 200 bln euro, in areas like traffic, water management, the environment, scientific research and technology.</p>
<i>Resources</i>	<p>2001 5 fte</p>
<i>Methods</i>	<ul style="list-style-type: none">• For long-term scenario analyses: combining our own qualitative and quantitative expertise with the results from exercises with several large transport models operated by the Ministry of Transport, Public Works and Water Management. In such a set-up, organisation and maintaining quality standards deserves attention.• For the analysis of investment projects cost-benefit analysis is the preferred method.• Other policy issues are evaluated by using appropriate specific methods.

<p><i>Plans</i></p>	<ul style="list-style-type: none"> • A new long-term scenario study of traffic and transport issues ('EFO'); • Analysis of the way local public transport systems are organised; • Monitoring and analysing European transport policies; • Economic analysis of policies to improve public safety: concepts and applications; • Cost-benefit analyses of new public works programmes (e.g. Westerschelde Estuary); • A one-week study tour abroad.
<p><i>Output</i></p>	<p>Unless otherwise stated all publications mentioned below are in Dutch. Presentations for groups of policy makers and for the informed public.</p> <ul style="list-style-type: none"> • CPB, 2000, <i>Towards more efficient environmental policies</i>, Sdu Publishers, pp. 175 (chapters 4 and 5). • CPB, 2001, <i>Welfare impact of 'Maasvlakte 2': cost-benefit analysis of the enlargement of the Rotterdam harbour through land reclamation</i>, CPB & Koninklijke de Swart, pp. 280. • CPB, 2002, <i>Welfare impact of 'Maasvlakte 2': additional cost-benefit analysis of the enlargement of the Rotterdam harbour through land reclamation</i>, CPB & Koninklijke de Swart, pp. 202. • CPB, 2002, <i>Charting choices, economic effects of eight election platforms</i>, CPB & Koninklijke de Swart, pp. 228 (various parts). • CPB, 2002, <i>Consequences of the enlargement of Schiphol: a concise cost-benefit analysis</i>, CPB & Koninklijke de Swart, pp. 148. • CPB, RIVM, RPD and SCP, 2002, <i>Selecting investments: ICES-projects evaluated</i>, CPB & Koninklijke de Swart, pp. 210 (most parts). • Dijkman, H., C. Koopmans and M.W.A.M. Vromans, 2000, Cost-benefit analysis of high speed rail, <i>CPB Report 2000/2</i>. • Groot, W., and C. Koopmans, 2000, Road pricing and welfare, <i>CPB Report 2000/4</i>. • Verkade, E.M., 2001, Extending the Rotterdam port area, <i>CPB Report 2002/1</i>. • Dijkman, H., and A.S. Verrips, 2000, Evaluating government investment plans, <i>CPB Report 2002/3</i>. • CPB, 2001, Scope and limits for public investment programmes: a contribution to 'Exploring the economic structure' ('Verkenning Economische Structuur'), CPB Document 12.

	<ul style="list-style-type: none"> • CPB, 2000, Schiphol: a normal enterprise?, CPB Working Paper 126, pp. 68 (various parts). See also theme D. • CPB, 2000, Cost-benefit analysis of high-speed rail eastwards ('HSL-Oost'), CPB Working Paper 128, pp. 59. • CPB, 2000, Mobility and welfare; economic impact of the National Traffic and Transport Plan 2001-2020 ('NVVP'), CPB Working Paper 132, pp. 53. • CPB, 2000, Second opinion of the cost-benefit analysis 'Zuiderzeelijn', CPB Communication 2000/34. • CPB, 2001, Second opinion of the cost-benefit analysis of improved capacity utilisation of the railway track Utrecht-Arnhem ('Op het goede spoor'), CPB Communication 2001/19. • CPB, 2001, Second opinion of the cost-benefit analysis of a new railway track Roosendaal-Antwerpen ('Vera'), CPB Communication 2001/23. • CPB, 2001, Second opinion of the cost-benefit analysis 'Sluizen IJmuiden', CPB Communication 2001/29. • CPB 2002, Second opinion of the cost-benefit analysis 'IJzeren Rijn', CPB Communication 2002/2. • CPB 2002, Assessing the 'Deltametropool' study and the cost-benefit analysis 'Rondje Randstad', CPB Communication 2002/4. • Dijkman, H., and W. Groot, 2002, Towards cleaner traffic, CBS magazine INDEX, August, vol. 9, no. 7.
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Theme F: Physical and regional aspects

Activity: Spatial and regional analysis

<i>Contents</i>	<p>Research on spatial and regional problems, e.g. land market, big cities.</p> <p>Regional projections for employment and spatial demand for industrial sites and office space (<i>Business Estates Monitor</i>, in Dutch BLM).</p> <p>Cost-benefit analysis for projects with spatial character, e.g. water management, safety.</p> <p>Regional general equilibrium models with attraction and congestion, e.g. to evaluate indirect effects in the cost-benefit analysis of infra structural projects.</p>
<i>Relevance</i>	<p>Several departments pay at least partly for all activities in this field. With exception of the construction of the regional labour market model, all activities are done at the request of departments.</p>
<i>Resources</i>	<p>2001 3.0 fte</p>
<i>Methods</i>	<ul style="list-style-type: none">• Use and improvement of a model for the regional demand for industrial sites and office space (see table).• Construction of a regional model for the labour market.• Cost-benefit analysis and trying to extend this methodology for the application on spatial and security problems.• Taking part of (inter)national workshops on Spatial General Equilibrium models.
<i>Plans</i>	<p>In 2003, the completion of the regional labour market model, the contribution to the long-term study and the CBA of the river project are the main subjects. The regional model will be discussed in external workshops with scientists and policy-makers. Papers on the subject will be presented at two international conferences. After completion of the last two publications attention can focus more on the pro's and con's of spatial general equilibrium models, policies for big cities and the issues on the market for land. It can be expected that the need for cost-benefit analyses continues, e.g. in the field of water management, external security and the combination of infrastructure investment and land use.</p>

<p><i>Output</i></p>	<ul style="list-style-type: none"> • CPB, 2000, On the way to a more efficient national Major Cities Policy, CPB Working Paper 117. • Planning Offices, 2001, <i>tOETS: Ex ante evaluation Fifth Policy Document on Spatial Planning</i>, Rijksplanologische Dienst, The Hague. • CPB, 2001, Mogelijkheden en beperkingen van overheidsinvesteringen: analyse ten behoeve van de Verkenningen Economische Structuur, CPB Document 12. • CPB, 2001, Spatial demand till 2030 in 2 scenarios (contribution), CPB Document 9. • CPB, 2001, Second opinion 'heffingen op grond', CPB Communication 66. • CPB, 2002, Effecten van een Openruimteheffing (ORH), CPB Communication 44. • CPB, 2002, <i>Charting choices: economic effects of eight election platforms</i>, CPB Special Publication 39, in Dutch, Koninklijke de Swart, The Hague. • CPB, 2000, Space for water, CPB Working Paper 130. • CPB, 1999, Business Estates Monitor, Regional developments 2010-2020, CPB Working Paper 112. • CPB, 2001, <i>Business Estates Monitor, The obsolescence of industrial sites: a structure for restructuring</i>, Koninklijke de Swart, The Hague. • CPB 2002, <i>Business Estates Monitor, BEM: method and recent adjustments</i>, Koninklijke de Swart, The Hague.
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Theme F: Physical and regional aspects

Activity: Environment

<i>Contents</i>	<p>Special studies:</p> <p>Long-term climate scenarios.</p> <p>Activities on a regular basis:</p> <ul style="list-style-type: none"> • Analysing the consequences of national and international policies, especially emissions trading, to improve energy efficiency and to encourage the production of renewable energy.
<i>Relevance</i>	<p>The long-term climate scenario study is part of CPB's general long-term study. This project will also contribute to international debates about the future development of the climate problem and policy.</p>
<i>Resources</i>	<p>2001: 1 fte.</p>
<i>Methods</i>	<p>The activities are done by means of the energy models and WorldScan, CPB's model of the global economy.</p>
<i>Plans</i>	<ul style="list-style-type: none"> • Report on long-term climate scenarios. • Journal articles about emissions trading.
<i>Output</i>	<ul style="list-style-type: none"> • Lijesen, M.G., M. Mulder and M.W.A.M. Vromans, 2001, Fiscale vergroening en energie II; economische effecten van verhoging en verbreding van de Regulerende Energiebelasting, CPB Document 6. • Mulder, M., 2001, Klimaatbeleid in Nederland, <i>Economisch Statistische Berichten</i>, Dossier Klimaatbeleid, 11 October, pp. D21-D22. • Mulder, M., and M.G. Lijesen, 2002, Klimaatbeleid: heffen of handelen?, <i>Economisch Statistische Berichten</i>, 26 April, blz. 328-330 • Mulder, M., 2002, Emissions trading in the Netherlands: the optimal route towards an international scheme?, <i>CPB Report</i>, 2002/1. • Broer, D.P., M. Mulder and M.W.A.M. Vromans, 2002, Economische effecten van nationale systemen van CO₂-emissiehandel; nationale dilemma's bij een mondiaal vraagstuk, CPB Document 18. See also theme D. • Mulder, M., 2002, The Dutch climate policy debate: an economic assessment of different proposals, paper prepared for the Workshop on the Northern Dimension, organised by Government Institute for Economic Research (VATT), Helsinki, Finland, May 30-31.

	<ul style="list-style-type: none"> • Mulder, M., 2002, Economic effects of national emissions trading schemes; national dilemmas within a global issue, paper prepared for the 25th Annual International Conference of the IAEE (International Association of Energy Economics), Aberdeen, Scotland, UK, June 26-29. • Kuik, O. (IVM/VU), M. Mulder and H. Verbruggen (IVM/VU), 2002, CO2 emissions trading in the Netherlands: an assessment of the proposal of the Advisory Committee on CO2-trade, paper prepared for the Workshop on the Design and Integration of National Tradable Permit Schemes for Environmental Protection, University College London, March 25-26. • CPB/RIVM, 2002, <i>Economie, energie en milieu: een verkenning tot 2010</i>, CPB Special Publication 37, Sdu Publishers, The Hague.
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Theme F: Physical and regional aspects

Model: Regional labour market model

<i>Description</i>	Model under construction for the labour market in 40 regions in the Netherlands. National totals are given. Demand is divided into 18 branches of industry (same detail as ATHENA). Both commuting and migration are modelled and depend on some characteristics of the population. Output: regional population, labour force, employment and unemployment plus commuting and migration.
<i>Benchmarks</i>	Model in the tradition of structural empirical models. Shift and share models. Spatial interaction models.
<i>Applications</i>	Simultaneous projections for regional employment and population as inputs for others inside and outside CPB. Analysis of policies with a regional or a spatial component e.g.: <ul style="list-style-type: none">- Spatial effects of infra structural investment.- Effects of the urbanisation in the west of the Netherlands.- Regional issues of the northern provinces.- Issues of larger cities.
<i>Model maintenance</i>	Maintenance of an up-to-date historical database. Construction of a model with consistent regional database that is also consistent with NA.
<i>Model revisions</i>	Not relevant.
<i>Publications</i>	Verkade, E.M., 2002, A new regional labour market model for the Netherlands, <i>CPB Report 2002/4</i> .

Theme F : Physical and regional aspects

Model : Business Estates Monitor (BEM)

<i>Description</i>	<p>The model predicts spatial demand on industrial sites and office locations by region (40 regions) and terrain type (3 types). Important exogenous variables in the model are regional employment by branch (26 branches) and terrain-coefficients (the ratio of spatial demand and employment).</p> <p>Regional employment by branch is derived from the regional labour market model; terrain-coefficients are based on data from surveys. Future shifts in spatial demand by type of location (4 location types) are taken from trends in the past.</p>
<i>Benchmarks</i>	<p>The planning of spatial demand for industrial sites in the Netherlands is mostly based on the method of terrain-coefficients. The BEM publication of 2002 (BEM: method and recent adjustments) discussed also some models outside the CPB.</p>
<i>Applications</i>	<p>The forecasts, usually made in the framework of CPB's long-term study, are used not only by the Ministry of Economic Affairs and the Ministry of Housing and Spatial Planning, but also by regional authorities.</p>
<i>Model maintenance</i>	<p>The model was developed in 1997/1998 at the request of the Ministry of Economic Affairs and the Ministry of Housing and Spatial Planning. Maintenance is expected to take 0.3 fte.</p>
<i>Model revisions</i>	<p>Since 1997 great efforts have been made to improve the empirical foundation of the model. Another important amelioration was the extension of the model with non formal, unregistered sites (mostly in urban areas). Further improvements will be introduced – including the use of cross section analysis.</p>
<i>Publications</i>	<p>(All publications mentioned below are in Dutch):</p> <ul style="list-style-type: none"> • Schuur, J., A.S. Verrips and P.H.A.M. Arts, 2001, <i>The obsolescence of industrial sites : a structure for restructuring</i>, CPB Special Publication 31. • Jansen, C.L., J. Schuur and M. Stoffers, 2001, <i>Spatial demand until 2030 in 2 scenarios (contribution)</i>, CPB Document 9. • Arts, P.H.A.M., J. Blokdijk, J. Ebregt and M.J. Stoffers, 2001, <i>BEM: method and recent adjustments</i>, CPB Special Publication 36.

Theme F: Physical and regional aspects

Models: Energy models

<i>Description</i>	<p>The following energy models are used to make forecasts of energy prices, production and demand:</p> <ul style="list-style-type: none">• NATGAS: a model of the European natural gas market (output: wholesale prices, international trade, production per country)• ELMAR: a model of the European electricity market (output: wholesale prices, international trade, production per technique per country)• Energy retail model: a model of the domestic energy retail market (output: end user prices)• NEMO: a model of the domestic energy demand (output: efficiency, national energy balance)• STREAM: a model of the production and consumption of materials like steel and aluminum (other output: energy use per sector)• ABM: a model to calculate domestic prices of various energy products, government's gas returns and value added of domestic energy sectors <p>The forecasts of oil prices are made with the help of a rather aggregated model of the global oil market.</p>
<i>Benchmarks</i>	<p>The energy economic literature offers a large number of benchmark models and studies, like</p> <ul style="list-style-type: none">• Smeers, Y., 1997, Computable Equilibrium Models and the Restructuring of the European Electricity and Gas Markets, <i>The Energy Journal</i>, vol. 18, No. 4.• Withagen, C., 1990, Optimal extraction of non-renewable resources, in J.C.J.M. van de Berg (ed.), <i>Handbook of Environmental and Resource Economics</i>, Edward Elgar Publishing Limited, 49-58.• Chermak, J.M., J. Crafton, S.M. Norquist and R.H. Patrick, 1999, A hybrid economic-engineering model for natural gas production, <i>Energy Economics</i> 21, 67-94.• Amundsen, E.S., 1991, Seasonal fluctuations of demand and optimal inventories of a non-renewable resource such as natural gas, <i>Resources and Energy</i> 13, 285-306.

	<ul style="list-style-type: none"> • Atkinson, S.E., and R. Halvorson, 1984, Parametric efficiency tests, economies of scale, and power input demand in US electric power generation, <i>International Economic Review</i>, No 3: pp. 648-662. • Berry, D.M., and F.G. Mixon, 1999, Multi product outputs and scale economies in electric power production: some new estimates, <i>Review of Industrial Organisation</i> 15: pp. 65-76. • Betancourt, R.R., and J.H.Y. Edwards, 1987, Economies of scale and the load factor in electricity generation, <i>Review of Economics and Statistics</i>, pp 551-556.
<i>Applications</i>	The above-mentioned models are used in the 'energy' activity (both special studies and regular work).
<i>Maintenance</i>	NATGAS, ELMAR, the energy retail model and NEMO were recently made operational in ISIS. In 2002, an assessment was made of the management of these models by the department OMD. ABM and STREAM will be transferred to ISIS in 2003.
<i>Revisions</i>	NATGAS and ELMAR are going to be developed further in the project cost-benefit analysis of policies to secure the supply of energy (see 'energy' activity). Researchers from universities and other research institutes will contribute to that development. In 2002, a start was made to develop a new version of the oil market model.
<i>Publications</i>	<ul style="list-style-type: none"> • Mannaerts, H.J.B.M., 2000, STREAM, a partial equilibrium model for material flows in the economy, paper presented at the Conaccount meeting: Sustainable development – model and statistics, Stockholm, Sweden, April 25-27. • Kingma, D., and M. Mulder, 2001, A Model of Western European Natural Gas Supply in a Liberalised Market, paper presented at the 24th Annual International Conference of the IAEE, Houston, USA, April 25-27. • Lijesen, M.G., 2002, End user prices in liberalised energy markets, CPB Discussion Paper 16.

Miscellaneous literature, not attributable to one of the themes:

Don, F.J.H., 2000, The rank condition for forward looking models, R.D.H. Heijmans, D.S.G. Pollock and A. Satorra (eds), *Innovations in Multivariate Statistical Analysis: A Festschrift for Heinz Neudecker*, Kluwer Dordrecht.

Hoek, T.H. van, R.A. de Mooij, P.W.C. Koning, J.M. Pomp and E.W.M.T. Westerhout, 2000, Keuzes voor de lange termijn, *Economisch Statistische Berichten*, 8 September.

CPB, 2000, *Trends, dilemma's en beleid; essays over ontwikkelingen op langere termijn*, Special Publication 24, Sdu/CPB, The Hague.

Florax, R.J.G.M., H.L.F. de Groot and R.A. de Mooij, 2002, Meta analysis: a tool for upgrading inputs of macroeconomic policy models, Tinbergen Institute Discussion Paper 041/3.

Florax, R.J.G.M., H.L.F. de Groot and R.A. de Mooij, 2002, Meta analysis in policy-oriented economic research, *CPB Report 2002/1*.

Florax, R.J.G.M., H.L.F. de Groot and R.A. de Mooij, 2002, Analyseer de Analyses, *Economisch Statistische Berichten*, 1 February.

List of abbreviations:

Acht	Ambitieux, Concreet, Haalbaar, Toetsbaar Ambitious, Concrete, Feasible, Verifiable
AGE	Applied General Equilibrium
AGIR	Ageing, health and retirement in Europe (ENEPRI)
AIECE	Association d'Instituts Européens de Conjoncture Economique Association of European Conjunction Institutes Vereniging van Europese Conjunctuurinstituten
AN	Ageing in the Netherlands Vergrijzing in Nederland
ATL	Automatic Tape Library
AVV	Adviesdienst Verkeer en Vervoer Transport Research Center
BLM / BEM	Bedrijfslocatie Monitor (in Dutch) Business Estates Monitor (in English)
BP-filter	Band Pass filter
cao	Collectieve arbeidsovereenkomst Collective labour agreement
CBA	Cost-Benefit Analysis Kosten-batenanalyse
CBS	Centraal Bureau voor de Statistiek Statistics Netherlands
CEC	Centrale Economische Commissie Central Economic Commission
CEP	<i>Centraal Economisch Plan</i> <i>Central Economic Plan</i> (CPB publication)
CEPR	Centre for Economic Policy Research, London Centrum voor Economisch Beleidsonderzoek, Londen
CF-filter	Christiano-Fitzgerald filter
CMPO	Leverhulme Centre for Market and Public Organisation (Bristol)
CPB	Centraal Planbureau CPB Netherlands Bureau for Economic Policy Analysis
CPC	Centrale Plancommissie Central Planning Commission
DBC	Diagnose Behandel Combinatie Diagnostic and Treatment Combination

DEMVEL	Demographic uncertainty and the sustainability of social welfare systems
DIW	Deutsches Institut für Wirtschaftsforschung, Berlin German Institute for Economic Research, Berlin
DLT	Digital Linear Tape
DRG	Diagnosis Related Groups
EARIE	European Association on Research in Industrial Economics, Lausanne
EC	European Commission Europese Commissie
ECB	European Central Bank Europese Central Bank
ECN	Energieonderzoek Centrum Nederland Netherlands Energy Research Foundation
EFO	Economie en fysieke omgeving Economy and the environment
ELIS	Equilibrium Labour Income Share Evenwichtige AIQ
ENEPRI	European Network of Economic Policy Research Institutes
ESB	<i>Economisch Statistische Berichten</i> (Dutch Economics Magazine)
EU	European Union Europese Unie
EUROFRAME	European Forecasting Research Association for the Macro Economy
fte	Full-time equivalents Arbeidsjaren
GDP	Gross Domestic Product Bruto Binnenlands Product
GTAP	Global Trade Analysis Project
HBO	Higher Vocational education Hogere Beroepsopleiding
HSL	Hogesnelheidslijn High speed train
HP-filter	Hodrick-Prescott filter
HRM	Human Resource Management
IAEE	International Association of Energy Economics
ICES	Interdepartementale Commissie Economische Structuur Interdepartmental Committee for Economic Structure
ICT	Information communication technology
IFS	Institute for fiscal studies

IMF	International Monetary Fund Internationaal Monetair Fonds
IP	Internet Protocol
IPO	Inkomens Panel Onderzoek van het CBS Income Panel Survey of Statistics Netherlands
IT	Information Technology Informatie Technologie
IZA	Forschungsinstitut zur Zukunft der Arbeit, Bonn Institute for the Study of Labor, Bonn
MEV	<i>Macro Economische Verkenning</i> <i>Macroeconomic Outlook</i> (CPB publication)
NA	National Accounts Nationale Rekeningen
NAIRU	Non-accelerating inflation rate of unemployment Werkloosheidsniveau waarbij de inflatie niet hoeft op te lopen.
NBER	National Bureau for Economic Research
NEI	Nederlands Economisch Instituut ECORYS-NEI Economic research and consulting organisation
NVVP	Nationaal Verkeers- en Vervoersplan National Traffic and Transport Plan
OECD	Organisation for Economic Cooperation and Development Organisatie voor Economische Samenwerking en Ontwikkeling
OEEI	Onderzoekprogramma Economische Effecten Infrastructuur Research Programme on the Economic Effects of Infrastructure
OLIS	OECD OnLine Information Services
ORH	Openruimteheffing Open spaces fee
PAYG	Pay as you go
R&D	Research & Development Onderzoek en Ontwikkeling
RIVM	Rijksinstituut voor Volksgezondheid en Milieu National Institute for Public Health and the Environment
RPB	Ruimtelijk Planbureau Netherlands Institute for Spatial Research
RPD	Rijksplanologische Dienst National Physical Planning Agency (now RPB)
SAS	Statistical Analysis System (Data Warehousing Company)
SCP	Sociaal en Cultureel Planbureau,

	Social and Cultural Planning Bureau
Sdu	Sdu Uitgevers Sdu Publishers
SER	Sociaal-Economische Raad Social Economic Council
SWOT	Strengths, Weaknesses, Opportunities, Threats Sterktepunten, Zwaktepunten, Kansen en Bedreigingen
TCP	Transmission Control Protocol
VATT	Government Institute for Economic Research (Finland)
WAO	Wet op de Arbeidsongeschiktheidsverzekering Disability Insurance Act
WBO	Household survey Woningbehoefteonderzoek
WEB	Former CPB World model
WIFO	Österreichisches Institut für Wirtschaftsforschung (Wien) Austrian Institute for Economic Research, Vienna
WTO	World Trade Organisation Wereldhandelsorganisatie
YPP	Young Professionals Programme