



DEVELOPING AND APPLYING SPECIFIC MODELS FOR THE CZECH ECONOMY

REFERENCE: PPA03/CZ/9/1

Final Report

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TABLE OF CONTENTS

1	Introduction	1
2	Project progress last quarter of 2005.....	2
2.1	Introduction	2
2.2	Progress in 4 th quarter of 2005.....	2
3	Resource Utilisation.....	4
3.1	Inception Phase.....	4
3.2	Result 1: Improve Quarterly Model and adapt it to answer specific policy questions	4
3.3	Result 2: Improve General Equilibrium Model and adapt it to answer specific policy Issues	5
3.4	Result 3: Training of Civil Servants in Policy formulation, based on outcome of the models	5
3.5	Final Phase	6
3.6	Total Resource utilisation per 31 December 2005	7
3.7	Expenditure	8
4	Review on Project Implementation.....	9
4.1	Situation at the start of the project.....	9
4.1.1	Ministry of Finance	9
4.1.2	Ministry of Industry and Trade.....	10
4.1.3	Project Advisory Committee	10
4.2	Result 1: Improve QEM and adapt to policy questions.....	11
4.2.1	Ministry of Finance	11
4.2.2	Ministry of Industry and Trade.....	11
4.3	Result 2: Improve GEM and adapt to policy questions.....	11
4.3.1	Ministry of Finance	11
4.3.2	Ministry of Industry and Trade.....	12
4.4	Training Civil Servants in policy formulation.....	12
4.4.1	Ministry of Finance	12
4.4.2	Ministry of Industry and Trade.....	12
4.5	Final phase.....	13
4.6	Assessment	13

Annex 1: Logical Framework

1 INTRODUCTION

Under the PSO Pre-accession Programme, EVD Internationaal has financed the project “Developing and Applying Specific Economic Models for the Czech Economy” (PPA03/CZ/9/1)¹. The project supported both the Ministry of Finance (MoF) and the Ministry of Industry and Trade (MIT) in developing analytical instruments for the preparation of their economic policies. SEOR BV, a company affiliated to the Erasmus University Rotterdam (EUR) has executed the project. The contract for the project was signed end-December 2003 and the project started January 1st 2004.

This project fitted well in the purpose defined for the PSO Pre-accession Programme, which aims at assisting candidate member states in Central Europe, among them the Czech Republic at the time of the start of the project, in meeting the criteria for EU membership through projects dealing with the (consequences of) implementation of European legislation.

The project and its predecessor¹ were largely aimed at the development of formal tools and on their use in economic policy formulation and they have indeed contributed to the preparation of EU membership and to meeting the requirements formulated by the European Commission for countries that join the Communities. This project assisted the Czech Government, and in particular the two ministries mentioned, with further development of the models available in the ministries and with adapting these to specific Czech policy issues. It also involved training of the staff of the counterpart organisations in economic modelling and supporting them in incorporating the modelling activities in their regular activities.

This final report on the project gives an overview of the activities in the project and its achievements. The document starts with a more detailed description of the activities during the last quarter (the 4th quarter of 2005) of the project.

¹ “Assistance to the Czech Ministry of Finance in Building a model of the Czech Economy”, Projectnr: PPA01/CZ/9/2.

2 PROJECT PROGRESS LAST QUARTER OF 2005

2.1 INTRODUCTION

With December 31st 2005 as the end date of the project the activities during the fourth quarter of last year were largely focused on finalisation of the project final papers. The design, estimation and calibration, and the updating of the models developed have been fully transferred to staff of the two ministries. During this quarter the main focus was on application of the models in simulations and occasionally on projections for 2006 and beyond.

The project has presented its results during a seminar in premises of MoF in Smilovice. Staff of MoF and MIT as well as from the Czech National Bank was present at the seminar. During the seminar the models developed within the two 'client' ministries were presented by staff of these two ministries. The team leader discussed the use of models in an economic policy environment during this event.

The finalisation of the project and the preparation of the documents benefited considerably from the visit of two staff members, one from each ministry, to Erasmus University in Rotterdam in December. During their stay both Czech counterparts could spend all their time on finalising the formulation and testing of in particular the General Equilibrium Models developed within respectively MoF and MIT in cooperation with Dutch project staff.

As reported in the previous progress reports the focus of the project has been gradually re-directed towards the use of models in policy discussions rather than on the design and refinements of the models. During the final phase of the project this has resulted in a number of papers that report on these model simulations. These papers are added in separate volumes to this report. These papers have been discussed with other units and departments of both ministries and during the seminar in Smilovice where as mentioned staff of both ministries and other institutions were present.

A continuous problem regarding the parameterisation of the models is the lack of sufficient reliable statistics. Recently the Czech Statistical Office (CSO) has revised the national accounts resulting in major changes in the most important national accounts variables, including GDP. Although such revisions are quite usual also in other countries it seriously complicates the construction of models, simply because they may have a large impact on earlier estimated parameters in the models. As far as possible the project has tried to cope with these changes through re-estimating and again calibrating the coefficients of the models. These revisions appear to have only minor impact on the simulation results of the models.

As was reported in earlier progress reports and discussed during several Project Advisory Committee meetings it appears to be difficult to create interest from (departments of) other ministries in formulating policy questions that can be analysed with the use of the models developed. The ToR mention two ministries in this respect: the Ministry of Regional development and the Ministry of Labour and Social Security. The Ministry of Regional Development is heavily involved in the executing activities regarding 'structural funds' from the European Commission rather than formulating regional development policies. Regarding the Ministry of Labour and Social Security it appears to be difficult to establish regular contacts with potential candidate departments even after repeating attempts of MoF staff. Nevertheless the project has prepared a document on the Czech labour market, in which with the help of model simulations the structural unemployment is analysed.

2.2 PROGRESS IN 4TH QUARTER OF 2005

During this period one of the core members of the project team in the Ministry, who visited the IMF in Washington for a one-month course on macroeconomic modelling returned to

Prague and resumed working on the project. He was mainly active with writing the documentation on the quarterly model. Further the computer programme on the quarterly model has been improved as a result of which the running of the model for policy simulations has been made easier and therefore user-friendlier.

The development of the General Equilibrium Model has continued in both ministries. Although the focus of the GEM in use in MoF differs from the one being developed in MIT the base structure of these two model versions has been kept similar as far as possible. In order to make the two versions of the model as consistent as possible staff of both ministries worked together during this quarter on the last design issues of the models. They further cooperated in running some simulations as well as in the presentation of the model(s) and its (their) results during the seminar in Smilovice. The activities gained much from the two-weeks visit of both members of staff to the Erasmus University in Rotterdam where they were able to work on the model away from daily requests in the ministries. At the moment both versions of the models are operational in MoF and MIT, although it should be recognised that economic models are never final and therefore require continuous refinements on the basis of new information becoming available. The current versions of the models have been used to make projections and simulations for both Ministries.

3 RESOURCE UTILISATION

This section of document reports on the utilisation of resources during the project. Since it covers the whole project period it also includes that resource utilisation during the 4th quarter of 2005.

3.1 INCEPTION PHASE

The Inception period has been implemented as planned and was finalised with the presentation of the Inception Report. Table 3.1 provides the details on the use of human resources.

	Revised Planning 2nd quarter, 2005			Spent			Balance		
	Neth.	Czech	Total	Neth.	Czech	Total	Neth.	Czech	Total
Van der Windt	4	6	10	4	6	10	0	0	0
Van der Windt/Bijwaard	0	0	0	0	0	0	0	0	0
<i>Total Van der Windt</i>	<i>4</i>	<i>6</i>	<i>10</i>	<i>4</i>	<i>6</i>	<i>10</i>	<i>0</i>	<i>0</i>	<i>0</i>
Bijwaard	2	0	2	2	0	2	0	0	0
Knoester	0	0	0	0	0	0	0	0	0
de Haan	0	0	0	0	0	0	0	0	0
<i>Total</i>	<i>6</i>	<i>6</i>	<i>12</i>	<i>6</i>	<i>6</i>	<i>12</i>	<i>0</i>	<i>0</i>	<i>0</i>

3.2 RESULT 1: IMPROVE QUARTERLY MODEL AND ADAPT IT TO ANSWER SPECIFIC POLICY QUESTIONS

The activities during the 4th quarter were mainly focused on fine-tuning of the model in the context of the finalisation of the project. As mentioned above the model, its main features and some results were presented during the seminar in Smilovice. This also required further testing of the model's performance. These tests are not only related to forecasting performance but also whether the model produces plausible results in case exogenous variables change. In order to check on such plausibility the model is regularly applied in estimating the impact of external shocks. The models have been documented and some of the documentation is added in the annex to this paper. Table 3.2 provides the details on the use of human resources. As have been explained in the previous progress report the contribution of Knoester during this quarter was considered not effective. For that reasons not all days allocated to him have been utilised.

	Revised Planning 2nd quarter, 2005			Spent			Balance		
	Neth.	Czech	Total	Neth.	Czech	Total	Neth.	Czech	Total
Van der Windt	11	20	31	11	20	31	0	0	0
Van der Windt/Bijwaard	10	0	10	10	0	10	0	0	0
<i>Total Van der Windt</i>	<i>21</i>	<i>20</i>	<i>41</i>	<i>21</i>	<i>20</i>	<i>41</i>	<i>0</i>	<i>0</i>	<i>0</i>
Bijwaard	5	10	15	5	10	15	0	0	0
Knoester	6	6	12	6	0	0	0	6	6
de Haan	0	0	0	0	0	0	0	0	0
<i>Total</i>	<i>32</i>	<i>36</i>	<i>68</i>	<i>32</i>	<i>30</i>	<i>56</i>	<i>0</i>	<i>6</i>	<i>6</i>

3.3 RESULT 2: IMPROVE GENERAL EQUILIBRIUM MODEL AND ADAPT IT TO ANSWER SPECIFIC POLICY ISSUES

During the last quarter of 2005 GEM in MoF has been adapted further to the requirements in MoF, especially in relation to different tax regimes. The quarter was further used to make the two versions (in MoF and MIT) of this sector model mutually consistent, without giving in on the specific requirements in both ministries. The visit of the two members of staff of both ministries to the Netherlands in December has contributed significantly to this cooperation of the two ministries in this field. During this visit they has worked closely together with Van der Windt in the premises of the Erasmus University. The general structure of the model has been presented in Smilovice during a joint presentation of the two staff members. Table 3.3 presents the use of person days in comparison with the planning. It shows that Van der Windt has spent 2 days in the Netherlands in excess of the number of days planned, whereas he spent 2 days less than planned in the Czech Republic.

	Revised Planning 2nd quarter, 2005			Spent			Balance		
	Neth.	Czech	Total	Neth.	Czech	Total	Neth.	Czech	Total
Van der Windt	5	10	15	7	8	15	-2	2	0
Van der Windt/Bijwaard	0	0	0	0	0	0	0	0	0
<i>Total Van der Windt</i>	<i>5</i>	<i>10</i>	<i>15</i>	<i>7</i>	<i>8</i>	<i>15</i>	<i>-2</i>	<i>2</i>	<i>0</i>
Bijwaard	0	0	0	0	0	0	0	0	0
Knoester	0	0	0	0	0	0	0	0	0
de Haan	13	25	38	13	25	38	0	0	0
<i>Total</i>	<i>18</i>	<i>35</i>	<i>53</i>	<i>20</i>	<i>33</i>	<i>35</i>	<i>-2</i>	<i>2</i>	<i>0</i>

3.4 RESULT 3: TRAINING OF CIVIL SERVANTS IN POLICY FORMULATION, BASED ON OUTCOME OF THE MODELS

The activities in relation to the capacity building components have continued through on-the-job-training. These included discussions on and guidance in modelling in both ministries both in Prague as well as in Rotterdam. In addition quite substantial exchanges of ideas and information has taken place by electronic mail. Table 3.4 shows the overall use of resources in comparison with the planning. For reasons explained in the previous progress report Knoester has spent 4 days less in Prague than foreseen in the planning. Van der Windt

compensates the extra days spent in the Netherlands reported under result 2 with two days less here under result 3. A similar effect is shown for his time spent in the Czech Republic.

	Revised Planning 2nd quarter, 2005			Spent			Balance		
	Neth.	Czech	Total	Neth.	Czech	Total	Neth.	Czech	Total
Van der Windt	3	1	4	1	3	4	2	-2	0
Van der Windt/Bijwaard	2	6	8	2	6	8	0	0	0
<i>Total Van der Windt</i>	5	7	12	3	9	12	2	-2	0
Bijwaard	1	0	1	0	0	0	1	0	1
Knoester	0	6	6	0	2	2	0	4	4
de Haan	7	0	7	7	0	7	0	0	0
Erasmus University	20	0	20	20	0	20	0	0	0
MIT & MOF staff	0	0	0	0	0	0	0	0	0
<i>Total</i>	32	13	45	30	11	41	3	2	5

3.5 FINAL PHASE

The Final Phase went as planned with the presentation of some of the project results during a seminar in premises of MoF in Smilovice. Table 3.5 presents the overall resource utilisation during this phase of the project.

	Revised Planning 2nd quarter, 2005			Spent			Balance		
	Neth.	Czech	Total	Neth.	Czech	Total	Neth.	Czech	Total
Van der Windt	3	5	8	3	5	8	0	0	0
Van der Windt/Bijwaard	2	0	2	2	0	2	0	0	0
<i>Total Van der Windt</i>	5	5	10	5	5	10	0	0	0
Bijwaard	0	0	0	0	0	0	0	0	0
Knoester	0	0	0	0	0	0	0	0	0
de Haan	0	0	0	0	0	0	0	0	0
<i>Total</i>	5	5	10	5	5	10	0	0	0

3.6 TOTAL RESOURCE UTILISATION PER 31 DECEMBER 2005

Table 3.6 summarizes the use of human resources so far and compares these with the resources available. It shows that apart from the resources allocated to Knoester all hunab resources have been utilised according to the revised planning presented in the 2nd quarter of 2005.

	Revised Planning 2nd quarter, 2005			Spent			Balance		
	Neth.	Czech	Total	Neth.	Czech	Total	Neth.	Czech	Total
Van der Windt	26	42	68	26	42	68	0	0	0
Van der Windt/Bijwaard	14	6	20	14	6	20	0	0	0
<i>Total Van der Windt</i>	<i>40</i>	<i>48</i>	<i>88</i>	<i>40</i>	<i>48</i>	<i>88</i>	<i>0</i>	<i>0</i>	<i>0</i>
Bijwaard	7	10	17	7	10	17	0	0	0
Knoester	6	12	18	6	2	8	0	10	10
de Haan	20	25	45	20	25	45	0	0	0
Erasmus University	20	0	20	20	0	20	0	0	0
MIT & MOF staff	0	0	0	0	0	0	0	0	0
<i>Total</i>	<i>93</i>	<i>95</i>	<i>188</i>	<i>93</i>	<i>85</i>	<i>178</i>	<i>0</i>	<i>10</i>	<i>10</i>

3.7 EXPENDITURE

Table 3.7 provides the amounts spent per sub-category and per result. They show that in most cases the actual spending is pretty close to the plans. The progress report on the 3rd quarter of 2005 included a request for using part of the contingencies for expenditures related to the seminar in December. Since MoF has paid for the expenditures of the seminar the use of these funds have not been materialised.

Table 3.7: Expenditures in Euro			
Inception Phase, expenditures			
	Planning	Used	Balance
Time spent in the Netherlands	5.372	5.372	0
Time spent in the Czech Republic	4.506	4.506	0
Travel costs	350	316	34
Living allowances	1.150	1.150	0
Other costs			
<i>Total</i>	<i>11.378</i>	<i>11.344</i>	<i>34</i>
Result 1, expenditures			
Time spent in the Netherlands	25.935	26.274	-339
Time spent in the Czech Republic	23.606	20.120	3.486
Travel costs	2.450	1.657	793
Living allowances	7.130	5.060	2.070
Other costs	1.950	2.092	-142
<i>Total</i>	<i>61.071</i>	<i>55.203</i>	<i>5.868</i>
Result 2, expenditures			
Time spent in the Netherlands	15.095	17.307	-2.212
Time spent in the Czech Republic	21.310	19.808	1.502
Travel costs	2.100	1.654	446
Living allowances	6.670	6.670	0
Other costs	1.250	1.050	200
<i>Total</i>	<i>46.425</i>	<i>46.489</i>	<i>-64</i>
Result 3, expenditures			
Time spent in the Netherlands	27.253	24.905	2.349
Time spent in the Czech Republic	7.297	6.475	822
Travel costs	4.900	5.127	-227
Living allowances	33.750	36.900	-3.150
Other costs	1.587	1.200	387
<i>Total</i>	<i>74.787</i>	<i>74.606</i>	<i>181</i>
Final Phase, expenditures			
Time spent in the Netherlands	4.368	4.368	0
Time spent in the Czech Republic	3.755	3.755	0
Travel costs	350	289	61
Living allowances	920	920	0
Other costs	2.550	2.050	500
<i>Total</i>	<i>11.943</i>	<i>11.382</i>	<i>561</i>
Total, expenditures			
Time spent in the Netherlands	78.023	78.225	-202
Time spent in the Czech Republic	60.474	54.664	5.810
Travel costs	10.150	9.043	1.107
Living allowances	49.620	50.700	-1.080
Other costs	7.337	6.392	945
<i>Total</i>	<i>205.604</i>	<i>199.024</i>	<i>6.580</i>

4 REVIEW ON PROJECT IMPLEMENTATION

4.1 SITUATION AT THE START OF THE PROJECT

At the start of the project two models were available in the two ‘client’ ministries. These models had been developed in a previous project. The first model was a medium term econometric model (QEM), the parameters of which have, as far as possible, been estimated on the basis of quarterly information. The second model was a General Equilibrium Model (GEM), the parameters of which had been calibrated on the basis of the most recent social accounting matrix. A version of GEM was operational within the Ministry of Finance (MoF). This version was oriented to issues relevant for MoF, such as tax and budget policies. Another version of GEM was in use in MIT. In line with MIT’s mandate this version of GEM was focused more on detailing economic sectors and international trade.

The ToR required that project should start up-dating and improving these models, and secondly that they should be adapted for specific policy scenarios. Thirdly, the ToR pointed at the need for further institutionalisation of these models within both ministries. This implied among other things that the model results should get a more significant place in the policy-making exercises of the ministries and the outputs of the models should play a more substantial role in the economic policy discussions. The ToR further suggested to also involving two other ministries in the project, namely the Ministry of Labour and Social Affairs (MoLSA) and the Ministry of Regional Development (MoRD). Both were considered relevant in the Czech economic policy making context.

4.1.1 MINISTRY OF FINANCE

QEM

QEM has been developed with a few main principles in mind. First, the model should be a useful tool for medium term policies implying that both supply and demand should be included. Secondly, it should include as much as possible the main economic mechanisms. It should not have any open ends. The latter is considered important because experience shows that if some important elements are treated exogenously (left outside the model) a model often over- or underestimates the effects of economic policy measures, simply because some feedback mechanisms are not included. On the basis of these principles one of the main features of the model is that it is, as far as possible, based on an integrated set of financial and national accounts. It contains both a description of the real and sector of the economy, and a rather rudimentary monetary sector.

Another choice made from the beginning is that the model should be able to describe both supply and demand in the markets distinguished. The inclusion of a rather detailed supply side was considered important because the main changes in an economy in transition, like the Czech economy, are taking place in the supply side of the economy. During the construction of the model quite a number of experiments have been carried out with different specifications of the supply side of the economy. The CES production approach appears to give the most plausible results in terms of overall model solutions.

The model parameters are calibrated. The calibrated values were checked against econometric estimation of the parameters as far as the data allowed. Although the present version of the model behaves relatively well in the short- and medium term some elements still require attention also after the project. This is in particular the case for the government sector regarding the link between the government statistics that are based upon the IMF Government Financial Statistics (GFS) methodology.

GEM

At the start of the project the GEM was still under construction and therefore was not yet sufficiently reliable for policy scenarios. For that reason one of the main tasks in the early stages of this project was to improve the model. The version of GEM developed for MoF is based on the same general structure as the GEM in use in MIT. However, with a view to the specific activities of MoF and its mandate it is more oriented to tax and fiscal policies, rather than that it is as detailed in terms of economic sectors as the version operational in MIT.

Institutionalisation of the models

Within MoF two groups of staff are responsible for the development of the models. They are working under the guidance of the management of the unit. With the appointment of a new member of staff with experience in modelling a few months prior to the start of the project the unit was strengthened considerably in terms number and skills of staff. The models and the various steps in their development are intensively discussed within the modelling group. They further regularly communicate the model results to the staff of the other units in the department and contribute as such to the discussions on forecasting issues and economic policies.

4.1.2 MINISTRY OF INDUSTRY AND TRADE

During the Inception Period MIT has expressed its needs for analytical tools that are operational. Such tools should not only provide a solid basis for the economic policy discussion the Ministry is involved in, but it should also form the backbone for the regular publication of the Ministry on structural developments in the Czech Economy. At the start of the project it was decided that the models would be developed with a view to contribute to these publications. At the moment a sector model is available within the ministry, which integrates features of general equilibrium model with the sector specifics. This meets the requirements of the Ministry, which is not only interested in macroeconomic details but also in developments of economic sectors.

Institutionalisation of the models

During the previous project two new members of staff were appointed especially for modelling. With a separate unit working on the technical elements of the modelling there existed a danger that the unit works in isolation from the other departments in the ministry that are responsible for analysing main economic developments and for designing economic policies. During the project period this situation has been discussed at several occasions and the main conclusion was that the model activities should become more integrated with other activities in the Ministry. To some extent this has been realised, yet the situation is still far from ideal and continues to require attention from the management. The project has tried to contribute to this by orienting its activities to the economic policy issues the ministry is facing and through trying to translate these in model terms and vice versa. As such a more or less permanent discussion should start between the staff responsible for development and maintenance of the models and the departments that use the results of the modelling exercise.

4.1.3 PROJECT ADVISORY COMMITTEE

As indicated in the ToR a project Advisory Committee (PAC) was established, which has guided and monitored the project. During the project period the Committee has met regularly in the Ministry of Finance. The Czech project staff, and in particular staff of MIT, has acted as secretariat of the PAC and will as such be responsible for all organisational and logistical matters concerning the Committee. The meetings the following members of the PAC were present. In many cases project staff of both ministries were visiting these meetings as well.

- Mrs. Horcicova; Director of the Department of Financial Policies of the Ministry of Finance;
- Mr. Gejdos; Advisor to the Deputy Minister of Industry and Trade;

- Mr. Ivo Hering; Ministry of Industry and Trade;
- Mr. Plandor; Ministry of Industry and Trade
- Dr. Ing. Ales Krejdl, Ministry of Finance (secretary)
- Mrs. Podivinska; National coordinator Ministry of Finance
- Mrs. Klappe-Linsen; representative of the Royal Netherlands' Embassy
- Mr. Norbert van der Straaten; responsible Project Officer of Senter (chair);
- Mr. Nico van der Windt; team leader of the project (secretary).

4.2 RESULT 1: IMPROVE QEM AND ADAPT TO POLICY QUESTIONS

4.2.1 MINISTRY OF FINANCE

The focus during the earlier stages of the project was on improvement of the Quarterly Econometric Model. This involved both further refinement of the design of the model and where necessary estimation and updating of the parameters. It further included a virtually permanent testing of the overall performance of the model. During later stages of the project the model have been applied for specific policy questions that were considered in the interest of the Ministry.

As described elsewhere the basic structure of the model consists of seven blocks. These blocks are not equally important for the dynamics of the system and therefore not all of them needed refinement in equal detail. The main focus was on the supply block, government sector and on the monetary sector. Supply conditions appear to be extremely important in the medium term both in terms of competitiveness of the Czech economy and regarding structural unemployment. A detailed description of the government sector was considered important especially from the viewpoint of the Ministry of Finance. A bottleneck here continues to be that the government budget is registered following the GFS methodology, while the model is based on the national accounts methodology. The resulting discrepancies between these two methodologies have been resolved through the use of statistical methods. Although the monetary sector in the former version of the model was relatively detailed with describing money supply and various components of money demand, it did not work well. It lacked a description of the credit market and neglected policy rules being followed by the Czech National Bank regarding exchange and interest rates. These issues have been addressed in the newest version of the model.

Regarding the use of the model in economic policy scenarios the ministry fed the project team with relevant policy issues. These issues have in consultation with the Netherlands' project staff be re-formulated into problems for which the model was utilised.

4.2.2 MINISTRY OF INDUSTRY AND TRADE

In reaction to the request of the Ministry to orient the modelling activities more to the practical economic policy questions the Ministry is facing it was agreed to also install a version of QEM in MIT. In practice this implied the adaptation of the sector model into a model, which includes some main features of QEM in combination with a description of the main economic sectors. This model has been used for medium-term macroeconomic projections and for policy simulations.

4.3 RESULT 2: IMPROVE GEM AND ADAPT TO POLICY QUESTIONS

4.3.1 MINISTRY OF FINANCE

Project staff of MoF has continued to develop the version of GEM being introduced in this ministry. The focus of this model is on different household categories rather than on a detailed economic sector structure. The background of this focus is that MoF given its

responsibilities is more interested in effects of different tax regimes and fiscal policies. As in the case of QEM the model required still improvements, further refinements and updating of the parameters. It should be recognised that such refinements is a continuous process, which will not end with the finalisation of the project.

4.3.2 MINISTRY OF INDUSTRY AND TRADE

The version of GEM developed within MIT is especially focused on sector developments and international trade. So far however it has not yet intensively used in policy simulations. The main reasons being that it was considered too primitive to give answers to specific problems. Against this background the model has been further developed with a view to sector performance in relation to international trade issues. For the purpose of economic policy scenarios this model has been complemented with features from QEM. The sector model developed can be applied in policy scenarios relevant for MIT.

4.4 TRAINING CIVIL SERVANTS IN POLICY FORMULATION

The ToR rightly pointed at the importance of the models becoming an integral part of the activities within both ministries. This requires not only a department (unit) involved in building and use of economic models but also that the results of the models play an important role in the discussions on projections and economic policies. This requires first of all that the model-building unit shows that model calculations indeed add value to the less formal methodologies applied so far in both ministries. It requires however as well that the users of the model results understand the main mechanisms in the model and that they have some confidence in that the models developed fit relatively well to the Czech specific situation. On the other hand the model builders should be open for the economic policy discussions in order to adapt the models in such a way that they indeed can provide a sensible contribution to these discussions. All these aspects require training of the staff involved, model builders as well as the end users, and inclusion of the modelling activities as a regular part of the activities in the respective departments and ministries. In reaction to this observation the project has provided training will be both formal as well as training-on-the-job. The formal training took place in Rotterdam at the Erasmus University. The opportunity of being in the Netherlands has been used to visit some institutions that play a role in economic policy making in the Netherlands with a view to learn from their experiences.

4.4.1 MINISTRY OF FINANCE

The approach of coaching and guidance has been followed in MoF. The specifics of the model improvements were determined in consultation among the team members with specific experience and theoretical inputs from the Dutch team members. The Czech members of the project team did the actual implementation of the improvements and refinements. In case of the economic policy simulations the Ministry provided the team with information about the most urgent economic policy issues. On the basis of this information the team analysed these issues also on the basis of the model(s) available.

4.4.2 MINISTRY OF INDUSTRY AND TRADE

Similar to the approach followed in MoF the Netherlands' members of the project team acted as coaches of the modelling activities. The Czech team members executed the actual modelling, including running and testing the model(s) and if necessary estimation of the parameters. The policy issues for which the model was used were formulated and defined in consultation between the project team and the end-users of the model outcomes. Often this required additional study and analysis of the issues at hand.

4.5 FINAL PHASE

During the final phase of the project final documents describing the models developed and used in detail will be prepared. These documents should give a guidance to the staff of the ministries that should allow this staff to continue the activities after the Netherlands' team has been phased out. In the same period a seminar has been organised for a wide audience (also from outside the ministries involved in the project) to present the results of the project.

4.6 ASSESSMENT

Ambitions

The project was quite ambitious with three main components and two ministries as main counterparts, and a wide range of substantive areas to be covered. At the start of the project it was recognised that these ambitions could be met if sufficient staff was made available by the two ministries. This was indeed the case. In MoF three members of staff were assigned to the project, two for development and running of the QEM and one for GEM. In MIT two additional staff was appointed, who were involved in project activities.

Project approach

The approach followed in the project was based upon a coaching model, implying that the Netherlands' team members were not executing the technical modelling activities themselves but that these were being done by the Czech counterpart staff. In terms of outputs of the project this approach includes two risks. This approach has worked relatively well also because the staffs assigned to the project in both ministries were well equipped with modelling skills. Without exception this staff combine technical computer skills with mathematical skill needed for the development and running of the models. In addition much communication took place through electronic media, which supported the discussion on issues related to the models, their use and other specific problems.

Involvement of Staff

Next to the availability of a sufficient number of staff the quality of the staff is extremely important for the success of the project. As mentioned above the quality of the staffs assigned to the project is of high standard. The feeling exists that through the project the analytical capabilities of the staff involved in the project has improved. Within MoF the Unit of Fiscal Projections and Modelling, which was especially established in order to concentrate the modelling efforts of the Ministry within one organisational unit. The project has contributed to the further technical and institutional strengthening of this Unit. Although this unit is responsible for the formulation, construction and maintenance of the model, it cannot operate in isolation from the other four units in the department. For that reason during the project period the staff of the unit has organised regular meetings with staff of other units in order to discuss model results.

Similar discussions have taken place in MIT between staff assigned to the project and other staff of the ministry. They have also been involved in analysis not directly related to the modelling but extremely relevant for the policy formulation in the Ministry, such as foreign trade and a comparative study on developments in productivity in a number of countries in transition.

Co-operation with other units and institutions

The project was dependent on inputs from units and institutions that are not direct beneficiaries. The project required statistics from the Czech Statistical Office on national accounts data, from the Czech National Bank on balance of payments and monetary data, from other units within the Ministry of Finance on government financial data, and from other units within DFP on the models currently been used. During the project period these

institutions were very cooperative, which has been resulted in virtually regular contacts between the departments responsible for the modelling activities and these institutions.

Quantity and Quality of the Statistics

Although all these institutions were very cooperative the quality of the information is questionable from time to time. This is also recognised by the Czech Statistical Office, which regularly revises the information. Nevertheless the time series only cover a limited number of years and they include several gaps. This makes it difficult to rely on econometric methods to estimate the parameters. As a result the parameterisation of the model was basically done on the basis of calibration supported with econometric estimations were possible.

Sustainability

The sustainability of the project, and in this case the models and their use depends heavily on whether they are able to provide a useful contribution in the economic policy discussions in the Czech administration. The end-users of the model outcomes should feel confident with the underlying analysis and with the performance of the model(s). In other words it should be demonstrated that the model results contribute to a better quality of economic policies. Only then models add value to these discussions and proof that it is worth to continue the activities. At several occasions the models developed have indeed shown that they can add value to answering the questions at hand. They were used in the context of the discussions with the European Commission and in particular in sensitivity analysis, and in forecasting exercises. Although the use of the models could still be intensified these examples show that they were considered a useful instrument in these cases.

Sustainability also depends on to what extent the departments or units are embedded in the ministries. Economic policy models cannot be constructed in isolation. The quality of these models benefits considerably from regular discussions with users of the outcomes of the model and vice versa. Modelling benefits from the information about the economic policy issues the policy makers are facing and on the basis of this information the models can be adapted to the specifics of these issues. On the other hand the end-users of the product should be fully aware what models can do and cannot do, in other words they benefit more from the analysis executed with help of the models if they are fully aware of the scope of the models. For that reason regular contacts between the model builders on the one hand and end-users are extremely important and should preferably be formalised. In MoF with a separate unit especially established for the construction and use of the models these activities are to a large extent institutionalised. Although MIT appointed two members of staff to the project the institutionalisation of the activities is less advanced than in MoF. It is therefore advised that this ministry continues to address the issue of institutionalisation of the activities.

Annexes

ANNEX 1: LOGICAL FRAMEWORK

LOGFRAME PLANNING MATRIX FOR PROJECT: PPA03/CZ/9/1			
Project duration: 05-01-2004 to 31-12-2005			Total budget: EUR 205,604
Overall Objective	Objectively Verifiable Indicators	Means of Verification	
<ul style="list-style-type: none"> - Providing assistance to the public sector in the implementation of the acquis communautaire or accession related policy. - Establishing lasting relationships between government institutions in the Netherlands and in the recipient countries. - Contribute to the accession of the Czech Republic to the European Union and to the well functioning of the Czech economy within the EU-single market, and, in the future, possibly also within the EMU. 	<ul style="list-style-type: none"> - PAC (including the following parties: Senter, the beneficiaries and counterparts and the RNE Prague) positively assesses the results, relevancy and effectiveness of the project according to the Logical Framework Approach (PAC meets twice a year). - Institutionalisation of the knowledge of building and maintaining economic models transferred through the project within MoF and MIT as well as institutionalisation of interdepartmental relations on the field of modelling and forecasting. 	<ul style="list-style-type: none"> - Minutes PAC Meetings - The actual establishment of an office/department within or outside the organisational structures of the beneficiaries responsible for macro-economic modelling, as well as the institutionalisation of interdepartmental relations. 	

Project Purpose	Objectively Verifiable Indicators	Means of Verification	Assumptions and risks
<ul style="list-style-type: none"> - Assist the Czech administration in developing specific economic (macro) models that will allow the Czech government to base its policy on a more coherent and quantified basis, which will improve the efficiency and effectiveness of the decisions. 	<ul style="list-style-type: none"> - Quarterly model further improved and adapted to answer specific policy issues. - General Equilibrium Model improved and adapted to answer specific policy issues - Civil servants of MoF and MIT trained in using the outcomes of the models for policy formulation. - Civil servants of MoF and MIT trained in developing new models based on new policy questions without any help from outside. - Policy makers at MoF and MIT are able to make policy, based on the new methodology. - Institutionalisation of the knowledge of building and maintaining economic models transferred through the project within MoF and MIT as well as institutionalisation of interdepartmental relations on the field of modelling and forecasting. 	<ul style="list-style-type: none"> - PAC Meetings and evaluation/ assessment of the project by stakeholders and beneficiary organisations. - The actual establishment of an office/department within or outside the organisational structures of the beneficiaries responsible for macro-economic modelling, as well as the institutionalisation of interdepartmental relations. 	<ul style="list-style-type: none"> - Continued political commitment in both EU and the Czech Republic to (further and deeper) European Integration. - Possible changes at political level will not interfere with capacities built and organisational improvements achieved under the project - The Government of the Czech Republic will make available sufficient national resources in order to ensure the sustainability of the project's results. - Support from the Czech government at all levels. - Support and active cooperation of the involved ministries, in particular MoF and MIT staff.

Results	Objectively Verifiable Indicators	Means of Verification	Assumptions and risks
<p>1. Quarterly Economic Model further improved and adapted to answer specific policy issues</p> <p>2. General Equilibrium Models improved and adapted to answer specific policy issues</p> <p>3. Civil servants trained in using the outcomes of the models for policy formulation</p>	<ul style="list-style-type: none"> - QEM: more sophisticated and a number of smaller “satellite models” are built. Moreover the QEM should be used for forecasts in the context of the preparation of the annual government budget. - GEM: The following four topics are solved: 1. Estimation of exogenous coefficients; 2. the model is more dynamic; 3. industries are described in more detail; 4. a more detailed structure of prices. - Both QEM and GEM are able to provide quantified answers to policy questions related to: EU-accession and EU membership, Public Finance Reform, Tax Policy Reform, Labour Market Issues, impact of the further reduction of subsidies to enterprises and families and; the impact of certain exogenous events - Number of civil servants of MoF and MIT trained “on the job” in using the outcomes of the models for policy formulation. - Other “customers” of the models, both within and outside the MoF and the MIT receive training to be made aware of the existence of the models and how they can be used by their Ministries. 	<ul style="list-style-type: none"> - PAC Meetings and evaluation/ assessment of the project by stakeholders and beneficiary organisations (in particular MoF and MIT) - Manuals on the use of the GEM and QEM models developed - Courses in the Netherlands and courses in the Czech Republic 	<ul style="list-style-type: none"> - Continuity in the availability of MoF and MIT staff that is technically able to work with the existing QEM and GEM models. - All Czech parties involved (ministerial bodies, politicians, NGO’s, others) are willing to co-operate in the framework of the project and will make available (human) resources in order to fully support the project’s activities - Knowledge of building and maintaining economic models as delivered in the project PPA01/CZ/9/2 is institutionalised within MoF and MIT and that the staff has the expertise and capacity to use this. - Departments at MoF and MIT as well as other Ministries will show sufficient interest and release sufficient resources to make use of the outputs of the models. - Commitment to the project of MoF and MIT Management and willingness to discuss all relevant issues - Sufficient availability and quality of staff in MoLSA and MoRD which can be trained in using the models - Sufficient availability and quality of staff in MoF and MIT which can be trained in using the models - No limits in the capability of MoF and MIT staff to make regular inputs for MoLSA and MoRD - Easy access to statistics and to all documents on analytical tools currently used. - Availability of hardware - Availability of documentation

Activities	Input (human resources + total mandays)		Assumptions and risks
<p>Inception phase (start up of the project and writing of the inception report)</p> <p>Result 1: Quarterly Economic Model further improved and adapted to answer specific policy issues</p> <p>1.1 Guidance in improving the model 1.2 Support to DFP in re-estimation of the model 1.3 Assessments of needs for detailed (sub)-models 1.4 Support to DFP in using the models for forecasting 1.5 Support to DFP in using the models for policy formulation exercises, in particular in the context of budget preparation 1.6 Guidance in adapting of the models for particular policy questions 1.7 Writing manuals and document the models (in collaboration with DFP)</p> <p>Result 2: General Equilibrium Models improved and adapted to answer specific policy issues</p> <p>2.1 Support to DFP and MIT in using GEM for long term trends 2.2 Support to DFP in using GEM for policy formulation exercises, in particular in the context of social security system, pensions and the tax system 2.3 Support to MIT in using GEM for policy formulation exercises, in particular in the context of international trade, competitiveness and re-structuring of particular economic sectors 2.4 Assessment of needs for detailed (sub)models 2.5 Guidance in refining the model by a more detailed industry and price structure 2.6 Guidance in improving the model, in particular in dynamisation</p>	<p>Inception phase</p> <p>N. van der Windt: 10 mandays G. Bijwaard: 2 mandays</p> <p>Result 1</p> <p>N. van der Windt: 20 mandays G. Bijwaard: 20 mandays A. Knoester: 24 mandays</p> <p>Result 2</p> <p>N. van der Windt: 20 mandays H. de Haan: 38 mandays</p>		<ul style="list-style-type: none"> - MoF will continue to employ the same number of staff as has been involved in the project PPA01/CZ/9/2. - Adequate working space for the Netherlands experts is provided. - Support is provided by the counterpart (MoF and MIT) to the work of experts (networking, involving beneficiary organisations, organising arrangements). - Continuity in the availability of MoF and MIT staff that is technically able to work with the existing QEM and GEM models. - All Czech parties involved (ministerial bodies, politicians, NGO's, others) are willing to co-operate in the framework of the project and will make available (human) resources in order to fully support the project's activities - Knowledge of building and maintaining economic models as delivered in the project PPA01/CZ/9/2 is institutionalised within MoF and MIT and that the staff has the expertise and capacity to use this. - Departments at MoF and MIT as well as other Ministries will show sufficient interest and release sufficient resources to make use of the

<p>of the current model</p> <p>2.7 Guidance in adapting of the models for particular policy questions</p> <p>2.8 Guidance in re-estimating / re-calibrating the parameters of the model on the basis of new statistical data</p> <p>2.9 Writing manuals and document the models (in collaboration with DFP and MIT)</p> <p>Result 3: Civil servants trained in using the outcomes of the models for policy formulation</p> <p>3.1 Training main counterparts on the job</p> <p>3.2 Training main counterparts in the Netherlands</p> <p>3.3 Visit to CPB and other Dutch institutions involved in economic model building</p> <p>3.4 Organisation of internal seminars at the offices of both counterparts</p> <p>3.5 Organisation of a workshop to discuss models with representatives of other ministries</p> <p>Final phase (end phase of the project, including administrative tasks and end-report writing)</p>	<p>Result 3</p> <p>N. van der Windt: 9 mandays G. Bijwaard: 8 mandays A. Knoester: 7 mandays H. de Haan: 7 mandays EUR staff: 15 mandays</p> <p>Final phase</p> <p>N. van der Windt: 8 mandays G. Bijwaard: 2 mandays</p>		<p>outputs of the models.</p> <ul style="list-style-type: none"> - Commitment to the project of MoF and MIT Management and willingness to discuss all relevant issues - Sufficient availability and quality of staff in MoLSA and MoRD which can be trained in using the models - Sufficient availability and quality of staff in MoF and MIT which can be trained in using the models - No limits in the capability of MoF and MIT staff to make regular inputs for MoLSA and MoRD - Easy access to statistics and to all documents on analytical tools currently used. - Availability of hardware - Availability of documentation
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