

Presentation by Bertil Thorslund on ICF – An international challenge

Introduction

No one politician can afford to be uninterested in social insurance. The cost of it, in any western country, must be accounted for when considering the possibilities for political initiative. Politicians are paying us for making prognosis and politicians should be thought of as our main customers or users. We can observe though, that in spite of all the efforts we put in, all the skills we accumulate and use in our professional efforts, there is still a lack of confidence in the projections we deliver (Swedish example). And this is a problem common to all of us that are active in doing prognosis work. So, the idea of forming an international collaboration (or network) for mutual professional growth is a rather obvious one. Following a Swedish initiative, ICF was formed at a meeting in London in February 2005. We are now some 30 members from 8 European countries. Our most recent meeting was held in Copenhagen in Nov 2006 and the next one is scheduled for Berlin in October 2007. The name we picked, ICF, was not a difficult one to come up with. Improving confidence in forecasting – that is in short what it is all about.

I will use this opportunity to introduce you to work that has been presented at meetings held by ICF. Let me admit from the very start that we are still awaiting something produced by the network and its working groups. So far we have rather achieved that work done by members of ICF has been made available to the network.

There are many interesting aspects that must be observed, discussed and developed to some higher level. A tentative working group structure was established early on.

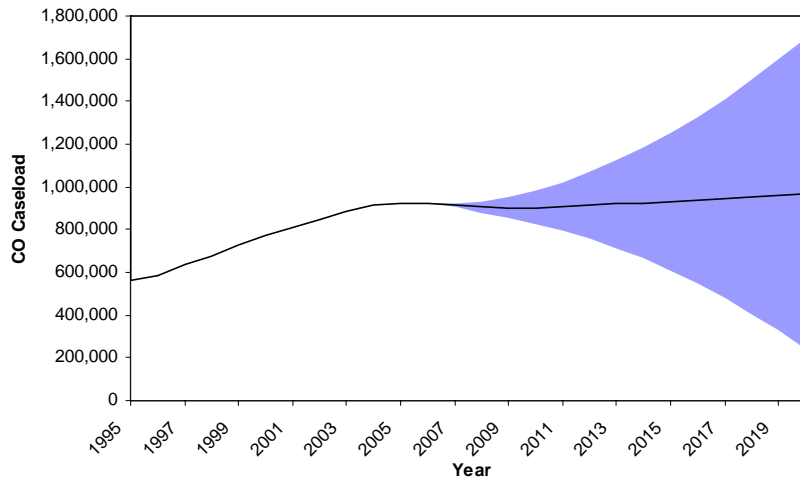
- WG1:** Model Development Procedures
- WG2:** Software and Data Management
- WG3:** Labour Market and Benefit Take-up
- WG4:** Uncertainty Analysis

I call it tentative for the simple reason that it can be alter at any time by the members of ICF. Just to give you an idea: There has been some discussion on dedicating a working group to Communication issues, thereby possibly taking a chunk from WG1 and leaving them with primarily very internal aspects of how the working processes should be designed and made to tick. WG1 is densely populated by persons with prestigious positions in their organisations and what I here put on the agenda is not as yet discussed within ICF.

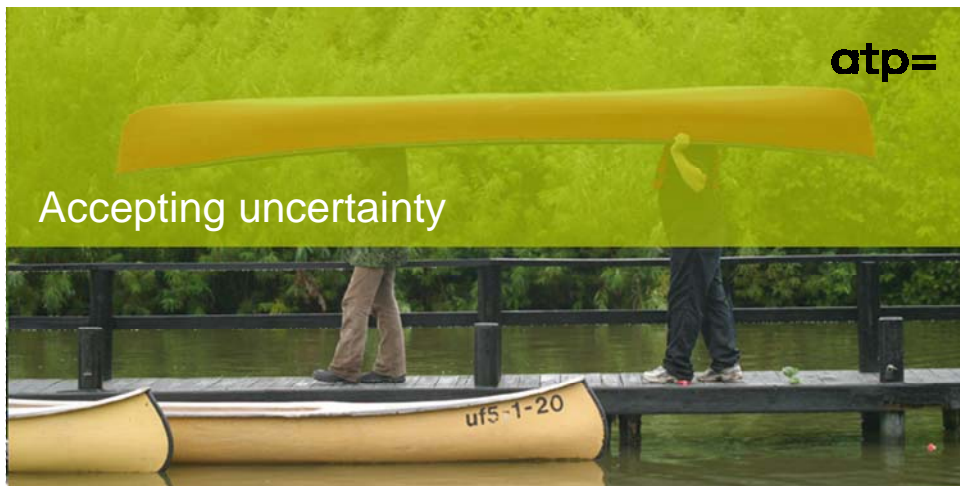
On uncertainty

We have a special problem about communicating with politicians and other mighty decision makers. People that work in the field of prognosis love to talk (more than to work if there would be a short moment of truth) on uncertainty in the prognosis work we deliver. And politicians do not want to hear about it. Give us your best estimate, they say. The rest you can save for some actuarial conference. Thus we have a double challenge. We must develop and use methods of doing Uncertainty Analysis and we must discover ways of making politicians listen to our messages.

If something like this is what we intend to show at presentations, you would wonder whether the audience will have a heart attack, fall asleep or leave the room.



The issue of communicating uncertainty was addressed in a very interesting presentation in Copenhagen, Denmark last November.



ICF workshop
23 November 2006

Søren Fiig Jarner
Chief Analyst, Ph.D.

Søren Fiig-Jarner, Chief Analyst at ATP (Labour Market Supplementary Pension Fund), an organisation that nowadays covers more or less all of the Danish population. His focus was the investment strategy for the organisation. Professionals in the organisation wanted the board to decide on implementing a dynamic rule which they knew would lessen the risk for insolvency – in popular (not only Danish) words – a red light situation. Søren Fiig Jarner was very eloquently demonstrating what consideration were made to form a communication strategy to give the board a good-enough understanding of the situation, the proposition and the possible advantages of that proposition. The board declared themselves informed and decided upon that new dynamic rule. Dr Fiig Jarner concluded his presentation with this slide

It's all about confidence!

- Hard to convince people of something they don't expect
 - and it is impossible if they don't trust you
- Possible to explain virtually everything given time and interest
 - educate board over time ... and build up confidence
- Acting in the public arena is different
 - very hard to maintain the wider perspective
 - demand for simple explanations and one-liners
 - very little accept of inherent uncertainty in forecasts
 - ... still confidence goes a long way!

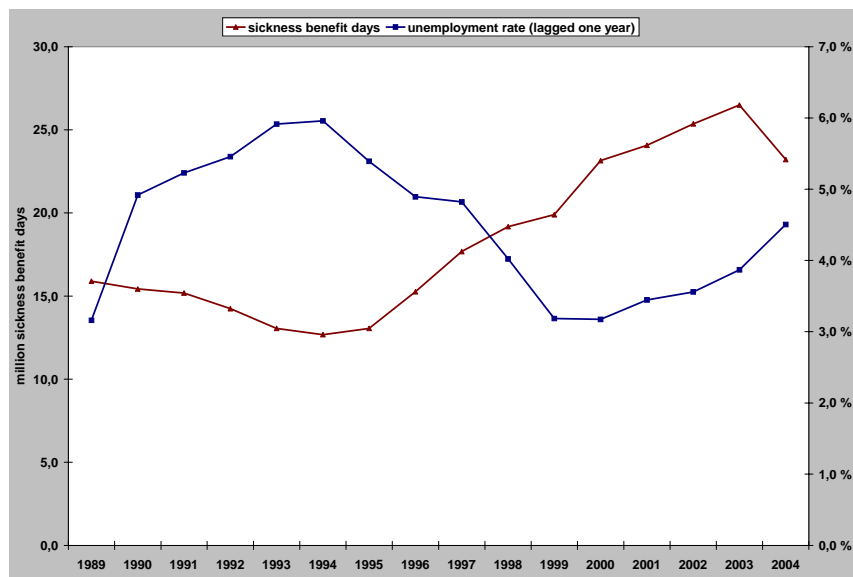
And I would like to draw your attention to the background picture Dr Fiig Järner did choose for his presentation. Those two persons carrying their canoe over their heads have accepted to act on a degree of uncertainty that necessity imposed on them. Thus they are truly models to be followed by us prognosis people.

On a possibly important exogenous variable in a model for cost of sickness insurance in Sweden

For reasons that do not really endure the light of day (or analysis) there has been over the years a very marked correlation between the situation in the sickness insurance and the labour market situation. When one goes up the other one goes down – and vice versa. Rather many scholar hours have been dedicated to this phenomenon and no really good reason has been presented. The best one I have heard so far was an informed layman (or rather laywoman) who said, sighing: OK, OK, but people must sustain on something. So the real truth might be that, regardless of the legal prerequisites, people are given the one benefit or the other. Our late minister of labour, Hans Karlsson, was cited as saying that he wanted to be remembered as the minister in office as this dependency between sickness insurance and labour market situation was broken. And his wish might still come true because in those last years sickness insurance is going down and at the same time the labour market situation is improving. So the traditional relation is now a fragile and openly questioned fact.

Anyway, this correlation between sickness insurance and labour market situation is well documented over the years. So, if something should be added to the model we use in Sweden for forecasting the cost of sickness insurance it should be some variable reflecting the changes on the labour market. One of the Swedish members of ICF, Johan Ekstedt, has been looking into this and he made an interesting report on this topic in Copenhagen.

If you would introduce a casual variable like development on the labour market you would need information on the nature of this casual relationship. Johan Ekstedt pointed to two different aspects of that relation. The first one was the disciplinary effect, that would 'scare' employees to be absent from work in times when holding a job is a fragile thing. Observations look like this:



Evidence for this disciplinary effect seem to be very clear and has been argued by many scientist.

Another aspect of this casual relation is the composition effect. It deals with the fact that as the demand for labour increases persons with a higher risk for falling ill will increase their chances on the labour market. As labour market participation goes up, so would reported sickness absence.

Also this aspect of the casual relation is established through scientific analyses. So far we would argue that developments in the labour market should be an exogenous variable in the model for forecasting the cost of sickness insurance.

Next Johan Ekstedt focused on whether this relationship is a strong one. Prognosis people are always trying to fight the temptation of sub-optimization (more on this later in my presentation). Johan Ekstedt could easily show that also this condition was met.

So for a third condition: The direction of the casual variable can be accurately predicted and the magnitudes of these changes can be estimated.

Johan Ekstedt says No. The predictions presented are too poor, the errors are too great. If a new exogenous variable mirroring developments in the labour market was introduced as a casual variable it would not be a good idea given the quality of the prognosis made for this variable.

To believers in this labour market – sickness insurance relation the message is: Give us better predictions for this variable or we will not use it. Non-believers would just smile inwardly the way people do when they think they are proven right.

On modelling/software issues: Dynamic microsimulation at DWP (Department of Work and Pension, UK)

At DWP, as reported by Sally Edwards in Copenhagen, Dynamic Microsimulation is more widely employed. Applications include projections for

- Pensions (long term - 50 yrs, state and private pensions)
- Pensions (medium term – 5-8 years, state pensions)
- Incapacity Benefit, i.e. Sickness benefit (medium term)
- Disability Living Allowance (medium term)
- Attendance Allowance (medium term)

Given this ambition DWP has put some effort into simplifying the construction of new models (and thereby paving the way for adjusting existing models). DWP has specialized teams that do programming work. These teams are, needless to say, working closely with analysis people that are also the users of the software.

There is an ambition to bring users and software specialists closer together and so DWP has developed what they humbly call Genesis – a tool for generating dynamic microsimulation models. So what you achieve is primarily that it is quick to develop simple new models that are easier for the users to understand and change without an in-depth programming knowledge. If someone would sniff a scent of that recurrent discussion on how to avoid sub-optimization, yes, I think it is there.

And there is also a downside. But to most of us it would not seem too terrible. That the models take longer to run than standard Excel cell based models seems to be an affordable price to pay. What you get is a more powerful model (who would do real microsimulation in Excel?) and the prize for both mass storage and additional RAM and/or GHz would never kill the budget of an organisation like DWP. And we must all remember that we are not talking meteorology here. So we are not talking days, hardly hours in lapse time.

Just a short remark on this lapse time issue: At Copenhagen Danne Mikula from Sweden demonstrated a model for projecting scenarios on possible surplus handling in the Swedish pension system. Danne Mikula made real runs in his (not so ordinary but still) laptop. And we were talking seconds. So the lesson is: Do not be afraid of anything that can be solved by buying more potent hardware.

Now back to DWP. The models for dynamic microsimulation are run in SAS, data input are SAS datasets and so are the outputs. All of this is familiar to the users. But the user interface which is about specifying parameters is built in Excel. SAS-code transfers those parameters to the SAS procedures that comprise the dynamic microsimulation model. Much is gained in terms of transparency for the user from this solution.

The output is subject to further analysis primarily using SAS facilities for tables and graphs. Scenarios stemming from runs with different sets of parameters are readily handled.

Since DWP is so engaged in coding they also have to address to problem of securing that code and allow for handling of versions. Software for this has been developed in-house but DPW is currently looking for some commercial software package offering the same utilities. *“We are looking for a tool that will identify the differences between one version of code and the next and also to securely hold the code and allow individual team members to ‘check out’ the code that they need to change, preventing other team members from modifying the same code at the same time”* says Sally Edwards of DWP.

Characteristics of a good-enough model (for projecting costs)

So for this issue of possible sub-optimization that has been popping its head a few times already in my presentation. Sarah Hawken, now a distinguished staff member at DWP but then a no less distinguished member of staff at GAD (Government Actuary's Department, UK) listed what her organization thought were important aspects of models and modelling. The list is quite long. I find it most worthwhile to share a few with you. Sarah Hawken is discussing flexibility and adaptability and states: *“A point to be noted in relation to the above two considerations is that social security policy is likely to change frequently. No Government can resist the temptation to make its mark by making significant changes in legislation. For this reason most models can be expected to have only a limited ‘life expectancy’. A highly sophisticated and complex model that can only cater for the existing legislation is likely to be come obsolete very rapidly. In contrast a simpler model that has been designed to be flexible and adaptable may be better suited to coping with frequent changes.”* I might add, from recent experience in the Swedish Social Agency, that not only Governments change. We are also vulnerable from dependency upon individual staff members. This is something that organisations, especially those with a nominally numerous staff, tend to try to avoid to discuss. But the truth is that if you take a specialized function, like building advanced prognosis models, and scratch the surface, quite often an individual, filled with ambition for his/her model pops up. Management often encourages high ambitions and doesn't always realize the danger inherent in possible personal vulnerability. But I am certain that I am not the only one in this room that has found that space left behind by a staff member who has found a new job has been very hard to fill. It is not only nature itself that experiences ‘horror vacui’. So the risk of sub-optimization is something no professional organisation can neglect.

There is little objection to the view that it is an advantage to make projections for one special scheme using different models. This is likely to lessen the error in the estimates given. GAD, through the voice of Sarah Hawken, makes a special observation. *“A simple model may also be used to check on the results produced by a more complex model. If both produce similar results at overall aggregate levels, then one can have more confidence in the detailed results from the complex model that may not be available from the simple model. In this way an aggregate type model may be used to help validate and check a microsimulation model. Also when considering such large item of government expenditure as pensions, having two models which use different techniques, but produce similar results can be of assistance when explaining results to clients.”* To my mind, what Sarah Hawken is cunningly pointing to is again this issue of confidence. Those clients referred to are not very likely experts on microsimulation and might be hesitant to use surprising projections as basis for policy-making unless they feel some degree of common-sense understanding for the results.

Let me conclude this review of interesting discussions taking place during the meetings of ICF by pointing to an observation made by Sally Edwards of DWP. Rather frequently you can meet with a discussion on pros and cons for rules for a benefit being integrated into the prognosis model. And the conventional view (or at least the view voiced at conventions) is that this is just around the corner and should be an operational reality any minute. In Copenhagen you could hear Sally Edwards saying: *“Interesting subject but will be postponed for future discussions”*

To me this kind of simple honesty is a very good example of what is making ICF such an enticing international collaboration.

Concluding remarks

ICF has a website which demands authorization. The reason for this is not to keep the network or its doings secret. It is merely a measure to ensure an open discussion on topics and documents that are still not ready for being scrutinized the way the scientific community is used to. So you are not helped by me giving you the (rather terrible) address of that site. But I would welcome a mail to bertil.thorslund@socialagency.se telling me that you would like to be a member of ICF. One of the advantages you will get is the access to our website.

Let me finalize my presentation by saying what most of you have understood from the very start. My reviews of presentations made at meetings held by ICF are by necessity shortened, compressed, maybe even a bit vulgar if the original presenters could have their say. But I hope to have conveyed to you the nature of the activities of ICF, I hope to have increased your interest in ICF and I most certainly hope that we all agree that there is nothing more interesting to invest your efforts into than Improving Confidence in Forecasting.