# MODELLING AND FORECASTING AT THE BANK OF ITALY

*Forecasting Models and Procedures of EU Central Banks*
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# Contents of the presentation

**The Bank of Italy Quarterly Model (BIQM):**

**Supply Side: factor demands, capacity utilisation, price setting behaviour, wage dynamics, inflation expectations Demand Side: household/firm spending, trade variables**

**The role of forecasts and econometric models in monetary policymaking:**

**Transparency, accountability and the pursuit of multiple targets**

**Forecasting at the Bank of Italy**

**A guide to the Broad Macroeconomic Projection Exercises:**

**Common assumptions, projections, cross checks (trade and financial consistency exercises), last minute updates (PUEs), drafting and publication**

# General characteristics of the BIQM

1. It is NOT microfounded
2. It has not model-consistent expectations

## Long-run:

- supply determined, with exogenous TFP growth, putty-clay capital and endogenous saving

## Short-run:

- demand determined (Keynesian)
- short-run dynamics due to:
  - price and wage stickiness
  - non malleability of installed physical capital
  - habits in consumption and institutional lags in fiscal policy
  - (price) expectation errors

669 eqs., 71 stochastic; only domestic economy covered; disaggregated into market and non-market sector, the former split into 3 subsectors (energy, farm and manufacturing+services).

# The firm's problem

$$\min_{L_{t+i|t},\, I_{t+i|t}} c(\Delta Y^{d}_{t+i}) = \min_{L_{t+i|t},\, I_{t+i|t}} (q_{t+i|t} I_{t+i|t} + w_{t+i|t} L_{t+i|t})$$

$$\text{s.to} : \Delta Y^{d}_{t+i} = (I_{t+i|t})^{1-\alpha} (L_{t+i|t} (1+g)^{t+1})^{\alpha}, \; i = 1,\ldots, T$$

## First order conditions

$$\frac{I_{t+1|t}}{\Delta Y^{d}_{t+1}} = k^{*}_{t} \equiv \left( \frac{1-\alpha}{\alpha} \frac{w_t/(1+g)^t}{q_t} \right)^{\alpha}$$

$$\frac{L_{t+1|t}(1+g)^t}{\Delta Y^{d}_{t+1}} = l^{*}_{t} \equiv \left( \frac{\alpha}{1-\alpha} \frac{q_t}{w_t/(1+g)^t} \right)^{1-\alpha}$$

# Factor demands

**Both factor demand equations are of ECM type; the two long-run relations are given by the first order conditions computed from solving the firm's problem.**

$$\Delta \ln I_t = \alpha_1 + \beta_1(\ln Y_{t-1} + \ln k^*_{t-1} - \ln I_{t-1}) + A_1(L)\Delta \ln Y_{t-1} + B_1(L)\Delta \ln k^*_{t-1}$$

$$\Delta \ln L_t = \alpha_2 + \beta_2(\ln Y_{t-1} + \ln l^{**}_{t-1} - \ln L_{t-1} - gt) + A_2(L)\Delta \ln Y_{t-1} + B_2(L)\Delta \ln l^*_{t-1}$$

**where *lnl***=optimal labor/output ratio ($l^{**} \neq l^*$, average over all vintages of capital; putty-clay);**

***lnk** =optimal capital/output ratio.**

**Equations are estimated in a limited-information framework.**

# Potential output and output gap

**Basic intuition: the investment function defines a mapping between desired addition to supply capacity and capital, with the optimal capital/output ratio being the conversion factor; freeze $k^*_t$ (i.e. relative prices), invert the relationship and sum vintages.**

$$I_{t+1|t} = \left( \frac{1-\alpha}{\alpha} \frac{w_t/(1+g)^t}{q_t} \right)^{\alpha} \Delta Y^d_{t+1} = k^*_t \cdot \Delta Y^d_{t+1}$$

Empirical form. :

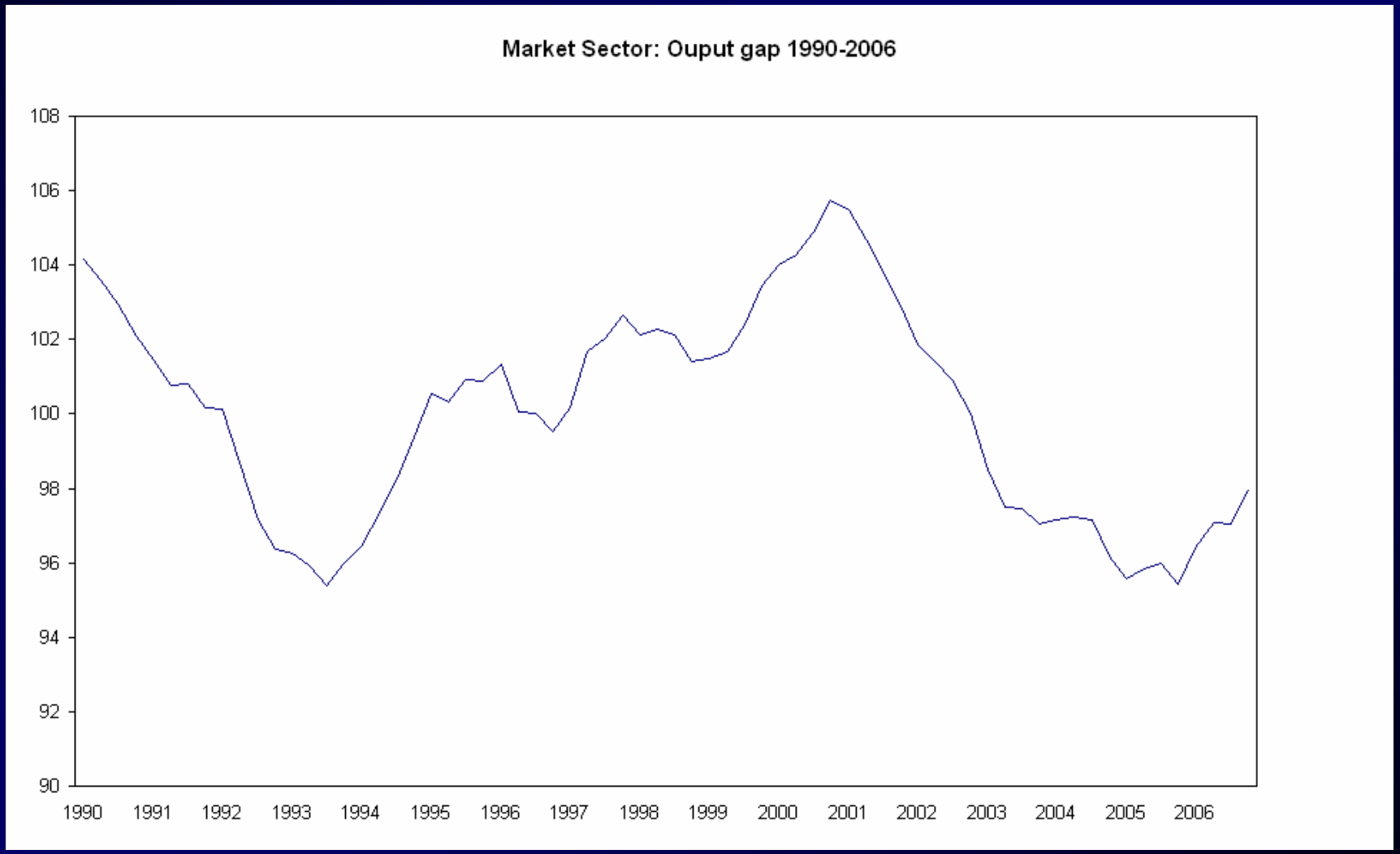
$$\Delta \ln I_t = \alpha + \beta(\ln Y_{t-1} + \ln k^*_{t-1} - \ln I_{t-1}) + \mathrm{A}(L)\Delta \ln Y_{t-1} + B(L)\Delta \ln k^*_{t-1}$$

Solve with $k^* = 1$, to get an estimate of $\Delta Y^d_{t+1}$

Cumulate (starting from a benchmark value) to get an estimate of $Y^{POT}$

**This approach is, implicitly, production-function-based; but does not require smoothing of production inputs. The smoothing is provided by the lag structure of the investment function.**

# Utilized capacity: comparison of alternative measures



# Pricing behaviour

$$\lambda_t \propto \left( \frac{w_t /(1+g)^t}{\alpha} \right)^{\alpha} \left( \frac{q_t}{1-\alpha} \right)^{1-\alpha}$$

**marginal/minimum average cost of producing a unit of output**

$$p_t = \mu \cdot \lambda_t = \mu' \cdot \frac{w_t}{\Delta Y_{t+1} / L_{t+1|t}}$$

$$\ln \mu = \mu_0 + \mu_1 \ln \frac{e_t p_t^f}{p_t^x} + \mu_2 \ln ygap_t + \mu_3 z_t$$

$$\Rightarrow p_t = \beta_0 + \beta_1 \ln \frac{w_t}{\Delta Y_{t+1} / L_{t+1|t}} + (1-\beta_1) e_t p_t^f + \beta_2 \ln ygap_t + \beta_3 z_t$$

**price set by firms for a unit of output ($z_t$ captures short-run factors)**

# Wage dynamics

Vertical Phillips curve: time-dependent due to frequent changes in the bargaining framework (automatic indexation; 1992-1993 agreement among social partners )

$$\Delta \ln w = \alpha_0 - \alpha_1 \cdot \ln u_{-1} + f(\pi^e, \pi_{-1}) + \alpha_3 \Delta \ln(strike) + \alpha_4 \frac{ygap}{.5 \cdot (ygap + ygap_{-1})}$$

where

$$f\left(\pi^{e}, \pi_{-1}\right) = \begin{cases} 1 \cdot \ln(1 + \pi_{-1}) + \alpha_2 \ln \dfrac{1 + \pi^{e}}{1 + \pi_{-1}} \cdot (before \quad 1992 \quad .Q\ 4) \\ 1 \cdot \ln(1 + \pi^{e}) \cdot (after \quad 1992 \quad .Q\ 4) \end{cases}$$

Clear signs of misspecification: not able to capture the impact of the labour market reforms of last 10 years. NAIRU too high: close to 8 p.p.

# Demand deflators and inflation expectations

Demand deflator (consumption, investment, …) are modelled according to the Klein framework, which maps supply prices (value-added and import deflators) into demand prices.

Inflation survey data are modelled by means of stochastic equation:

- The equation for expected inflation is basically a reduced form of the wage/price block of the model, with $\pi^e$ being a function of the output gap and foreign prices;
- Long-run unbiased expectations is the equilibrium condition;
- There is a direct, non linear effect of official rates on the expectations formation mechanism.

# Aggregate demand components

- Consumption is modelled according to life-cycle theory: permanent income is proxied by a weighted average of wealth and (hicksian corrected, private sector) disposable income. Durable goods are modelled separately
- Housing capital depends on Tobin's *q* and tax factors. The interaction between supply and demand – modelled within a portfolio framework - determines the market price of houses.
- Export equations are standard: exhibit fast response to foreign demand and slow (but large) response to competitiveness. Domestic demand pressures proxy for non-price competitiveness.
- Imports driven by weighted (I/O tables) average of aggregate demand components. Overshooting in the SR. Large response to competitiveness.
- Government consumption is partly exogenous (employment) and partly endogenous (goods and services purchases), via an *ad-hoc* rule.

# Government sector and fiscal policy

- No *ad-hoc* policy rule incorporated: those revenue/expenditure items most closely related to fiscal policy, are linked to nominal GDP and to an exogenous component capturing gov't discretionary impulses.
- Automatic stabilisers (not unemployment benefits) are quite powerful.
- Revenues are modelled on both a cash and an accrual basis.
- Short- and long-term interest rates on public-sector debt drive those in the banking sector (interbank rates becomes pivotal only from 1989).

# Monetary policy

NO MORE

# The monetary policy strategy: Objective

- ***Price stability*** **over the** ***medium term*** **(Article 105 of Maastricht Treaty). But also, in 2nd place, growth, employment .. (*social and economic objectives*)**
- **Operational definition of price stability: "a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the euro area of below 2%" (13 October 1998) "but close to" it (8 May 2003)**

# The monetary policy strategy: Framework

**Monetary policy strategy is based on comprehensive analysis of the risks to price stability founded on a two pillar framework:**

***Economic analysis*** **to identify SR to MR risks to price stability (includes everything that is not money and credit)**

***Monetary analysis*** **to assess MR to LR trends in inflation (reference value — not objective— for M3)**

# Economic Analysis (formerly: Second Pillar)

**Analyses conducted under the "Economic Analysis" pillar should aim at assessing the impact on prices of a large number of factors, e.g.:**

- **Exchange rates**
- **Prices (of manufactured goods, oil, raw materials, …)**
- **Dynamics of supply and demand**
- **Dynamics of wages**
- **Developments in the labour market**
- **Fiscal developments**
- **etc.**

**Natural way to make a synthesis of the combined impact of all those factors: Forecasts/Projections (definition given below)**

# Forecasts and monetary policy strategies

**Monetary policy affects the economy with long and variable lags (M. Friedman). To avoid taking actions that will become effective at the wrong stage of the business cycle, short to medium-term forecasts are needed.**

**However uncertainty is not enough to justify a prominent role for forecasts; the monetary policy strategy matters as well. If it is based on intermediate targets (exchange rate; money supply; …), the optimal level of the policy interest rate is dictated by the need to keep the exchange rate constant or the growth rate of the money supply on target: since the intermediate targets respond immediately to the policy steering, there is no need for forecasts.**

**Developments in monetary theory in the past 20 years have taught us that the monetary policymaker had better target final (i.e. those affecting social welfare) - rather than intermediate – objectives, as the relationships between final and intermediate objectives is weak and time-varying and trying to stabilise the former through the latter can end up increasing the volatility of the economic environment.**

# Forecasts and econometric models

**Targeting final objectives (*inflation, output gap, employment,* ...) requires a model extracting information from lots of variables and capturing the transmission mechanism.**

**Econometric models provide forecasts not only on inflation, but also on all key macroeconomic variables. They are therefore a powerful *communication device* and contribute to enhance *transparency* of the monetary policy framework.**

**Forecasts also promote *accountability*: they make clear the relationships between instruments and targets and make easier for society to control and appraise the actions of the policymaker and its ability to keep under control developments in the economy.**

**Routinely updating econometric models helps detecting structural changes in the working of the economy and in the transmission mechanism.**

# Forecasts and econometric models

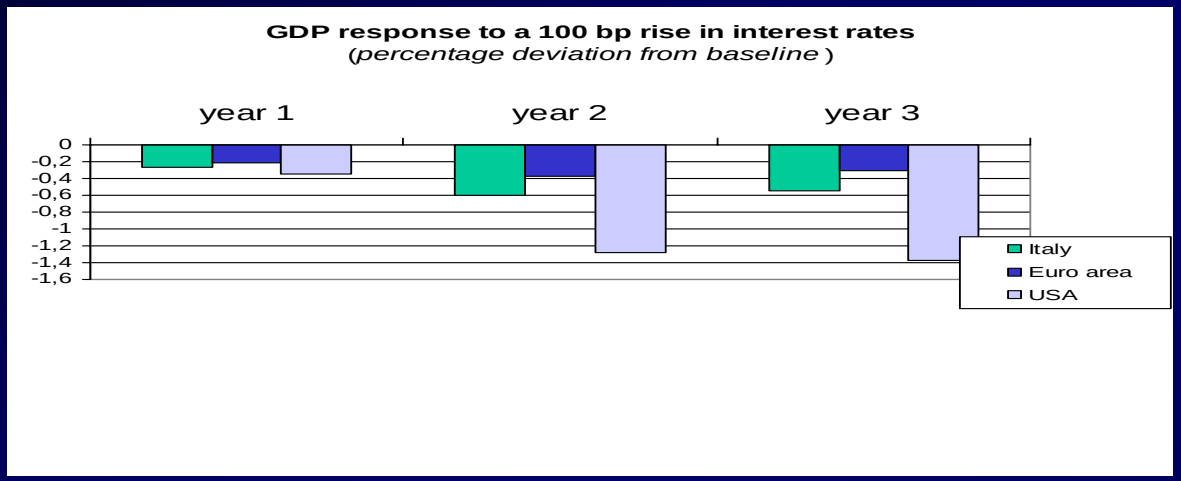
***What if the central banks is given multiple objectives? What if some of them are unobservable?***

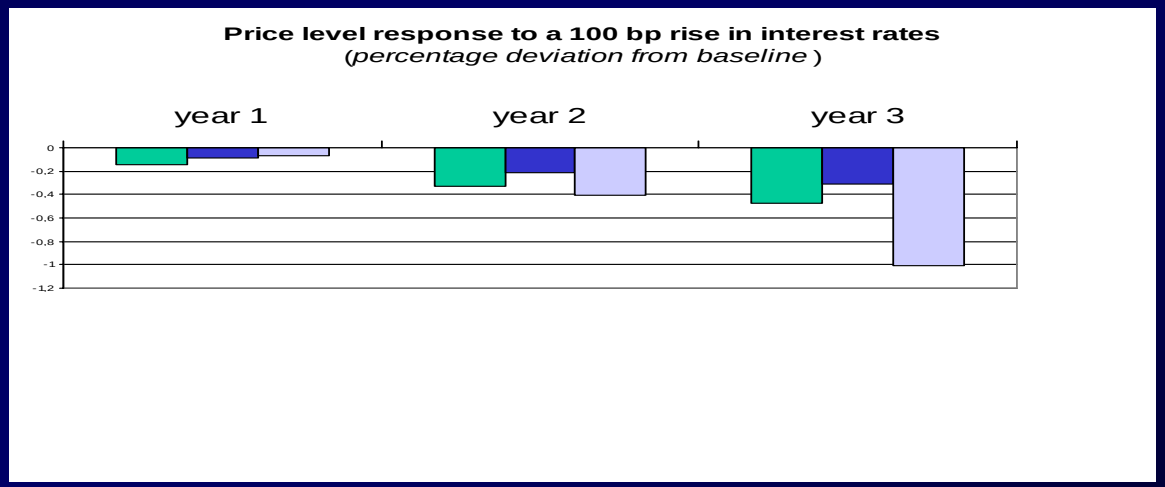
**There is a short-run trade-off between price and output volatility. If both are of concern for the central bank, a low speed of convergence between outcomes and targets may allow to achieve both of them.**

**It takes time for interest rates to affect inflation. Too quick a realignment of inflation may destabilise output; too slow an adjustment can endanger price stability. The optimal time frame is the one allowing the desired combination of inflation and output volatility. It represent an additional policy instrument.**

**Econometric models (and some weighting of social objectives) are of the utmost importance for selecting the optimal convergence speed between outcomes and targets.**

# Interest rates, GDP and inflation




*GDP response peaks after 1-2 years; slower response of prices*

# Macroeconomic forecasting at the Bank of Italy

- **Main macroeconomic forecasting tool: Bank of Italy's Quarterly Model (medium/large-size, covering the whole macroeconomy; BIQM)**

**In addition, when a forecast is being made, the following pieces of information are usually also available:**

- **High-frequency inflation data**
- **Public finance numbers (detailed model, with judgmental elements)**
- **Industrial production, conjunctural indicators, surveys**
- **Wage forecasts (analysis of existing contracts, with judgmental elements; e.g., for drift)**

**Since the BIQM covers the whole economy, the forecasting approach at the Bank of Italy tends to incorporate all info into the BIQM**

# Forecasting: Backcasting/Short-run Forecasting (1)

Information may differ as to timeliness, quality, ease of inclusion in the forecasts; it may belong to the following categories:

- quantitative and concerning model variables directly
- quantitative, but concerning variables not included in model
- quantitative, on discrete variables
- qualitative
- anecdotal

Difficulties of incorporating info from different categories above differ considerably.

Solution: build "Bridge" models: models that allow one to map high-frequency, readily-available information into a projection for variables that are part of large, structural macroeconomic model

Example:

consumption function in macromodel:

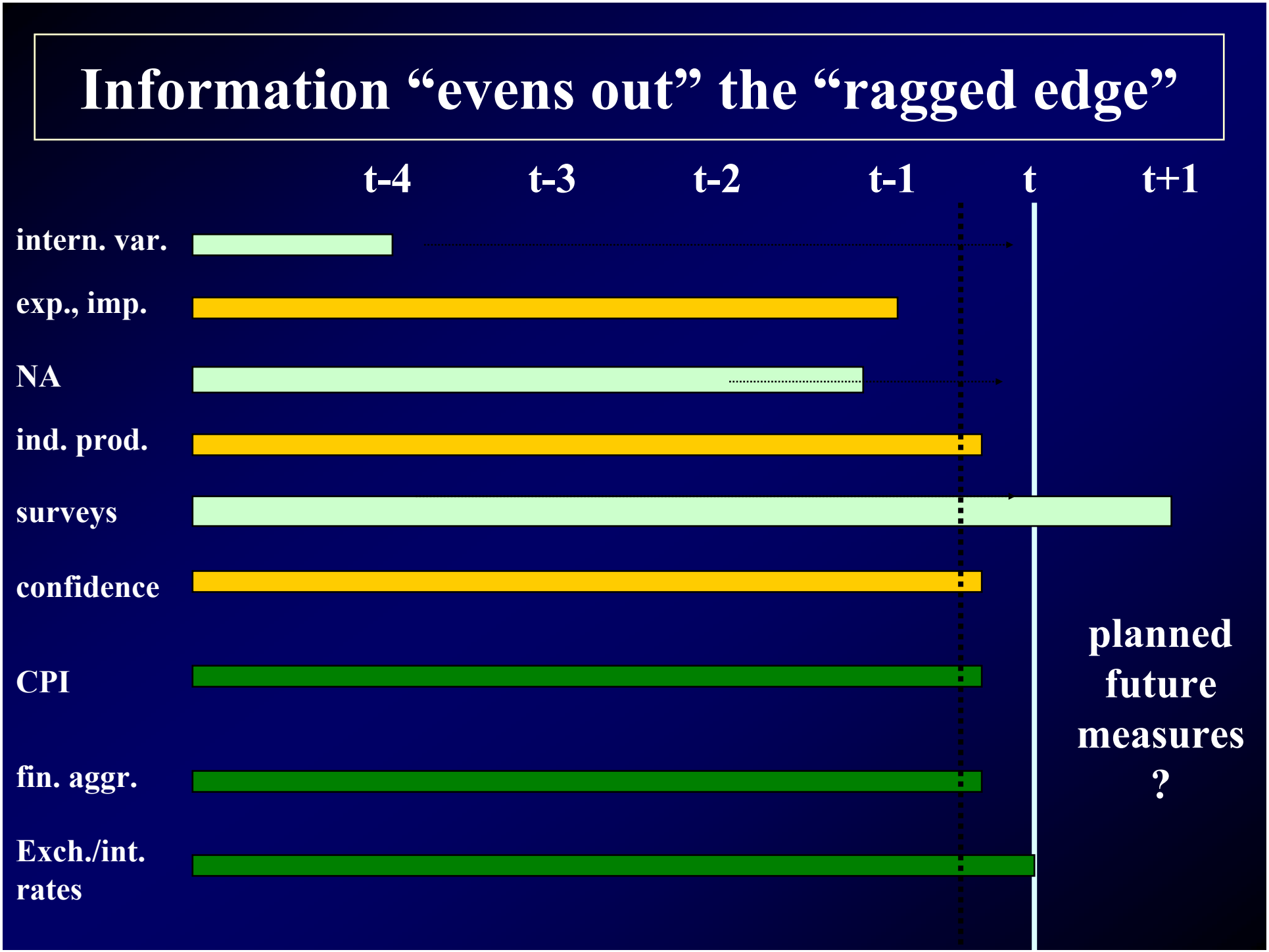
C = *f*(disposable income, wealth, interest rates, …)

consumption function in bridge model:

C = *f*(consumers' confidence, retail sales index, sales of cars, …)

R.h.s. variables in (2) are readily available: → use (2) to predict current C, force (1) to reproduce results so obtained

# Information “evens out” the “ragged edge”



# Forecasting: Backcasting/Short-run Forecasting (2)

Quarterly NA data are available with shorter lags than other information (IMF data on international environment) and are of the utmost importance.

Inversion of single equations unfeasible. Not all RHS variables knowm

Putting aside the issue about the reliability of preliminary data, any sensible forecast should replicate the latest data on GDP, household consumption, …..

Inversion procedure á la Timbergen

Results are not internally consistent (some variables underlying official NA statistics are not known) and the inversion is demanding, so that it must be limited to a subset of variables. Moreover, preliminary data might be quite different from the final vintage, so cons may be as strong as pros.

Mutual agreement within the Eurosystem to fully exploit the latest NA data.

# Satellite models - 1: inflation

- Very short-run inflation forecasts: they are expected, first of all, to make the most out of all available current/recent information (as to: tariffs and other administered prices; market-specific news)
- Judgmental/spreadsheet approach
- For somewhat longer horizon (up to 6 quarters): simple regression equations or (in the past) BVAR models
- Usually, short-run largely judgmental inflation projections prevail with respect to the ones of the BIQM for first 1-2 quarters
- 3-6 quarter-ahead: grey area
- May require interaction between those who are responsible of inflation forecasts and those running the BIQM

# Satellite models - 2: bridge

- Typical lag in availability of NA data: 4-5 months (e.g.: today, in april, only NA figures up to quarter 4 of last year are known; moreover: NA figures are only preliminary estimates)
- But a lot more info is available that can be exploited to form estimates for last and current quarter's NA figures: consumer confidence, industrial production, import and export customs data, demand for credit, retail sales, sales of autovehicles, survey of firms' inventories, etc.
- Bridge models exploits all this information that cannot be directly interpreted by the BIQM
- BIQM's hands-off predictions (first step of all forecast rounds) may differ considerably from bridge model projections: if this is the case, laborious interaction takes place

# Satellite models - 3: public finance

- Despite its relatively large size, the public finance block in the BIQM may not be accurate enough for "realistic" forecasting and policy analysis purposes
- E.g.: interest payments = $i_{sr}\, D_{sr,-1} + i_{lr}\, D_{lr,-1}$. Simplification may be inappropriate if debt maturity changes significantly
- Public finance model: much more detailed description of public balance items
- E.g.: bonds issued are modelled individually, and individually "followed" throughout their "life"
- Public finance model takes GDP, prices, interest rates as given
- Hence, iterations with BIQM are required: run public finance model with GDP and prices as generated by the BIQM; run BIQM, forcing it to reproduce refined public finance projections; keep going until convergence

# Forecasting: More than one model

Use different models; use them in an iterative way (so that all info. Is included in main, larger-scope model):

# A rationale for (reasonably) large-size structural macroeconometric models

- The choice of building a structural model is made because in a policy-oriented institution the model is a common analytical reference; it provides a framework within which conflicting views can be compared and the data can be organised and interpreted; it may help the central bank to present and explain its policies, notably to the government and public opinion; finally, it is a learning device, in that it stimulates discussion and improvements.

- Moreover, a large-size model may provide a larger number of out-reaching "hooks" where outside information may be "appended". In other words, it may facilitate incorporating additional information (that may or may not be included directly, which justifies using satellite models) into the model projections.

# Various exercises - Various bodies involved

- ***Broad Macroeconomic Projections Exercise*, BMPE**
  **coverage: main macroeconomic variables in Euro Area; published since December 2000, 2/year (June and December); ECB and NCBs; responsibility: MPC; technical responsibility: WGF (with interactions with WGPF)**
- ***Narrow Inflation Projections*, NIPE**
  **coverage: inflation in Euro Area; 4/year (2 with BMPE, 2 with SMPE); NCBs (ECB: aggregation only); responsibility: MPC; technical responsibility: WGF**
- ***(ECB) Staff Macroeconomic Projections Exercise*, MPE**
  **coverage: main macroeconomic variables in Euro Area; published since September 2004, 2/year (September and March); responsibility: ECB staff; MPC comments**
- ***Public Finance Report*, PFR**
  **coverage: public finance in EU; 1/year; responsibility: MPC; technical responsibility: WGPF**
- **⇒ Variety of projections, different for variable and time coverage, tools, dissemination, etc. ⇒ different tools for different purposes (we will get back to this)**

# The yearly timetable

- **Start: January**
  **Internal reports: February**
  **Publication: March MB**

  **Winter ECB SMPE**
  **NIPE (smaller scale)**

- **Start: March**
  **Internal reports: May**
  **Publication: June MB**

  **Spring BMPE**
  **BMPCE**
  **NIPE (full scale)**
  **PFR**

- **Start: July**
  **Internal report: August**
  **Publication: September MB**

  **Summer ECB SMPE**
  **NIPE (smaller scale)**

- **Start: September**
  **Internal reports: November**
  **Publication: December MB**

  **Autumn BMPE**
  **BMPCE**
  **NIPE (full scale)**

# NIPE

- Only concerned with inflation
- With a shorter horizon than BMPEs (typically, 1-1,5 year vs. 3)
- Tools: ARIMAX models, BVARs, judgement
- Need to be consistent, for the overlapping horizon, with BMPE/SMPE (will be discussed again later)

# BMPE

- Conducted twice/year
- Both ECB and NCBs co-operate
- “Zero-issue” of BMPE in autumn 1998
- First “actual” BMPE: spring 1999
- First published BMPE: autumn 2000 (in MB of 12/2000)
- A number of adjustments (mostly additions) made along the way; recent example: risk analysis

# Responsibility of BMPEs

**The Monetary Policy Committee (comprising, as working groups below, both ECB and NCBs delegates) is ultimately responsible, with help from:**

- **Working Group on Forecasting (WGF): actual number-crunching, discussion of assumptions and scenarios, first draft of report**
- **Working Group on Public Finance (WGPF): projections of Government budget and components**
- **Working Group on Econometric Modelling (WGEM): not involved in projections, but helps building forecast/policy analysis tools**

# Steps of BMPEs

1. Setting of assumptions

2. Derivation of and agreement on a set of macroeconomic projection figures (peer review)

3. Consistency checks

4. Preparation of Report

# Step 1: Setting of assumptions (subsequent revisions not unlikely)

**S-R interest rates: 3-month constant at currently observed level for whole horizon (until December 2005); market interest rates thereafter.**

**L-R interest rates: evolving in accordance with market expectations**

**Exchange rates: constant (standard "technical" assumption)**

**Oil and non-oil commodity prices: based on futures prices**

**International environment: agreed by WGF on initial proposal by the ECB with contributions by some NCBs**

**Fiscal variables: based on "most likely" scenario**

# Remark on interest rate assumptions

**Why constant S-R interest rates until recently? it is the typical assumption of many CBs. Contrast this assumption with those for fiscal policy: the latter are based on most likely scenario**

**Why? Because the CB does not control fiscal policy, but controls interest rates**

**Hence, monetary policymaker is interested in knowing answer to the question: "what if I do nothing?"**

**The shift to market interest rates was motivated by the desire to achieve grater internal consistency of the projection scenario. No acritical endorsement of market valuations.**

# Projections vs. Forecasts

**In the Eurosystem's terminology:**

**Projections = Conditional**

**Forecasts = Best guess (l.s. unconditional)**

**This is why published forecasts are called projections (more on this below). The distinction is however essentially a matter of degree**

# Step 2: Deriving the projections

- **NCBs produce their own projections, taking as given imports, prices, etc. of other countries**
- **If all NCBs' models were linked together, any variable in any country would automatically react to developments in all other country**
- **An iterative process and consistency checks are used to account for the trade linkages between EA countries**

# Agreement on figures

**The final figures that are eventually aggregated to give the projections for the euro area as a whole are those assembled by the NCBs.**

**However, an intense peer review process takes place in a number of meetings, with the aim of ironing out possible differences in the assessments: every NCB's projections are compared with those of the ECB, and with the results of the consistency exercises. All other NCBs are obviously entitled to raise questions and remarks.**

**NCBs may be asked to review their projections, on the basis of sound argument that the WGF views as convincing. NCBs are expected to produce all sorts of additional evidence that may support their figures.**

# Step 3: Need for consistency checks

**Each NCB manages and simulates its own model(s); trade linkages within the EA cannot be properly accounted for.**

**An iterative approach has to be used:**

**assume starting values for trade variables (usually: outcomes in previous forecast exercise)**

**simulate models separately**

**use outcomes for trade variables as input and simulate again**

**continue until convergence is reached (i.e. when discrepancy does not exceed 0.1 p.p.).**

# Financial Consistency Exercise

**Aims at assessing the implications of the BMPE for the consolidated balance sheet of MFIs in the euro area, given a projection for M3.**

# Step 4: Last-minute revisions

- Assumptions may be reviewed in the course of the exercise
- To the extent that time allows, NCBs re-run their models on the basis of the new assumptions
- If time is running out, the revisions are made on the basis of a tool called Projection Update Elasticities

# Projection Update Elasticities (PUEs)

**All NCBs produced a set of multipliers for the respective endogenous variables, with respect of a number of exogenous variables (non-euro-area imports, oil prices, etc.), and with respect to endogenous variables of other countries:**

**The PUEs may be solved simultaneously to deliver a consistent picture for the euro area.**

**They are not suitable for producing baseline simulations (as they cannot easily take into account specific factors, e.g., results of wage agreement rounds), but only for small variations around a baseline.**

# Publication of forecasts: Background

**All CBs produce forecasts: given the average lag with which monetary policy affects economic activity and prices (a delay of about 2 years before the maximum effect is reached), monetary policy-making needs projections about the future.**

**Not all central banks publish them. Typically inflation targeters do, with exceptions: Canada.**

**The Banca d'Italia published its forecasts for the first tim in July 2007.**

**Why? Because publishing has pros as well as cons.**

# Pros

**Increase transparency of MP. Specifically, when projections are used in policy making, by publishing them one makes it easier for the markets to understand the motivations behind MP decisions, and makes it clear that the latter depend on a forward-looking perspective. Expectations may also be influenced in this way.**

**The demand for more accountability is met (with beneficial effects on reputation).**

**From the viewpoint of modellers: the management may feel more involved in the projection-making process**

# Cons, 1

**Given the emphasis that the publication would give to projections, the markets may be induced to think that they represent a synthesis of all information that the MP committees review, whereas this is not true (in the Eurosystem, the projections are possibly the most important component of the 2nd pillar only).**

**The markets may expect an automatic reaction to the inflation risks signalled by the projections, which is not what they should. This risk can be avoided by giving correct information, and also by the operational design.**

# Cons, 2

**The projections are conditional upon a few technical assumptions: they do not represent the "most likely scenario". If they signal inflation risks, agents may be induced incorrectly to modify their expectations upwards: they should instead assume that proper action will be likely undertaken to counter those risks. The conditional nature of the projections should be clearly explained.**

**Forecast errors may be negative for reputation (incidentally: conditional projections are even more prone to be affected by errors). On the whole: this risk is likely to be limited.**

**Publication of forecasts may distract the public from the wealth of analyses that are presented in the MB.**

# To publish or not to publish?

- In Europe, the European Parliament requested in October 1999 that forecasts be published every six months, to: make it possible for the public to evaluate monetary policy decision; to inform the markets; to insure transparency

- First publication: December 2000 (BMPE), September 2004 (SMPE)

# Projections by the staff or by the Council?

**Who should be indicated to the public as the proprietor of the projections?**

**If they were presented as being the Councils projections, the latter would be viewed as reflecting its views about future developments in the economy.**

**But: the public should not be induced to think that the forecasts reflect all information and all judgement that goes into the decision process.**

**Hence: present forecasts as a "technical" product, that does not involve any responsibility of the Council, and does not entail any automatic reaction.**

# Which variables should be included?

**Issues:**

**Few but good? Or many (with increasing risks of making errors)?**

**What about policy sensitive variables (e.g., public finance ones? Risks both in departing from and in reproducing faithfully the official programs).**

**Solution:**

**Only publish variables that are relevant to understand inflation prospects.**

# What is the best publication format?

- In a separate document?
- Or in one of the publications that already exist?
- The second option seems preferable, as it makes it clear that the projections are only one of the elements that enter the policy-making process.
- Published in the ECB Monthly Bulletin.

# Only area-wide variables or national ones too?

**To avoid any possibility of ambiguity, only area-wide variables are included (as the Eurosystem has area-wide objectives).**

# ECB's or Eurosystem's?

- Projections prepared by the ECB only would presumably save time (however, staff projection exercises take about as much time as the Eurosystem's).
- Also, confidentiality issues are likely to be less acute.
- However, letting the NCBs' expertise on country-specific issues play a role seems to be the wisest choice (example: wage contracts).

# Confidentiality & guidelines for publication

- **Confidentiality is obviously a primary concern in any CB.**

- **Several restrictions put in place (limited access to projection results and documents, etc.)**

- **'Black-out windows' in periods close to publication of Eurosystem's projections**

- **NCBs retain possibility of making their view on national economy clear.**