


CMTEA Workshop

Medium-term macroeconomic projections in a multiregional state: the case of Belgium

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Medium-term forecasting at the Belgian Federal Planning Bureau

- ✓ Long tradition of making medium-term forecasts at the Belgian Federal Planning Bureau...
- ✓ ... first at national level...
- ✓ ... since a few years also at regional level
- ✓ Aim of this presentation: explaining how national and regional medium-term forecasts are generated
- ✓ Overview:
 1. National medium-term forecasts: the HERMES model
 2. Regional medium-term forecasts: the HERMREG model

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FPB's national medium-term model: HERMES

General Description

- ✓ Harmonized Econometric Research for Modelling Economic Systems
- ✓ Analysis of macroeconomic and sectoral aspects of the Belgian economy
- ✓ Yearly sectoral model with a forecasting period of 1 to 6-12 years
- ✓ Econometric model based on time series analysis with strong theoretical foundations
- ✓ Demand-driven model + important supply elements

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FPB's national medium-term model: HERMES

Which disaggregation?

- ✓ 8000 equations of which 600 are econometrically estimated
- ✓ 1200 exogenous variables
- ✓ 15 industries
- ✓ 4 production factors
- ✓ 3 main categories of salaried employment (and 2 sub-categories)
- ✓ 8 main energy products (total of 14)
- ✓ 6 greenhouse gases
- ✓ 15 main consumption categories (total of 24)
- ✓ 5 main institutional sectors (total of 12)
- ✓ Highly detailed public finances block

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FPB's national medium-term model: HERMES

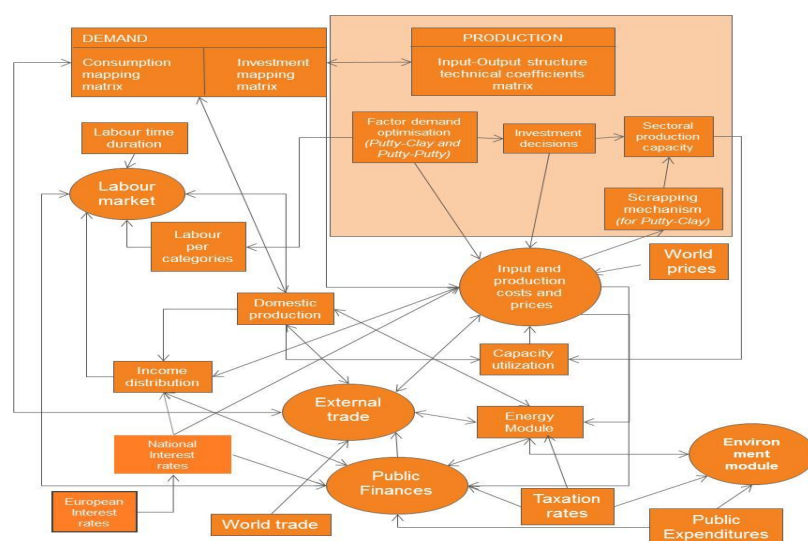
Some characteristics

- ✓ Starting point: international environment and demography
- ✓ For years t and $t+1$, fully coherent with the short-term MODTRIM model's results
- ✓ From industries to national results
- ✓ Putty-clay production functions for manufacturing
- ✓ Exogenous technical progress
- ✓ Use of input-output and transition matrices to determine consumption and sectoral investments
- ✓ Potential output and output gap are computed ex post using the EC methodology (but applied to our own historical and projected series)
- ✓ Working Paper "A new version of the HERMES model" to be published in the coming months

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FPB's national medium-term model: HERMES

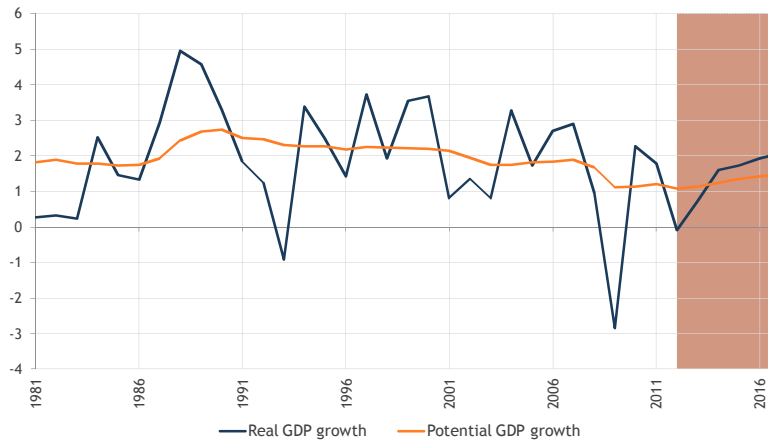
Different blocks



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FPB's national medium-term model: HERMES

An illustration: Real and potential GDP growth



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FPB's national medium-term model: HERMES

Main uses and users

- Main uses:
 - ✓ Medium-term outlook (unchanged policy scenario, notably with regard to fiscal and social policies)
 - ✓ Impact of policy measures and exogeneous shocks (impact of higher crude oil prices, effects of various energy taxation policies, effects of new labour policies,...)
- Main users:
 - ✓ Social Partners
 - ✓ Federal Government
 - ✓ Parliament, universities, research departments, ...

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Calendar of FPB's national and regional forecasts

- ✓ In February: National short-term exercise (year t) for budgetary control produced by MODTRIM (FPB's national short-term model)
- ✓ In March: Fully coherent with national short-term forecast, preliminary version of national medium-term exercise, used by the government to draw up SP and NRP, submitted to EC
- ✓ In May: Final version of national medium-term assessment for Belgian economy

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Calendar of FPB's national and regional forecasts

- ✓ In June: Fully coherent with national medium-term outlook, regional medium-term outlook published with our regional partners
- ✓ In June: Fully coherent with national medium-term outlook, national long term outlook published by the Study Committee on Ageing (MALTESE model)
- ✓ In September: National short-term exercise (year t and t+1) for the budget of year t+1
- ✓ In September: Fully coherent with new national short-term exercise, quick update of national and regional medium-term outlook

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Multiregional forecasting: the HERMREG project

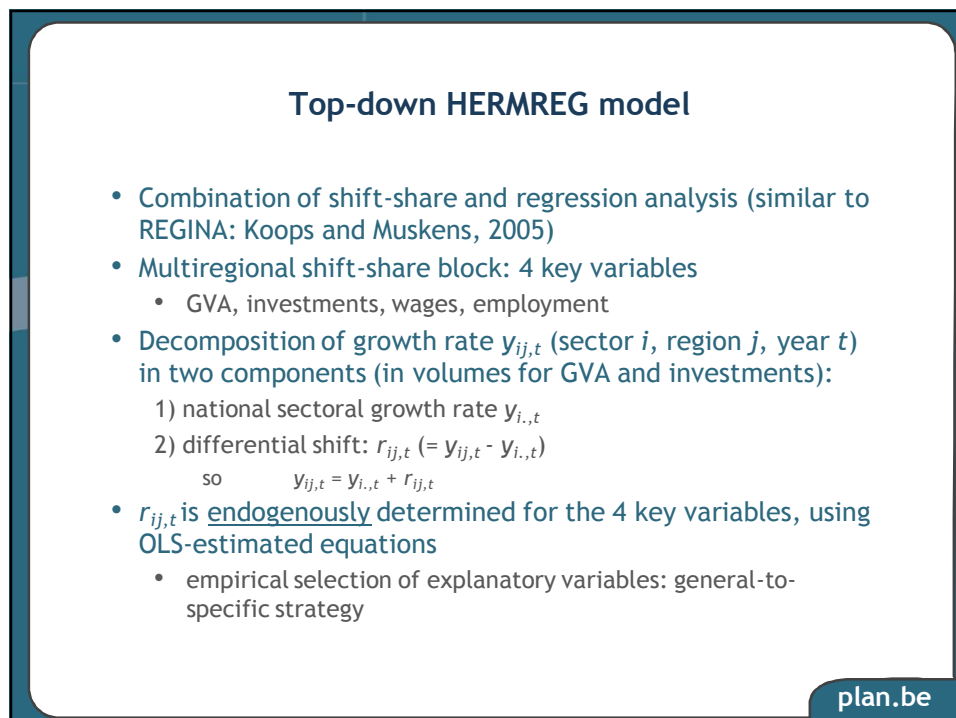
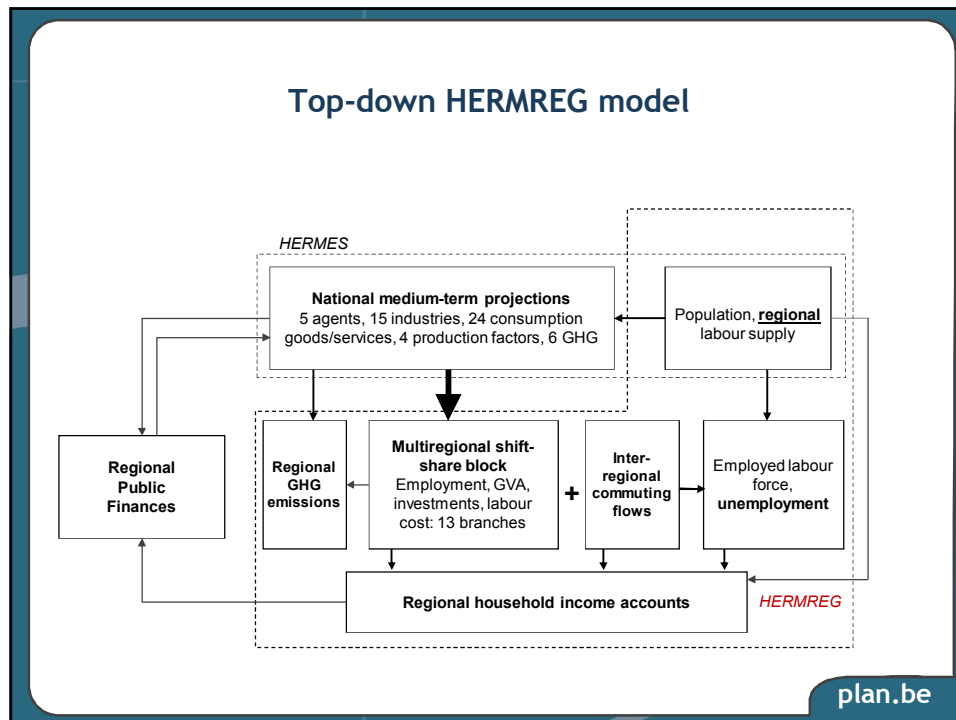
- ✓ Cooperation (since end 2005) between the three regional research institutes (IBSA, SVR, IWEPS) and FPB
- ✓ Why HERMREG ?
 - Growing importance of Regions for policy making
 - Since 1970: six State reforms in Belgium
 - Sixth State reform under way: devolution of even more responsibilities to the Regions
 - Regional policy instruments (EU, national, regional levels)
 - Need for developing tools for policy analysis including a regional dimension
- ✓ 1st step: development of a first top-down macroeconomic multiregional module (“HERMREG”) coupled to HERMES
 - Main goal: **medium-term forecasting**
 - Top-down (why ?) : severe data restrictions at regional level

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Multiregional forecasting: the HERMREG project

- 3 regions, 13 industries
- Time-series macroeconometrics (1980-...)
- Public finances by Region and by Community: in HERMES
- Credibility of the regional projections:
 - ✓ Consistency with the national FPB outlook/projections
 - ✓ Collective publications/communication (common press releases)
 - ✓ Close collaboration of experts of FPB and the 3 regions
 - ✓ Transparency: publication of regional projections + database 1995-... available on the FPB website
 - ✓ Use of HERMREG database/projections by national/regional experts, usual “outsiders” (academics, ...)

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Top-down HERMREG model

- Coherence with national projections:
 - Regional projections $\hat{y}_{ij,T+k} = \bar{y}_{i,T+k} + \hat{r}_{ij,T+k}$ are used as “endogenous keys”
 - Any regional series in current prices: weights applied to the national forecast
 - Any regional series in “chained Euros”: calibration to the national projected value (aggregates in PYP are additive)
- 3 regions → 6 commuting flows are modelled ...
 - ... using push-pull factors: economic conditions in origin and/or destination region (e.g. employment growth, unemployment rate)
- Regional unemployment = labour supply - working population
 - working population = employment + (outgoing commuting - incoming commuting) + net-border workers flow
- ✓ Public accounts of the Communities and Regions
- ✓ Top-down regional energy-environment (GHG) module

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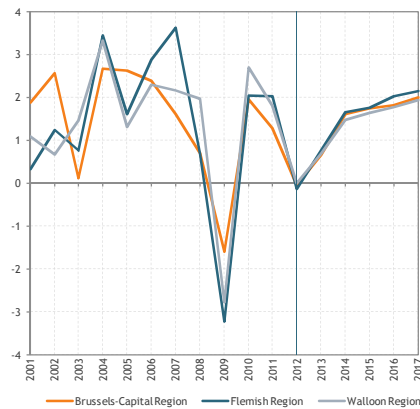
Multiregional projections

- Multiregional multisectoral medium-term projections:
 - ✓ GVA
 - ✓ Investments
 - ✓ Wages
 - ✓ Employment (salaried and self-employed)
 - ✓ Labour productivity
- Multiregional medium-term projections:
 - ✓ GDP
 - ✓ Commuting flows, working population, employment rate, unemployment
 - ✓ GHG emissions (CO₂, ...)
 - ✓ Households incomes

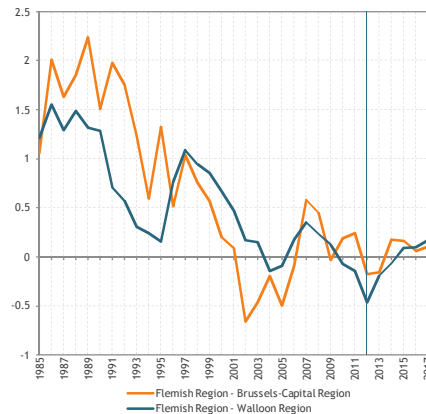
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Multiregional projections

Regional GDP in volume
growth rate in %



Regional GDP growth differentials
compared to Flanders, in pp : 5-year moving average



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Work in progress: the bottom-up approach

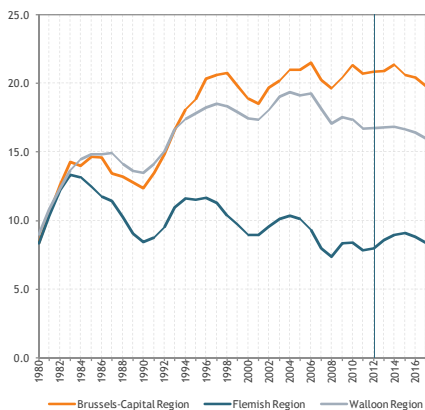
- ✓ Progressive development of a **bottom-up** multiregional macroeconomic structural model
 - Top-down: OK for prevision, not for regional impact analysis
 - Different regions are influenced differently by national policies
 - Need to model both the supply and the demand sides by region
- ✓ 1st step: a hybrid bottom-up/top down model
 - ✓ Supply side regionalised
 - ✓ Two-level CES four-factor production functions
 - Demand side: still overwhelmingly national (demand for regional production: top-down determined)
- ✓ Next steps: regionalisation of demand components
 - ✓ Deliveries by regional branch to investments of all the branches



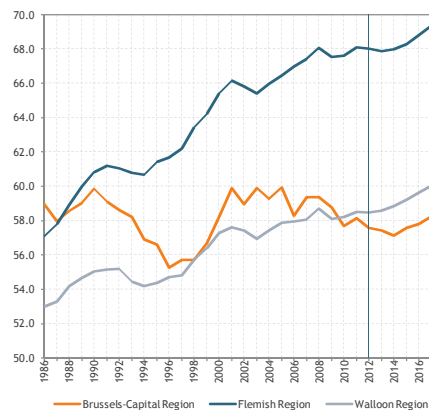
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Regions are different: example

Regional unemployment rate
% of labour force (broad definition)



Regional employment rate
% of working age population (15-64 years)



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Thank you !

For listening

For questions (?)

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