



VATT

AGE Modelling and Long-Term Forecasting in VATT

- The VATTAGE approach

Juha Honkatukia

GOVERNMENT INSTITUTE FOR ECONOMIC RESEARCH (VATT)

Outline of the presentation

- **VATT – the Government Institute for Economic Research**

- **Policy Analysis and Modelling**

- **The VATTAGE model**
 - **Structure of the model**
 - **Core data sources**

- **Use of historical data**
 - **Technology trends**
 - **Changes in consumer taste**
 - **Contribution of policies**

- **Long-term forecast/foresight**
 - **Expert views**
 - **Other models**

- **Extensions to the model**
 - **Regional extensions: VERM (Vattage Regional Model)**
 - **Cuts in public spending in care sectors**

VATT Long-Term foresight

www.vatt.fi

- Shared scenarios for several ministries
- VATTAGE and VERM used to produce long-term forecasts to 2025, 2030, 2050
- Sources for assumptions - Stability pact and AWG projections, sector level history and “expert panels”
 - Population, age-related public expenditure
 - VATTAGE used in sensitivity analysis of MoF forecasts
- The baseline development of the economy has also been studied in the context of the National Energy and Climate Strategy
- Pace of growth for energy intensive industries slows down, but they remain important also in the future
- Energy efficiency improves as on trend
- VATT in the process of integrating sector expert views in forecasts
 - Labour supply -> potential GDP
 - Efficiency of public services -> age-related
 - -VATTAGE provides most of productivity history and integrates views on world markets and price (mainly exports)

Issues with BAU

- "EU closure"

- The €;
- Somebody else's forecasts on euro vs USD etc.

- Macros

- MOF Medium term forecast
 - Macros -> 2016 (2013)
 - "Double dip"
 - "Output gap"
 - AWG ->(2060)
 - Pensions, age-related expenditures

- History

- Productivity, structural change
 - Productivity growth slows down (2012)
- Absorption
 - Exports won't fully recover (2012)

- Links to other projects/sources

- Climate policies – Low Carbon Finland 2050 VTT/TEM (2013)
- Age-related – SOME/MoH
- MOF "austerity"

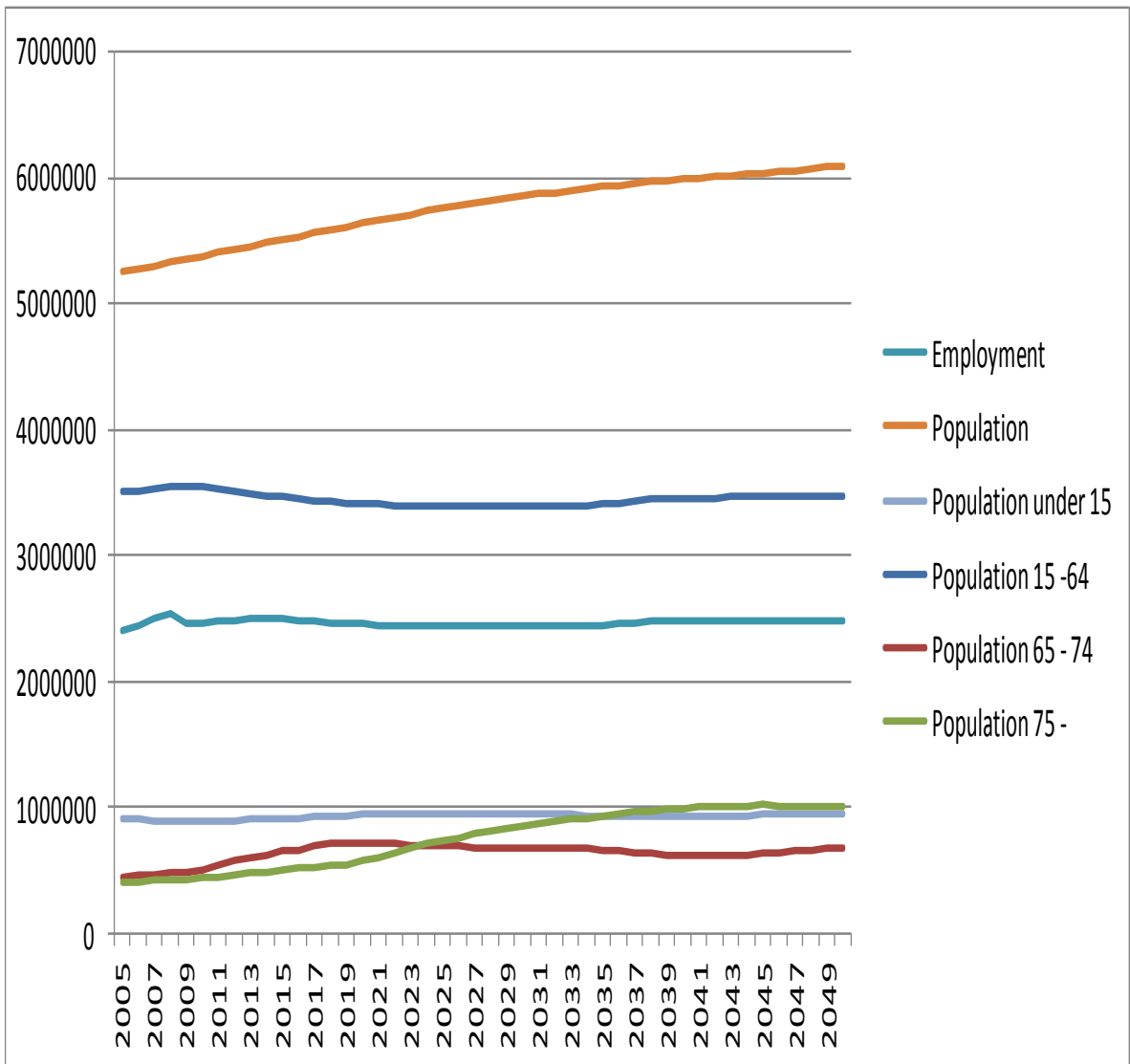
Issues with BAU

- **Modelling health demand for labour in the health sector**
 - **Based on a model for social care services and health care**
- **Driven by development of age cohorts**
- **Detailed data on unit costs per procedure/type of care per cohort**
- **Distinguishes between private and public care provision**
- **In Finland, public sector dominates specialist health care,**
- **Private sector increasing its share in esp. Care for the elderly**
- **Under current structures, drastic increase in labour demand anticipated until late in the 20's**
- **Currently, major reforms in process**
 - **Cuts in growth of public employment**
 - **Changes in funding (govt/municipalities, private sector)**

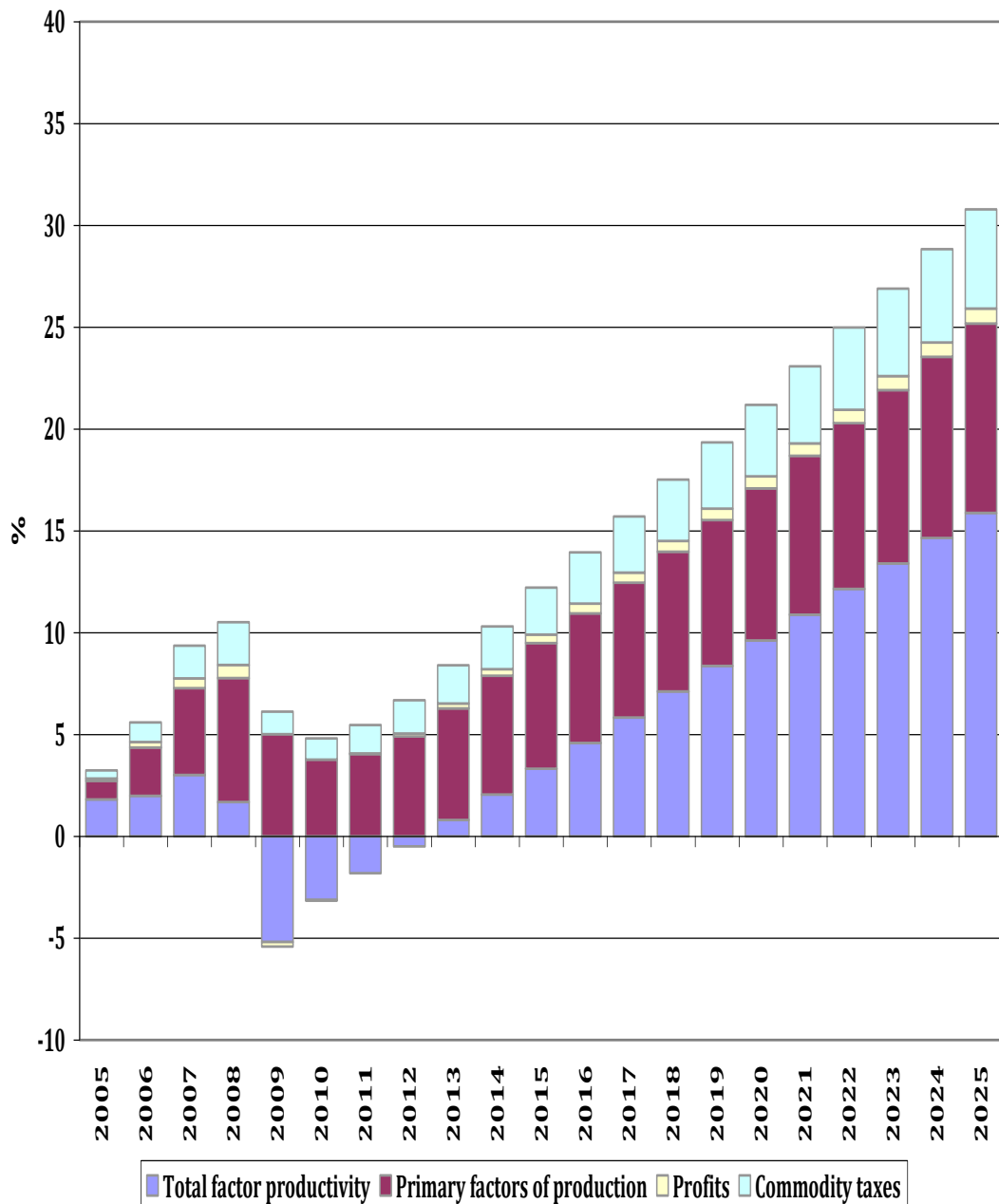
VATT Foresight scenarios for 2025 *www.vatt.fi*

- **Baseline**
 - GDP growth 1.8 by 2025
 - Employment declines starting end 2010s, limiting potential GDP growth
 - GDP share of services increases, esp. those of social care and health
- **SOME**
 - Social care and health more productive
- **Immigration**
 - Labour force grows by 10000 more than in baseline
- **Target**
 - Public sector savings programme
 - More productive S&H sectors
 - More public R&D expenditure
 - Faste export growth in many industries

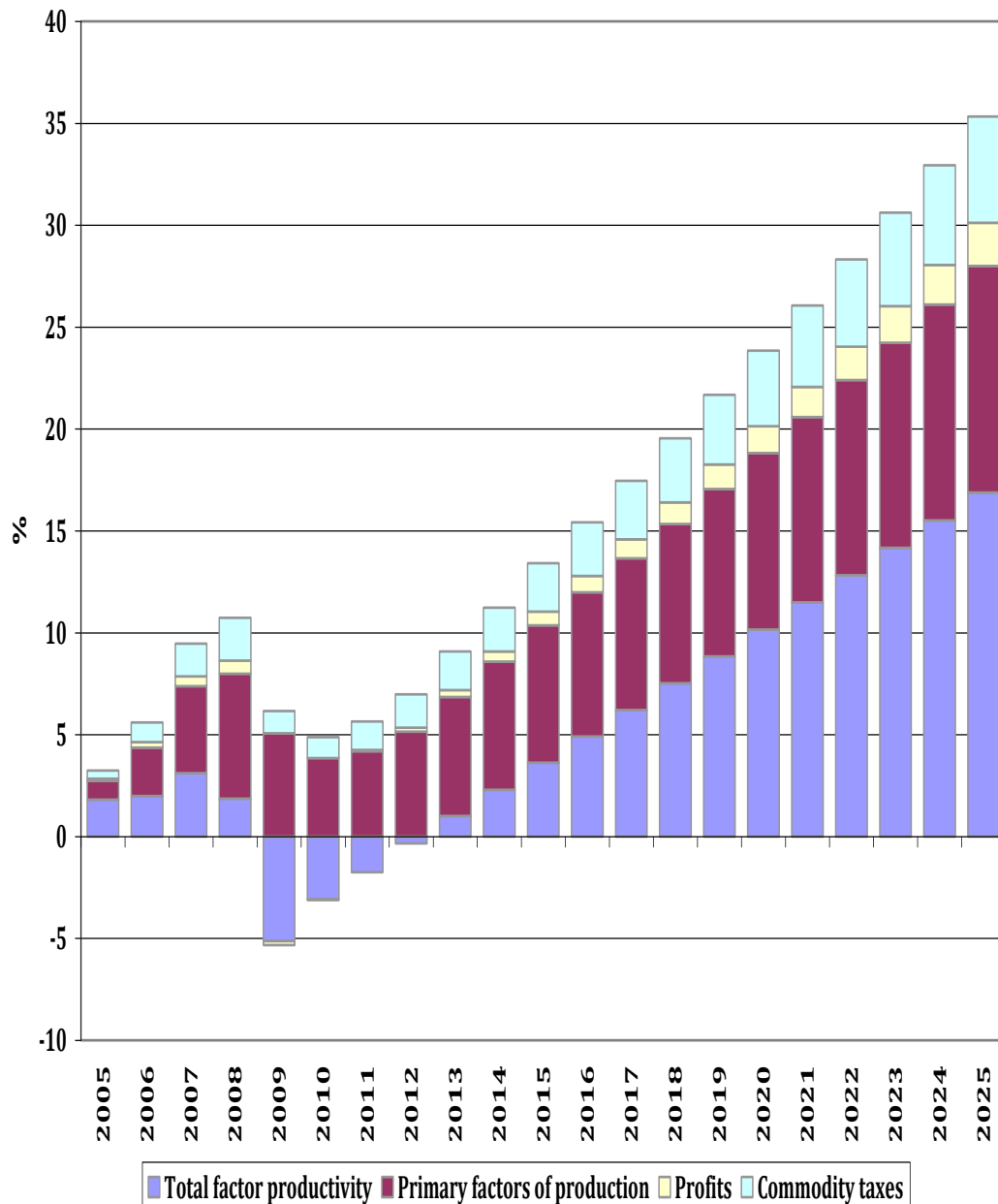
2. Dependency ratio is worsening rapidly



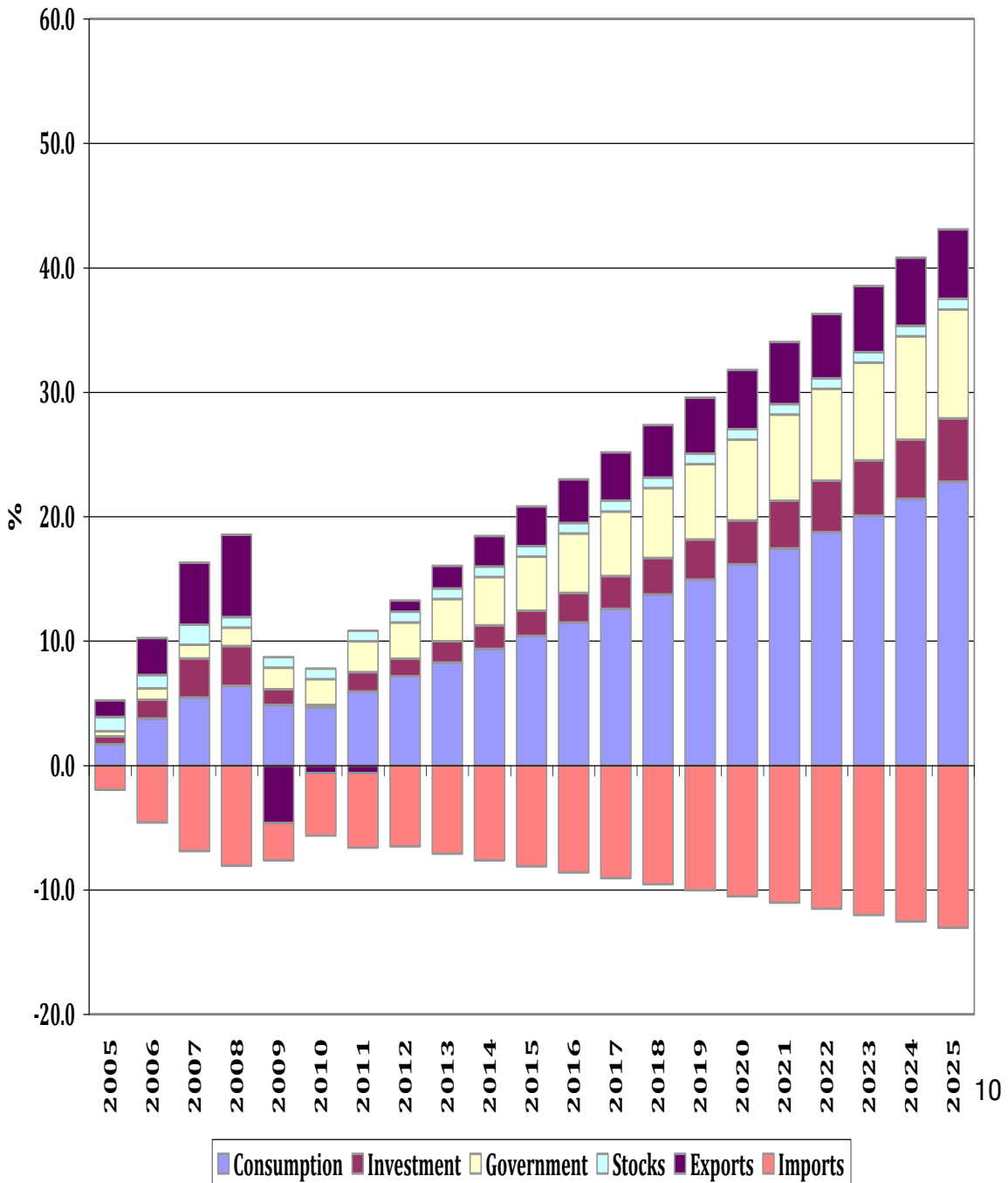
Supply side contributions to GDP growth (baseline)



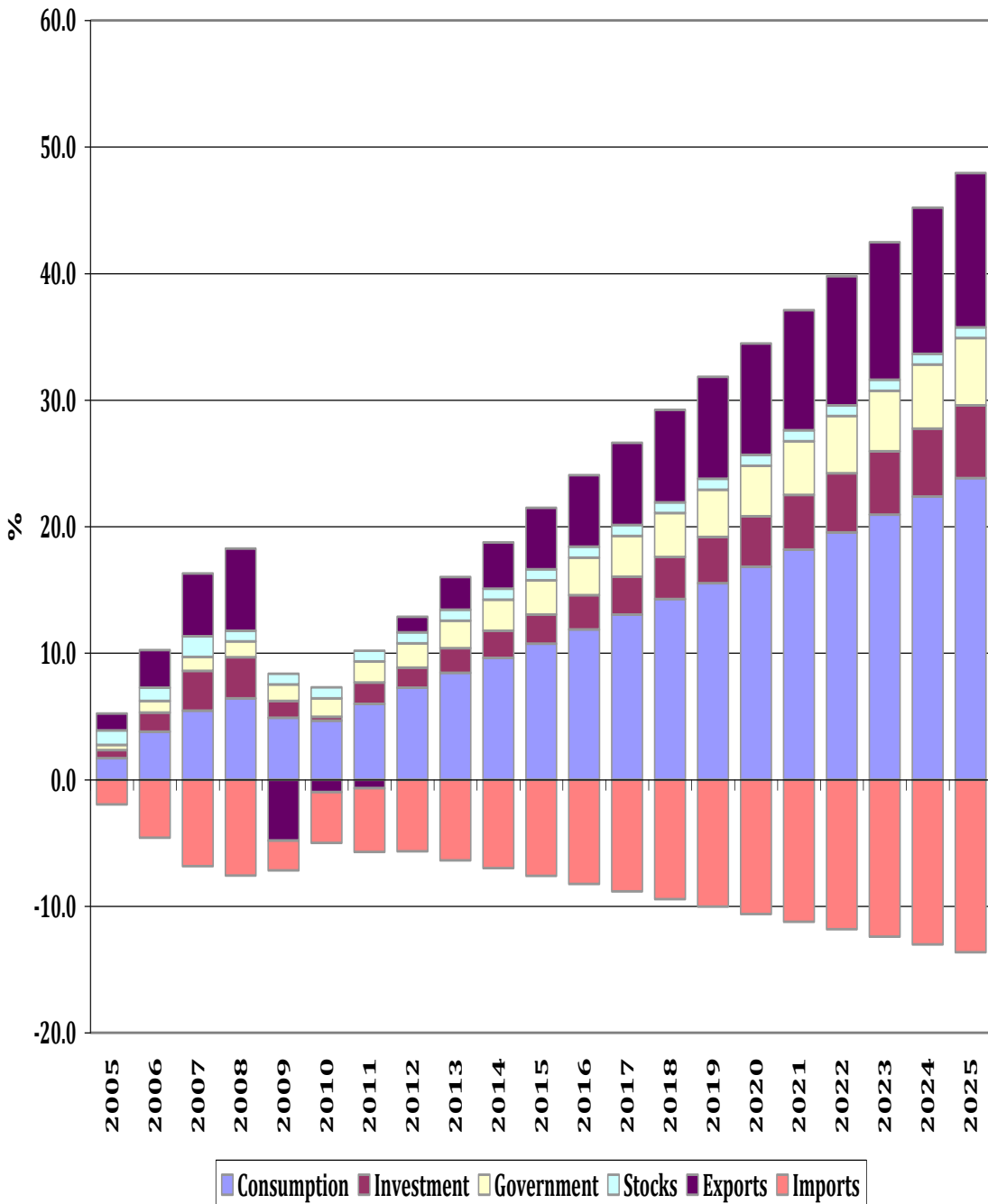
Supply side contributions to GDP growth (target)



Demand side contributions to GDP growth (baseline)



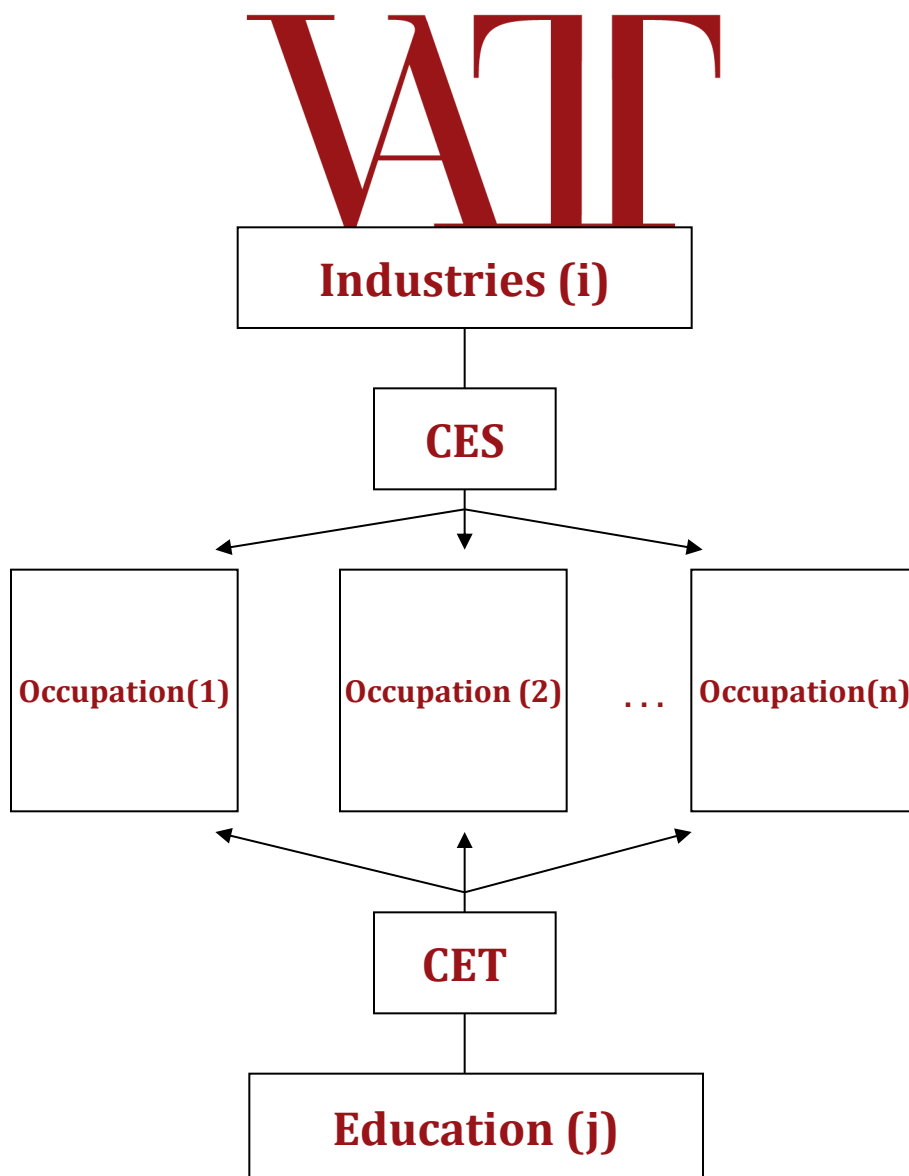
Demand side contributions to GDP growth (target)



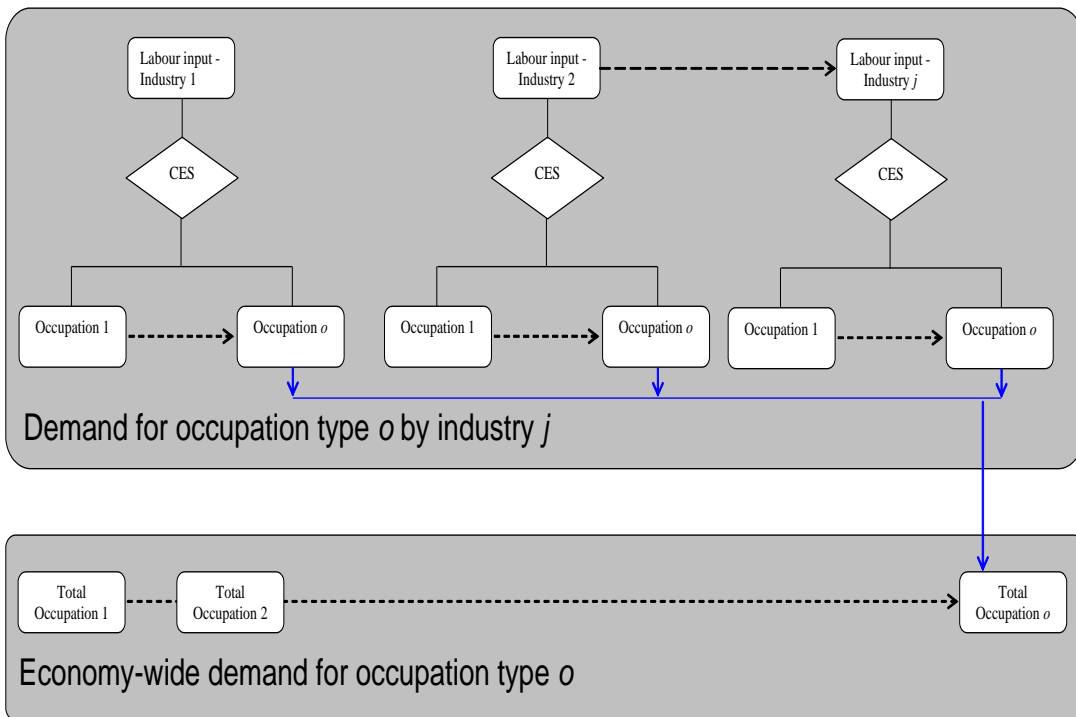
The VATTAGE model

- **Labour demand can be modelled as demand for skills or occupations**
- **”Standard setup”: cohort-specific participation and employment rates**
- **A useful new extension focuses on demand for skills on the one hand and the supply for skills stemming from various educational backgrounds on the other**
- **Links to industry/corporate studies – econometrics on changing occupational structures**
- **Advantages**
 - **model reports relative wage changes between skills/occupations, indicating bottlenecks in supply**
 - **Model can be used to study different educational policy regimes and to evaluate their efficiency and welfare effects**
 - **Taking different types of labour into account enables analysis of distributional effects of other policies**

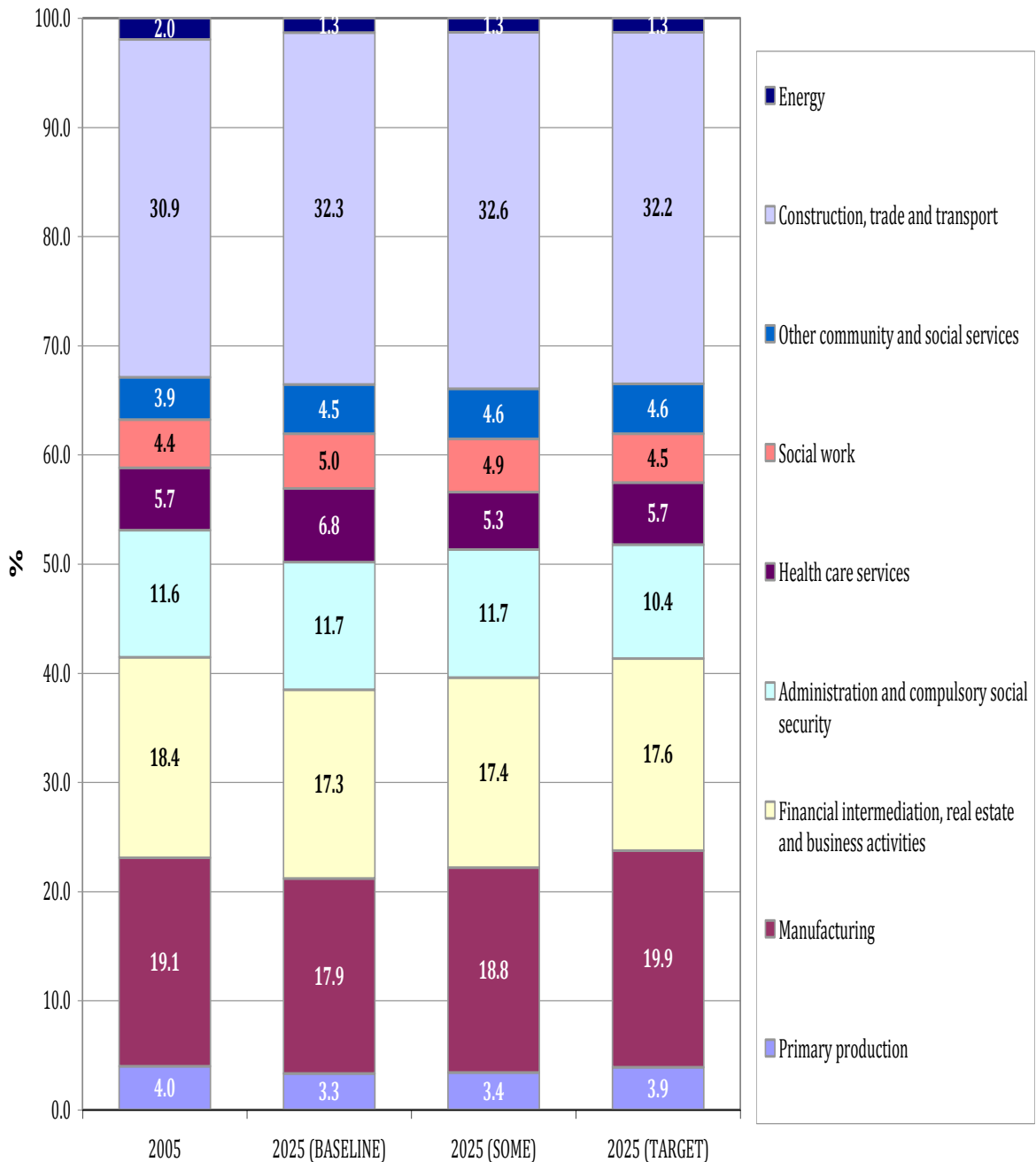
Labour demand



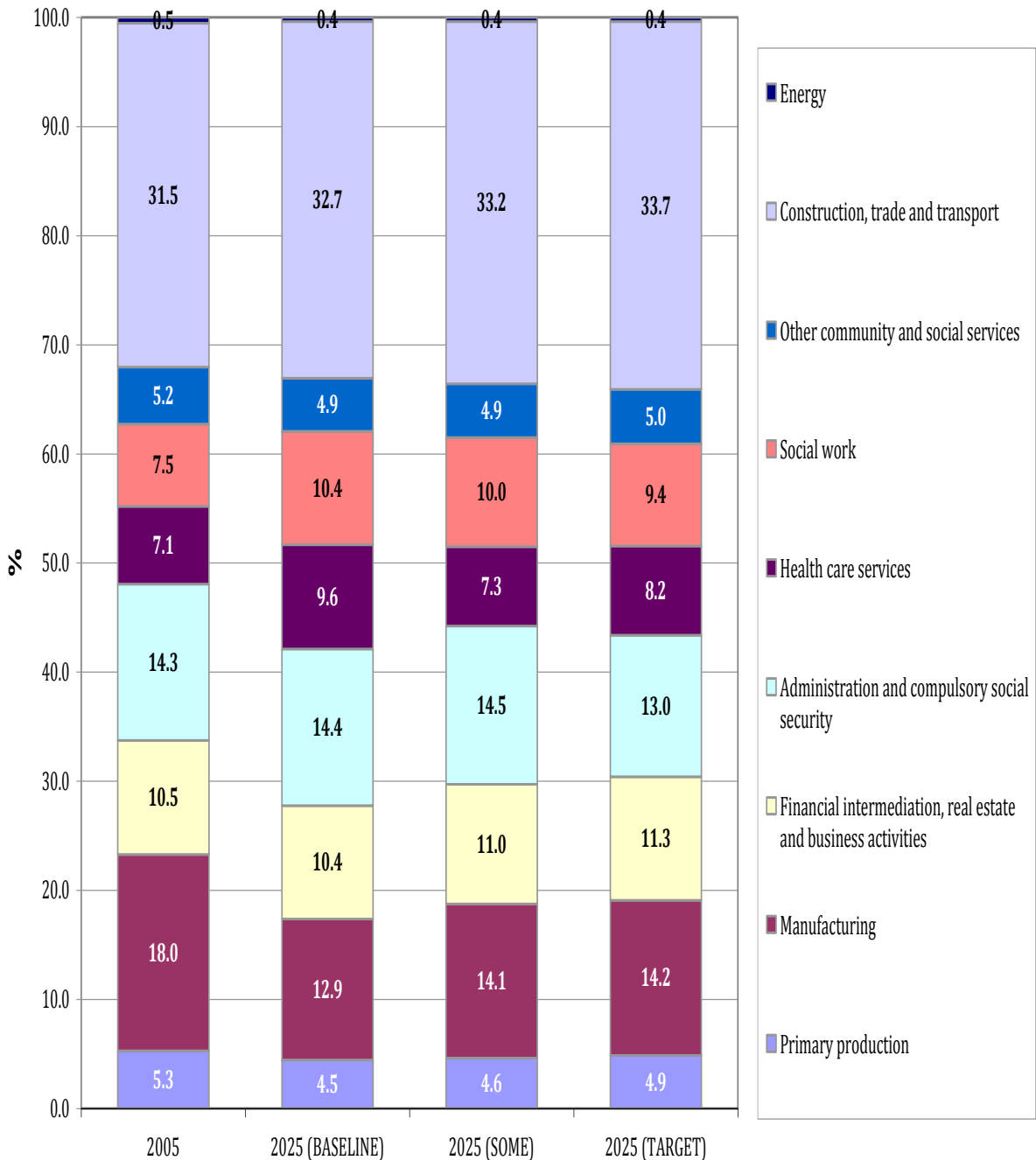
Labour supply



Comparison of different scenarios (production)



Comparison of different scenarios (employment)



The changing age structure has big implications on demand for services

Demography also limits potential GDP growth

Productivity growth has a key role since employment growth negligible

Export industries depend on world market developments

Most services follow domestic demand

Increasingly, services linked to exports

Recent update – fiscal sustainability is becoming an issue

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Extensions – fiscal thrift

Fiscal sustainability is becoming an issue in Finland

Government proposes to cut anticipated growth in public health and social sector workforce by two thirds

Affects of cuts on labour markets need to be anticipated

Problem: how much will people compensate by increasing demand for private care services?

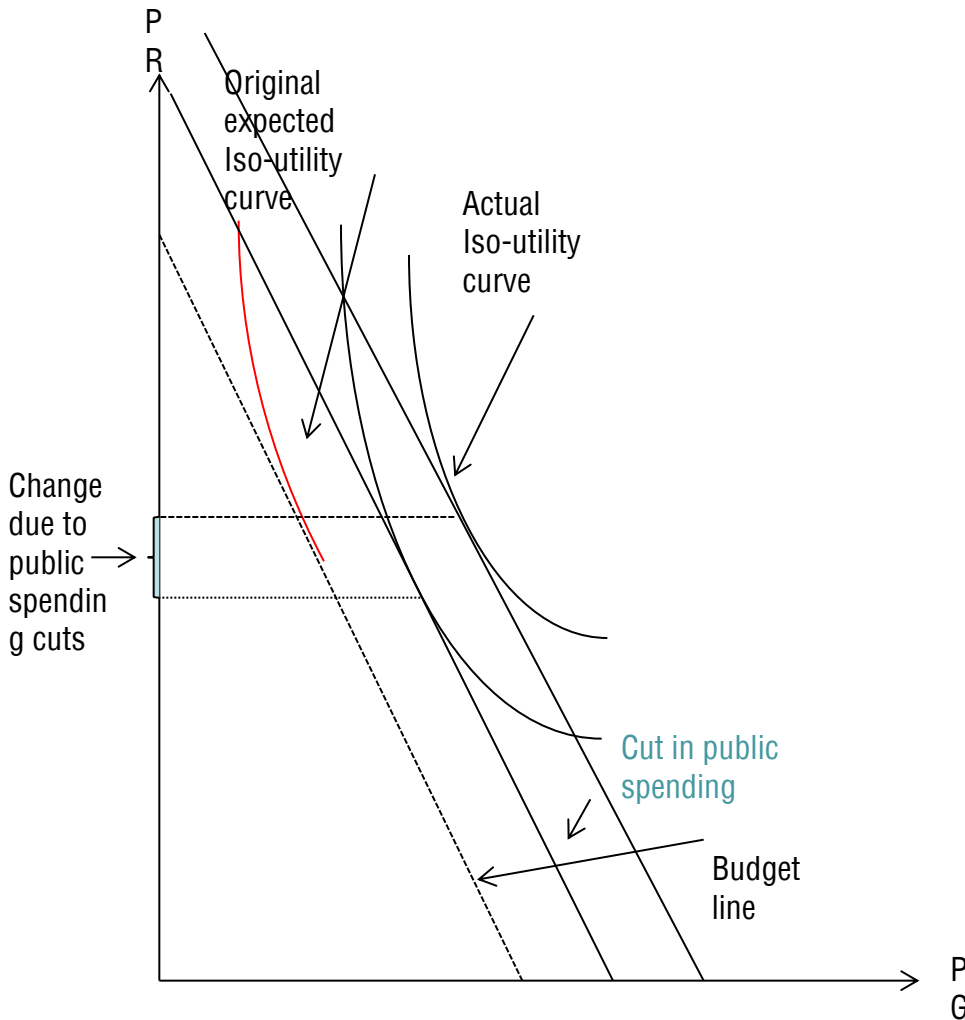
2013 MoF short-term forecast

- Basic macros (private and public consumption, investment, exports)
- AWG
 - SOME forecasts for age-related public expenditure and pensions (commodity specific)
 - Other public consumption follows trends / GDP growth / targets
 - Income transfers follow population and SOME indexation schemes
- Industry-specific productivity growth (PATKET exercises; historicals; decomposition and updating)

2. Introducing utility from public spending

- Additional data from special consumption survey of Statistics Finland
- Calculation of shares of public expenditure “given” to household in different deciles
- Behavioral rule: Consumers compensate for changes in public service provision by adjusting their private demand for the servicew, subject to changes in relative prices and in their incomes

2. The VATTAGE model – adjustment for public services



**VATTAGE documentation
Research report 147**

**VERM documentation
Research report 171**

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