DETAILED LABOUR MARKET MODELLING WITH THE INFORUM MODEL INFORGE AND NEXT STEPS

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(Anke Mönnig)

German Labour Market in Transition

► Number of unemployed persons declined from 4.5 million in 2005 to 1.5 million in 2018

► As a result, the challenges of the German labour market policy have changed:

⇨ Shortage of manpower in occupations

⇨ Impact of structural changes (e.g. digitalization, new mobility regimes, climate change, …) stronger

► To meet these challenges the INFORUM-Modell INFORGE was significantly expanded to QINFORGE

⇨ QuBe-Projekt (qualifications and occupations in the future)

QINFORGE – An Overview

► Four interdependent blocks

⇨ ❶ The demographic module records immigration from 150 countries, birth and mortality rates and immigration

⇨ ❷ The education module depends on demographic change

   ▪ School, vocational training and studies

   ▪ Persons leaving the education system are allocated to occupations

⇨ ❸ The module of occupational flexibility: transition from trained occupation to practiced occupation.

⇨ ❹ INFORGE: labour demand on the sectoral and aggregated level; determined among others by demographic change

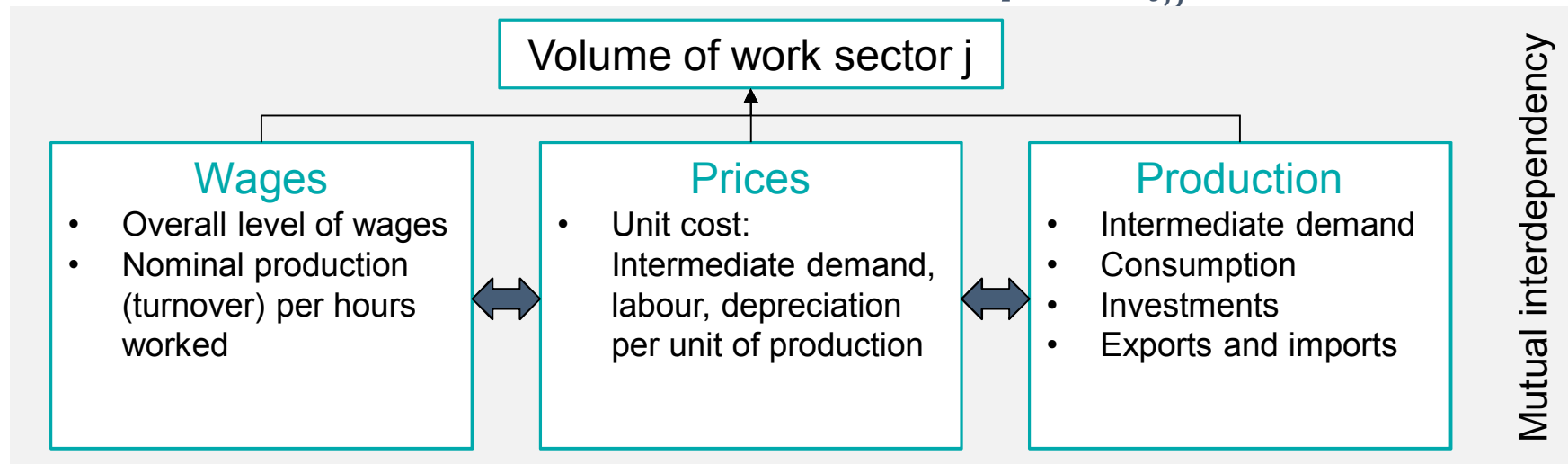► Demographic change influences both sides of the labour market: Labour force and sectoral demand

QINFORGE – An Overview
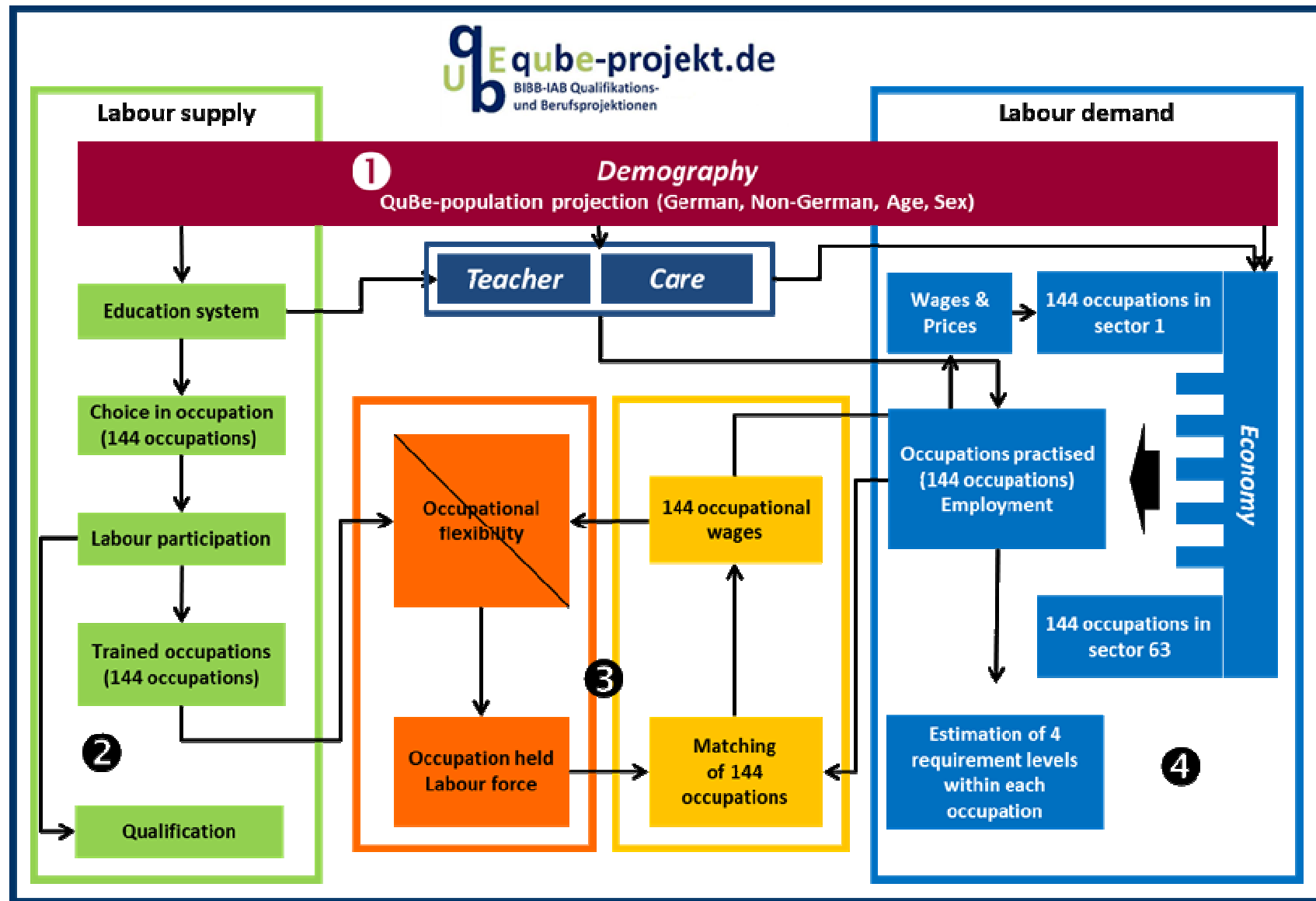
Labour Demand in QINFORGE (❹)

(1) Labour demand measured in hours (volume of work)

$$Volume\ of\ work_{t,j} = f\left(production_{t,j}, \frac{wages_{t,j}}{prices_{t,j}}, trend\right)$$

Volume of work sector j

| Wages	Prices	Production
• Overall level of wages • Nominal production (turnover) per hours worked	• Unit cost: Intermediate demand, labour, depreciation per unit of production	• Intermediate demand • Consumption • Investments • Exports and imports

Mutual interdependency

⇨ productivity (production per hour) is a result

(2) Sector specific labour demand by occupation k (**Ldo**)

$$\mathbf{Ldo}_{t,j,k} = f(wage_{t,k}/wage_{t,j}, volume\ of\ work_{t,j}, trend)$$
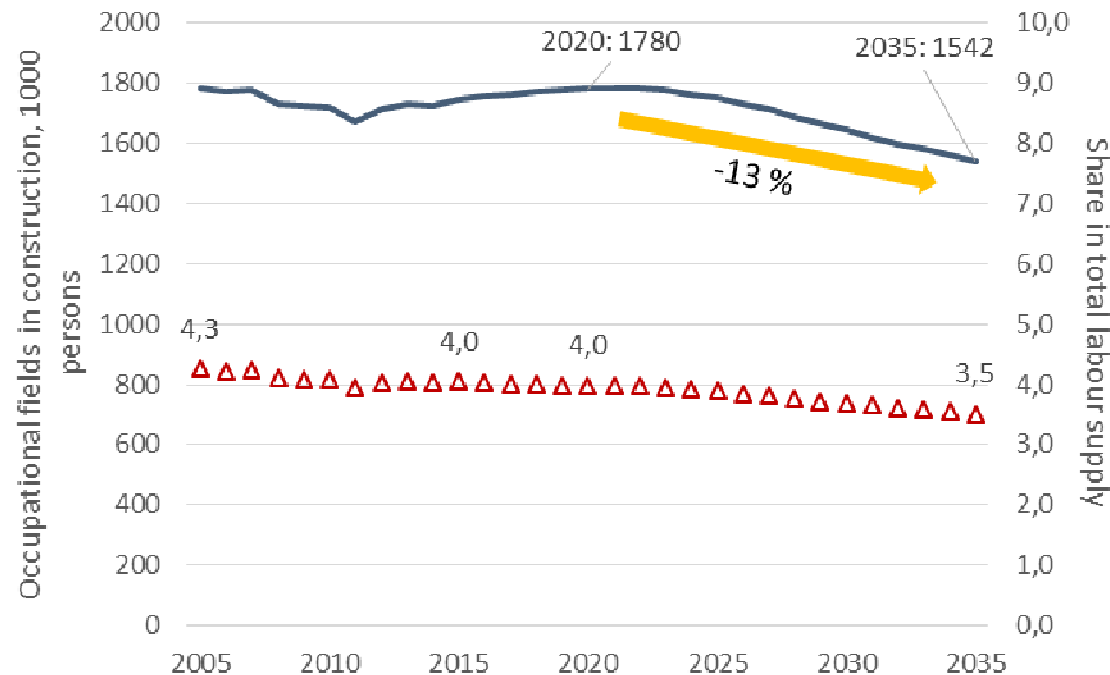
Results: Total Labour Market: ❸ →← ❹

► Working population, labour force and employed persons in Germany from 1991 to 2035, projection as of 2017
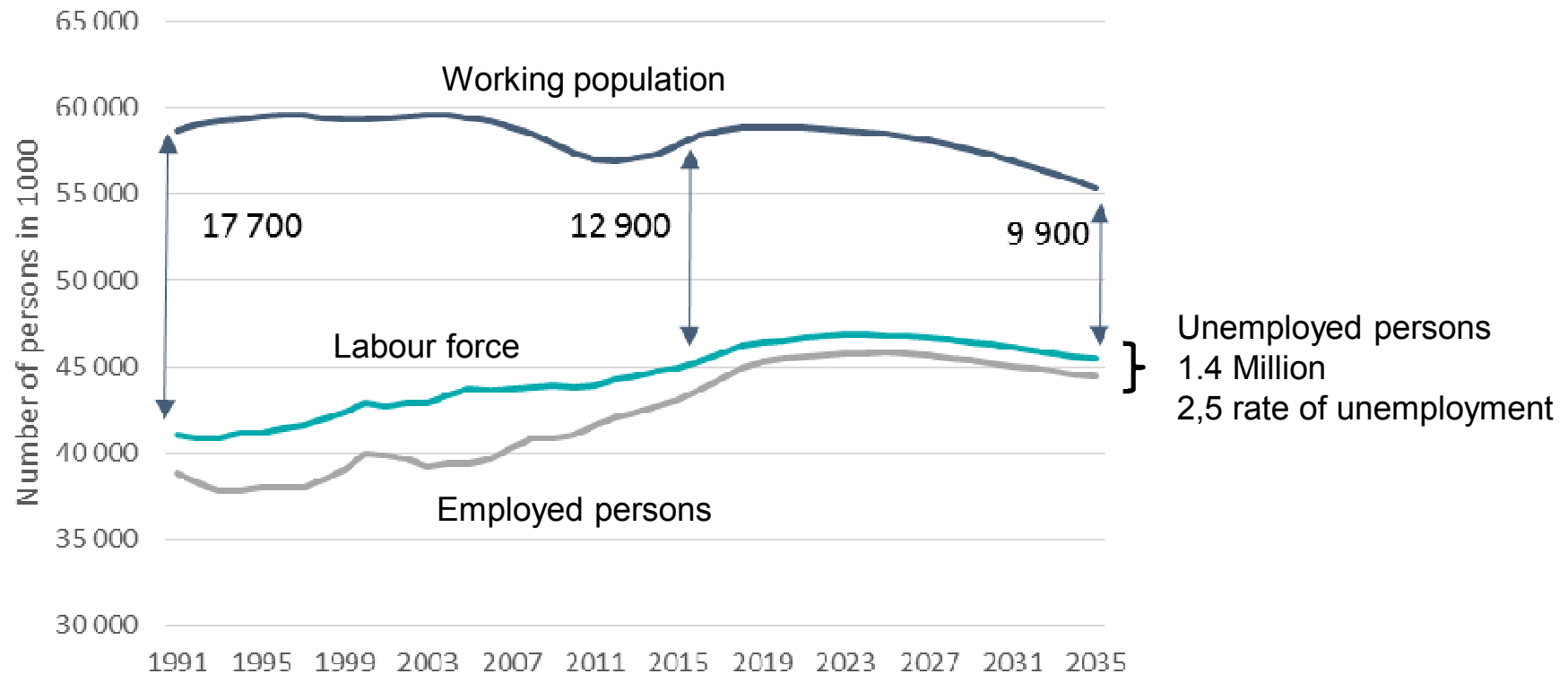
► Labour demand is restricted by the supply side
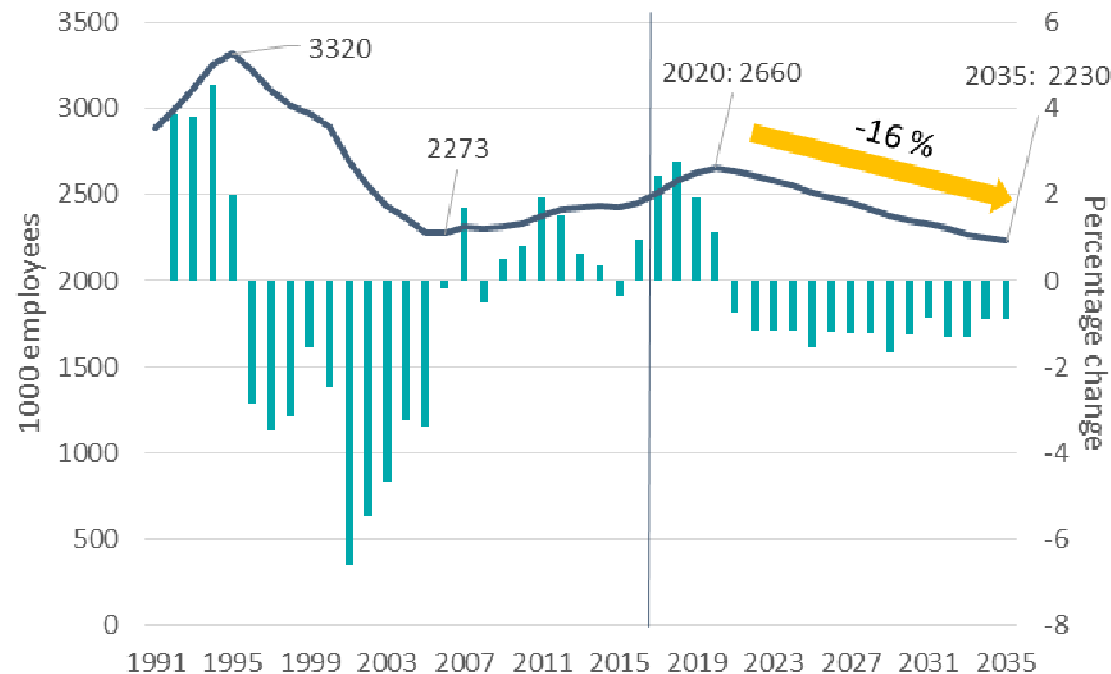
Results: Construction (**Supply Side → ❸**)

► Labour supply by construction occupations and its share in total labour supply

► After 2020 the **number of persons in construction occupations** shrinks, due to shifts in wages and demographic change

Results: Construction (**Demand Side → ❹**)
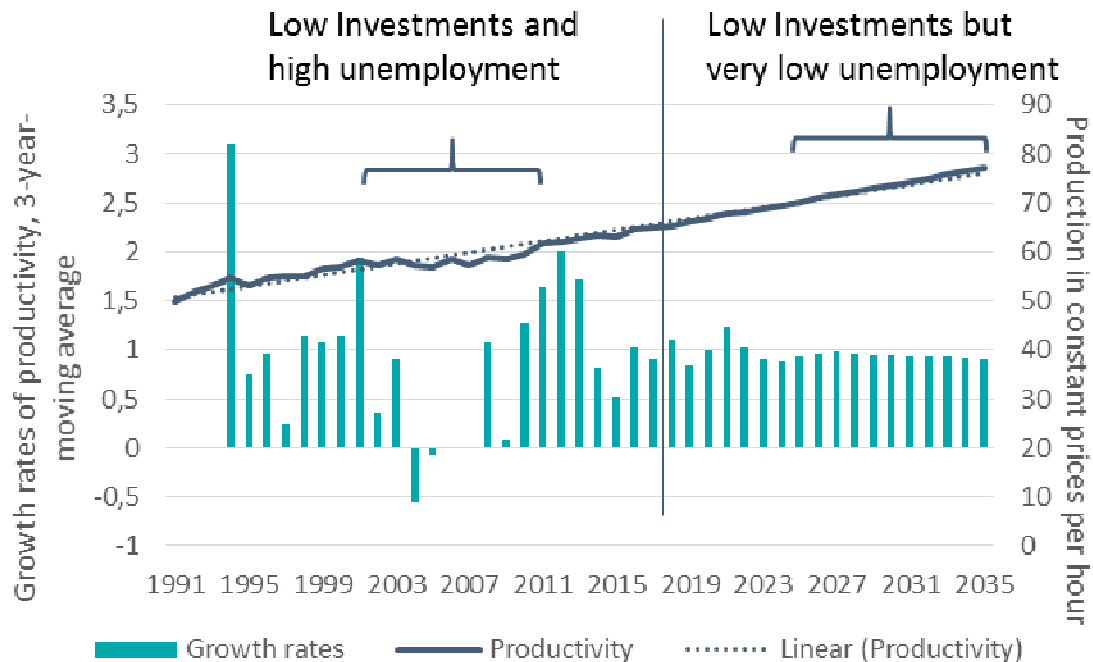
► Number of persons employed in the construction industry in Germany from 1991 to 2035

► After 2020 the number of households looking for houseing grows less than before → investment in construction and employment shrinks

Results: Construction Labor Productivity

► Development of productivity per hour in construction 1991 to 2035

► The development of productivity depends on the final demand and the result of the labourmarket
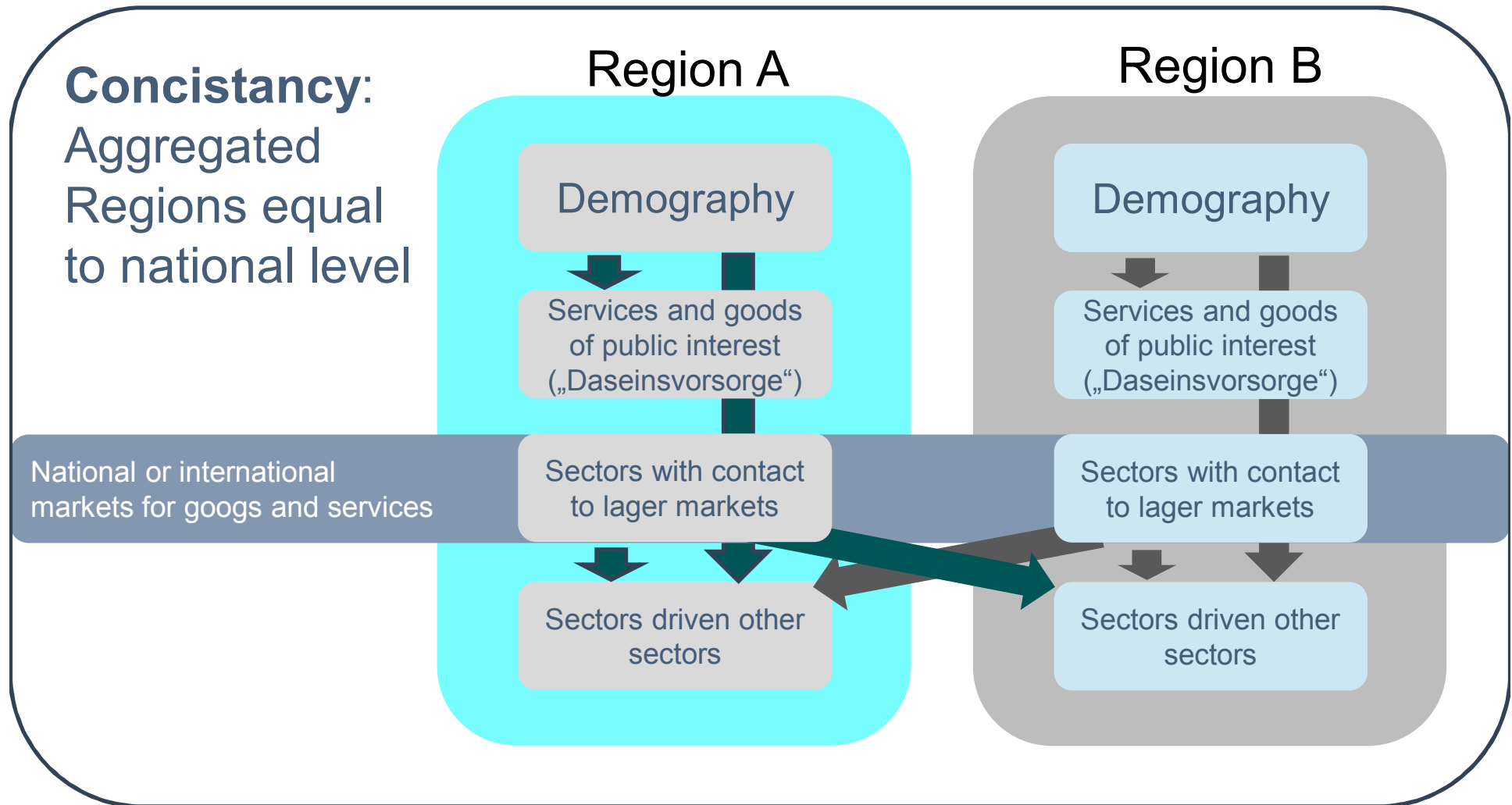
Conclusion

► Demographic development is changing the **supply and demand** of labour simultaneously

► Both sides of the market in an econometric structural model should therefore react to changes **in population trends**

► **Job-specific ageing and changing career** choices lead to an acceleration or deceleration of the demographic transition of job-specific supply.

► The **construction industry** shows that both influences have an effect on this specific labour market at the same time

News: From QINFORGE to QMORE

► More detail at regional level:

(1) Labour markets: 34 regions, defined by minimal commuting between these 34 regions:

➔ **Disparities** betreen regions may grow

➔ to make impacts of **structural change** visible

(2) diskussion on multi-region IO-tables at federal state level (16)

➔ intra-national trade flows help to explain disparaties

► One step on „the bridge" from macro to micro level

⇨ Integrate **surveys** and **process data** of the labour market into IO-models

► Next steps:

⇨ Implement Micro data?: looking for corporate data

⇨ How to use „big data" in IO-models? (Italy, Austria, … already using job advertisements)

News: From QINFORGE to QMORE

► Flows of information

Concistancy:
Aggregated Regions equal to national level

Region A

Demography

Services and goods of public interest („Daseinsvorsorge")

Sectors with contact to lager markets

Sectors driven other sectors

Region B

Demography

Services and goods of public interest („Daseinsvorsorge")

Sectors with contact to lager markets

Sectors driven other sectors

National or international markets for googs and services

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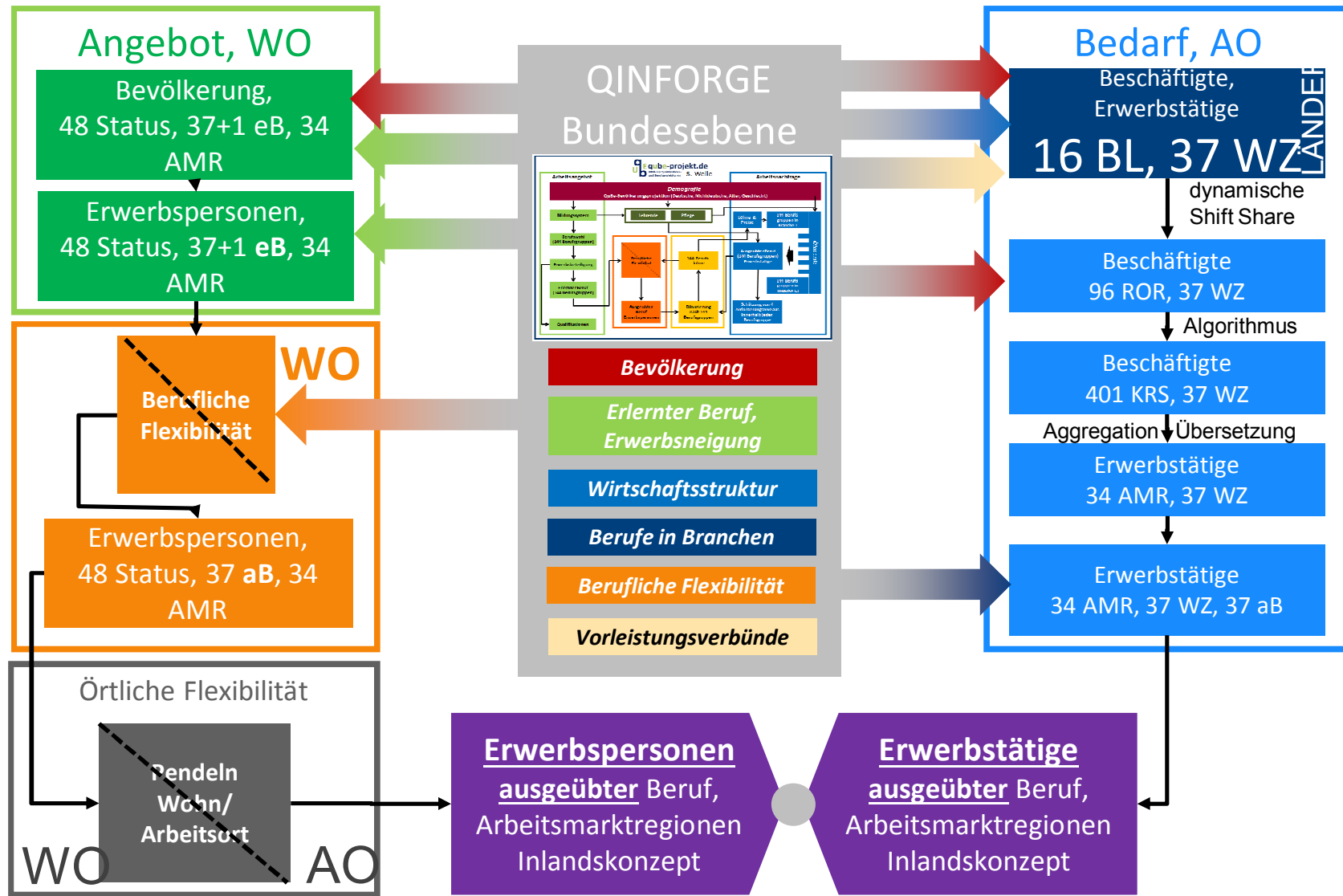
► IO-Modellbilder face new challanges: much more data!

► IO-Models **are able to integrate micro-data** (aggregated)

⇨ IO-models have linkages to surveys (consumption, labour, corporations, …)

⇨ IO-Models are like an „economic landscape" and each survey have a certain position in this landscape

⇨ Position can be measured relative to GDP

► **INFORUM-Models** are able to use more detailed data

⇨ A lot of examples (→ Italy, US)

► And: **Interdyme** is able to handle a huge amount of data

⇨ VAM-files combined with meta-data

►

Thank you for your attention!

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► Back up

Investment