

Modelling Trade Growth for Long-Run Economic Prospects: Improving Trade to Income Elasticity Calibration in Baselines

Caitlyn Carrico, Andrzej Tabeau and Marijke Kuiper
Wageningen Economic Research

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Introduction

- The world trade to income elasticity estimated as 1.5 for merchandise trade 1950-2017 (Bekkers et al. 2020)
- Fell to 1.1 after the Recession (2011-2013) as global trade growth stalled (ECB 2014)
- In ex-ante research, the projected trade to income elasticity serves as an important indicator for future anticipated global prosperity
- In the long-run, current model mechanisms deliver an elasticity below 1

Implementation of trade to income elasticity

- The literature uses both sector-specific targeting and implementation in Armington to achieve elasticity of 1.5
 - 1) increasing productivity in the transportation sector
 - 2) reducing oil prices
 - 3) reducing tariffs
 - 4) decreasing non-tariff measures
- We allow the model to directly adjust trade flows across sectors, exploring Armington as well as a cost-neutral preference shift

Four Experimental Calibration Methods

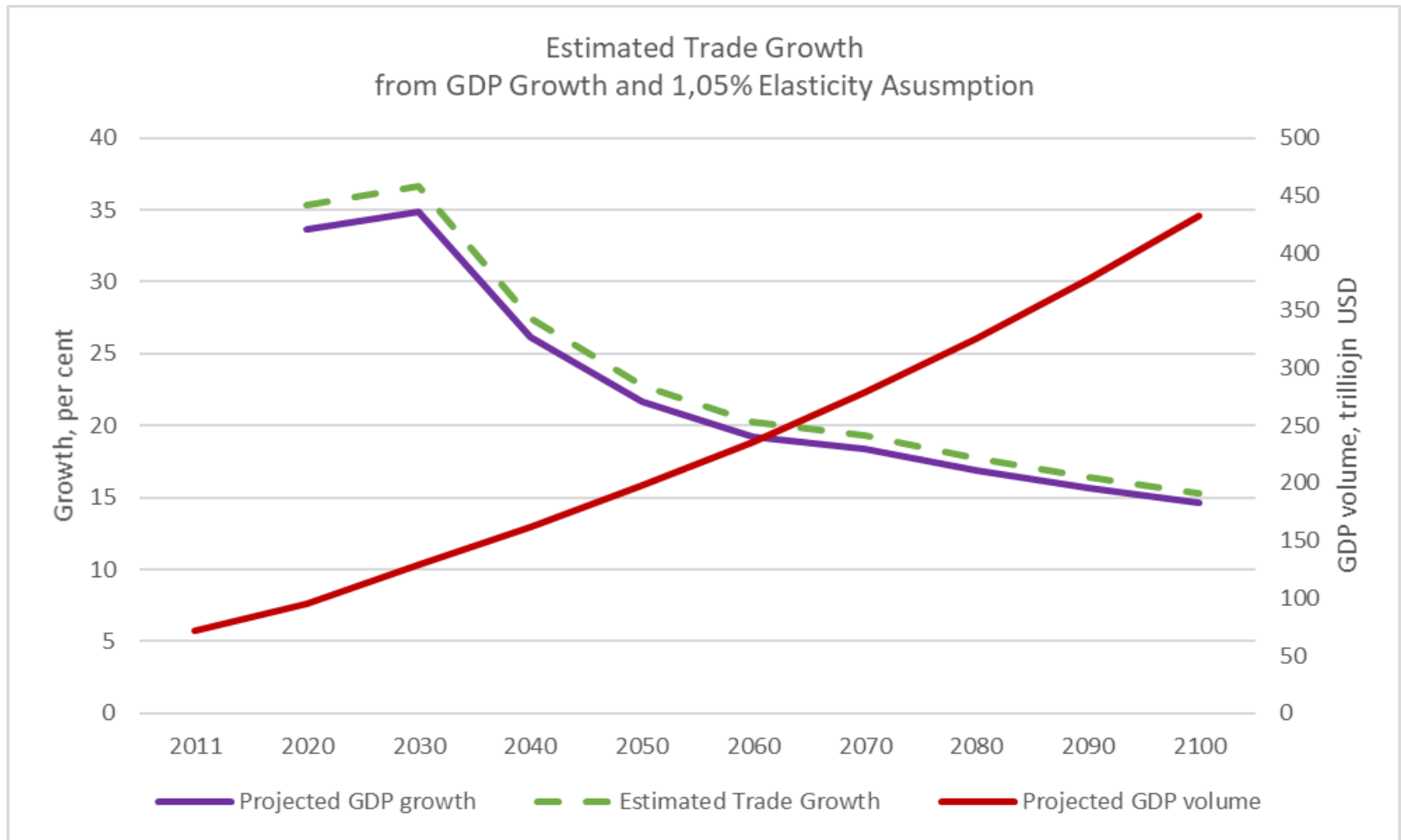
Experiment	Model	New Variables	Shocks
P1	MAGNET-TrV1	<i>qxswld</i> : aggregate trade <i>amswld</i> : aggregate trade efficiency	Period 1: <i>qxswld</i> =35% Period 1+t: <i>amswld</i> =14%
AP	MAGNET-TrV1	<i>qxswld</i> : aggregate trade <i>amswld</i> : aggregate trade efficiency	All periods: <i>qxswld</i> set at % level calculated to maintain constant 1,05 trade to GDP elasticity
AS	MAGNET	None	All periods: services sectoral-input productivity (ASCALE) set to 0
AF	MAGNET-TrV2	<i>qxswld</i> : aggregate trade <i>afs_{ij,r}</i> , <i>afs1_{ij,r}</i> : sectoral twists <i>afswld</i> : aggregate twist	Period 1: <i>qxswld</i> =35% Period 1+t: <i>afswld</i> =27%

Target trade to income elasticity of 1.05

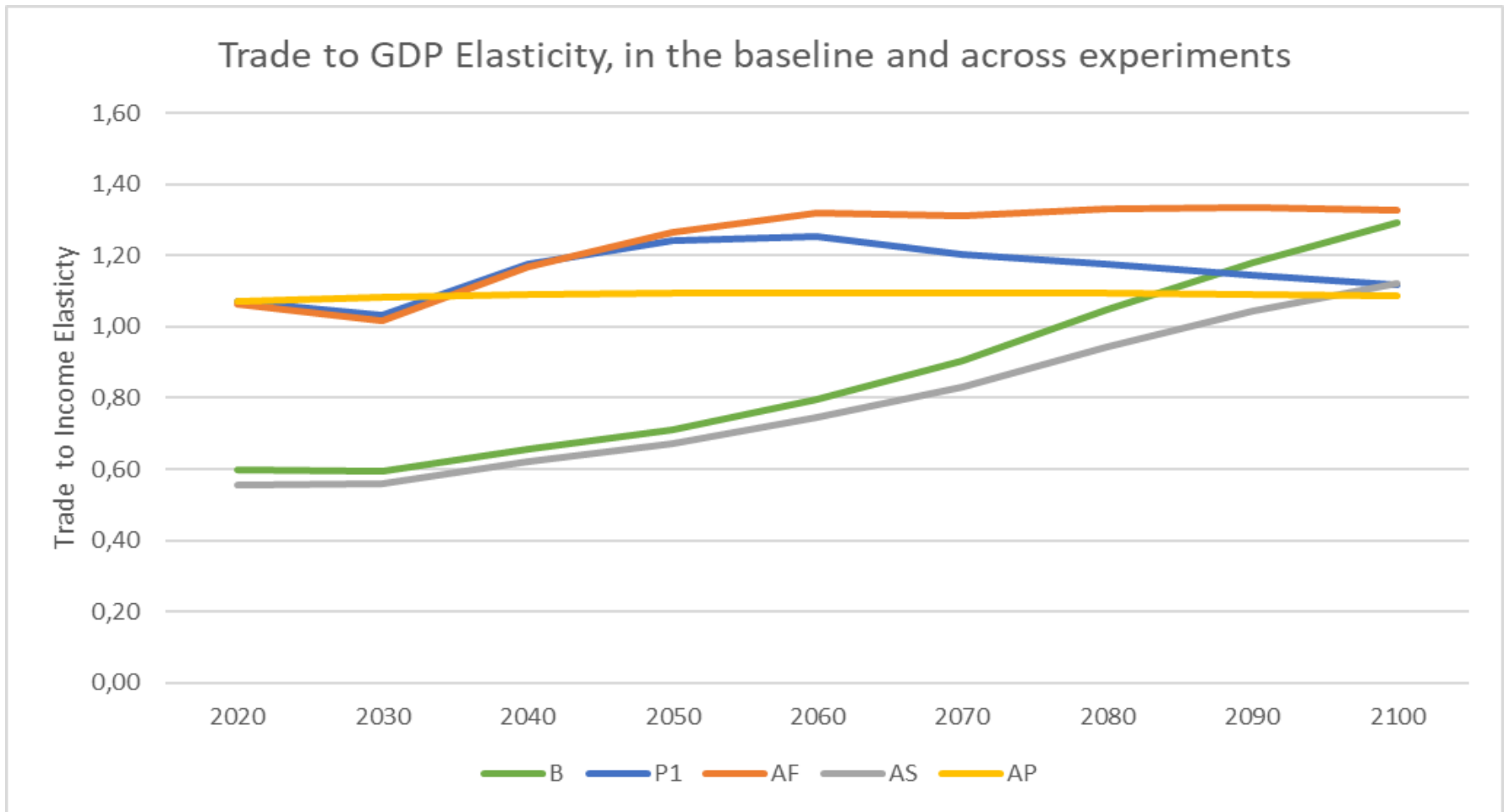


Author calculations from World Development Indicators (WDI) data

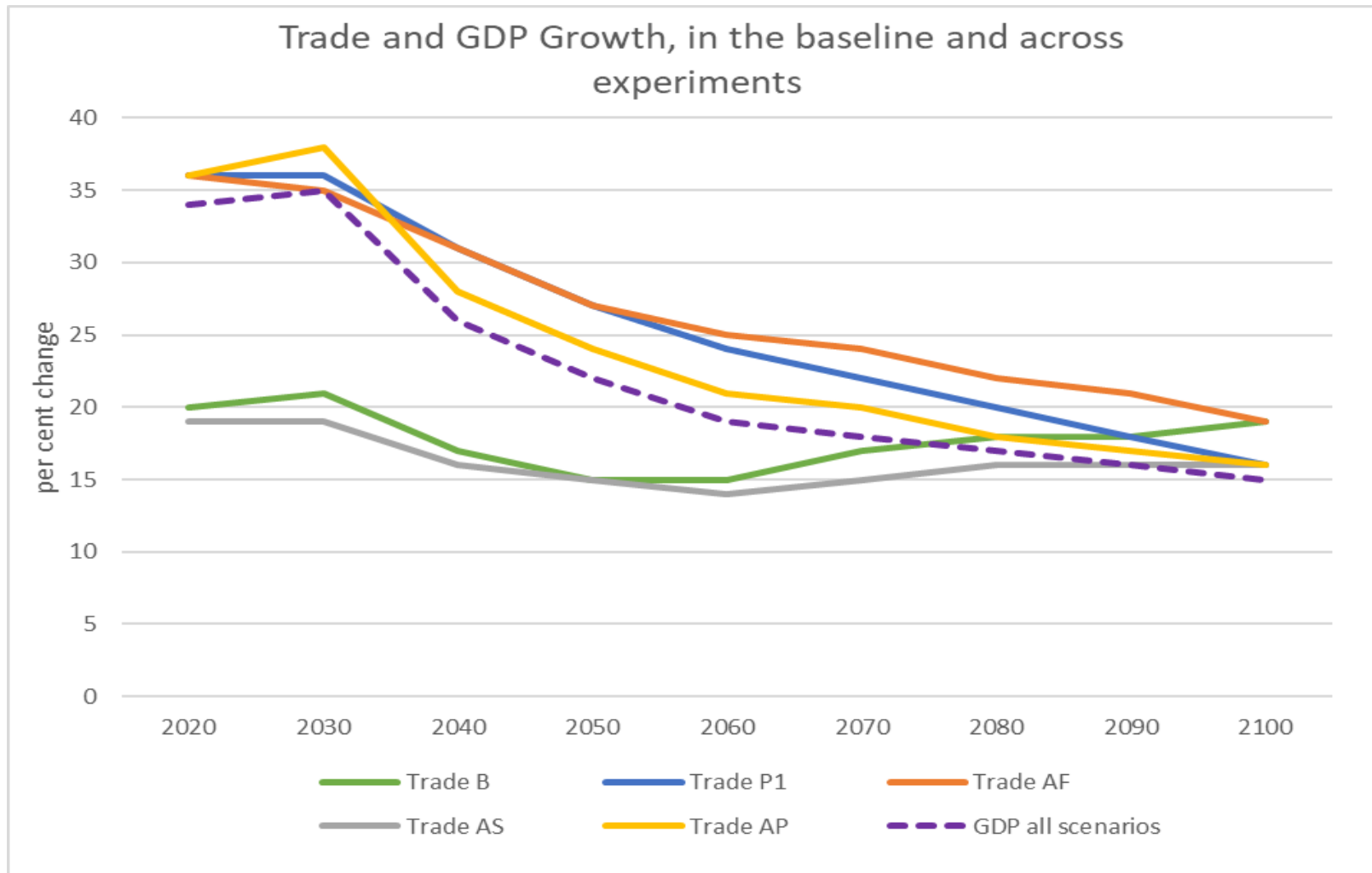
Under fixed trade to income elasticity, trade growth follows GDP growth



Elasticity Comparison across Experiments

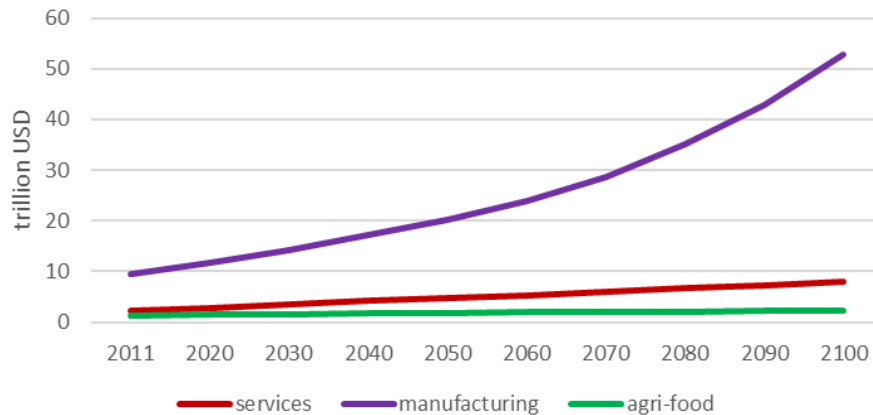


Differences in Elasticity depend on Trade Growth

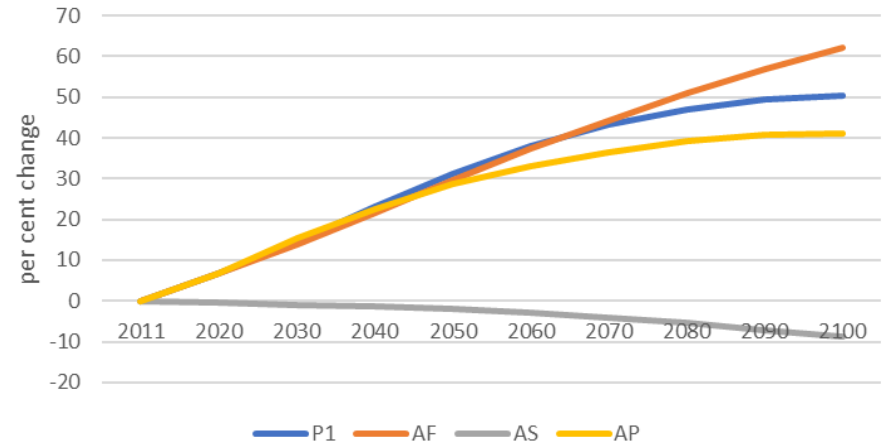


Trade decomposed by Commodity

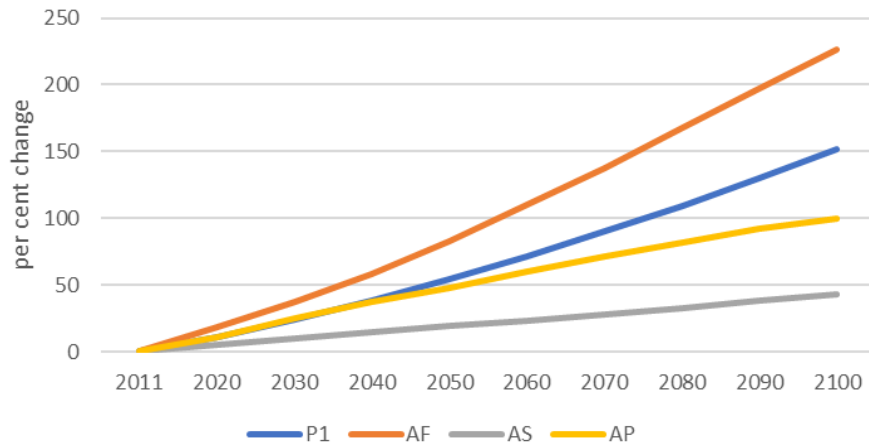
Global Trade in the Baseline by agri-food, manufacturing, and services



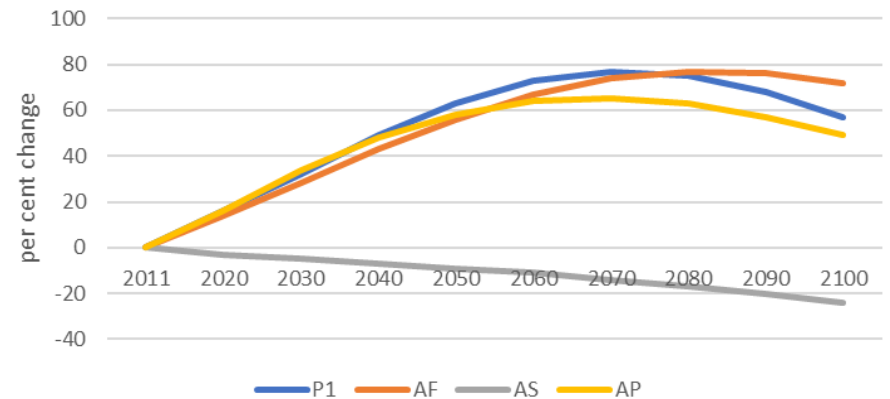
Agri-food Exports, change relative to Baseline



Services Exports, change relative to Baseline

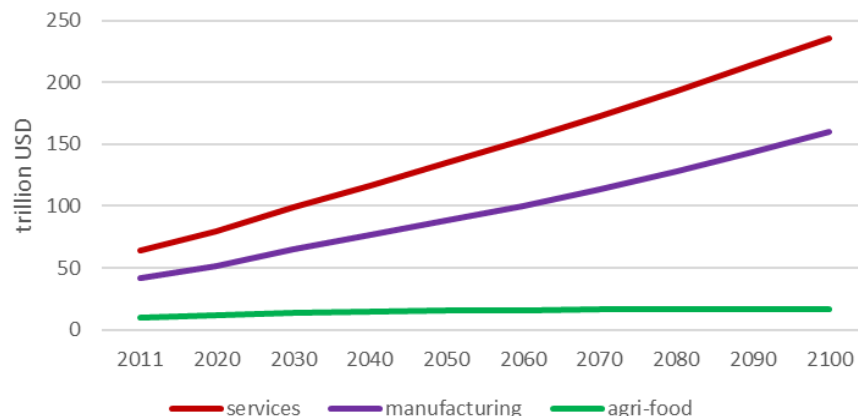


Manufacturing Exports, change relative to Baseline

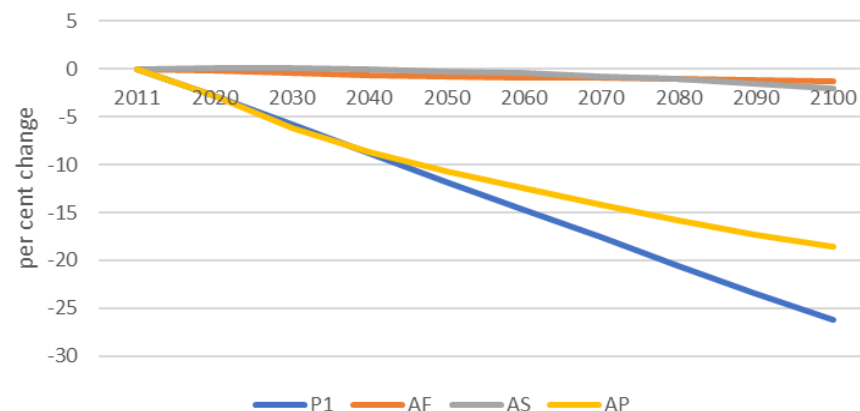


Production as Supply-Side Driver

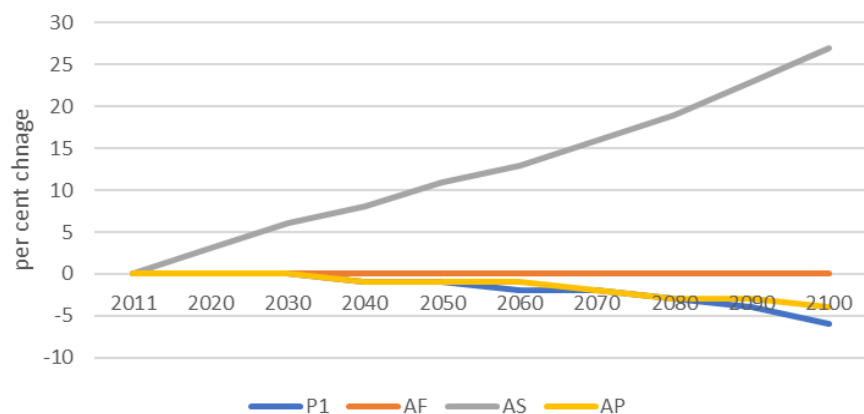
Global Production in the Baseline by agri-food, manufacturing, and services



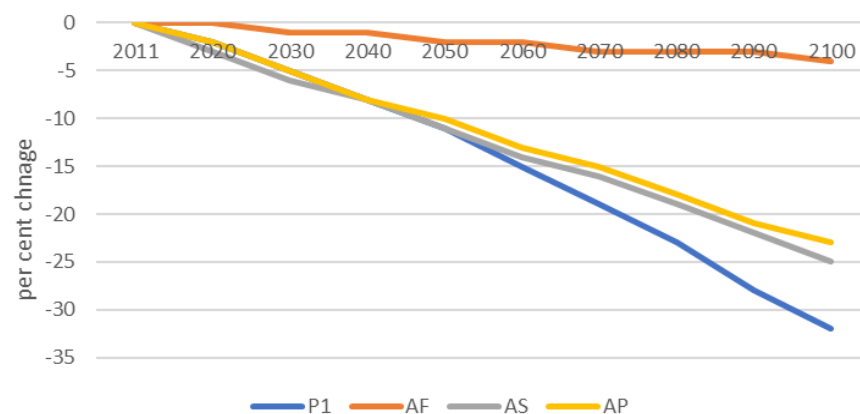
Global Agri-food Production, change relative to Baseline



Global Services Production, change relative to Baseline

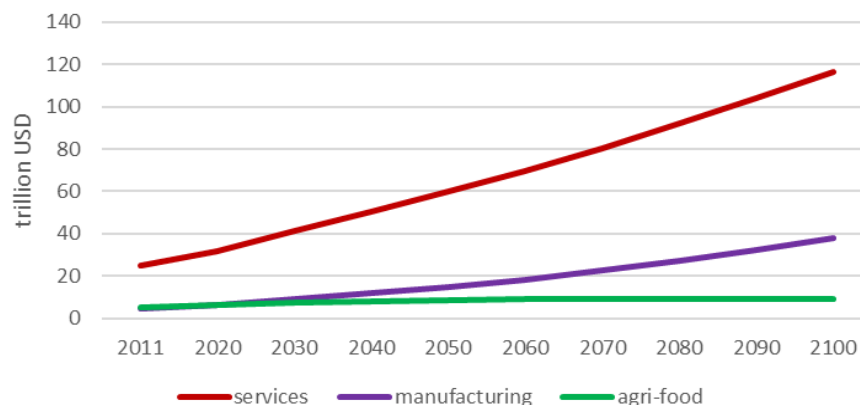


Global Manufacturing Production, change relative to Baseline

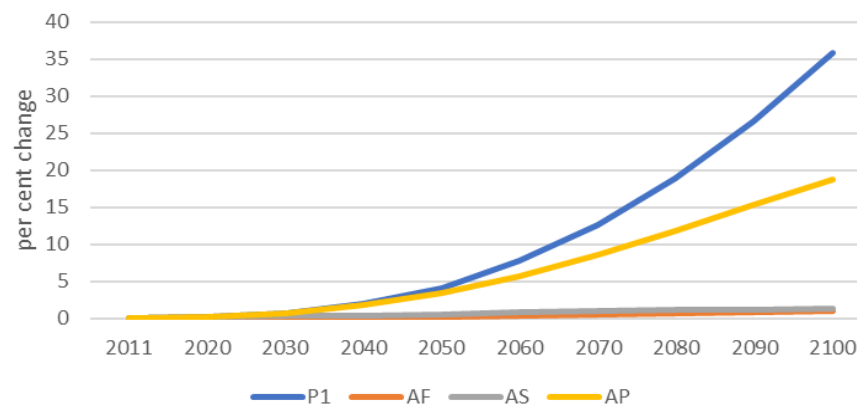


Consumption as Demand-Side Driver

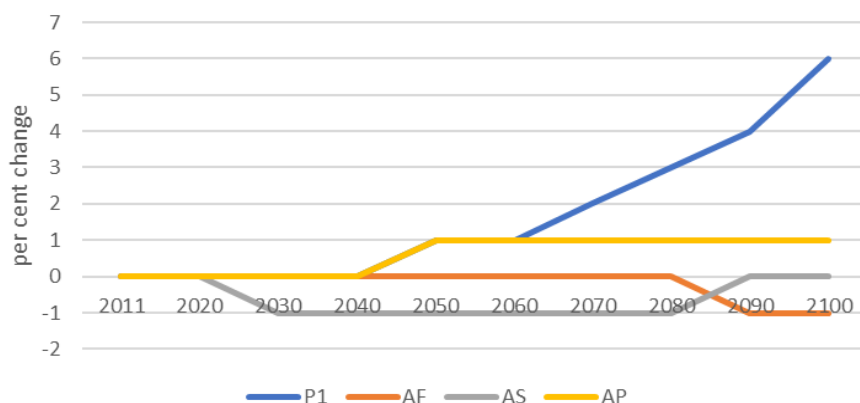
Global Consumption in the Baseline by agri-food, manufacturing, and services



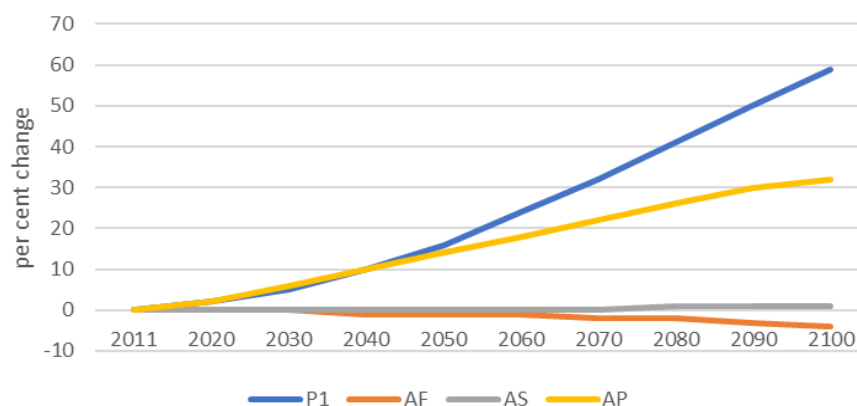
Agri-food Consumption, change relative to Baseline



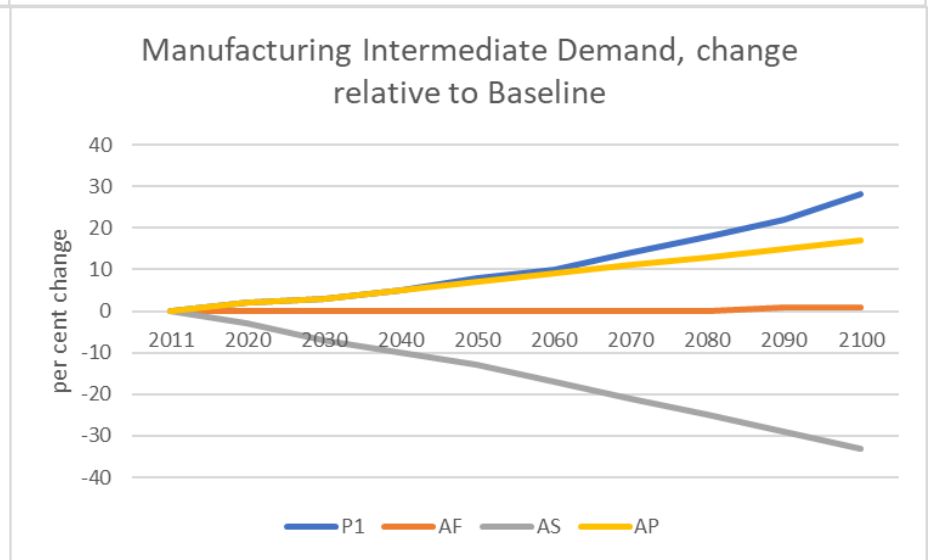
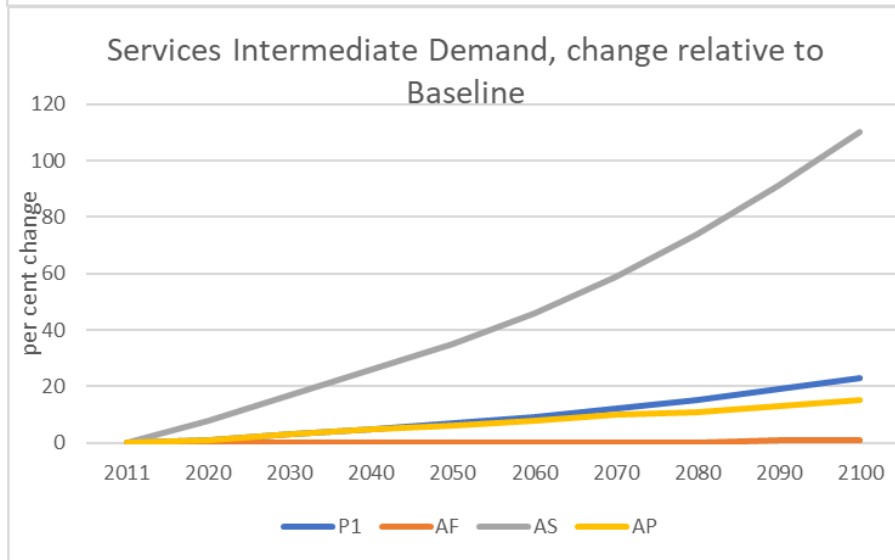
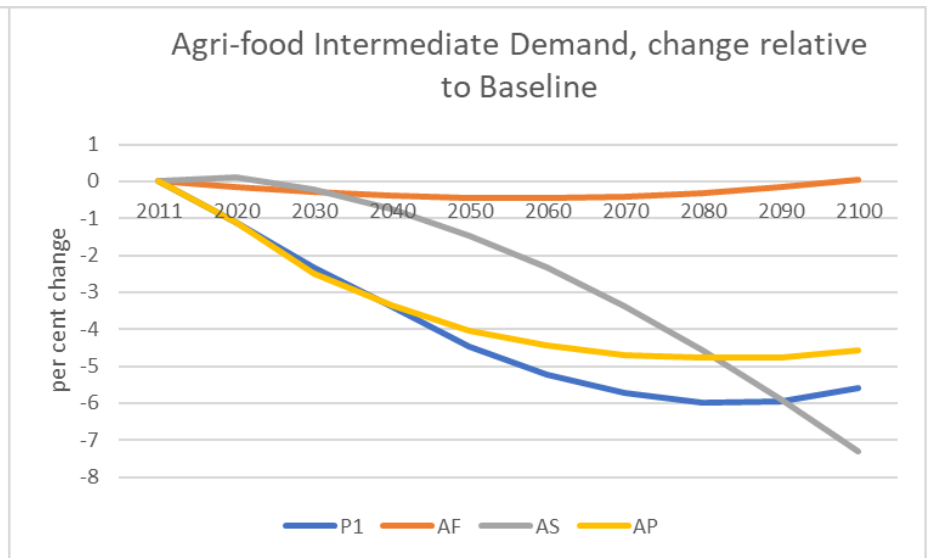
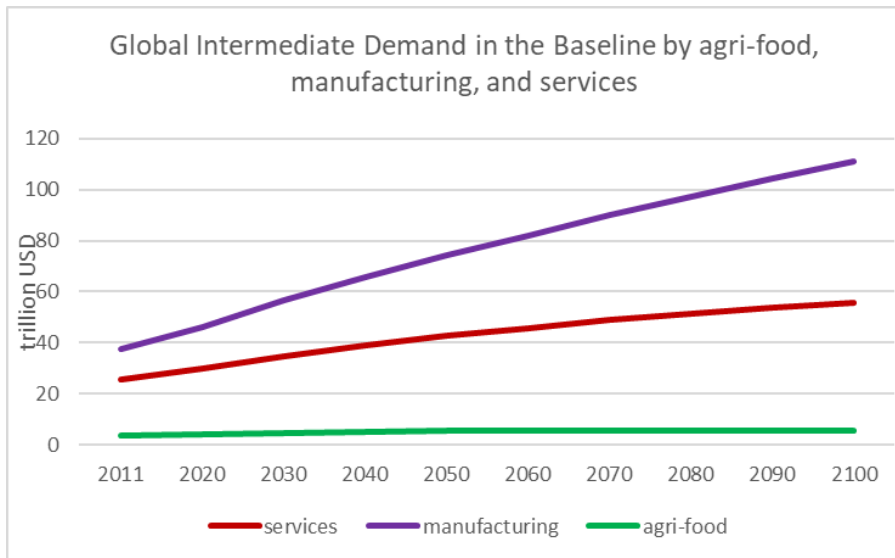
Services Consumption, change relative to Baseline



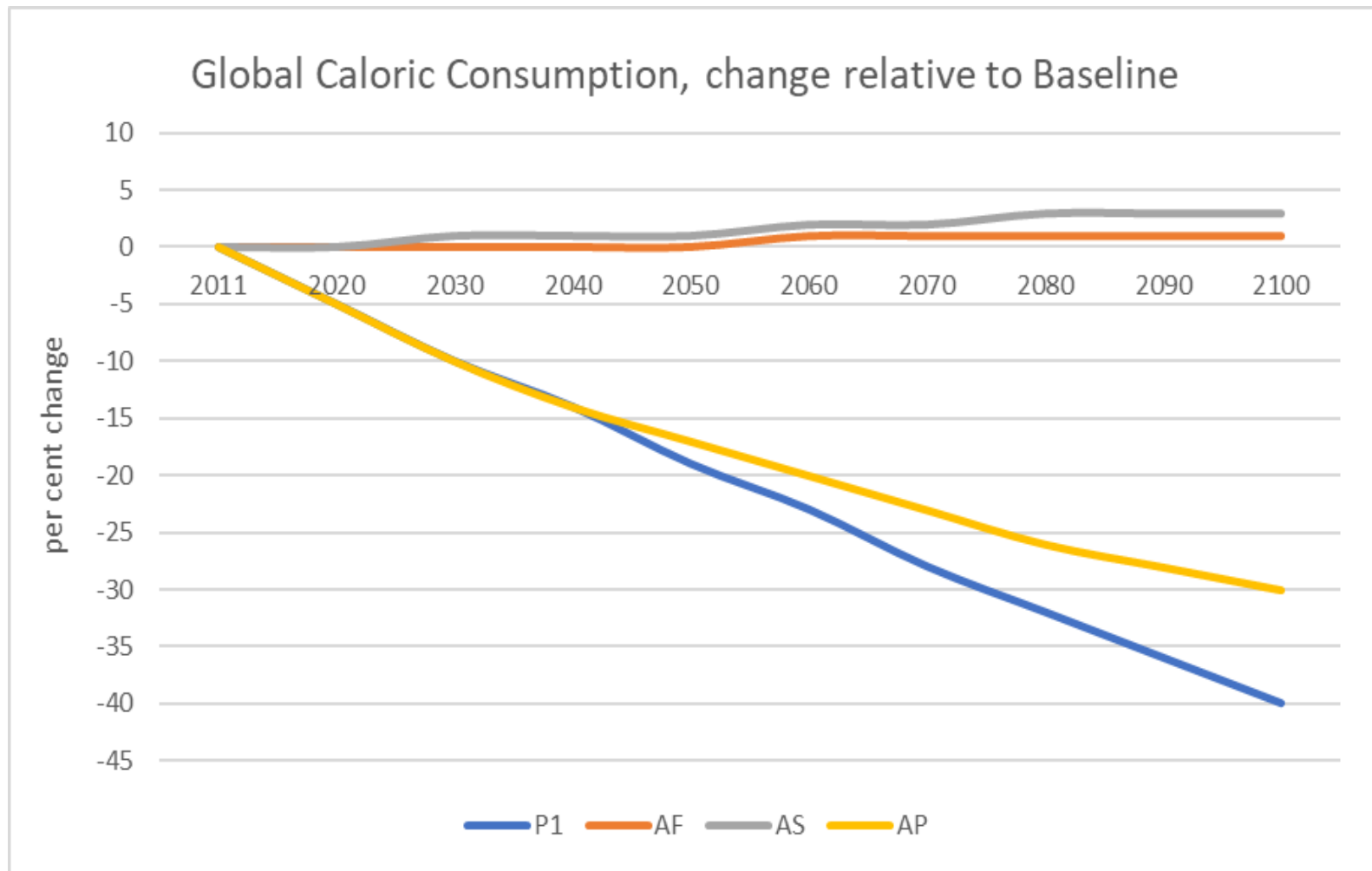
Manufacturing Consumption, change relative to Baseline



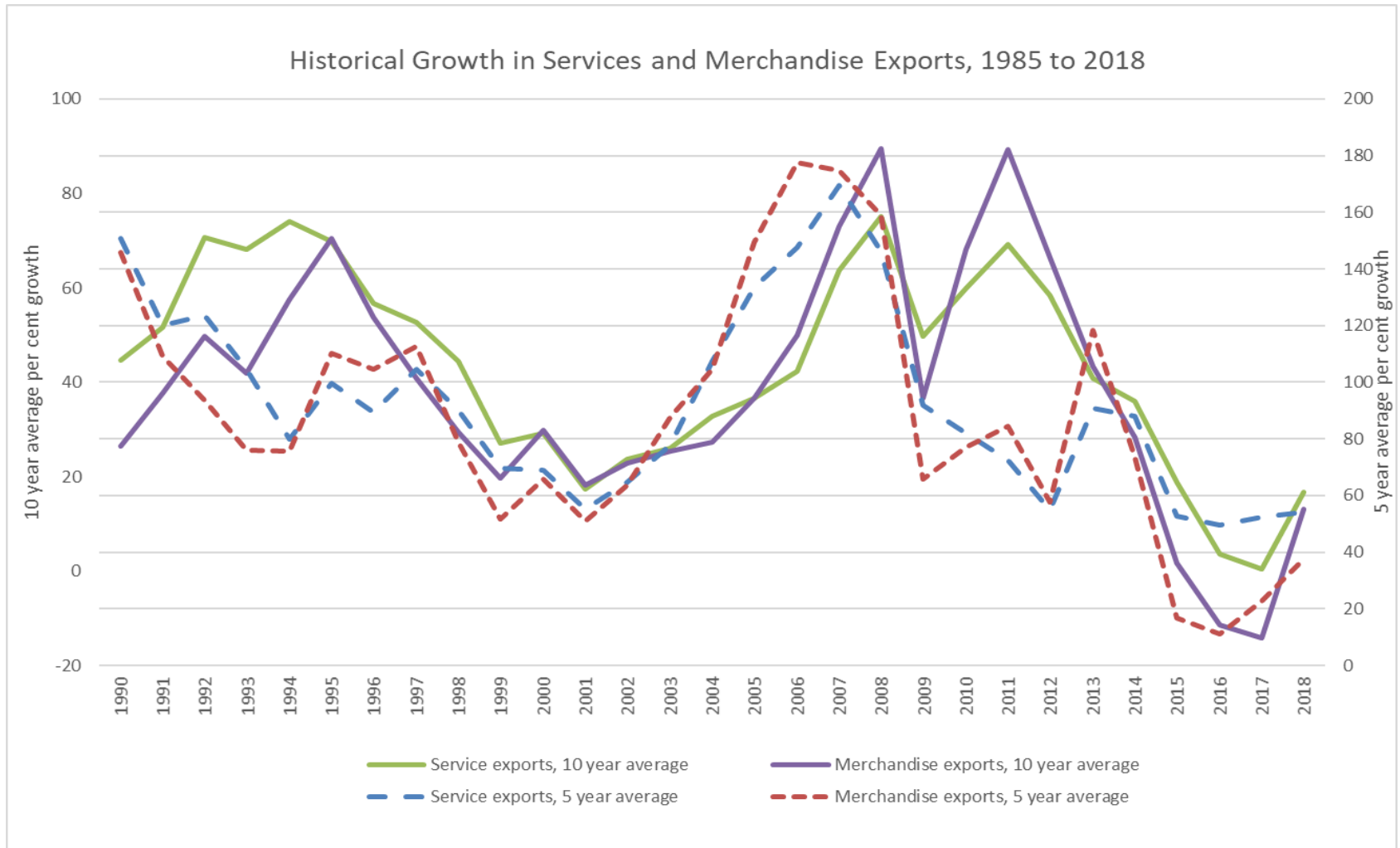
Intermediate Demand Driver



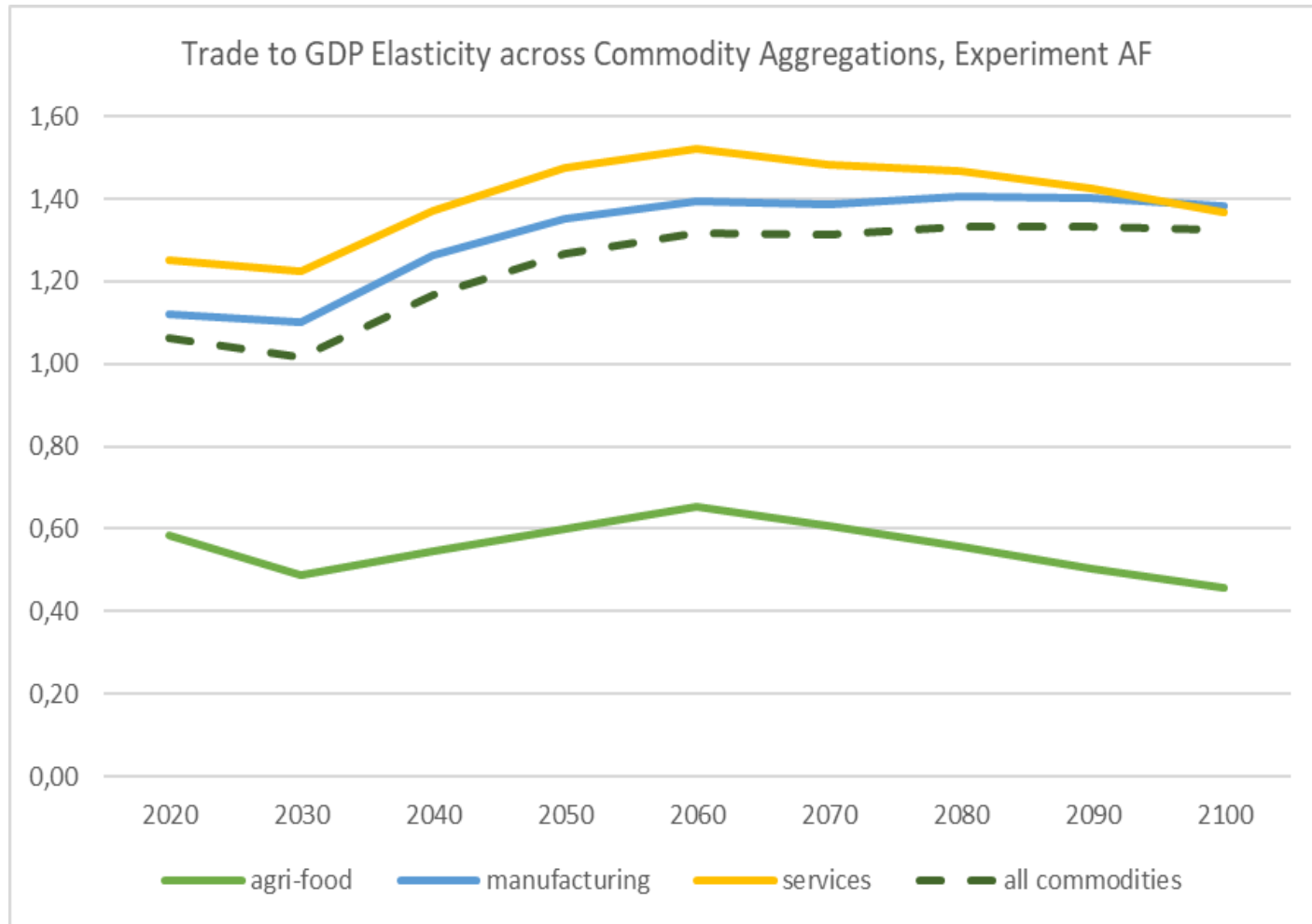
Nutritional Aspects of Consumption



Volatility in Services and Merchandise Trade Growth



Elasticity Decomposition for AF



Conclusions – Three Observations

1. Trade to income elasticity is a gross measure to be calibrating, and further research needed to decompose the underlying channels
2. The development of trade to income elasticity in the long-run (e.g. 100 year span) calls for further research
3. Traditional global technology variables affecting trade (Armington) can create undesired production effects

Conclusions – Two Recommendations

1. Cost-neutral preference twist variables recommended as a technical solution for the exogenous calibration of the trade to income elasticity
2. Further research into a permanent solution merits (A) *significant empirical investigation* as well as (B) *new theoretical advances* to endogenously achieve a “realistic” level for the trade to income elasticity within the model