

# Capital Ownership and Use



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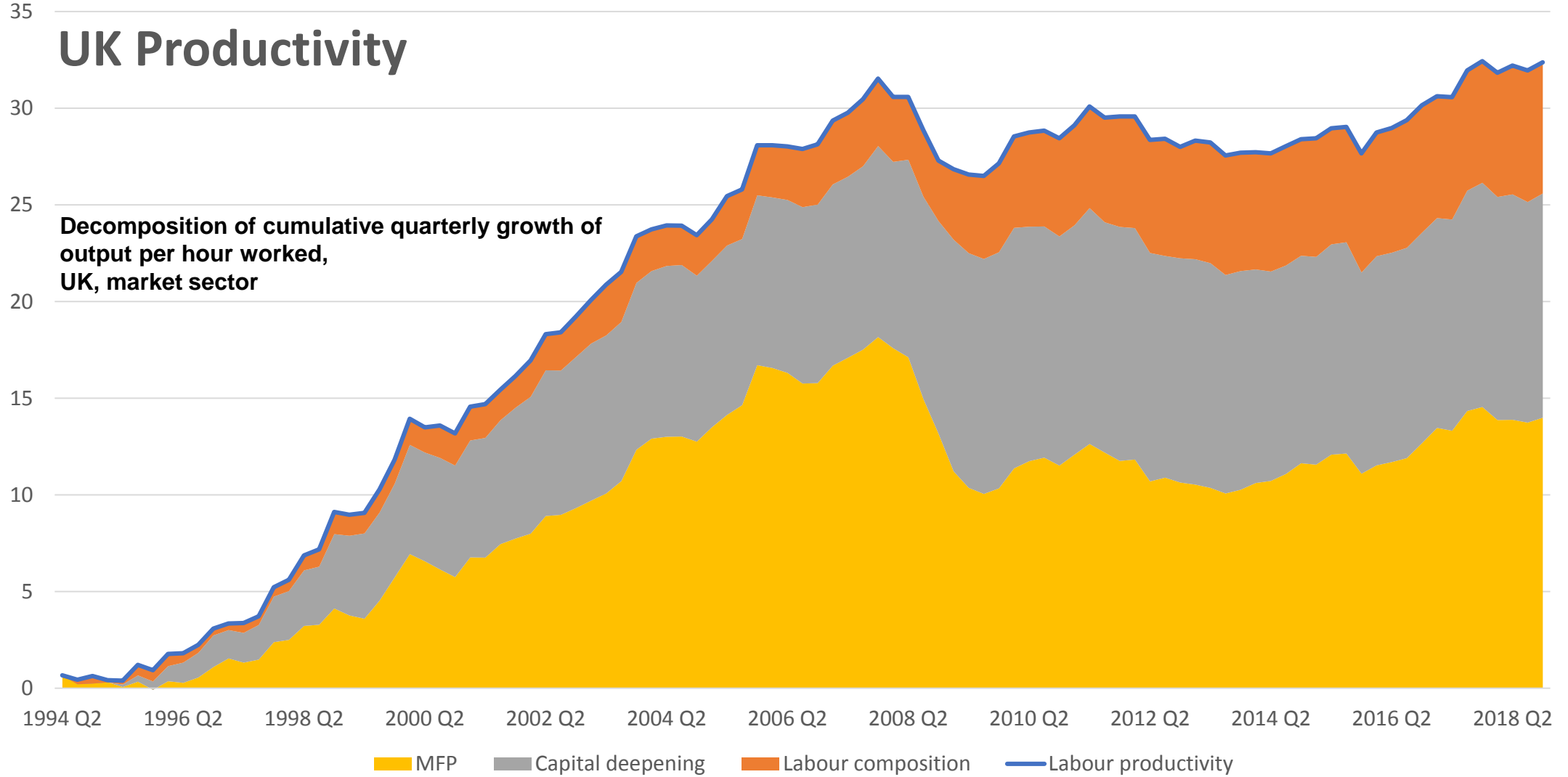
**Case study – human capital & in-work training**

**Consequences, outstanding questions**

# UK Productivity & motivation

Part 1

# UK Productivity



# Multi-factor productivity

In a world of imperfect capital observation:

$$Y = A f(K_L, K_U, L) = A \cdot K_U^\alpha \cdot K_U^\beta \cdot L^\gamma$$

$K_L = \textit{observed capital}$

$K_U = \textit{unobserved capital}$

$L = \textit{labour}$

$$MFP^+ = MFP + \beta g(K_U)$$

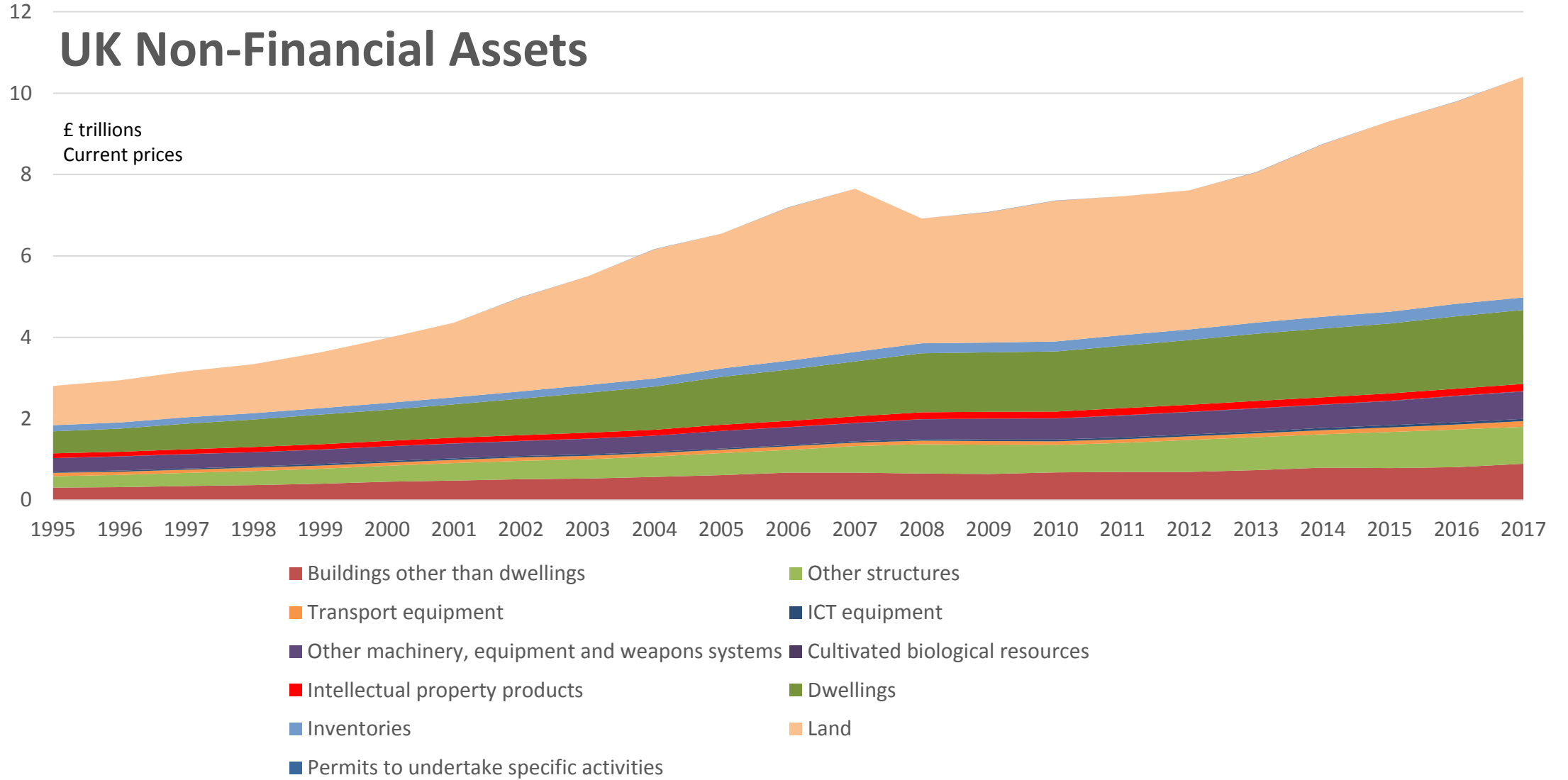
# National Accounts and capitals

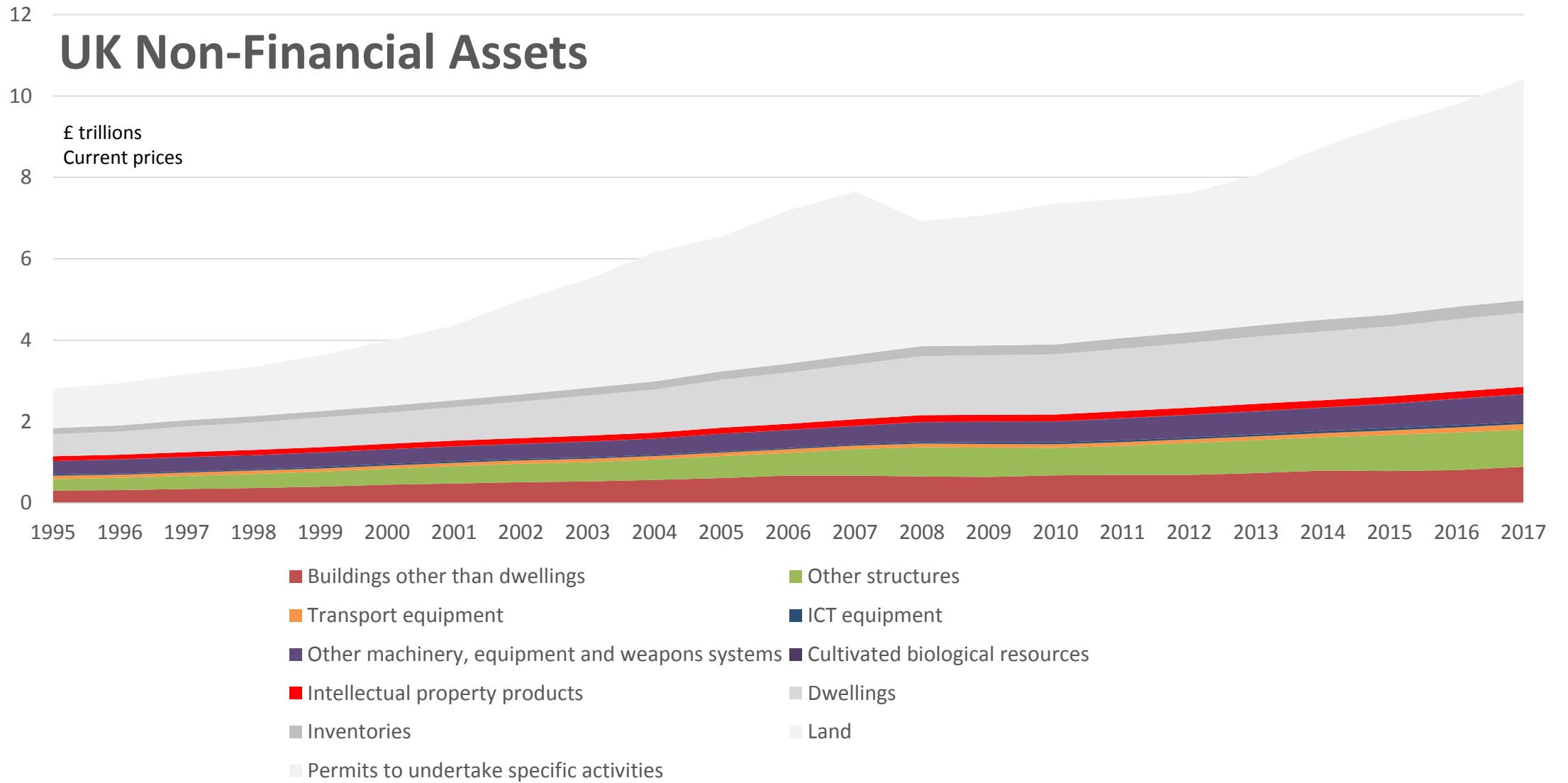
Boundary definition:

An economic asset is a store of value representing the benefits accruing to the economic **owner** by **holding** or **using** the entity over a period of time. It is a means of carrying forward value from one accounting period to another.

- Non-financial produced assets
- Non-financial non-produced assets
- Financial assets

# UK Non-Financial Assets







# Incorporating Capitals

## Part 2

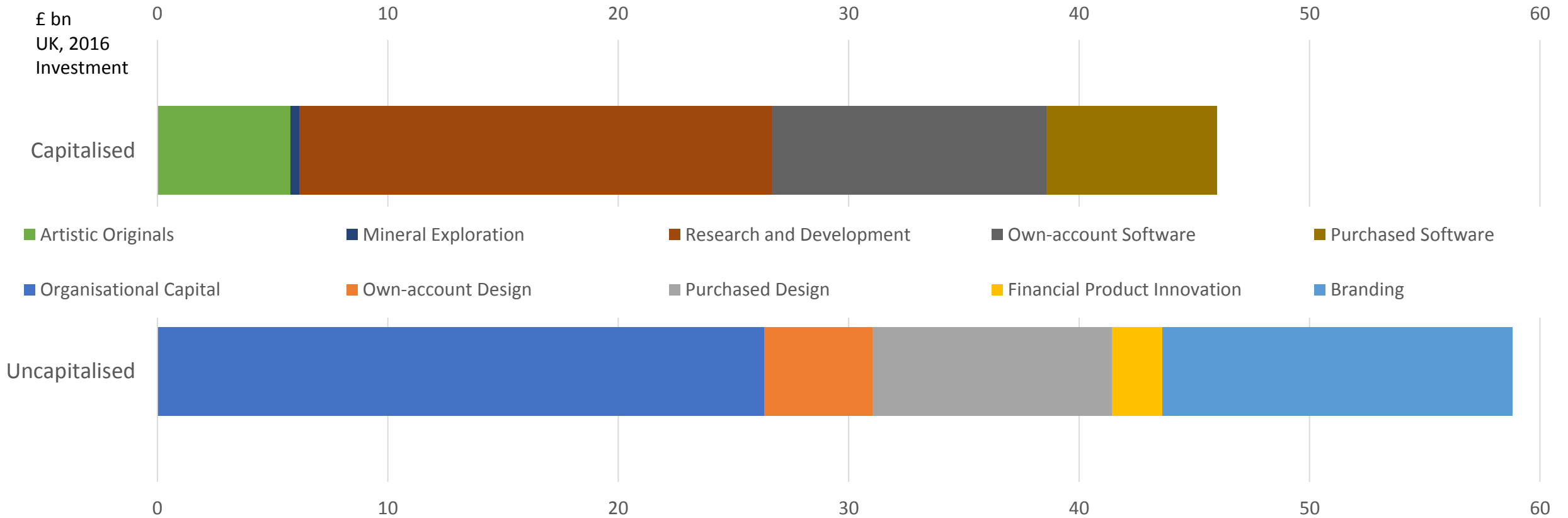
# What capitals are ‘missing’?

ESA10: “coverage is limited to those assets that are used in economic activity and that are subject to ownership rights. Exclude:

- human capital;
- natural assets that are not considered as economic assets (e.g. air, river water);
- consumer durables; and
- contingent assets and liabilities, which are not financial assets and liabilities”

# Further Missing Capitals

- Intangibles



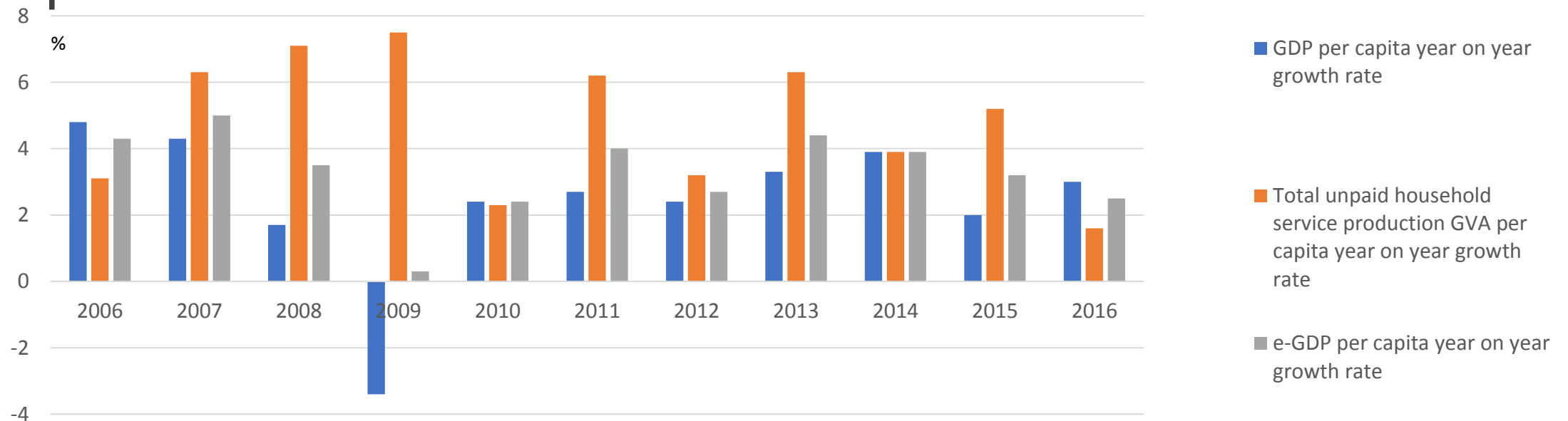
- Social Capital – develops all other capitals

# Justifying incorporating capitals

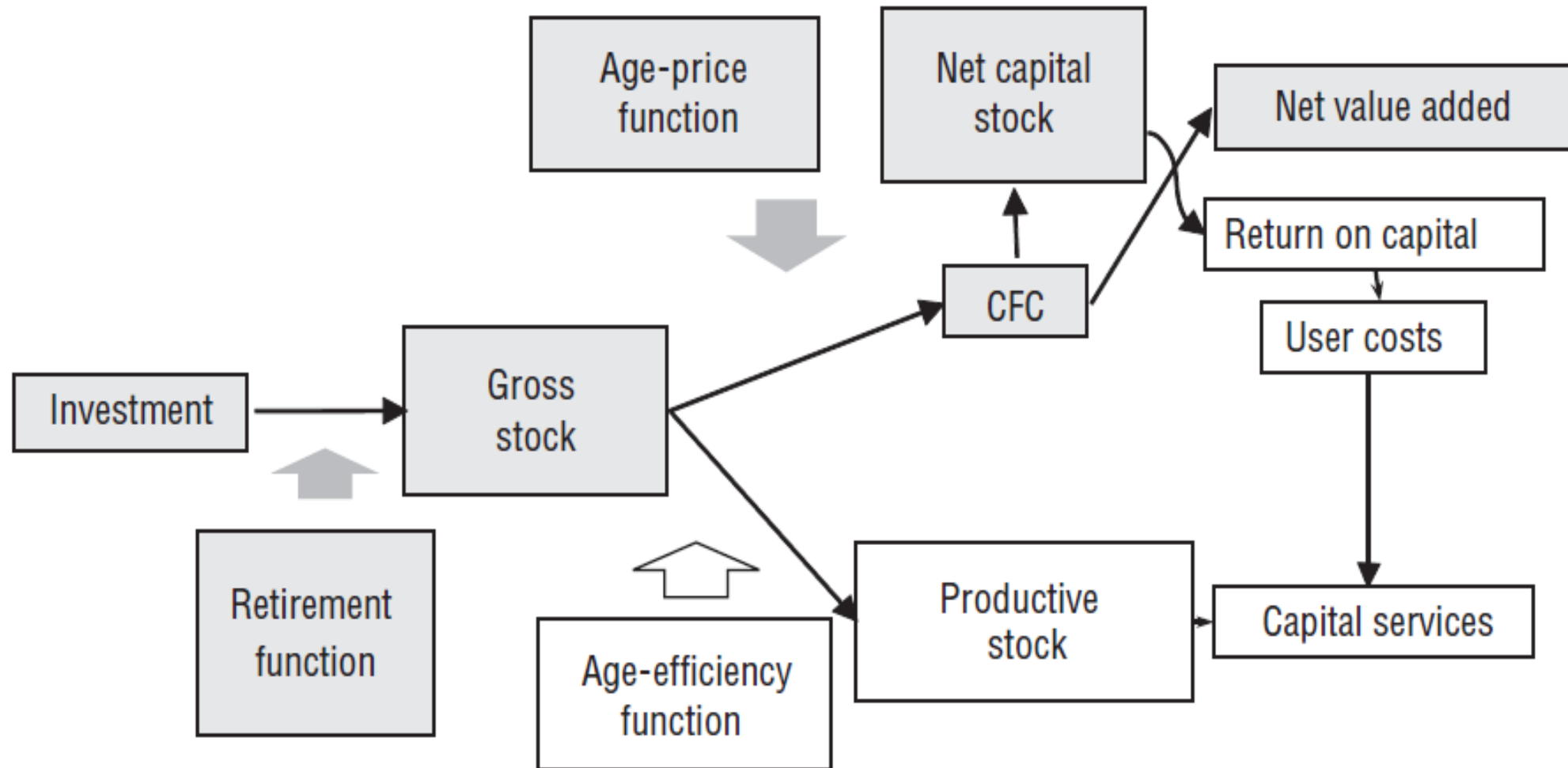
Pre-requisite	Human Capital	Natural capital	Infrastructure & Intangibles	Consumer durables
Capitalised?	No	Partially	Partially	No
Use in production	Used to deliver any services needing labour, including unpaid production	Some free, taken for granted, but used. Active/passive (mis) management of the asset – non-use improves stock for future use	Similar use as R&D	Unpaid production
Ownership	Households	New sector(s) – ‘Gaia’ Imports and exports of climate change	Public/private	Households
Reallocation for capital services?	To private/public	To Households/private/ public	To private Inc. from private	None
Accrues benefit/value to owner	Comparative advantage, better life opportunities, as well as basis for productive work	Contributes to market production, as well as wider welfare Mutual agreement?	Assumed to contribute to economic output	Already in boundary

# Scope of incorporation of capitals

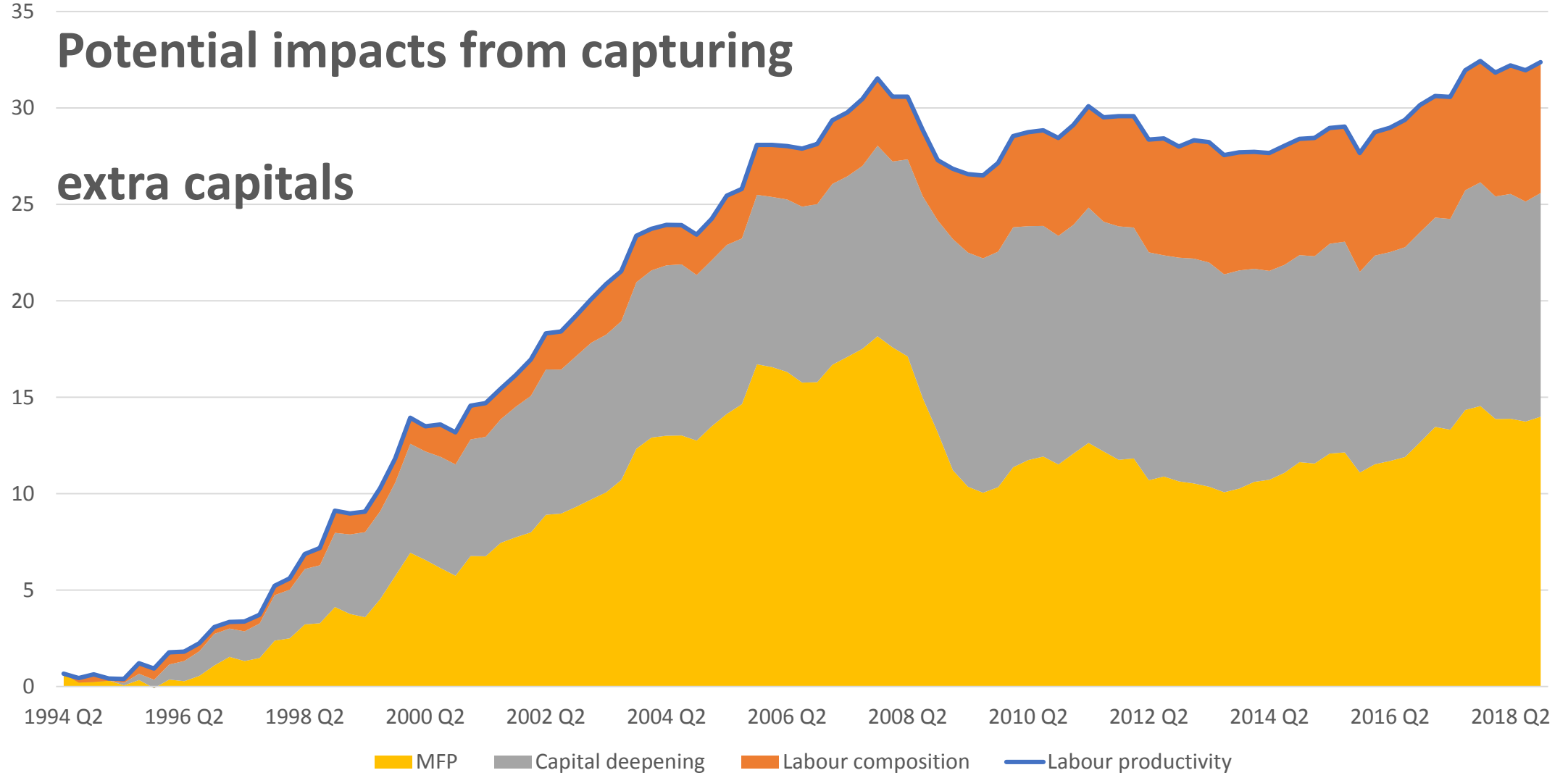
- Human, natural and intangible capital – enough?
- Consideration or Incorporation
- Extending production boundary – in for a penny, in for a pound



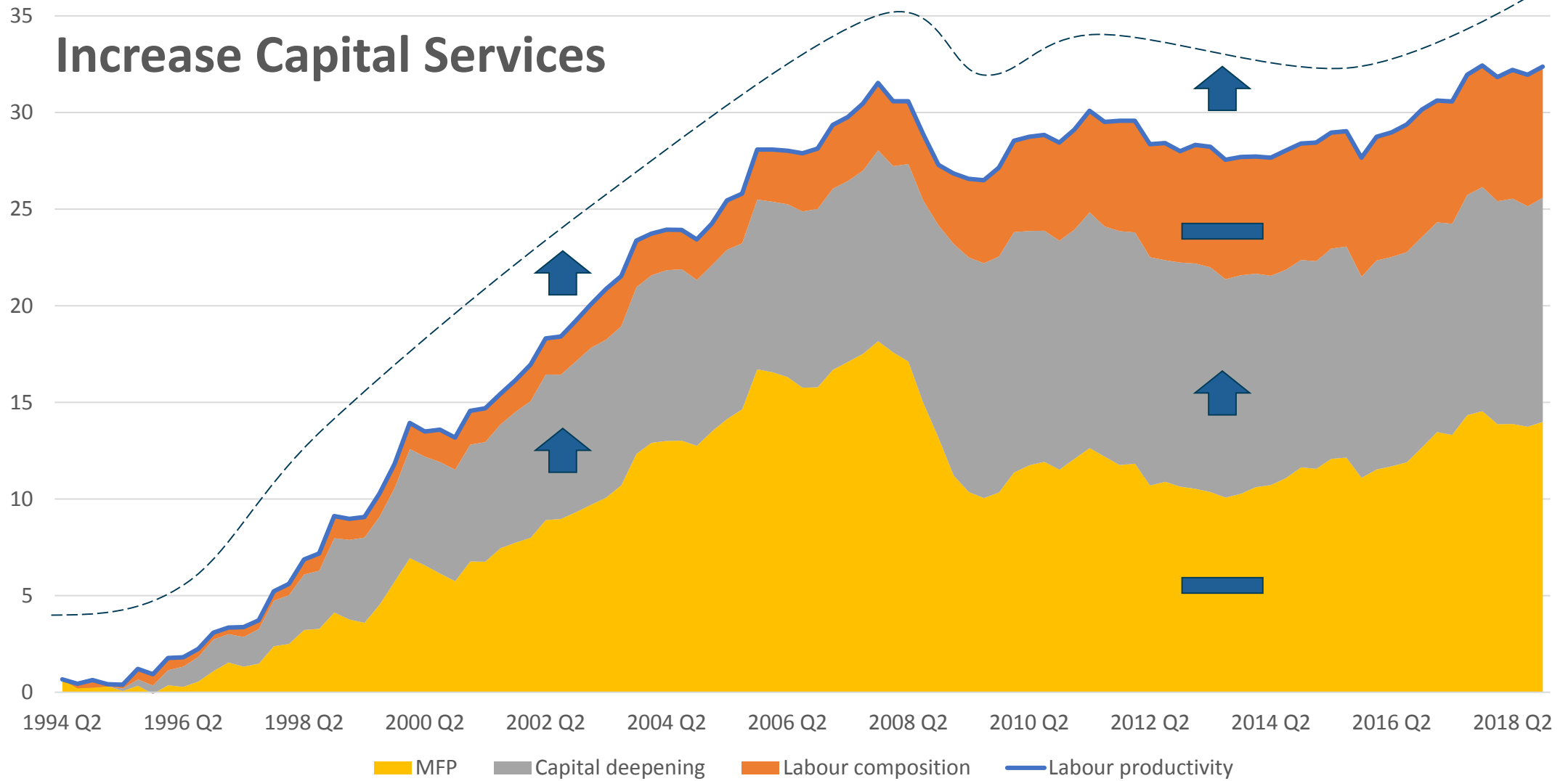
# Building blocks of elements of capitals



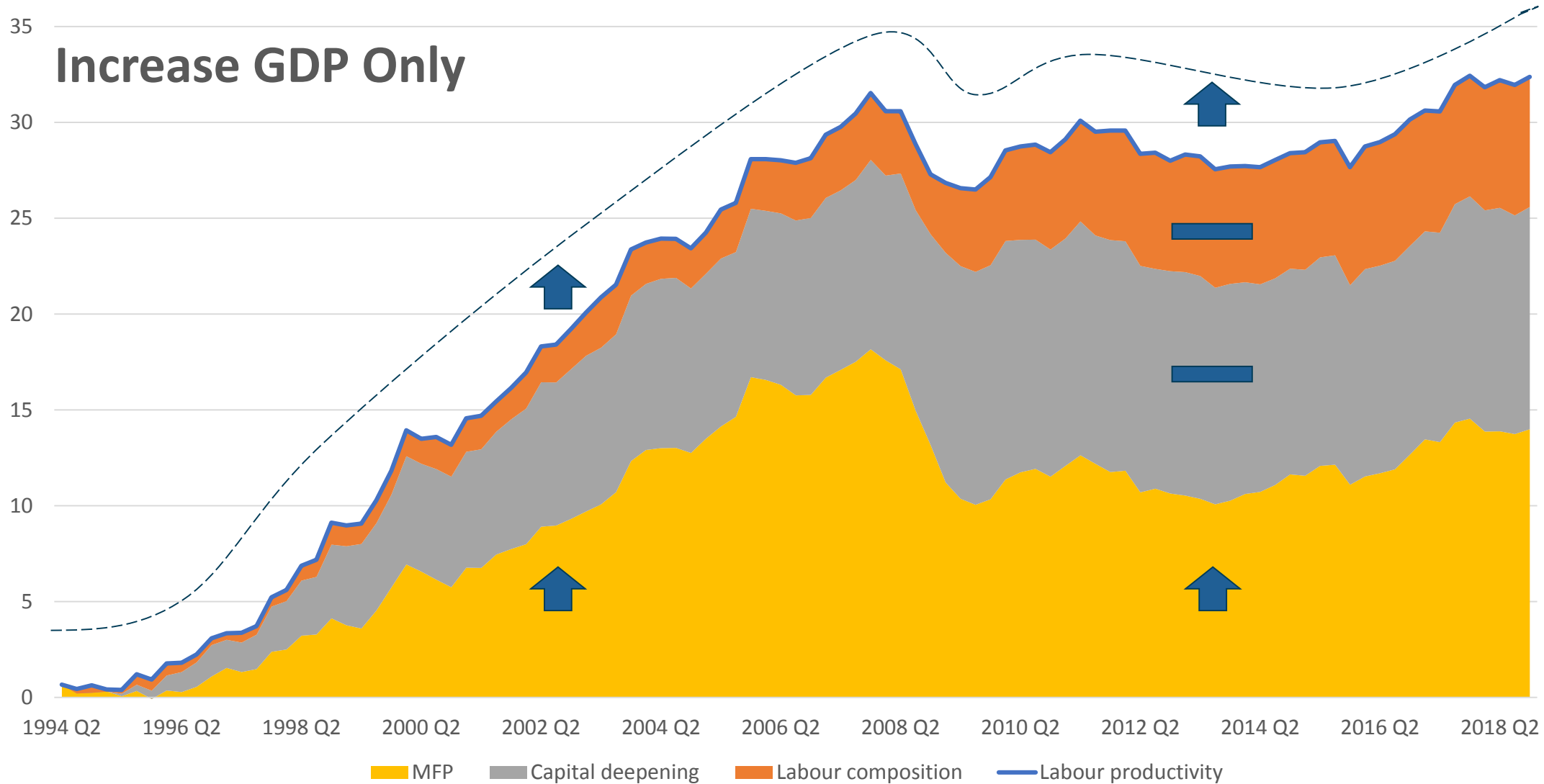
# Potential impacts from capturing extra capitals



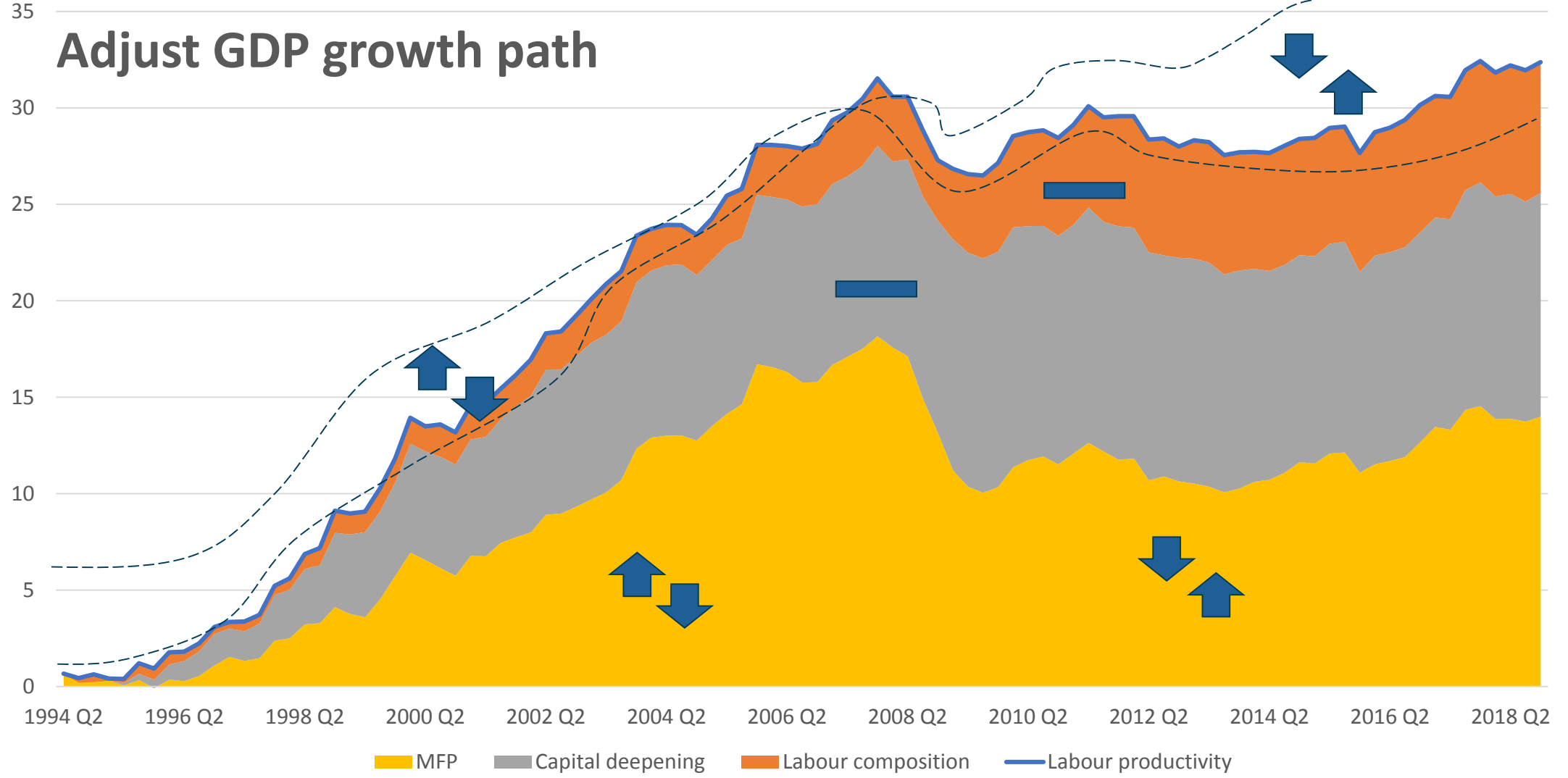
# Increase Capital Services



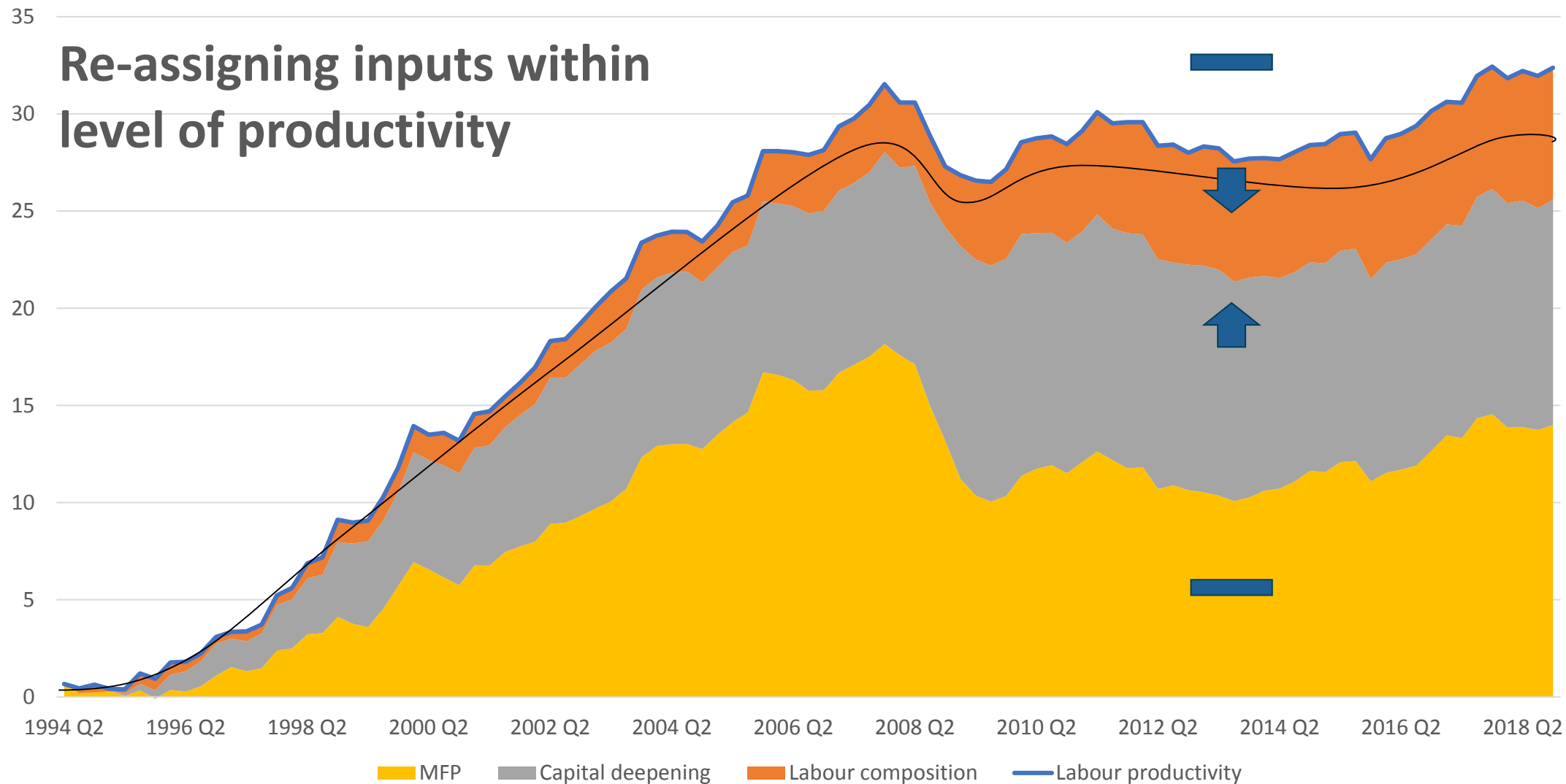




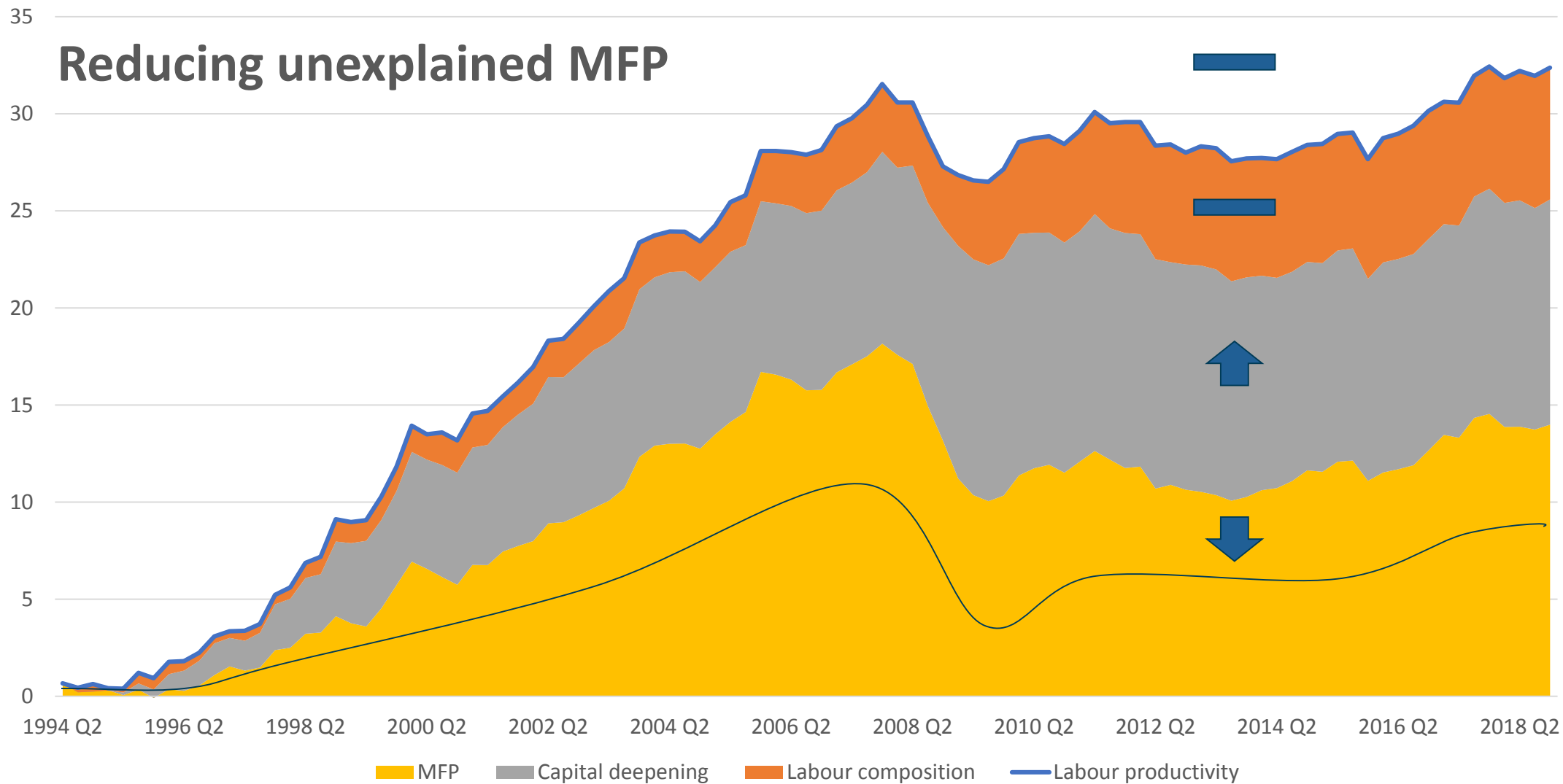
# Adjust GDP growth path



# Re-assigning inputs within level of productivity



# Reducing unexplained MFP



# Case Study and reflections

Part 3

# Human Capital, focus on in-work training

- Scope (Education, Health, Social Protection)
- Justification & Quirks
- Current measures
- Incorporating in-work training

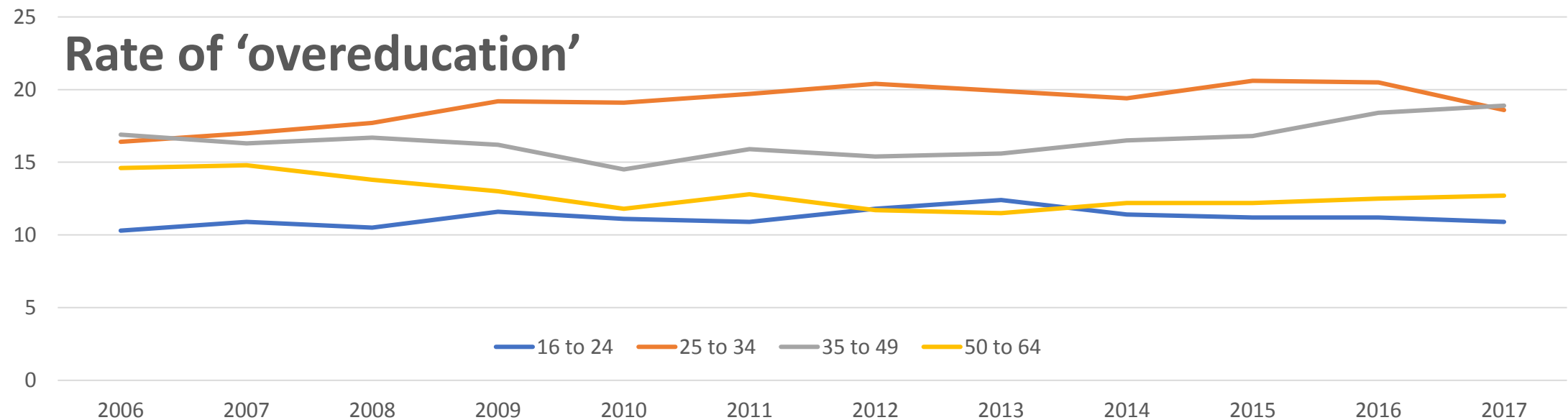
Type of training	Public Sector			Private Sector		
	GVA	Hours	Capital	GVA	Hours	Capital
Outsourced training	Up	-	No treatment	Down	-	No treatment
On-the-job training	Neutral/Up	Across industries	IT, Buildings etc	Down	Across industries	IT, Buildings etc

# Measuring value of in-work training / human capital

Element for valuation	In-work training case 4	Other aspects of human capital
Investment	Sum of costs + Mark-up	
Price	Multiple markets of equivalent provision	Market for education provision?
Life-length	Assessment of quality vs demand of skill provided	Variable – one-year to life expectancy Function of use (feed-back?)
Age-efficiency/ price function	Assessment of demand of skill in economy	Function of use (feed-back) Iterative optimisation as: $HK_t \sim f \left( \sum_t I_t, P, LL(HK_{t-1}), AP(HK_{t-1}), \dots \right)$

# Implications

- Multiple distinct assets → classification – e.g. skills classification. “Data analysis”, “Leadership”, “Maths” etc
- Price of ‘undeveloped’ human capital
- Assumption of complete markets





# Further unanswered questions

- Valuation
- Compound nature of knowledge acquisition
- Dealing with iterative feed-back loop
- Sector ownership
- Capturing negative impact
  - over-intensive training/on-the-job experience
  - obsolesce for useless training