

# First Beyond GDP Sprint Meeting of the United Nations Network of Economic Statisticians

10 March 2022



# Welcome

**Stefan Schweinfest**

Director of United Nations Statistics Division

**Richard Heys**

Deputy Chief Economist  
Office For National Statistics



# Agenda – shown in UK time

- 12:00 – 12:15 Welcome and introduction – Stefan Schweinfest, Director of United Nations Statistics Division and Richard Heys, Deputy Chief Economist, Office for National Statistics
- 12:15 – 12:45 Intangible Assets – Jonathan Haskel, Imperial College Business School and Bank of England
- 12:45 – 13:20 Data as an asset – John Mitchel, (OECD)  
Country Presentation by Sean Crick, Australian Bureau of Statistics
- 13:20 – 13:30 Break
- 13:30 – 14:00 Natural Capital – Bram Edens, UN, Carl Obst, ME and Mark de Haan, IMF
- 14:00 – 14:30 Human Capital – Gueorguie Vassilev, Office for National Statistics
- 14:30 – 14:45 Consolidating discussion, Richard Heys, Deputy Chief Economist, Office for National Statistics
- 14:45 – 15:00 Next steps and closing remarks – Erich Strassner, Associate Director for National Economic Accounts, US Bureau of Economic Analysis on Distributional Sprint

# Beyond GDP Sprint Session One: Measuring Modern Capital



Richard Heys (ONS)



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March 2022

UN Network of Economic Statisticians

# High level Sprint objectives

*“What we measure affects what we do. If we have the wrong metrics, we will strive for the wrong things.”*

*(Stiglitz, Fitoussi & Sen 2010)*

While the Stiglitz Report set the dimensions of the global debate around ‘Beyond GDP’, it was not prescriptive of specific approaches or measurement. Since then, many approaches, frameworks, and specific measures have been put forward.

The sprint’s objective is to review the potential to agree an extended framework for measuring all aspects of economic activity, in a way which is compatible with GDP / national accounts, but captures key elements excluded from that measure.

# Sprint Design

**Session One:** Modern Capital

**Sessions Two & Three:** Distributional Accounts

- SNA update issues, environment, wellbeing (Fitoussi, Stiglitz and Durand report)

**Session Four:** Population and wellbeing

- Socio-demographic disaggregation of national accounts, vulnerability, HDI index

**Session Five:** Synthesis and Next Steps

# Sprint One: Modern Capitals

*‘What does capital look like in the modern economy, and how should we measure modern capital and its flows of benefits?’*

Scope:

- What is modern capital and where do we classify it?
- How does our current measurement techniques impact on our understanding of modern capital?
- How do we think about ownership v use?
- How do we think about capital assets which are not exclusive or rivalrous?
- Does the produced / non-produced boundary help or hinder efforts to understand modern capital?
- How do we tackle capital which isn't defined by national borders?

# Defining Capital

We need to agree which types of capital we consider to be in scope:

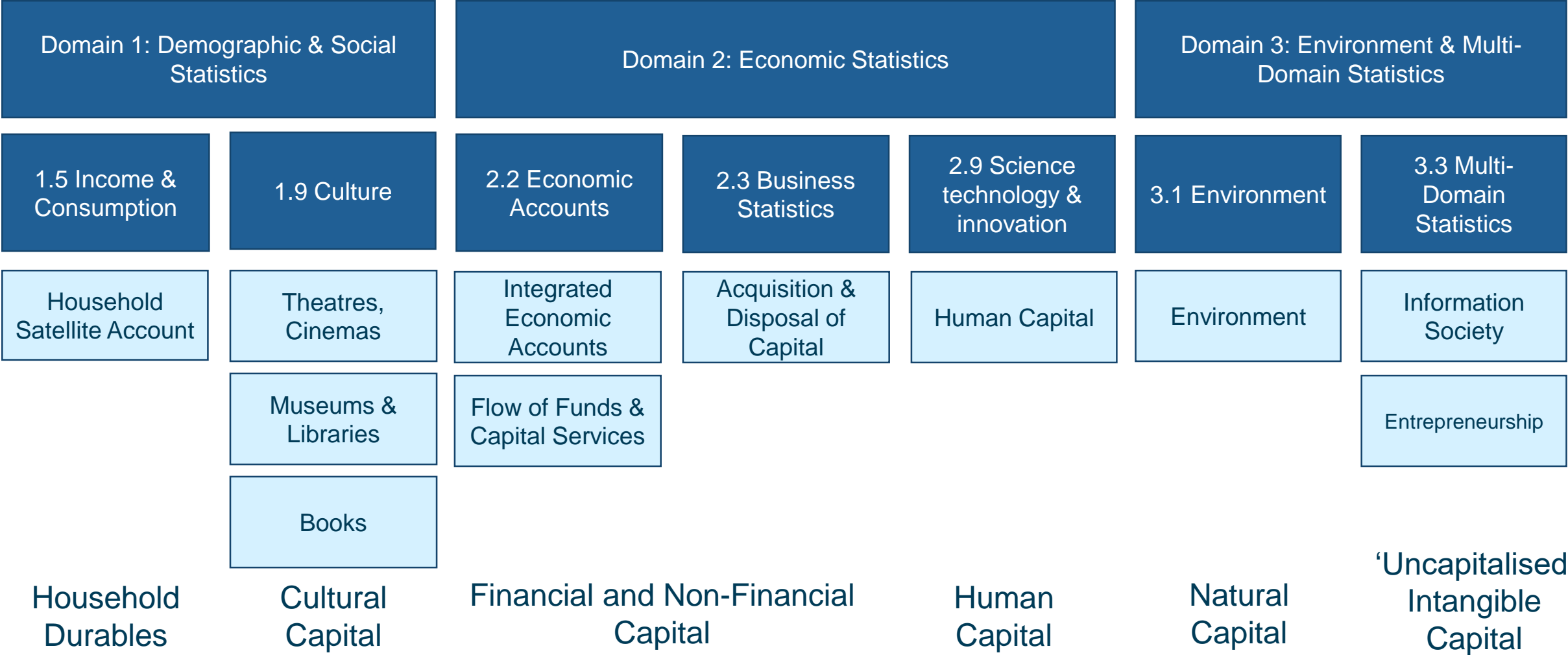
SNA 2008 Para 10.8 *An asset is a store of value representing a benefit or series of benefits accruing to the economic owner by holding or using the entity over a period of time. It is a means of carrying forward value from one accounting period to another.*

But not just economic statistics contain capital assets – many statistical domains cover assets beyond the traditional economic asset boundary.





# Classification of Statistical Activities Mapped to Measuring Capital



# Measuring the value of modern capital

*Sum of Costs of Production = Expected Sum of Discounted  
+ Margin flow of benefits*

- Under assumption of perfect competition, institutions will invest up to the point equal to the discounted sum of future benefits.
- However, numerous reasons why this may not be the case in market economy, even harder to assume perfect competition outside of the market:
  - Human Capital – credit market constraints
  - Risk aversity – without perfect foresight, investors may exhibit caution
  - Future benefits may be dependent on other investments / decisions – particularly natural capital may see cliff-edges in returns
  - Fast-moving innovation (e.g. technology) makes it increasingly hard to form expectations of future returns
  - Sufficiently long-lived assets can find new purposes and renewed benefit streams
- Is it valid to assume the different methods are consistent?

# Ownership & Use

- Many assets are owned by someone other than the user.
  - The current treatment of capitals within the accounts mean some payments to access assets are treated as rentals, some as rents, and particularly for infrastructure held by the public sector either not at all or indirectly through taxes.
  - Practical problems at identifying ownership, particularly in the context of globalisation.
  - Human capital lies outside the core national accounts framework, for technical reasons but even if it did not, who owns human capital and who utilises it? How could its rewards be treated – as compensation or a rent?
  - Atmosphere and natural capital raise similar questions of ownership and usage. Pollution does not know borders and trees sequester carbon no matter where, or by whom it is emitted.
  - ICT hardware has been increasingly replaced by many firms with cloud services: Capital services commensurately fall and intermediate consumption rises, but from a productivity perspective the same capital services are being delivered.
- Do we need to consider how best to address this in a consistent manner?

# How do we think about capital which is not exclusive?

- Physical, tangible assets can be owned and exclusivity enforced, but intangible assets can be utilised in very different ways, potentially coming close to being public goods with non-rival, non-excludable qualities.
- Traditional and digital infrastructure (roads and mobile phone networks) have very similar qualities (if not perfect non-rivalry).
- Many capitals are currently being replaced with services, such as cloud-computing, that not only don't preclude someone else using the same ICT assets, but is designed to optimise use of these across multiple users, including open-source software.
- Do we need to stand back and consider whether we need to focus more on private and non-exclusive capitals.



# Does the produced / non-produced boundary help understand modern capital?

- The national accounts currently distinguish between produced and non-produced assets, but there is an increasing need to better reflect the flow of services which don't fit neatly into a produced/non-produced dichotomy:
  - Environment
  - Data
  - Crypto-assets
  - Human Capital (Nature v nurture)

# How do we tackle capital which isn't defined by national borders?

How do we tackle capital which isn't defined by national borders?

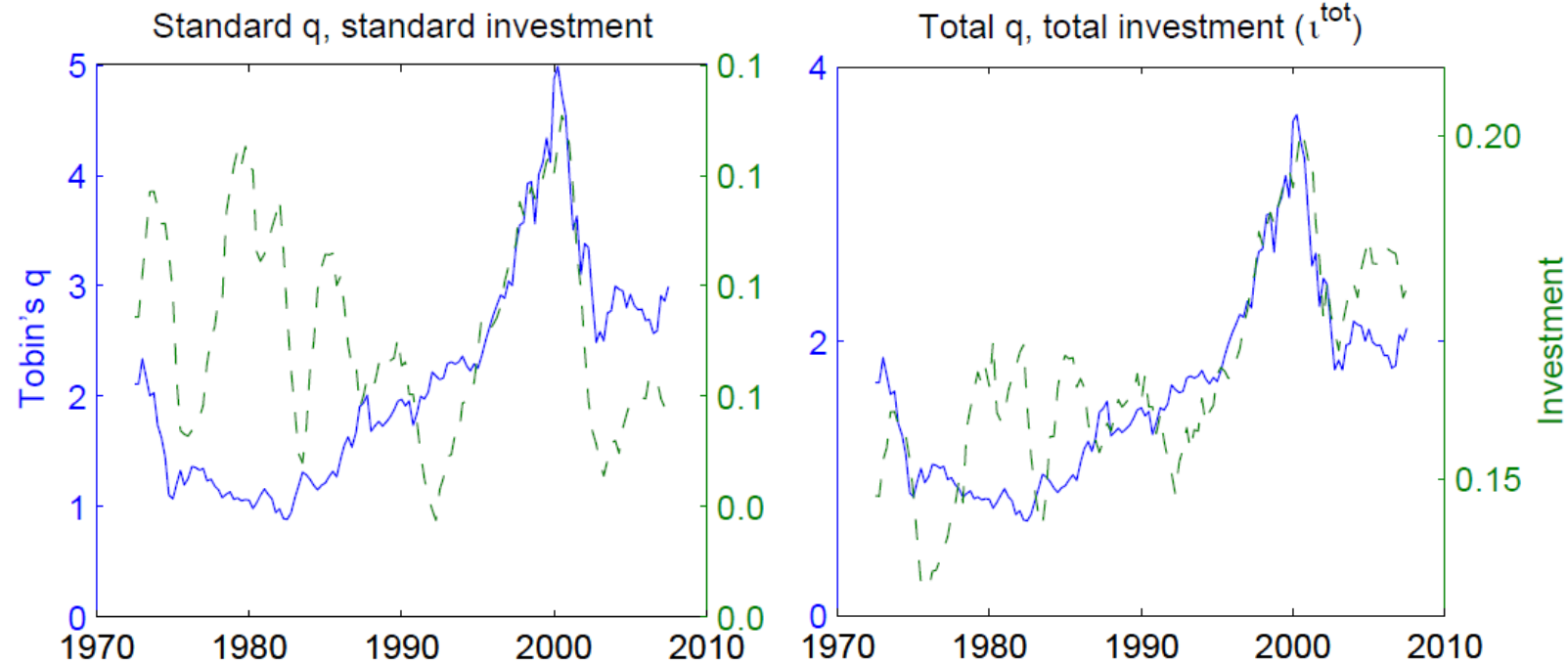
The need to understand the relationship between the economy and the environment has never been stronger, and the need to find ways to address the full range of environmental services is becoming increasingly apparent, (but not forgetting open source software)



# National Accounts v Business Accounts

Business accounts are increasingly less transparent as intangible assets are not recorded. As firm's stock market values diverge from the value of assets recorded, it is clear that many firms derive their value from intangibles (Peters and Taylor 2017), and are not always keen to reveal these.

National accounts needs this data however, particularly as intangibles represent an increasing share of gross fixed capital formation, and in some cases now form the majority of investment, particularly if we include uncapitalised intangibles.



# Any Questions?



# Intangible assets

Jonathan Haskel

@haskelecon

Imperial College Business School and Bank of England  
UN Beyond GDP sprint on Modern Capitals, 10<sup>th</sup> March 2022.

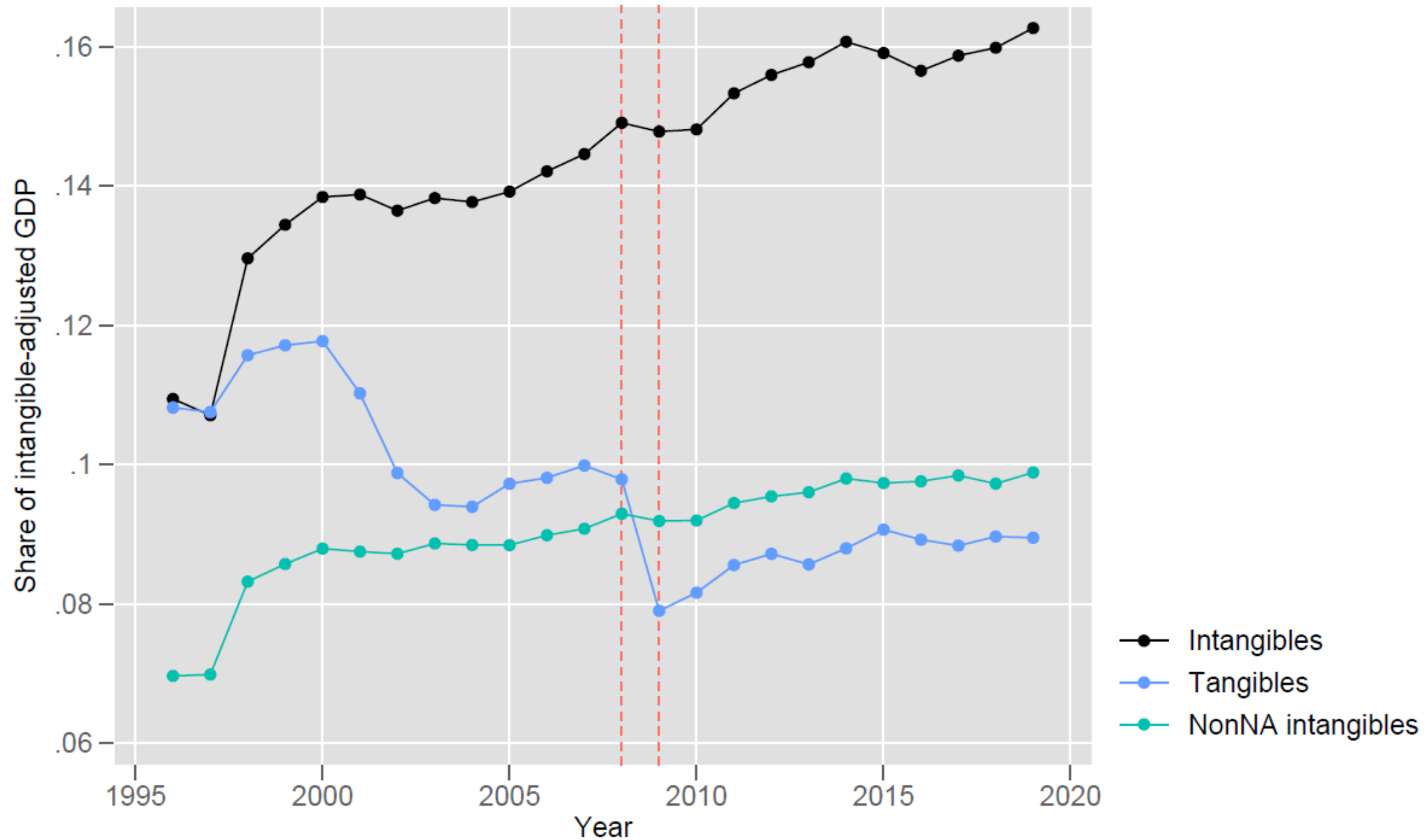
Views are my own.

# Intangible assets framework

Broad category	Type of Intangible Asset	Description (from CHS)	Capitalised in the National Accounts?
Computerised Information	Software and databases	This includes knowledge embedded in computer programmes and computerised databases.	Yes
	Research and development		Yes
Innovative Property	Mineral exploration and evaluation		Yes
	Entertainment, literary and artistic originals	This includes knowledge acquired through scientific research and development, product development and non-scientific inventive and creative activities.	Yes
	Design		No
	Financial product innovation		No
Economic Competencies	Branding		No
	Organisational capital	This includes knowledge embedded in firm-specific human and structural resources, including brand names.	No
	Firm-specific training		No

Source: UK ONS adapting Corrado, Hulten and Sichel (2005)

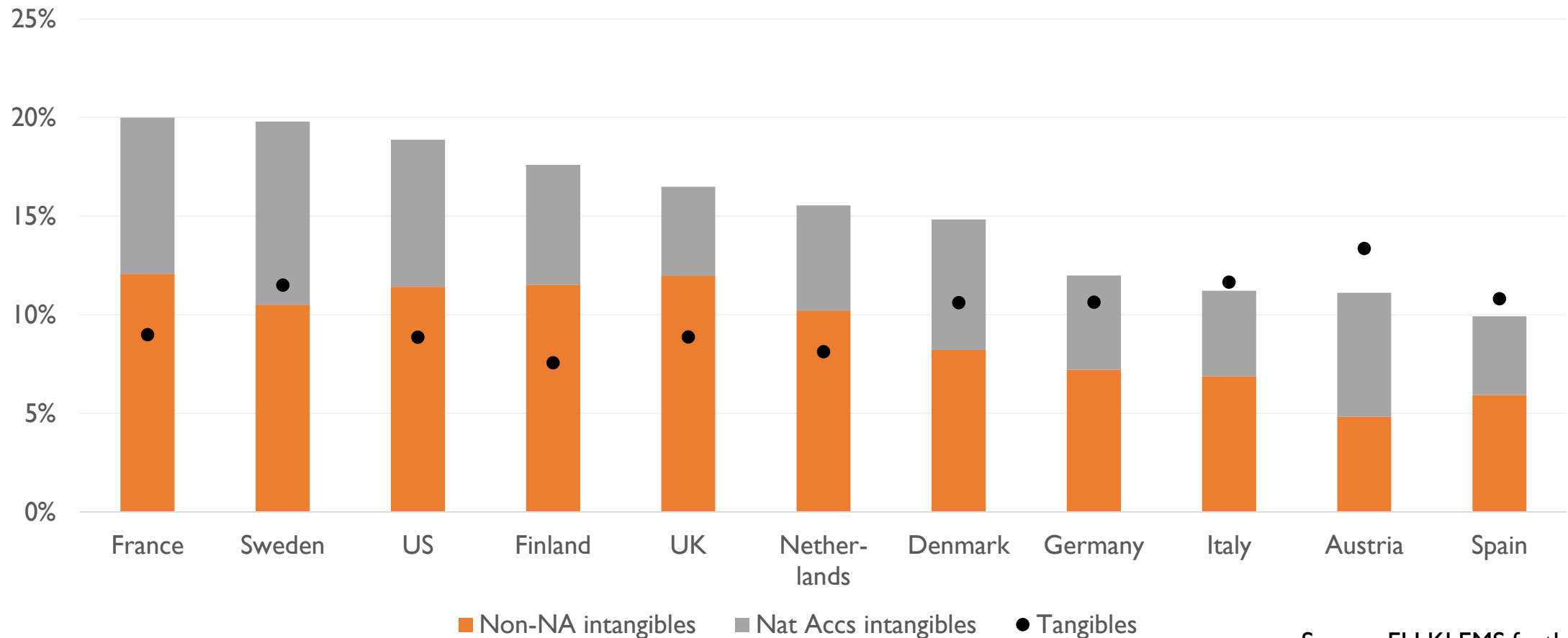
# Shares of intangible, tangible and nonNA intangible investment



Note: Non-farm 'market' sector, Europe10 & US

# Intangible investment exceeds tangible investment in many countries, with uncapitalised intangibles accounting for the majority

Share of intangible and tangible investment in GDP, 2010-2019 average, by country



Source: EU KLEMS forthcoming, authors' calculations

# The four economic properties of intangibles and implications for measurement

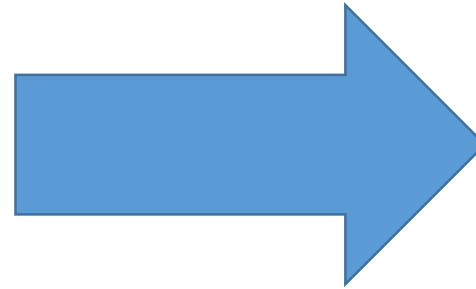
## Scalable

Intangible assets can often be used over & over, in multiple places, with little or no reinvestment.

There is likely to be a wide variation in rates of depreciation (obsolescence) for some intangibles.

## Spillovers

A firm making an intangible investment will not receive all (or perhaps any) of the returns.



Some intangibles are quasi-public goods (adding to open knowledge) while others may start as private goods and later become public.

## Sunk

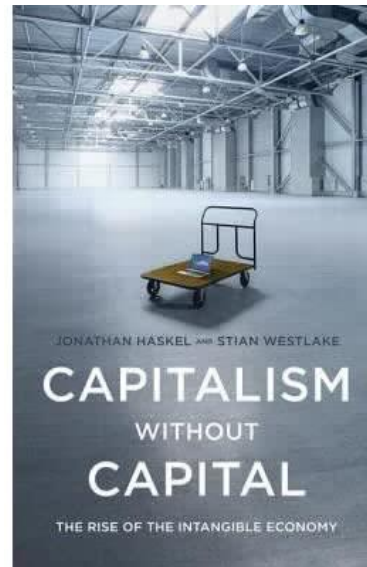
Once a firm makes an intangible investment, hard to sell it or recover its value.

Intangibles often don't show up on balance sheets, and businesses do not keep data on them, as they cannot use them for collateral.

## Synergies

Intangible assets are often especially valuable when combined with other intangibles and human capital

Rates of return on intangible assets may be non-linear, and depreciation rates could even be negative at times.



# Measuring intangible investment is a game of two halves

## Tangible assets

95%

**Purchased investment** – a firm buys another unit's output on the market

5%

Mostly dwellings

**Own-account investment** – a firm develops an intangible asset in-house for its own use

## Intangible assets

40%

60%

70% for only capitalised intangibles

# Purchased investment is 'easy' if you know where to look



Notice is given under section 1 of the Statistics of Trade Act 1947

## Annual Business Survey 2018



### All Other Expenditure (except employment costs)

#### 4. What was your expenditure on the following?

**Note:** Please give amounts payable **excluding** employment costs, stock variation, all interest payments, amounts charged to capital account and capitalised building repairs.

#### Services for Business Use

(p) Amounts payable for advertising and marketing services ..... £ 

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BUT

- Is definition different from current intermediate consumption product breakdown?
- Do businesses hold such data to reliably report?

# Own-account investment needs much more research, but it is possible

Wages and salaries of relevant workers

*Multiplied by*

A scale-up factor for non-wage labour costs

*Multiplied by*

A scale-down factor for time spent on non-investment activities

*Multiplied by*

A scale-up factor for non-labour costs

*Multiplied by*

A sales-adjustment factor for those industries that produce the relevant good for sale (so as to avoid double-counting with 'purchased' investments)

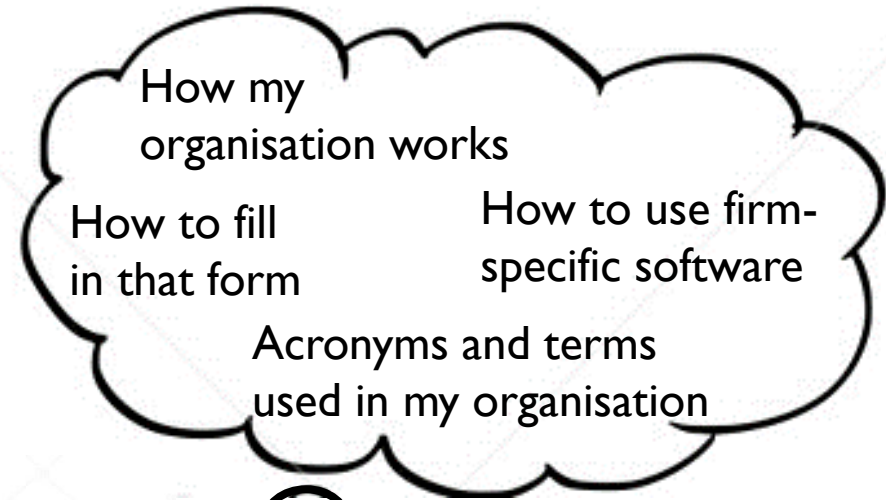
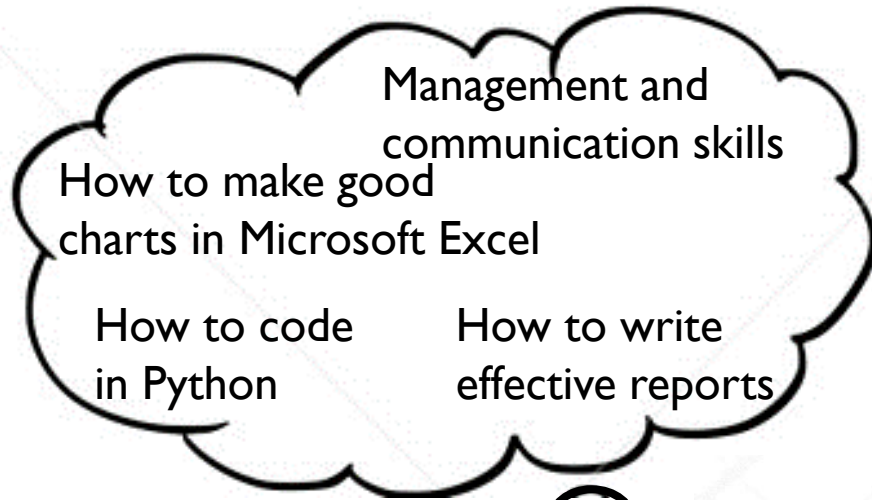
Table 1. Occupations used in own-account branding estimates

SOC code	1132	1134	2473	3421	3543	3545
Description	Marketing and sales directors	Advertising and PR directors	Advertising accounts managers and creative directors	Graphic designers	Marketing associate professionals	Sales accounts and business development managers
Associated job titles	Marketing director; sales director	Account director; head of public relations	Advertising manager; creative director	Commercial artist; graphic designer	Market research analyst; marketing executive	Sales manager; business development managers
Responsibilities	Planning, organising and directing market research and organising marketing and sales policies	Planning, organising and directing advertising and PR activity	Planning and designing the advertising activities of an organisation	Using multimedia techniques for information, entertainment or advertising purposes	Developing projects to elicit preferences of consumers	Undertaking market research to meet marketing and sales policies
Role in marketing process	Overseeing whole process	Overseeing whole process	Planning stage	Creative stage	Planning and evaluation stages	Planning and evaluation stages
Advertising or market research	Both	Mostly advertising	Mostly advertising	Entirely advertising	Mostly market research	Mostly market research
Relevant (range)	15–30%	30–45%	45–60%	15–30%	40–50%	15–25%
Own-account branding time factor (range)	10–30%	10–30%	20–40%	20%	70%	50–60%
Other own-account investments	Organisational capital (20%)	Organisational capital (20%)		Design (50%)		Software and databases (10%)

Source: Martin, 2019



# Boundaries: human capital and training



# Boundaries: R&D with design and software

Table 2.3. **Borderline between R&D, innovation and other business activities**

Item	Treatment	Remarks
Prototypes	Include in R&D	As long as the primary objective is to make further improvements.
Pilot plant	Include in R&D	As long as the primary purpose is R&D.
Industrial design	Split	Include design required during R&D. Exclude design for production process.
Industrial engineering and tooling up	Split	Include "feedback" R&D and tooling up industrial engineering in innovation processes. Exclude for production processes.
Trial production	Split	Include if production implies full-scale testing and subsequent further design and engineering. Exclude all other associated activities.
Pre-production development	Exclude	
After-sales service and trouble-shooting	Exclude	Except "feedback" R&D (to be included).
Patent and licence work	Exclude	All administrative and legal work needed to apply for patents and licences (delivering documentation as an outcome of R&D projects is R&D). However, patent work connected directly with R&D projects is R&D.
Routine tests	Exclude	Even if undertaken by R&D personnel.
Data collection	Exclude	Except when an integral part of R&D.
Routine compliance with public inspection control, enforcement of standards, regulations	Exclude	

Design (process)

Design (product)

# Boundaries: current vs capital spending

“Fixed assets are produced assets that are **used repeatedly or continuously in production processes for more than one year.** The distinguishing feature of a fixed asset is not that it is durable in some physical sense, but that it may be used repeatedly or continuously in production over a long period of time, which is taken to be more than one year.”

SNA 2008, 10.11

# Thank you

## References

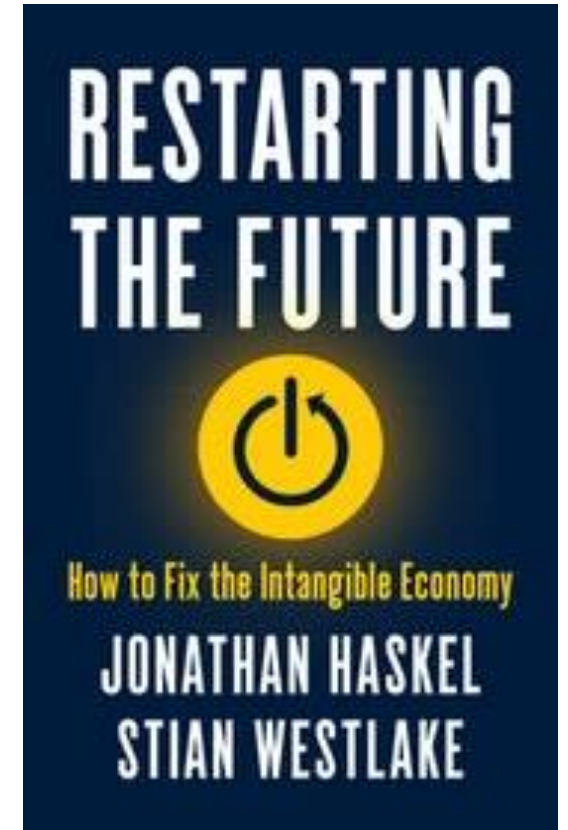
Corrado, C., Hulten, C., & Sichel, D. (2005). “Measuring capital and technology: an expanded framework.” *In Measuring capital in the new economy (pp. 11-46). University of Chicago Press.*

Haskel, J. & Westlake, S. (2017). “Capitalism without capital.” *Princeton University Press.*

Martin, J. (2019). “Measuring the Other Half: New estimates of intangible investment from the UK Office for National Statistics” *National Institute Economic Review*

OECD. (2015). “Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development”. *The Measurement of Scientific, Technological and Innovation Activities, OECD Publishing, Paris.*

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Published:

22 March 2022 (UK)

5 April 2022 (US)



# Modern capital – Data as an asset

John Mitchell (*National Accounts Division - OECD*)

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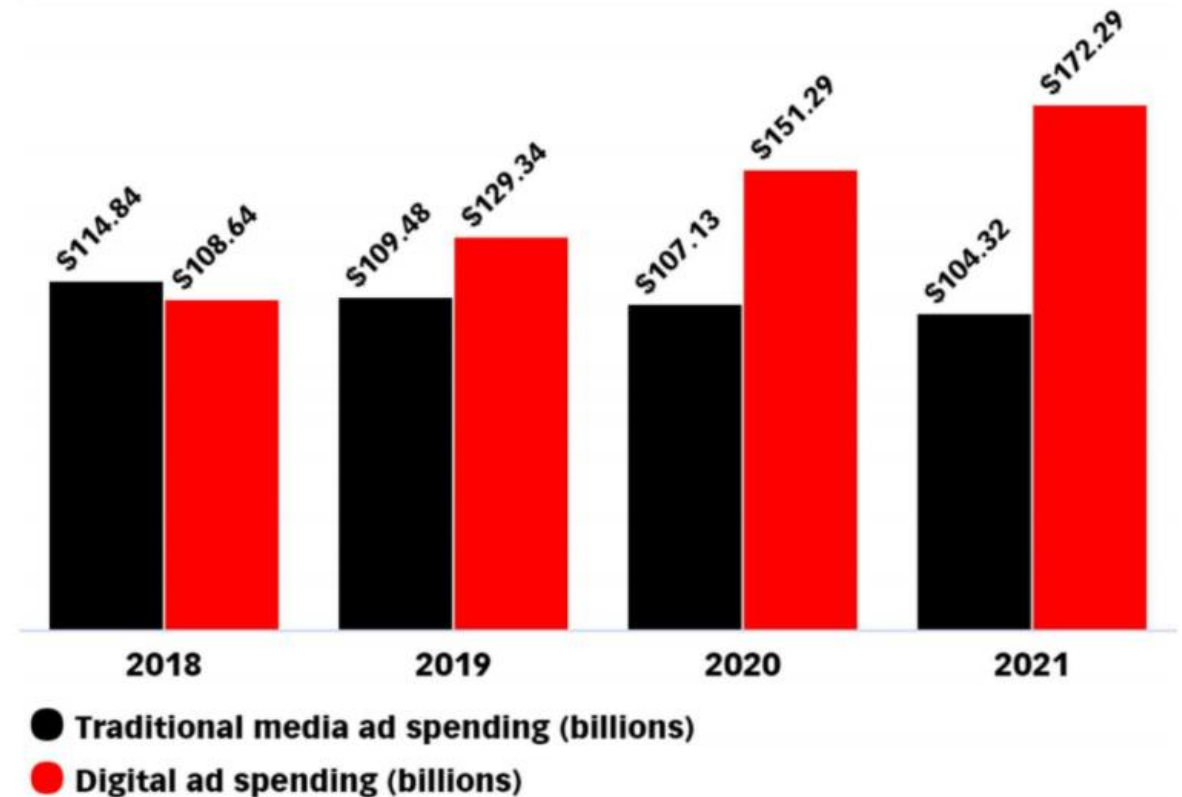
# Modern Capital - Data as an asset

What assets are used in the production of Digital advertising?

- ✓ Computer hardware
- ✓ Computer Software
- ✓ R & D
- ✓ ...
- X Data

## Digital vs. Traditional Ad Spending

United States, 2018-2021



Source: eMarketer, Feb 2019



## Modern Capital - Data as an asset

Data contributes to **improved productivity & efficiency** in a range of industries.

- **Just-in-time supply chain control**
- **Customer loyalty programs**
- **Improved demand forecasts**

Not just the private sector; **public sector data** has transformed many aspects of non-market output!





## Data vs other assets in the National Accounts.

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- Most data is produced on an own account basis.
- Data doesn't depreciate.
- Data is extraordinarily heterogeneous, most value based on specific content and context.
- Data used in production can be non-rivalrous.
- Quantity of data is often unrelated to the value of the data.
- Service life of data is extremely varied.

Data creation by governments can be considered an input to improve government output (tax or social security databases) or as a public good itself.





# Data in the National Accounts

## Considerations for inclusion

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- Consider data entirely the result of production.
- Value of data is based on sum-of-costs.
- Assumptions based around service life – current vs capital cost.
- Likely to be calculated at an aggregate level, examples by Statistics Canada and *Goodridge et al.* (Modelled rather than direct reporting).



# Data in the National Accounts

Additional thoughts

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- Testing is required to set user expectations on impact of the accounts (capital formation, capital stock & GDP).
- Are we appropriately reflecting who is responsible for the value added?
- How does legislative decisions impact the treatment of ownership of data in the accounts?

# Country experience: Measuring data as an asset in Australia

Australian Bureau of Statistics  
Informing Australia's important decisions



The background features a series of overlapping triangles in shades of blue, yellow, and green, creating a geometric pattern. On the right side, there is a stylized data visualization with a red line graph and a bar chart, overlaid with binary code (0s and 1s) in blue and white.

# Where are we at?

- ▶ Data-related investment: data/database/data science
- ▶ Cost-of-production approach (salary, non-direct salary and other intermediate input costs, cost of capital)
- ▶ Applied lower-upper bounds for robustness
- ▶ Sense-of-magnitude estimates, though they present overlap to a degree with published components.

# Data-related capital formation

**Table 1. Estimates of Data related Capital Formation (current price)**

	2006	2011	2016
	millions of AUD		
<b>Total of all data-related categories</b>			
lower range value	19,790	25,951	35,512
upper range value	25,543	33,682	46,728

**Table 2. Annual growth rates for Data related Capital Formation (current price)**

	2006	2011	2016
<b>Annual growth rate (all data-related categories)</b>			
lower range value		5.6%	6.5%
upper range value		5.7%	6.8%

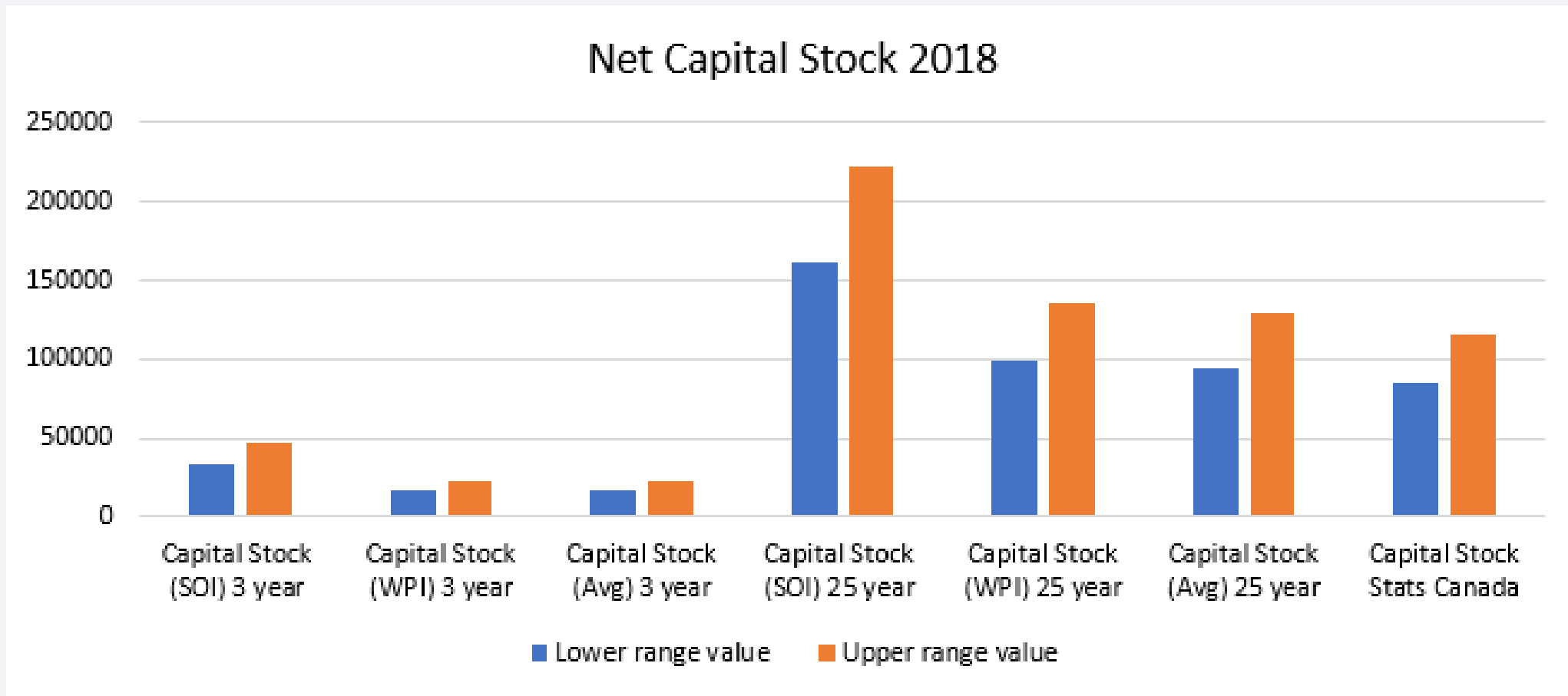
# Where are we at? (cont.)

Preliminary estimates of net capital stock for data (*databases and data science currently excluded*) based on Perpetual Inventory Method.

Sensitivity test for:

- Price indexes: WPI vs. Inhouse computer software (SOI) deflator vs. weighted measure
- Asset lives: 3-year mean asset life vs. 25-year mean asset life (Stats Canada)

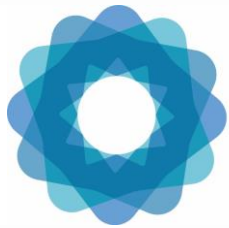
# Net capital stock - Data



- ▶ Improve in estimates of investment in data-related assets
  - Occupation mapping (NOC – ANZSCO; 6 digit ANZSCO)
  - Reassess assumptions on share of production activities
- ▶ Refine estimates of capital stock for data-related assets
  - Expand coverage of the experimental estimates (databases and data science)
  - Reassess assumptions and collect real world information (asset lives, price indexes)
- ▶ Review overlap with existing estimates (e.g. R&D)
- ▶ Assess impact to productivity estimates



# Break



System of  
Environmental  
Economic  
Accounting

# Measuring natural capital and the relationship between SNA and SEEA

Bram Edens, PhD.

United Nations Statistics Division



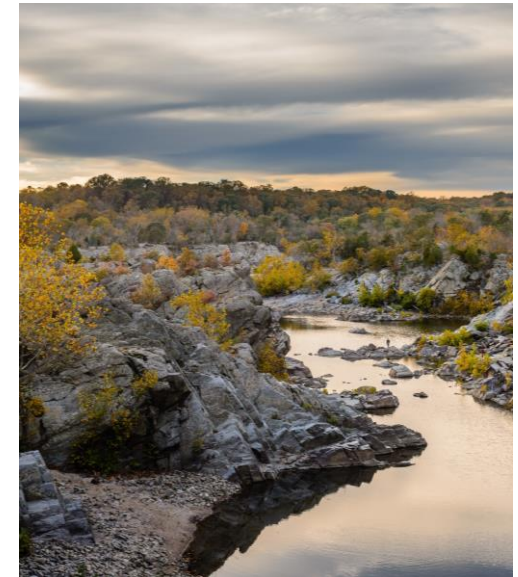
United Nations

# Outline

- Context on SEEA
- Defining natural capital in SEEA
- Measuring natural capital
- Beyond GDP

# The Need


- Our economy and well-being crucially depends on nature
- Recognize natural capital as asset:
  - Provide flows of benefits to people
  - Stocks that can be degraded / depleted or enhanced / restored
- Both aspects important to assess the impacts and dependencies on natural capital which is not reflected in GDP or the SNA
- Decision makers need key information necessary to effectively pursue and track sustainable development
- SEEA has been developed to address those needs



# Standardization of measurement of the environment

- History goes back to 1980s: 1993 SEEA; 2003 SEEA
- SEEA Central Framework adopted in 2013 as statistical standard by UNSC
- SEEA Ecosystem Accounting adopted in March 2021
  - > *chapters 1-7 describing the accounting framework and the physical accounts adopted as an international statistical standard*
  - > *chapters 8-11 recognized as describing internationally recognized statistical principles and recommendations for the valuation of ecosystem services and assets*
- SEEA developed in close collaboration with numerous stakeholders, including:
  - > CBD, UNCCD
  - > IPBES
  - > IUCN
  - > Capitals Coalition and private sector (most recently TNFD)
  - > Wealth accounting efforts (World Bank; UNEP)

# SEEA accounts

<p><b>SEEA-CF</b> (Central Framework)</p>	<ul style="list-style-type: none"> <li>• <b>Assets</b></li> <li>• <b>Physical flows</b></li> <li>• <b>Monetary flows</b></li> </ul>	<ul style="list-style-type: none"> <li>• Minerals &amp; Energy, Land, Timber, Soil, Water, Aquatic, Other Biological</li> <li>• Materials, Energy, Water, Emissions, Effluents, Wastes</li> <li>• Protection expenditures, taxes &amp; subsidies</li> </ul>
<p><b>SEEA Water;</b> <b>SEEA Energy;</b> <b>SEEA Agriculture, Forestry and Fisheries</b></p>	<p>Add sector detail</p>	<p>As above for</p> <ul style="list-style-type: none"> <li>• Water</li> <li>• Energy</li> <li>• Agricultural, Forestry and Fisheries</li> </ul>
<p><b>SEEA-EA</b> (Ecosystem Accounting)</p>	<p>Adds spatial detail and ecosystem perspective</p>	<p>Extent, Condition, Ecosystem Services, Thematic: Carbon, Water, Biodiversity</p>
		

# Defining natural capital

- SNA:
  - > Assets: stores of value which are owned that provide economic benefits
  - > Natural capital = natural resources + land
- SEEA CF expands SNA asset boundary
  - > Environmental assets: naturally occurring living and non-living components of the Earth, together constituting the biophysical environment, which may provide benefits to humanity. (Para 2.17)
  - > Provides a physical asset boundary not present in the SNA
- SEEA EA : expands the production boundary with ecosystem services (ES)
  - > ES: contributions of ecosystems to benefits used in economic and other human activity. (para. 2.14)
  - > ES: conceptualized as transaction between ecosystems assets (supply) and beneficiaries (users)

# One environment, two perspectives



**Measures environmental assets and individual resources and how the economy used them.**



**Timber**



**Water**




**Fish**




**Soil**




**Minerals**




**Measures ecosystems and the services they provide to economic and human activity.**




**Forests**



**Rivers**



**Coral reef**



**Wetlands**



# Extended measures of wealth

- SEEA EA Chapter 11
- Integrates SNA, SEEA CF+SEEA EA
- Ecosystem types based on IUCN Global Ecosystem Typology
- Prominence to natural capital (in SNA scattered across multiple categories)
- Avoids double counting, but special attention for:
  - > Cultivated biological resources
  - > Land (SEEA definition differs from SNA definition)
  - > Renewable energy resources
- Atmosphere (special case)

<b>Produced assets*</b>	Fixed assets <ul style="list-style-type: none"> <li>• Dwellings</li> <li>• Other buildings and structure</li> <li>• Machinery and equipment</li> <li>• Weapons systems</li> <li>• Intellectual property products</li> </ul>
	Inventories**
	Valuables
<b>Environmental assets - ecosystems</b>	Terrestrial ecosystems (IUCN GET EFG T1-T7) (includes SNA value of natural timber resources, and other non-produced biota)
	Freshwater ecosystems (IUCN GET EFG F1 – FM1) (includes SNA value of natural aquatic resources, and other non-produced biota) (Excludes the value of water resources)
	Marine ecosystems (IUCN GET EFG M1-MFT1) (includes SNA value of natural aquatic resources, and other non-produced biota)
	Subterranean ecosystems (IUCN GET S1-SM1)
<b>Environmental assets – other</b>	Cultivated biological resources <ul style="list-style-type: none"> <li>• Fixed assets</li> <li>• Work in progress (inventories)</li> </ul>
	Land (as provision of space) (includes SNA value of Land under buildings)
	Renewable energy resources**
	Water resources**
	Mineral and energy resources
	Atmospheric systems (includes SNA value of the radio spectrum)
<b>Other non-produced assets</b>	Contracts, leases and licenses***
	Goodwill and marketing assets
<b>Financial assets</b>	

# Measuring natural capital

- Stock accounts (physical units)
  - > Opening / closing stocks and changes during the accounting period
  - > Examples: extent of ecosystems; stocks of standing timber
- Monetary asset accounts
  - > Asset value = NPV of services provided
  - > Revaluation; depletion and degradation (grounded in physical indicators)
- Integration in sequence of accounts
  - > (net measures) and extended balance sheet
- Consistent with valuation principles of SNA
  - > Clear distinction between “exchange value” + “welfare value”
- Relation to broader measures of value
  - > SEEA takes an economic + instrumental perspective (focus on “use”)
  - > But recognizes broader perspectives (intrinsic values; relational values)



# Specific issues:

## ownership / borders / exclusivity / (non)-produced

- Several types of natural capital are public goods (non-exclusive / non-rival)
  - > SEEA EA makes contributions to benefits (+ impacts upon them) visible
  - > But necessitates using non-market valuation techniques
- Ownership: SEEA EA -> *de facto* all land is owned
  - > Ecosystem trustee as separate subsector of general government in the sectoral accounts
- Produced/non-produced distinction:
  - > SEEA perspective: gradual distinction + in Anthropocene hard to conceive of pure non-produced
  - > Discussed as topic during SNA revision process
    - Other topics discussed: asset ownership, permits, depletion, biological assets as an attempt to bring the SNA closer to the SEEA.
- International dimension:
  - > SEEA EA: spatial framework; ES benefit specific users; some inherently global (climate regulation)
  - > Imports + exports of ES

# Some challenges with measuring natural capital

- Conceptual:
  - > Exchange value when doing non-market valuation; allowable non-market valuation techniques
  - > *Sub-group to discuss SNA valuation principles as part of SNA update process*
- Philosophical:
  - > Nature has tremendous (welfare) value, but exchange value can be low compared to welfare value
  - > SEEA EA (Chapter 12) discusses complementary approaches to valuation
- Measurement:
  - > Projections of future service flows (+ discounting discussions) are inherently difficult
  - > Great advances in use of Earth Observation data + development of tools / data platform
- Way forward:
  - > SEEA EA implementation strategy includes development of tools + guidelines
  - > Research agenda

# Beyond GDP, broader framework

- SEEA can play an important role:
  - > SEEA has graduated from being satellite accounts towards a system on par with the SNA
  - > SNA and SEEA **complementary frameworks**
  - > With SNA and SEEA data in many countries, comprehensive datasets can be put together
- UN Common Agenda -> calls for implementation of SEEA EA
  - > SEEA status of implementation 2021: 89 countries SEEACF / 36 SEEA EA
- Trends / insights from SEEA development:
  - > Growing focus on wealth as underpinning current measures of welfare
  - > The importance of accounts in physical data
  - > Opportunities in bringing geospatial and statistical worlds together
  - > Challenges between economics (welfare) and accounting approaches
  - > Seek clarity (from policy makers / users) around number of indicators

# THANK YOU

[seea@un.org](mailto:seea@un.org) // <https://seea.un.org/>



# **UN Network of Economic Statisticians 10 March 2022**



## **Human Capital**

**Gueorguie Vassilev – Head of Skills, Time-  
Use and Economic Well-being, UK**

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# Contents

- Existing international guidance on human capital measurement
- Main current approaches and existing implementations (i.e. specific countries, some cross-country examples from OECD, World Bank, academics but no consistency)
- Outstanding conceptual concerns for incorporation – where does this guidance fall short?
- Commonalities with other capitals



# Existing international guidance on human capital measurement

- 2001: The Well-being of Nations (OECD)
- 2016 Guide to Measuring Human Capital (UNECE)
  - Cost-based measures – most natural alignment with National Accounts framework
  - Income-based measures – alternative valuation welcomed by individual countries' existing efforts
  - Indicators – range of options – e.g. World Bank Human Capital Index
- 2020 Guide to the Satellite Account on Education and Training (UNECE\_

# Drivers of change

- What do users want?
  - Policy, research, academia
- What are their expectations?
- What can statistical producers provide – where evidence gaps translate to future collection needs?

# Current conceptual situation

- Good progress on several options for identifying (main) contributions to independent human capital valuation
- Some reference to implications to sequence of accounts from existing approaches
  - Cost-based approaches identify items relating to human capital investment
  - Income-based approaches derive estimates for transactions and concepts that may need imputation or adjustment
- Less is agreed upon in terms of consistency in measurement and valuation with other capitals
- Many conceptual issues in terms of relation to SNA framework still outstanding

# Outstanding conceptual developments - framework

Existing disconnect and gap between frameworks

- Production boundary to account for human capital acquisition
- Extension of coverage of 'economic benefits' and 'economic activity'
- Clarifying distinction between human capital and labour

Clear definition of human capital – e.g.s:

- skill, knowledge or other concept that can be learned or trained individually, that can/does improve person's employment income potential for multiple period
- Individual attribute that, upon improvement or acquisition, improves associated production process over multiple periods beyond acquisition

# Outstanding conceptual developments - allocations

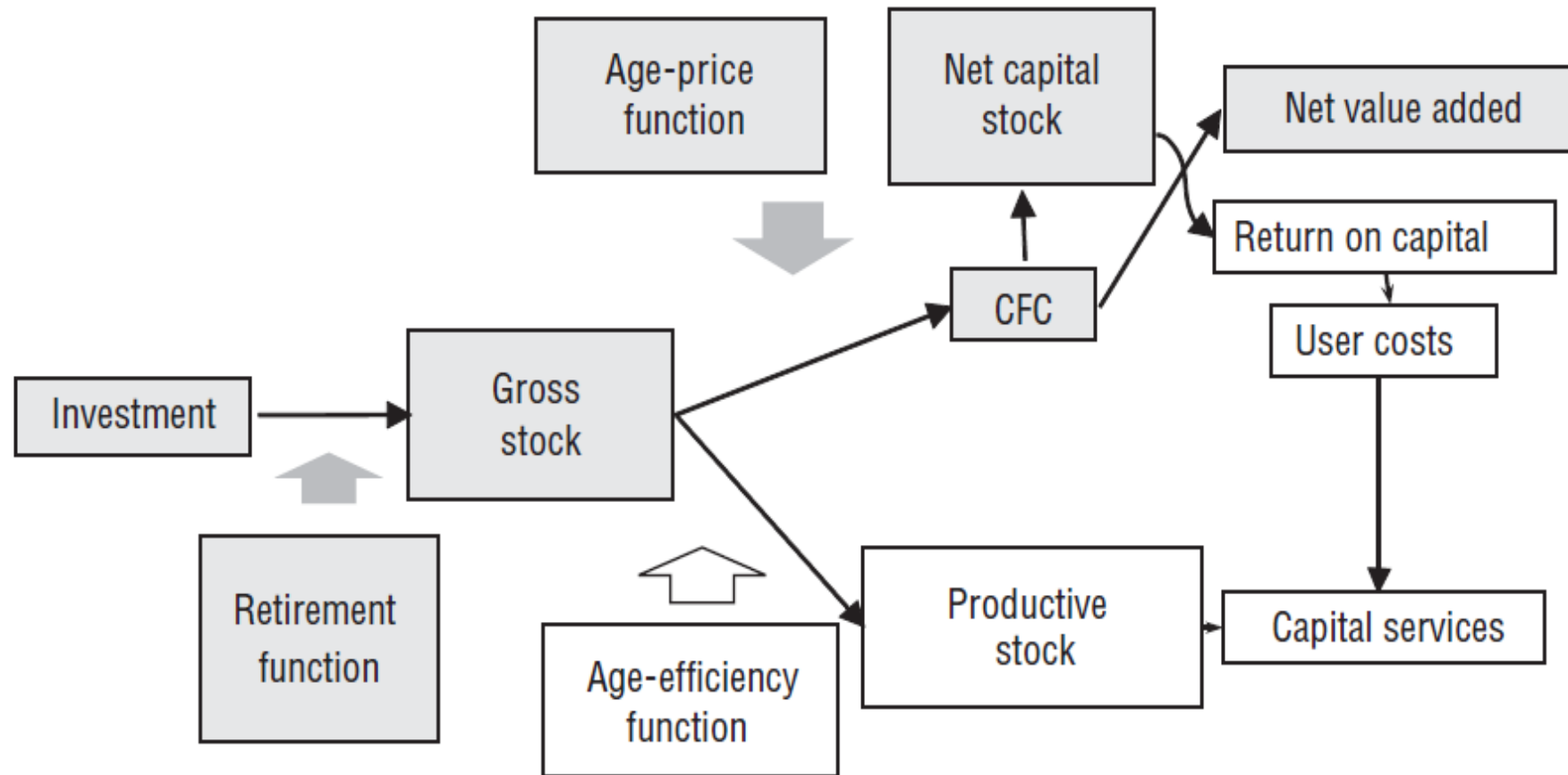
- Accounting for ownership and resident boundaries
  - Implications from different ownership of acquisition, holding of stocks, and use in production process
  - Relatedly – timing of accounting for transactions (is most acquisition Work in Progress?)
- Knock-on indirect impacts? Examples:
  - other activities being brought into production;
  - distributional transactions to account for different sectors' use

# Outstanding conceptual developments

## - scope

- What is human capital output?
  - Education, training, apprenticeships
- Relationship between stocks and flows
- What is the full scope of human capital investment?
  - E.g. Health, unpaid household production, independent learning etc
  - How to account for multiplicative, combinatorial nature of human capital investment?

# Outstanding measurement issues



# Outstanding measurement issues

If income-based measure used for stock valuation, there should still be an equivalence with the above concepts

For it to be valued as an asset, what are the:

- Acquisitions
- Different products – qualifications, knowledge and skills, competencies, others
  - Learning to read, learning arithmetic vs learning advanced quantum theory or specific method of use of machinery
- Different prices
- Life-lengths
- Age-price functions

How to square up existing monetary expenditures with real investments

- Can expenditures (e.g. on education, health, training) be split between human capital-improving and on-going current?



# Other capitals' overlaps

- Unpaid household production as input into human capital asset acquisition
- Air and water quality - health relationship → knock on to human capital
- Relative human capital valuation when combined with differing physical assets (tech-savvy engineer with appropriate software vs tech-savvy engineer working in retail)
- Multiplicative impacts to production process from human capital and organisational capital stocks in firms

# Consolidation and Discussion

**Richard Heys**

Deputy Chief Economist  
Office For National Statistics



# Consolidating discussion – key points

- Do we agree there is a challenge in measuring modern capitals?
- Are there common challenges across the different types of capitals we have discussed today?
- What should we prioritise in any future work on measuring modern capitals?

# Beyond GDP Sprint



**Richard Heys (ONS) & Erich Strassner (BEA)**



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**March 10, 2022**

**UN Network of Economic Statisticians**

# Sprint Design: Five Sessions

1. **Modern Capital:** Intangible capitals (training), human capital, natural capitals, etc.
- 2&3. **Distributional Accounts:** SNA update issues, environment, wellbeing (Fitoussi, Stiglitz and Durand report)
4. **Population, Society, and Wellbeing:** Socio-demographic disaggregation of national accounts, vulnerability index, HDI index UN SG Beyond GDP initiative
5. **Synthesis and Next Steps**

# Distributional Accounts

- **Part 1: Distributional Initiatives within the Core SNA research agenda**
  - Income, Consumption, and Wealth
  - Aim to share examples, strategies, and best practices from ongoing
  - Level set on current initiatives to establish baseline for Part 2 session
- **Part 2: Distributional & Other Wellbeing Initiatives beyond Core SNA agenda**
  - Move beyond the core SNA toward the frontier
  - Aim to learn about research and other initiatives on broader wellbeing agenda—  
E.g., Stiglitz, Sen, Fitoussi as well as Distributional National Accounts linked to other domains
- **Plus: Closing discussion on way forward**

# Distributional Accounts – March 24

- Focus on initiatives associated within the Core Accounts
- Presentations by International Organizations and Country Experts
  - OECD-Eurostat Expert Group on Disparities in a National Accounts Framework: Jorrit Zwiijnenburg, OECD
  - Expert Group on Linking Macro & Micro Data for Household Sectors: Pierre Sola, ECB
  - Distributions of U.S. Personal Income: Dennis Fixler, U.S. BEA
  - **Call for participants:** Ideally two (2) additional country perspectives

# Other Wellbeing Initiatives – April 5

- Move beyond the Core toward “the frontier”
- Presentations by International Organizations and Country Experts
  - Initiatives of the OECD Centre on Wellbeing, Inclusion, Sustainability, and Equal Opportunity: Fabrice Murtin, OECD
  - **Call for participants:** Ideally three (3) country perspectives for the broader wellbeing agenda beyond Distributional Accounts
- Plus, discussion on way forward



# Population, Society, and Wellbeing

## 1. National Transfer Accounts Population Division, UN DESA

How population growth and changing population age structure influence economic growth, gender and generational equity, public finances, and other important features of the macro-economy– the generational economy by disaggregating national accounts by socio-demographic characteristics

## 2. Human Development Index - UNDP

How to emphasize that people and their capabilities are the ultimate criteria for assessing the development of a country, not economic growth alone?

## 3. Vulnerability Index for sustainable development for Small Island Developing States (SIDS) - UNCTAD

How to recognize the socio-economic and environmental vulnerabilities of SIDS for inclusive growth and sustainable development?

## 4. United Nations Secretary General on Beyond GDP as part of the “Our Common Agenda” - UN Secretariat, UNSD, UNDP, and UNCTAD

How to secure a world where everyone can thrive in peace, dignity and equality on a healthy planet?

# Any Questions?