ONS/Merge Wealth accounting workshop 2 summary

Executive summary

The ONS Wealth Accounting Workshop focused on advancing frameworks for measuring diverse forms of capital—produced, natural, human, social, cultural, and intangible—beyond traditional GDP-based metrics. The sessions explored inclusive wealth accounting, productivity integration, cultural heritage valuation, cross-sector measurement challenges, and methodological innovations for capital classification and valuation.

Purpose

- Develop **coherent, integrated frameworks** for capital measurement.
- Align economic metrics with **sustainability, well-being, and policy goals**.
- Address fragmentation across government, business, and international standards (e.g., SDGs, OECD, ESG).

Key Discussions

1. Inclusive Wealth Accounting

- Extends national accounts to include **human, natural, and household capital**.
- Links stocks and flows through **genuine savings and revaluations**.
- UK inclusive capital ≈ £600,000 per person (2022).
- Shadow pricing essential for capturing **social and environmental value**.

2. Productivity and Sustainability

- Evolution from Solow's growth model to **multi-factor productivity (MFP)**.
- OECD's **Environmentally Adjusted MFP** integrates pollution and resource use.
- Challenges: shadow pricing, spillovers, and data gaps.
- Principle: **improvement over perfection**—start with major externalities.

3. Cultural Heritage Capital

- Framework includes **stocks (tangible, intangible, digital)** and **flows (cultural services)**.
- Valuation methods: contingent/revealed preference, well-being metrics (QALYs).
- Non-use values (existence, bequest) significant but hard to measure.
- Integration with national accounts remains a challenge.

4. Cross-Sector Measurement

- Current systems fragmented and terminology inconsistent.
- Need for **integrated capital taxonomies** aligned with SDGs and ESG.
- Emphasize **plain language** and harmonized reporting to reduce burdens.

5. Types of Capital and Measurement

- Five dimensions: **tangible/intangible, produced/non-produced, standardized/non-standardized, exclusive/non-exclusive, fixed/non-fixed**.

- Three valuation methods: **Expenditure, Reproduction, Income**—each with limitations.
- Non-standardization is the biggest challenge, not intangibility alone.
- Non-exclusive assets systematically undervalued in national accounts.

Key Takeaways

- **Capital measurement must evolve** beyond traditional boundaries to reflect sustainability and well-being.
- **Harmonization and triangulation** across methods are critical for reliability.
- **Digitization and bundling** require new frameworks.
- Policy relevance: inclusive wealth and productivity measures can inform **long-term strategies and trade-off analysis**.

Session 1: ONS Inclusive Wealth estimates from 2005 onwards

1. Purpose and Framework

- The ONS's Inclusive Wealth and Income Accounts aim to extend the **System of National Accounts (SNA)** to beyond traditional measures like GDP by incorporating **human, natural, and household capital** alongside produced capital.
- The goal is to provide a **consistent, coherent framework** for comparing different types of capital and supporting long-term policy decisions.

2. Core Concepts

- **Inclusive Capital:** Produced + human + natural capital.
- **Inclusive Net Worth:** Adds financial assets/liabilities and non-produced assets.
- **Inclusive Income:** Flow measures linked to inclusive wealth.

3. Accounting Structure

- Inclusive wealth produces **gross inclusive income**, which splits into:
  - Consumption/trade
  - Capital depreciation
  - Net investment (genuine savings)
- Genuine savings + revaluations → next period's inclusive wealth.
- This creates a **consistent link between stocks and flows**.

4. Measurement Highlights

- UK inclusive capital ≈ **£600,000 per person (2022)**.
- Components:
  - Fixed capital → intangibles → household capital → natural capital → human capital.
- Trends:
  - Produced capital ↑ strongly.
  - Natural capital ↓ per capita (due to population growth).
  - Human capital ↑ moderately, with a spike during COVID.
- Inclusive capital is **more stable** than net worth (which is volatile due to financial assets).

5. Shadow Pricing and Externalities

- Market prices often fail to reflect **true social value**.
- Shadow prices = **marginal social value**, essential for intergenerational well-being.
- Approach:
    - Use existing ecosystem accounts for valuation.
    - Offset externalities in flow accounts (reallocation of value).
    - Allow non-zero differences in stock accounts due to different asset life spans.
- Examples:
    - Aesthetic value of natural capital (added to natural capital, subtracted from land).
    - Health benefits from green spaces (added to natural capital, partially offset from human capital).

6. Principles for Implementation

- Focus on **major externalities** (e.g., climate change) for meaningful impact.
- Improvement over perfection—impossible to account for all externalities.

7. Next Steps

- Address conceptual gaps (e.g., atmosphere accounting in stocks).
- Develop shadow price estimates.
- Improve timeliness (move from annual to quarterly data).
- Update data to 2023 by December.

Key Insight

This session emphasized a **systematic, integrated approach** to wealth accounting that reflects sustainability, well-being, and cultural value. Shadow pricing and externality accounting are critical for aligning economic measures with social and environmental priorities.

Session 2: Incorporating non-traditional capital into productivity accounting

1. Purpose and Context

- The session aimed to connect **growth accounting principles** with **environmental and resource sustainability**, highlighting how productivity measures can inform policy decisions beyond GDP.
- Key question: *How do we measure true sustainability and incorporate social and environmental values into productivity metrics?*

2. Historical Foundations

- **Solow Growth Model (1950s):**

    - Introduced the concept of technological progress as the driver of long-term growth.
    - Assumed Harrod-neutral technical change and constant factor shares.
    - Total Factor Productivity (TFP) was defined as the residual— “a measure of our ignorance”—representing growth not explained by measurable inputs.
- **Jorgenson’s Contributions:**
    - Critiqued Solow’s residual and focused on unifying theory and evidence.
    - Developed **optimal growth models** (Ramsey-Cass-Koopmans framework) with endogenous savings and investment.
    - Introduced **user cost of capital** concept, incorporating depreciation, opportunity cost, and capital gains.
    - Emphasized **quality-adjusted input measures** for labour (education, experience) and capital (ICT vs. structures).

3. Evolution of Productivity Accounting

- Shift from simple growth models to **multi-factor productivity (MFP)** frameworks that account for:
    - **Service flows** from capital and labour.
    - **Quality changes** in inputs.
- Jorgenson, Gallop, and Fraumeni (1987) formalized methods for measuring input quality and service flows.

4. Integration of Environmental Factors

- Early work in the 1990s examined productivity impacts of **clean air and water regulations** in U.S. agriculture and electric utilities.
    - Found that environmental regulations-imposed costs but also delivered long-term benefits through improved health and sustainability.
- Concept of **Total Resource Productivity (TRP)** introduced, incorporating:
    - Producer-weighted measures.
    - Shadow prices reflecting social or welfare values.

5. OECD and International Efforts

- OECD developed **Environmentally Adjusted Multi-Factor Productivity (EAMFP)**:
    - Adjusts traditional productivity measures for pollution abatement and natural resource use.
    - Uses production function approach with weights based on marginal costs and rates of transformation.
- UN frameworks emphasize **shadow pricing** and welfare-based valuation for sustainability indicators.

6. Key Challenges

- **Measurement Complexity:**
    - Valuing externalities and shadow prices for pollution and resource depletion.
    - Operationalizing social vs. producer costs.
- **Data Gaps:**
    - Many countries lack detailed labour and capital accounts.
    - Environmental data often incomplete or inconsistent.
- **Aggregation Issues:**
    - Combining diverse inputs and outputs into coherent productivity metrics.
- **Spillovers:**

- Hard to capture indirect effects (e.g., ecological interactions, policy impacts).

7. Practical Insights

- Start with **major externalities** (e.g., climate change) for meaningful impact.
- Use existing reporting frameworks (e.g., GHG emissions data from energy sectors).
- Apply **quality adjustments** for environmental outputs similar to those used for ICT and labour inputs.
- Adopt the principle of **"improvement, not perfection"**—focus on feasible enhancements rather than exhaustive coverage.

8. Policy Relevance

- Productivity measures incorporating environmental factors can:
  - Inform **tax policy** and **capital allowances**.
  - Support **sustainability assessments** and **long-term growth strategies**.
- Raises critical questions:
  - Should GDP reflect investments in renewable energy or pollution reduction?
  - How do we communicate these metrics to policymakers and the public?

9. Conclusions

- Productivity accounting has evolved over 75 years, integrating theory, measurement, and policy.
- Significant progress by OECD and UN, but gaps remain in:
  - Shadow pricing.
  - Spillover effects.
  - Unified sustainability metrics.
- Future work should aim to **bridge theory and practice**, ensuring that productivity measures capture both economic and environmental dimensions of growth.

Session 3: Valuing Culture and Heritage Capital

Comprehensive Summary: Valuing Cultural Heritage Capital

The valuation of **Cultural Heritage Capital (CHC)** is a complex process that aims to quantify the economic, social, and well-being benefits of cultural assets and services. This approach moves beyond traditional GDP measures and intrinsic value arguments to provide a structured framework for policy and investment decisions.

1. Why Value Cultural Heritage Capital?

- Cultural assets contribute to **economic growth**, **social cohesion**, **identity**, and **well-being**.
- Historically undervalued in cost-benefit analysis, often assigned zero value in appraisals.
- Valuation ensures cultural assets are considered in **public investment**, **heritage preservation**, and **policy planning**.

2. Framework for CHC

- **System-based approach** inspired by natural capital accounting:
  - **Stocks:** Tangible (buildings, collections), intangible (traditions, languages), and digital assets.
  - **Flows:** Cultural services such as creativity, aesthetic enjoyment, communal identity.
- **Benefits:** Economic productivity, health and well-being, innovation spillovers.

3. Valuation Components

A. Use Values

- Direct benefits from consumption of cultural services (e.g., museum visits, performances).
- Methods:
  - **Contingent valuation** (stated preference surveys).
  - **Revealed preference** (ticket prices, travel costs).
- Example: Great North Museum visit valued at **~£6.66** (lower bound).

B. Non-Use Values

- Welfare benefits for individuals who do not directly consume the asset:
  - **Existence value:** Pride and identity linked to heritage.
  - **Altruistic and bequest values:** Desire for future generations to enjoy cultural assets.
- Potential aggregate values: **hundreds of millions annually**.
- Challenges:
  - Identifying non-users.
  - Measuring marginal changes when assets degrade or disappear.
- Proposed solutions:
  - **Distance decay functions** to adjust values based on proximity.

C. Health and Well-Being Impacts

- Cultural engagement improves mental health and life satisfaction.
- Valuation using **QALYs** and well-being metrics:
  - Sustained engagement estimated at **~£992 per adult annually**.
  - Productivity gains: **~£8 billion** for certain cohorts.

4. Degradation and Lifetime Value

- Cultural assets face **physical deterioration** and **irreversible damage**, similar to environmental assets.
- **Heritage Science Approach**:
  - Links physical degradation rates to welfare value loss.

    - Uses **lifetime multipliers** to compare scenarios:
        - With intervention vs. without intervention.
- Key insight: Assets may exist physically but lose functional or cultural value over time.

5. Challenges in Valuation

- **Double counting risks** when combining use and non-use values.
- **Discounting future benefits** rarely applied but essential for accurate valuation.
- **Integration with accounting frameworks**: Non-use values and well-being impacts are not yet included in formal capital accounts.

6. Future Directions

- Develop operational models for:
    - Service definitions.
    - Valuation guidance.
    - Degradation and risk-based analysis.
- Incorporate **digital assets** and adapt frameworks for evolving cultural consumption patterns.
- Explore integration of CHC into **national accounts** and **policy dashboards**.

Key Takeaways

Valuing cultural heritage capital requires a **multi-dimensional approach** that captures:

- Market and non-market benefits.
- Health and well-being impacts.
- Long-term sustainability through degradation modelling. This ensures cultural assets are properly recognized in **economic planning**, **heritage preservation**, and **social policy**.

Session 4: Capital for Impact: Navigating Measurement Across Sectors and Systems

This session, explored the complexity of defining, measuring, and integrating different forms of capital across government, business, and charity sectors. It highlighted the challenges of fragmented frameworks, the need for clarity in terminology, and opportunities for creating coherent systems that support **impact measurement and sustainability goals**.

1. Context and Purpose

- Nancy drew on experience from **OECD well-being frameworks**, **SDGs**, and **corporate ESG reporting** to illustrate how capital concepts are used inconsistently across sectors.
- The discussion focused on:
    - How **capitals underpin well-being and resilience**.
    - Why current reporting systems are fragmented and burdensome.
    - How to move toward **integrated, practical frameworks**.

2. Beyond GDP and Well-being Frameworks

- **OECD Model:**
  - Emphasizes four systemic resources for sustaining well-being: **natural, economic, human, and social capital**.
- **New Zealand Well-being Framework:**
  - Adds **culture**, **social cohesion**, and **governance** alongside traditional capitals.
- **SDGs:**
  - Largest global well-being framework, structured around **prosperity, planet, and people**, with implicit links to capital concepts.

3. ESG and Corporate Reporting

- Businesses report on **economic, environmental, social, and governance (ESG)** dimensions.
- **Social capital** and **governance** often overlap but lack clear definitions.
- Attempts to integrate corporate and charity reporting have resulted in **confusing, bolt-on frameworks**, creating inefficiencies and compliance burdens.

4. Mapping Capital Types

Grouped diverse capital concepts into four broad categories:

- **Human Capital Plus:**
  - Includes intellectual and mental capital, skills, health, and well-being.
- **Natural Capital:**
  - Environmental resources and sustainability efforts.
- **Social Capital:**
  - Relational networks, institutional trust, and cultural heritage.
- **Economic Capital:**
  - Manufactured, produced, physical, intangible, and financial assets.

Observation:

- Significant overlaps exist (e.g., cultural heritage straddles social and economic domains).
- **Knowledge capital**—professional networks and innovation ecosystems—is often missing from models.

5. Key Challenges

- **Terminology Confusion:**
  - “Capital” is used differently across contexts, leading to misunderstanding.
- **Fragmented Reporting:**
  - Multiple frameworks impose inconsistent requirements on organizations.
- **Measurement Gaps:**
  - Social and cultural impacts are undervalued or ignored in traditional accounting.
- **Depreciation and Risk:**
  - Lack of systematic approaches to measure capital depletion (e.g., social trust erosion, cultural asset degradation).

6. Strategic Opportunities

- Develop **integrated capital taxonomies** aligned with:
    - **SDGs** and beyond-GDP frameworks.
    - Practical reporting needs for government, business, and charities.
- Incorporate **knowledge capital** and **mental capital** explicitly.
- Reduce reporting burdens by harmonizing metrics across sectors.
- Communicate in **plain language**, avoiding technical jargon like “depreciation” and “depletion” for non-expert audiences.

7. Policy and Impact Implications

- Government spending on health, education, infrastructure, and governance can be reframed as **investment in capitals**, improving accountability and strategic planning.
- Integrated capital frameworks can:
    - Support **resilience measurement**.
    - Enable **better trade-off analysis** between economic growth and social/environmental well-being.
    - Inform **long-term sustainability strategies**.

Key Takeaways

- Current capital measurement systems are **fragmented, inconsistent, and burdensome**.
- There is an urgent need for **coherent, integrated frameworks** that:
    - Capture **economic, social, cultural, and environmental dimensions**.
    - Align with **policy goals and global sustainability standards**.
- Success depends on **clarity of purpose**, **harmonized methodologies**, and **effective communication** to decision-makers.

Session 5: Types of capital and their measurement

1. Capital is Heterogeneous

Capital encompasses a wide range of assets beyond traditional physical goods. It includes:

- **Produced assets** (machinery, infrastructure)
- **Non-produced assets** (natural resources)
- **Intangible assets** (software, intellectual property, cultural heritage)
- **Social and institutional capital** (networks, governance structures)

This diversity creates significant measurement challenges because different types of capital have different characteristics and economic roles.

2. Five Dimensions of Capital

To classify and understand measurement implications, five key dimensions are proposed:

1. **Tangible vs. Intangible**
    - Tangible: Physical assets (e.g., trucks, buildings)
    - Intangible: Knowledge-based or non-physical assets (e.g., software, brand value)

    - **Measurement implications**: Intangibles often lack market transactions, making purchase price and reproduction cost methods problematic.
2. **Produced vs. non-produced**
    - Produced: Created through human action (e.g., machinery, software)
    - Non-Produced: Naturally occurring (e.g., land, minerals)
    - **Measurement implications**: Non-produced assets rarely transact and cannot be reproduced, so income-based valuation dominates.
3. **Standardized vs. non-standardized**
    - Standardized: Mass-produced, replicable assets (e.g., cars, computers)
    - Non-Standardized: Unique or bespoke assets (e.g., heritage sites, rare art)
    - **Measurement implications**: Non-standardized assets cannot be valued by reproduction cost and often lack comparable market prices.
4. **Exclusive vs. Non-Exclusive**
    - Exclusive: Benefits accrue to one economic owner (e.g., private machinery)
    - Non-Exclusive: Benefits shared broadly (e.g., infrastructure, cultural heritage)
    - **Measurement implications**: National accounts undervalue non-exclusive assets because they only capture private benefits; social valuation is needed.
5. **Fixed vs. non-fixed**
    - Fixed: Used repeatedly in production (e.g., machinery, infrastructure)
    - Non-Fixed: Used once or not in production (e.g., inventories, valuables)
    - **Measurement implications**: Non-fixed assets lack production services, complicating valuation.

3. Measurement Methods

Three main approaches to valuing capital stock (value at a point in time):

1. **Expenditure (Purchase Price) Method**
    - Based on market transactions.
    - **Strengths**: Simple when transactions exist.
    - **Challenges**: Many assets never transact; bundled purchases obscure individual values; non-competitive markets distort prices.
2. **Reproduction (Perpetual Inventory) Method**
    - Value = cumulative past investments (adjusted for depreciation).
    - **Strengths**: Widely used for produced, standardized assets.
    - **Challenges**: Cannot apply to non-produced assets; depreciation assumptions often weak; fails for unique assets.
3. **Income (Net Present Value of Future Benefits) Method**
    - Discounted value of expected future service flows.
    - **Strengths**: Useful for non-produced, non-standardized, and non-exclusive assets.
    - **Challenges**: Requires forecasting benefits and choosing discount rates; highly model dependent.

4. Practical Difficulty

- **Scale**: Less difficult → tangible, produced, standardized, exclusive assets (e.g., trucks).
- **Moderately difficult** → standardized intangibles (e.g., purchased software).
- **Very difficult** → non-standardized, non-exclusive intangibles (e.g., cultural heritage, institutional capital).
- **Key insight**: Non-standardization is the biggest challenge, not intangibility alone.

5. Implications for Policy and Accounting

- National accounts historically focused on “easy” assets (tangible, produced, standardized, exclusive, fixed).
- Modern economies increasingly rely on assets that break this mold, requiring new frameworks.
- Non-exclusive assets are systematically undervalued because private valuation ignores social benefits.
- Harmonization across measurement communities is essential for comparability and better policy decisions.
- Experimentation with multiple methods for the same asset could improve understanding and accuracy.

6. Conclusion

- Measurement of capital is always challenging—ranging from less difficult to very difficult—but remains crucial for economic analysis and policy.
- The five-dimension framework provides structure for classifying assets and guiding measurement choices.
- Greater collaboration and methodological innovation are needed to capture the full value of diverse capital types.

Conclusion

Capital Measurement Must Evolve Beyond Traditional Boundaries

- Capital is heterogeneous, spanning produced, non-produced, tangible, intangible, standardized, non-standardized, exclusive, and non-exclusive forms.
- Traditional accounting frameworks have focused on “easy” assets (tangible, produced, standardized, exclusive, fixed), but modern economies increasingly depend on complex assets such as cultural heritage, social capital, and digital resources.

Five-Dimension Framework Provides Structure

- Tangibility, production status, standardization, exclusivity, and fixity help classify assets and guide measurement choices.
- Non-standardization—not intangibility alone—is the biggest challenge for valuation.

Measurement Methods Are Imperfect and Divergent

- **Expenditure (Purchase Price)** works for standardized assets but fails for unique or free assets.
- **Reproduction (Perpetual Inventory)** suits produced assets but cannot handle non-produced or bespoke assets.
- **Income (NPV of Future Benefits)** is often the fallback for non-exclusive and non-standardized assets but is highly model-dependent.
- These methods rarely converge in practice due to market imperfections, bundling, and externalities.

Systematic Undervaluation of Non-Exclusive Assets

- National accounts capture private benefits only, ignoring social and well-being impacts.
- Cultural heritage, natural capital, and public goods require shadow pricing and social valuation.

Integration Across Frameworks Is Critical

- Current systems are fragmented across government, business, and international standards (e.g., SDGs, ESG, OECD well-being frameworks).
- Harmonization and clarity of purpose are essential for coherent, comparable data.

Policy Relevance and Sustainability

- Inclusive wealth and productivity measures incorporating environmental and cultural factors can inform long-term strategies, resilience planning, and trade-off analysis.
- Measurement complexity should not delay progress—adopt “improvement over perfection.”

Next steps

Develop a Unified Capital Taxonomy

- Incorporate five dimensions plus digital vs. physical assets and bundling considerations.
- Align with SDGs, OECD well-being frameworks, and ESG reporting.

Operationalize Measurement Guidance

- Map asset types to preferred valuation methods with difficulty rankings.
- Provide practical examples for cultural, natural, and social capital.

Advance Shadow Pricing and Externality Accounting

- Prioritize major externalities (e.g., climate change, health benefits of green spaces).
- Develop robust shadow price estimates for non-market benefits.

Pilot Triangulation Studies

- Apply multiple valuation methods to the same asset (e.g., heritage sites, open-source software).
- Compare results to identify gaps and refine assumptions.

Integrate Cultural and Digital Assets

- Expand frameworks to include intangible and digital heritage.
- Address degradation and lifetime valuation for cultural assets.

Improve Timeliness and Coverage

- Move toward quarterly updates for inclusive wealth accounts.
- Close data gaps in environmental and social capital measurement.

Foster Cross-Sector Collaboration

- Engage government, academia, and industry to harmonize methodologies.
- Share best practices across natural, cultural, and social capital communities.

Communicate Clearly

- Use plain language for non-expert audiences.
- Develop visual tools (classification grids, measurement tables) for policymakers.