Constructing Comprehensive Wealth

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WAVES

Wealth Accounting and the Valuation of Ecosystem Services
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Measuring Comprehensive Wealth

TOTAL WEALTH	Estimated as the stock that generates a stream of sustainable future consumption	
PRODUCED CAPITAL	Buildings, Machinery, and Equipment	
	Urban Land	Estimated directly
NATURAL CAPITAL	Subsoil Assets (10 minerals, 4 energy resources)	Estimated directly
	Agricultural Land (crop and pasture)	Estimated directly
	Forest Land (timber, NTFP, other services)	Estimated directly
	Protected Areas	Estimated directly
NET FOREIGN ASSETS	Data obtained from External Wealth of Nations Mark II	
INTANGIBLE CAPITAL	Human, Institutional, and Social Capital Not directly observed; estimated as a residual	

Build Wealth Accounts in following order:

SNA and SEEA

Produced Capital

Net Foreign Assets

Natural Capital:

- Agricultural Land, Energy and Mineral Resources, Timber Resources

Outside SNA and SEEA

Natural Capital

- Non-Timber Forest Resources

Human, Social/Institutional Capital (residual)

Total Wealth (direct measure)

Produced Capital

[WB] Produced Capital: Calculation

Produced Capital = value of physical capital stock + value of urban land

Value of physical capital stock

- *Buildings, Machinery, and Equipment*

- Data taken directly from Penn World Table 8.0

  - Previous wealth editions: World Bank estimated physical capital stock directly

Value of urban land

- Estimated as 24% of the value of physical capital stock

Penn World Table: Physical Capital Stock

Penn World Table 8.0 (PWT) provides estimates of physical capital stock for 167 countries from 1970 to 2011. Derived using perpetual inventory method:

Capital stocks, K, in year t is estimated by:

$$K_t = \sum_{i=0}^{t} I_{t-i}(1-\alpha)^i$$

where I is value of investment and

α is the depreciation rate (weighted average given investment structure)

Capital stocks in year i=0, first year that investment data are available, are estimated at an initial capital-output ratio.

Asset	Depreciation rate
Structures (residential and non-residential)	2%
Transport equipment	18.9%
Computers	31.5%
Communication equipment	11.5%
Software	31.5%
Other machinery and assets	12.6%

Notes: depreciation rates are based on official BEA depreciation rates of Fraumeni (1997).

Source: http://www.rug.nl/research/ggdc/data/pwt/

Physical Capital: Investment Data

Data Requirements	Data Source
Gross Capital Formation	*World Development Indicators*, World Bank *http://data.worldbank.org/indicator/NE.GDI.TOTL.CD*

Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, and "work in progress." According to the 1993 SNA, net acquisitions of valuables are also considered capital formation.

[WB] Valuation of Urban Land

Value of urban land

- Estimated as 24% of the value of physical capital stock, based on data from Statistics Canada (source: Kunte et al, 1998)

  - On average these balance sheet accounts show structures accounting for roughly 72 percent of total produced assets, while urban land in turn is 33 percent of structures

[WB] Produced Capital: Excel Exercise

See tab "PK Exercise" [*Wealth_Philippines.xlsx*]

Instructions: With data provided, calculate:

- Missing value of physical capital stock in 2012 (quick gap-fill), where $K_t = (1 - \alpha_{t-1})K_{t-1} + I_t$

- Value of urban land

- Total Produced Capital

Net Foreign Assets

Net Foreign Assets: Data

Source: **Updated and extended version of dataset constructed by Lane and Milesi-Ferretti (2007)**

Philip R. Lane and Gian Maria Milesi-Ferretti (2007), "The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970–2004", Journal of International Economics 73, November, 223-250.

- *http://www.philiplane.org/EWN.html*

- Years: 1970-2011

WB Methodology: Take data as-is from source

Gap-fill for years after 2011, using same data sources (e.g., IMF)

Net Foreign Assets: Calculation

NFA = Total Assets – Total Liabilities, where

Total Assets	Total Liabilities
Portfolio equity assets (stock)	Portfolio equity liabilities (stock)
Foreign Direct Investment (FDI) assets (stock)	FDI liabilities (stock)
Debt assets (stock)	Debt liabilities (stock)
Financial derivatives (assets)	Financial derivatives (liab)
Foreign exchange reserves minus gold	

NFA: EWN Data Sources for Philippines

IIP data avail-ability	Lane-Milesi-F. data coverage	Capital flows data (IFS/BOPS)	Portfolio equity assets	Portfolio equity liabilities	FDI assets	FDI liabilities
2001-2011	1970-2011	1977-2011	US holdings times 1/0.8 from 1976-1997, LMF method thereafter (IIP smaller, but small numbers overall)	Max (CPIS, adjusted cumulative flows) 1997-onwards, pct change in US holdings backwards (flows only from 1996)	LMF with initial UNCTAD value (but no data on flows and stocks prior to 1980). Stock slightly larger than IIP	IIP 2011-onwards, pct change in LMF backwards (LMF stock about $12bn larger than IIP in 2011)

Debt assets (Portfolio debt +other investment)	Debt liabilities (Portfolio debt +other investment)	FX Reserves	Notes	Last IIP update	Last K-flow update
IIP 2001-onwards; K-flow backwards to 2000; max between BIS holdings and sum of IFS bank holdings and BIS nonbank holdings 1977-1999, Sinn data 1970-76. Note: other capital flows adjusted to eliminate trade credits for period 1999-2002 (reclassified in E&O)	World Bank (in line with WEO, higher than IIP). Note: other capital flows adjusted to eliminate trade credits for period 1999-2002 (reclassified in E&O)	IFS data (reserves minus gold)	Problem for debt asset flows with offshore center in recent years. Also, some problem with equity liabilities	13-Oct-12	16-Apr-13

(Data Source Acronyms)

BIS: Bank of International Settlements

BOPS: Balance of Payments Statistics

IFS: International Financial Statistics

IIP: International Investment Position

LMF: Lane and Milesi-Ferretti, authors' estimates

UNCTAD: United Nations Conference on Trade and
   Development

WEO: World Economic Outlook

WB: World Bank's Global Development Finance database

[WB] Net Foreign Assets: Excel Exercise

See tab "NFA Exercise" [*Wealth_Philippines.xlsx*]

Instructions: With data provided, calculate:

- Missing value of Net Foreign Assets in 2012 (gap-fill)

Energy and Mineral Resources

[WB] Energy and Mineral Resources

Energy Resources

- Oil

- Natural Gas

- Hard Coal

- Soft Coal

Metal and Mineral Resources

- Bauxite

- Copper

- Gold

- Iron Ore

- Lead

- Nickel

- Phosphate

- Silver

- Tin

- Zinc

Note on omitted resources:
We are limited by data availability, especially information on reserves and production costs, as well as time constraints in producing a global and annual data series.

[WB] Energy/Mineral Wealth: Methodology

Calculations per commodity:

- **Resource Rents** = Production x Unit Rent
  = Production x (Unit Price – Unit Cost)

  - If Unit Rent < 0, then cap at 0.

  - **SMOOTH** Resource Rents (constant prices): five-year lagged average

- **Exhaustion time =** years to depletion (or, life of resource) (reserves/current production), capped at 25 years

- **Wealth** = Net Present Value of Resource Rents, discounted at 4%, over exhaustion time

  - Assumes that future rents are constant and equal to current rent

[WB] Energy/Mineral: Data

Underlying data for energy and mineral resources same as underlying data used for depletion in ANNI and ANS

- Production

- Unit Price

- Unit Cost

- Proven Reserves

Therefore, the only additional step required in the wealth calculation is the smoothing of resource rents (to smooth price volatility).

[WB] Energy/Mineral: Data, Assumptions

Data Requirements	Data Source (WB Methodology)
Annual production	*Refer to slides from ANNI presentation.*
Unit price	
Unit costs of production	
Proven reserves	
Cost trend	

Assumptions	WB Methodology
Smooth volatility	Five-year lagged average
Cap on exhaustion time of resource	Twenty-five years (consistent across all wealth components)
Discount rate	4%

Agricultural Land

[WB] Agricultural Land Wealth

Agricultural land wealth: **Value of agricultural land that generates future stream of income (resource rents) over time**

Limited data availability on market (sale) price of agricultural land → so we estimate value of **crop** and **pasture** land

[WB] Agric. Land Wealth: Methodology

Calculations per product:

Total Revenue = Production x Unit Price

Resource Rent = Total Revenue x Rental Rate, where

- Rental Rate = (Unit Price – Unit Cost) / Unit Price

- **SMOOTH** Resource Rents (constant prices): five-year lagged average

Wealth =   Net Present Value of Resource Rents, discounted at 4%, over 25 years

- Assume constant growth rate of future rents

- Assume time horizon of 25 years, all countries and all products

[WB] Crop and Pasture Products

Crop Products

- Cereal
- Fibre
- Fruit
- Nuts
- Oil-bearing
- Pulses
- Roots
- Spices
- Stimulants
- Sugar
- Vegetables
- Other

Pasture Products

- Eggs
- Meat
- Milk
- Other

Philippines: 72 Crops

Agave fibres nes
Asparagus
Avocados
Bananas
Beans, dry
Beans, green
Cabbages and other brassicas
Carrots and turnips
Cashew nuts, with shell
Cassava
Castor oil seed
Cauliflowers and broccoli
Chicory roots
Chillies and peppers, green
Cocoa, beans
Coconuts
Coffee, green
Cow peas, dry
Cucumbers and gherkins
Eggplants (aubergines)
Fibre crops nes
Fruit, citrus nes
Fruit, fresh nes
Fruit, tropical fresh nes
Garlic

Ginger
Grapefruit (inc. pomelos)
Grapes
Groundnuts, with shell
Leeks, other alliaceous vegetables
Lemons and limes
Lettuce and chicory
Maize
Mangoes, mangosteens, guavas
Manila fibre (abaca)
Melons, other (inc.cantaloupes)
Mushrooms and truffles
Nuts, nes
Oil, palm fruit
Oilseeds nes
Okra
Onions, dry
Onions, shallots, green
Oranges
Papayas
Peas, dry
Peas, green
Pepper (piper spp.)

Pigeon peas
Pineapples
Potatoes
Pulses, nes
Pumpkins, squash and gourds
Ramie
Rice, paddy
Roots and tubers, nes
Rubber, natural
Seed cotton
Sorghum
Soybeans
Spinach
Strawberries
String beans
Sugar cane
Sweet potatoes
Tangerines, mandarins, clementines, satsumas
Taro (cocoyam)
Tobacco, unmanufactured
Tomatoes
Vegetables, fresh nes
Watermelons
Yams

Philippines: Pasture Products

Eggs, hen, in shell
Eggs, other bird, in shell
Meat indigenous, buffalo
Meat, buffalo
Meat, cattle
Meat, chicken
Meat, duck
Meat, goat

Meat, goose and guinea fowl
Meat, horse
Meat, nes
Meat, pig
Meat, sheep
Meat, turkey
Milk, whole fresh cow
Skins, sheep, with wool

[WB] Agricultural Land Wealth: Data

	Cropland	Pastureland	*Source*
Production (t)	Harvest area x yield	Production	*FAO*
Unit Price ($/t)	Producer price *also export unit value*	Producer prices *also export unit value*	*FAO: country-specific*
Rental Rate	30% of revenues	45% of revenues	*Literature*
Growth rate of future rent	0.97% developed 1.94% developing	0.89% developed 2.95% developing	*Literature*

Key Assumptions:

- Rental rate is constant across products and countries

- Growth rate of future rent is constant across products and time, differentiated by developed/developing country

[WB] Agricultural Land Wealth: Suggested Improvements

- Improve cropland rental rate estimates, to vary by region

- Categorize pastureland by production system and apply respective rental rate

- Consider the impacts of land degradation, climate change on assumptions of future growth rate of rent, time horizon

Further analysis and recommendations:

- *Recent Scoping Report*

Protected Areas

[WB] Protected Area Wealth: Methodology

Approach: Direct valuation of protected areas is very difficult, so WB approach is to value PA using an opportunity cost approach.

- **Agriculture is considered an alternative land use**

Protected Area Wealth =

Minimum {cropland wealth per ha, pastureland wealth per ha }
x Protected Area (ha)

- Likely a lower bound on the true value of protected areas

- Agr land outliers replaced with median value (of all countries)

- Missing agr land values gap-filled with median values

[WB] PA Wealth: Data

Data Requirements	Data Source (WB Methodology)
Protected Area	*International Union for Conservation of Nature*
Total Cropland Wealth ($)	*Wealth Accounting Database*
Total Pastureland Wealth ($)	*Wealth Accounting Database*
Total Land Area (ha)	*World Development Indicators, World Bank*
Agricultural Land (% of land area)	*World Development Indicators, World Bank*
Arable Land (% of land area)	*World Development Indicators, World Bank*
Permanent Cropland (% of land area)	*World Development Indicators, World Bank*

Cropland Area = Total Land Area x (Arable Land % + Permanent Cropland %)

Pastureland Area = Total Land Area x (Agricultural Land % – Arable Land % – Permanent Cropland %)

[WB] PA Wealth: Excel Exercise

See tab "PA Wealth Exercise" [*Wealth_Philippines.xlsx*]

Instructions: With data provided, calculate:

- Wealth of Protected Areas

Timber Resources

[WB] Timber Wealth: Methodology

Calculations per product:

Total Revenue = Production x Unit Price

Resource Rent = Total Revenue x Rental Rate, where

- Rental Rate = (Unit Price – Unit Cost) / Unit Price

- **SMOOTH** Resource Rents (constant prices): five-year lagged average

Wealth =   Net Present Value of Resource Rents, discounted at 4%, over sustainable time horizon

- Assumes future rents are constant and equal to current rent
- Sustainable time horizon is capped at 25 years

[WB] Timber Wealth: Data

Underlying data for timber are same as underlying data used for depletion in ANNI and ANS

- Production

- Unit Price

- Rental rate

- Forest productive area

- Annual commercial increment

Additional steps required in the wealth calculation:

- Smoothing of resource rents (to smooth price volatility)

- Calculation of sustainable time horizon

[WB] Timber Wealth: Sustainable Time Horizon

Forests can be harvested at a sustainable yield such that productive potential is maintained, or they can be unsustainably exploited and depleted rapidly. The concept of sustainable use of forest resources is incorporated into the **choice of the time horizon** over which the stream of timber rents is capitalized:

- If timber harvest is smaller than net annual increment, i.e., the forest is sustainably harvested, the resource life span is capped at 25 years

- If timber harvest is greater than the net annual increment, i.e., there is overharvest, then the time to depletion is calculated. See next slide:

[WB] Timber Wealth: Sustainable Time Horizon

Step 1: Net Annual Increment =   Annual Commercial Increment x Productive Area

Step 2: Overharvest = Total Production – Net Annual Increment

Step 3: Productive Volume = Productive Area x Volume Converter

Step 4: **Time to Depletion** = Productive Volume / Overharvest

[WB] Timber Wealth: Data

RENT	Frequency	Coverage	Data Source(s)
Annual Production (industrial roundwood, wood fuel) (m3)	Updated Annually	All countries	*FAO*
Unit Price (export value/export quantity) ($/m3)	Updated Annually	All countries	*FAO*
Rental Rate	Based on previous literature review	Regional (derived averages of country case studies)	*Fortech, 1997; Whiteman, 1996; Tay et al, 2001; Lopina et al, 2003: Haripriya, 1998; Global Witness, 2001; Eurostat, 2002.*

[WB] Timber Wealth: Data

Sustainable Time Horizon	Frequency	Coverage	Data Source(s)
Total Forest Area (ha)	Updated every five years	All countries	*Source: Global Forest Resources Assessment (FRA), FAO*
Forest Productive Area (1000 ha)	Updated every five years	All countries	*Table 7: Designated functions of forest – total area with function 2005. Source: Global Forest Resources Assessment (FRA), FAO*
Growing Stock (m3/ha)	Updated every five years	All countries	*Table 11: Growing stock in forest and other wooded land. Source: Global FRA*
Annual Commercial Increment (m3/ha/yr)	Based on previous literature review; not updated since	All countries	*Source: "Potential Productivity" map (Figure 2.3, A. Mather, Global Forest Resources, Belhaven Press, London, 1990) and other country specific studies and data sources; under the guidance of a WB forestry expert.*

Timber Wealth: Assumptions

Assumptions	WB Methodology
Rental Rate	EAP 39%; based on literature review
Time horizon	Cap at 25 years
Annual Commercial Increment (m3/ha/yr)	Philippines: 1.5
Discount rate	4%; same for all natural capital components

Recap of Wealth Components, so far:

Produced Capital

Net Foreign Assets

Natural Capital

- Energy and Mineral Resources

- Agricultural Land

- Timber Resources

We have stayed within the boundaries of the SNA/ SEEA, thus far

WB Approach to Comprehensive Wealth

Include estimates of:

Value of services from non-timber forest resources

- Part of total forest wealth

Intangible capital (e.g., human, social, institutional)

- Measured as a residual of Total Wealth

Non-Timber Forest Resources

Non-Timber Forest Resources

Forests are not only a source of timber but also provide other goods and services important to well-being and livelihood. Under the non-timber forest wealth, we include **non-timber forest products**, **benefits from recreation, hunting and fishing**, and **watershed protection services**.

- Non-timber forest products include removals of forest plant products for food, consisting mainly of oil seeds, nuts and bamboo shoots; tannin extract and raw lacquer; raw materials for medicinal and aromatic uses.

[WB] Non-Timber Wealth: Methodology

General calculation per category:

(Current year) Value of Non-Timber Benefits = unit value x forest area

Non-Timber Wealth = NPV of value of non-timber benefits, discounted at 4%, over 25 years

- Specific assumptions about forest area (both in access and change over time) per category (see next slide)

Non-Timber Wealth: Assumptions

Data Requirements	WB Assumption/ Data Source
Annual benefit per ha from watershed protection	$10/ha (1995 US$) for all countries Source: Lampietti and Dixon (1995)
Deforestation rate applies to calculation of watershed benefits	Source: FAO Forest Resources Assessment
Annual benefit per ha from hunting, recreation, and fishing	$17/ha (1995 US$) for developing countries Source: Lampietti and Dixon (1995)
Forest area accessible for hunting, recreation, and fishing	10% of total forest area
Value of non-timber forest products	Source: FAO Forest Resources Assessment
Time horizon	25 years; as per WB methodology
Discount rate	4%; as per WB methodology

Non-Timber Forest Wealth: Suggested Improvements

Revise approach to estimating non-timber benefits

- Conduct literature review

- Meta-analysis of ecosystem service values (forthcoming for global database)

Forest area available for non-timber benefits and services

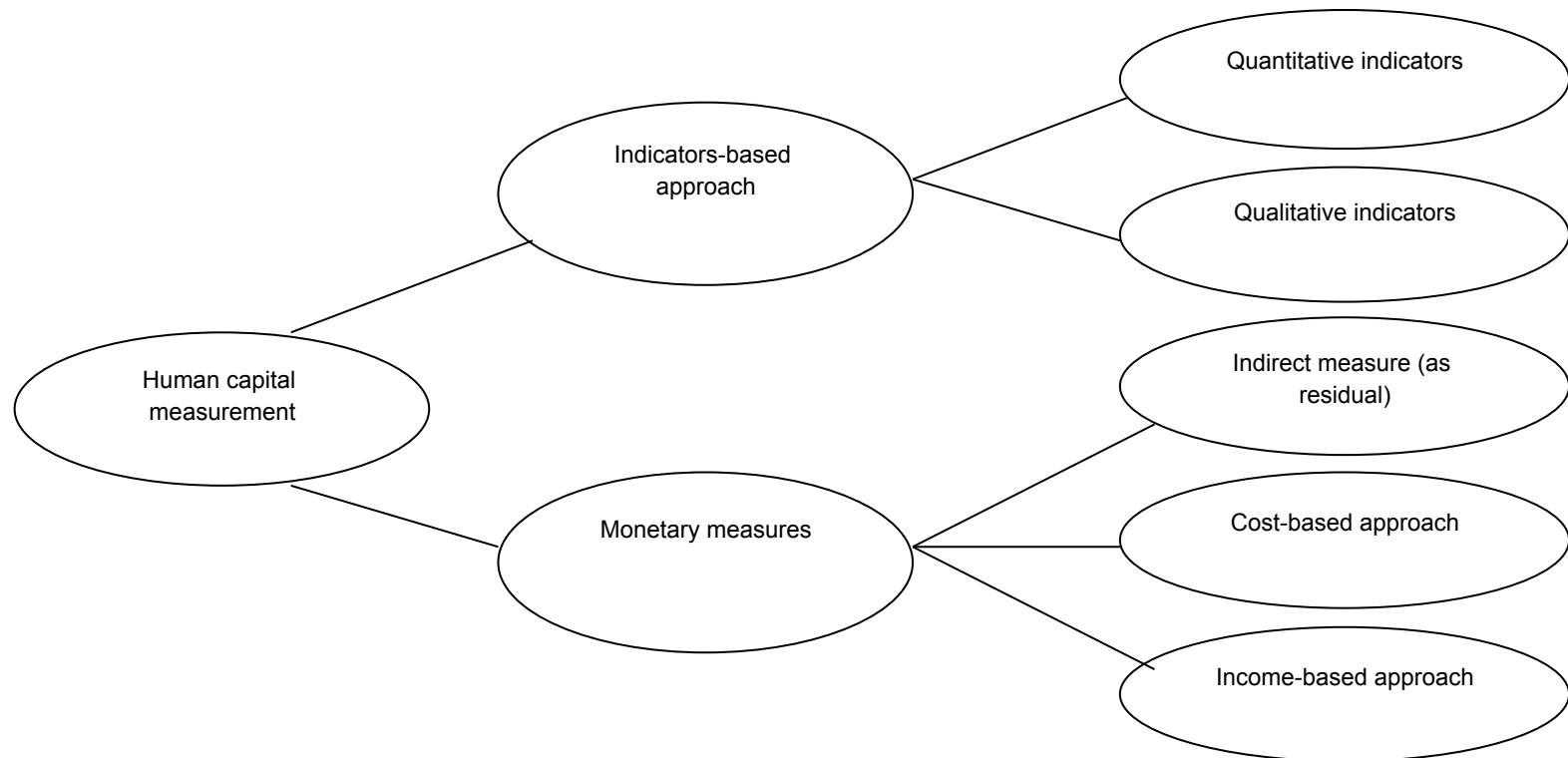*Further analysis and recommendations*:

- *Recent Scoping Report*

Intangible Wealth:
Human, Social/Institutional

Approaches to Measuring Human Capital

Figure 1. A taxonomy of different measuring approaches

Human Capital

World Bank approach is to capture Human Capital as an indirect measure, as part of the Intangible Capital residual.

- Challenges in disentangling the Intangible residual (from social/institutions, etc.)

- Cannot evaluate drivers of changes in human capital over time

Aim to move towards income-based approach

- The income-based approach measures human capital by looking at the stream of future earnings that human capital investment generates.

    - Case study of China in *Changing Wealth of Nations (World Bank)*

    - OECD work

Human Capital: Income-Based Approach

Lifetime Income Approach (Jorgenson and Fraumeni)

Value of individual's human capital can be determined from that person's discounted lifetime income

Implementation requires three major steps:

Step 1: Compile database containing economic value of labor market activities for various categories of people in the population

Step 2: Construct algorithm for calculating lifetime income for representative individual in each classified category of database

Step 3: Apply per capita lifetime labor income measures to all individuals in each age/education category; sum human capital stocks across all classified categories, resulting in aggregate value of HC stock for a country

Human Capital: Income-Based Approach

Data Requirements

- cross-classified by gender, age, and education

- Survival rates

- Educational attachment

- Employment rates

- School enrollment rates

- Annual earnings

Exogenous Parameters

- Annual real income growth rate

- Discount rate

Social/Institutional Capital

World Bank approach is to capture Social and Institutional Capital as an indirect measure, as part of the Intangible Capital residual.

- Challenges in disentangling the Intangible residual (e.g., from human capital)

- Cannot evaluate drivers of changes over time

Indicators-based approach? For institutional capital:

- Example: World Bank's *Diversified Development* Report for Eastern Europe

  - Government effectiveness

  - Global Competitiveness Index, 2012–13

  - Ease of Doing Business Index (1 = most business-friendly regulations), 2012–13
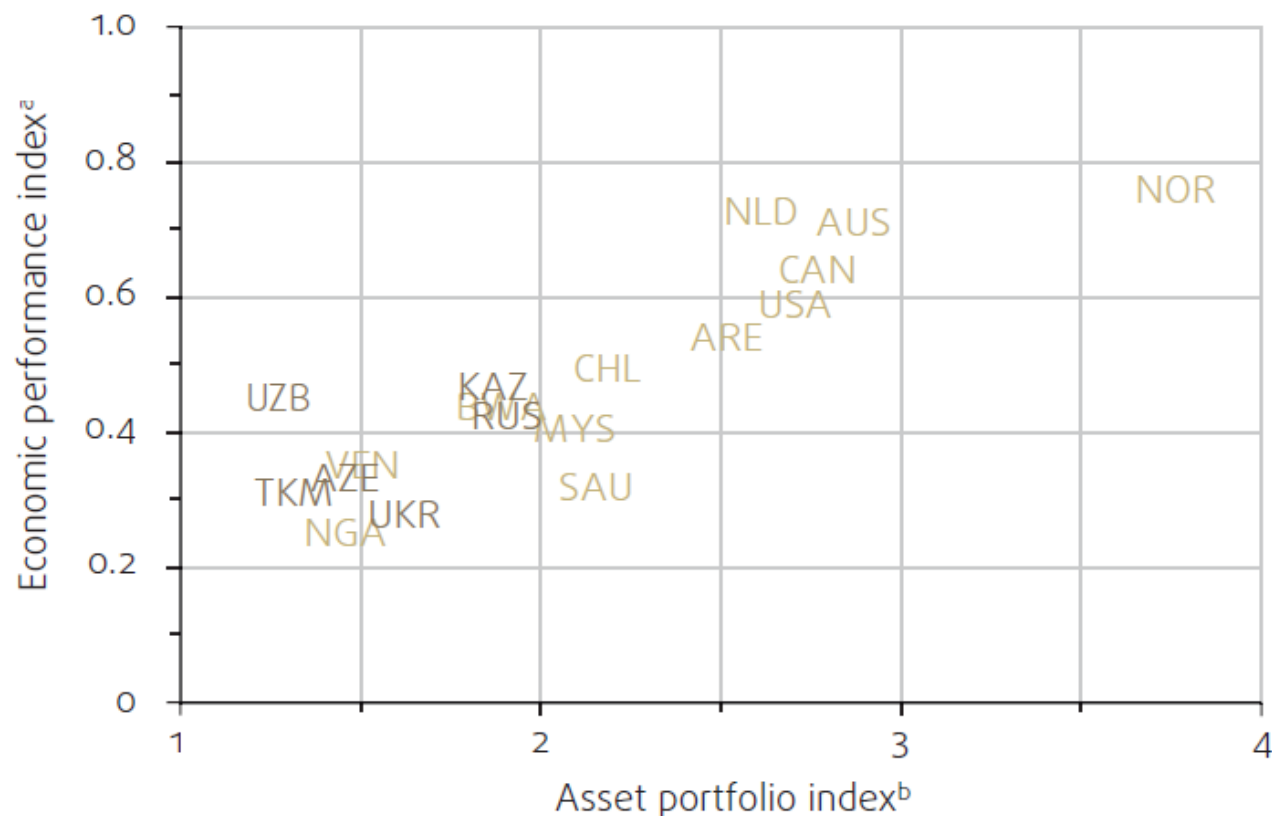
Figure 0.28. What really matters: built capital and economic institutions

(Economic performance index vs. asset portfolio index)

Source: World Bank 2014,

Diversified Development

The asset portfolio index is a multiplicative index constructed as the product of two types of assets: capital (natural resources and built capital averaged) and institutions. The economic performance index is a composite index constructed as the unweighted average of the three measures of economic performance: output volatility, employment, and productivity. a. Higher values indicate better performance. b. Higher values indicate more diversified portfolio.

Intangible Capital Residual

What else is capture in this residual measure?

Total Wealth

Total Wealth: Approaches

Approaches to calculating Total Wealth:

Bottom-Up: sum the value of all components, if and only if all components of wealth can be independently and accurately measured

Top-Down: estimate Total Wealth directly, under the assumption that sustainable consumption is a return on total assets

Both approaches should be the same, if accurately measured

World Bank takes the Top-Down approach, since all components of wealth cannot be independently measured

Australia: National Balance Sheet (2010-11 $b)

Total assets				10,242.1
	Non-financial assets			9,064
		Produced assets		4,350.5
			Fixed assets	4,189.5
			Inventories	161
		Non-produced assets		4,713.5
			Natural resources	4,711.5
			Permission to use natural resources	2
	Financial assets with the rest of the world			1,178.1
	Liabilities to the rest of the world			1,912.5
Net worth				**8,329.6**

Source: Australian Bureau of Statistics, Year Book Australia 2012

Comprehensive Wealth

WB: Estimate wealth components, including Total Wealth, then estimate Intangible Capital as the residual
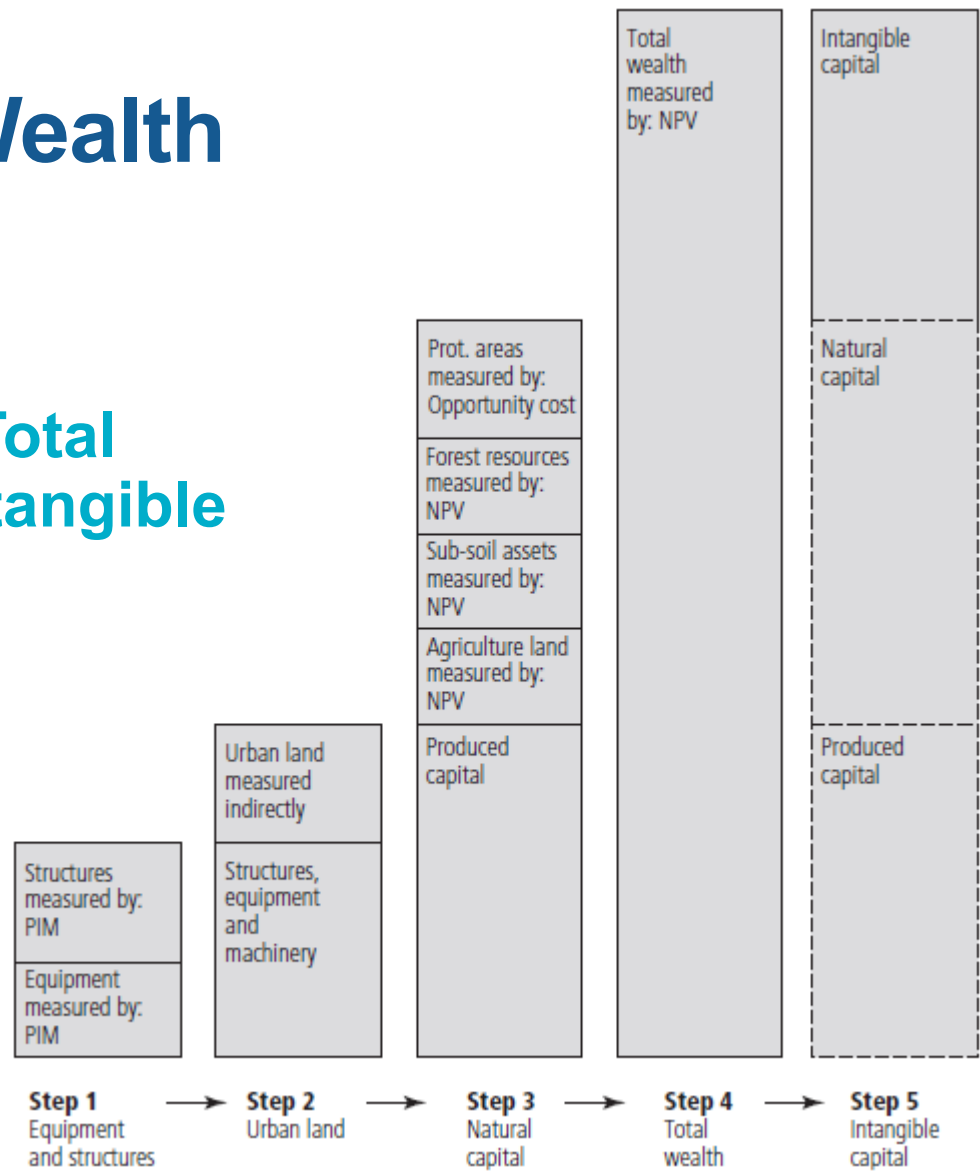
Total Wealth: Theory

Total Wealth can be calculated as:

$$W_t = \int_t^\infty C(s) \cdot e^{-r(s-t)} ds$$

where   Wt is the total value of wealth in year t,
C(s) is consumption in year s,
and r is the social rate of return to investment.

The social rate of return to investment is expressed as: $r = \rho + \eta \dfrac{\dot{C}}{C}$

where ρ is the pure rate of time preference,
η is the elasticity of utility with respect to consumption.

Assuming that η=1 and <u>consumption grows at a constant rate</u>,
Total Wealth can be expressed as:

(A.1) $W_t = \int_t^\infty C(t) \cdot e^{-\rho(s-t)} ds$

Total Wealth: Sustainable Consumption

Expression (A.I) assumes that consumption is on a sustainable path – consumption level that would leave the capital stock intact (e.g., the level of saving is enough to offset the depletion of natural resources)

How to calculate Sustainable Consumption

In a given year, if **Depletion-Adjusted Saving** is negative, then subtract this amount from total consumption to obtain **Sustainable Consumption**.

Depletion-Adjusted Saving = Gross Saving – Consumption of Fixed Capital – Depletion of Natural Resources

[WB] Total Wealth: Methodology

Calculating Total Wealth from Sustainable Consumption:

Step 1: Calculate **final consumption expenditure**
(private + public consumption)

Step 2: Subtract education expenditures from consumption
(treated as investment in human capital, not consumption)

Step 3: Based on negative depletion-adjusted saving, calculate **sustainable consumption**

Step 4: **Smooth volatility**, by taking a five-year lagged average of sustainable consumption (constant prices) for a given year

Step 5: **Calculate Total Wealth**, by taking the net present value of consumption (i.e., five-year average sustainable consumption) over a 25 year period using a discount rate of 1.5%

[WB] Total Wealth: Data, Assumptions

Data Requirements	Data Source (WB Methodology)
Final Consumption Expenditure	*World Development Indicators*, World Bank
Education Expenditure	*UNESCO*
Depletion-Adjusted Saving *(Gross Saving – Consumption of Fixed Capital – Depletion of Natural Capital)*	*Estimates taken directly from ANNI/ANS database*

Assumptions	WB Methodology
Smooth volatility in consumption	Five-year lagged average
Time horizon	Twenty-five years (consistent across all wealth components)
Pure rate of time preference	1.5%, constant across countries and time

[WB] Total Wealth: Excel Exercise

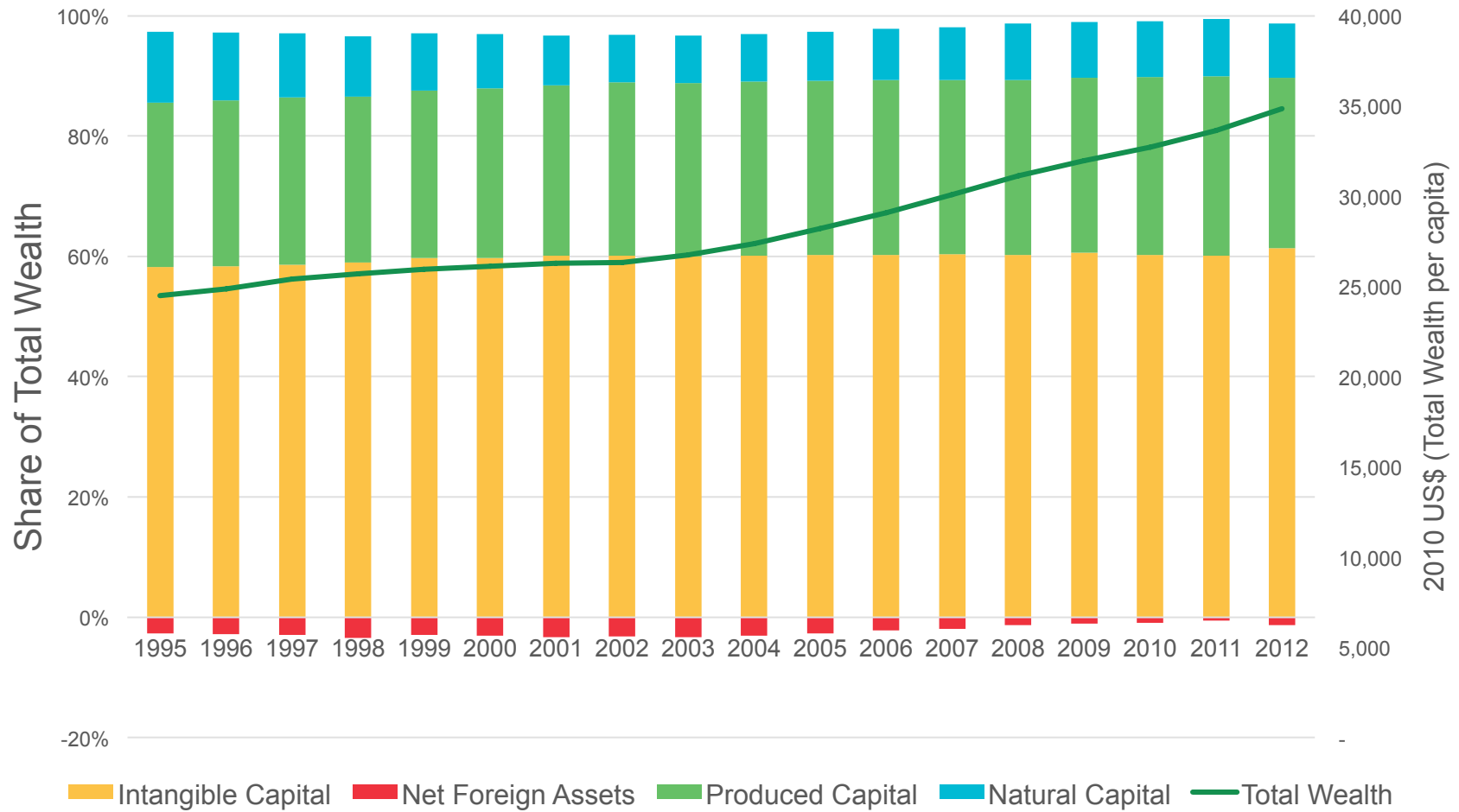**See tab "Total Wealth Exercise" [*Wealth_Philippines.xlsx*]**

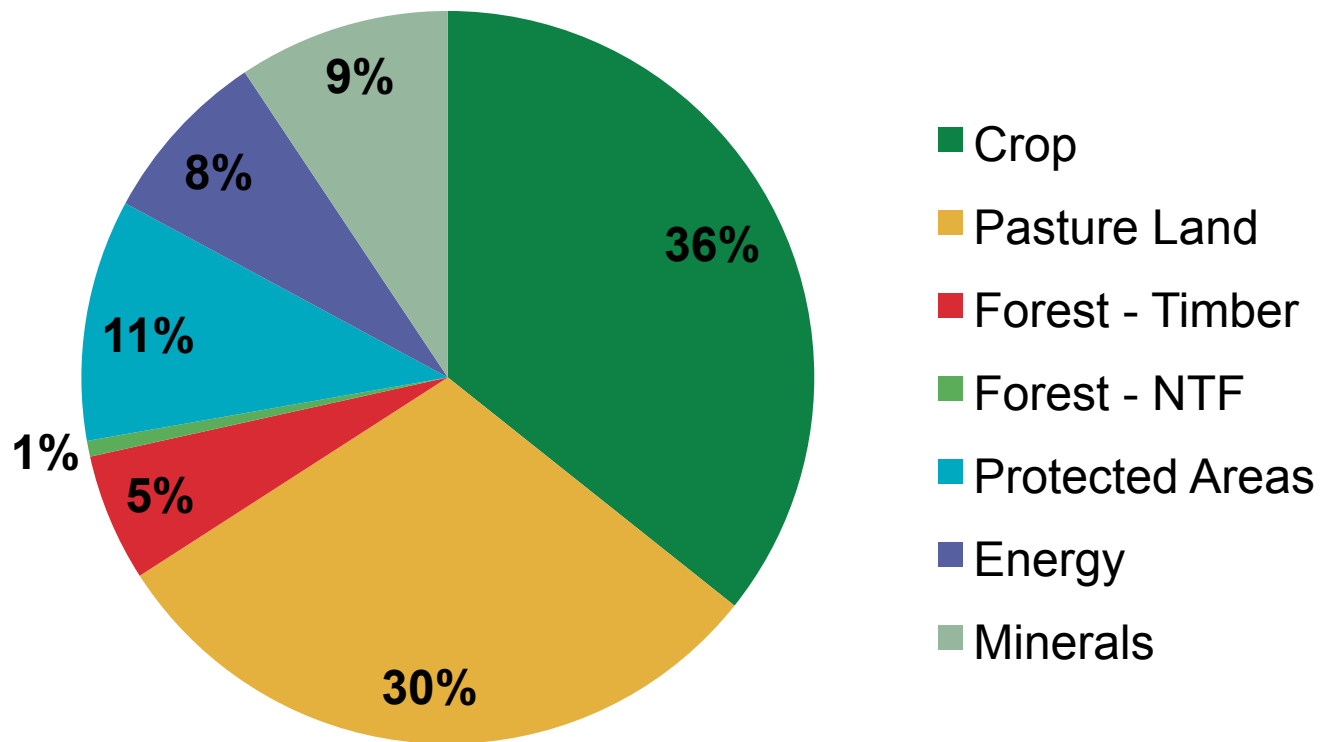**Instructions: With data provided, <u>calculate Total Wealth</u>**

WB Estimates for Philippines (prelim)

Wealth of Philippines, 1995-2012

Legend: Intangible Capital | Net Foreign Assets | Produced Capital | Natural Capital | Total Wealth

WB Estimates for Philippines (prelim)

Natural Capital Composition, 2012

- Crop — 36%
- Pasture Land — 30%
- Forest - Timber — 5%
- Forest - NTF — 1%
- Protected Areas — 11%
- Energy — 8%
- Minerals — 9%

Questions?