

Asset Exposure and Capital Stock for Indonesia, Philippines, Taiwan and Thailand

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- Capital Stock (CS) and National Wealth account values provide a representation of a country's physical insurable assets exposed to catastrophes.
- National Wealth: total value of wealth in a country at a set point in time and is the total value of wealth & goods generated by all economic activities.
- Capital Stock (CS): provides another view with Gross CS representing value of fixed assets still in use at current purchasers' prices (i.e. new assets of same type) irrespective of age of assets while Net CS represents sum of written-down values of all fixed assets still in use.
- For representing replacement values Gross (National Wealth or CS) is needed.

National Wealth and CS Data Sources

- Country National Accounts (NA) provide the best information source
 - Taiwan – Gross & Net National Wealth and GFCF²
 - Thailand – Gross & Net CS and Gross Fixed Capital Formation (GFCF)¹
 - Indonesia and Philippines – GFCF^{3,4} but no CS or National Wealth info
- Penn World Table 9.1 reports Net CS (PPP mill 2011 USD)⁵
 - Indonesia & Philippines – Gross CS reconstructed from PWT Net CS by ICRM

1. Gross CS by asset type estimated from PWT Net CS

$$NetCS = GrossCS - Capital\ Consumption$$

$$GrossCS_t = GrossCS_{t-1} + Investment_t - Retirement_t$$

Assumed asset life⁶: Structures – 40 years, Machinery – 10 years, Transport equip – 10 years, Others – 5 years

Country Exposure (inclusive of infrastructure)	National Currency (Trillion)			
	National Account (NA)		PWT 9.1	Gross CS Reconstructed from PWT Net
	Net CS or Net Wealth	Gross CS or Gross Wealth	Net CS	
Indonesia (2017)	-	-	47,730.18	65,145.69
Philippines (2017)	-	-	34.01	43.51
Thailand (2015)	39.22	56.35	39.39	57.09
Taiwan (2017)	50.64	100.09	43.58	59.13

2. Res/Non-Res building value contributed by Gross CS asset types

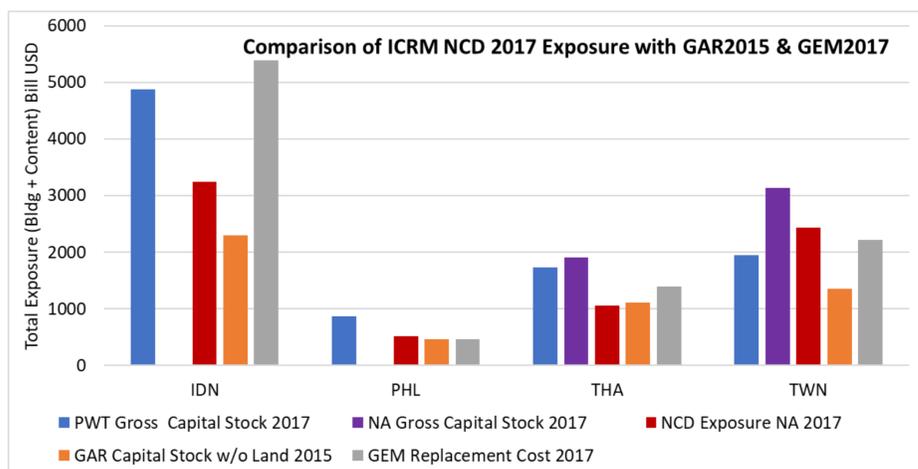
- GFCF as reported in NA provides the primary data for accumulating CS
- Cumulative GFCF breakdown used to separate out infrastructure, and then separating remainder into residential/non-residential building & content values in the reconstructed Gross CS

3. Disaggregate Non-Residential CS by line of business/sector

- Disaggregate non-residential buildings by sector using gross regional domestic product (output GDP) distribution by industry/line of business

$$GCS_{Line\ of\ business} = \frac{GDP_{Line\ of\ business}}{GDP_{National}} \times GCS_{National, Non-Residential}$$

where GDP grouped by line of businesses into 4 sectors (Primary, Industrial, Commercial, and Public)



1. Gross Capital Stock (CS)

Value of all fixed assets still in use irrespective of age asset

2. Gross CS component contributing to building replacement value

Building & Content Values

3. Disaggregate by line of business/sector

Residential and Non-Residential

Non-Residential: Commercial, Industrial, Public, Primary

ICRM derived NatCatDAX Exposure (Bil USD, 2017)

Sector	Indonesia (PWT)	Philippines (PWT)	Taiwan (NA)	Thailand (NA)
Primary	332.7	30.5	29.2	81.5
Industrial	860.3	96.1	1,002.7	254.3
Commercial	1,125.2	176.1	655.5	293.1
Public	206.9	13.1	155.8	83.6
Residential	713.9	200.2	595.6	344.5
Total	3,239.0	516.1	2,438.8	1,056.9

¹http://www.nesdb.go.th/nesdb_en/main.php?filename=national_account

²<https://eng.stat.gov.tw/ct.asp?xItem=44147&CtNode=1640&mp=5>

³<https://www.rug.nl/ggdc/productivity/pwt/>

⁴<https://psa.gov.ph/nap-press-release/data-series>

⁵<https://www.bps.go.id/>

⁶Fraumeni, Barbara M The Measurement of Depreciation in the U.S. National Income and Product Accounts. (1997)

