JIM methodology briefs #1: asset turnover ratios

Issue: limited impact data in FI portfolios

Financial institutions (FIs) have difficulty measuring the impacts of all their clients directly. Some clients may have the capacity to measure and report impacts like value added (VA), greenhouse gas (GHG) emissions and employment, verified or unverified. Most bank clients globally cannot yet do this.

Banks and their clients also have difficulty trying to estimate impacts based on physical activity (e.g. people employed and GHGs emitted per 40kg bag of cement produced).

Even estimating impacts using turnover (or sales revenue) data, the next best alternative, can be problematic because client turnover data may not be readily available on an annual basis. This is the case for FIs with many clients in multiple sectors, particularly if the clients are in emerging markets and developing countries. Even FIs with smaller portfolios can find it difficult to source client turnover data reliably. According to the IMF, there are around 3,450 commercial banks operating in non-OECD countries.[1]

Solution: use of asset turnover ratios

In such cases, FIs can estimate their share of client turnover by multiplying their investment (a contribution to the client's total assets) by a sectoral asset turnover ratio (ATR).[2] Using sectoral averages for individual firms is not ideal because any given firm might be more or less productive than average, but for FIs with multiple investments in a given sector this probably balances out.

Calculating emissions using asset turnover ratio's is the lowest level of data quality endorsed by the PCAF Global GHG Standard.[3] The alternative would be to omit these clients altogether, which could lead to significant underreporting of

Example: a bank has $10m invested in 30 clients in the construction sector in South Africa but does not have standardised production data or even sales revenue data. The construction sector ATR in South Africa is 0.85. The FI can thus estimate its contribution to construction client turnover as $8.5m. Using sector turnover–impact multipliers, the FI can then estimate the impacts of this $8.5m financing as being $7m of value added generated, 7,000 tonnes of GHGs emitted and 420 jobs supported, with all impacts including directly at the clients and indirectly in their supply chains.

financed impacts. "There is currently insufficient available data to accurately reflect the financed emissions of the remaining 23 per cent of our in-scope assets", reported a multinational bank with operations in 70+ countries recently.[4]

Given the value of ATRs as a fall-back option in the data quality hierarchy in data-poor environments, can ATRs be reliably generated for sectors and countries? While easily calculated for individual listed companies, there is not a publicly available, free-of-charge source of ATRs at sector and regional level.

The Joint Impact Model sources its ATRs from the Global Trade Analysis Project[5], where capital stock and output data are available for a modest licence-fee for 141 countries and 65 sectors. From GTAP's total capital stock, JIM estimates private sector capital stock in order to identify the capital productivity of private sector investments, using World Bank data on private sector capital formation (as a share of total gross fixed capital formation). Private sector capital stock is then allocated per sector using capital endowment data from GTAP.

The ATRs derived for developing countries from this exercise and used by JIM are summarised in Table 1. Ratios vary significantly by both sector and by region. Alternative sources of ATRs could be from proprietary firm-level databases or from alternative collections of input-output tables.[6]

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[1] https://data.imf.org/?sk=E5DCAB7E-A5CA-4892-A6EA-598B5463A34C&sId=1460055200236, accessed 25/11/21.

[2] ATR may be known as the total asset turnover ratio and can be understood as equivalent to a capital output ratio or COR.

[3] https://carbonaccountingfinancials.com/files/downloads/PCAF-Global-GHG-Standard.pdf page 65.

[4] https://av.sc.com/corp-en/content/docs/SC-net-zero-whitepaper.pdf

[5] https://www.gtap.agecon.purdue.edu/databases/contribute/detailedsector.asp. GTAP capital stock data is sourced from the Penn World Tables. Capital stock excludes other assets like accounts receivables, cash, intangibles, goodwill etc.
https://www.rug.nl/ggdc/docs/capital_labor_and_tfp_in_pwt80.pdf

[6] Examples include S&P Capital IQ; Bureau van Dijk Orbis; WBG Enterprise Surveys; WIOD. Less developing country coverage is a limitation of some of these alternatives.

Table 1: Asset turnover ratios used in JIM

	Asia	Latin America & Caribbean	North America	Oceania	Europe	China	Africa	World
Accommodation and food service activities (I)	1.03	1.02	1.11	1.94	0.88	1.09	2.12	0.97
Agriculture, forestry and fishing (A)	1.40	0.93	0.77	0.99	1.36	1.23	1.36	1.06
Construction (F)	1.49	0.85	1.59	2.40	0.90	1.62	0.85	1.17
Education (P)	1.09	2.32	1.24	1.52	1.21	0.31	2.48	1.02
Electricity, gas, steam and air conditioning supply (D)	1.21	0.74	0.36	0.41	0.75	0.61	0.99	0.68
Financial and insurance activities (K)	0.47	0.62	1.15	0.39	0.68	0.83	0.95	0.69
Human health and social work activities (Q)	1.29	2.54	1.33	1.69	1.50	0.46	2.90	1.34
Information and communication (J)	0.64	0.69	0.90	0.70	0.58	0.41	0.62	0.59
Manufacturing (C)	1.44	1.29	1.26	0.98	1.46	1.34	1.47	1.35
Mining and quarrying (B)	0.43	0.69	0.37	0.36	0.63	0.82	0.62	0.46
Real estate activities (L)	0.39	0.33	0.40	0.36	0.33	0.45	0.51	0.36
Professional, Scientific and Technical Activities (M)	0.76	0.68	1.09	0.73	0.60	0.49	1.02	0.66
Administrative and Support Service Activities (N)	0.76	0.68	1.09	0.73	0.60	0.49	1.02	0.66
Public Administration and Defence, Compulsory Soc	0.65	1.26	0.67	0.84	0.72	0.39	1.33	0.67
Activities of Extraterritorial Organisations and Bodie	0.65	1.26	0.67	0.84	0.72	0.39	1.33	0.67
Arts, Entertainment and Recreation (R)	0.68	0.72	1.26	0.65	0.60	0.62	1.52	0.76
Other Service Activities (S)	0.68	0.72	1.26	0.65	0.60	0.62	1.52	0.76
Activities of Households as Employers (T)	0.68	0.72	1.26	0.65	0.60	0.62	1.52	0.76
Transportation and storage (H)	0.96	0.89	0.92	0.89	0.97	0.55	1.09	0.82
Water supply; sewerage, waste management and re	0.65	0.98	0.75	0.53	0.90	0.37	1.22	0.71
Wholesale and retail trade; repair of motor vehicles	0.53	0.61	0.72	1.05	0.53	0.46	0.80	0.54
Other, Dwellings	0.23	0.22	0.15	0.18	0.20	0.16	0.23	0.19

Comparison with anticipated impact modelling

Financial institutions not only want to account for the impacts of their portfolio but may also want to estimate the anticipated impact of a new investment during due diligence. For example, what might be the expected jobs impact over two years of a new lending facility at a bank targeting SMEs as clients?[7]

For these purposes, good practice suggests the establishment of a counterfactual, i.e. what is the underlying trend against which the additional impact can be measured.[8]

In the latter case, it is reasonable to argue that only the incremental impact of additional assets provided should be modelled. The difference

between the average ATR used for accounting and an incremental ratio used for forecasting is 0.6.[9]

Therefore, modelling the anticipated impacts of individual investments should be understood to be more conservative in terms of scale of impact than modelling for portfolio-level financed impacts, where investors take on responsibility for their share of the existing footprint.

Next steps

In 2022, the JIM secretariat is be working with PCAF, the Partnership for Carbon Accounting Financials, on a number of pilot projects with banks in Latin America, Africa and South Asia to test the tool for their carbon footprints. The results of these pilots will be fed back into the methodology. In addition, we will be looking into use cases of anticipated impact modelling and provide more guidance around how apply this. To comment on this methodology brief or participate in the pilots, please contact info@jointimpactmodel.org

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[7] https://www.ifc.org/wps/wcm/connect/2c499fd9-a2e8-4fac-9833-145620746fc4/IFC_SME_Report_2021_FA_digital.pdf?MOD=AJPERES&CVID=nCL6R9f

[8] HIPSO Indirect Jobs Working Group paper 2021. ILO is working on a set of enhancements to standard IO models to introduce more dynamic effects, with a focus on jobs in Sub-Saharan Africa. https://www.ilo.org/employment/Whatwedo/Projects/strengthen2/WCMS_823261/lang--en/index.htm

[9] The incremental ratio in 17,210 firms in developing countries from recent WBG *Enterprise Surveys* is 0.46, as compared to the average ratio of 0.77 from GTAP, giving a differential of 0.6. In certain specialist financing, for example VC funds, the incremental ATR could be higher than 0.6x of ATR.

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