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Measuring Financial Integration between Australia and New Zealand

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Background

- Financial integration is the process in which a country's or region's financial markets—including its money, bond, bank credit and equity markets—become more closely aligned with those in other countries or regions.
- More particularly, the market for a set of financial instruments and/or services is said to be fully integrated if all potential market participants with the same relevant characteristics: (i) face a single set of rules when they deal with these financial instruments and/or services; (ii) have equal access to the set of financial instruments and/or services; and (iii) are treated equally when they are active in the market
- Three widely accepted benefits from this process: more opportunities for risk sharing and diversification, the better allocation of capital across investment opportunities, and the potential for higher economic growth.
- Financial integration arises in two main ways. One is from formal efforts to integrate financial markets with particular partners, typically those that share membership in some wider regional agreement (e.g. the EU).
- Integration in this sense involves the elimination of cross-border restrictions on the activities of firms and investors within the region, as well as the harmonisation of rules, taxes, and regulations between member countries.

- However, financial integration may also emerge less formally, very often but not always, as a precursor to explicit regional agreements.
- Several factors contribute to this means of financial integration. These include foreign bank entry into domestic markets, direct borrowing by firms in international markets, bilateral financial and trade agreements, strengthening finance and trade relationships between countries, and the convergence of business and investor practices.
- Financial integration such as this is relatively more common in geographically close regions.

Approaches

- A number of qualitative approaches to measuring integration (or the lack of), including assessing the impact of existing frictions.
- Simplest approach is to measure the state of integration using equilibrium prices as these should reflect all information held by agents, including possible frictions and barriers that these agents face under the law of one price.
- One is price-based measures, which measure discrepancies in prices or returns on assets caused by the geographic origin of the assets. Constitutes a direct check of the law of one price, which must hold if financial integration is complete.
- Another is news-based measures designed to distinguish information effects from the effects of other frictions or barriers. More precisely, in a financially integrated area, portfolios should be well diversified. Hence, one would expect news (i.e. arrival of new economic information) of a regional character to have little impact on prices, whereas common or global news should be relatively more important.
- A final is quantity-based measures to quantify the effects of frictions faced by the demand for and supply of investment opportunities. When available, use statistics giving information on the ease of market access, such as cross-border activities or listings and portfolio home bias.

Method

- Use a price-based measure.
- Define the change in the return/yield on an asset in country i at time t (NZ), and the yield change on a comparable asset in benchmark country (Aust.).
- In integrated markets, yield changes in the benchmark asset should be a good proxy for the correct reaction of prices (and hence yields) across countries, if we also assume that the degree of systematic risk is identical.
- To separate common from local influences, we run a regression estimating a time-varying intercept, a time-dependent beta with respect to the benchmark asset, and a country-specific shock.
- Increasing integration requires (i) the intercept to converge to zero, (ii) the beta with respect to the benchmark asset, to converge to one, and (iii) the proportion of the variance explained by the common factor to increase towards one.
- Consider money, credit, equity, and debt markets, comprising, monthly prices in large and small cap equity, 2-, 5- and 10-year swaps, business overdraft and lending rates and residential lending rates.
- Period August 1995 to June 2015 with pre-and post-GFC subsamples (July 2007)



	ASX	NZSE	ASC	NZSC	ARL	NZRL	AOD	NZOD
Mean	0.388	0.246	0.304	0.963	-0.243	-0.162	-0.174	-0.025
Median	0.921	0.766	0.901	1.272	0.000	0.000	0.000	0.000
Maximum	9.520	10.200	13.476	10.591	7.353	8.429	6.667	6.947
Minimum	-13.421	-13.896	-24.919	-9.774	-14.599	-15.777	-10.989	-13.160
Std. Dev.	3.998	3.647	4.871	3.688	2.497	2.933	2.043	2.006
Skewness	-0.692	-0.700	-1.073	-0.242	-1.818	-1.244	-1.609	-1.826
Kurtosis	3.846	4.153	6.098	3.276	10.997	8.779	10.295	13.597
	ABL	NZBL	A2Y	NZ2Y	A5Y	NZ5Y	A10Y	NZ10Y
Mean	-0.359	-0.187	-0.355	-0.278	-0.353	-0.252	-0.310	-0.260
Median	0.000	0.000	-0.300	0.227	-0.326	-0.246	-0.229	-0.238
Maximum	10.092	5.197	15.320	15.789	11.919	20.614	12.422	14.922
Minimum	-22.222	-10.222	-24.063	-24.681	-17.578	-16.783	-14.225	-14.536
Std. Dev.	2.718	2.111	5.502	5.146	4.851	4.713	4.595	4.003
Skewness	-3.354	-1.622	-0.558	-0.621	-0.159	0.072	-0.177	0.068
Kurtosis	25.949	8.176	5.007	5.810	3.530	5.304	3.464	4.624

	Overall			Pre-GFC			Post-GFC			
	Alpha	Beta	Variance	Alpha	Beta	Variance	Alpha	Beta	Variance	
Large cap equity	0.161	0.465	0.321	0.177	0.524	0.286	0.241	0.389	0.380	Moderate and increasing
Small cap equity	0.920	0.465	0.392	0.962	0.553	0.353	0.658	0.406	0.444	Moderate and increasing
2Y swap	0.134	0.584	0.359	0.182	0.600	0.354	-0.135	0.530	0.354	Moderate and constant
5Y swap	-0.023	0.642	0.504	-0.105	0.657	0.593	-0.107	0.620	0.443	Moderate and decreasing
10Y swap	-0.137	-0.003	-0.001	0.050	0.049	0.001	-0.292	-0.045	-0.003	None
Overdraft	0.000	0.299	0.128	0.100	0.323	0.081	-0.011	0.134	0.192	Weak and increasing
Business lending	0.036	0.027	0.005	0.006	0.008	0.001	-0.037	0.027	0.007	Weak and Increasing
Residential lending	0.225	0.130	0.021	0.562	-0.009	-0.028	0.072	0.063	0.019	Weak and constant

Summary

- Generally results suggest stronger integration in equity than credit markets.
- But increasing post-GFC.
- Would be useful to apply this in a more thorough way.
- With price-based measures (approach used) could additionally look at bond spreads and margins, plus other measures of business and household loans.
- With quantity-based measures, could link at proportion of cross-border loans to banks and non-banks, share of cross-border invested funds in bonds and equity, FDI inflows and outflows, etc. relative to each other and compare with other major trading partners (China, South Korea, Japan, US, etc.).
- With news-based measures would assume that local returns react to two common factors, namely innovations in Australia and NZ and some proxy for global factors (say US).