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Renewable entry costs, project finance and the role of revenue quality in Australia's National Electricity Market

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Nicholas Gohdes & Paul Simshauser

Global energy markets have become increasingly dominated by variable renewable energy (VRE) investment commitments - a trend driven in part by falling technology costs while underpinned by a motivation to reduce dependence on carbon emitting technologies. Australia's National Electricity Market (NEM) is no exception, experiencing a renewable investment "supercycle" during 2016-2021, where 135 VRE projects totalling 16,000MW and worth more than $26.5 billion were committed. All the more striking is the fact that this supercycle followed a two-decade long climate change policy war between Australia's two main political parties. Despite recent improvements in political cohesion, the transition's success remains largely dependent on underlying VRE entry costs as policymakers aim to limit potentially adverse short term pricing impacts on consumers.

This article is focused on the capital cost component of new entry VRE projects. Specifically, the variance in a project's expected *cost of capital* is measured under various 'revenue quality' conditions for a plant operating in Australia's NEM (i.e. an energy-only gross pool under conditions of policy uncertainty). Revenue quality is defined in accordance with a project's Power Purchase Agreement (PPA), namely the agreement between the generator and a third party to sell a portion of electricity generated, at an agreed price over a fixed period.

It is generally understood that revenue security via a PPA is important when securing a workable cost of capital for new VRE projects. Due to the absence of fuel expenses, the majority of ongoing costs exist in capital repayments (i.e. debt repayments and returns to equity investors) – unlike conventional baseload gas plant which incur significant fuel costs. Stable and predictable revenues therefore become highly useful when a project is attempting to structure finance at higher levels of gearing. Mitigating exposures to the volatile spot market via a PPA therefore allows new renewable projects to raise capital at rates conducive to a lower overall cost of market entry.

This article varies revenue quality by, i). PPA volume cover, and, ii). the credit quality of the PPA counterparty. We make use of novel and otherwise confidential industry data from Australia's capital markets and in particular, from a number of active VRE project originators/equity investors and project finance lenders. Variances in entry costs for a given project are measured by reference to the post-taxation, post-financing entry cost of VRE plant under each PPA category.

Rather expectedly, we find the presence of PPA coverage (at 100% of plant output) lowers entry costs relative to partial (50%) or merchant plant (0%) exposure via the securing of greater debt quantities at favourable interest rates. However, we also find that the credit quality of a PPA's counterparty can be as important as the level of PPA energy volume cover under certain conditions. Lenders and equity investors appear willing to trade-off gearing, credit spreads and returns on equity capital when future revenues are secured through PPAs from higher credit quality counterparties. PPA counterparties with higher credit ratings are preferred by financiers, who offer commensurately higher gearing levels and lower credit spreads, while equity investors appear to moderate expected returns, all of which appears to defy Modigliani and Miller's (1958) classic theorem. In practical terms however, such structures do not create 'a magic pudding' or defy financial economics. Project risks have merely been repackaged and reallocated.

Contact p.simshauser@griffith.edu.au
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