External technical peer review: Economies of Scale in Superannuation

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November 9, 2018

This report undertakes an analysis into economies of scale (EoS) of superannuation funds as part of an investigation of the efficiency and competitiveness of Australia's superannuation system to assess the degree to which funds' cost per member account or dollars invested decrease as the funds increase in membership accounts and assets. A failure to realise EoS or pass on realised efficiency gains to members are potential signals of a lack of competitive pressure. Superannuation funds have two main cost components, administrative and investment costs, and in each component EoS may be realized as a fund grows in asset size and member accounts. Previous studies in the Australian context have been limited both in terms of scope and addressing technical challenges, several arising from data issues. They have found some evidence for EoS, with the strongest evidence for administrative costs and the weakest evidence for retail funds but also indicate substantial heterogeneity across funds and fund types.

This report presents extensive results on efficiencies of scales in the superannuation sector that are based on a careful and comprehensive analysis empirical analysis of administration and investment cots under a cost function approach using data from 2004 to 2016 to understand how cost vary by fund size (assets, member accounts). Appropriate and advanced econometric methods are employed to address the technical challenges and integrated into an econometric framework to investigate different aspects of efficiency to obtain a more comprehensive and reliable picture of the market efficiencies of the sample period and future potential cost savings from scale economies.

The analysis is based on a large sample of superannuation funds from the corporate, industry, public and retail sectors that spans 17 years. During this period the Australian superannuation sector went through a significant consolidation phase with the number of funds being reduced from over 800 in 2004 to around 200 in 2016. Not all funds are captured in the analysis mainly due to their short period in the sample (market exit after two periods), some due to missing information on key variables (assets, member accounts). The vast majority of funds missing from the sample are small funds present in early sample years before becoming part of large retail funds, which are present in the sample (the former thus representing only a small proportion of the market in terms of assets and member accounts). This may manifest itself in a downward bias of some of the estimated efficiency gains due an underrepresentation of small high-cost funds, suggesting for example that reported realized cost savings from EoS are conservative in nature.

The final sample that forms the basis for most of the analysis in the report contains 494 funds. For only 20% of these investment data was available. These data features directly drive two of the main challenges for estimation -missing investment data and over-presentation of smaller funds in earlier sample period. Both issues need to be addressed to avoid bias in the estimation results on returns of scale and obtain more meaningful results. Further, inspection of the raw cost data exhibits a very large variation in costs for funds of similar size, in particular among smaller size firms, that will also need to be addressed in the estimation strategy. The authors of the report have developed a sophisticated empirical framework to deal with complexity of the problem and these technical challenges.

The starting point for the empirical framework is the standard cost function approach that in this case relates administrative and investment expenses to a fund's assets, member accounts and a few other cost drivers such as number of investment options and the introduction of the "Stronger super" legislation and controls for fund type (corporate, industry, public sector, retail). The coefficients/parameters relating to assets and member accounts reflect EoS (or diseconomies of scale). Since the estimation uses panel data, it is possible to identify fund specific scale effects in assets and accounts in addition to average industry and fund type scale effects.

The empirical model in this report therefore follows a multilevel modelling approach to estimate separate cost curves for each fund. This is important as the raw data exhibits considerable variation in expenses for similar size funds even with a specific type. Estimates accounting for this heterogeneity will yield more precise conclusions regarding realized and (predicted) unrealized EoS. For example, impact of changes in size would not be expected to be the same for two retail funds of the same size and other characteristics. Such modelling also helps to control for systematic misreporting of a specific fund. Cost curves for administrative and investment expenses are jointly modelled to allow for unobserved factors that affect both cost components. Missing information on expenses in a specific year was predicted within this framework based on observed characteristics. A Heckman-type selection approach is used to control for survival bias from industry consolidation through estimated market exit probabilities of a fund in a given year that is included in the cost model.

A Bayesian estimation framework was used for the empirical analysis to obtain a wide range of estimates and predictions complete with standard errors to assess precision and strength of all results. Bayesian methods are particularly well suited for the estimation of complex hierarchical (multi-level) models which contain a set of parameters to capture heterogeneity (here across firms). Through the prior distribution inference about these effects can be obtained more effectively by imposing a structure on these effects which allows identification of these effects using information on all funds (regularisation). The Bayesian framework is particularly well suited to explore "what-if" questions, such as the estimation of unrealised EoS. Since inference is based on the posterior and predictive distributions of parameters, direct probability statements can be made about model parameters and functions of model parameters. For example, we can compute the probability that the power coefficient, itself computed based on several cost function parameters relating to scale, is less than 1 implying EoS for this fund. Efficient estimation methods are used and sensible priors for the context. Further, a model for fees is estimated to assess whether changes in costs are reflected in lower fee. The methods used in the report are detailed in the technical appendix.

The report provides two sets of results. The first set of results establish that the sector overall exhibits EoS as well as each of the four sectors. It also shows that there is scope for further cost savings. A key finding of this multi-level analysis is that EoS vary significantly across funds with most funds showing clear EoS in both investment and administrative cost. A subset of funds does exhibit diseconomies of scales. Overall, the analysis reveals that most funds have realized economies of scales over the sample period and system still exhibits significant unrealised economies of scale. It should be noted that due to the lower quality and coverage of investment data reporting in the sample, the EoS results relating to administrative data are stronger. The second set of results relate to the pass-through of the realised efficiency gains in terms of lower fees. As is already apparent from the raw data, fees have changed very little despite the large consolidation and efficiency gains from scale effects. The formal analysis suggests that some of savings in investment expenses have been passed through via larger returns, with large funds investing in more costly but higher return asset classes.

The report has implemented a complex econometric framework to produce a large set of results and many different efficiency measures and summaries. These capture different aspects of market efficiency, such as firm level versus sector level and overall effects. Below I have included a few suggestions, mainly relating to the presentation and discussion of results.

- Table 8.2 and its discussion could include some statistics on market coverage, i.e. what proportion of market is captured in the sample in terms of assets or member accounts.

- The presentation of the cost function framework, including Table 8.5, should be adjusted to clarify which variables drive EoS and which variables are general cost drivers. The reader would also benefit from a clear definition EoS and the power coefficient in the context of the cost function used.

- A challenge for the estimation and calculation of realised and unrealised EoS is the large heterogeneity in expenses and sizes across funds. One way to address this issue is to also present results based on a sample with outliers on either end removed. Predictions based on such a sample are likely to be more representative and robust. Another approach to address these issues would be to consider different scenarios when predicting unrealised EoS. For example, more a conservative scenario of high cost funds merging with medium cost funds could be considered for Figure 8.14. Such an approach would yield a range measure of gains rather than a point measure.

- A surprising result is that the cost savings have not been passed through in terms of lower fees (although not surprising given the raw data on fees exhibiting very little change over the sample period). It might be useful to look into other variables, such as online presence and online account access, that capture improvements of customer service. The non-profit character of most funds should be noted in this context. The resulst might suggest that relevant cost drivers from customer service are missing in the cost function and are not captured by for example member account numbers.