



**Assessing the Financial Vulnerability of Not-for-Profit Organisations
in the Australian Aged Care Sector**

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ABSTRACT

This study addresses the measurement of financial vulnerability (FV) of aged care non-profit organisations (NFPs) in Australia by creating a revised multi-dimensional framework and the development of an FV index and FV scores. In addition to its methodological contribution, the study assesses the extent of FV faced by aged care NFPs, using annual reporting data collected from 200 organisations in the period from 2017 to 2019. The results suggest aged care NFPs hold a limited capacity to withstand financial shocks and provide an alarming message on the high level of FV risks faced by all NFPs. This study contributes to the literature in several ways: (1) by examining the conceptual and empirical disjuncture among the dimensions developed for measuring financial health in the NFP sector; (2) by providing evidence to the limited literature on measuring the extent of FV in the NFP sector, especially as related to the Australian aged care sector; and (3) by extending the literature on the risk associated with outsourcing public sector service delivery. Consequently, the study provides new insights to allow the Australian government to identify potential risks associated with outsourced government service delivery.

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1. Introduction

Not-for-Profit organisations (NFPs) that provide human services are critical for meeting social service demands. Australian government bodies (Federal and State) depend heavily on NFPs to provide human services in various sectors such as health, housing, legal, and aged care. NFP providers continue to be the largest service provider group and dominate the aged care industry in Australia. The industry is expanding in line with growth in the aging population due to the sustained low fertility and increasing life expectancy (ABS, 2019) of people in Australia. However, NFPs struggle to deliver social services in an environment where resources are rapidly reducing while social service needs are escalating. Therefore, identifying the FV of NFPs becomes critical so that remedial strategies can be put in place to safeguard the services provided.

Nevertheless, the research evidence for guiding policymakers and management in the aged care sector remains scant and limited for several reasons. Firstly, to date studies on FV have been predominantly conducted in the for-profit sector (Beaver, 1966), with limited attention given to the FV of NFPs (Andres-Alonso, et al., 2015; Zhai, et al. 2017). Further, it is argued that there is no real common understanding of the concept of FV within the NFP sector, and this lack of agreement extends to how to measure FV, what drives FV and the complexities relating to which financial measures are most suitable for recognising financial problems and the level of exposure to FV (Prentice 2016; Andres-Alonso, et al., 2016). At the same time, when compared to the US and UK context, even fewer studies have been conducted on detecting the FV of NFPs operating in Australia (Zhai et al. 2017; Cortis & Lee 2019), and the extant empirical evidence instead draws on studies from different countries. Although the literature related to FV in the NFP sector is not abundant, most of the prior research has been related to developing a framework to predict FV in the NFP sector

(Tuckman & Chang, 1991; Trussel, 2002; Ryan & Irvine, 2012; Omar et al., 2013). However, many NFP scholars agreed that generalising the applicability of the financial measures in these frameworks to other NFPs, even those just in a different sector in the same country, is problematic (Hager, 2001; Trussel, 2002; Helmig, et al. 2014; Andres-Alonso, et al. 2015). Therefore, coming up with a universal set of measures as indicators of FV is extremely difficult. At the same time, there is a lack of formal regulatory guidelines for identifying FV comprehensively and reliably within the Australian context (Zhai et al. 2017; Cortis & Lee, 2019).

Recently, NFP scholars have agreed that FV can be measured through a multi-dimensional framework that includes financial and other measures to use different dimensions of FV to predict FV (Prentice, 2016; Cortis & Lee, 2019). Financial measures are utilised to diagnose the signs of FV, and the FV signs are indicators of vulnerability (Zhai, Watson, Gilchrist & Newby, 2017). These financial measures are organised under different dimensions that are used to identify FV signs from different aspects of NFP vulnerability (Irvine & Ryan, 2019). However, there is no consistent framework for determining the extent of FV in the Australian aged care NFP sector. Moreover, in the Australian context, there have been calls by researchers to use a larger set of Australian data to develop a more comprehensive framework for identifying the signs and underlying reasons of NFP financial vulnerability in order to better predict NFP financial vulnerability (Zhai et al. 2017; Cortis & Lee, 2019). Nevertheless, the literature is unclear on what financial measures to capture, and it is inconsistent as to which measures best capture each dimension in a multi-dimensional framework (Prentice, 2016). Hence, without any clear guidance NFP researchers select financial measures and develop model dimensions based on research relating to the for-profit sector. The application of these FV dimensions, largely

developed in the private context, to NFPs appears inadequate and questionable. Furthermore, most NFP researchers employ single measures to evaluate the various dimensions. However, "if these constructs (i.e., dimensions) are multi-dimensional, then choosing a single measure as an indicator presents only a partial picture" (Prentice, 2016, p. 716).

To address the gap in the literature, this study seeks to interrogate the dimensions and financial measures utilised to characterise FV in the NFP sector, in preparation for an assessment of the extent of FV among aged care service providers in the Australian NFP sector. To achieve this research objective, two research questions were developed: (1). Which financial measures and FV dimensions are appropriate to measure FV in the Australian aged care NFP sector? (2) To what extent are NFPs in the Australian aged care sector exposed to financial vulnerability?

The study uses data from 200 aged care service NFPs registered with the Australian Charities and Not-for-Profit Commission (ACNC) who issued audited financial statements for the three consecutive years from 2017 to 2019. Our data analysis and discussion of findings are provided in two parts, based on the above two research questions. In the first part of the article, the study examines the appropriateness of using the dimensions developed to categorise financial measures in the NFP literature to measure FV in the Australian aged care NFP sector. The study's findings fit well with the findings of Prentice (2016), who initially identified a conceptual and empirical disjuncture among the dimensions and financial measures proposed to measure FV in the NFP sector. The present study extends Prentice's (2016) study by identifying six sector specific dimensions to recognise the signs of FV. After identifying the lack of a consistent framework to determine the extent of FV in the Australian aged care NFP sector, the present study proposes a theory-based multi-dimensional framework. It uses

18 financial measures based on unique features of the Australian aged care NFP sector and weaknesses identified in the existing frameworks developed for the Australian context. In addition, a FV index and FV score were developed based on Tuckman & Chang's (1991) framework to assess the extent of FV in the Australian aged care NFP sector.

In the second part of the article the researcher assesses the extent of FV in the Australian aged care NFP sector using the proposed multi-dimensional FV framework, index, and score. The results suggest that all aged care NFPs in the sample face a high or very high level of FV, and no organisation is at a low or very low level of FV. Further, attention should be given to avoid NFPs in the high-risk category falling into the very high-risk category. The findings present a discouraging picture of financial health for all NFPs in the study's sample and recognise six signs of FV. Overall, the analysis indicates that the capacity to withstand financial shock among aged care NFPs is limited, flagging an alarming message that the Australian aged care NFP sector is at high risk for FV.

The remainder of the paper is organised as follows: The paper begins with a review of the literature on FV and theoretical frameworks of FV. Then it describes the sample and the methodology used to develop the FV framework, index and FV score to measure the extent of FV in the Australian aged care NFP sector. Afterwards, the paper presents the findings related to the extent and nature of FV. The paper ends with a discussion of the results and a presentation of the main conclusions.

1.2 Literature Review

Scholars have examined FV in the corporate sector since the 1920s, and the concept is much better developed in the for-profit sector (Beaver, 1966) than for the NFP sector. In the NFP sector, "financial problems were not analysed until the 1990s" (Andres-Alonso, et

al. 2016, p. 2542). Moreover, in comparison to the for-profit sector, limited scholarly attention has been devoted to the concept of FV in the NFP sector (Prentice, 2016; Cortis & Lee, 2019) and thus it is still at its preliminary stage (Andres-Alonso, et al., 2015; Zhai, et al., 2017). Furthermore, even “the definition of financial vulnerability is not clear among the scholars of the non-profit sector” (Andres-Alonso, et al., 2015, p. 372). According to Tuckman and Chang (1991), an entity is financially vulnerable if ‘it is likely to cut back its service offerings immediately when it experiences a financial shock’ (Tuckman & Chang, 1991, p. 445). Therefore, financially vulnerable organisations do not have sufficient resources to carry out their operations continuously (Irvine & Ryan, 2019).

Several conceptual approaches (Tuckman & Chang, 1991; Greenlee & Trussel, 2000; Trussel, 2002; Bowman, 2011; Ryan & Irvine, 2012) provide the foundation for the financial measures and dimensions in the NFP context. Tuckman and Chang (1991) introduced the theory of FV for the NFP sector and proposed the first predictive framework based on theatre organisations in the US context with four financial measures to recognise the signs of FV. Their framework is based on the bankruptcy theory used by Beaver (1966) and Altman (1968) for the for-profit sector. Then, Greenlee and Trussel (2000) examined both the for-profit and NFP approaches to extend Tuckman and Chang’s (1991) framework and introduced a predictive framework of FV, which was then tested using multi-year rather than single-year data. Hager (2001) applied the measures of Tuckman and Chang’s (1991) framework to arts organisations in the US context and found difficulties in generalising the same framework, even to a subcategory of the main industry in the same country. Bowman (2011) proposed the sustainability principle and measured short-term sustainability through annual surpluses and long-term sustainability in terms of asset growth.

Subsequently, NFP researchers have focused on measuring FV through a multi-dimensional framework. Indeed, prior studies provide evidence that the identification of FV in NFPs is sector or subsector specific (Hager, 2001; Helmig, et al. 2014; Prentice, 2016b). In addition, the literature is unclear on the conceptual link between financial measures and the FV dimensions used to categorise those measures in the NFP sector (Prentice, 2016). Also, there is no agreement among NFP scholars on the specific number of dimensions needed for capturing FV in the NFP sector (Prentice, 2016). For instance, Ryan and Irvine (2012) proposed a framework with a key set of financial measures to measure internal accountability from five perspectives (i.e., efficiency, stability, liquidity, gearing, and sustainability). Omar et al. (2013) categorised eight measures into four dimensions: stability, solvency, efficiency, and surplus margin. Likewise, Andres-Alonso, et al. (2016) introduced a three-dimensional framework to measure the FV of 212 non-governmental organisations in the UK and the three aspects used were operational vulnerability (based on variation in the net assets over time), leverage vulnerability (based on the debt to total assets ratio), and liquidity vulnerability (based on the short-term debt to current assets ratio). Prentice (2016) too initially examined the conceptual link between financial measures and FV dimensions in the NFP sector and recognised a disjuncture between the dimensions chosen and the proposed financial measures in the NFP literature. As well as identifying the lack of a consistent multi-dimensional framework to measure the extent of FV in the Australian aged care NFP sector, the present study has taken on board Prentice’s (2016) advice that future studies should re-evaluate the conceptual link between dimensions and their proposed financial measures before proposing sector specific multi-dimensional frameworks for the NFP sector.

2. Materials and Methods

Sample of the study is composed of 200 aged care NFPs that issued audited financial statements for three consecutive years from 2017 to 2019. The ACNC website (www.acnc.gov.au) has been used to obtain their audited financial statements. The present study involves two quantitative analytical phases:

1. Development of the FV measurement tools – a multi-dimensional FV framework, FV index and FV scores.
2. Assessment of the extent of FV in the Australian aged care NFP sector.

The study first presents the method used to develop the three FV measurement tools, and then the method used to assess the extent of FV in the Australian aged care NFP sector is presented next.

2.1 Phase 1: Method Used to Develop FV Measurement Tools

Having identified the lack of a consistent framework to determine the extent of FV in the Australian aged care NFP sector, the present study proposed three FV measurement tools – the multi-dimensional FV framework, an FV index, and FV scores – to identify the extent of FV in the Australian aged care NFP sector.

Proposed Multi-Dimensional FV Framework – A Sector Specific Focus

This study follows a structured process to develop the framework, index, and scores step by step. First, a comprehensive literature review of journal articles measuring FV in the NFP sector and two recently published financial management textbooks identified 69 financial measures related to the NFP sector. Once these 69 were put into a common or a standard language, 41 financial measures remained. For instance, some authors calculated the same financial measure in months or days. Then, seven financial measures from 41 were excluded from the list due to non-availability of data. For example, most of the NFPs did not detail fundraising related income and expenses. This is because aged care NFPs in Australia are more likely to receive income from the government and less likely to receive donations and bequests from individuals and corporates (Cortis, et al. 2017). Finally, 34 financial measures were recognised as usable after standardisation (i.e., put into a common language) and checking for data availability. Financial data for 2019 related to the 34 financial measures were then collected from the 200 aged care NFPs to check the conceptual link between dimensions and financial measures utilised in the NFP literature. Once the relevant financial measures were selected, an exploratory factor analysis (EFA) with principal component analysis (PCA) and Varimax rotation was performed using SPSS 26.0.

Table 1. Initial Components

Component	Eigen Values	% of Variance	Cumulative %
1	6.291	18.503	18.503
2	5.193	15.272	33.775
3	4.158	12.229	46.004
4	2.797	8.228	54.232
5	2.509	7.378	61.610
6	2.254	6.528	68.238
7	1.805	5.308	73.546
8	1.527	4.492	78.038
9	1.215	3.575	81.612

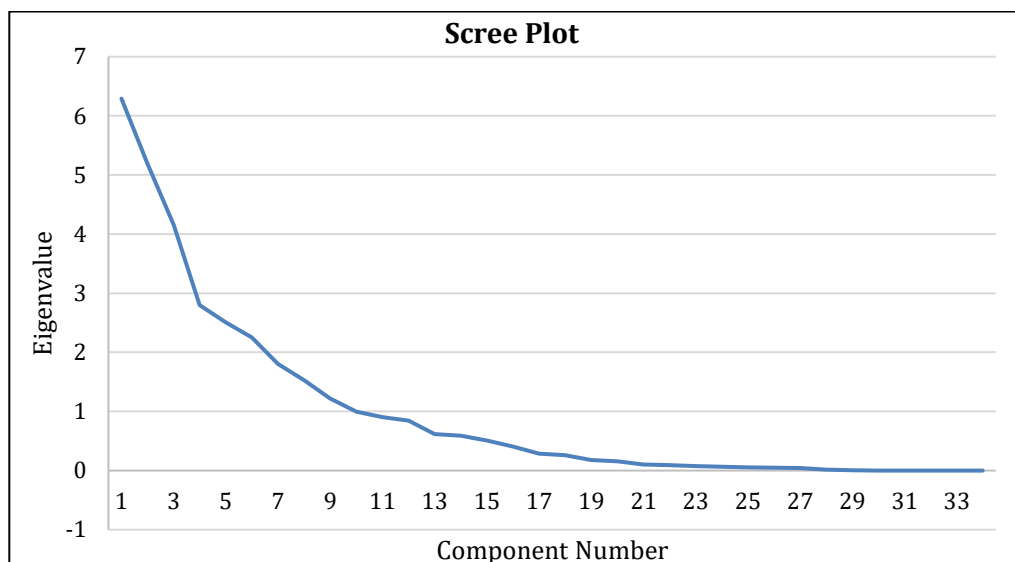


Figure 1. Scree Plot

An examination of the scree plot suggested nine components (refer to Figure 1) while the NFP literature suggests only four (Omar et al. 2013) or five (Ryan & Irvine 2012) dimensions. Thus, the financial measures did not fit into any dimensions as proposed in the literature. The findings of the study are consistent with Prentice (2016), who was the first to recognise the disjuncture between the theoretically developed and empirically recognised dimensions in the NFP sector and to suggest that financial measures cannot be organised based on the dimensions developed in the NFP literature. To overcome this problem Prentice (2016) recommended that future research select financial measures based on the elements of interest and employ multiple measures to capture fully the areas of interest.

From the 34 measures remaining 18 financial measures were then selected based on unique features of the Australian aged care NFP sector and weaknesses identified in the existing frameworks developed for the Australian context. A PCA with a Varimax rotation was performed on these 18 financial measures to check whether these measures are exclusively loaded to five pre-determined

dimensions: efficiency, stability, liquidity, gearing, and sustainability. The PCA suggests that six components with eigenvalues exceeding 1 explain 21.98%, 21.13%, 15.36%, 10.58%, 6.59%, and 5.74% of the variance, respectively, and 81.38% of the total variance. Warner (2013) suggests 40% to 70% of variance to identify suitable components. An examination of the scree plot also suggested six factors. Due to uncertainty regarding the number of components, the researcher also performed an oblique rotation, and the factor structure was identical in both rotation approaches.

Further, the correlation matrix shows that all variables have at least one correlation greater than 0.3 with another variable (Pallant, 2013). Thus, the assumption of linearity between variables is satisfied (refer to Appendix 1). Commonalities indicate adequate correlations (adequacy) in EFA, and all values are greater than the threshold value of 0.500 (refer to Appendix 2), indicating the items fit well with other items on the same component (Pallant, 2013). Then, the convergent validity of items was checked. Convergent validity is established when the items in the factor have factor loadings

greater than 0.5 (refer to Appendix 3). Values below 0.5 are considered low and should be removed from the scale (Hinkin, 1995). Component 1 is labelled “FV related to Revenue”, component 2 is labelled “FV related to Efficiency/Expenses/Spending Behaviour”, component 3 is labelled, “FV related to Profitability & Cash Flow”, component 4 is labelled “FV related to Working Capital Management & Reserves”, component 5 is labelled, “FV related to Total Assets Usage”, and component 6 is labelled “FV related to Gearing”. The items loaded for components 1, 2, 4 and 6 are based on the prior literature and labelled based on the literature (Ryan & Irvine, 2012; Omar, et al., 2013). The items loaded for components 3 and 5 are not based on the literature and are therefore labelled based on the nature of the items loaded for each component. The proposed FV framework is shown in Appendix 4.

Development of FV Index and Score

Tuckman and Chang (1991), pioneers of the concept of FV, used a binary code to develop FV index. Accordingly, if an organisation is vulnerable to a particular measure, the value “1” is assigned, otherwise the value is “0”. The sum of these values calculates the FV score, which measures each NFPs’ overall level of

vulnerability. Then, two levels of FV were identified based on the FV score, at risk, and severely at risk.

However, to obtain a deeper understanding of the extent of FV in the Australian aged care NFP sector, the present study has expanded Tuckman and Chang’s (1991) binary coding (1 = Yes, 0 = No) into four categories as defined below:

- 1 = the organisation’s vulnerability to this particular measure is very low
- 2 = the organisation’s vulnerability to this particular measure is low
- 3 = the organisation’s vulnerability to this particular measure is high
- 4 = the organisation’s vulnerability to this particular measure is very high

The FV score is calculated based on the FV index to measure the extent of FV of NFPs in the sample. The FV score is the ratio of the value of each NFP (calculated based on the proposed FV index) to the total maximum possible value that an organisation could obtain if its extent of FV is very high to every proposed financial measure (i.e., 72) in the proposed FV framework. Finally, the score is converted to a percentage value. The score from this index is denoted as follows:

$$FV\ Score_k = \left\{ Total\ value\ assigned\ for\ \frac{NFP_k}{72} \right\} \times 100$$

where the maximum possible value that NFP_k could obtain if the organisation’s FV was very high against every proposed financial measure is 72. Next, four levels of FV are recognised based on the value of the FV score: very low, low, high, and very high.

Table 2. Categorisation of NFPs based on FV Score

Extent of FV	FV Score
Very low	0–25%
Low	26%–50%
High	51%–75%
Very high	76%–100%

2.2 Phase 2: Method Used to Assess the Extent of FV

The paper is also aimed at assessing the extent of FV in the Australian aged care NFP sector. The proposed FV framework with a set of financial measures, FV index and FV score have been used to assess the extent of FV. More specifically, data related to a set of financial measures were collected from 200 audited financial reports for three consecutive years, from 2017 to 2019. The study uses ANOVA and independent t-test results to recognise any significant difference in FV level based on the size, type of service,

and geographical location of the sampled organisations.

3. Results and Discussion

To assess the FV of NFPs in the Australian aged care sector, the researcher analysed financial measures produced by applying the measures for 200 aged care NFPs over the period 2017–2019. The following sections discuss the results from this analysis to show the extent of FV in the Australian aged care sector, how FV is manifested in the various dimensions of the framework and the differences in FV level based on organisation size, type of service, and geographical location.

3.1 Extent of FV in The Australian Aged Care NFP Sector

To assess the extent of FV in the Australian aged care NFP sector, the study uses 18

financial measures presented in Appendix 4 over the three years, the. The findings indicate that almost all NFPs in the sample are at a high or very high level of FV, and no organisation is at a low or very low level of FV. Indeed 59% of aged care NFPs are in the very high-risk category, and 41% of NFPs are in the high-risk category (Figure 2). Moreover, the average level of FV is approximately 69%, with the maximum exposure to FV by an organisation at nearly 90%.

Figure 3 shows that around 83% of NFPs (165) in the sample operate at a more than 70% level of FV risk.

In addition, Figure 4 depicts that NFPs with a high level of FV are gradually moving to the very high-level risk category, with the percentage of NFPs in this category gradually increasing from 58% in 2017, 60% in 2018, to 66% in 2019.

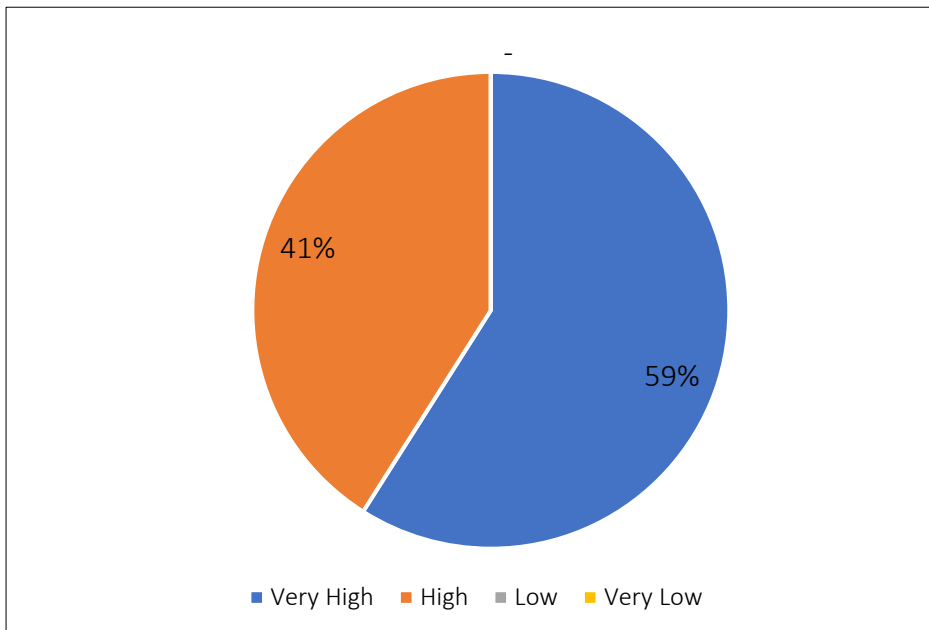


Figure 2. Extent of FV in Australian aged care NFPs

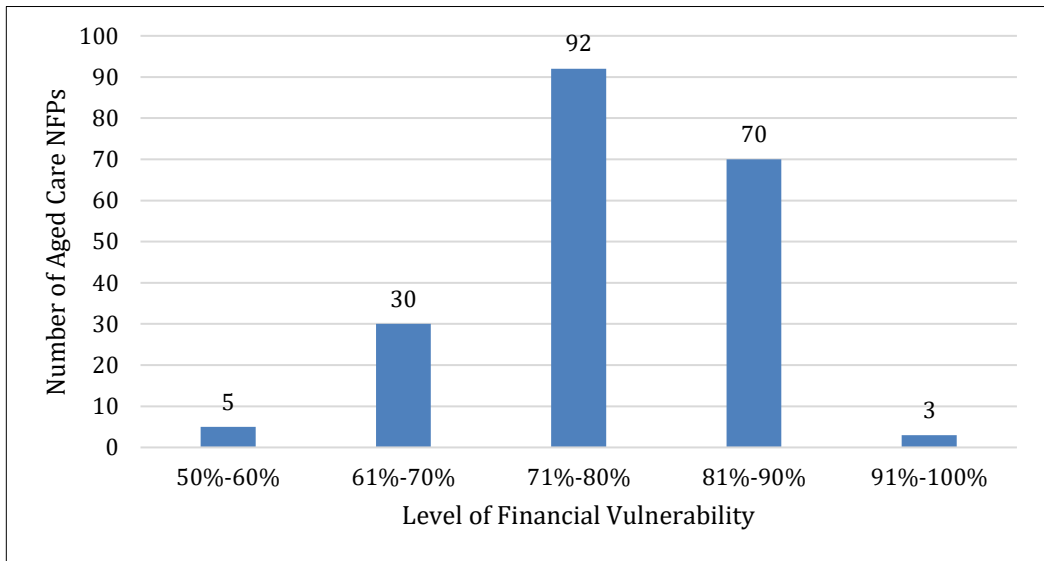


Figure 3. Aged care NFPs by level of FV risk

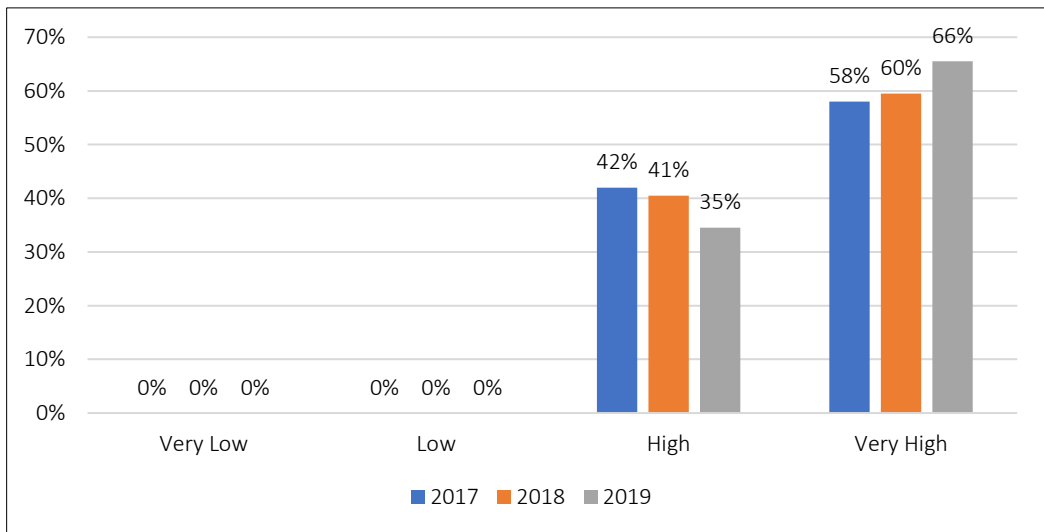


Figure 4. Increase over time in very high-risk category of financial vulnerability

3.2 Dimensionality of Financial Vulnerability

In this section the paper presents the results related to signs of FV identified based on financial measures categorised under the six dimensions of FV. The dimensions are utilised to recognise FV signs from different perspectives of vulnerability.

(1) Revenue

Revenue stability measures reflect the ongoing stability of revenue flows or continuity of revenue sources needed for an organisation’s financial sustainability (Tuckman & Chang, 1991; Ryan & Irvine, 2012). Two measures, revenue concentration and revenue reliance ratios, were used to measure NFPs’ revenue stability in the aged

care sector. The revenue composition of the sector gives a clearer understanding of the revenue source and proportional reliance on each source and changes over the period depicted in Figure 5. There was a 5% reduction in government funding in 2019 compared to 2017. On the other hand, a slight increase was reported in self-generated income (i.e., income received from consumers and from investment income increased from 37% in 2017 to 41% in 2019). This slight increase reflects the limited access for the aged care sector to revenue diversification during government funding cutbacks.

The revenue concentration ratio is measured using the Herfindahl index, where the values of the index range from 0 to 1. The results reflected that the mean revenue concentration is 0.60, thus indicating that NFPs in the sample are highly dependent on a single revenue source. Also, on average, 71% of NFPs in the sample reported high revenue concentration (where the value of the ratio is over 0.5), with 74% of the revenue of aged care NFPs from just one main source of income (i.e., government funding). Therefore, the revenue of NFPs in the sample is not diversified. There is a risk of a major decline in the primary revenue source (i.e., government funding), indicating a higher chance of exposure to FV.

(2) Expenses/Efficiency

Expenditure related financial measures relate to the spending behaviour of the aged care NFPs in the sample. Overall, total expenditure had increased by 15% (\$24.2 billion) during the study period. Figure 6 portrays that the larger portion (on average 73%) of total spending is for administration costs, and this is dominated by employee compensation (on average 66%) which is essential in providing in-home care, respite care and residential services.

The aged care sector contributes significantly to employment in the Australian economy. Employee expenses include payment made to

direct care positions (such as doctors, nurses, therapists, and other health professionals) and other positions (such as administrative and ancillary care). Also, 99% of organisations in the sample reported low general administration costs (on average 7%). Hence, those organisations cannot cut these additional costs further during any financial shock and are thus highly financially vulnerable on this indicator. According to Tuckman and Chang (1991) and Greenlee and Trussel (2000), if organisations have low administration costs, they may be more financially vulnerable, because those organisations have less ability to cut back their expenditure in the event of any financial shock.

(3) Profitability And Cash Flow

A NFP is an organisation that does not carry out its activities to maximise profit. However, a NFP can be profitable with surplus funds where income exceeds expenses. Such profit or surplus must be used for its organisational purpose or to maintain sustainability (ACNC, 2019).

Low or Negative Operating Margin

Overall, the total revenue of NFPs in the sample increased by 12% (\$20.5 billion) and expenditure increased by 15% (\$24.2 billion) for 2019 as compared to the base year of 2017. The net operating margin (surplus margin) shows an organisation's capacity to build reserves from its revenue (Tuckman & Chang, 1991; Ryan & Irvine, 2012). This surplus margin continuously declined during the study period, from 5.13% in 2017 to 3.89% in 2018 and further to 1.93% in 2019. This is a decline of 24% in 2018 and 62% in 2019 from the base year of 2017.

Overall, 33% of NFPs in the sample reported negative operating results, and 67% of aged care NFPs reported a net operating margin of less than 5% in 2019 (compared to 65% reporting a net operating margin of less than 5% in 2017). On average, the sector reported an operating margin of 3.65%. Scholars suggest that NFPs with a deficit or a very low

surplus are more financially vulnerable, having no buffer against a drop in revenue which will, in turn, cause them to cut back on service delivery (Tuckman & Chang, 1991; Ryan & Irvine, 2019). If a NFP has a low or negative operating margin, “it has little or no cash surplus that can be drawn down before it must cut program support. A NFP with a

negative margin is already likely to be in the process of reducing program offerings” (Tuckman & Chang, 1991, p. 453), and therefore this is a sign of high FV. As demonstrated most NFPs in the Australian aged care sector are already showing signs of high FV related to this indicator.

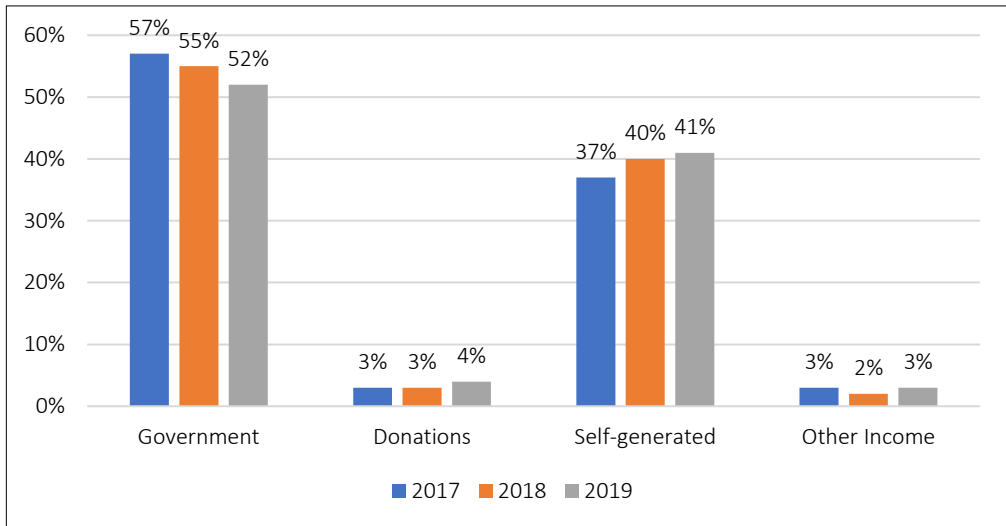


Figure 5. Revenue composition and government funding cutbacks (2017–2019)

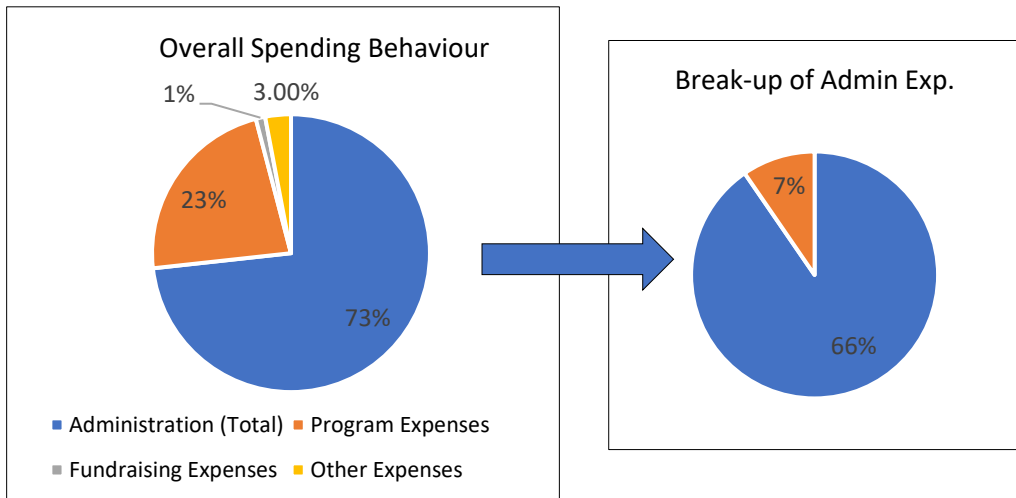


Figure 5. Revenue composition and government funding cutbacks (2017–2019)

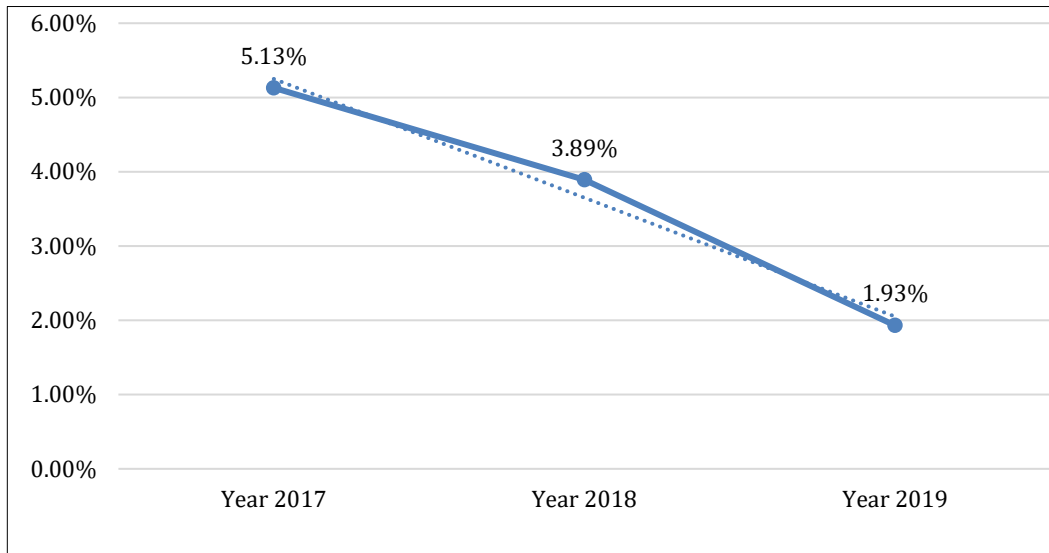


Figure 7. Continuous decline in operating margin

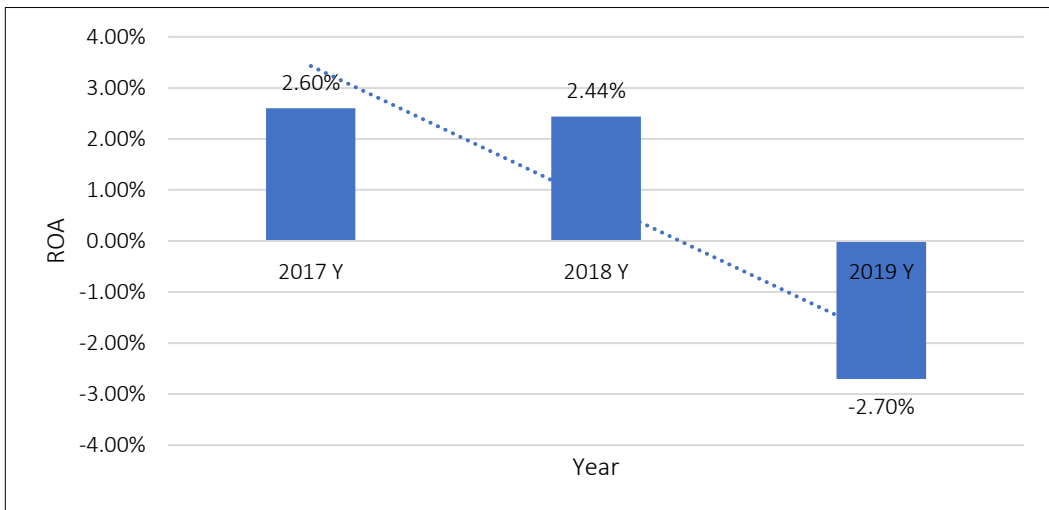


Figure 8. Declining ROA

Continuous Decline in Return on Assets (ROA)

As a second indicator of profitability, the average ROA for organisations in the aged care NFP sector decreased from 2.60% in 2017 to -2.70% in 2019 (see Figure 8).

The average ROA of the sector is 0.78%. As Bowman (2011) suggests, a NFPs' ROA

should equal the general inflation rate (1.91% in Australia in 2019) to survive over a longer period, and the sector average ROA of 0.78% is below this inflation rate. On average, 67% of NFPs in the sample reported a low ROA. From this, the question arises as to whether NFPs in the Australian aged care sector might use their assets more efficiently to improve the sector's productivity.

Operating Cash Flow (OCF)

As shown in Figure 9 below, there has been a continuous reduction of average OCF in NFPs in the sample during the study period. Further, 19% of aged care NFPs in the sample have a negative OCF. The cash flow to debt ratio is the ratio of an organisation’s operating cash flow to its total debt. Cash flows provide a better estimate of an organisation’s ability to repay its obligations. The ratio continuously declined from 47.09% in 2017 to 21.96% in 2019, indicating low stability in operational cash flows.

(4) Working Capital Management and Reserves

Financial measures related to working capital management identify an organisation’s ability to meet its short-term obligations. Reserves are recognised as a significant factor in “financial stability and long-term sustainability” for NFPs (ACNC, 2019). Greenlee and Trussel (2000) indicate that inadequate equity balances or reserves are an indicator of FV.

Working capital to total assets ratio measures the availability of working capital as a percentage of an organisation’s total assets. The average ratio is 13.64% of total assets and this represents a higher risk of FV. Further, the NFPs in the sample reported

inadequate reserves according to Ryan and Irvine’s (2012) months of spending ratio. Ryan and Irvine’s (2012) ratio identifies whether “realistic reserves of working capital” (Ryan & Irvine, 2012, p.190) are available to a NFP organisations. Aged care NFPs in the sample reported approximately two months of reserves to cover operating expenditure requirements in the event of a sudden loss of present revenue sources.

(5) Total Assets Usage

Financial measures on total assets usage measure the proportion of total assets in a liquid form (the liquidity of total assets) and the proportion of assets invested in illiquid property, plant & equipment.

Figure 10 portrays the continuous reduction in the modified cash ratio from 2017 to 2019. The modified cash ratio measures net cash as a proportion of total assets. Further, the assets ratio reveals the proportion of an organisation’s total assets invested in items that should turn into cash within a year. Higher values for the asset ratio indicate greater financial health or lower FV (Zietlow,2012). The overall average modified cash ratio of the sample is 26.40%, indicating that most organisations prop up their cash by stretching payables and accruing more expenses, which shows a high risk for FV.

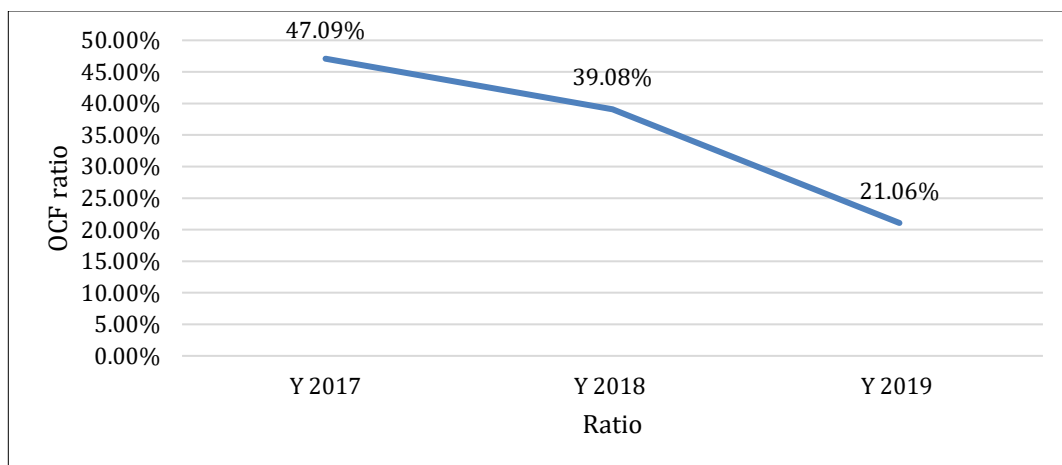


Figure 9. Continuous reduction of operating cash flow

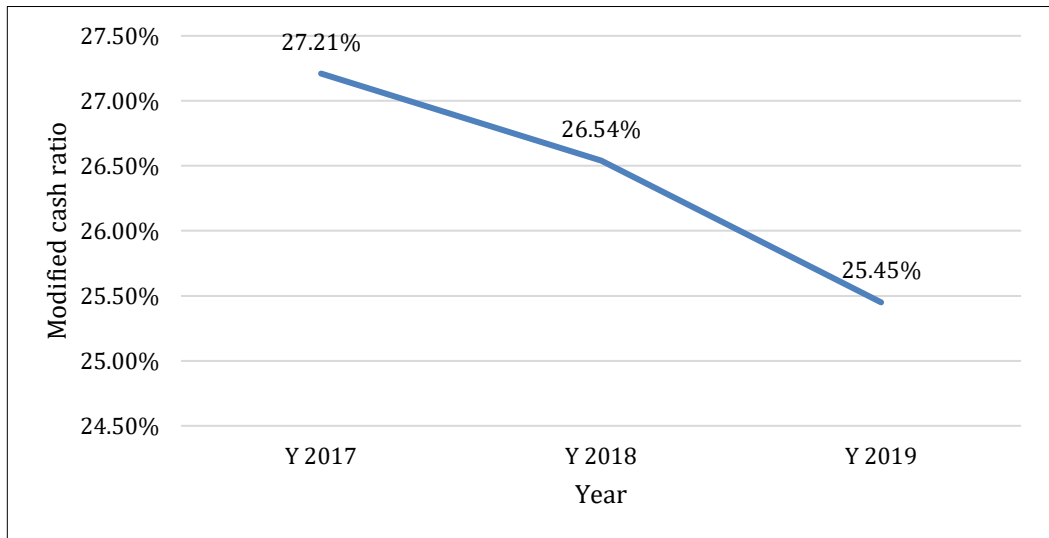


Figure 10. Declining modified cash ratio

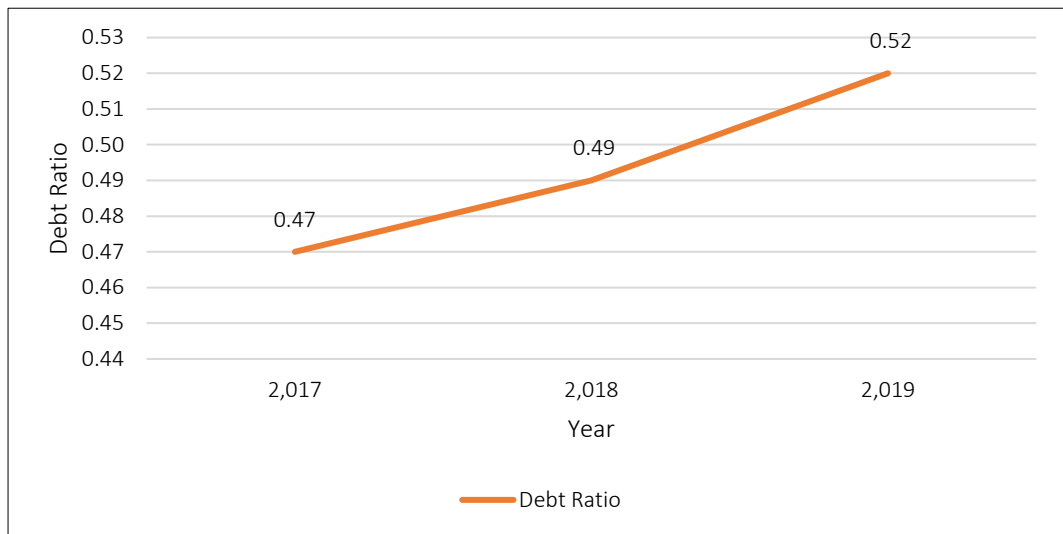


Figure 11. Growth in the debt ratio

(6) Gearing

The debt ratio shows the amount of debt an organisation utilises to finance its programs (Trussel, 2002). As Trussel (2002) suggests, “organisations with relatively large amounts of debt may be less able to finance new and continuing programs and projects than those with relatively small amounts of debt. The higher the debt ratio, the more vulnerable the organisation is to financial problems” (p. 20).

The mean value of the debt ratio is relatively low at 49%, indicating that, on average, only 49% of debts are used to purchase assets. Also, 42% of organisations in the sample reported a high debt ratio (i.e., more than 50%). However, according to Figure 11 the average debt ratio grew from 47% in 2017 to 52% in 2019. Therefore, the ratio still provides signs of increasing FV. Because of

reductions in government funding, aged care NFPs used more debt to finance assets in 2019 than they did in 2017. Most residential aged care NFPs used refundable accommodation deposits (RAD) instead of borrowing funds from third parties to finance their fixed assets.

Since the sector is highly dependent on the RAD for PPE investments, the debt ratio is relatively low. Interestingly, the long-term debt to assets ratio is 9%, indicating that the NFPs in the sample have little use for long-term obligations to finance assets and have a low level of exposure to FV in this area. Yet total long-term debt has increased from \$30.3 billion in 2017 to \$34.2 billion in 2019, as due to cutbacks in government funding organisations increasingly utilise long term debt to carry out their organisational activities. This situation will continue in Australia because of the “current freeze of government funding” (Irvine & Ryan 2019, p. 1511) to the sector. Nonetheless the sector is financially healthy in terms of long-term debt because NFPs finance their fixed assets through RAD. There is a dormant capacity for most aged care NFPs to increase their level of long-term debt to continue their service delivery and remain viable, or even, in most cases, resilient.

4. Conclusion and Recommendation

This paper has reviewed measures of FV in the NFP sector to propose the most appropriate FV measurement tools and examine the extent of FV among aged care service providers in the Australian NFP sector. Based on these research objectives, two research questions were developed.

The findings for the first research question are aligned with those of Prentice (2016), who was the first to identify a disjuncture between the dimensions proposed for predicting FV in the NFP sector and the financial measures used under each dimension. More specifically, findings of the present study extend Prentice’s (2016) study

by proposing 18 financial measures under six dimensions to recognise signs of FV from different perspectives of vulnerability. These dimensions cover FV related to expenses, revenue, profitability, and cash flow, working capital management and reserves, gearing, and total assets usage. Further, as Prentice (2016) suggests, the current study utilises multiple financial measures to capture each dimension in the framework.

Subsequently, a FV index for the NFP sample was developed based on Tuckman and Chang’s (1991) framework but expanding their binary codes into a 1,2,3,4 coding system to get a comprehensive view of the level of FV. Finally, FV scores were calculated for each NFP in the sample to recognise the level of FV. The results indicate that aged care NFPs face high levels of FV, with 41% of aged care NFPs assessed as having a high risk of exposure to FV and 59% of NFPs with a very high risk of FV exposure. These measures paint a discouraging picture of financial health for the NFPs in the sample, where the following six risks associated with FV were evident:

These findings are consistent with those of several recent industry reports (Seventh Report on the Funding and Financing of the Aged Care Industry 2019 (ACFA, 2019); National Aged Care Survey Final report 2019 (ANMF, 2019); Eighth Report on the Funding and Financing of the Aged Care Industry 2020 (ACFA, 2020) and the Royal Commission Final Report 2021 (RCACQS, 2021)) found funding pressure as well as insufficient funds to cover at least the operating expenses of the industry. Moreover, the NFPs in the sample reported insufficient reserves, on average only enough to cover approximately two months of their operating funding requirements during any financial shock, which is well below the recommended 3-month threshold. Similarly other research has found that Australian NFPs that depend on government funding tend to have lower reserves, and too much dependence on

government funding appears to limit the ability to accumulate reserves (Booth, et al. 2017; Cortis & Lee, 2019). These findings, therefore, highlight the need for policymakers and government funding bodies to focus on strengthening NFP financial stability to ensure long-term sustainability in the partnership between government and aged care service providers. Overall, the results of this study clearly show the limited capacity of aged care NFPs to withstand financial shock and provide an alarming message regarding the risk of FV in the sector. Senior people (those over 65 years) represent 15% (approximately 3.8 million) of all Australians and the Australian aged care sector presently provides services to over 1.3 million Australian seniors (ACFA, 2019). There is a huge demand for aged care services due to the aging of the population. Moreover, more than 50% of aged care ownership is within the NFP sector, and the sector mostly operates as large-sized NFPs with more than \$1 million of income. Within this context, the aged care sector in Australia is highly financially vulnerable and its NFPs are at a higher risk of failure. Furthermore, our findings align with those of Tannous and Luo (2006), whose research on residential aged care facilities in Australia led to the conclusion that “increasingly not-for-profit operators are closing their facilities and moving away from the provision of aged care” (Tannous & Luo, 2006, p. 2). However, the Australian government depends heavily on NFPs to provide aged care services to the most vulnerable people in the country. Therefore, there is a risk associated with outsourcing government service delivery in Australia (Cortis & Lee, 2019), especially in the aged care sector.

Thus, the present study contributes to the literature in three ways. First, it examines the conceptual and empirical disjuncture among the dimensions developed for measuring FV in the NFP sector. The study extends Prentice’s (2016) study by selecting financial measures based on the areas of interest for

measuring FV in the NFP sector (revenue, expenses, profitability and cash flow, working capital management, gearing, and total assets usage) rather than relying on dimensions developed for the profit sector. Second, the present study adds additional evidence to the limited literature on measuring the extent of FV in the NFP sector, especially to the literature related to the Australian aged care NFP sector. After identifying the lack of a consistent framework to determine the extent of FV in the Australian aged care NFP sector, the present study proposed a theory-based multi-dimensional framework. In doing so, it uses 18 financial measures relevant to the aged care NFP sector, both expanding the scope of measures and strengthening the rigour of FV measurement. Further, the study extends Tuckman and Chang’s (1991) FV index by moving from a binary coding (where 1= yes and 0 = no) to a four-level coding to get a more comprehensive picture of FV levels in the Australian aged care NFP sector. Finally, the study extends the frameworks of Ryan and Irvine (2012) and Omar et al. (2013) by using multiple measures to capture a single dimension and including financial measures to capture operational cash flow stability. More specifically, this study is the first to focus on classifying FV risk levels based on FV scores into four categories, very low, low, high, and very high risk. In doing so, it brings greater granularity to the measurement of FV. Finally, the present study extends the literature on the risks of outsourcing public sector service delivery.

As for the implications for practice from this study, CEOs and board chairs in the aged care industry could well compare the financial measures of their organisations with the benchmarks provided and take precautions to avoid their organisations being placed into a high or very high level of FV risk. Moreover, CEOs and board chairs in the aged care industry could recognise key signs as identified from this study. The top management team could regularly (i.e.,

yearly) assess an organisation's FV risk level based on the signs of financial stress (e.g., revenue concentrated in the primary funding source, lack of funds to cover operational activities, lack of reserves for any financial shock) identified in the present study. In addition, the study will aid policymakers, particularly the ACNC, Department of Health, and the RCACQ, in better detecting financial risks related to the quality and safety of aged care service organisations. This includes providing insights that allow the Australian government to identify "potential risks associated with outsourced government service delivery" (Cortis & Lee, 2019, p.738). While the study has provided new insights into the measurement of FV for the NFP sector, the results need to be interpreted based on the following limitations, which also provide avenues for future research. First, the study focuses only on medium and large aged care NFPs and has ignored small, aged care NFPs because the necessary data was not available. Second, the study was conducted using the ACNC database, and data collected only from aged care NFPs registered with the ACNC. Third, the study is based on secondary data collected from the audited financial reports of individual aged care NFPs and this uncovered some inconsistencies in reporting. Fourth, the study focuses on six dimensions and limits analysis to these six specific areas. These four limitations also provide avenues for future research. Future study might expand to assess the FV in all sizes of aged care charities. There is also opportunity for a case study approach to be utilised to get an in-depth understanding of the level of FV in the Australian aged care NFP sector.

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Appendix 1. Correlation Matrix

	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	Ratio
0.234	0.234	0.215	0.192	-0.056	0.170	0.120	0.101	0.078	-0.001	-0.003	0.154	0.183	0.040	0.064	0.922	1.000	1
0.256	0.256	0.236	0.183	-0.056	0.154	0.095	0.084	0.071	-0.018	-0.017	-0.148	-0.177	0.029	0.039	1.000	0.922	2
0.156	0.156	0.243	0.209	0.082	0.185	0.105	0.250	0.058	-0.035	0.310	0.521	0.705	0.637	1.000	0.039	0.064	3
0.156	0.156	0.194	0.198	0.035	0.116	-0.100	-0.306	-0.527	-0.531	-0.450	0.747	0.391	1.000	0.637	0.029	0.040	4
0.125	0.125	0.133	0.124	0.062	0.105	-0.093	0.185	0.150	0.192	0.316	0.767	1.000	0.391	0.705	-0.177	-0.183	5
0.268	0.268	0.101	0.108	-0.026	0.046	-0.202	-0.182	-0.284	-0.087	-0.261	1.000	0.767	0.747	0.521	-0.148	-0.154	6
0.231	0.231	0.037	0.022	0.132	0.062	0.230	0.757	0.624	0.547	1.000	-0.261	0.316	-0.450	0.310	-0.017	-0.003	7
0.213	0.213	-0.086	-0.133	0.018	-0.088	0.008	0.474	0.667	1.000	0.547	-0.087	0.192	-0.531	-0.035	-0.018	-0.001	8
0.143	0.143	0.011	-0.029	0.077	0.048	0.116	0.757	1.000	0.667	0.624	-0.284	0.150	-0.527	0.058	0.071	0.078	9
0.235	0.235	0.018	-0.006	0.127	0.066	0.357	1.000	0.757	0.474	0.757	-0.182	0.185	-0.306	0.250	0.084	0.101	10
0.265	0.265	0.180	0.298	0.552	0.560	1.000	0.357	0.116	0.008	0.230	-0.202	-0.093	-0.100	0.105	0.095	0.120	11
0.231	0.231	0.531	0.772	0.735	1.000	0.560	0.066	0.048	-0.088	0.062	0.046	0.105	0.116	0.185	0.154	0.170	12
0.243	0.243	0.224	0.419	1.000	0.735	0.552	0.127	0.077	0.018	0.132	-0.026	0.062	-0.035	0.082	-0.056	-0.056	13
0.514	0.514	0.699	1.000	0.419	0.772	0.298	-0.006	-0.029	-0.133	0.022	0.108	0.124	0.198	0.209	0.183	0.192	14
0.654	0.654	1.000	0.699	0.224	0.531	0.180	0.018	0.011	-0.086	0.037	0.101	0.133	0.194	0.243	0.236	0.215	15
1.000	1.000	0.654	0.514	0.180	0.243	0.224	0.143	0.011	0.143	0.011	0.029	0.040	0.250	0.084	0.058	0.071	16
0.123	0.123	-0.228	-0.161	-0.264	-0.377	-0.384	-0.249	-0.211	-0.011	-0.232	0.065	-0.090	0.015	-0.170	-0.294	-0.255	17
-0.246	-0.246	-0.210	-0.315	-0.036	-0.156	-0.042	-0.185	-0.040	0.016	-0.186	-0.103	-0.186	-0.097	-0.199	-0.061	-0.032	18

17	-0.255	-0.294	-0.170	0.015	-0.090	0.065	-0.232	-0.011	-0.211	-0.249	-0.384	-0.377	-0.264	-0.161	-0.228	-0.164	1.000	0.327
18	-0.032	-0.061	-0.199	-0.097	-0.186	-0.103	-0.186	0.016	-0.040	-0.185	-0.042	-0.156	-0.036	-0.315	-0.210	-0.026	0.327	1.000

**Note: 1-Revenue concentration ratio; 2-Revenue reliance ratio; 3-Administration cost ratio; 4-Management cost rate ratio; 5-Rate of compensation ratio; 6-Human resource development utilisation ratio; 7-Operating margin ratio; 8-Return on assets ratio; 9-Operating cash flow to debt ratio; 10-Cash conversion efficiency ratio; 11-Current ratio; 12-Working capital to total assets ratio; 13-Months of spending ratio; 14-Assets ratio; 15-Modified cash ratio; 16-Total assets turnover ratio; 17-Debt ratio; 18-Long-term debt ratio.

Appendix 2. Commonalities

Financial indicator	Extraction
Revenue concentration ratio	0.937
Revenue reliance ratio	0.932
Administration cost ratio	0.800
Management cost rate ratio	0.914
Rate of compensation	0.892
Human resource development utilisation ratio	0.871
Operating margin ratio	0.797
Return on assets ratio	0.762
Operating cash flow to debt ratio	0.799
Cash conversion efficiency ratio	0.760
Current ratio	0.758
Working capital to total assets ratio	0.899
Months of spending	0.799
Assets ratio	0.889
Modified cash ratio	0.738
Total assets turnover ratio	0.720
Debt ratio	0.663
Long-term debt ratio	0.719

Appendix 3. Rotated Component Matrix

	FV related to Revenue	FV related to Efficiency/ Expenses	FV related to Profitability & Cash Flow	FV related to Working Capital Management &	FV related to Total Assets Usage	FV related to Gearing
Revenue concentration ratio	0.956					
Revenue reliance ratio	0.951					
Human resource utilisation		0.885				
Rate of compensation		0.883				
Administration cost ratio		0.838				
Management cost rate ratio		0.736				
Operating margin ratio			0.846			
Return on assets ratio			0.827			
Cash conversion efficiency			0.798			
Cash flow to debt ratio			0.886			
Months of spending ratio				0.848		
Current ratio				0.839		
Working capital to total assets				0.746		
Assets ratio					0.873	
Modified assets ratio					0.822	
Total assets turnover ratio					0.684	
Long-term debt ratio						0.788
Debt ratio						0.583

*Note: Only factor loadings above 0.5 are noted Extraction method: Principal component analysis Rotation method: Varimax with Kaiser normalisation

Appendix 4. Proposed Financial Vulnerability Framework

Financial Measure	Calculation
FV related to Revenue	
01. Revenue concentration ratio	$\sum (\text{Revenue source}/\text{Total revenue})^2$
02. Revenue reliance ratio	Primary revenue/ Total revenue

FV related to Expenses/Efficiency	
03. Administration cost ratio	Administration cost/Total expenditure
04. Management cost rate ratio	General (except staff cost)administration cost / Total revenue
05. Rate of compensation	Human resources Expenses /Total expenditure
06. Human resources expenses utilisation	Human resources expenditure/ Total revenue
FV related to Profitability and Cash Flow	
07. Operating margin ratio	$\frac{(\text{Total revenue} - \text{Total expenditure})}{\text{Total revenue}} \times 100$
08. Return on assets ratio	$\frac{(\text{Total revenue} - \text{Total expenditure})}{\text{Total assets}} \times 100$
09. Cash conversion efficiency ratio	$\frac{\text{Operating cash flow (Net income + Depreciation)}}{\text{Total revenue}}$
10. Cash flow to debt ratio	$\frac{\text{Operating cash flow (Net income + Depreciation)}}{\text{Total liabilities}}$
FV related to Working Capital Management & Reserves	
11. Current ratio	Current assets/Current liabilities
12. Working capital to total assets	$\frac{\text{Working capital}}{\text{Total assets}}$
13. Months of spending ratio (Ryan & Irvine)	$\left\{ \frac{\text{Working capital}}{\text{Total expenditure} - \text{Depreciation}} \right\} \times 12$
FV related to Total Assets Usage	
14. Assets ratio	$\frac{\text{Current assets}}{\text{Total assets}}$
15. Modified cash ratio	$\frac{\text{Cash and cash equivalents}}{\text{Total assets}} \times 100$
16. Total assets turnover ratio	Revenue/Average total assets
FV related to Gearing	
17. Debt ratio	$(\text{Total liabilities})/(\text{Total assets})$
18. Long-term debt ratio	$\frac{(\text{Long-term debt})}{\text{Total assets}} \times 100$