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NEW ZEALAND INSTITUTE OF ECONOMIC RESEARCH

Fiscal measures, parameters and benchmarks

Measuring fiscal prudence in New Zealand local government

NZIER report to Local Government New Zealand, 2012

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Preface

In December 2012 Parliament agreed to the Government's request that the Minister of Local Government be given the authority to make regulations for "prescribing parameters or benchmarks for assessing whether a local authority is prudently managing its revenues, expenses, assets, liabilities, investments and general financial dealing" (S.259(1)(dc) LGA 2002).

In 2013 LGNZ established the Fiscal Threshold Working Party, with membership drawn from elected members and officials, to work with the Department of Internal Affairs which was charged with developing the appropriate parameters or benchmarks.

To assist the thinking of the Working Party, and LGNZ itself, a number of research papers were commissioned from NZIER. These papers reviewed international practice to clarify the meaning of financial prudence and collated and assessed different benchmarks used for its measurement.

This report, *Fiscal measures, parameters and benchmarks: Measuring fiscal prudence in NZ local government* combines those papers. It has been published to enhance the understanding of both the local government sector and the public in general about the issues involved in meaningfully measuring financial prudence.

Information on a number of the critical questions can be found in the following sections of the report:

Defining fiscal prudence

Section 3.1 (page 6) discusses how the topic of fiscal prudence in treated in the international literature. It considers matter like service and fiscal capacity and vulnerability or resilience.

Criteria for assessing measures

Section 3.3 (page 12) examines accepted criteria which could be used when evaluating whether or not a potential measure is suitable or not.

Potential measures

Section 4 (page 15) summarises and assesses the efficacy of fiscal measures used in a range of different frameworks

Using fiscal measures

Section 5 (page22) outlines three potential scenarios that could affect a local authority and considers interventions for both predicting and dealing with them.

On the basis of its consultation with the LGNZ working party and other interested parties the Government settled on seven specific measures reflecting three dimensions, affordability, sustainability and predictability. See the full set below:

Recommended benchmarks and indicators

	Benchmark name	Description
Affordability benchmarks	Rates benchmark Debt benchmark	Rates revenue complies with the limits set in the council's financial strategy Debt complies with the limits set in the council's financial strategy
Affordability indicators	*Rates* *Debt*	*Rates per rating unit* *Net debt per rating unit*
Sustainability benchmarks	Balanced budget benchmark Essential services benchmark Debt servicing benchmark	Operating revenue, excluding development and financial contributions and revenue from revaluations, exceeds operating expenditure Capital expenditure on the five network infrastructure services exceeds depreciation on those five services Interest expense is less than 10% of operating revenue, as defined in the balanced budget benchmark, except for local authorities with projected population growth greater than or equal to New Zealand's projected population growth. For those authorities, the benchmark is 15% of operating revenue
Predictability benchmarks	Operations control benchmark Debt control benchmark	Net cash flow from operations equals or exceeds budget Net debt is less than or equal to forecast debt in the long-term plan

The regulations and benchmarks were gazetted in March 2014. The Cabinet papers and Regulatory Impact Statement can be viewed at http://www.dia.govt.nz/Better-Local-Government#implementing2

LGNZ

April 2014

Key points

The material in this report was developed by NZIER to help LGNZ contribute to the development of fiscal responsibility provisions proposed in the Local Government Amendment Bill 2012. An earlier NZIER report 'Is Local Government Fiscally Responsible' concluded that there is no consistent evidence that Local Government as a whole has been fiscally irresponsible over the last two decades. This paper looks forward to what needs to happen in the future. Local Government New Zealand (LGNZ) sought some independent advice from NZIER based on a summary of the literature on fiscal prudence measures.

What is fiscal prudence and how does this relate to other key concepts – fiscal sustainability, and resilience?

Fiscal prudence has two main dimensions: fiscal resilience and fiscal sustainability. Fiscal prudence is a forward looking concept that is much wider than financial solvency. It includes political judgments on the ability to continue to raise rates and other revenue to finance a certain level of politically determined services over time.

Fiscal prudence cannot be defined as a precise point estimate as it has a wide potential range and estimating the outer bounds will require judgments of political acceptability and public legitimacy. As such fiscal prudence is a complex notion that is hard to define or predict and impossible to collapse into a few measures. Fiscal responsibility in the Public Finance Act is left up to the central government of the day to define rather than specify what is prudent in legislation.

Can fiscal prudence of local government (and related concepts) be measured and if so how?

Developing and interpreting fiscal prudence is not just a technical task – fundamentally it requires making judgments about issues that will be determined by politics. The ability to raise future rates is a key asset which is not recorded on a government balance sheet. Measuring sustainability requires making judgements about political acceptability of raising rates and the public legitimacy of government rather than making purely technical assessments. The inability to value the power to raise future rates also reduces the meaningfulness of ratio analysis and financial KPIs applied to governments' financial statements. As alternatives to Balance Sheet Analysis, other techniques are available for developing fiscal measures including Fiscal Gap Analysis and Baseline Projections. Different measures would be required for a benchmarking exercise to learn and improve performance from those used to monitor risk thresholds in order to trigger intervention.

What criteria should be used to assess potential measures and thresholds?

The accounting literature provides a range of useful criteria including that fiscal measures are feasible in the sense of being cost effective and timely, relevant by being comparable and informative. At the same time, measures need to be reliable. This literature is less useful on how to manage the inevitable trade-offs between competing criteria.

There are a number of key elements associated with fiscal sustainability – liquidity, fiscal capacity, intergenerational equity, service capacity and public confidence and there were a range of measurement techniques – baseline analysis, balance sheet analysis, fiscal gap analysis, generational accounting, and public opinion surveys. Quite different techniques and measures would be used to benchmark local authorities in order to learn from each other from the set of measures that would be used to monitor risk thresholds in order to trigger intervention.

How should measures and thresholds be used?

Analysis was conducted of the thresholds used by the New Zealand Local Government Funding Agency (LGFA), and measures suggested by other sources. It found that financial ratios, while useful, need to be interpreted with caution as:

- key variables such as public legitimacy and confidence are not included
- there are too many variables to enable a few financial ratios to be adequate
- multiple measures require a model to provide weights and allow for interaction between measures
- financial measures are inherently ambiguous and need careful interpretation (measures never speak for themselves)
- careful interpretation will have to distinguish deviation (due to differences in local preferences and local conditions) from deviance
- absolute measures lack relative magnitude
- there is a lack of common data definitions and data quality standards which limit the ability to make comparisons between territorial authorities.

In short, fiscal prudence is a forward-looking concept that is complex and impossible to collapse into a few measures. Individual financial ratios are at best co-incident and generally lagging indicators for financial sustainability. No analysis of individual financial ratios would have predicted the financial resilience problems modelled in the scenarios discussed later in this paper. It may, however, be possible to build models that can predict financial distress based on weighting and allowing for the interaction of multiple variables.

What are the limits to potential measures that need to be considered?

Measurement is a useful tool for assessing overall performance, but measurement done badly and pushed too far has perverse effects. De Bruijn's "law of diminishing effectiveness" (de Bruijn 2006 p35) affects performance measurement, like other productive inputs. While the initial returns from the greater use of measures is positive, increasing effort reduces returns. Beyond a tipping point negative returns set in. After this threshold the greater the efforts to manage performance using performance measurement the stronger the incentive to engage in perverse behaviour - emphasis shifts from increasing performance to increasing conformance, and data manipulation.

Are there particular characteristics of local government that will affect how fiscal prudence might be measured?

Local government bodies in New Zealand vary significantly in size and function. Their territories have different populations and economic structures so simple

comparisons are unlikely to be useful. Consideration also needs to be given to whether and how any data set could be normalised to allow meaningful benchmarks.

Future prospects for different local authorities are varied. Statistics New Zealand's (2012b) population forecast suggests Auckland will grow by over 30% while some of the smaller rural territorial authorities (TAs) such as Ruapehu face the prospect of losing up to one third of their population by 2031. This means that TAs with similar historical financial ratios could have a quite different future prospects and hence different fiscal sustainability challenges.

Local government spending is generally dominated by sustaining and developing long term fixed assets for the '3 waters' and roading. Care is required to ensure that the right balance between short-term fiscal constraints and avoiding perverse incentives is achieved so councils won't cut essential spending on planned maintenance.

What key questions should be considered when developing fiscal measures and thresholds for local government?

The analysis of the literature suggests that the use of fiscal performance measures to assess fiscal prudence requires a 'health warning'. Measures can be useful as tools but don't lend themselves to rules. Care is required to find the 'sweet spot' between over-use and under-use. We have identified a number of policy issues that need to be addressed as part of the search for the 'sweet spot'. In this summary, we pose a series of questions that are grouped under five headings: the ambiguity of the concept of fiscal prudence, the difficulties with measures, data quality and standards, the diversity of local authorities and political issues.

The concept of fiscal prudence

- Who will make the judgement about what is fiscally responsible based on what factors?
- What is the purpose of fiscal measures? Is it benchmarking in order to learn and improve or monitoring thresholds to trigger intervention?
- How to ensure that resilience measures can handle discontinuities?

The difficulties with measures

- How to handle the limited predictive capacity of financial ratios?
- How is the predictive capacity of financial ratios to be tested in advance? What kind of ex ante testing and evaluation is proposed?
- What are the lessons from other sectors such as banking supervision where public and private monitoring using financial measures have failed to mitigate the effects of the Global Financial Crisis?
- Why are local governments in so many places in the world experiencing such serious financial difficulties? Where in the world have fiscal measures such as financial ratios been used successfully to manage fiscal risks in local government? What can we learn?
- What use should be made of other types of measures other than historical ratios?
- What adjustment is to be made for qualitative or difficult to quantify factors?

- What are the perverse and indirect effects from the measures proposed?

Data quality and standards

- How to handle issues of data quality and lack of data standards leading to data manipulation?
- What consideration has been given to building a local government data repository based on a set of common data definitions and standards?

The diversity of local authorities

- How to deal with the inevitable diversity and complexity of local authorities?
- How will different starting points be allowed for?

Political economy issues

- How to avoid undermining council's accountability to their local ratepayers?
- Who is to judge 'excessive' spending levels? By what standard?
- Will this introduce perverse incentives for councils to cut spending on essential planned maintenance to meet short term fiscal constraints?
- Will blame shifting with Wellington replace a dialogue with local ratepayers and planning and budgeting become an exercise in conformance rather than performance?

Contents

1. Introduction 1
2. Local government context 3
3. Key questions 6
4. Fiscal sustainability measures 15
5. Fiscal resilience 22
6. Summary of policy implications 26
7. Concluding comment 29

Appendices

Appendix A References 31

Figures

Figure 1 Current Spending of Local Government by function 3

Tables

Table 1 Illustrative local government fiscal measures 11
Table 2 Conformance Cheating and Gaming- NZ Roading 13
Table 3 Analysis of the NZIER measures (from Table 1) 16
Table 4 Analysis of the League Table’s sustainability and affordability averages 17
Table 5 Analysis of LGFA financial covenants 18
Table 6 Analysis of the other possible measures 19

1. Introduction

NZIER in an earlier report 'Is Local Government Fiscally Responsible' concluded that there is no evidence that local government as a whole has been fiscally irresponsible over the last two decades. That earlier deliverable was backward looking in that it looked at what happened in the past.

This paper looks forward to what needs to happen in the future. Local Government New Zealand (LGNZ) asked NZIER to provide independent technical advice on fiscal prudence measures for local government in New Zealand. The proposition is that the fiscal prudence proposals under the Better Local Government reform programme need to be based on a sound understanding on the role and limits of fiscal measures.

1.1 What is the task?

This paper focuses on providing a survey of the literature on fiscal prudence measures for local government and an analysis of the fiscal thresholds and measures that are in use. This technical report was developed as a background resource document for LGNZ to use in discussion with other stakeholders to inform the development of actual measures. The final section of the report identifies the policy questions that are raised.

1.2 What is the approach?

Our approach to reviewing fiscal measures regime was to seek to understand 'who wants to know about what for what purpose?' We started from the proposition well established in the performance measurement literature that there are many different perspectives on performance and different users of measures require different information for different purposes. Measurement has a key role to play in informing judgements about fiscal sustainability. However, measurement by its nature is partial and selective so the measures never speak for themselves. Measures need active interrogation to contribute to an intelligent dialogue. This suggests one set of measures would be required for a benchmarking exercise in which local authorities can learn from each other in order to improve performance. A different set of measures would be used to monitor risk thresholds in order to trigger intervention.

The policy issues raised by fiscal prudence are not new. With the passage of the Fiscal Responsibility Act 1994, New Zealand central government became a world leader in providing a transparent coherent medium term measurement framework to assess central government financial performance (Janssen 2001). There is now a growing international literature on fiscal prudence and sustainability involving both academics and practitioners and drawing upon a range of disciplines including accounting, economics, and political science.

Our approach was to draw out key insights from this literature relevant to local government in New Zealand. With the time and resources available, it has not been possible to do a thorough literature survey. Instead we used searched for citations of the major contributions to the literature on fiscal prudence/ sustainability/ resilience drawing on our pre-existing knowledge of the literature and those references identified in a 2012 background paper prepared for the OAG. In particular, we

focused the scan on material that related to fiscal prudence of local government. This identified an active literature in Australia, and these references are identified separately in the list of References in Appendix A.

We have organised the findings from the literature scan under four analytical questions:

1. What is fiscal prudence and how does this relate to other key concepts – fiscal prudence, sustainability, resilience?

2. Can fiscal prudence of local government (and related concepts) be measured and if so how?

3. What criteria should be used to assess potential measures?

4. What are the limits to potential measures that need to be considered?

Using these findings, an analysis was conducted of the thresholds used by the New Zealand Local Government Funding Agency (LGFA), and measures suggested by other sources. To assess fiscal resilience we developed three plausible scenarios - infrastructure development, an adverse climatic event, and off-balance sheet risk - to assess what happens when a local government is fiscally irresponsible.

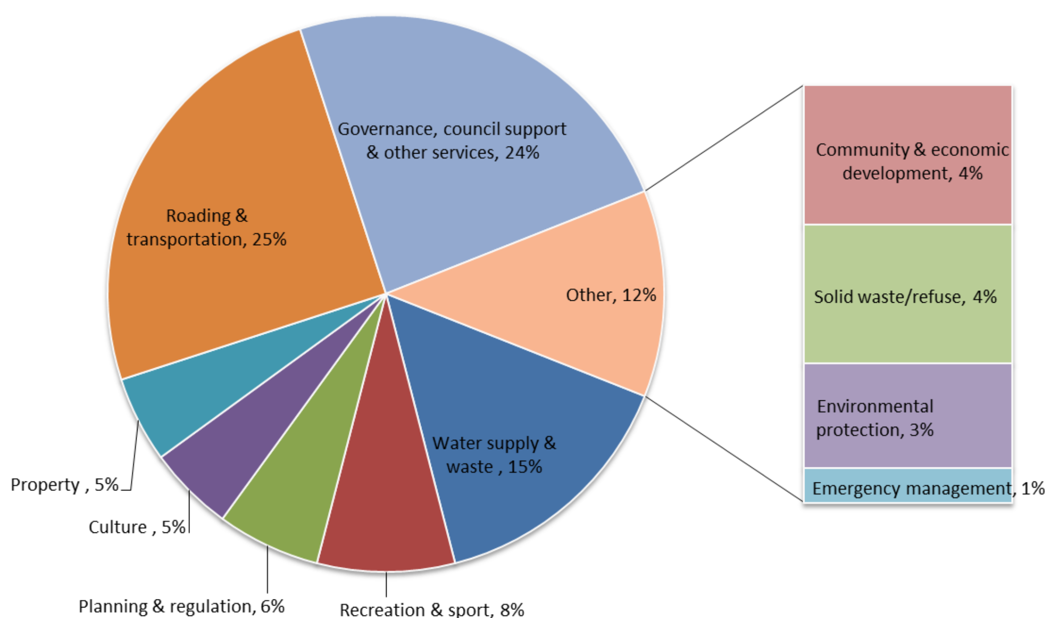
Based on the discussion of the literature, plus consideration of the scenarios and an analysis of the use of financial ratios, the report then concludes by drawing out the key policy conclusions.

2. Local government context

There are 78 local authorities in New Zealand in 2014: 11 regional councils and 67 territorial authorities (TAs). TAs includes 12 city councils, Auckland Council, 54 district councils. Six of the territorial authorities (including Auckland, 1 city and 4 district councils) are unitary authorities which also have the powers of a regional council. Councils range in size from 1.4 million residents in Auckland to approximately 650 in the Chatham Islands.

New Zealand has the most centralised jurisdiction in the OECD. Central government undertakes functions such as the provision of fire services, policing, social services and education, which are undertaken by local government in other comparable countries. An analysis of total local government current spending prepared by the Department of Internal Affairs for the year ended June 2010 broke spending down into categories. This showed that while the share of spending varied significantly by council, on average across local government as a whole, roading and the '3 waters' (water supply, waste water and storm water) account for approximately half of current spending by local government in New Zealand.

Figure 1 Current spending of local government by function



Source: DIA (2010)

Local government is a creature of Parliament and statute in New Zealand. The Local Government Act 2002 and other statutes provide a detailed governance and accountability framework for local authorities. Like central government, local government is required to comply with a principles based legal framework based on the council being accountable to its community in a financially prudent manner. Under section 100 of the 2002 Local Government Act, councils face a balanced budget requirement. The law requires councils to ensure that annual projected operating revenues are set at a level sufficient to meet that year's projected

operating expenses, unless it is prudent not to do so. In addition, councils must produce policies covering financial, revenue and financing, liability management and investment.

Accrual accounting requires that expenses include both the immediate costs of running services as well as depreciation to meet the decline in the service potential of their assets. As a result, the financial management regime applying to local government – requiring depreciation to be funded, balanced budgets, long term plans (and annual plans when a long term plan is not prepared) and audit of plans and annual reports – all tend to reinforce the sense of fiscal prudence[1].

Taken as a whole, territorial authorities in New Zealand ran small fiscal surpluses until 2007 when the effect of the Global Financial Crisis and associated economic slow-down were felt.[2] However, there is a wide variation between individual councils.

The Local Government Act 2002 Amendment Act 2012 moved away from a purely principles-based approach based on local council accountability. Under S259 the Minister is given a rule making power to develop regulations that "prescribe parameters or benchmarks" including under (3)(2)(ii) "the use of ratios, factors, or other relative terms (for example, the expenditure of a local authority in a financial year, generally, should not increase by more than the ratio of population growth multiplied by the rate of increase of the Consumers Price Index)". The DIA website suggests that Regulations will be introduced in 2014.[3]

Are there particular characteristics of local government that will affect how fiscal prudence might be measured?

The next section discusses what fiscal prudence might mean in the context of local government. But before we do that it is important to summarise the particular characteristics of local government that will affect how fiscal prudence might be measured. Based on the above discussion we emphasise the following:

- **Simple comparisons are likely to be misleading**. Local government bodies in New Zealand vary significantly in size and function and their territories have different populations and economic structures. The potential diversity of needs and expectations of ratepayers in different councils may preclude the use of one size fits all measures. Differences in the economic structures, goals and missions of local authorities also need to be taken into account. Consideration would need to be given to whether and how any data set could be normalised to allow meaningful benchmarks.
- **Local authorities vary in their future prospects**. Statistics New Zealand's (2012b) population forecast suggests Auckland will grow by over 30% while some of the smaller rural councils (such as Ruapehu) face the prospect of losing up to one third of their populations by 2031. The districts with declining population will face high dependency ratios and will face issues concerning affordability. TAs with similar historical financial ratios could

[1] Local government is generally obliged to balance their budget so debt is not used to fund operational expenditure. This is underpinned by the 'Golden Rule' of fiscal policy. The Golden Rule suggests that Government should only borrow to invest and not to fund current spending. This is consistent with intergenerational equity in that any debt inherited by future generations is matched by assets passed on. Debt can be used by local government to spread the cost of capital across generations.

[2] Statistics NZ Local Authority Financial Statistics (2012a) suggest that local government as a whole ran operating deficits of $NZ0.56 million while total net worth equity increased by$16.7m to $110 million in 2011. The difference between the flow and the change in the stock presumably reflects accounting and valuation gains.

[3] http://www.dia.govt.nz/Better-Local-Government#implementing2

have a quite different fiscal sustainability challenges in the future because of the different future prospects.

- **When government expenditure is dominated by long term assets, concerns about under-spending are as important as those of over-spending.** The '3 waters' and roading generally dominate local government spending. This means that the majority of council's expenditure is on sustaining and developing long term fixed assets. The world provides multiple examples of local government who have cut back on maintenance in order to meet short-term political priorities. The current New Zealand regime has introduced a range to measures to give incentives to councils to sustain their infrastructure assets. Care is required to ensure the right balance between short-term fiscal constraints and avoiding perverse incentives for councils to cut essential spending on planned maintenance.

3. Key questions

The previous section discussed the key contextual characteristics about local government in New Zealand that will affect the development of fiscal measures. In this section we discuss what we found when we scanned the international literature for perspectives on local government fiscal prudence and sustainability. We organised the results around four questions starting with defining the key concepts.

In summary, fiscal prudence is a forward-looking concept that is much wider than financial liquidity and solvency. It includes political judgments on the ability to continue to raise rates and other revenue over time to finance a certain level of politically determined services. As such fiscal prudence is a complex notion that is hard to define or predict and impossible to collapse into a few measures. Quite different measures would be used to benchmark local authorities in order to learn from each other from the set of measures that would be used to monitor risk thresholds in order to trigger intervention.

3.1. What is fiscal prudence and how does this relate to other key concepts – fiscal responsibility, sustainability, resilience?

Insights into the meaning of the key fiscal concepts can be found in statutory definition, accounting standards and economic theory.

An initial place to look for guidance is in legislation. Central government in New Zealand is bound by fiscal responsibility requirements first introduced in the Fiscal Responsibility Act 1994 (FRA) and now included in Part 2 of the Public Finance Act 2004. There is no statutory definition of fiscal responsibility or of the key terms included as the principles of responsible fiscal management such as 'prudent debt levels' or 'predictable tax rates'. Instead, the fiscal responsibility provisions leave it up to the government of the day to interpret what the terms mean. (Janssen 2001 p9)

Local government is bound by fiscal responsibility requirements in the Local Government Act 2004. The term 'financial responsibility' is not directly used but instead reference is made to "being financially prudent". Section 101 A of the Local Government Act requires the preparation of a financial strategy to facilitate "prudent financial management".

Looking at the statutory definitions, underpinning the notion of financial responsibility or prudence are two related concepts: fiscal sustainability and fiscal resilience.

- Fiscal resilience refers to the ability to withstand shocks and is related to the concept of prudence. Thus, the FRA requires central government to maintain prudent levels of debt in order to provide a buffer. Prudence means taking "a sensible and careful attitude that makes you avoid unnecessary risks". [4]

[4] http://www.ldoceonline.com/dictionary/prudence). Prudence is used in accounting to require that accounts always record the least favourable position. This principle requires conservatism in preparing financial statements particularly as accounting

- Fiscal sustainability refers to the ability to predictably raise sufficient revenue over time to meet financial commitments and sustain a certain level of services. Fiscal resilience and fiscal sustainability are overlapping concepts so some definitions keep the two concepts separate and others combine them.

As legislatures around the world have increasingly introduced legislative requirements for fiscal prudence and sustainability, the accounting standard setters have turned their attention to defining what the terms mean and how they might be measured.[5]

The International Public Sector Accounting Standards Board (IFAC) in its 2011 consultation document noted that "there is no universally accepted definition of long-term fiscal sustainability" and included a working definition that long-term fiscal sustainability is "the ability of government to meet its service delivery and financial commitments now and in the future" (2011 p16). While IFAC acknowledged that this definition is "insufficiently rigorous" (p17) the discussion then highlighted three elements or dimensions:

- service capacity (the ability to maintain services and entitlements at current levels)
- fiscal capability (the ability to meet financial obligations, principally debt servicing)
- vulnerability or resilience ("the degree to which a government is dependent on sources of funding outside its control or influence or is exposed to risks that could impair its ability to meet its existing financial obligations both in respect of its service commitments to the public and financial commitments to creditors, employees and others" p19).

The commentary then went on to highlight the problem caused by the sovereign power of government to legislate for new taxation sources and to vary the levels of existing taxation. The key issue that fiscal sustainability has to grapple with is how to treat the power to raise future taxes. The ability to raise future rates and taxes is a key asset that is not recorded on a government balance sheet.

Measuring sustainability requires making an assessment about the ability to raise future taxes. This involves judgements about political acceptability and the public legitimacy of government rather than making purely technical assessments. The inability to value the power to raise future rates or taxes also reduces the meaningfulness of ratio analysis and financial KPIs applied to governments' financial statements.

Future rates or taxes also raise the issue of intergenerational equity or fairness. The 'Golden Rule' of fiscal policy, discussed in footnote 1, suggests that governments should only borrow to finance net additions to the stock of investment. This rule is explicitly introduced by the definition of fiscal sustainability suggested by the US Government Accounting Standards Board (2011). GASB suggests fiscal sustainability is "the forward-looking aspect of economic condition...the government's ability and

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depends on estimates. It is one of the fundamental principles of financial accounting and is considered very important by the IAS 1 (International Accounting Standard).

[5] The references and some of the quotations in section 3.1 were identified by Bruce Anderson in his 'Research report on public sector financial sustainability, stability, and resilience' prepared for the OAG. We are grateful to Bruce Anderson for his discussion of the concepts and drawing our attention to a number of the references in section 3.1 and 3.2 of this paper. The views expressed and any omissions or errors remain the responsibility of NZIER.

willingness to generate inflows of resources necessary to honour current service commitments and to meet financial obligations as they come due, without transferring financial obligations to future periods that do not result in commensurate benefits" (2010 p X).

Other authorities have a slightly different take on fiscal sustainability. Schick (2005) identified four overlapping dimensions of sustainability:

- "Solvency – the ability of government to pay its financial obligations.
- Growth – fiscal policy that sustains economic growth.
- Stability – the capacity of government to meet future obligations with existing tax burdens.
- Fairness – the capacity of government to pay current obligations without shifting the cost to future generations" (p110).

Klumpes and co-authors in a 2011 SSRN paper define financial sustainability as "relevant public sector entities having access to sufficient finance when needed to make it possible to maintain politically determined and demographically-sensitive services in the long-term at their current quality and intensity for both existing and future generations of customers or claimants" (2011 p4).

Looking at local government in particular the South Australian Financial Sustainability Review Board proposed the following definition for fiscal sustainability in local government:

"A council's long-term financial performance and position is sustainable where:

> (i) continuation of the council's present spending and funding policies;
>
> (ii) likely developments in the council's revenue-raising capacity and the demand for and costs of its services and infrastructure; and
>
> (iii) normal financial risks and financial shocks,

altogether are unlikely to necessitate substantial increases in council rates (or, alternatively, disruptive service cuts)" (2005 p19).

Looking across all these competing accounts, while there is no generally accepted definition, there are a number of common capabilities or elements:

- solvency (defined as the ability to pay immediate financial obligations when they fall due)
- fiscal capability (the ability to meet future financial obligations at credible and plausible tax rates)
- inter-generational equity (not transferring financial obligations to future periods that do not result in commensurate benefits)
- service capacity (the ability to maintain services and entitlements at current levels)
- public confidence (which underpins the ability to raise future taxes).

Resilience, which is the capacity to withstand internal and external shocks, can be treated as separate but related to sustainability. Whereas sustainability is about continuity, resilience is about responding to discontinuities. We elaborate on this point in Section 4.3 below.

Looking at the key features of fiscal sustainability (and hence prudence):

1. fiscal sustainability is a forward looking concept

2. fiscal sustainability is much wider than financial solvency. It includes political judgments on the ability to be able to continue to raise rates and other revenue to finance a certain level of politically determined services over time

3. access to future rates or taxes will depend upon political legitimacy and public acceptability

4. fiscal sustainability will depend upon factors only partly under the control of the public entity such as the overall performance across all four well beings - economic, environmental, social and cultural

5. fiscal sustainability cannot be defined as a precise point estimate as it has a wide potential range and estimating the outer bounds will require judgments of political acceptability and the public legitimacy.

As a result, it will be difficult to develop hard and fast rules to precisely demarcate what fiscal sustainability is and is not. Therefore, this paper will turn to the measurement of fiscal prudence and sustainability.

3.2. Can fiscal prudence of local government (and related concepts) be measured and if so how?

In order for measurement to be successful Thomas (2006 p65) identified four key conditions:

- agreement on what constitutes performance
- activities involved are amenable to measurement on a quantitative or qualitative basis
- cause-effect relations are reasonably well understood and attribution is possible
- scale of operation is large enough to spread the costs of designing and operating the measurement system.

All of these conditions are problematic for the measurement of fiscal sustainability. The previous section concluded that assessing the outer bounds of fiscal sustainability required judgments of political acceptability and the public legitimacy. Critical mass and scale of operation is a perennial issue facing New Zealand public bodies. Issues of scale suggest the need for a shared approach to developing measures across groups of councils. Comparative measures could be used to benchmark local authorities in order improve performance by learning from each other. However, quite a different set of measures that would be required to monitor risk thresholds in order to assess whether to trigger intervention.

Developing sustainability measures will require judgement about the level of service that is politically sustainable over time and the ability to raise rates to finance

expenditure. Making judgement about what constitutes performance will be occurring in a heavily political context.

However, the search for perfection should never get in the way of the search for the good. Despite the ambiguities and difficulties a number of techniques have been developed. We therefore turn to how aspects of fiscal prudence might constructively be measured.

3.2.1. Techniques for measurement

Fiscal sustainability is a forward-looking concept. The obvious means of looking forward over a three to five year horizon is to project forward the current financial information. The GASB (2011) suggested that in order to assess a government entity's fiscal sustainability, there should be five-year projections of the major financial inflows and outflows, debt servicing payments and other financial obligations.

Similarly, the IPSASB's Exposure Draft suggested projections are required for the major financial inflows, outflows, along with net debt. In addition, they list a range of indicators to augment the financial projections. These indicators are total gross debt, net debt, net worth, net financial worth, fiscal gap, inter-temporal budget gap,[6] net debt/total revenue, and fiscal dependency to other government entities.

Looking beyond the three to five year horizon Alan Schick, (2005 p115-120) discusses four different techniques used to project fiscal aggregates into the more distant future:

- baseline projections of the effect of current policies over longer time periods (such as the New Zealand Treasury's 40 year projections in its four yearly Statement on Long Term Fiscal Position)
- balance sheet analysis based on the continuation of current policy settings
- fiscal gap analysis (where the gap refers to the permanent increase in rates or reduction in spending needed to keep debt over time at its current level)
- generational accounting, which attempts to measure intergenerational equity by comparing the net benefits received by different age cohorts.

The first three of these techniques focus on the service capability aspect of fiscal sustainability. The concern is the ability to maintain services and entitlements at current levels. By contrast generational accounting focuses fairness between generations.[7] All these techniques have merits and drawbacks and are discussed by Schick. What is important for these purposes is that there are many different perspectives on fiscal sustainability and that different measures require different information for different dimensions of sustainability.

An alternative approach, which provides at a country level a measure of fiscal resilience, is the "Sovereign Fiscal prudence Index" by Augustine et al. (2011). This index attempts to measure the instability of the fiscal system and identify likely tipping points. The three main components of the index are the 'fiscal space'

[6] The inter-temporal budget gap is calculated from the inter-temporal budget constraint which is satisfied when the present values of projected spending outflows in matched by projected revenues.

[7] Generational accounting mainly focuses on the transfers made less taxes paid by different population cohorts. This technique would not appear to be readily applicable to local government in New Zealand as income transfers are almost solely the domain of central government.

between the current debt and the IMF assessment of a debt ceiling, the 'fiscal path' using current fiscal setting to assess how long it would take to reach the debt ceiling and 'fiscal governance'. The latter involves forming a numerical judgment based on the quality of institutions such as the fiscal rules.

3.2.2. Different fiscal measures for different purposes

The literature discussed in this paper generally suggests there is 'no one size fits all' simple set of measures of fiscal sustainability. Different techniques used over different timeframes may be best suited to assessing different elements of fiscal sustainability. Quite different measures would be used to benchmark local authorities in order to learn from each other from the set of measures that would be used to monitor risk thresholds in order to trigger intervention. To illustrate this Table 1 below suggests a plausible set of measures that could be applied to local government in New Zealand. We have used the common elements of fiscal sustainability discussed on page 6-9 in 3.1 above.

Table 1 Illustrative local government fiscal measures

Dimension	Technique/ Measure	Rationale	Judgement
Liquidity	Current Ratio	Classic financial ratio for liquidity	How to treat the ability to raise new taxes?
Fiscal Capacity	Balance Sheet Analysis	Whether future tax and trading revenues are being committed today	Distinguishing innovative financing from cooking the books
Service Capacity	Baseline Projection	Ability to meet future obligations with existing tax burdens	Heroic assumptions on growth, demand and 'no policy change'
Intergenerational Equity (1)	Fiscal Surplus or Deficit	Is current spending funded by current revenue?	Balance before or after accounting for gains and losses?
Intergenerational Equity (2)	Net outlays on asset replacement	Indicator of whether assets are maintained	Quantity of spend is reflected in quality maintained
Public Confidence	Public Opinion Survey	Measure perceptions of legitimacy	Respondent bias is low
Resilience	Fiscal Gap Analysis	Identify head room before tipping points	Magnitude of shock is known in advance

Source: NZIER

These measures are intended as a 'straw man' to illustrate the arguments in this paper in a practical way. Section 4 provides an analysis of these measures along with other measures such as the thresholds used by the New Zealand Local Government Funding Agency.

3.3. What criteria should be used to assess potential measures?

A number of organisations that set accounting standards have developed criteria to assess performance reporting measures that could usefully be applied to measures of fiscal sustainability.

In New Zealand the NZICA (then ICANZ) Technical Practice Aid No. 9 (September 2002) includes the following principles: external focus, controllable, comprehensive, measurable and informative to the user. The United Kingdom's accounting standards body developed the following criteria for good financial indicators: relevance, attribution, timeliness, reliability and verifiability (Bouckaert & Halligan 2008 p141). These criteria are in turn similar to those developed under the banner of FABRIC: Focused, Appropriate, Balanced, Robust, Integrated and Cost-effective. (HM Treasury 2001 p17).

The United States Government Accounting Standards Board (2011) suggests the following standards apply to programme or organisational level services:

- relevance - service performance information should have a close logical relationship between the information provided and the purpose for which it is intended to be used
- faithful representation - service performance information should provide a realistic representation of the service performance of a public sector entity's services
- understandability - service performance information should be communicated to users simply and clearly
- timeliness - service performance information should be reported to users before it loses its capacity to be useful for accountability and decision-making purposes
- comparability - service performance information should provide users with a basis and context for assessing a public sector entity's service performance
- verifiability - service performance information should provide users with a basis for assessing whether the information in a service performance report could be replicated.

Looking across all these definitions, there are a number of common characteristics that seem relevant to fiscal sustainability and some that do not. Those that seem relevant include:

- Feasible – cost effective and timely
- Relevant – focused, comparable and informative
- Reliable - measurable, robust, faithful, verifiable, and consistent.

This literature is less useful on how to manage the inevitable trade-off between the characteristics. The holy grail of performance measurement is to achieve balance in your measurement system between comprehensiveness vs. relevance/simplicity; financial vs. non-financial; short-term vs. longer-term; control vs. learning, outputs and outcomes; quality from an internal, professional perspective with quality from an

external, user perspective. There are no hard and fast rules about how to achieve this nirvana.

3.4. What are the limits to potential measures that need to be considered?[8]

Measurement is inevitable and useful in assessing overall performance. However, the design of any measurement system needs to take account of the inherent limits of measurement systems. Advocates who attempt to measure performance predicate their arguments on a number of strong but often unarticulated assumptions identified by Hodd (2007) as:

- that performance of the parts that can readily be measured adequately represents overall performance of the whole (synecdoche)
- that measurement error is not material
- that the distribution of performance is less important than the central tendency
- that there is no significant manipulation of data through cheating and gaming.

The previous sections of this report have discussed how fiscal prudence measurements are subject to the problems of the part not representing the whole and measurement error. The term cheating and gaming however needs some elaboration. In brief, any measurement is subject to limits due to problems of conformance (what gets measured gets managed), gaming (of measures) and cheating (of both measures and activities).

Table 2 below uses material developed for the Road Maintenance Taskforce to illustrate the conformance, cheating and gaming that is experienced in the New Zealand roading sector.

Table 2 Conformance cheating and gaming – NZ Roading

	Internal	External
Conformance	Recording what is required not what is needed	Hitting the target missing the mark - re-gravelling roads close to gravel pit
Gaming measurement only	Flexible coding	Fiddling response time measures
Cheating measures & activities	Reclassifying support staff as front line staff	Changing activities to meet the target e.g. charging low value gravel as premium quality gravel

Source: NZIER partly based on Raynor (2009)

Data manipulation is particularly likely if there are problems of data quality and poorly developed data standards. Data deficiencies and inconsistencies in data definition will restrict the comparability of financial measures across councils and increase the scope for data manipulation.

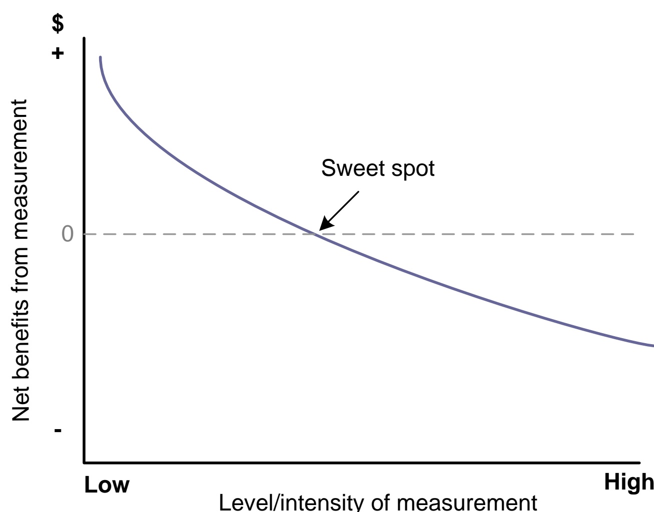
[8] This section is drawn from a 2012 NZIER report to the Road Maintenance Task Force. For a longer discussion of these issues see www.nzta.govt.nz/consultation/.../nzier-performance-measures.pdf.

The greater the consequences of success or failure, the more performance measurement provide incentives for perverse strategic behaviour including conformance, and data manipulation. The greater the threats, the greater the probability of perverse strategic behaviour. In such a situation, subordinates often feel justified in sabotaging a measurement system.

The designers of the architecture a for any measurement system need to be aware of the perverse dynamics that measurement systems can create. de Bruijn identified four perverse laws of measurement system dynamics:

- the law of decreasing effectiveness (the system is perverted)
- the law of mushrooming (the system is bloated)
- the law of collective blindness (myopia based on short-sightedly putting too much weight on production figures)
- the law of preserving perverted systems (insufficient incentives for abandoning the system) (2006 p33).

Figure 2 The law of decreasing effectiveness



Source: NZIER adapted from de Bruijn, H. (2006) p35.

Figure 2 illustrates 'the Law of Decreasing Effectiveness'. What it shows is that while the initial returns from the greater use of measures is positive, increasing effort yield reduced returns. Beyond the tipping point negative returns set in.

After that threshold, the greater the efforts to manage performance using performance measurement, the stronger the incentive to engage in perverse behaviour. Emphasis shifts from increasing performance to increasing conformance and data manipulation. This leads to a negative spiral of more control leading to more negative consequences. Those who engage in data manipulation can be rewarded and those who do not can be punished. This has the effect of encouraging perverse strategic behaviour.

4. Fiscal sustainability measures

While there was no agreed definition, there were two key components to fiscal prudence:

- Fiscal sustainability concerns known knowns – the ability to financially sustain a certain level of politically determined services into the future
- Fiscal resilience concerns known unknowns - the ability to withstand shocks and discontinuities.

This section is focused on the analysis of potential *fiscal sustainability* measures including the thresholds used by the New Zealand Local Government Funding Agency (LGFA), the benchmarks suggested in Table 1 and measures suggested by other sources. Section 5 discusses *fiscal resilience*.

Fiscal sustainability is a forward-looking concept that includes both technical projections of population and economic growth as well as political judgments on the ability to raise future rates and provide a certain service levels over time. As such fiscal prudence is a complex notion that is hard to define, predict or capture in a few financial measures. Quite different measures would be used to benchmark local authorities in order to learn from each other, from the set of measures that would be used to monitor risk thresholds in order to trigger intervention.

Fiscal sustainability (benchmarking known knowns) includes a number of elements:

- liquidity - pay immediate financial obligations when due
- fiscal capability - meet future financial obligations at credible tax rates
- inter-generational equity - not transferring financial obligations to future periods without matching benefits
- service capacity - maintain services and entitlements at current levels
- public confidence - underpins the ability to raise future rates.

Fiscal resilience (thresholds for known unknowns) is the ability to withstand shocks and discontinuities.

The tables that follow use the elements of fiscal sustainability to analyse a range of possible measures that could be applied to local government in New Zealand. Table 3 of this report reviews an illustrative set of fiscal measures suggested in Table 1 (Section 3.2.2). Subsequent tables analyse the measures used in constructing league tables, the thresholds used by the LGFA, and measures suggested by other sources.

Comments on NZIER measures

- There are a range of measurement techniques and the technique and measure selected need to be tailored to the particular task.
- Different elements require different measures (see the purple diagonal).
- Measuring one element does not assist with measuring others (few measures have ticks in more than one box).
- There are too many variables to enable one financial ratio to be adequate.
- Key variables such as public legitimacy and confidence are not included (other than in the second to bottom row).
- Apparently technical issues (such as whether fiscal balance is measured before or after accounting gains and losses) can have material effects.

Table 3 Analysis of the NZIER measures (from Table 1)

Measure (NZIER)	Technique	Liquidity	Fiscal Capacity	Service Capacity	Intergen. Equity	Public Confidence	Resilience	Comment
Current Assets % Current Liability	Working Capital Ratio	☑☑	☑	☒	☒	☒	☒	Ignores credit lines and unutilised facilities and financial investment that can be realised
Contingent Liabilities	Analysis of off Balance Sheet items	☒	☑☑	☒	☒	☒	☑	Distinguishing innovative financing from cooking the books
Spending, Revenue, Balance, Debt	Baseline Projection	☒	☑	☑☑	☑	☑	☑	Heroic assumptions on growth, demand and ‘no policy’ changes
Fiscal Balance (Exc. AGL)	Absolute Value	☒	☒	☒	☑☑	☒	☒	Absolute or per capita? Before or after accounting gains and losses
Net Outlays on Renewals	Capex - Depreciation	☒	☒	☑	☑☑	☒	☒	Ignores quality of investment spending
Change in % Public support	Opinion Survey	☒	☒	☒	☒	☑☑	☒	Respondent bias and subjectivity
Change in Tax/ Spending	Fiscal Gap	☒	☑	☒	☒	☒	☑☑	Magnitude of shock known in advance

Code - ☑☑= Direct Measure, ☑= Indirect measure, ☒ = No measure.

Source: NZIER.

Comments on Local Government League Table measures

- The league tables include a mixture of financial ratios (debt per rate payer), other ratios (the unemployment rate) and absolute values (fiscal balance).
- Absolute measures lack relative magnitude so a trivial $1 deterioration in the fiscal balance for a large council needs to be clearly distinguished from a $100m deterioration for a small council.
- There is a strong focus on affordability using measures over which the TA has little direct significantly influence (e.g. the unemployment rate).

Table 4 Analysis of the League Table's sustainability and affordability averages

Measure	Technique	Liquidity	Fiscal Capacity	Service Capacity	Intergen. Equity	Public Confidence	Resilience	Comment
Debt per ratepayer	Ratio	☒	☑	☒	☒	☒	☑	Ignores assets, gross or net debt?
Equity per ratepayer	Ratio	☒	☒	☒	☑☑	☒	☑	Ignores ability to rate
Capex to Depreciation	Ratio	☒	☒	☑	☑	☒	☒	Ambiguous Why is >1.0 a risk? Equally 1.0 > is a risk
Fiscal Balance (Inc. AGL)	Absolute Value	☒	☒	☒	☑☑	☒	☒	What band? A small change in the absolute value is meaningless
Gross debt servicing to total rates & charges	Ratio	☒	☑	☒	☒	☒	☑	Classic solvency measure that ignores ability to raise rates
Household income	Mean of Absolute Value	☒	☒	☒	☒	☑	☒	Average income ignores variance, maybe median income to median rates
Average property value	Mean of Absolute Value	☒	☑	☒	☒	☒	☒	Affordability measure. Better used as a ratio to rates
Average rates to Household income	Ratio of Averages	☒	☑	☒	☒	☒	☒	Average measures obscure distribution, ratio of medians?
Unemployment rate	Ratio	☒	☒	☒	☒	☒	☒	Proxy for affordability, exogenous to Local Authority

Code - ☑☑ = Direct Measure, ☑= Indirect measure, ☒ = No measure.

Source: NZIER.

Additional Comments - the same points made in connection with Table 1 all apply:

- Measuring one element does not assist with measuring others (few measures have ticks in more than one box).
- There are too many variables to enable one financial ratio to be adequate.
- Key variables such as public legitimacy and confidence are not included.
- Apparently technical issues (such as whether fiscal balance is measure before or after accounting gains and losses) can have material effects.

Comments on LGFA financial covenants

- LGFA's financial covenants have a strong focus on fiscal capacity and financial resilience (see the ticks in the resilience column).
- There is a reliance on financial ratios (e.g. measures of debt to revenue).
- The second and third are different measures of the same thing (which reduces the risk of gaming e.g. purchase of a low profitability high turnover company to which boost but reduces financial resilience).
- Data manipulation remains a risk because of the judgements required (what is a liquid investment?) and shifting debt to Council Controlled Organisations (LGFA has the ability not to lend even if the financial covenants are fully meet).

Table 5 Analysis of LGFA financial covenants

LGFA Covenants (lending policy/foundation policy covenants)	Technique	Liquid ity	Fiscal Capacity	Service Capacity	Intergen. Equity	Public Confid-ence	Resilience	Comment
Net Debt to Total Revenue (175%/250%)	Ratio	☒	☑	☒	☒	☒	☑	Used as threshold
Net Debt Servicing to Total Rates (25%/30%)	Ratio	☒	☑	☒	☒	☒	☑	Classic liquidity measure. Excludes trading revenue from CCOs and charges. Lack of common data definition for rates restricts comparisons
Net Debt Servicing to Total Revenue (20%/20%)	Ratio	☒	☑	☒	☒	☒	☑	As above but includes revenue from charges and dividends from CCOs. Ignores ability to raise rates and changes
Liquidity i.e. Debt + committed facilities – liquid investments relative to debt (110%/110%)	Ratio	☑☑	☒	☒	☒	☒	☑	Looks at liquid assets relative to debt

Code - ☑☑ = Direct Measure, ☑= Indirect measure, ☒ = No measure.

Source: NZIER.

Additional Comments - the same points made in connection with Table 1 all apply:

- Measuring one element need not assist with measuring others (few measures have ticks in more than one box).
- There are too many variables to enable one financial ratio to be adequate.
- Key variables such as public legitimacy and confidence are not included.
- Apparently technical issues (such as whether a financial asset is liquid) can have material effects.

Table 6 Analysis of the other possible measures

Other Measures (e.g. OAG, VOLG)	Technique	Liquidity	Fiscal Capacity	Service Capacity	Intergen. Equity	Public Confidence	Resilience	Comment
Rates per Ratepayer	Ratio	☒	☑	☒	☒	☒	☒	Useful benchmark if common definition of rates is used, no use as threshold
Rates & Charges % Capital Improved Value	Ratio	☒	☑	☒	☒▯	☒	☑	Useful benchmark if rates are defined consistently, no use as threshold
Rates deflated by CPI	% change	☒	☒	☒	☒	☒	☒	Misleading measure – need appropriate deflator
Net Debt	Absolute value	☒	☑	☒	☒	☒	☑	Ignores size of rates base, fixed assets holdings and asset quality. Net debt per capita better
Gross Debt	Absolute value	☒	☒	☒	☒	☒	☑☑	Ignores size of rates base financial and fixed asset holdings
Gross Debt to Assets	Ratio	☒	☑	☒	☒	☒	☑	Potential benchmark, limited use as threshold
Renewals Spending to Deprecation	Ratio	☒	☒	☑	☑	☒	☒	Alternative to Table 2 Line 3
Debt Servicing to Total Rates	Ratio	☒	☑	☒	☒	☒	☑	Useful benchmark if rates are defined consistently, no use as threshold
Net Debt to Total Revenue	Ratio	☒	☑	☒	☒	☒	☑	Useful benchmark, could be used as a threshold
Net Debt Servicing to Total Rates & Charges	Ratio	☒	☑	☒	☒	☒	☑	Classic liquidity measure. Excludes trading revenue from CCOs
Rates And Charges to Total Revenues	Ratio	☒	☒	☒	☒	☒	☑	Overseas vulnerability measure (revenue sharing)
Fixed Costs To Cash Outflows	Ratio	☒	☒	☒	☒	☒	☑	Potential Overhead Benchmark
% revenue outstanding at year end	Ratio	☑	☒	☒	☒	☒	☑	Debtor management measure

Code - ☑☑ = Direct Measure, ☑= Indirect measure, ☒ = No measure.

Source: NZIER.

There are a number of technical comments that should be made on the other possible measures shown on Table 6:

- The plethora of potential measures for example the Victoria Office of Local Government (VOLG) use a suite of 20 measures (plus 47 comparative indicators)
- The problem of too many measures – a local government which fails on eight measures may be much lower risk relative to one that fails on two crucial measures
- The selection contains a mix of absolute values and financial ratios
- There is a high focus on fiscal capacity and financial reliance
- Specific measures are needed for specific purposes (see the last ratio for debt management)
- Care is required interpreting a change in rates deflated by CPI).

In short, fiscal prudence is a forward-looking concept that is complex and impossible to collapse into a few measures. Individual financial ratios are at best co-incident and generally lagging indicators for financial sustainability. While financial ratios are useful, are they are inherently ambiguous and need careful interpretation as measures never speak for themselves. There are a number of potential limitations that will need to be borne in mind.

The first *limitation is data quality and differences in data definitions*. The lack of common data definitions and data quality standards limit the ability to make comparisons between Territorial Authorities. For example, comparisons of rates revenue to need to distinguish 'special rates' from 'general rates' and control for differences how user charges for services like water and rubbish collection are assessed.

The second limitation concerns the *number of fiscal measures* required. Relying on a handful of ratios is inadequate as there are too many important variables that are being ignored. As the size of the set of potential measures is expanded, then the problem becomes the difficulty of dealing with multiple measures. A local government which 'fails' on eight measures may be much lower risk relative to one that 'fails' on two just measures if the latter are crucial. Use of multiple measures requires a formal model that can estimate weights and allow for interaction between measures.

The third limitation is key *variables are omitted.* Fiscal prudence is a forward looking concept that require both technical decisions about the credibility of projected economic and population forecasts, as well as political judgments on the ability to continue to raise rates and other revenue and cut spending. The continuation of public legitimacy and confidence are critical subjective variables that are not included in standard financial measures and ratios.

The fourth limitation is the problem of *comparing apples and oranges*. Local governments vary significantly in size, functions, goals and missions and their territories have different populations and economic structures. The potential diversity of needs and expectations of ratepayers in different councils may preclude the use of one size fits all measures. Consideration would need to be given to whether and how any data set could be normalised to allow meaningful benchmarks. It will be important to distinguish *deviance* from legitimate *deviations* due to differences in local preferences and local conditions.

The practices of the credit rating agencies are consistent with view that financial responsibility can't be reduced to a few financial ratios. We reviewed the methodology used by Moody's, Fitch and Standard and Poors to rate local governments around the world. While the precise details differ, all used a mixture of qualitative information and quantitative measures. The qualitative information included assessment of the national institutional framework as well as a judgment of the quality of the governance and financial management of the individual government. Using Moody's as an example, 50% of the overall assessment is based on national economic performance measures with a 10% weighting on each of governance and management, institutional framework, debt profile, financial performance, and local economic measures. Overall, the weighting on analysis of financial ratios was around 25%.[9]

[9] Auckland Council, which has the highest debt to revenue ratio of all NZ councils, also has the highest credit rating (AA). This supports that proposition that rating agencies place significant weighting on factors other than financial ratios in assessing credit quality.

5. Fiscal resilience scenarios

The distinction between fiscal sustainability from fiscal resilience is analogous in financial terms to the difference between a business that is a going concern and a business facing insolvency. Assessing sustainability involves judgements about the continuity of existing policy settings – rates, spending, investment in assets, risk management etc. – in a steady state world environment. By contrast, fiscal resilience is about discontinuous change in response to internal or external shocks. For example, Governments who push beyond the outer limits of fiscal prudence find that beyond the tipping point they are suddenly shut out from debt markets. The sorts of techniques that are required to assess fiscal resilience are quite different from those used for fiscal sustainability.

In order to assess fiscal resilience we started by developing plausible scenarios about what happens when a local government is fiscally irresponsible and in effect goes into receivership.[10] We used the Fiscal Threshold Working Party to explore these scenarios to understand fiscal resilience better. We considered three scenarios – infrastructure development, an adverse climatic event, and off-balance sheet risk.

The technique used in the workshop was 'threat barrier analysis', which is drawn from the engineering literature on risk and reliability, provides alternative ways to assess known unknowns. Rather than projecting current policies forward, the approach is to work back from a discontinuous outcome to assess the threats and the barriers to those threats that could avoid a loss of control.

The technique involves working back along the chain of events. Starting with what happens when a local government is fiscally irresponsible and in effect becomes bankrupt, the next stages are to work back through the chain of events to identify the existing barriers and other possible barriers that could be put in place to mitigate those threats.

The technique involves working back through a series of questions:

- What would have to happen to generate the insolvency and/or receivership?
- What are the credible threats or triggers?
- What current barriers currently exist to mitigate those threats?
- What other barriers could be put in place to mitigate the threats?
- What 'trip wires' would trigger when the tipping point is near?

5.1. Scenario one – infrastructure development

The first scenario considered was an event where a major infrastructure project goes wrong.

Based on the experience at Kaipara District Council with the Mangawhai sewage treatment scheme, it is possible to envisage 'a perfect storm' involving:

[10] The Ratings Powers Act means the credit of local authorities is unlikely to ever be seriously threatened, but the rating may affect the cost of borrowing

- excessively optimistic forecasting assumptions about population growth and hence size of infrastructure required, the likely development contributions and future rates base
- dysfunctional governance with a long history of council infighting and a poor record of supervising management
- weak management systems and processes leading to a lack of cost management, poor supervision of the consultant overseeing the development, no systematic risk management, limited reporting to council (the numbers report may exclude the development).

These could culminate in the loss of public confidence and trust and the threat of a rates revolt.

Two particular features about this case are relevant to fiscal prudence measures:

1. this would be like a fire in a coal mine – a long slow burn which observant spectators should notice. But who was watching?
2. conventional financial ratio analysis would not detect this scenario until it was too late. It is notable that that Kaipara District Council was ranked highly by the New Zealand Local Authority League Tables until after the event, subjective qualitative factors were used to bring its league table ranking down in 2011.

What are the current barriers?

A number of controls are currently in place. Local government is required to comply with a principles based legal framework including:

- councils face a balanced budget requirement (section 100 of the 2002 Local Government Act)
- councils must produce long term plans (and annual plans when a long term plan is not prepared)
- councils must produce policies covering financial, revenue and financing, liability managements and investment
- accrual accounting requires that expenses include both the immediate costs of running services as well as depreciation to meet the decline in the service potential of their assets.

The Audit Office audits both the annual reports and the plans although the reviews tend to focus more on the internal consistency of the long term plans rather than the credibility of the forecasts.

What other barriers could be put in place?

Governance and management is like a tennis doubles partnership – weakness in one can be covered by strengths of the other. In this scenario, the inherent problem is the lack of internal capability at both the governance and management level. When both are weak then the combination is a weak pair indeed. However, more planning requirements or external financial reporting of key financial ratios would not have addressed the binding constraint of the capability gap.

What were needed in this scenario were strengthened governance and management systems. Governance training could put more emphasis on escalation strategies and who the 'go to people' are outside of management.

Management strengthening could occur through greater use of shared services such as pooling shared resources on risk assessment and risk management, backed by

more peer review type audit and benchmarking. External review of the long term plan needed to deal with the rosy scenario problem. External review needs to stress test the planning assumptions for credibility rather than not just for internal consistency.

What trip wires?

The workshop failed to identify any credible trip wires. A range of soft signals were identified which included a chief executive been in the role for more than 10 years, where a council has a history of making decisions based on incomplete management information, there was a lack of robust project management and a lack of capacity to deal with complex infrastructure projects. In addition to this, there were a number of errors in the revenue and finance policies that required special validating legislation. Taken together this led to pressure from ratepayers and the risk of a rates boycott.

Because these were very noisy signals, they would only be useful in a peer audit and review process.

5.2. Scenario two – adverse climatic event

The second scenario literally involved a 'perfect storm' whereby a severe weather event triggered massive damage to the three waters infrastructure, as well as roading and housing in a number of adjoining local authorities. In addition to the huge direct cost of a major infrastructure rebuild, the councils would also face contingent liabilities for inadequacies in flood protection and allowing private building on a flood plain that was not fully compliant with regional plans and the building code. The cost of rebuilding the public infrastructure alone would take the affected local authorities beyond the NZ Local Government Funding Agency debt covenants.

What are the current barriers?

A number of controls are currently in place. Councils already:

- are expected to act prudently which includes identifying and managing risk, (including effective insurance arrangements)[11]
- must produce long term plans which include risk assessment and risk matrix profiling
- undertake proper maintenance and provide for deprecation to generate reserve funds
- participate in the Local Authority Protection Programme Disaster Fund (LAPP) a mutual assistance scheme with other local authorities.[12]

What other barriers could be put in place?

A key requirement for local authorities should be to have an adequate contingency plan to manage natural hazard risk. The required risk assessment and risk matrix profiling is expected to lead to better asset management and planning. These requirements could be buttressed by a peer review and QA of each local authority's risk assessment and asset management processes. This is particularly important for local authorities outside of the Local Authority Protection Programme Disaster Fund.

[11] Local authorities have the ability to self- insure so long as it is financial prudent to do so. Clearly it would not be prudent to self-insure everything.

[12] Local Authority Protection Programme Disaster Fund (LAPP) is a mutual pool created by local authorities to cater for the replacement of infrastructure following catastrophic damage by natural disaster. 58 local authorities currently belong out of a total of 78 local authorities.

The binding constraint in this scenario is the lack of a culture of asset and risk management. What is needed under this scenario is a strengthened management culture rather than further reporting requirements.

5.3. Scenario three – off-balance sheet risk

The last scenario involved reviewing New Zealand's only 'near miss' with insolvency in local government. In 1931, the New Zealand pound was devalued against sterling by 25 percent. The Southland Council held sterling denominated debt. The effect of the devaluation was to increase the Council's debt servicing obligations at the same time as New Zealand currency revenue was falling. This squeeze meant the Southland Council was unable to service its debt.

A more modern version of this scenario could focus on the use of derivatives and other complex financial products. The bankruptcy of Orange County (California) in 1994 was triggered by losses generated by an aggressive investment strategy using derivatives. In 1989 the Hammersmith and Fulham Council in London incurred significant losses on a speculative position that used interest rate swaps. In addition, in the private sector there are numerous examples of firms taking massive losses as rogue traders took unauthorised positions outside risk limits and policies. These sorts of individual frauds can happen anywhere including councils.

The controls put in place for New Zealand local authorities since the 1930s include the outright prohibition on borrowing in foreign currency (s113) of the Local Government Act[13] and restrictions on local government borrowing and investing powers. Each Territorial Authority (TA) is required to have an Investment Policy (s105) and a Liability Policy (s104) where the latter covers interest rate exposure, liquidity, credit exposure and debt repayment. The Local Government Act also requires councils to be prudent financial managers, which involves using financial instruments to hedge their long term borrowing requirements rather than speculate.

In addition, those TAs that borrow from the NZ Local Government Funding Agency face additional requirements. LGFA requires that borrowers maintain a specified liquidity ratio. Liquidity is defined as cash, high quality liquid short term investments or deposits and undrawn committed standby facilities. LGFA transact all its derivatives with the New Zealand Debt Management Office (NZDMO), which is a unit of the New Zealand Treasury. As discussed in Table 5 LGFA have also devised a set of threshold ratios above which intervention may be required to stabilise the local authority's financial position.

[13] The September 2011 amendment to the Local Government (Auckland Council) Act 2009 allowed the Auckland Council to issue foreign currency debt.

6. Summary of policy implications

The previous sections discussed the positive role of performance measures and also some of the limits. Some sort of performance measurement is inevitable in assessing overall performance. As Pidd observed (2008 p69) “All humans make judgements and these judgements rest on measurement of some kind”. Not only is organisational performance measurement inevitable, there is also evidence that it can be beneficial.

For performance measurement to be beneficial it also needs to be recognised as being dysfunctional if not done properly. The discussion in Section 2 and the analytical questions emerging from the literature in Section 3 raise a number of critical policy issues that will need to be addressed in the development of any fiscal measures applying to local government. The policy issues raised need to be considered in the light of the underlying policy problem that enhanced use of fiscal measures policy is meant to solve. As Eugene Bardach put it “your problem definition is the crucial step” in the eight steps of policy analysis (2000 p1).

6.1. What is the policy problem that fiscal measures are trying to fix?

The Regulatory Impact Statement for Better Local Government gives a hint when it suggests (p15 Para 64-5) “local councils are perceived to have insufficient incentives to reduce and constrain expenditure and keep rates and debt to minimum levels”. One lever to constrain spending is to restrict the tax base. Compared to other jurisdictions overseas, local government in New Zealand has a very limited tax base and fiscal autonomy. Caulfield discusses the “phenomenon of inadequate growth in local government revenue” and specifically cites New Zealand as an example (2000 p1).

Another lever, which was enacted in the 2012 amendments to the Local Government Act 2002, was to establish the ability to set fiscal prudence requirements for benchmarks or parameters covering income, expenditure and prudent debt levels. “Councils that fail to meet, or are close to failing the benchmarks **may** be subject to the application of the assistance and intervention framework” (DIA RIS 2012 p15 para. 65).

A council with spending, rates and debt above ‘prescribed levels’ (however they are determined) does not mean that a local authority is acting in a fiscally irresponsible manner. Context is influential. What mattes is that councils are able to explain the reasons why they may have exceeded a benchmark, such as an extreme weather event causing unplanned infrastructure repairs, should that have occurred.

6.2. What are the key questions to consider when developing fiscal measures for local government?

How to handle the lack of precision of the concepts of fiscal prudence and responsibility?

Fiscal prudence/ responsibility are complex notions – hard to define or predict – impossible to collapse into a few measures. This paper suggests fiscal sustainability is more like art than science – like art 'one knows it when one sees it' but it is very hard to define yet alone measure with any precision. Financial ratios derived from Balance Sheet Analysis are helpful analytical tools but they generally lack predictive capacity and omit key factors such as public confidence and legitimacy. It is quite conceivable that a council will 'hit the mark and miss the target' – its forecasts before the event may meet all the required measures and yet after the fact it may emerge that the council is in fact financially unsustainable. Objective financial measures will need to be augmented by subjective judgment factors. This begs questions such as whose judgment of what factors.

How to handle the limited predictive capacity of financial ratios?

Historical ratios are inevitably backward looking and in isolation have limited predictive power. Historical ratios can usefully be used in a benchmarking exercise that enables local authorities to learn and improve performance by comparing themselves against others. It is much harder to devise a set of ratios to set thresholds above which intervention may be required to stabilise the local authority's financial position. Ratios drawn from plans also face severe limitations. How is the predictive capacity of financial ratios to be tested in advance? What kind of ex ante testing and evaluation is proposed?

What use should be made of other types of measures other than historical ratios?

In addition to financial ratio analysis, there are other types of techniques such as medium term baseline projections and fiscal gap analysis. How can we ensure that realistic economic projections and the predictable changes in the structures of populations are factored into planning projections? What analysis have DIA done on using measures other than financial ratios?

How to handle issues of data quality and lack of data standards leading to data manipulation?

Fiscal measures are a proxy, are subject to measurement error, support multiple interpretations, and encourage perverse behaviours. Data deficiencies and inconsistencies in data definition will restrict the comparability of financial measures across councils. This is more than a technical issue. The experience in the United Kingdom suggests that faced with high-powered consequences from failing to meet targets for financial measures results in data manipulation. Should common data definitions be introduced or is generally accepted accounting practice sufficiently robust?

Local government statistical data is currently dispersed and difficulty to access. Consideration could be given to building data repository (using a data warehouse or a data-mart) to enable TAs and other analysts to undertake comparative analysis. What consideration has been given to building a local government data repository based on a set of common data definitions and standards?

What adjustment is to be made for qualitative or difficult to quantify factors

Measures are a useful analytical tool but there are not objective diagnostic tool. It is doubtful that the problems being experienced at Kaipara would have been identified using ratio analysis. Practitioners recognise the need to augment analysis of financial ratios with subjective judgmental information. For example, the credit rating agencies augment financial analysis with information obtained from interviews from senior managers and other contextual information. The New Zealand Local Government League Tables augments a range of quantitative financial measures with qualitative "Other Factors". These other factors include exposure to leaky buildings and to earthquakes.

What are the perverse and indirect effects from the measures proposed?

Will the proposed fiscal prudence provisions encourage councils to cut back on essential long term maintenance in order to deliver on short term priorities? Will it undermine local accountability to electors? Will local authority budgeting become an exercise in conformance rather than performance? Will blame shifting with Wellington replace a dialogue with local ratepayers?

How to deal with the inevitable diversity and complexity?

Local authorities in New Zealand vary significantly so making simple comparisons is likely to be misleading. The potential diversity of needs and expectations of ratepayers and prospects facing different councils may preclude the use of one size fits all measures? Can a potential data set be normalised to allow meaningful benchmarks and if so how?

How will different starting points be allowed for?

Different local authorities have different current profiles and face quite different prospects. How will the different opening position and hence the amount of fiscal space available to accommodate the fiscal path of each authority be calculated?

Who is to judge 'excessive' spending levels?

The DIA RIS expressed a concern that councils spending was excessive leading to increased rates and debt. Who is to judge what is excessive and by what standard? Simple measures like comparing the growth in rates with the change in the CPI over the same period are inadequate for reasons discussed in the recent NZIER paper 'Is Local Government Fiscally Responsible'. Will the changes introduce perverse incentives for councils to cut spending on essential planned maintenance to meet short term fiscal constraints?

7. Concluding comment

This report has reviewed the established literature to explore the concept of fiscal prudence and how it might be measured. In defining fiscal prudence we distinguished fiscal sustainability from fiscal resilience. The intuition behind this distinction is the difference between 'know knowns' and 'known unknowns'. In financial terms it is analogous to the difference between a business that is a going concern and a business facing insolvency.

Fiscal sustainability is a forward-looking concept. It will require technical decisions about the credibility of projected economic and population forecasts, the workability of future plans as well as political judgments on the ability to continue to raise rates and other revenue and cut spending.

By contrast fiscal resilience is about discontinuous change in response to internal or external shocks. For example, Governments who push beyond the outer limits of fiscal prudence find that beyond the tipping point they are suddenly shut out from debt markets. The sorts of techniques that are required to assess fiscal resilience are quite different from those used for fiscal sustainability. In Section 5 we used 'threat barrier analysis' to assess known unknowns.

Financial ratios are at best co-incident and generally lagging indicators – none of the three scenarios analysed using threat barrier analysis would have been predicted by an analysis of financial ratios.

Warning times vary if a local government is fiscally irresponsible and in effect goes into receivership. In some cases, this would be like a long slow burn like a fire in a coal mine but in others, some sort of 'perfect storm' could trigger receivership overnight.

The paper has analysed potential fiscal measures including those used by New Zealand Local Government Funding Agency (LGFA), those suggested in NZIER's second report (Table 1) and measures suggested by other sources such as the New Zealand Local Authority League Tables. We found that financial ratios, while useful, need to be interpreted with caution as:

- key variables such as public legitimacy and confidence are not included
- there are too many variables to enable a few financial ratios to be adequate
- multiple measures require a model to provide weights and allow for interaction between measures
- financial measures are inherently ambiguous and need careful interpretation (measures never speak for themselves)
- careful interpretation will have to distinguish deviation (due to differences in local preferences and local conditions) from deviance
- absolute measures lack relative magnitude
- there is a lack of common data definitions and data quality standards which limit the ability to make comparisons between Territorial Authorities.

In preparing this paper, we came across some material that discussed predicting financial distress in local government in Australia and the United States. The first view is put forcefully by Dollery et al

“If we are correct in arguing that no agreed and satisfactory measures of local government financial sustainability exist <in Australia>, then this has important implications for policy making. For instance, if the same council would be adjudged differently by the different measures of financial sustainability in different states, then this indicates how arbitrary the definition of financial sustainability has become in spatial context. If measurement is capriciously subjective, then it follows that regional policy intervention will also be arbitrary” (Dollery et al 2007).

The counterview is that combinations of variables can be used to predict problems of financial sustainability. For example, Kloha, Weisset and Klein (pp.313-323, 2005) suggest that ten indicators (including population, changes in the revenue base, operating balance, opening balance long term debt) can be combined into a simple composite index that can be used to successfully predict financial crises. Walker and Jones are dismissive of the Kloha et al approach but suggest it is possible to build models to predict financial distress of local government similar to the models used to predict distress in private sector firms. What all these approaches have in common is that prediction of local government financial emergencies requires multiple measures and qualitative factors rather than simply relying on a few financial variables.

Kloha et. al. (op cit p317) suggests a number of criteria that measures should meet including:

- theoretical validity
- predictive ability
- relevance
- ready availability of information
- accessibility
- resistant to manipulation.

These are useful criteria to use to develop a credible and coherent set of benchmarks and thresholds.

Appendix A References

Most of the references included below are cited in the review. A few references are included which have not been directly cited, but are significant contributions to the literature judged to be worth including.

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