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Preface

The 39th Annual Conference of the Australian and New Zealand Regional Science Association International (ANZRS AI) was held at the University of Technology Sydney from 1st to 4th December, 2015, co-hosted with the UTS Centre for Local Government. A broad range of papers from academics, policy advisors and practitioners was presented to the conference. This publication contains the refereed proceedings of those contributed papers.

Participants who submitted their full paper by the due date were eligible to be considered for these refereed proceedings. There were nine papers submitted to a double blind refereeing process, all of which were accepted for presentation in this publication. As in previous conferences, I am very grateful to referees for their work within a short timeframe.

Three awards were presented at the conference dinner. The John Dickinson Memorial Award for best article in the *Australasian Journal of Regional Science* 2015 was awarded to Maheshwar Rao, Robert Tanton and Yogi Vidyattama (Institute of Governance and Policy Analysis, University of Canberra) for their article “Modelling the Economic, Social and Ecological Links in the Murray-Darling Basin: A Conceptual Framework” published in volume 21(1), pp. 80-102.

The ANZRS AI Award for Best Conference Paper 2015 was awarded to Robert Stimson, William Mitchell, Michael Flanagan, Scott Baum and Tung-Kai Shyy for their paper “Demarcating Functional Economic Regions across Australia Differentiated by Work Participation Categories”. This paper is the first paper presented in these proceedings.

The ANZRS AI Award for Best Conference Paper by a Current or Recent Student 2014 was awarded to Christopher Ambrey and Peter Daniels for their paper “Urbanisation, Carbon Footprints and Wellbeing”. The committee highly commended two other entrants for this Award: Mark Boulle, Delwar Akbar and Shane Hopkinson for their paper “Social Sustainability in Australian Local Government: Commitment and Accountability”; and Joseph Drew and Nicole Campbell for their paper “Autopsy of Municipal Failure: The Case of Central Darling Shire”.

I thank all the participants for their involvement in our 39th Annual Conference, particularly those who had travelled some distance from overseas to attend. The international community of regional science scholars is strengthened when people gather to share their research and expertise at conferences such as this.

Professor Paul Dalziel
Editor, 39th Annual ANZRS AI Conference Proceedings

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Demarcating Functional Economic Regions across Australia Differentiated by Work Participation Categories

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ABSTRACT

Analysing spatial variations in regional economic performance is a common focus for research by regional scientists. Typically such investigations suffer from using *de jure* regions (such as Local Government Areas) as the spatial base as data tend to be readily available for such administrative areas to derive the variables that researchers use in econometric modelling. But using those *de jure* regions means we encounter the modifiable area unit problem (MAUP) which necessitates making adjustments to address spatial autocorrelation issues. It is preferable to use functional regions as the spatial base for such investigations, but that is often difficult to achieve. This paper outlines how, in Australia, we have undertaken research to derive functional economic regions (FERs) to provide an improved spatial data base that is *functional* and not *de jure*-based to address the autocorrelation issue. To do that we employ the Intramax procedure applied to journey-to-work (JTW) commuting flows data that is available from the 2011 census. The research has generated not only a national framework of FERs based on aggregate employment but also a series of regionalisations of FERs differentiated by employment in industry and occupational categories, employment by gender, and mode of travel to work.

1. INTRODUCTION

For a long time regional scientists have been investigating spatial variations in regional economic development/performance using spatial econometric modelling to help identify factors that might explain that variability. Invariably such investigations are dependent on using aggregated data that is usually readily available for *de jure* regions, and as a result we encounter the modifiable area unit problem (MAUP), requiring the analyst to employ spatial econometric tools to adjust for spatial autocorrelation issues. Ideally such modelling would use *functional regions* as the spatial base which, theoretically, should overcome this problem. In their investigation of spatial variations in regional endogenous employment performance over the decade 1996 to 2006, Stimson *et al.* (2011) showed that when spatial econometric modelling is conducted using functional economic regions (FERs) rather than *de jure* regions (Local Government Areas) as the spatial base for modelling, then the spatial autocorrelation encountered when using *de jure* regions might be overcome.

Thus, we are now focusing our modelling of regional economic performance in Australia on using FERs as the spatial base, and we are deriving those FERs using journey-to-work (JTW) commuting flows data that is available in the Australian census. In doing so we employ the Intramax procedure developed by Masser and Brown (1975).

In this paper we report on how, through analysis being conducted at the Centre of Full Employment and Equity (CofFEE) at the University of Newcastle in Australia, FERs have been derived using the 2011 census JTW data. Our intent is to use FERs as the spatial units for modelling the determinants of spatial variations in the performance of regional labour markets over the decade 2001 to 2011. Those FERs are designated by us as CofFEE Functional Economic Regions (CFERs).

But we go further than deriving FERs that just relate to aggregate employment across all industry sectors as it is well known that spatial patterns in the degree of spatial concentration or dispersal of jobs differ between industry and occupation categories. In addition, it is likely that the spatial locations of male and female jobs may also differ, as might the spatial patterns of commuting to jobs according to the mode of transport for the JTW. To address those issues we have thus developed a series of 10 regionalisations of CFERs across Australia for 2011 as specified in Table 1. Each of those regionalisations are designed using the JTW commuting flows of their respective cohort of worker categories as shown in the table.

In this paper we first outline the methodology and the data used to derive those ten regionalisations of CFERs. We then proceed to discuss the number of CFERs across Australia that are thus derived, providing a comparison with Labour Force Regions (LFRs) used by the Australian Bureau of Statistics (ABS). We then proceed to briefly discuss the spatial characteristics of the CFERs that have been derived for the 10 regionalisations listed in Table 1.

2. METHODOLOGY

2.1 The Intramax Procedure

The Intramax procedure (after Masser and Brown, 1975) is used to derive CFERs for all 10 the CFER regionalisations. The procedure considers the size of the interactions in the JTW commuting flows matrix that are in the form of a contingency table. It then formulates the “objective function in terms of the differences between the observed and the expected probabilities that are associated with these marginal totals” (p. 510). A schematic representation of the square JTW flows matrix is shown in Table 2, where the rows are designated as *origins* and the columns are *destinations*.

If we view Table 2 as a contingency table, then the expected values of each element are derived as the product of the relevant column sum (Equation 3 below) times the ratio of the row sum (Equation 2) to total interaction (Equation 4). For example, the expected flow out of region 2 into region 1, a_{21} in Table 2 (where a_{ij} is the element in row i and column j of the contingency table, JTW matrix), is given as:

$$a_{21}^* = \sum_i a_{i1} \left(\sum_j a_{2j} / \sum_i \sum_j a_{ij} \right) = \sum_i a_{i1} \left(\sum_j a_{2j} / n \right) \quad (1)$$

This is the “flow that would have been expected simply on the basis of the size of the row and column marginal totals” (Masser and Brown, 1975, p. 512).

The row sum of the JTW matrix is:

$$a_{i*} = \sum_j a_{ij} \quad (2)$$

Table 1: The Ten Regionalisations of Functional Economic Regions across Australia Derived from JTW Data Available in the 2011 Census

<i>All workers</i>	
1.	Original CFERs (CFER2011)
<i>Gender-based</i>	
2.	Male CFERs (MCFER2011)
3.	Female CFERs (FCFER2011)
<i>Occupation-based</i>	
4.	Skilled CFERs (SCFER2011) – workers in ANZCO categories: <ul style="list-style-type: none"> • Managers • Professionals
5.	Less Skilled CFERs (LSCFER2011) – workers in ANZCO categories: <ul style="list-style-type: none"> • Community and Personal Service Workers • Clerical and Administrative Workers • Sales Workers • Machinery Operators and Drivers • Labourers
6.	Trades CFERs (TCFER2011) – workers in ANZCO category: <ul style="list-style-type: none"> • Technicians and Trades Workers
<i>JTW Mode of Transport-based</i>	
7.	Road JTW CFERs (RoCFER2011) - workers who used one (and only one) of the following modes of transport to travel to work: <ul style="list-style-type: none"> • Car as driver • Car as passenger • Bus • Motorbike • Taxi • Tram • Truck
8.	Rail JTW CFERs (RaCFER2011) - workers who travelled to work by train (only)
9.	Bicycle JTW CFERs (BCFER2011) - workers who travelled to work by bicycle (only)
10.	Multiple Transport Mode JTW CFERs (MTCFER2011) - workers who used more than one mode of transport (those above as well as a classification of “Other”)

Source: Authors.

Table 2: JTW Flow Matrix with j Regions

Destination Origin	Region 1	Region 2	...	Region j	Total
Region 1	1 to 1	1 to 2	...	1 to j	$\sum_j a_{1j}$ Sum of flows out of Region 1
Region 2	2 to 1	2 to 2	...	2 to j	$\sum_j a_{2j}$
...
Region j	j to 1	j to 2	...	j to j	$\sum_j a_{jj}$
Total	$\sum_i a_{i1}$ Sum of flows into Region 1	$\sum_i a_{i2}$...	$\sum_i a_{ij}$	$n = \sum_i \sum_j a_{ij}$ Total Interaction

Source: Authors, after Masser and Brown (1975).

The column sum of the JTW matrix is:

$$a_{j*} = \sum_i a_{ij} \quad (3)$$

The total interaction, n , is the sum of the row sums:

$$n = \sum_i \sum_j a_{ij} \quad (4)$$

The null hypothesis for independence between the row and column marginal totals of a contingency table is defined as:

$$H_0: a_{ij}^* = (\sum_j a_{ij} \sum_i a_{ij})/n = (a_{i*} a_{j*})/n \quad (5)$$

The objective function of the hierarchical clustering algorithm, using a non-symmetrical JTW matrix, is defined as:

$$\max I = (a_{ij} - a_{ij}^*) + (a_{ji} - a_{ji}^*), \quad i \neq j \quad (6)$$

In the Flowmap software, which we used to perform the Intramax procedure for the CFERs, Equation (6) is modified as follows (Breukelman, *et al*, 2009):

$$\max I = \frac{T_{ij}}{O_i D_j} + \frac{T_{ji}}{D_j O_i}, \quad i \neq j \quad (7)$$

where:

- T_{ij} is the interaction between the origin SA2 i and destination SA2 j ;
- O_i is the sum of all flows starting from origin i ; and
- D_j is the sum of all flows ending at destination j .

This alters the focus from the absolute difference between the observed and expected flows to the proportional difference.

At each stage of the clustering process, fusion occurs between the regions that have the strongest commuting ties (interaction), as represented by Equation (7). The stepwise procedure then combines the clustered interaction, and the matrix is reduced by a column and a row. The remaining actual and expected commuting flows are re-calculated and the i, j

combination of regions maximising (Equation 7) is again calculated, and so-on. If there is a continuous network of flows across the study area, with N regions, after $N-1$ steps, all regions would be clustered into a single area and by construction, all interaction would be intra-zonal with one matrix element remaining.

To render the concept of functional regions operational, some level of clustering (number of steps) has to be chosen and the resulting regionalisation defined. There are two main approaches to deciding how and when to stop the clustering process:

1. The first is by reference to intra-regional flows, where the user may stop the clustering process when a certain percentage of flows are intra-regional, or where there is a large increase in the intra-regional flows.
2. Alternatively, the user may want to stop the Intramax method when a pre-determined number of regions has been formed. We stop the clustering for the regions around the 75 percent mark.

2.2 The Data Used

Data from the ABS's 2011 census was used to design the CFERs employing the ABS TableBuilder product. The spatial area building blocks we use to derive the CFERs are the SA2 units within the hierarchy of the new Australian Statistical Geography Standard (ASGS) that was introduced for the first time in the 2011 census. Those SA2s tend to equate to suburbs within the metropolitan cities and larger regional cities and to towns and surrounding areas in regional Australia. It is the SA2s that are used by the ABS as the origin and destination zones for reporting commuting flows for JTW data in the 2011 census.

In the case of all of the CFER regionalisations we have derived, a commuting flow matrix was designed listing the flows between all possible SA2s, which are local areas that basically equate to suburbs and towns.

The JTW data from the 2011 census has two notable limitations:

1. First, the ABS has strict rules on confidentialising its data for the purpose of making it impossible to identify a particular person, which does provide some limitation to the data's accuracy at small numbers. For small numbers the ABS randomises the data and the smallest flow is a value of 3.
2. The second limitation is a result of the different reference periods for the questions asked in the Census. While our origin SA2 is the usual address of workers (at which they will have lived for 6 months or more in 2011), the workplace address is taken for the main job held in the week prior to the date of the census count. To address this limitation we enforce a threshold commuting distance of 300km, above which the flow is excluded from the dataset, so as to exclude flows where it is obvious a person was not carrying out a daily commute. The distance of a commute was taken as the distance between the population-weighted centroids of the origin and destination SA2s.

2.3 Using the Flowmap Software

In using the Flowmap software to run the Intramax procedure, there is a requirement that all spatial areas (that is, the 2011 census SA2s) used in the calculation be interactive. That interactivity is defined as an SA2 being required to have both resident workers and workplaces, and at least one of these must interact with another SA2. Hence, prior to running the Intramax, we needed to remove SA2s that were non-interactive.

When we included flows from all workers there were 25 SA2s across Australia with no flows, plus another 11 SA2s with only an intra-zonal flow. In addition there were 38 SA2s that had

inflows but no outflows, and there were two SA2s with outflows but no inflows. SA2s with only an intra-zonal flow represent self-contained labour markets, and are given the same status as regions that are formed through the Intramax process. SA2s with only one direction flow were placed into regions after the Intramax procedure completed. SA2s with no flows were removed and are classified separately.

For the JTW ‘mode of transport’ regionalisations there were many SA2s with flows in just one direction. As these flows were important in the design of the CFERs (as opposed to the others where their number was very small), an intra-zonal flow of 1 were added to those SA2s so they became interactive and remained part of the flow dataset utilised in the Intramax procedure.

2.4 Dividing Australia into Large Regions

As there were negligible JTW commuting flows between some States and Territories, we divided up Australia into the following four large regions:

1. *East Coast plus South Australia (EC+SA)*, consisting of these states/territories:
 - New South Wales
 - Australian Capital Territory.
 - Victoria
 - Queensland
 - South Australia.
2. *Western Australia (WA)*.
3. *Tasmania (TAS)*.
4. *Northern Territory (NT)*.

The Intramax procedure was run separately for each these large regions.

3. OVERVIEW OF RESULTS DERIVED FROM THE INTRAMAX PROCEDURE TO PRODUCE CFERS

Australia is a very large continent and its relatively small population of around 24 million is highly concentrated geographically, with almost seven out of ten people living in just five large capital city metropolitan regions (Sydney, Melbourne, Brisbane, Perth and Adelaide) whose populations range from a little over one to almost five million. Those capital city metropolitan areas are ‘primate cities’ in their respective States, and there is certainly not a well-developed urban hierarchy – as per Zipf’s (1949) ‘rank size rule’ – across Australia’s urban settlement system. The vast bulk of the nation’s settlement is located within a few hundred kilometres of the east, south-east and south-west coasts of the Australian continent, with the interior of the country being very sparsely settled with extremely low populated densities, with much of that settlement occurring in remote small indigenous communities. Outside the main large state capital city metropolitan regions there are just a handful of urban centres with populations over 100,000, and only one with more than 500,000. The large majority of urban centres outside the metropolitan city areas (in what is commonly referred to as rural and regional Australia) tend to be small.

It might be expected that within the large capital city metropolitan areas there would be a number (probably relatively small) of FERs. And it might be expected that there would be a relatively large number of FERs beyond the capital cities across the vast expanses of rural and regional Australia, with those FERs focusing on the larger regional cities and towns and often incorporating smaller urban centres in the surrounding hinterlands, and with the FERs in the more sparsely settled interior areas being very large geographically.

3.1 The CFERs and Regions for Various Aggregations of the Australian Statistical Geography Standard (ASGS)

Table 3 shows the number of regions across the four large regions into which we have divided Australia that are produced by the Intramax procedure for the Original CFERs (that is, based on the JTW commuting flows data for all workers across all industry categories). The table also indicates the number of areas in the various ASGS classifications that are included in the CFERs.

Across the five states/territories comprising the EC + SA large region, the Intramax procedure produced 79 interactive CFERs, with 5 non-interactive SA2s that are self-contained labour markets (SCLMs). Associated with those CFERs there are 72 SA4s located across the same EC + SA large region at the 2011 census. For the Western Australia large region there are 18 CFERs, with 4 SCLMs, and 9 SA4s; for Tasmania there are 12 CFERs, with no SCLMs and 4 SA4s; and for the Northern Territory there are 14 CFERs, with 2 SCLMs, and 2 SA4s.

Of particular interest is the comparison between the number of CFERs and the regions at which the ABS disseminates data collected through its Labour Force Survey. Previously, under the old Australian Standard Geographical Classification (ASGC) used prior to the 2011 census, this data was made available for the ABS Labour Force Regions (LFRs). However, since the introduction of the new national geography - the Australian Statistical Geography Standard (ASGS) - at the 2011 census, this is now at the SA4 level of the national geography.

Table 3: The Number of Original CFERs across Australia's Large Regions, and the Various Aggregations of the ASGS Statistical Areas in 2011

	NSW	Vic	QLD	SA	ACT	WA	Tas	NT	Australia*
States/Territories	1	1	1	1	1	1	1	1	8
Greater Capital City	2	2	2	2	1	2	2	2	15
<i>ASGS:</i>									
Statistical Area Level 1	17891	13335	11039	4087	918	5508	1446	537	54761
Statistical Area Level 2	538	433	526	170	110	250	98	68	2193
Statistical Area Level 3	91	65	80	28	9	33	15	9	330
Statistical Area Level 4	28	17	19	7	1	9	4	2	87
<i>CofFEE FERs</i> (the Original CFERs)			79 (5)			18 (4)	12	14 (2)	123 (11)

Note: * Does not include other territories.

Source: ABS (2010) and authors' calculations.

As shown in Table 3, there are more of the Original CFERs than there are SA4s; however, there are more SA4s than there were ABS LFRs, partly due to the fact that "labour markets were a key consideration in (their) design" (ABS 2010, p. 27). The SA4s must be large enough to accommodate the ABS sample sizes for its surveys without giving results with standard errors that are too large to make the data meaningful; and the SA4s must also aggregate to capital city/rest of state and state/territory borders. Importantly, those requirements are *not* placed on our CFERs, whose boundaries are permitted to cross those borders if the JTW commuting flows data are such that they in fact cross those administrative (*de jure*) boundaries. This is the big advantage in using *functional* regions as against *de jure* regions as the spatial data base for the analysis of the characteristic and performance regional labour markets.

3.2 Regions for the Various CFER aggregations

Turning now to consider the 10 regionalisations for which CFERs have been derived using the Intramax procedure, Table 4 lists the number of regions corresponding to each of the CFER aggregations. In each case we began by removing the Other Territories and Lord Howe Island, which left us with 2,192 SA2s across Australia.

Table 3: Regions for the Various CFER Aggregations

	EC + SA			WA			TAS			NT			Australia		
	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
Original CFERSs	79	5	15	18	4	6	12	0	3	14	2	1	123	11	25
Male CFERS	72	7	18	16	4	6	12	0	3	16	3	2	116	14	29
Female CFERS	95	9	21	19	4	6	12	1	3	15	3	3	141	17	33
Skilled CFERS	65	7	23	16	4	10	12	1	3	15	3	4	108	15	40
Less Skilled CFERS	95	11	16	20	4	6	13	0	3	16	2	2	144	17	27
Trades CFERS	95	12	28	19	4	6	13	1	3	13	5	4	140	22	41
Road JTW CFERS	87	6	16	17	4	5	11	1	3	14	2	2	129	13	26
Rail JTW CFERS*	13	-	-	4	-	-	-	-	-	-	-	-	17	-	-
Bicycle JTW CFERS	131	316	185	18	53	28	10	21	27	15	14	11	162	404	251
Multiple Transport Mode JTW CFERS	70	68	52	21	18	13	12	7	5	5	14	6	108	107	76

Notes: a = interactive CFERS after the Intramax procedure

b = non-interactive SA2s (self-contained labour markets)

c = SA2s with no flows.

* Only SA2s that had sufficient rail commuting were included in any analysis.

Source: Authors' calculations.

In Table 4 there are three columns for all four of the large regions into which we divided Australia:

- Column (a) is the number of interactive CFERS produced using the Intramax procedure. There are 123 such interactive Original CFERS across Australia.
- Column (b) is the number of SA2s that are non-interactive, which we call Self-Contained Labour Markets (SCLMs). There are 11 SCLMs across Australia, almost all being located in the EC + SA and the WA large regions.
- Column (c) is the number of SA2s that have no flows, for all workers, or for a particular gender, broad occupation class, or mode of commuting. There are 25 of those across

Australia, predominately in the EC + SA large region with a few in the WA large region.

The SA2s that are SCLMs are considered analogous to interactive CFERs as they represent a labour market and therefore should be included in any analysis. However, SA2s with no JTW commute flows should be excluded from any analysis.

In total, across Australia there are 159 Original CFERs, of which 123 are interactive CFERs, 11 are SA2s that are SCLMs, and 25 are SA2s that have no JTW commuting flows.

From Table 4 it is evident that there is a significantly larger number of Female CFERs than there are Male CFERs across Australia, and this is also the case for Less Skilled CFERs and for Trades CFERs as against Skilled CFERs, while the number of Less Skilled CFERs and Trades CFERs are about the same.

With relation to JTW mode of travel, because the JTW is dominated by road transport there is a large number of Road JTW CFERs across Australia, with that number being similar to the number of Original CFERs. The number of Multiple Transport Mode JTW CFERs is somewhat less numerous. Not unexpectedly there are many more Bicycle JTW CFERs than there are for the other modes of commuting. And the number of Rail JTW CFERs is very small. But with respect to the latter, it needs to be noted that Rail JTW CFERs exist only in and around the capital cities of Sydney, Melbourne, Brisbane, Adelaide and Perth. In some cases the Rail JTW CFERs do extend outside the ABS defined area of the capital cities; however, in general there were very few workers from outside these areas that indicated they used the rail network for their mode of commuting. Hence, we excluded any flows from outside the areas that make up the Rail JTW CFERs.

As may also be seen from Table 4, some of the aggregations have many SA2s that are SCLMs, and also many SA2s with no flows. This reflects the type travel mode that is being used for the JTW commute. For example, in the case of the Bicycle JTW CFERs there are naturally many non-interactive SA2s as, generally, the distance someone would ride a bike to work is small, and it is quite likely that bike riders do not leave their SA2 of origin. In addition, the Bicycle JTW CFERs also have many SA2s with no flows, reflecting the lack of popularity of using a bike to commute to work in those areas.

4. CONVENTIONS FOR NAMING THE CFERS

For all of the 10 regionalisation we followed the same naming conventions. Each unique area has an area name, whether it is an interactive CFER, an SA2 with only an intra-zonal flow (a SCLM), or an SA2 without any flows. For those that were classified as CFERs their name attempts to explain where they are placed in Australia. If a CFER crossed a state/territory boundary we included the name of at least one area from both the States on either side of the border in the CFER name to indicate this. The exception is for the ACT - which in most cases was part of a CFER that included surrounding towns in NSW - where the name for the CFER is ACT and surrounds. If a CFER was a single SA2 it took on the name of the SA2. SCLMs also took on the name of their SA2, as did those without flows.

Each area also has a corresponding area code. CFER codes are four-digit numbers:

- The first digit aligning with the State/Territory the most (or all) of the CFER (or self-contained or no flows SA2) is in: NSW = 1; Victoria = 2; Queensland = 3; SA = 4; WA= 5; Tasmania = 6; NT = 7; and ACT = 8.
- The second digit indicates the type of region it is: 1= the region is an interactive CFER, formed through the Intramax procedure; 2 = the region is a single SA2 that only has an

intra-zonal flow (that is, a SCLM); and 3 = indicates the region is an SA2 that had no commuting flows and as such was excluded from the analysis.

- The final two digits then start at 01 for the region incorporating the capital city CBD, and increase as the regions fan out. While SCLMs should be treated as interactive CFERs in most analyses, this coding structure allows analysts to consider the difference between these types of regions.

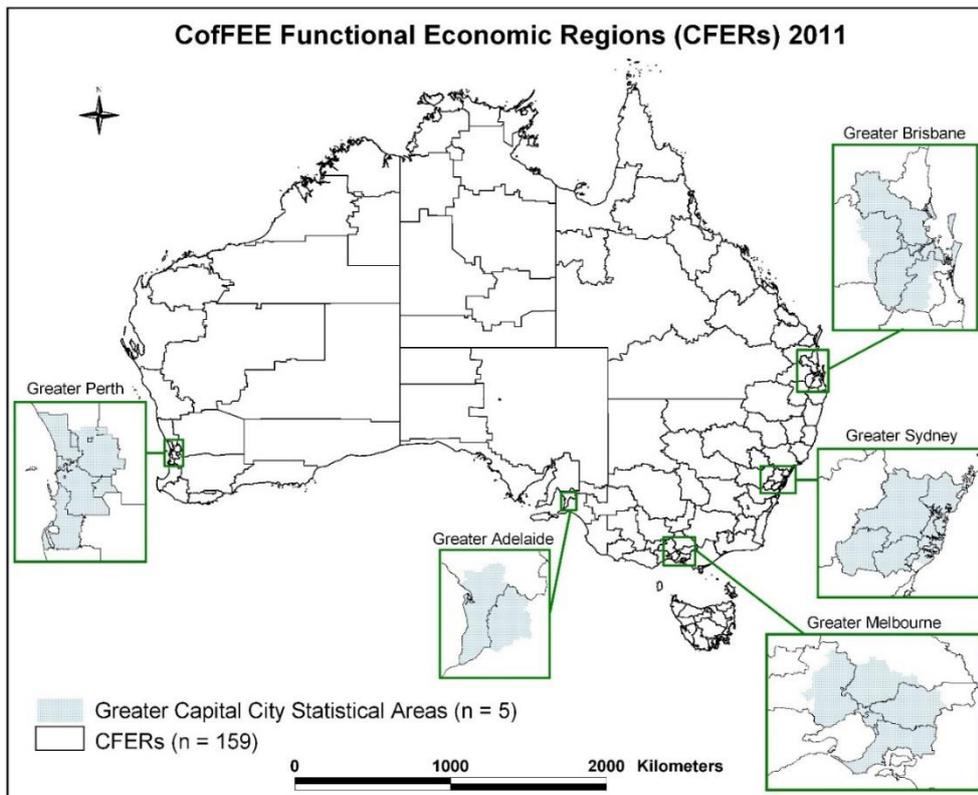
The SA2s that were not part of interactive Rail CFERs were combined, given the name Not Included and the code 9000. There were more than 100 SCLMs in NSW for the Bicycle CFERs, hence these begin at 1195 and continue to 1299.

5. MAPPING THE CFERS

We have mapped the 10 regionalisations of CFERs to show the spatial pattern of these functional economic regions across Australia, with map inserts focusing on the Greater Capital City Statistical Areas (GCCSAs) of Sydney, Melbourne, Brisbane, Perth and Adelaide. Those maps are provided in Figures 1 through 10. Note that in these maps the boundaries of all of the CFERs derived from the Intramax procedure are shown, not just for the interactive CFERs.

The discussion that follows draws attention to some of the significant features of those maps for the 10 regionalisations of the CFERs.

Figure 1: Original CFERs



Source: Authors.

5.1 Original CFERs

The boundaries of the Original CFERs derived from the 2011 census JTW commuting flows data for all workers across all industry categories are shown in Figure 1. There are 159 Original CFERs across Australia.

There are multiple Original CFERs in Australia's five GCCSAs - with the boundaries often extending beyond the *de jure* defined GCCSAs - indicating that those large metropolitan concentrations of people are characterised by a poli-centric structure in which distinct functional labour market regions have emerged. The spatial shape of these Original CFERs tend to be elongated stretching out along major transport routes

For the Sydney GCCSA there are 7 Original CFERs, with an additional three adjoining to encompass the Newcastle region to the north and the Wollongong region to the south. For Melbourne there are 6 CFERs with a further one adjoining encompassing the Geelong-Surf Coast. Brisbane has 4 CFERs plus the adjoining Gold Coast-Tweed to the south and the Sunshine Coast to the north to encompass what is known as the Brisbane-South East Queensland region. For Perth there are 4 CFERs. However, for Adelaide (the smallest of the GCCSAs) there is only one CFER which encompasses Greater Adelaide and the Barossa, with an adjoining CFER to the east that includes the Adelaide Hills-Murray Bridge-Fleurieu Peninsula.

In and around the National Capital area of Canberra there is only 1 large interactive CFER. And there are 4 Original CFERs in and around Hobart, and 3 in and around Darwin.

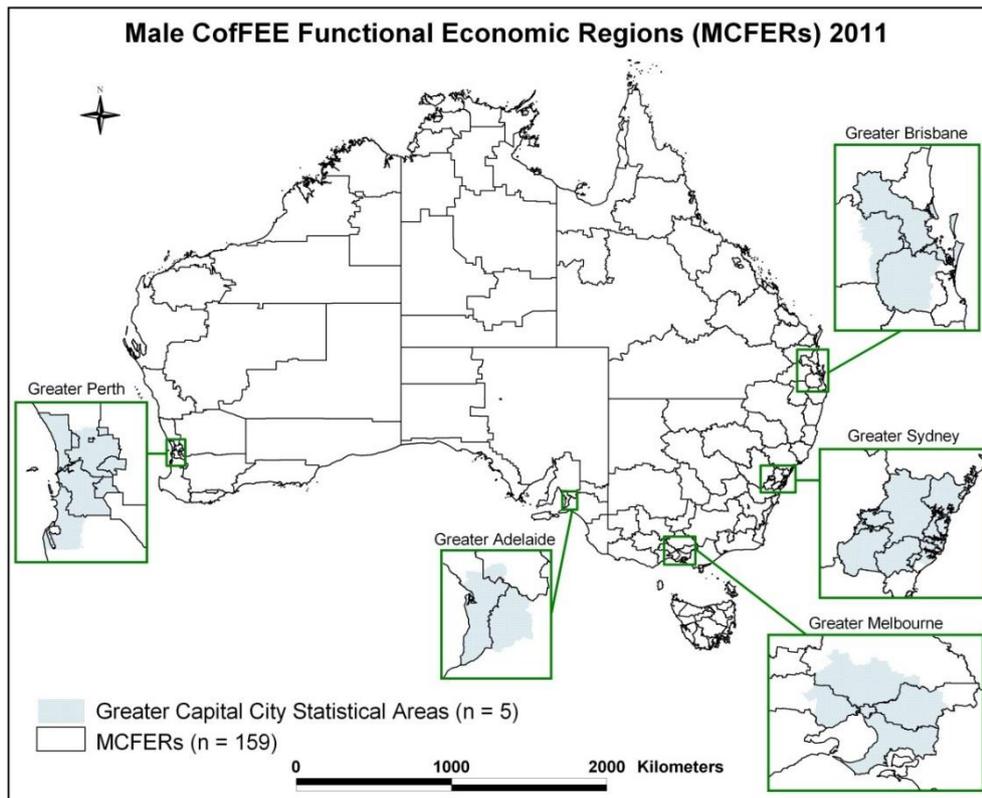
Outside the GCCSAs, across regional Australia the Original CFERs tend to focus largely on the larger regional cities and towns and encompass surrounding hinterland areas that may include a number of smaller urban centres, with the shape of those CFERs tending to be elongated (linear) along major transport routes. It is significant (but unsurprising) that the Original CFERs in regional Australia tend to cross over the State borders in the EC + SA large region, especially along the Murray River which forms the border between NSW and Victoria, along the eastern part of the NSW-Queensland border, and in what is often referred to as the Green Triangle section of the Victoria-SA border.

The Original CFERs tend to become less numerous and much larger in size with increasing distance inland from the coastal fringes of Australia, reflecting the rapid decrease in population density and the lack of larger urban centres in the inland and more remote areas of Australia. In some of the remote inland areas - especially in outback Queensland, in the Northern Territory, and in the inland and north-west Western Australia - there are some more self-contained CFERs associated with mining settlements and remote Indigenous communities.

5.2 Gender-differentiated CFERs

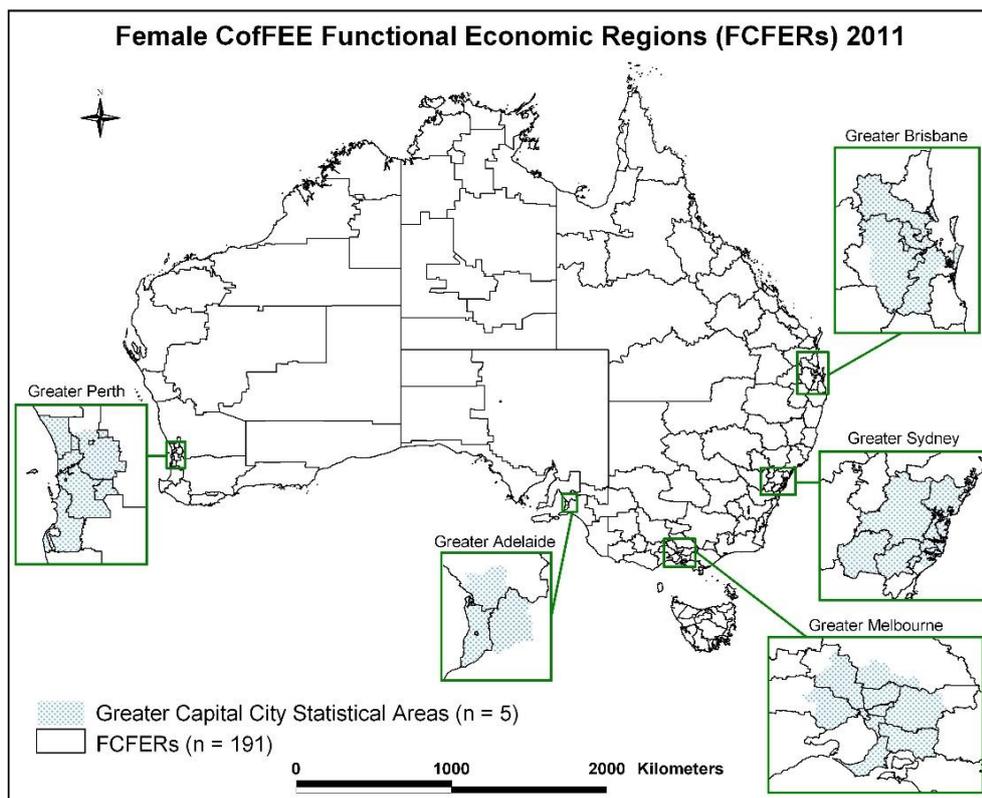
The boundaries of the Male (MCFERs) and the Female (FCFERs) regions are shown in Figures 2 and 3 respectively. Across Australia there are 159 Male CFERs (the same as the number of the Original CFERs), but the number of Female CFERs is considerable greater at 191. This could reflect the gender differences in the incidence of male and female employment in different industry and occupation categories and the patterns of spatial concentration and dispersal of male and female jobs in those sectors of economic activity. But within and around the GCCSAs there is not a lot of difference. For the area in and around Sydney there are 12 Male CFERs and 13 female CFERs; for Melbourne it is 7 and 10; for Brisbane it is 6 and 6; for Perth it is 4 and 4; and for Adelaide it is 2 and 3. The ACT has 5 Male CFERs and 7 Female FERs. Hobart has 4 CFERs for both Males and Females.

Figure 2: Male CFERs



Source: Authors.

Figure 3: Female CFERs



Source: Authors.

Thus it is beyond the large metropolitan city regions into regional Australia where there are a significantly larger number of Female CFERs than Male CFERs with a tendency for the Female CFERs to be more confined to focusing on country towns and lesser inclined to encompass the hinterland areas surrounding the larger regional cities, and that is the case across all four of the large regions into which we divided Australia.

In the remote areas of NT and WA there are quite a large number of both Male and Female CFERs that are confined largely to Indigenous settlements and to mining settlements.

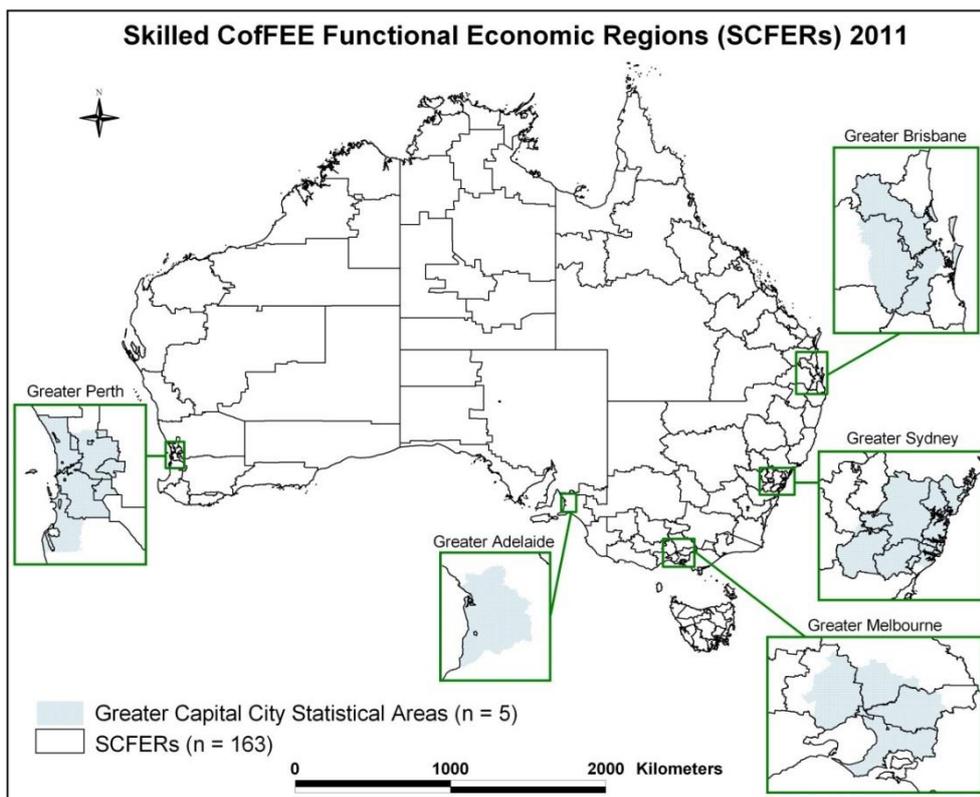
5.3 Occupation and Skills Differentiated CFERs

The boundaries of the Skilled CFERs, the Less Skilled CFERs, and the Trades CFERs are shown in Figures 4, 5 and 6.

Skilled CFERs

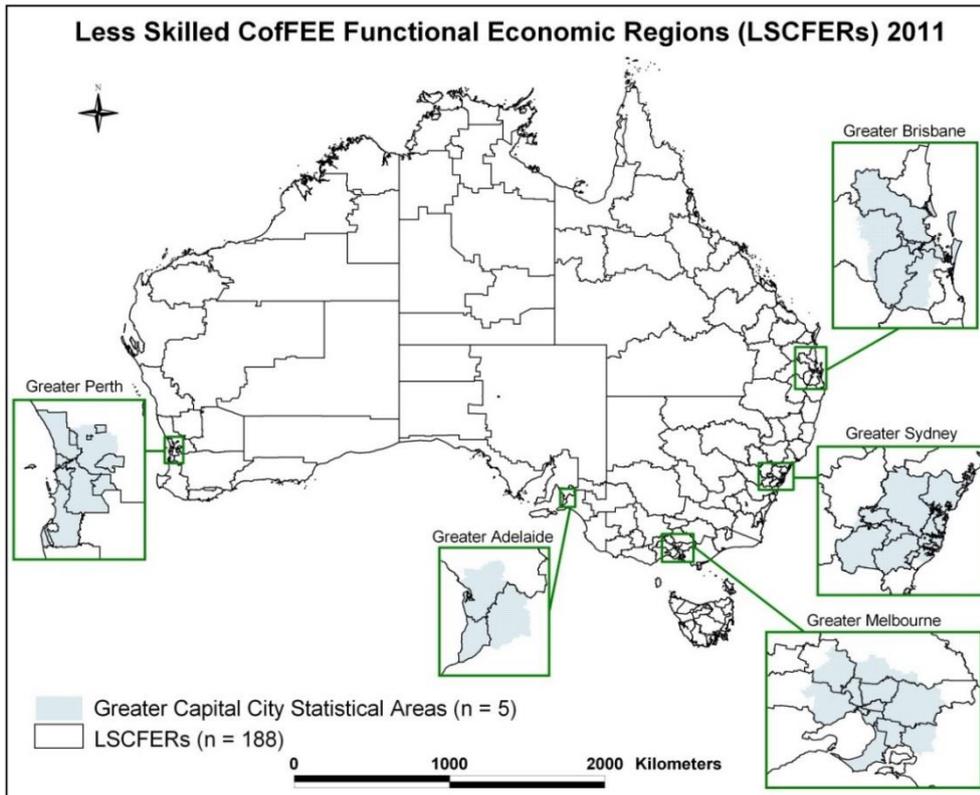
From Figure 4 we see there are a total of 163 Skilled CFERs across Australia. Focussing on the Sydney GCCSA, there are 6 Skilled CFERs, plus another 3 taking in the Central Coast and Newcastle-Hunter area to the north and Wollongong-Illawarra-Batemans Bay area to the south, and another 2 encompassing the Blue Mountains to Sydney's west. In and around Melbourne there are 6 Skilled CFERs, including the area around Geelong. However, in and around Brisbane there is just 1 Skilled CFER covering Greater Brisbane, plus 3 further Skilled CFERs taking in the Gold Coast-Tweed to the south, Ipswich-Toowoomba to the west, and Sunshine Coast to the north. A single large Skilled CFER encompasses Adelaide-Barossa-The Coorong. In and around Perth there are 5 Skilled CFERs. It is noteworthy again that in and around the ACT there is only 1 interactive Skilled CFER which, while there are 4 in Hobart, and Darwin has 4.

Figure 4: Skilled CFERs



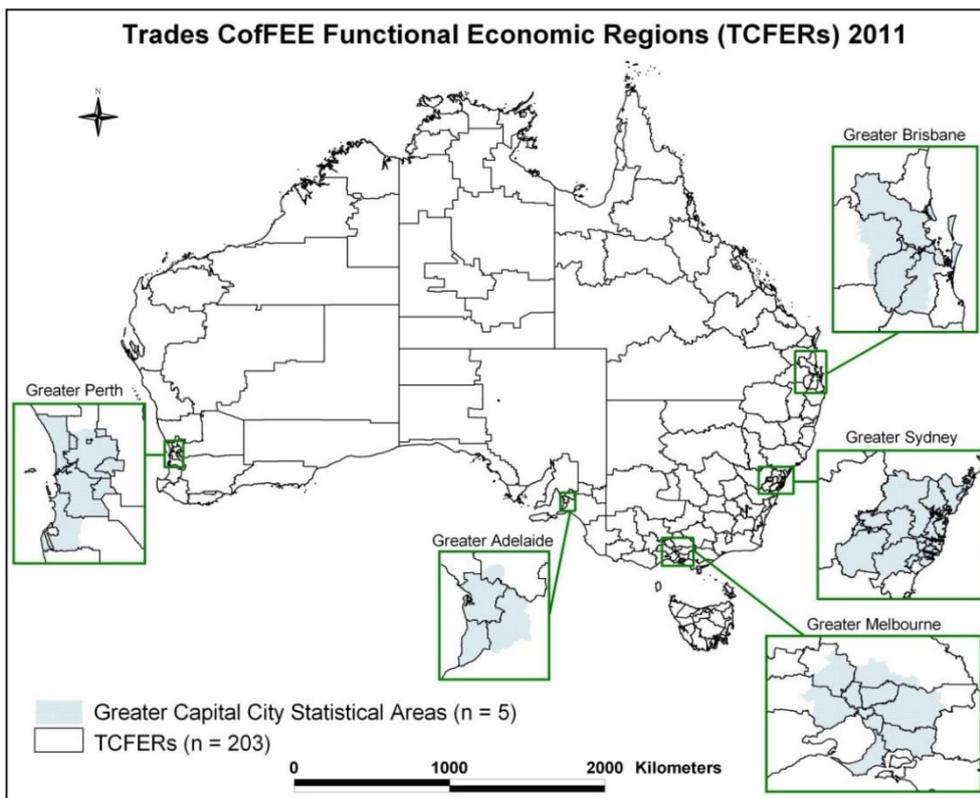
Source: Authors.

Figure 5: Less Skilled CFERs



Source: Authors.

Figure 6: Trades CFERs



Source: Authors.

Beyond the areas within and surrounding the GCCSAs the Skilled CFERs tend to take on somewhat similar forms to the previously-discussed Original CFERs and the Male and Female CFERs, except that there are a slightly larger number of them compared to the Male CFERs but fewer than the Female CFERS. The Skilled CFERs in regional Australia are certainly focused largely on the economic functions in those larger regional urban centres that depend on skilled workers draw from large hinterlands, indicating the smaller regional urban centres do not have local skilled worker labour markets.

In remote areas - especially in WA - there are distinct Skilled CFERS focused on mining settlements, and also on remote indigenous settlements. But across the inland remote areas of Australia there are few very large Skilled CFERS.

Less Skilled CFERS

As shown in Figure 5 there are substantially more Less Skilled CFERs across Australia at 188 compared to the 163 Skilled CFERs.

The Less Skilled CFERs are also more numerous in and around the GCCSAs. There are 14 across the Sydney-Newcastle-Wollongong areas; 12 in and around Melbourne-Geelong; 7 across the Brisbane-SEQ region; 3 across the Adelaide area; and 6 across the Perth area. Again in and around the ACT there is just 1 interactive Less Skilled CFER. Hobart has 4 Less Skilled CFERS, and Darwin has 3.

Beyond the GCCSAs and their surrounds into regional Australia the Less Skilled CFERS are considerably more numerous than is the case for the Skilled CFERS. They tend to focus not only on the larger regional cities and towns, but also on some of the smaller regional urban centres which indicates that many urban centres in regional Australia can sustain local labour markets for Less Skilled workers.

Across the inland remote areas of Australia there are few in number but large Less Skilled CFERS. But there are a considerable number of Less Skilled CFERS in the remote areas of NT and WA focusing on mining settlements and indigenous settlements.

Trades CFERS

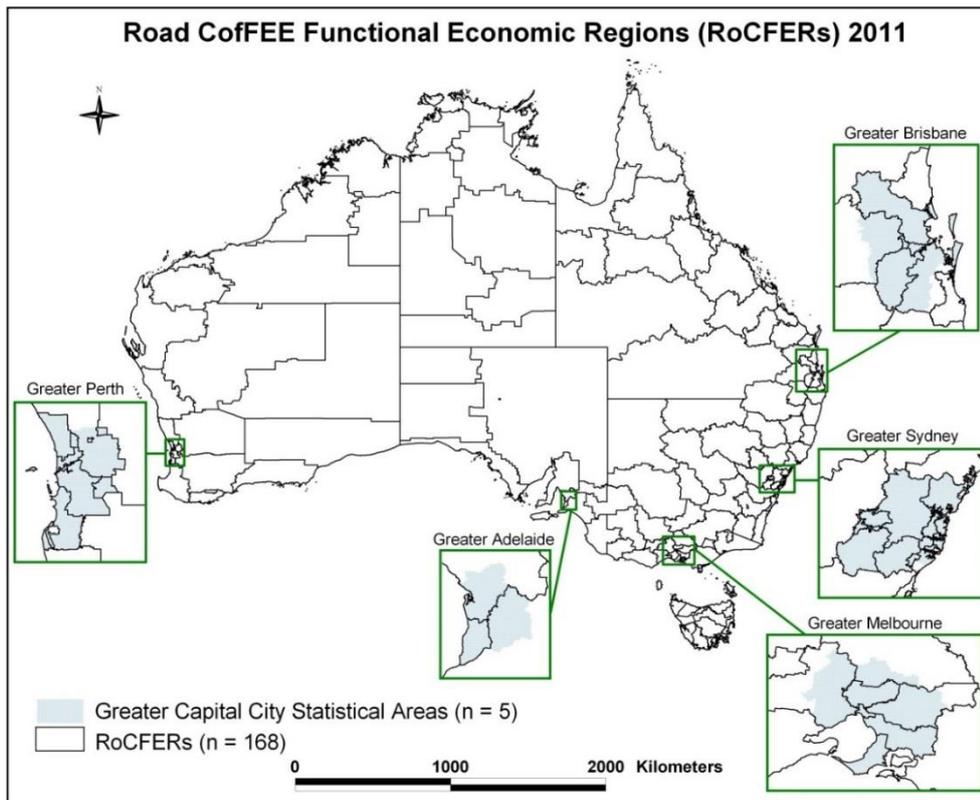
Figure 6 shows there are even more Trades CFERs across Australia at 203 in total. In and around the GCCAs, there are 15 across the Sydney-Newcastle-Wollongong area, and 11 across Melbourne-Geelong. There are 5 Trades CFERs across Brisbane-SEQ; 4 across the greater Adelaide area; and 4 across Perth. Once more in and around the ACT there is just 1 interactive Trades CFER, while Hobart has 4, and Darwin has 3.

Across regional Australia again the Trades CFERS tend to focus predominantly on the larger regional cities and towns, but a few of the less large urban centres do seem to support Trades CFERS. Again in the remote parts of NT and WA there are Trades CFERS that focus on mining settlements and indigenous settlements.

5.4 JTW Mode of Transport Differentiated CFERS

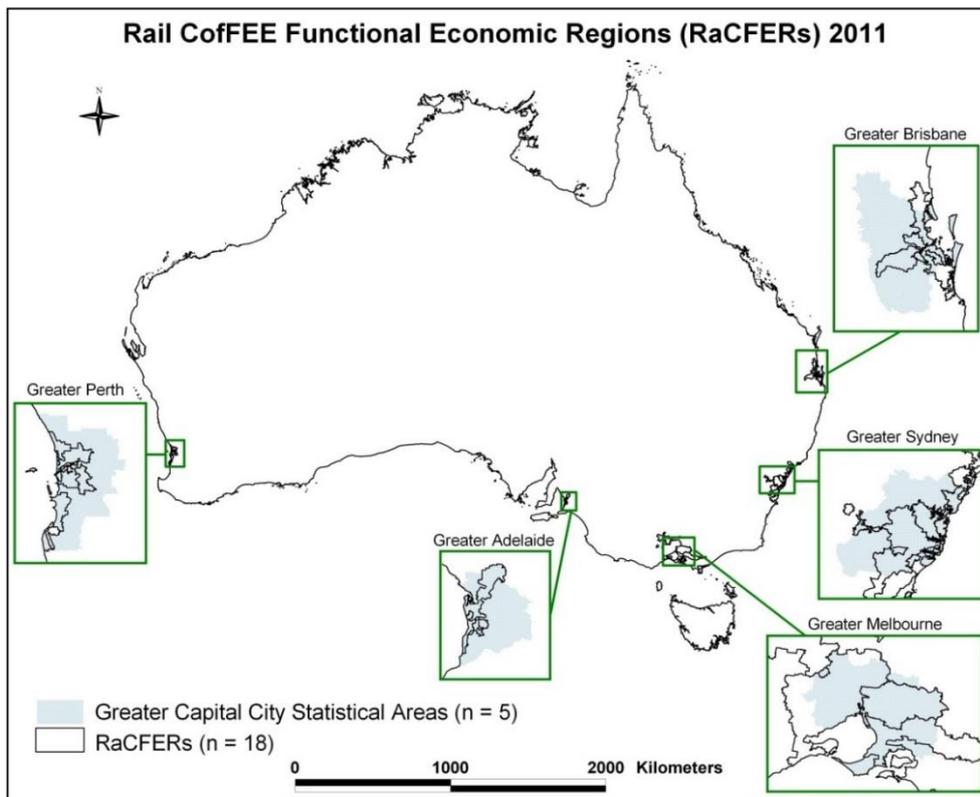
The boundaries of the Road JTW CFERs, Rail JTW CFERs, Bicycle JTW CFERs, and Multiple Transport JTW CFERs are shown in Figures 7, 8, 9 and 10. What these maps represent are approximations of largely self-contained commute sheds for specific JTW travel modes for workers at the time of the 2011 census in which there is a preponderance of that mode commuters who both live and work within a designated CFER.

Figure 7: Road JTW CFERs



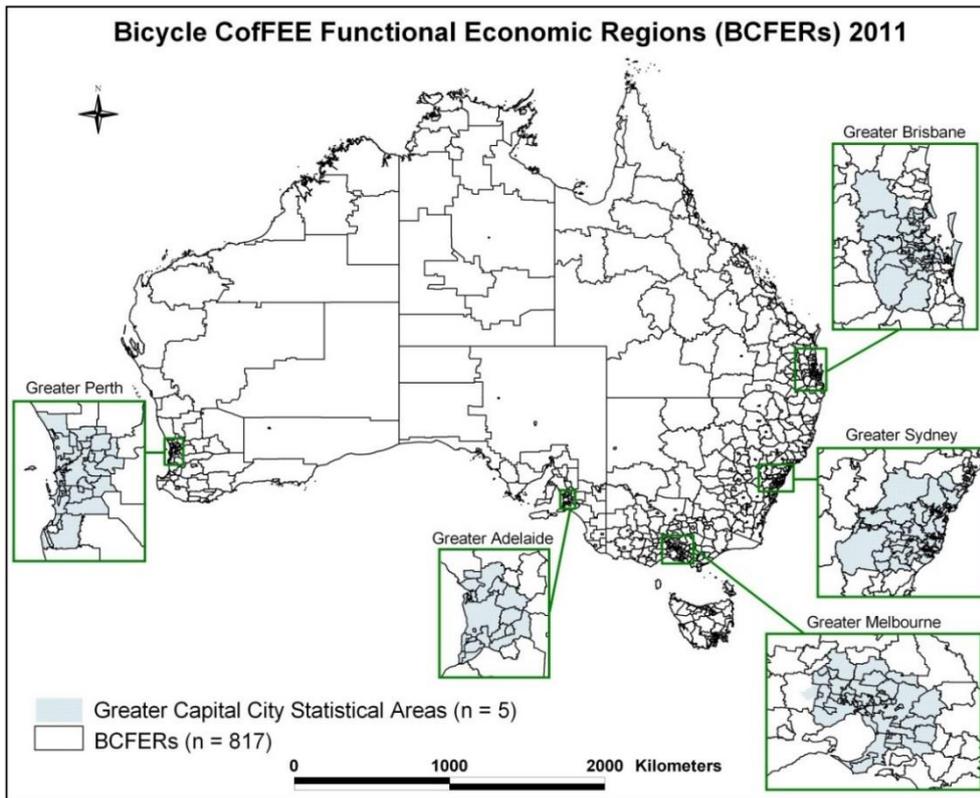
Source: Authors.

Figure 8: Rail JTW CFERs



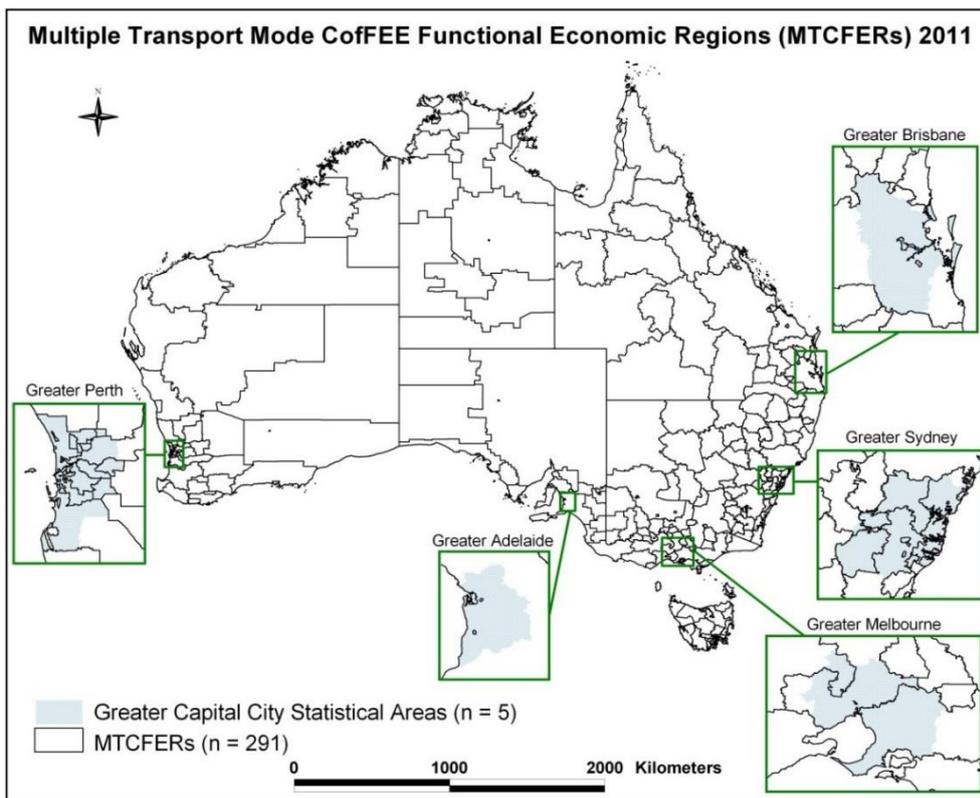
Source: Authors.

Figure 9: Bicycle JTW CFERs



Source: Authors.

Figure 10: Multiple Transport Mode JTW CFERs



Source: Authors.

Road JTW CFERs

As shown in Figure 7, across Australia there are 168 Road JTW CFERs, which is slightly more than the number of Original CFERs. It is important to stress the overall high incidence of the private motor vehicle as the predominant model of travel to work in Australia, and the almost total reliance on that mode of travel across regional Australia.

For the GCCSAs, we see in and around Sydney 7 Road JTW CFERs, with another 6 to the north, west and south embracing Newcastle, Wollongong and the Blue Mountains areas. There are 6 Road JTW CFERs encompassing the Melbourne GCCSA and Geelong-Surf Coast; 4 across the Brisbane GCCSA plus Gold Coast-Tweed and Sunshine Coast; 3 across the greater Adelaide area; and 6 across the Perth GCCSA. The ACT has only 1 interactive Road JTW CFER, while there are 4 in Hobart and 3 in Darwin.

Across regional Australia the Road JTW CFERs tend to focus on the larger urban centres and to take in smaller urban centres in their hinterlands, often covering quite large areas spread out along the main roads.

Rail JTW CFERs

Figure 8 shows that it is only the largest 5 of the GCCSAs with commuter rail networks that have Rail JTW CFERs. There are only 19 such CFERs in total - just 3 across Sydney and extending south to Wollongong. Across greater Melbourne there are 3 Rail JTW CFERs which extend north-west to Ballarat and south-west to Geelong, and east to Traralgon, plus an additional one that encompasses Bendigo-Castlemaine along a regional rail service. For the Brisbane region there are 3 Rail JTW CFERs that extend south to the Gold Coast and west beyond Ipswich. Adelaide has 3 Rail JTW CFERs, while Perth has 4. As one would expect, these Rail JTW CFERs are extensive in size and elongated in shape which reflects the radial commuter rail networks that radiate out from the capital CBDs.

Bicycle JTW CFERs

There has been a considerable public policy push in Australia to encourage cycling as a mode of travel, and while the incidence of cycling for the JTW is increasing it still represents a minute proportion of the JTW. As shown in Figure 9, these Bicycle CFERs tend to be small geographically and there is a large number of them – a total of 817 across Australia. This is not surprising as it is unlikely that workers who cycle to work would be prepared to travel a long distance.

For the GCCSAs and their surrounding areas, there are about 25 Bicycle CFERs across Sydney, Newcastle, Wollongong and the Blue Mountains area; about 20 across greater Melbourne; almost 30 across Brisbane-SEQ; 17 across greater Adelaide; and 10 across Perth. There is just 1 large interactive Bicycle JTW CFER across the ACT. There are 4 across Hobart and 5 across Darwin.

There are a large number of Bicycle JTW CFERs across regional Australia - literally numbering in the hundreds - with them tending to focus on both the larger and the smaller urban centres.

Multiple Transport Mode JTW CFERs

Figure 10 shows the Multiple Transport Mode JTW CFERs which number 291 across Australia. For the Sydney GCCSAs there are 3 Multiple Transport Mode CFERs, and there are additional ones to the north and south which extend beyond Newcastle and Wollongong and as well into the Blue Mountains. Greater Melbourne has 4 Multiple Transport Mode CFERs which extend well beyond that GCCSA along the regional commuter rail links east

into the La Trobe Valley, west to Bacchus Marsh and north to Seymour and west and north-west to Ballarat and Bendigo. It is interesting that there is just a single Multiple Transport Mode CFER covering a large area that encompasses Brisbane-Gold Coast-Toowoomba, with another covering the Sunshine Coast. A single Multiple Transport Mode CFER covers the whole of Greater Adelaide and surrounds. And there are several Multiple Transport Mode CFERs across the greater Perth region. In and around the ACT there is just 1 large interactive Multiple Transport Mode CFER. There are 2 in Hobart and 2 across Darwin.

In the regional areas of Australia the Multiple Transport Mode CFERs are focused largely on the larger urban centres and typically encompass a number of urban centres surrounding them.

CONCLUSION

This paper has outlined how we have been developing a new spatial base for investigating regional performance across Australia employing an approach that seeks to derive *functional* regions using the Intramax procedure and JTW data available in the 2011 census. In addition to deriving FERS that relate to aggregate employment across all industry categories (the Original CFERS), we have also derived regionalisations that segment workers into gender, occupation/skills categories, and different transport modes for the JTW commute.

The paper has discussed the outcomes of the 10 regionalisations derived from the JTW commuting data using the Intramax procedure and highlights some of the spatial patterns that result both across Australia's major capital city areas and across regional Australia. Not surprisingly there are considerable variations in both the number of CFERs that are derived for the 10 regionalisations used for this paper as well as the spatial characteristics of some of the patterns for those employment segmentations.

This research adds further evidence to demonstrate that labour markets are not homogenous across a nation's space economy, and the regional demarcations based on gender and occupations /skills of the labour force certainly show that for Australia's large capital city regions there are distinct local labour markets as a result of differences in the emerging patterns of spatial diffusion and concentration of employment that have subtle differences for jobs dominated by male and female work and by levels of skill and occupation. And it is also evident that the mode of travel to work chosen by commuters results in very substantial differences in the incidence and patterns of functional regions.

The research presented here will now be used as the basis for much more detailed interrogation using spatial econometric analytical tools to investigate possible determinant of spatial differentials in the economic performance of the CFERs derived through the Intramax procedure and to explore in depth the characteristics of the gender and occupation / skills segmented CFERs on a region-by-region basis for the major capital city areas and across parts of regional Australia.

ACKNOWLEDGEMENT

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Assessing Need for Education Services for Regional Sustainability – The Case of Moura, Australia

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ABSTRACT

This paper assesses the need for education services in the mining communities through a case study of the Moura Township in central Queensland, Australia. The study involves a case study approach with a survey method to assess the current performance and the need for education services of the Moura residents. This study found about two thirds of the respondents were reasonably satisfied with the level of education services in Moura, while the remaining one third expressed some concerns with these services. A TAFE was identified as the most predominantly needed facility in Moura. Currently, there is a TAFE in Biloela, which is 66km away from Moura; however there is no public transport facility between Moura and Biloela. Moura residents are looking for TAFE facilities to be built in the town or upgrade the exiting TAFE in Biloela with the provision of adequate public transport facility.

1. INTRODUCTION

The Australian government has been promoting quality of education and training at every level as a means to develop the nation's social and economic capital. The Council of Australian Government (COAG) in 2008 agreed to set up national standard of primary and secondary education for each of the state and territories. Bradley *et al.* (2008) also suggested a national education standard for tertiary education sector. COAG (2008) called for education reform, especially to address the education needs of low socio-economic, rural and remote communities through a funding partnership between federal and state governments. Under this partnership funding, some rural and regional schools were targeted, especially for recruitment and retention of specialised teachers and professional non-teaching staff.

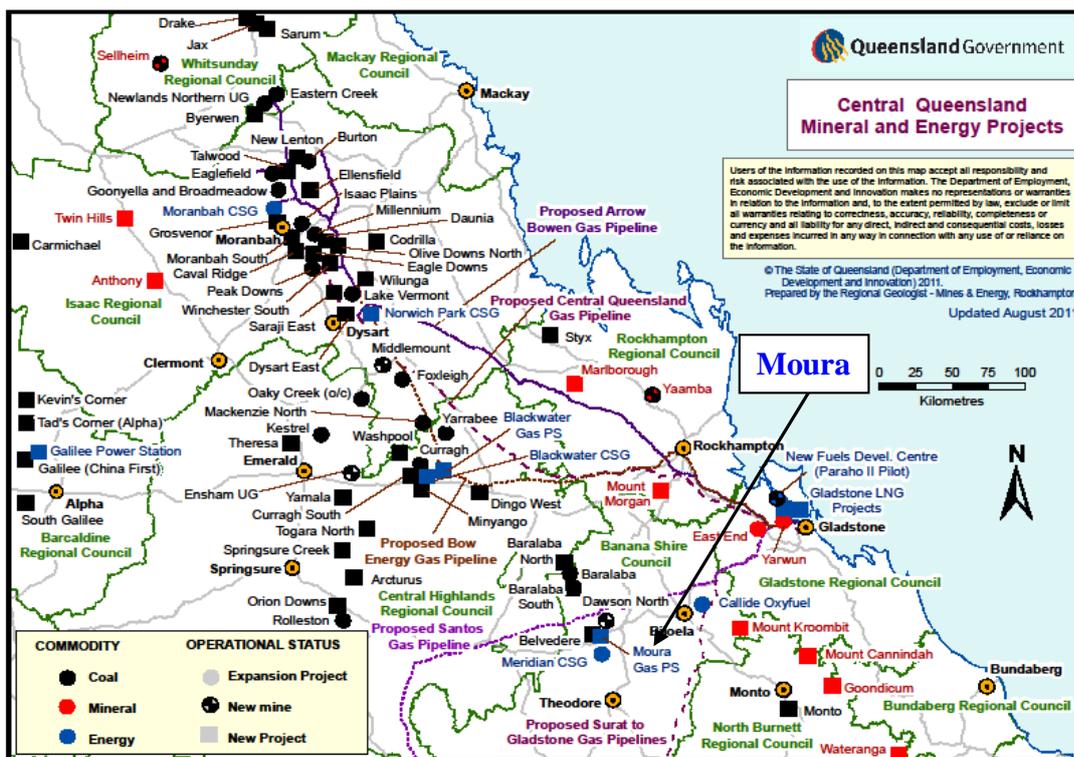
On the other hand, COAG (2008) also advocated developing or enhancing vocational or TAFE (Technical and Further Education) education for rural and regional communities. In fact, many studies supported vocation education as a vital vehicle for meeting the demand for training, developing the industry workforce and maintaining industry clusters and competitiveness in regional Australia (AGDE, 2014; Bullock, 2014; Seares, 2014; AWP, 2013; NSWDEC, 2013; DEECD, 2013). However, accessibility to and delivery of education services in regional and resource communities in Australia have been facing a number of distinctive challenges (Miles *et al.*, 2013). The focus of this paper is to assess the accessibility of, satisfaction with, and the needs for education services of regional and resource towns through a case study of the Moura Township in central Queensland, Australia. The paper is organised as follows. A background of the case study area is provided in Section 2, followed

by the analytical framework in Section 3. The study’s methodology is described in Section 4. The case study findings and analysis are detailed in Section 5 followed by stakeholders’ perceptions regarding service accessibility and future service provision in Section 6. The paper concludes in Section 7.

2. BACKGROUND OF THE CASE STUDY AREA

The Moura Township was chosen as a case study from central Queensland region in the state of Queensland representing small to medium sized mining towns in Australia. About 100 coal mines, mineral and energy (gas) projects operating in the rural and regional areas of Queensland (Figure 1).

Figure 1: Location of the Case Study Area (Moura Township) and its Adjoining Mining Towns within the Central Queensland Region



Source: Queensland Government.

Moura is mostly a mining community with a resident population of 2,000 (ABS, 2012); however some residents working with the agricultural sector also live in the town. Coal has been mined near Moura since 1961 and this one of the longest-established coal mining projects in Queensland. It is also expected that coal will be mined in or around Moura for another 30 to 40 years. So Moura has an expected resource life for mine of about 100 years.

The median age of Moura residents is 33 with little change over time and average household size is 2.5, which is very similar to many other mining towns in Australia (ABS, 2012). Median personal income has increased by \$391 since 2006, which is higher than many other towns in the region (ABS, 2008; ABS, 2012). Moura has a proportion of working age residents (72.5%) compared to other regional and rural towns in Queensland. The township has a high proportion (about 50%) of non-resident population living in the mining work camps (OESR, 2012). Half of the families/households have children and most of the children

attend childcare or the schools (ABS, 2008). About 60 percent of the Moura's residents have been living there for more than 10 years (Akbar *et al*, 2011).

These socio-demographic characteristics of Moura are very similar to other small-sized mining or rural towns in Australia. The Moura community may last for centuries as it has the connection with rural communities and the businesses that are linked to agricultural services and therefore it deserves accessibility to the education services because this is directly related to the wellbeing and productivity of the community. This paper further explores an assessment of its current education services.

3. A FRAMEWORK FOR ASSESSING EDUCATION NEED

The Moura Township was chosen as a case study from central Queensland region in the state of Queensland representing small to medium sized mining towns in Australia. About 100 coal mines, mineral and energy (gas) projects operating in the rural and regional areas of Queensland (Figure 1). There are various levels of education services needed to support local productivity and the social systems of a community; however all communities do not need all levels of services and even sometimes it is not feasible to provide all levels of services to all communities. For example, a university may be need at a metropolitan city while a rural or resource town may need kindergartens, primary and high schools and training centres.

Sahin and Sural (2007) identified different levels of education, starting from pre-school to graduate level institutions. This system is typically composed of non-nested facilities since service is provided to different age groups at each level. A distinct feature in modelling is to consider the solution of location problems in a planning horizon perspective since demand is dependent on the age composition of the population.

Some studies identify location of service delivery based on population base, distance and travel time (Sahin and Sural, 2007; Harper *et al*, 2005), while some suggest socio-economic and regional dynamics in preparing service delivery models (DEECD, 2013; NSWDEC, 2013; ILO, 2011; Murry and Gerrard, 1998; Narula, 1984). However no study has examined people's satisfaction with the services provided nor have they explored the people's opinions when developing new services or upgrading the existing services; instead they are all based on quantitative location-allocation models. There is a need to explore the community's characteristics and perception towards education service delivery, as well as the stakeholder's perceptions toward the need of such services. Thus, this study suggests a framework to assess the need for education services based on community perceptions regarding service need and examining stakeholder opinions.

4. METHODOLOGY

This study entails a case study approach with a mixed methodology of quantitative and qualitative methods for data analysis. A case study approach mostly makes a contribution in developing a systematic framework to examine a problem, and is well suited to the need assessment (Finn *et al*, 2000). In view of this, education services in Moura have been selected as the case study for this research to assess performance of the current health services and to understand community's need for upgrading existing services or for developing new services. The study did not focus on the quality of any particular education service or identify or detail factors affecting the supply of those services. Nor did the study estimate any cost that the suggested education service would require.

Two sources of primary data were collected. First, interviews with stakeholders were conducted. Second, a household survey was undertaken of Moura residents. This study

interviewed eight stakeholder participants, selected from education, health, local government and the mining sector. The sample size for the surveys was based on the current household size (2.5 people) and total number of households to achieve a 95% confidence level, which was estimated as requiring between 46 and 85 households. A total of 91 household responses were received, of which 83 were valid (the remaining responses were not returned complete). Data analysis was performed by categorising, tabulating and visualising evidence to address the objectives of this study.

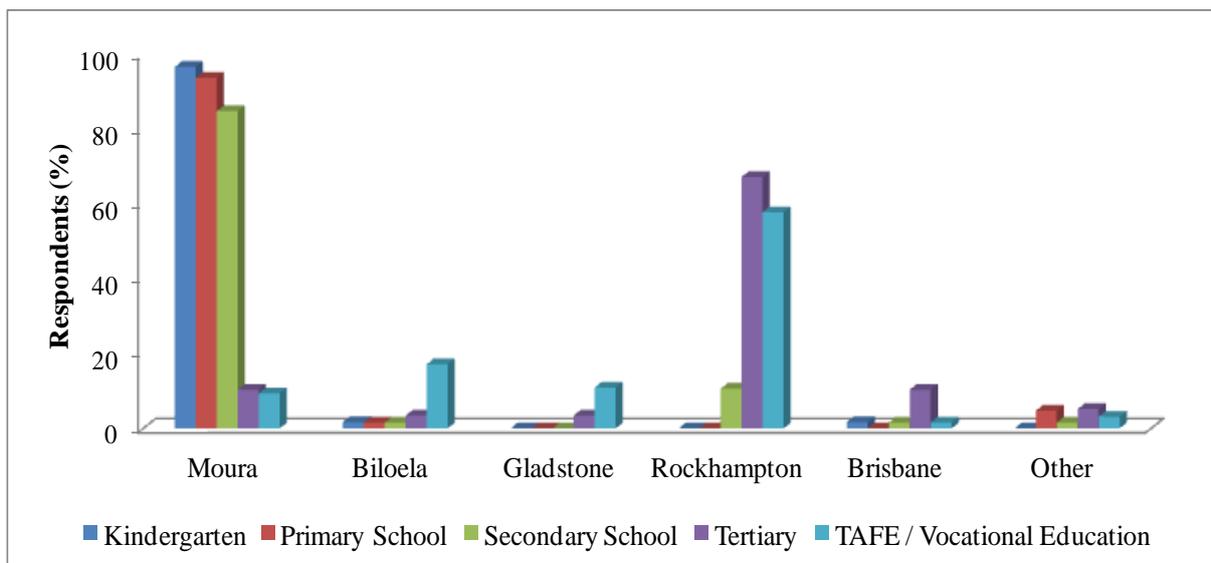
5. CASE STUDY FINDINGS AND ANALYSIS

5.1 Current Education Services in Moura

Moura has various educational services, including Kindergarten, Moura State High School, Moura State Primary School and a special Education Program (BSC, 2011). Moura Childcare Centre provides limited hours of childcare for children aged 8 weeks to 5 years. The centre can cater for up to 21 children. Moura State Primary School was established in 1940 and caters for pre-school, and prep to year seven students. Currently there are approximately 250 students enrolled (10% of whom attend the pre-school). Moura State High School was established in 1976 and caters for years eight through to 12, with 175 students currently enrolled (BSC, 2011). Besides the local primary school, students also come from three feeder schools: Banana State School, Bauhinia State School and Theodore State School. Moura State High School provides individual student counselling, a Chaplain for two days a week, as well as a youth health nurse to assist students with diet, mental health and sexual issues. Visiting specialists assist with school based apprenticeships and traineeships, indigenous issues and education.

A questionnaire survey was conducted to explore the satisfaction with the existing education services in Moura where to improve the quality of those services.

Figure 2: Location Preferences for Education Services for Moura Residents



5.2 Main Locations for Education Services

Moura and Rockhampton were named by residents as the main location they would source education services (Figure 2 above). Most households prefer to send their children to the local Moura kindergarten, primary school and high school. The second most popular location for

schooling was Rockhampton, which is a regional city, is about 180km north-east of Moura. Rockhampton was also the preferred location for higher education as the most preferred location for tertiary, TAFE and vocational education. Other locations considered for education were Biloela, Gladstone and Brisbane.

5.3 Distance and Travel Time to Access Educational Services

To access educational services, the majority of respondents travelled not more than 15 minutes for kindergarten, primary and secondary schools, with about 70% of these travelling just five minutes or less and about 75% are travelling less than 5km (Figures 3 and 4). To access higher education, such as TAFE/vocational education, most respondents indicated travel times of more than an hour (Figure 3). This is reflected in the distance travelled for this service, with most respondents travelling over 100 km (Figure 4).

Figure 3: Respondents Travel Time to Access Educational Services

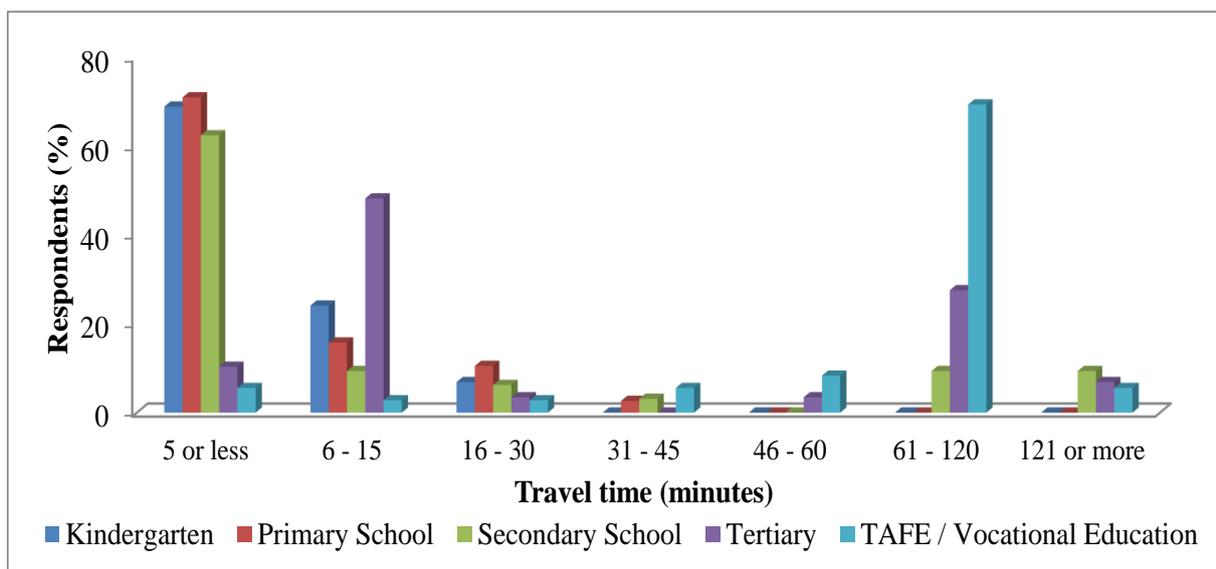
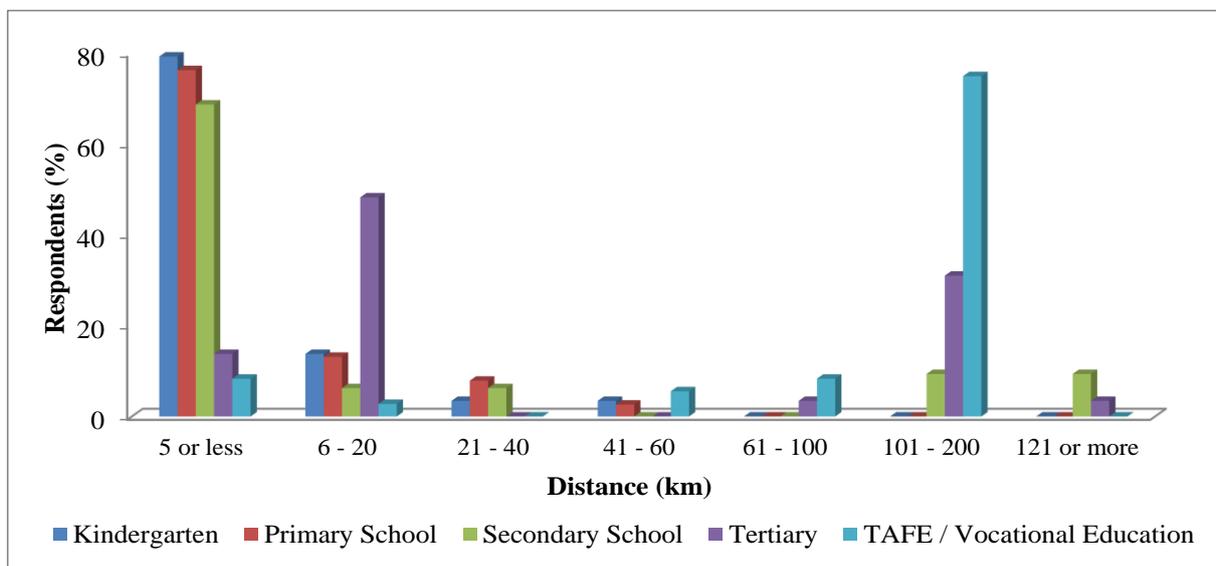


Figure 4: Distance Respondents Travel to Access Educational Services



5.4 Reasonable Distance and Travel Time for Accessing Education Services

When respondents were asked what they felt was a reasonable distance or travel time to access educational services, more than 75% of the respondents advised that it should not be more than 15 minute walk or drive to go to kindergarten and primary schools, equating to less than 5km to these services. Respondents preferred secondary schools to be within 20km but were satisfied with travelling for slightly longer times to access high schools. There was a general trend for respondents to prefer the lower educational levels closer to their homes and to be more accepting of higher educational services being further away and having greater travel times to access these. Despite this, very few considered travelling more than 200 km or 120 minutes to be reasonable (Figure 5 and Figure 6).

Figure 5: Travelling Time that Respondents Consider Reasonable when Accessing Various Educational Services

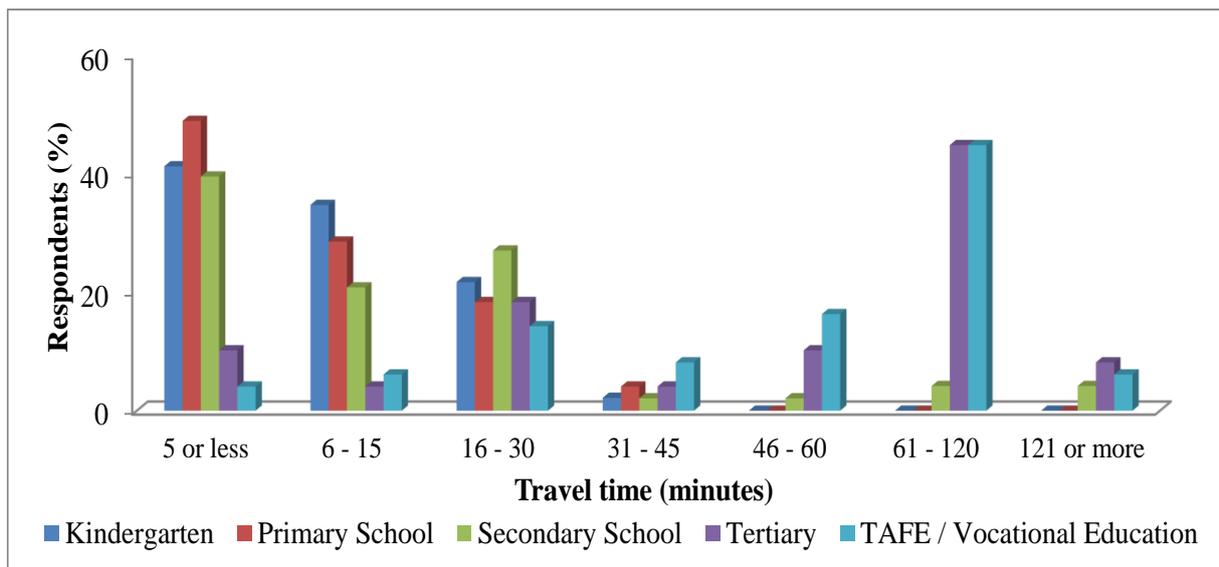
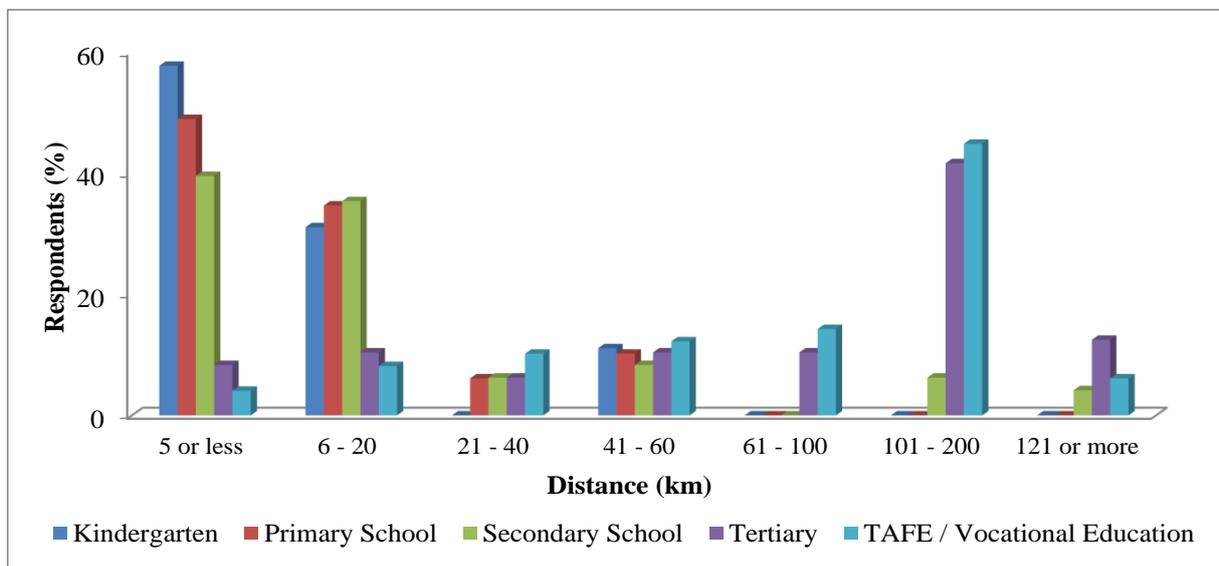


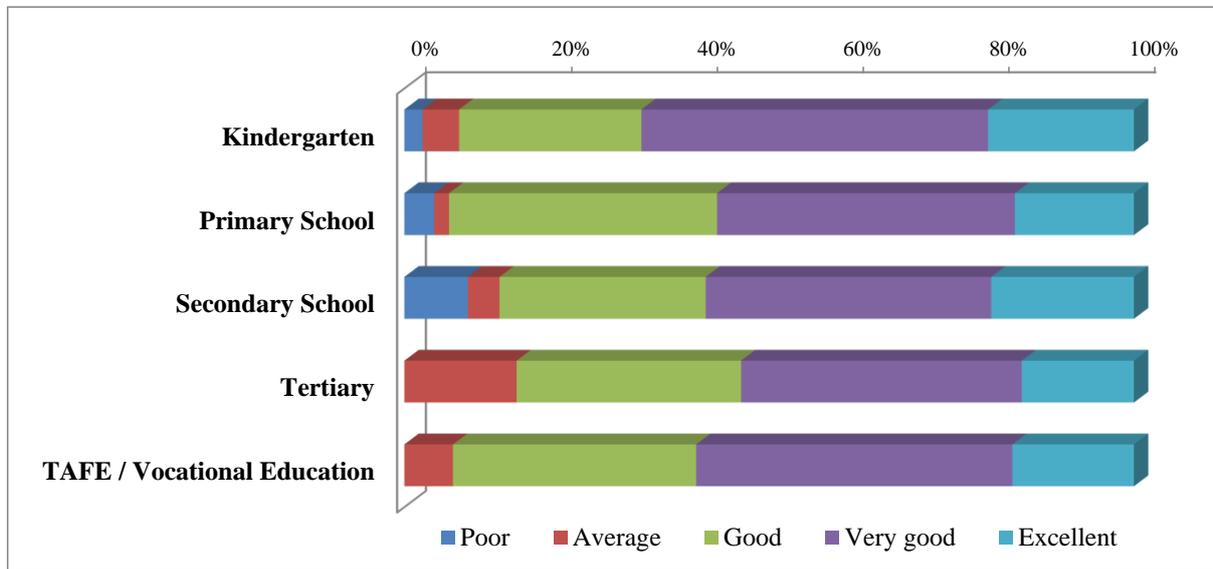
Figure 6: Distances that Respondents Consider Reasonable when Accessing Various Educational Services



5.5 Satisfaction with Current Education Services

Respondents’ satisfaction with educational services was generally high, with around 50% satisfied with all levels of educational services. Secondary schooling had the highest level of dissatisfaction with 8% of respondents rating it as ‘poor’ (Figure 7). Respondents overall satisfaction with educational services is quite good. Integrating this finding with the importance of the education services (above), the need to improve some of the education services such as school and TAFE is highlighted.

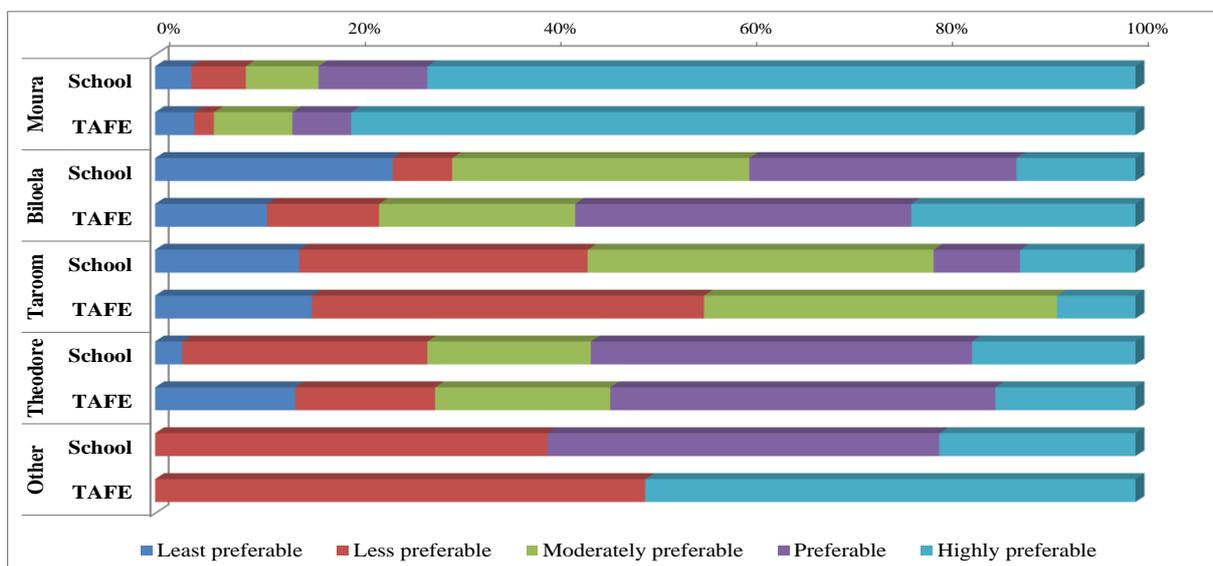
Figure 7: Respondents’ Satisfaction with the Current Educational Services



5.6 Preferred Location to Build or Upgrade Existing Educational Facilities

Respondents were asked their preferred location to build an educational or training facility. Two thirds of the respondents would like a new TAFE and school in Moura, or in nearby towns (Figure 8).

Figure 8: Respondents’ Preferred Location to Upgrade or Construct New Educational Facilities



Specifically 8% of respondents want a TAFE in Moura. Theodore was the second most preferred location for a TAFE development, followed by Tarron. Biloela was least preferable location for a TAFE. The majority of respondent comments focused on the establishment of a CQ TAFE branch to offer some mining, agriculture and hospitality related courses. While, some respondent suggestions included a branch of CQUniversity in Moura or Banana to offer some advance courses in hospitality management, mining and agricultural services.

6. STAKEHOLDER PERCEPTIONS AND SUGGESTIONS

Stakeholder interviews were conducted at the beginning of the research to understand the overall health and education situation in the case study town of Moura and surrounding region. Findings from this section have also been used to support the findings from the household questionnaire survey and vice versa. This would validate findings regarding the type and location of required education services for Moura residents.

Kindergarten: The Moura Community Kindergarten Inc. is the only kindergarten and child care facility. The kindergarten has two groups of 22 students; the child care operates four days per week and is fully booked with a long waiting list. The performance of the kindergarten and child care was rated highly. The opinions regarding improvements were variable, with some (10%) believing the facilities were good, while others (50-60%) suggest the building requires upgrading. Most stakeholders identified that staff retention was a problem.

Primary and secondary education: Moura has one primary school, with approximately 200 students, and one secondary school with approximately 170 students. There is also a school in Theodore (integrated with the Moura School) which teaches to grade 10. The performance of the primary school was rated highly. Some stakeholders commented on the school's ability to handle the highly transient student populations (due to the turnover of mining families). The secondary school was rated lower than the primary school. The suggested improvements for both schools were variable, with some stakeholders claiming the facilities were good, but more than half suggesting the buildings needed upgrading. The secondary school in particular requires a covered outdoor area. Stakeholders felt that both schools needed more extra-curricular activities. Limited teachers and low student numbers mean only a limited variety of subjects can be taught. This is somewhat abated by the use of virtual and distance education.

Vocational and specialised education: There are no vocational education facilities in Moura. The closest vocational facility is a TAFE in Biloela. There is a special education unit based in Biloela which travels out to the three schools on a needs basis. The performance of the unit is rated highly and no improvements were suggested.

Constraints: Several constraints were identified by stakeholders. The transient mining population leads to a transient student population. This makes it difficult to predict enrolment numbers for a long period of time and therefore the schools ability to have adequate funding for upcoming terms. Due to the high proportion of high income earners (particularly among mining families), residents can afford to send their children to private schools in nearby Rockhampton. So, if families are not happy with Moura schools they prefer to send students to boarding schools, resulting in a loss of enrolment funding for local Moura schools. This vicious cycle is further fuelled by the many farming families of the region, who for generations, have traditionally attended boarding schools.

There is a high teacher turnover, due to teachers leaving Moura (small town syndrome). At the secondary school, for example, of the 17 current teachers, seven of these are recent additions. Attracting good teachers and specialist teachers is an issue. Some stakeholders also stated that there is no accommodation for teachers, which confounds this problem.

Additional facilities: All stakeholders agreed that there were adequate primary and secondary school facilities, but there may be a need for more childcare. The most needed facility was identified as TAFE. The closest TAFE is in Biloela; although not too great a distance (66 km), most potential students are too young to hold a driver's licence or have limited financial support for vehicle costs. This makes travel the main issue for attending a TAFE facility. Some stakeholders suggested building TAFE facilities in Moura, while others found the current Biloela facility adequate with the proviso that public transport is upgraded. Stakeholders offered several suggestions for improving TAFE education: one suggesting educators could travel from other regional centres, such as Rockhampton, to teach specialist courses; another suggested a central educational hub (in Biloela) with public transport to and from other centres; and a third suggestion was to provide night courses for local workers with mobile lab/workshop facilities.

7 CONCLUSIONS

Moura is a typical mining town with a mix of rural activities. The town currently has some educational services that despite some shortcomings prove reasonable prospects for the future. Most stakeholders interviewed rated the performance of the existing primary schools as 'high' while they rated the secondary school lower. Stakeholders identified both levels of schooling needs more extracurricular activities and some capital works (for example a covered outdoor area). They generally agreed that the primary and secondary school facilities were adequate. This was also the opinion of the town's residents, with about two thirds of the respondents being satisfied with the current education services. Stakeholders and residents both commented on the need for more childcare. The most highly sort after facility is a TAFE. There is currently a TAFE in Biloela; however there are no public transport facility between Moura and Biloela. Many stakeholders and survey respondents suggested building TAFE facilities in Moura. It is clear that the options for facilitating this is to build a TAFE facility, as a branch of CQ TAFE, in Moura or upgrade the existing TAFE facility in Biloela by providing adequate public transport facilities. The high proportion of young workers in the mines and hospitality industries in and around Moura would benefit from further study in these areas to improve their career paths. As in Australia, state government is funding the education services, therefore Queensland Government may consider the findings of this study in their future plan for education service delivery in the resources and regional communities.

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Competitiveness Agreements of Regional Value Chains (VC): An Alternative to Deal with the Effects of Economic Restructuring in Colombia

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ABSTRACT

During the 1990s, the devastating outcomes of the economic restructuring on several regions and key sectors such as the agriculture and livestock prompted countries such as Colombia to undertake an aggressive program of value chain-based development policies and partnerships including its decentralization to the regions. The agreement on competitiveness of several value chains at the regional level became a proactive response at the meso-level to the new challenges that firms and nations faced in the context of globalization. The research aims to analyse the process effectiveness of the decentralized implementation of the Colombian national competitiveness policy during the period 1996-2010. The theoretical framework is based on institutional theory. The study expands and disaggregates Gereffi's Global Commodity Chain framework and applies some of its analytical categories (input output structure and governance amongst others) to the study of regional value chains.

1. INTRODUCTION

The economic liberalizing tendencies boosted by the economic conservative governments of British Prime Minister Margaret Thatcher and American President Ronald Reagan during the 1980s and condensed in what John Williamson (1993) called the 'Washington Consensus', were finally embraced by most Latin American countries, in particular by the liberal government of Cesar Gaviria in Colombia, at the onset of the 1990s. These policies included market reforms, price decontrol, privatization, deregulation, fiscal discipline, financial and trade liberalization, and foreign direct investment, amongst other reforms conducted towards the internationalization of the economy in a global context.

During the second half of the 1980s and at the beginning of the 1990s, national governments that participated in the Uruguayan round of the General Agreement on Tariffs and Trade (GATT) discussed and signed several measures amidst a large and complex trade negotiation on a myriad of goods and services targeting economic internationalization. Hence, national governments gave up part of their autonomy to carry out traditional industrial policy based on strong interventionist policies to promote, for example, infant industries. Instead, the World Trade Organization (WTO) system as a multilateral organization took a powerful stand in the coordination of the agreements that had come into effect since its formal establishment in 1995 as a result of the Uruguay round negotiations (1986-1994). In this context, 'international rules no longer leave space for industrial policy interventions' (Rodrik 2004: 37).

Liberalization and privatization reforms became hegemonic and the force of facts and new policy consensus left behind import substitution policies.

The implementation of market reforms and the neoliberal agenda brought several challenges to national firms including opportunities and threats among the different economic sectors, in particular the agricultural and industrial sectors. The key issue was the need for them to change their traditional ways of doing business. Because the artificial protection of their productive activity through market distortions introduced by government licenses and regulations, direct subsidies, largely to public enterprises, high tariffs, foreign exchange controls and so on were being lifted and they had to prepare to face stringent and aggressive foreign competition in the international markets. National producers were compelled to face the incursion of efficient competitors from abroad as well as to prepare to venture into other markets internationally or globally. To face this new environment, firms and regions had the challenge of becoming both productive and competitive. Likewise, the economy had to recover from the negative outcomes of the first round of adjustment policies and the economic restructuring processes. In fact, in 1999, the Colombian economy shrank for the first time in 50 years (-4.5%). This meant large unemployment rates, a catastrophic decline of the agro and livestock sector and economic distress. The role of the government was redefined, showing a clear tendency to move away from industrial policy and its large industrial projects, as was originally conceived, towards a more integral competitiveness policy following the advice of new development theories such as the competitive advantage of Porter (1990) and systemic competitiveness (Esser *et al*, 1996). The traditional sources of competitiveness based on static factors such as natural resource endowment and cheap labor had to be strengthened by factors that are more dynamic such as advanced human resources, knowledge and strong institutional development. There was a need to introduce systemic rationality to support innovation processes, collective learning and attempts to achieve productivity gains undertaken by the different economic units at the micro level, and systemic competitiveness to the economy as a whole. First, the competitiveness of a firm was not expected to be the result of individual endeavors. Instead, it was the result of joint efforts with suppliers, related industries and customers and coordination along the VC. Actions at the meso level were deemed necessary, given the need to provide a sound competitive environment (e.g. infrastructure, education and training, export policy, science and technology, environmental policy) to support the efforts at the micro level and at the aggregate level (provision of an adequate macroeconomic environment).

As Herzberg and Wright (2005, p. 37) point out,

At a time where trade liberalization has brought a renewed pressure for countries to dramatically improve their competitiveness, governments are compelled to work even closer with the private sector. When public authorities, entrepreneurs and subsequently, donors fine-tune their engagement with each other through credible public private dialogues, their coordinated actions can ensure a stronger impact of policies on investment, employment and growth.

In this line of thought on governance, the policy for the agricultural and livestock sector by the Ministry of Agriculture and Rural Development has evolved into a VC perspective for about two decades and in this framework the competitiveness agreements (CAs) of VCs became a wide ranging response by the national government of Colombia, in particular since the mid-1990s.

The signing and development of competitiveness agreements (CAs) of VCs among different countries in Latin America, and in particular in Colombia, represents an actual change of policy emphasis in two different and interrelated aspects. First, the policy embodies a change

from a supply orientation to a demand driven one. In the past, ‘the state administration carried out, with a supply vision and in a centralized way, the management of the policy through direct financial support to those firms and sectors that met the established requirements in the incentives laws’ (Vazquez Barquero 2005, p. 45). ‘The new development policy has a “demand” vision and emphasizes on endowing territories and productive systems with the services that firms require to solve their competitive problems instead of facilitating direct funds to the firms’. Second, the change in policy orientation is also reflected in a move from a traditional sector orientation to an agro-industrial VC, which is a more comprehensive approach. It includes not only the particular agricultural sector but also involves the whole range of activities and actors as well as the economic and technical relations that are established among them in the process required to bring an agro product from the inputs sourcing and production through its processing, distribution and supply to the final consumer. The multi-stakeholder partnerships for agro industrial VC development involve public and private sector coordination of activities and exchanges through regional councils for competitiveness. In this scenario, the identification of needs at the micro and meso-level by the agricultural producers, their associations as well as by other producers engaged in processing and transforming downstream the VC, constitute an important input for policy design, in particular for the Ministries of Agricultural and Rural Development and the related sectoral agencies. The commitments acquired by the government through its participation in CAs of agro-industrial value chains (VC) embody the new demand-oriented approach of the sectoral policies. The resulting policy design is genuinely demand inspired, based on first-hand knowledge of the needs of agricultural producers, which means direct feedback from the intended beneficiaries. Then, industrial policy becomes an ‘interactive process of strategic cooperation between public and private sectors which, on the one hand, serves the elicit information of business opportunities and constraints and on the other hand, generates policy initiatives in response’ (Rodrik 2004, p. 38).

The notion of sectoral CAs was introduced in Colombia in 1994 in the national development plan, and then in 1996, the first agreements were signed. In the same year, an influential study by IICA (Herrera and Bourgeois 1996) put forward an instrument for agricultural and policy design and implementation in Latin America and the Caribbean called the CADIAC approach (Chains and Dialogue for Action. Participatory Approach for the Development of Competitiveness of Agrifood Systems), which became an influential policy framework during the government of President Andres Pastrana (1998-2002) with the technical support of IICA, in the context of the Program of Agricultural Supply (PROAGRO), which included the signing of CAs for the regional nuclei of value chains. The CADIAC approach deems the organization of the chain as a key strategy to achieve competitiveness gains. It means, the generation of spaces for discussion and formal and ongoing dialogues between different stakeholders in representation of the private and public sector. Such spaces might be expected to facilitate the definition of policies and specific actions for competitiveness strengthening as well as a propitious room for stakeholder coordination (Hernandez and Herrera, 2005).

This paper is divided into five main parts starting with an introduction. The second part presents the theoretical framework. The third, discusses the background to the VC-based competitiveness policies in Colombia. The fourth part elaborates in detail about the competitiveness agreements (CAs) as a key feature of the national policy for productivity and competitiveness in Colombia. Finally, the fifth part presents concluding remarks. 5

2. THEORETICAL FRAMEWORK

2.1 *New Competition and Competitiveness Strategy*

This section presents a brief review of the change in thinking and approaches towards the study of industrial competitiveness and the contributions of Best (1990), Esser *et al.* (1996), Meyer-Stamer (1998) and Porter (1990, 1998, 2003), paying special attention to the elements that contribute to the theoretical framing of the current study. First, competitiveness is a widely known concept, though there is no clear consensus about its meaning in spite of the fact that it has paramount implications for the fate of entrepreneurs, especially in developing countries and for the livelihood of its inhabitants. ‘Competitiveness remains a concept that is not well understood, despite widespread acceptance of its importance’ (Porter, 2003, p. 25). The new business environment and the major economic restructuring processes taking place in both developed and developing countries are condensed largely from a theoretical standpoint in the concept of *new competition*. The latter constitutes an important advance in the understanding of what is happening at the regional level as a response to the major events taking place globally. Best’s theory gives a supreme role to the entrepreneurial firm whose definition has theoretical influence of Schumpeterian concepts of entrepreneurship and competition, and the Penrosian concepts of experience, teamwork and growth of the firm (1990, p. 276). To be competitive, countries and firms have to congregate several actors around competitiveness goals with the vital participation of government, the sector institutions and firms, not by mean of a traditional industrial policy but through schemes that involve strategic alliances along with what Best calls the ‘production commodity chain’ supported and enhanced by the proactive role of government.

From a theoretical perspective, the new industrial policy and in particular the competitiveness policy became even more systematic after the publication of the influential book by Michael Porter, *The Competitive Advantage of Nations* (1990). Porter, from the business administration and strategy perspective, argued that competitiveness is created, but not derived, from static comparative advantages as was traditionally accepted. ‘Productivity and innovation, not low wages, low taxes, or a devaluated currency, are the definition of competitiveness’ (1998, p. 263). Competitiveness is regarded as the efficiency with which a nation uses its economic resources. It is ‘rooted in a nation’s microeconomic fundamentals, manifested in the sophistication of its companies and the quality of its microeconomic business environment’ (Porter, 2003, p. 41). In this definition, competitiveness is treated as synonymous of productivity. Innovation is a key component that influences the construction of a nation’s competitiveness and supports the effort of its industry to upgrade (1998, p. 155). Porter states that ‘companies in a nation must upgrade their ways of competing if successful economic development is to occur. A nation’s companies must shift from competing on comparative advantages (low cost labour or natural resources) to competing on competitive advantage arising from unique products and processes’ (2003, p. 25).

Porter (1990) pays paramount attention to the microeconomic business environment and in its analysis introduces a chief analytical tool, ‘the diamond of competitiveness’. The four mutually interdependent components of it shape the environment in which local firms ought to compete and that fosters or prevents the creation of the competitive advantage. They are context for firm strategy and rivalry; the context, in which firms are created, organized and managed as well as the nature of domestic rivalry (1990, p. 108). Second, demand conditions, the sophistication of home demand and the pressure from local buyers to upgrade products and services sharpen the ability of enterprises to compete internationally. Third, related and supporting industries; this component refers to the availability and quality of local suppliers and related industries, and the state of development of clusters. Finally, factor endowment; in

this category, Porter highlights that ‘a nation’s firms gain competitive advantage if they possess low-cost or uniquely high-quality factors of particular types that are significant to competition in a particular industry’ (1990, p. 75). In sum, the competitive advantage of a firm depends not only on static but also largely on dynamic advantages. Since competition goes beyond prices, productivity improvements and innovation become key factors in Porter’s framework.

This point of view is complemented by other scholars who consider that competitiveness is the result of efforts carried out systemically at four levels: 1. Micro-level of the firm and inter-firm networks; 2. Meso-level of specific policies and institutions; 3. Macro-level of generic economic conditions; and 4. Meta-level of slow variables like socio-cultural structures, the basic order and orientation of the economy, and the capacity of societal actors to formulate strategies. Systemic competitiveness as a concept addresses a broader spectrum than individual firms do; it applies to nations, regions, industrial sectors or subsectors (Esser *et al*, 1996; Meyer-Stamer, 1998, p. 3). In this line of thought, ‘industrial competitiveness comes about neither spontaneously via a change in the macro framework nor merely via entrepreneurship at the microlevel. It is, rather, the outcome of a pattern of complex and dynamic interaction between governments, firms, intermediary institutions, and the organizational capacity of a society’ (Esser *et al*, 1996, p. 27).

This research focuses mainly on the meso-level. It refers to specific policies (meso-policies, i.e., export finance) and institutions (meso-institutions, i.e., technology institutes and training centers) to create a competitive advantage. This level relates to particular targeted policies (technology, environmental, export, import, education and training, regional infrastructure, finance, industrial structural policy) to shape industries and their environment with the aim of strengthening the competitiveness of industries (idem, p. 28). Meyer-Stamer states that this context is precisely the ‘world of local and regional industrial competitiveness initiatives to strengthen the firms’ environment’ (1998, p. 3). Another important point in relation to the meso-level is that the institutions that perform at the meso-level are not necessarily governmental, that is NGOs, business associations, firms and private-public sector partnerships like the national or regional council for competitiveness, for several value chains in Colombia. There is also an increasing trend prompted by the pressures on the local regional firms by the international competition to formulate meso-level policies at regional levels. These policies cannot be confused with traditional industrial policy, on the contrary (idem, p. 16):

mesopolicies to create systemic competitiveness are about stimulating competition and supporting firms to make the best of a highly competitive environment.

Finally, Meyer-Stamer contends that global commodity chains ‘adds a missing dimension to the systemic competitiveness concept. In the latter, world market integration and competitive pressure is taken for granted, and the focus is mainly on the producing firms. It is, however, essential to understand both features thoroughly to understand why competitiveness emerges, or why it does not’ (idem, p. 22). As pointed out in this research, the different elements that shape the theoretical framework are interrelated and the attention to commodity chains is a common feature in all approaches from Porter to Meyer-Stamer. The systemic competitiveness framework fits the requirements of the current research, in the sense that it depicts the synergy between the state and other members of society to create the conditions for successful industrial development intentionally, which is the case of the regional agreements on competitiveness. All of these factors are at play in these multi-stakeholder development partnerships of value chains carried out at the national and regional level. Their aim is the promotion of the agricultural sector, further integration of the links of the chains,

achievement of higher productivity, penetration and consolidation of national and international markets and the overall increase of industrial competitiveness of the country.

2.2 Multi-stakeholder Development Partnerships at the Level of Value Chain (Competitiveness Agreements of Value Chains)

Van Westen (2002, p. 58) contends that an appropriate way of promoting local economic development is a ‘moderate political embedding of the economy, where the state, in partnership with the private sector and civil society organizations can create a framework conducive to growth’. The value chain based development policies contribute to the above endeavor, in fact, the VC framework is increasingly being used as an analytical tool for policy design and delivery (Humphrey and Navas-Aleman, 2010; Kaplinsky and Morris, 2008, p. 294). In this context, the promotion of governments, business and NGO partnerships for VC development has become a central component of the competitiveness policies in Colombia as well as in other Latin American countries. According to Humphrey and Navas-Aleman, Rather than aiming at broad-based solutions for market development, value chain analysis works more directly on the linkages between agents in the market in order to reduce the costs of inter-firm coordination, maximize flows of knowledge along the value chain to overcome deficiencies in information about markets and technologies, increase the potential for value-adding strategies based on intangible attributes, and create trust so that people feel safe to make investments for the future (2010, p. 99).

The public/private partnerships for development do not constitute a new, recently introduced policy device in development literature. On the contrary, these partnerships are considered a key feature of local-regional development policies, in particular since the beginning of the 1990s, amidst the decentralization and economic restructuring processes. Nevertheless, the public/private partnerships for VC development have been less documented, leading to a literature vacuum on this subject. However, there is growing awareness about their policy potential to promote the improvement of the livelihoods of rural small holders and micro and small industrial entrepreneurs through participatory approaches (Meyer-Stamer, 2004; Morris, 2001; Ruben *et al*, 2007; van Wijk *et al*, 2009).

A competitiveness agreement involves collective action in the form of schemes of private-public partnerships whose main goals in the case of agro-commodities are the promotion of the agricultural sector, a better integration of the links and improvements in productivity to foster the national and international competitiveness of the local-regional production and the overall socioeconomic development of the region. All the competitiveness agreements have at least three main components: a strategic diagnosis agreed by main VC stakeholders, a collective vision for the VC and a plan of action to reach the vision (matrix of commitments). The main subjects regularly discussed and included in the different regional agreements on competitiveness for VCs in Colombia are the following: human resource development, technological development and transfer, information systems, international markets, organization of producers and production costs.

The discussion and signing of a CA is not free from contradictions, though the actual conditions make it necessary to reach consensus about key common issues that favor cooperation, though competition amongst firms is not excluded. It is important to point out that each stakeholder (firms, producer associations, governments, NGOs) has independent development intervention goals as well as strengths and weaknesses to meet the competitiveness challenges posed by globalization at the regional or sub-national level. For instance (Helmsing *et al*, 2008),

The private sector has an interest in building networks of contracts with groups of small producers, and is able to implement quality standards and provide key inputs and to organize

supply chain logistics. However, companies often are (understandably) reluctant to accept the high upfront costs of supplier development programs for previously excluded small producers and often tend to avoid high risks of supplier failure by engaging with larger and experienced producers.

Thus, greater needs for cooperation and coordination in their development interventions arise. Likewise, a great deal of commitment and imagination by the local-regional governments is necessary to make these public-private partnerships functional.

A regional council of competitiveness carries out the coordination of these partnerships for the VC. It is a modern and flexible instrument designed to deal with relevant issues related to the CAs. It includes members in representation of the different links of the VC such as leading entrepreneurs, business interest associations, producers' associations, universities, sectoral research centers, members of the national and/or regional governments amongst others. The councils do not generate bureaucratic structures, though they provide an optimal space for cooperation among different stakeholders of the VCs and for the coordination of the CAs.

In sum, the VC competitiveness agreements work under the logic of public-private partnerships for VC development. According to Walzer and Jacobs (1998), 'Partnerships are in a continual state of flux and adapt to changing local needs. They often begin with loose and informal networking by private and public agencies but then are transformed into more structured organizations, incorporating resource commitments by the participants'. In general, CAs facilitate this transition from loose informal networks to more structured partnerships through the Regional Councils for Competitiveness, which are in charge of the CA's coordination, and it has kept them structured as non-bureaucratic organizations. The problem in such organizations is the risk of becoming a mere agreement of wills without accountability or resources, along with deficient monitoring and supervisory structures, hence there can be limitations to enforce compliance, and in many cases, there can be lack of commitment by the stakeholders included in the CA, given their diverse interests. Thus, the success of these participatory devices depends on the good will and mobilization capacity of those who signed it, and it depends on whether the CA addresses the real needs of those concerned.

3. BACKGROUND TO THE VALUE CHAIN-BASED COMPETITIVENESS POLICIES IN COLOMBIA

During the last two decades, the Colombian government has been adapting its institutions with the purpose of facing the challenges posed by productive internationalization and globalization. A set of policies to promote improvements in the competitive environment characterized by structural reforms were carried out during the 1990s. At the onset of the decade, Colombia undertook a short stabilization program and a series of structural reforms (trade liberalization, labor, fiscal, monetary and financial, and privatization) in order to internationalize its economy and break with its past inward development model. This process was deepened and further institutionalized with the Constitutional reform in 1991, and the advent of an unequivocal outward-oriented strategy with a hasty reduction and elimination of tariffs and restrictions to exports. Also, throughout the second half of the 1990s, complementary measures were undertaken to promote the competitiveness of the productive sector. The reform process of the commercial policy severely affected the agro and livestock productive system in Colombia. Its exposure to international competition occurred in adverse conditions given the disadvantages in both costs and productivity in relation to many products in the international markets, and in particular its inability to compete with the large subsidies allocated by the developed countries to their agricultural products (Bejarano, 1998).

The reforms of the 1990s and the economic opening set the scenario for redefinition of the government's role in the economy. The recommendations of the multilateral organizations in relation to the expected role of the government, according to Bejarano (1998, p. 188) included: the provision of economic security through institutions and stable policies, the elimination of price distortions generated by public policies (i.e. taxes, subsidies and transferences) to create the conditions for markets to function properly, keeping competitive exchange rates and avoiding currency appreciation, investments in infrastructure, technology and human resource development and finally the design of a competitiveness policy according to international commitments by the government. In this scenario the latter gradually abandoned direct interventions in the markets for agricultural and livestock products. Subsequent national governments, to compensate for the reduction of the state, defined a strategy that privileged a greater participation of the private sector in the design and management of policies and hence a sharing of responsibility of the outcomes. In this scheme, the government presented a shift in its relations with the productive sector from dealing with particular links as it traditionally did during the import substitution industrialization model (ISI) towards dealing instead with the members of the VC.

The marketing boards (e.g. IDEMA) and other institutions through which the government traditionally regulated the markets were dismantled or liquidated. Meanwhile, the para-fiscal funds administered by the business interest associations of production have gained momentum, while other instruments for sectoral policies have been developed. Most of them represent direct incentives, compensations and subsidies. Increasingly the support services are demand driven and they target strategic alliances, collectives and VCs more than individual producers or individual sectors and in several cases require co-funding. This process has been accompanied by a systematic institutional development to leverage the productivity and competitiveness policy and the national system of science and technology through new legislation, the creation of new ministries, and the fusion of a few of them. Likewise, there has been a surge of new instruments that promote and organize the participation of civil society in partnerships with the government for the diagnosis of competitiveness problems, the design of a vision, the search for solutions to problems and co management of development policies. The national and regional councils for competitiveness and the CARCE are examples of this trend in Colombia.

In short, given the impact of the economic opening and of the entire range of market reforms on production and employment and particularly on economic sectors and regions that were most exposed to international competition, the national government was prompted to accompany the first wave of structural reforms that encompassed its economic restructuring with the development of a national policy for productivity and competitiveness. The creation of a conducive environment that served as a competitive platform for the internationalization of firms was of paramount importance. In this background, the policy of VC (productive chains) gained momentum and defined the new competitive strategy of the national government. The VC received a policy meaning and reflected the attempt of the government to approach the different stakeholders of the Colombian economy at the sector and regional level in a systemic way. We focused largely on the national and regional scope. This research adapts the framework of Gereffi et al. (1994) to the analysis of meso-level policies in order to understand the Colombian policy of CAs though focused on the sectoral and regional components of the VC

In spite of the changes of national governments from 1990 to 2010, emphasis on the competitiveness issues is present in all of them and although the relevance of some programs and instruments might change from one administration to the other, the VC approach has remained a focal point in the competitiveness policy at all levels from national to sectoral and

regional. In sum, the instruments of sectoral policy are increasingly bound or linked to the VC activity and organizations. These tools have leveraged the endeavor of MADR with the promotion of agricultural and livestock sectoral CAs, and the Ministry of Development (later the MCIT) with the industrial and services' VCs. The roles played by the agencies that are part of the organic structure of the ministries in charge of sectoral policies have been very important in supporting the work with VCs at the sectoral and regional level. The DNP has also fulfilled a key function in the implementation of competitiveness policies such as in the case of the 'Internal Agenda'.

4 COMPETITIVENESS AGREEMENTS (CAS)

It is important to recall that since the 1990s, regional administrations have confronted both a great increase in their functions and an imbalance between such commitments and their own resources, plus those transferred from the central level. Because of this, they have been increasingly searching for other local-regional stakeholders' support (hoping to pool resources and efforts) to face the challenges posed by the decentralization process and, above all, to promote local economic development amidst globalization.

The need for promoting VC development at the regional level requires the participation of several actors. It is neither a matter of traditional industrial policy nor an exclusive private sector concern. 'Rather than focusing the discussion on joint action by the private sector only, the question is also raised how the public and private sector can work together towards more effective local institutional arrangements' (Baud, 2002, p. 4). The regional CA is a policy device that promotes the undertaking of public/private partnerships and cooperation schemes among several VC actors at sector and regional levels. The coordination of the CA is done by the VC regional councils for competitiveness, which embody a modality of public/private partnership to promote VC development. The partnerships are a key element in managing local development initiatives through joint efforts, horizontal cooperation, shared leadership, multiple and complementary capabilities and collective learning.

The CAs of value chains (VCs) embody a new management approach of the government in regards to the support policies of the private sector, and is one of the most outstanding instruments of the new institutional arrangement developed in Colombia during the last two decades. The scheme draws several stakeholders (business, agricultural and livestock producers, their associations, universities, the government, etc.) to work in different sorts of partnerships with the purpose of creating synergies in the private and collective action domains at the national and regional levels. These efforts are aimed at improving the productivity of firms and farms and their overall competitive position amidst the process of internationalization of the Colombian economy. According to Herzberg and Wright (2005, p. 4),

Competitiveness partnerships can both clarify the incentives and build the capacity of governments to implement reforms. Dialogue with entrepreneurs not only helps to reveal to governments the likely microeconomic foundations for growth, it creates a sense of local ownership which makes policies more likely to succeed in practice, ideally building a sustainable and self-reinforcing constituency for reform.

This section is divided into two parts beginning with a description of the instruments for this policy (the CAs and the councils for competitiveness) and followed by the value chain organizations.

4.1 CAs and the Councils for Competitiveness

‘A Competitiveness Agreement is a formal framework for dialogue and public-private concerted action created in order to reach consensus policy and actions aimed at strengthening chain competitiveness’ (Herrera and Hernandez, 2005, p. 19). A CA is a consensus document signed by the main stakeholders involved in the elaboration of a diagnosis, a vision and a plan of action with strategic projects for the improvement of the competitiveness of a VC, mainly in the following aspects: markets, technology, quality, human capital, information, entrepreneurial development, environment and information (MADR-IICA, 1999, p. 9). The main objective of the CA is the improvement of productivity and competitiveness of the VCs in order to strengthen the national production, achieve a better integration of the links of the VC and the expansion of external markets.

During the period 1995-1998, IICA and MADR signed several technical cooperation agreements. In this context, they developed a conceptual framework of the subject, conducted several studies for the VCs and were in charge of the coordination of the national CAs. Then, the strategic role performed by IICA in the competitiveness policy continued in the context of the CAs signed in the PROAGRO.

A council or committee for competitiveness of a VC is a modern and flexible instrument designed to deal with relevant issues related to the CAs. It includes members in representation of the different links of the VC such as leading entrepreneurs, business interest associations, producer associations, universities, sectoral research centers, technology development centers, inputs and technology suppliers, members of the national and/or regional governments amongst others. The councils do not generate bureaucratic structures, though they provide an optimal space for cooperation among different stakeholders of the VCs and in particular for the coordination of the CAs. The organization of the competitiveness councils includes the work with subcommittees for specific topics, which enhances the scope of action and effectiveness of the councils. According to Herzberg and Wright (2005, p. 16), ‘relatively informal mechanisms can be good for tackling specific problems but lack sustainability, whereas more formal structures may have greater longevity but less dynamism’. The regional councils for competitiveness were created under the first scheme discussed by Herzberg and Wright, though they are moving towards the second structure as far as the process of consolidation of the value chain policy advances. Law 811 of 2003 further enhances the institutional structure of the regional councils by introducing the figure of ‘chain organizations’.

In general, the national councils for competitiveness are created by the MADR administrative resolution. These councils have the support of the MADR as well as of large firms and business interest associations for their functioning. They are considered policy advisory organizations to the MADR in the case of agroindustrial VCs. In practice, these councils have two main types of stakeholders, technical and political. First, those who perform the technical work at the interior of the council. Second, the high-ranking authorities, including ministries, presidents of larger companies and national business interest associations, which are in charge of the policymaking process.

The situation of the regional councils is different; they can be assimilated into technical committees because they do not have the governance to generate national or regional policies. However, they can influence the policymaking process indirectly through the members that participate in the council and through the national competitiveness councils. The regional councils plan, organize, prepare, agree, propose, monitor, facilitate exchanges of information, coordinate and support the development of activities. About one third of these councils have remained working since their creation. In contrast, other VCs’ regional competitiveness

councils have been dismantled after a certain period of functioning because of the loss of interest of part of their members as well as the lack of funding of their technical secretariat amongst other reasons. As Herzberg and Wright (2005, p. 31) point out, ‘competitiveness partnerships may become ineffective after a promising start, descending into a talk shop from which little substantive action results. Participants may become disillusioned with wasting time and energy, with negative effects on the credibility of public policy’.

The technical secretariat of a competitiveness council is an agency or a person that the different stakeholders of the VC respect and recognize for his/her experience and integral knowledge about different aspects of the VC. Likewise, he/she should be perceived as a neutral party in the context of the CA, as a facilitator-integrator of processes in the VC as well as a leader and the key administrative person in the council. According to MADR-IICA (1999, p. 8), the technical secretariat has the following functions: to convoke the meetings, write the minutes, formulate projects included in the plan of action, manage or coordinate and follow up on these projects, all while monitoring the VC’s competitiveness. In addition, if there is a technical contract with MADR-IICA, the technical secretariat has to write periodical reports about the performance of the VC and development of the CA.

4.2 Value Chain Organizations

Law 811 of 2003 created the VC organizations in the agricultural, livestock, forestry, aquaculture and fishery sectors in Colombia. It became the most important piece of legislation developed to foster and to endow the VC movement in Colombia with legal backing from organizations such as the national councils for competitiveness that coordinate CAs designed to promote improvements in the productivity and competitiveness of the productive units along the VC. This legislation took the VC organizations to an institutional level. It defined the minimum legal formalities to be observed in the commercial agreements signed in a VC organization and in this sense, there was an attempt to go beyond the mere agreements on wills and assure through verification and monitoring that the commitments of the public and private sector must be kept. Likewise, the financing of the VC organization’s operational costs, also received the backing of the legislation, in the sense that it could be secured with contributions of its members. The VC organizations registered in MADR would have priority in access to incentives of governmental sectoral instruments. Finally, the VC organizations obtained the status of policy advisors to the national government in regards to the products related to the VC.

Law 811 of 2003 filled a perceived vacuum and provided an institutional framework for the VCs, and the VCs’ organizations that worked to promote their productivity and competitiveness. It regulated the relationship among the private and public sector, the sources of funding, and the requirements to be acknowledged and registered in the MADR. The law itself is a clear sign of the awareness amongst private and public stakeholders about the potential of the VC organizations for the promotion and construction of the country’s economic development. The work with VCs has reached a vital milestone in its process of consolidation though its maturity will not be obtained until the VC regional organizations are strengthened since the law gave priority to the national organizations, and the regional ones are still searching for resources and a more explicit legal framework for their activity. As Espinal (2005) points out, the VC organizations have become social management models. Their key objective is to make the management of the state entirely more efficient, from which the civil society is an integral part.

5 CONCLUDING REMARKS

The competitiveness policy in Colombia has prominent features to underline the policy learning process; the continuity with change in the policy; the multi-layer nature of the policy; and the recognition that the decentralized participation and implementation are necessary. The national agreements are central to satisfy the leading firms while the regional agreements are crucial for the inclusion of agriculturalists.

There has been a policy learning process in the context of the national policy for competitiveness and productivity. The schemes developed to promote public-private sector partnerships and collective action among key stakeholders of the different VCs in the country have promoted improvements in information flow and coordination in several ways that is, between the regions and the nation, amongst private stakeholders, between private, public and academic sectors and between public institutions. In regards to the public-private sector relationships, the different devices to foster competitiveness developed by the national government have provided scenarios to test the idea that cooperation is better than conflict especially in situations of severe economic crisis such as that of the end of the 1990s. In line with Herzberg and Wright (2005, p. 8), ‘competitiveness partnerships can build trust and understanding simply by bringing people together on a regular basis and allowing them to get to know each other’.

There has been an increasing awareness about the most important economic characteristics of the regions. In this sense, the main agro-entrepreneurial nuclei have been identified and studied, as well as the clusters, VCs and networks that operate in the regions. The information flow between the local, regional and national governments have increased and become instrumental for policy interventions of a different nature. A new institutional arrangement in the regions has emerged, where the interaction between the private and public sector is more fluid. That is, universities, regional development centers, productivity centers, training institutions, CARCE and VC organizations participate in different cooperation schemes with the purpose of promoting regional development. Finally, it is important to point out that there have been regional differences in regards to the entire process of decentralization of the competitiveness policy. Some regions have appropriated these policies and instruments, and in general have taken more advantage and benefited more than others have.

The multilayer nature of the competitiveness policy constitutes one of its main features. For example, the VCs’ regional agreements on competitiveness are more than a scheme of horizontal relationships among key actors of the VC. They are generally envisioned as the regional nuclei of the national CAs (sector level) and are part of the national competitiveness policy. In this sense, the agreement and implementation of these schemes require coordination between different levels: national and decentralized sectoral policy agencies (for example ICA, SENA); between national (sectoral) and regional VC councils for competitiveness; between national, regional and local governments: and between the national agro-producer associations (e.g. Fedecacao), business interest associations and their regional chapters, among others. Finally, this coordination incorporates the partnerships established between regional NGOs and the national government and international donors. Horizontal networking needs to be complemented with vertical networking in order to access national institutions and resources (Helmsing 2002). The coordination among decentralized agencies at the local level implies a higher coordination between both regional and national levels, in regards to those agencies. Eventually, the performance of central agencies such as the Colombian Agricultural Institute (ICA) improves, given better coordination with their local branches, which at the same time are enhanced by their interaction in partnerships with other local actors. In this background, chances for small producers to be reached by government policies

and resources have increased. In addition, this situation has been reinforced by the systemic efficiency, gradually introduced by the firms that lead the VC, which has the potential to improve the VC governors' competitiveness as well as the small producers' socioeconomic conditions.

There has been continuity with change in the competitiveness policy. For example, a group of institutions and instruments had a permanent presence during the period of study in the competitiveness policies of the different governments. They have been able to adapt to the institutional changes originated in the policy for competitiveness and productivity while meeting the different requirements and priorities of those administrations, for example FINAGRO and the ICR (Rural Capitalization Incentive), BANCOLDEX and PROEXPORT. These institutions were created during the government of President Gaviria (1990-1994) and have been instrumental in the sectoral policy ever since.

As some stakeholders directly related to the implementation of VC policies point out, there is a prominent policy bias in the support for low competitiveness sectors, with the objective to compensate their competitive disadvantages and market distortions (Espinal, 2005, p. 48). The economic opening has affected agricultural producers in crops such as cotton, rice, sugar and animal feed (e.g. sorghum), which have had to face stiff competition from international markets. However, these sectoral policies have targeted them in one way or another. Likewise, the micro, small and medium-scale industry in garments and other labor-intensive sectors, which in a first wave of the economic opening were severely damaged, fall in the above category. However, these policies have also benefited prominent sectors with prospects to export flowers, tropical fruits, textiles and leather and, have promoted the increasing export diversification including other nontraditional exports. Finally, employment generation and food security are goals of the government's sectoral policies, which in many instances have higher priority than efficiency considerations.

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Social Sustainability in Australian Local Government: Commitment and Accountability

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ABSTRACT

With a dominant focus of economic rationality in development and management operations, interpretations of sustainable development have limited capacity to account for the contribution of social sustainability. This paper examines commitment to and accountability for social sustainability in Australian local government from the perspective of functional council managers. A mixed methods approach was adopted and a conceptual framework employed to examine the consideration and incorporation of components of social sustainability in local council practices. Data analysis integrates descriptive, quantitative findings with qualitative narratives. The study found councils give less of a priority to the social dimension of sustainability, as compared with the economic dimension. Engaged governance, as the procedural foundation of the conceptual framework, was revealed as the component less likely to be considered and incorporated in practice.

1. INTRODUCTION

In Australia, local government areas are increasingly vulnerable to adverse social impacts, including high levels of unemployment, socio-economic disadvantage, unaffordable housing, youth suicide and violence linked to mortgage stress (Gurran, 2008; Gurran *et al*, 2013; Islip and Biju, 2013). These social problems are exacerbated by rapid urban and demographic changes, and compounded by a lack of social services, social infrastructure and public transport. However, there have been limited formal responses by government to social dimensions of sustainable development in Australia (Cuthill, 2010; Ziller, 2011).

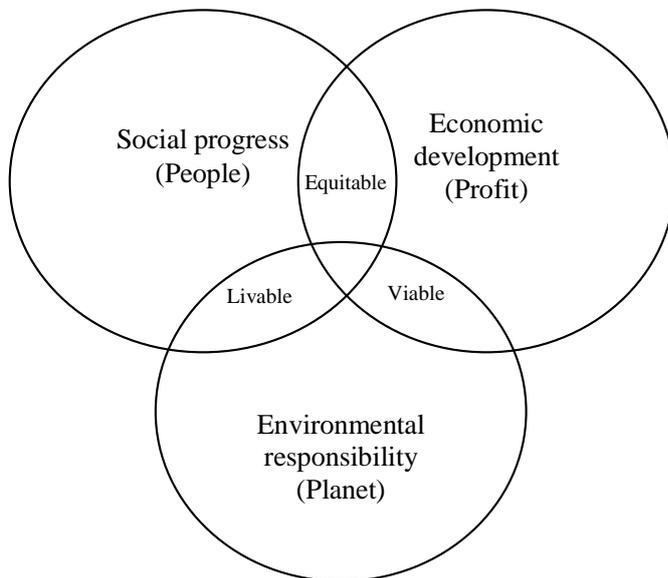
Social issues are ‘spatially isolated, poorly funded, time limited and not necessarily well supported by decision makers’ (Cuthill, 2010, p. 364). Social sustainability has not greatly influenced regional policy development, or led to well-resourced and well-coordinated local responses to social issues (Cuthill, 2010). In both research and practice, environmental and economic dimensions are given more attention than social sustainability (Murphy, 2012; O’Riordon, 2012; Psarikidou and Szerszynski, 2012).

This study explores commitment to and accountability for social sustainability in Australian local government using a holistic conceptual framework for social sustainability. The paper is organised as follows: The conceptual framework for social sustainability practice in local government is reviewed in Section 2, followed by an outline of the methodological approach in Section 3. The study findings and analysis are detailed in Section 4. The final section of the paper summarises the findings and presents the conclusions of the paper.

2. CONCEPTUAL FRAMEWORK

The Brundtland report suggested that sustainable development is not only about addressing environmental sustainability but is also concerned with social and economic considerations (United Nations World Commission on Environment and Development, 1987). Three integrated dimensions (Figure 1) of economy, society and environment are typically given attention in research and practice (Cucca and Tacchi, 2012; Gazibara and Chapple, 2011; Sustainable Aotearoa New Zealand, 2009).

Figure 1: Three Integrated Dimensions of Sustainability



Source: Adapted from Dragages (2015), Sustainable Aotearoa New Zealand (2009) and Elkington (1999).

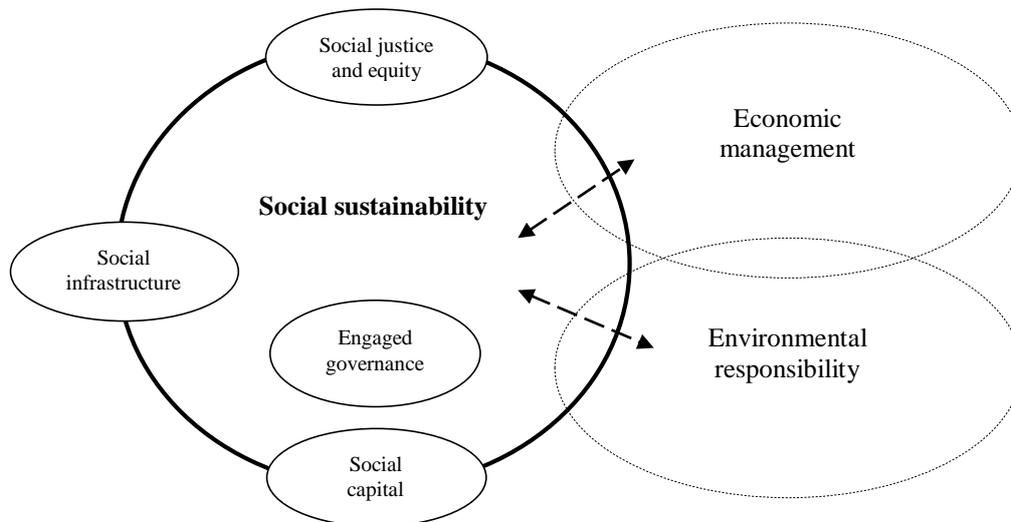
At its core, sustainability attempts to link intra and intergenerational justice with human-nature interactions and socio-ecological processes (Lange *et al*, 2013). Yet, with a diversity of consequences for people and planet across spatial (geographic) and temporal (intra and intergenerational) boundaries, sustainability is a complex and challenging concept for organisations to embrace (Kates *et al*, 2005). It can engender a creative ambiguity or malleability leading to different interpretations and practices (Boström, 2012; Collins and Kearins, 2010; Laine, 2010).

Cuthill (2010) has proposed a conceptual framework for *social* sustainability (CFSS) based on two premises. First, environmental problems are social problems i.e. ‘you manage the people who impact on the natural environment, you do not per se manage nature itself’ (Cuthill, 2010, p. 366). Second, economics is a social function and meant to serve people, as opposed to people serving particular economic interests.

The CFSS (Figure 2) is the result of action research involving input from government managers and other stakeholders on issues of social policy and community development. The framework was developed in response to the rapid urban growth South East Queensland

continues to experience, growth that is dominated by planning and reporting frameworks relating to hard infrastructure development and natural resource management.¹

Figure 2: Conceptual Framework for Social Sustainability



Source: Adapted with permission from Cuthill (2010, p. 366).

As shown in Figure 2, the CFSS comprises four components: engaged governance, the procedural foundation; social infrastructure, the operational component; social capital, a theoretical perspective; and social justice and equity, the ethical basis. There are both procedural (engaged governance) and substantive (social infrastructure) components contained in the framework (Boström, 2012). This study explored commitment to, and accountability for, social sustainability by examining the extent to which all four components of the CFSS are considered and incorporated in council practices.

3. METHODOLOGY

A mixed methods strategy of enquiry was adopted for this study for its pragmatic use of qualitative and quantitative data. This allowed a fuller picture to be generated on the state of social sustainability practice in Australian local government. The conceptual framework for social sustainability informed design of the survey instrument. This paper presents the findings from the online survey, which was the first stage of exploration into the state commitment to social sustainability in local government practices.² Data analysis utilised both quantitative and qualitative techniques including descriptive statistics and thematic analysis. The findings and analysis from this data collection are presented in the following section.

¹ Plans, such as the SEQ 2009-2031 Natural Resource Management Plan, SEQ 2026 Regional Plan, and SEQ Infrastructure Plan and Program 2005-2026 are primarily concerned with environmental, hard infrastructure and economic outcomes.

² The survey was followed by in-depth interviews with council officers. This paper only includes the survey findings.

4. FINDINGS AND ANALYSIS

4.1 Survey Participants

Five hundred and fifty-six local councils across Australia were surveyed during 2013-14. At its close, 125 council officers had completed the survey, resulting in an overall response rate of 22 percent (Table 1). This response exceeded the target response rate of 21% achieved by Creighton and Hartwich (2011). Respondents included local council directors, managers and officers working in social, community, corporate, economic, environment and other sustainability related directorates.

Table 1: Response Rates by State and Territory

State	VIC	NSW	QLD	SA	TAS	WA	NT	Total
Councils	78	152	73	69	29	140	15	556
Responses	34	42	18	14	4	12	1	125
Response rate	44%	28%	25%	20%	14%	9%	7%	22%

Source: Social sustainability survey (2013-14).

Response rates varied between seven percent in the Northern Territory and 44 percent in Victoria. Responses were received from every state and territory sampled, with the majority of respondents coming from the Eastern states.

4.2. Social Sustainability in Council Practice

Three broad topics areas were examined to explore commitment to and accountability for social sustainability in Australian local councils: (a) how and to what extent councils consider and incorporate the components of the CFSS in decision making and practice, and reasons why councils do not incorporate components; (b) how and to what extent councils publicly report on and monitor the components; and (c) what priority social sustainability receives in councils compared with other dimensions of sustainability.

a) Considering and Incorporating Social Sustainability in Practice

First, the survey examined whether councils consider the components of the CFSS in formulating values, vision or mission. The majority of respondents (on average over 87.6%) indicated that their councils consider the components of the CFSS in formulating values, vision or mission (Table 2). Councils appear more likely to consider social infrastructure when formulating values, vision and mission (VVM) statement than social capital (89.6%), engaged governance (86.4%) and social justice and equity (84%). On an average the gap between considering and stating social sustainability in VVM is 25%.

Second, the survey explored the extent to which components of social sustainability are considered in decision-making and incorporated in practice. As shown in Table 3, the majority of respondents indicated that their councils considers the components of the CFSS in decision-making (on average more than 84%) and incorporates the four components in practice (on average 88.4%). The findings suggest that council commitment to social infrastructure is strong, while there is a lesser degree of commitment to engaged governance and social justice and equity.

Table 2: Considering and Stating Components in Values, Vision and Mission

Component	Considered in formulating VVM (%)	Stated in VVM (%)	Gap between considering and stating (%)
Social infrastructure	90.40	62.40	-28.0
Social capital	89.60	64.00	-25.6
Engaged governance	86.40	64.80	-21.6
Social justice and equity	84.00	60.00	-24.0

Note: n = 125.

Source: Social sustainability survey (2013-14).

Table 3: Considering and Incorporating Components of Social Sustainability

Component	Considered in decision making (%)	Incorporated in practice (%)	Gap between considering and incorporating (%)
Social infrastructure	85.60	97.60	12
Social capital	84.00	88.00	4.0
Social justice and equity	83.20	84.80	1.6
Engaged governance	83.20	83.20	0.0

Note: n = 125.

Source: Social sustainability survey (2013-14).

Table 4: Incorporating Engaged Governance in Council Functions and Initiatives

Council function and initiative	Not at all 1	A little 2	Somewhat 3	A lot 4	Greatly 5
Community planning	0.96%	2.88%	8.65%	53.85%	33.65%
Sports initiatives/events	0.96%	5.77%	25.96%	45.19%	22.12%
Arts and culture initiatives/events	1.92%	6.73%	25.00%	45.19%	21.15%
Environmental planning	1.92%	12.50%	33.65%	39.42%	12.50%
Health projects	7.69%	10.58%	35.58%	33.65%	12.50%
Re-zoning applications	9.62%	12.50%	34.62%	33.65%	9.52%
Budget/funding allocations	6.73%	17.31%	40.38%	25.00%	10.58%
Development and building approvals	9.62%	12.50%	44.23%	26.92%	6.73%

Note: n = 125.

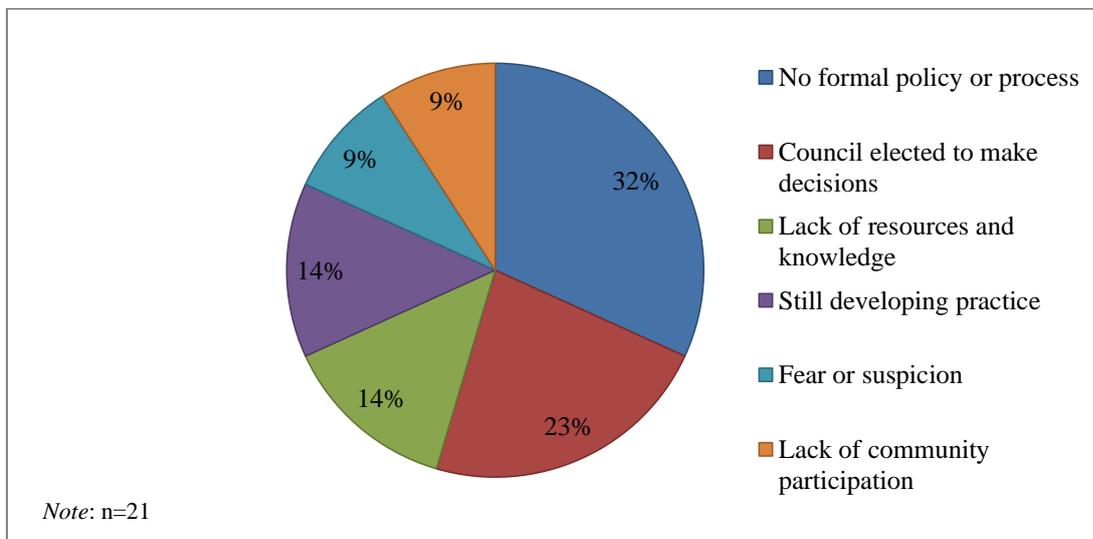
Source: Social sustainability survey (2013-14).

Third, the respondents were asked to rank the extent to which engaged governance is incorporated in council functions and initiatives.³ The majority of respondents considered engaged governance to be incorporated either *A lot* or *greatly* in ‘community planning’, ‘sports initiatives’, and ‘arts and culture’ initiatives (Table 4 on the previous page).

Engaged governance is incorporated to a much lesser extent in ‘rezoning applications’, ‘budget/funding allocations’ and ‘development and building approvals’ (Table 4). However, explanatory comments from respondents revealed that there is some level of engagement on budget and funding allocations. Councils also consult with neighbouring properties in relation to building and development matters; as well as with community on infrastructure and specific planning and development projects (e.g. playground and skate park design), service systems reform (e.g. kindergarten enrolment policy and procedures), and design (e.g. new community services).

Twenty-one respondents (16.8%) indicated that engaged governance is either not incorporated in practice or that they were unsure. Explanatory comments from these officers suggested the main reason councils do not incorporate engaged governance in practice is because of an absence of formal policy to guide engagement processes (Figure 3).

Figure 3: Reasons Why Engaged Governance is Not Incorporated in Practice.



Source: Nvivo coding (2014).

The second reason (23%) for not incorporating engaged governance in practice is that there is a perception in councils is ‘they are elected to make decisions’. The explanatory comments from interviews describe councils operating under representative as opposed to participatory governance structures, with limited political commitment to engaged governance: “engaged governance in the form of participatory democracy is nominally encouraged, but not very often used or achieved; Council has no commitment to accepting community viewpoints”.

The narrative comments provide support for the quantitative results that showed engaged governance incorporated in practice less than the other three components of the CFSS. However, they also indicate that engaged governance is not properly considered as an option, contrary to the 83.2% of respondents who suggest it is incorporated in practice. Even though

³ A review of council functions and initiatives on six randomly selected council websites was conducted to determine a list of common council functions. Eight council functions and initiatives were identified.

engaged governance is the least incorporated component and does not appear to be realised in council practice, as the procedural component of the CFSS it is integral to the successful incorporation of the other components of social sustainability. The findings supported this assertion.

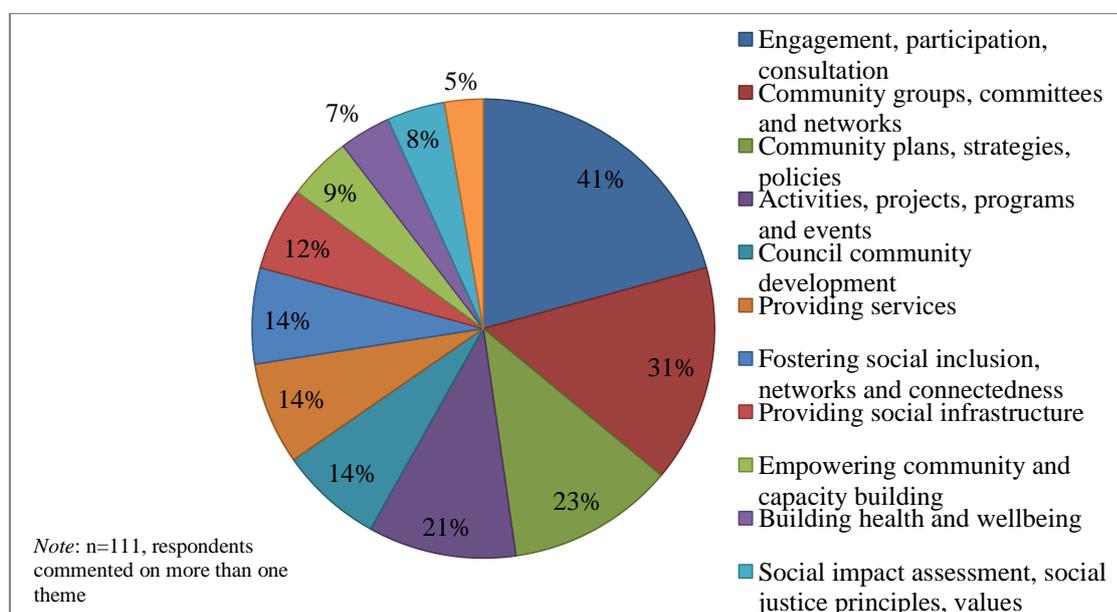
The majority of respondents indicated social justice and equity is incorporated ‘A lot’ or ‘Greatly’ in *public consultation opportunities*, operating in line with business and organisational ethics and opportunities to participate in civil and social life (Table 5). In addition, when asked how social capital is incorporated in practice, the most cited theme (41%) was on engagement/participation/consultation with community (Figure 4).

Table 5: Incorporating Social Justice and Equity in Council Functions/Initiatives

Council opportunity and initiative	Not at all 1	A little 2	Somewhat 3	A lot 4	Greatly 5
Public consultation opportunities	0%	2.83%	17.92%	55.66%	23.58%
Business and organisational ethics	0.94%	7.55%	20.75%	36.79%	33.96%
Opportunities to participate in social life	0%	3.77%	26.42%	43.40%	26.42%
Ensuring employment opportunities exist	4.72%	16.04%	31.13%	37.74%	10.38%
Right to information	7.55%	15.09%	29.25%	33.02%	15.09%
Social research reports	8.49%	13.21%	29.25%	35.85%	13.21%
Community safety	5.66%	20.75%	28.30%	35.85%	9.43%
Business support	11.32%	15.09%	37.74%	30.19%	5.66%
Health	12.26%	30.19%	30.19%	19.81%	7.55%
Education	16.04%	30.19%	35.85%	16.04%	1.89%
Citizen’s legal advice	72.64%	13.21%	10.38%	2.83%	0.94%

Source: Social sustainability survey (2013-14).

Figure 4: How Social Capital is Incorporated in Practice



Source: Nvivo coding (2014).

Respondents described how incorporating social capital involves engaging with the community, community engagement frameworks, community consultation and public participation. They also described the use of community engagement strategy, resilient leaders' networks, and community development teams as key to foster social capital (Figure 4). Community groups, committees and networks (31%) and community plans, strategies and policies (23%) were the second and third most cited themes respectively. Respondents described engaging with community members on committees and working with community groups as ways of developing social capital.

The above findings show that the survey respondents believe there are attempts to consider and incorporate social sustainability in council decision-making and practices, indicative of some degree of commitment to social sustainability. However, engaged governance, while fundamental to the realisation of the other three components, is less likely to be considered in decision-making and incorporated in practice.

b) Accountability for Social Sustainability

Reporting and monitoring for sustainability outcomes are essential mechanisms for the accountability and assessment of strategic approaches to sustainability (Keen *et al*, 2006). Respondents were asked firstly if their council publicly reports on the components of the CFSS that are incorporated in practice (Table 6).

Table 6: Publicly Reporting on Social Sustainability Components

Component	Yes	No	Unsure
Social infrastructure	69.8%	10.4%	20.0%
Engaged governance	64.8%	16.8%	18.4%
Social justice and equity	60.8%	17.6%	21.6%
Social capital	55.2%	21.6%	23.2%

Note: n = 125.

Source: Social sustainability survey (2013-14).

A significantly lower percentage of councils appear to publicly report on the components of the CFSS in practice, on average 62.7 percent (Table 7), as compared with the earlier results showing that on average 84 percent of councils incorporate the components in practice (Table 4). These findings are slightly higher than reported in Williams *et al*. (2011), who found 50% of local councils surveyed to be reporting voluntary sustainability information. Respondents were then asked if their council *monitors* that the four components of the CFSS are incorporated in practice. The findings indicate that only a small majority (on average 52.4%) of councils monitor that components are incorporated in practice (Table 7).

Most respondents considered social infrastructure to be the most reported on (69.8%) and monitored component (59.2%). Respondents rated engaged governance as the second most reported on (64.80%) and monitored component (56.80%) even though it is the least incorporated component in practice. Also consistent with the results on reporting, the least number of respondents (43.2%) indicated that social capital is monitored. This indicates that social capital is a challenging concept to both report on, and monitor.

Table 7: Monitoring Social Sustainability Components in Practice

Component	Yes	No	Unsure
Social infrastructure	59.2%	19.2%	21.6%
Engaged governance	56.8%	19.2%	24.0%
Social justice and equity	50.4%	24.0%	25.60%
Social capital	43.2%	26.4%	30.4%

Note: n = 125.

Source: Social sustainability survey (2013-14).

In explanatory comments, respondents related how the annual report, and community and strategic plans are the main avenues for reporting and monitoring for social sustainability. However, councils are left to their own discretion as to what and how they report. Councils are only beginning to investigate ways of measuring and monitoring social trends. The findings suggest a deficit of accountability for social sustainability in local government.

c) Priority of Social Sustainability

For the purposes of the study, sustainability was defined as comprising three dimensions – social, environmental and economic. Respondents were asked to rank each dimension from one to three in order of priority for their council, where one is the *highest priority* and three the *lowest*. A fourth option: *of equal importance*, was also used to signify an equal priority between dimensions.

The findings reveal that economic sustainability received the most ‘highest priority’ ratings (45.83%), while 40 percent of respondents indicated it is of ‘equal importance’ to the other dimensions (Table 8). Economic sustainability had the least amount of second and third priority selections.

Table 8: Priority Given to Dimensions of Sustainability in Councils

Dimension of sustainability	Priority			
	Highest	Medium	Lowest	Of equal importance
Economic	45.83%	8.33%	5.83%	40.00%
Social	13.33%	27.50%	15.00%	44.17%
Environmental	5.83%	20.83%	28.33%	45.00%

Note: n = 125.

Source: Social sustainability survey (2013-14).

Social sustainability was ranked for the most part as of equal importance with the other dimensions (44.17%). Only 5.83 percent and 13.33 percent of respondents ranked environmental and social respectively, as being the highest priority for their council.

The above findings show that social sustainability is mainly considered of equal importance with economic and environmental dimensions of sustainability. This is consistent with established triple bottom line approaches to sustainable development (see Wood and Garnett, 2010). However, fifteen percent of respondents consider social sustainability to be the lowest priority for their councils and economic sustainability is the highest priority in 45.83% of councils. In these councils it appears there is only a weak approximation of the triple bottom line approach to sustainable development (Ngwakwe, 2012). The findings are consistent with Goswami and Lodhia (2014) who found financial sustainability to be the main priority in local councils and are indicative of the financial constraints and pressures local councils face (see Dollery *et al*, 2013).

5. CONCLUSION

The survey findings revealed that the majority of officers believe their council considers and incorporates the four components of the CFSS in practice. However, commitment to social sustainability does not appear to be documented in vision, values and mission statements, and reported on or monitored to the same extent. The lack of articulation of the CFSS components in VVM statements, suggests that at both strategic and operational levels commitment to social sustainability is lacking (Lee *et al*, 2013).

The findings show that social infrastructure is the most considered, incorporated, reported on and monitored component of the CFSS. Out of the four definitional components of social sustainability, engaged governance appears less likely to be considered in decision making and incorporated in practice, especially in areas of budgeting, funding, and development and building approvals (compared with other community event areas). The findings suggest that in economic development fields there is less chance of community representation and public participation.

There appears to be a close interdependent relationship between engaged governance and social capital, where incorporating engaged governance in practice can help develop social capital. The findings provide support for an interdependent relationship between social capital and engaged governance, consistent with Cuthill's (2010) description of the components. However, challenges were identified to achieving engaged governance including a lack of consistency and structure around engagement processes.

Officers also described councils operating under representative as opposed to participatory governance structures, with limited political commitment to engaged governance. This translates in practice to a scarcity of resources (financial, time and staff) to allocate to implementing engaged governance, and different levels of knowledge and commitment within councils to the component. Accountability for social sustainability, by way of reporting and monitoring, is largely undeveloped and councils are left to their own discretion as to what and how they report. The findings suggest that while there is a high degree of commitment to social sustainability among functional managers in councils, practically it is still in a developmental stage. Political and governance obstacles appear to inhibit the successful integration of social sustainability in practice.

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Autopsy of Municipal Failure: The Case of Central Darling Shire

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ABSTRACT

Local government plays a vital role in providing infrastructure, services and employment to rural and regional communities. Indeed, threats to the fiscal viability of regional councils may well jeopardise the sustainability of an entire community. In December 2013 the New South Wales (NSW) Minister for Local Government suspended Central Darling Shire (in far-western NSW) and appointed an interim Administrator in response to an unprecedented liquidity crisis. In October 2014 a public inquiry recommended extension of the period of administration until September 2020. This paper considers the processes leading up to this extraordinarily lengthy period of financial administration. In particular, we examine the claim that an inequitable allocation of Financial Assistance Grants (FAGs) was a major factor in bringing about the Shire's liquidity crisis. We conclude our analysis with some recommendations for changes to FAG allocations which will help ensure sustainable futures for rural communities.

1. INTRODUCTION

Central Darling Shire is located 970 km from Sydney in far Western NSW. The Shire covers 5,349,380 hectares, which is about 60% of the size of Tasmania or over one-fifth of the size of the entire United Kingdom (ABS, 2014). The municipality is responsible for a range of government functions, inclusive of the maintenance of 1,602 km of road infrastructure, and four aerodromes which are used by the Royal Flying Doctor Service, State Emergency Service and Rural Fire Service (OLG, 2015). Yet Central Darling has a comparatively small rating base of just 1580 properties (1078 residential, 362 farm and 140 businesses) clustered around four small towns which are separated by vast distances.⁴ This disparity between infrastructure responsibilities and taxation base is exacerbated by harsh environmental constraints: Central Darling has the second lowest socio-economic rating in the state, Indigeneity of 38.3% and an unemployment rate of 13.1%. In addition, market failure owing to remote location and low population density means that Council is often called upon to provide important one-off 'placed based' commercial services to the community (see, for example, Dollery *et al*, 2010).⁵

⁴ The distances of towns making up the Shire, relative to the Council Chambers in Wilcannia are: Menindee (306 km), White Cliffs (94 km) and Ivanhoe (182 km).

⁵ For instance, Central Darling Shire has operated the Wilcannia Post Office since the previous owners went into receivership (Colley, 2014a, p. 93).

The combination of environmental constraints, a heavy infrastructure burden and low taxation base has resulted in the Shire experiencing acute fiscal distress over a number of years. From at least January 2011 various official reports cast doubt on the council's long-term sustainability. On 23 December 2013 the (then) NSW Minister for Local Government suspended the council and appointed an interim Administrator pursuant to clause 413E of the Local Government (General) Regulation 2005, in response to an unprecedented 'real possibility of the Council running out of cash in the next few months' (OLG, 2014, p. 5). This interim order was extended for an additional three months in March 2014. In October 2014 the Minister for Local Government (Paul Toole) commissioned a Public Inquiry which led to Civic Offices being declared vacant until September 2020.

In a stinging assessment of Councillors' performances the state government's suspension report assessment says (*sic*) that "most – if not all – of the maladies affecting the Council may be laid squarely at the feet of a lack of leadership and managerial expertise at both the elected and staff levels of the organisation" (Bajkowski, 2014). However, from the outset the mayor and councillors of Central Darling sought to highlight the role of insufficient intergovernmental grants in the Shire's liquidity crisis. Moreover, elected representatives made considerable efforts at the Public Inquiry to emphasise what they felt to be inequitable intergovernmental grant allocations. In the *Central Darling Shire Council Public Inquiry Report*, Commissioner Colley was critical of councillor reticence to accept responsibility for the fiscal plight of the Shire and noted his 'great concern [that], instead of considering remedial budgetary actions, there has been a propensity to blame others for the situation.' (Colley, 2014, p. 60)

Since 1973 the federal government has provided intergovernmental grants to councils with the objective of achieving horizontal fiscal equalisation (HFE). HFE seeks to provide councils with the capacity 'to provide their residents with an equitable level of services' (Local Government (Financial Assistance) Act 1995, s3(2)(b)). The need for HFE arises as a result of: (i) vertical fiscal imbalance whereby the federal government has powers to collect the bulk of taxation and (ii) horizontal fiscal imbalance arising from different revenue raising capacities and expenditure attributes of Australian municipalities (Drew and Dollery, 2015a). Due to the absence of constitutional recognition for Australian local government, the federal HFE grants are allocated by seven separate Grants Commissions operated by the states and the Northern Territory (Drew and Dollery, 2015a). Notably, the Commissioner of the Public Inquiry into the Central Darling Shire liquidity crisis was also the Chair of the NSW Local Government Grants Commission (NSWLGGC, 2014).

Our central concerns in this context are to undertake a critical investigation into the process of placing Central Darling Shire into Administration for such an extended period and to query the public reasons for so doing against the backdrop of Australia's fiscal federalism generally and the regime of transfers designed to accomplish HFE in particular. The paper itself is divided into six main parts. Section 2 provides a brief overview of the operational context of the Central Darling Shire including a comparative summary of environmental constraints, revenue metrics and functional expenditure with respect to the other twenty councils occupying the same OLG classification. Section 3 provides a review of the theory and literature on intergovernmental grants. Section 4 outlines important events leading up to the decision to appoint a permanent Administrator. We then provide a summary in Section 5 of the Public Inquiry, with particular reference to the matter of intergovernmental grant allocations. The paper ends in Section 6 with a number of recommendations relating to the equitable distribution of HFE grants and observations on the procedural fairness of the Inquiry.

2. CENTRAL DARLING SHIRE OPERATIONAL CONTEXT

Table 1 provides details of the environmental constraints facing Central Darling Shire, along with comparative data for the other twenty councils classified as Group 9 municipalities (medium size, remote and agricultural councils). Notably Central Darling has the lowest socio-economic rating in the cohort (the second lowest in the state), the lowest population density, highest proportion of Aboriginal and Torres Strait Islander (ATSI) individuals in the cohort (and second highest in the state), the second highest unemployment rate in the cohort (fourth highest in the state) and highest metre road length per capita for the state (OLG, 2015). The environmental constraint data is brought into stark relief by the arithmetic mean of the various metrics for the state, presented in the last row of Table 1. In sum, it is clear that the residents of Central Darling have arguably the highest need for municipal goods and services in the state whilst also exhibiting one of the lowest capacities to pay for same. This environmental constraint data suggests that the Shire might require comparatively high levels of HFE grant aide.

Table 1: Environmental Constraints of Medium Remote and Agricultural Category Municipalities, 2013

Council	Socio Economic Rating	Population Density (capita/km ²)	Length of Roads (km)	ATSI (%)	Unemployment Rate (%)	Average Taxable Income (\$)	No. of Businesses
Balranald	33	0.1	1328	6.8	4.5	32,816	171
Bogan	40	0.2	1352	14.4	5.8	36,149	188
Bombala	45	0.6	629	2	6.1	36,168	157
Boorowa	74	1	608	2	5.2	35,527	69
Bourke	37	0.1	1883	30.2	14.5	37,544	216
Carrathool	76	0.1	2300	6.6	4	38,064	195
Central Darling	2	0.04	1602	38.3	13.1	38,248	144
Coolamon	80	1.8	1275	2.6	3.9	35,448	232
Coonamble	6	0.4	1393	29.3	8.9	35,735	206
Gilgandra	16	0.9	1293	12.2	6.6	35,615	208
Gundagai	64	1.5	694	2.5	5.1	36,777	167
Guyra	27	1.1	842	10	5.9	32,075	144
Harden	35	2	768	4.5	5.4	35,333	228
Hay	21	0.3	777	5.5	6.8	32,664	211
Lockhart	102	1	1488	2.5	3.7	36,245	251
Murrumbidgee	25	0.7	590	10.2	4	38,150	93
Tumbarumba	59	0.8	465	2.4	4.4	36,278	186
Wakool	82	0.5	1281	2.5	6.1	32,444	270
Walcha	84	0.5	807	7.4	5.2	31,741	156
Warren	49	0.3	964	13.3	6.1	35,985	127
Weddin	52	1.1	968	1.8	5.7	30,621	131
Group Mean	48	0.72	1109.9	9.86	6.24	35,220	179
State Mean	76	780.9	945.36	5.3	6.1	42,912	1,251

Source: OLG (2015) and ABS (2015).

Table 2: Financial Assistance Grant Allocations, 2013

Council	Total No. Assess	Population	General Purpose (\$ per assessment in parentheses)	Road Grants (\$ per km in parentheses)
Balranald	1,516	2,371	1,571,497 (974.87)	1,172,720 (883.07)
Bogan	1,938	3,037	1,623,020 (840.07)	1,302,018 (963.03)
Bombala	1,899	2,401	1,061,603 (561.40)	641,167 (1,019.34)
Boorowa	1,890	2,558	833,844 (437.25)	607,116 (998.55)
Bourke	1,735	2,996	2,189,941 (1257.14)	1,692,856 (899.02)
Carrathool	1,954	2,792	2,038,237 (1017.08)	2,046,343 (889.71)
Central Darling	1,606	2,070	2,200,748 (1392.88)	1,409,193 (879.65)
Coolamon	2,815	4,276	1,717,641 (607.37)	1,155,421 (906.21)
Coonamble	2,567	4,279	1,845,983 (712.18)	1,312,827 (942.45)
Gilgandra	2,337	4,488	1,538,735 (657.30)	1,190,715 (920.89)
Gundagai	2,538	3,747	1,113,438 (438.53)	736,875 (1,061.78)
Guyra	2,422	4,645	1,105,992 (455.14)	842,741 (1,000.88)
Harden	2,397	3,762	1,321,322 (542.19)	759,361 (988.75)
Hay	1,921	2,962	1,675,700 (871.85)	721,019 (927.95)
Lockhart	2,540	3,021	1,768,834 (690.68)	1,422,781 (956.17)
Murrumbidgee	1,327	2,503	1,046,024 (785.30)	545,073 (923.85)
Tumbarumba	2,521	3,521	1,329,417 (529.02)	519,896 (1,118.06)
Wakool	2,829	3,979	2,026,066 (714.91)	1,301,468 (1,015.98)
Walcha	1,815	3,087	788,347 (441.65)	822,049 (1,018.65)
Warren	1,895	2,910	1,270,954 (669.98)	924,165 (958.68)
Weddin	2,569	3,711	1,448,232 (562.64)	901,634 (931.44)
Group Mean	2,144	3,291	1,500,742 (721.88)	1,048,926 (962.10)
State Mean	19,741	48,723	3,171,664 (344.46)	1,262,544 (1,647.70)

Source: OLG (2015), ABS (2015) and NSW Local Government Grants Commission (2014).

Table 2 on the previous page details the Financial Assistance Grants (FAG) allocations for Group 9 councils in the 2012/13 financial year.⁶ FAG grants are allocated in two tranches – General Purpose grants and Road grants – even though both allocations are untied. Central Darling Shire received the highest General Purpose allocation in the cohort; however, the quantum of the grant was just two-thirds of the NSW average. On a per assessment basis, the Shire received the highest General Purpose allocation in the state. However, it is important to be mindful of the stated purpose of HFE grants – ‘to allow councils to function at a standard not lower than the average standard in the State’ – when assessing whether the Shire’s quantum was sufficient (Local Government (Financial Assistance) Act, 1995). The final column of Table 2 details the quantum of road allocation, which we also present in per kilometre terms in parentheses. Central Darling received the fourth highest quantum in the cohort, but curiously received a lower quantum than Lockhart council, which maintains 114 km less road distance. Moreover, on a per kilometre basis the Shire received the lowest road allocation in the cohort and an allocation which was almost half of the state mean. This anomaly results from the NSW Local Government Grants Commission’s use of population data as a key input into the road grant allocation algorithm (see Drew and Dollery, 2015a).

Table 3 summarises taxation, domestic waste charge and water and sewerage charge data for Group 9 councils for 2012/13. Central Darling Shire had the fifth lowest residential rates and the lowest farm and business rates in the cohort. Moreover, the average rates levied in these categories were well below the state mean. However, the data should be interpreted in the context of the tax limitation regime which has operated in NSW for almost four decades (Drew and Dollery, 2015b). In particular it is important to take account of the total imposts placed on residents, as tax limitations do not apply to annual fees and charges. The final column of Table 3 presents the average cumulative charge to residential ratepayers (residential rates plus water, sewerage and domestic waste). When considered on this basis the Shire has an impost considerably higher than the cohort average. Indeed, the residential revenue effort⁷ for Central Darling in 2012 was the highest in the state (3.796%) and well over three times the state mean (1.016%). This own-source revenue data is an important consideration, given that HFE grants take into account the revenue effort exerted by the municipality. We now consider the theory and practice of horizontal fiscal equalisation grants.

3. INTER-GOVERNMENTAL GRANTS

The need for inter-governmental grants results from two factors common to most federalist systems of government. First, most federations are characterised by vertical fiscal imbalance owing to the fact that central governments typically have the greatest taxation powers but relatively less service provision responsibilities (Oates, 1999). For instance, in Australia the Commonwealth Government collects over 80% of the nation’s total tax take whilst local government collects just 3.4% (ABS, 2015). Yet local government has significant infrastructure responsibilities, including maintenance of around 80% of the national road network as well as the majority of rural and regional airports (Chakrabarti *et al*, 2002). Second, the constituent entities of most federations are distinguished by pronounced horizontal fiscal imbalance in terms of both revenue-raising capacity and expenditure need (Oates, 1999). Thus, horizontal fiscal equalisation grants are ‘a necessary counterpart to decentralisation,

⁶ Data is presented for the 2012/2013 year as this would have been the most recent data available to the Commissioner during the Public Inquiry.

⁷ Residential revenue effort is the total residential rates and charges expressed as a function of total income accruing to individuals residing in the municipality. It is the most relevant comparative statistic for capacity to pay (Ladd and Yinger, 1989).

offsetting its tendency to create disparities among regions in the ability to provide public goods and services (Boadway, 2004, p. 212).

Table 3: Own-Source Revenue, 2012/13

Council	Average Residential Rate (\$)	Average Farm Rate (\$)	Average Business Rate (\$)	Typical Water and Sewer Charge (\$)	Average Domestic Waste Charge (\$)	Total Average Residential Charge (\$)
Balranald	221.48	1,751.66	748.54	1,452	202.46	1,876
Bogan	219.85	2,157.74	1,095.74	1,501	344.16	2,065
Bombala	508.60	2,105.18	872.61	1,125	225.34	1,859
Boorowa	445.98	2,196.48	449.28	1,282	101.57	1,829
Bourke	298.08	2,605.33	430.56	1,683	205.42	2,186
Carrathool	387.03	2,856.79	1,010.26	978	194.56	1,559
Central Darling	233.79	991.83	222.22	1,483	275.80	1,992
Coolamon	289.72	1,642.94	280.17	350	202.10	842
Coonamble	295.87	3,954.75	597.09	651	295.19	1,242
Gilgandra	486.34	3,115.91	817.31	1,109	256.45	1,852
Gundagai	268.62	1,898.29	491.02	1,071	268.62	1,609
Guyra	410.36	2,171.39	631.94	1,106	209.95	1,727
Harden	396.34	2,205.22	706.14	1,647	290.11	2,333
Hay	517.53	2,643.22	1,341.23	1,462	182.93	2,163
Lockhart	231.51	1,397.37	334.66	464	258.49	954
Murrumbidgee	199.16	2,963.18	279.57	640	240.95	1,080
Tumbarumba	375.36	1,556.49	682.80	1,152	310.52	1,838
Wakool	486.52	2,899.68	859.26	1,406	196.08	2,089
Walcha	401.33	3,266.84	666.67	845	304.88	1,551
Warren	456.30	4,980.91	1,267.72	1,267	179.39	1,903
Weddin	381.87	1,216.90	786.26	297	180.63	860
Group Mean	358	2,408	694	1,094	235	1,686
State Mean	712	2195	2,693	1,129	298	Not applicable*

Note: * Given that only around half of the councils in NSW conduct water and sewerage operations, it is not possible to calculate a comparable statistic for the state.

Source: OLG (2015).

There are many reasons for pursuing HFE in a federation. Most importantly, HFE eliminates inefficient migration of capital and labour which might result if municipalities operated in vastly different fiscal environments (Oates, 1999). However, an effective system of HFE also helps to bind a federation together (Boadway and Shah, 2009), removes potential for political conflict between municipalities (Lecours and Beland, 2013), and eliminates wasteful lobbying and opportunities for pork barrelling. Moreover, for rural and remote councils HFE has an important role to play in regional economic development. For instance, where HFE grants facilitate provision and maintenance of sealed road infrastructure, primary producers enjoy cheaper and faster all-weather access to markets along with higher prices for animal stock (which is subsequently subject to less stress in transit).

In Australia HFE grants are administered according to the Local Government (Financial Assistance) Act 1995. The statute stipulates that funds should be allocated on a full horizontal equalisation basis which (Local Government (Financial Assistance) Act 1995, s6(3)):

Ensures that each local governing body in a state is able to function, by reasonable effort, at a standard not lower than the average standard of other local governing bodies in the state; and

Takes account of differences in the expenditure required to be incurred by local governing bodies in the performance of their functions and in their capacity to raise revenue.

Thus FAG grants should by definition provide councils with the *potential* for service equality, given reasonable revenue effort. It is important to note that *actual* service provision may differ from one municipality to another in accordance with the specific preferences of residents. Indeed, the *raison d'être* of federal systems of government is that 'by tailoring outputs of such goods and services to the particular preferences and circumstances of their constituencies, decentralised provision increases economic welfare above that which results from the more uniform levels of such services that are likely under national provision' (Oates, 1999, p. 1121).

The scholarly literature has been sceptical for some time regarding whether the practice of FAG allocations in Australia does in fact accord with the theory of HFE or, indeed, the definitions provided in the enabling legislation (see, for instance, Dollery and Mounter, 2010; Drew and Dollery, 2015a). One reason why practice diverges from the stated purpose of the legislation can be found in s6(2)(b) of the Act, which stipulates a minimum quantum for each council of 'no less than the amount that would be allocated to the body if 30% of the amount to which the State is entitled under that section in respect to the year were allocated among local governing bodies in the state on a per capita basis'. As observed in a number of reports, this clause essentially undermines the HFE objectives embodied elsewhere in the legislation (see, Commonwealth Grants Commission, 2012). The other reason why actual practice does not accord with the principles of HFE relates to the algorithms employed by the various State Local Government Grants Commissions. For instance, the NSW Local Government Grants Commission (NSWLGGC) employs standard expenditure allowances based on the state average cost of providing twenty different functions over a five-year period. Clearly expenditure allowances based on state averages do not respond to s6(3)(b) of the Act – that is, state averages implicitly (and implausibly) assume that all councils in the jurisdiction face similar costs for providing services.

Moreover, the NSWLGGC generates revenue adjusters to control for 'revenue effort' in response to s6(3)(a) using a standard tax rate which is calculated as the quotient of the sum of all general rates levied for all councils in NSW with respect to the sum of rateable unimproved property values for the entire state. Clearly this method of adjusting for revenue effort is flawed on at least three counts. First, for almost four decades NSW has operated a tax limitation regime which caps the total tax take of all councils in the state. It is therefore misleading to suggest that an average tax rate in any way reflects the potential revenue which could be exacted by any particular council (Drew and Dollery, 2015b). Second, the method employed entirely neglects annual fees and charges levied by council. It is particularly concerning that only a partial estimate of municipal impost is made given that there is considerable evidence that tax limitations encourage upward pressure on unregulated fees and charges (Blom-Hansen *et al*, 2009). Third, municipal taxes are paid out of flows of income *not* stocks of wealth – therefore, the NSWLGGC appears to be calculating 'effort' on an entirely incorrect premise (revenue effort calculated as total municipal impost divided by total income accruing to entities in the jurisdiction is the appropriate measure – see, for instance, Ladd and Yinger, 1989).

It appears that the NSWLGGC makes some effort to adjust for differences in need through employing a range of disability factors. The process is not transparent; however, the NSWLGGC makes clear that the disability factors are in part a product of ‘weightings [which are] meant to reflect the significance of the measure in terms of the expected additional cost’ (NSWLGGC, 2014, p. 20). Further, the Commission’s report states that ‘the weightings have generally been determined by establishing a factor for the maximum disability based on a *sample of councils or through discussion* with appropriate peak organisations’ (emphasis added, NSWLGGC, 2014, p. 20). This is a rather disappointing and chaotic approach to the allocation of HFE grants, especially given that an empirically robust econometric method for calculating grants has been outlined in the scholarly literature for many decades (Ladd and Yinger, 1989)

We now briefly consider some of the key events leading up to the decision to suspend the democratically elected representatives of Darling Shire until September 2020.

4. TIME LINE TO ADMINISTRATION

One of the curious aspects of the unprecedented liquidity crisis faced by Central Darling Shire is that it was preceded by at least three years of adverse reports, ineffective interventions and requests from the Shire for financial assistance (OLG, 2014). This section provides a chronology of key events.

January 2011. The ‘Promoting Better Practice Review’ was initiated into Central Darling Shire by the Department of Local Government (now the Office of Local Government) and conducted by Angus Broad (subsequently appointed assistant to Commissioner Colley). This Review ‘contained fifty six recommendations, highlighting significant concerns about the current performance of the Council’ and ‘comment[ing] on the difficulties faced by the Council in the longer term’ (Colley, 2014, p. 3).

September 2012. Six of the nine incumbent Councillors were returned to office following local government elections. The elected representatives had between six and 23 years of experience as councillors (the mayor had served on council for 18 years).

17 December 2012. The Shire’s ‘Auditor’s Report’ for the preceding financial year noted that the Shire’s liquidity position had ‘deteriorated significantly over the last year’ and that ‘this poor cash position will have a major impact in the Council being able to deliver services into the future’ (Colley, 2014, p. 101).

27 February 2013. The Shire requested a \$2million finance facility at a meeting with the Minister for Local Government, Minister for Western NSW and Member for Murray-Darling (John Williams) to alleviate a cash flow problem which had arisen due to changes in the way Roads and Maritime Services (RMS) paid for work subcontracted to council (Department of Premier and Cabinet, 2014, p. 38).

February 2013. The Office of Local Government expressed concern that ‘Council’s financial position had deteriorated further and was parlous’ (OLG, 2014, p.2). This prompted an on-site review over the period 12th –14th February which concluded that ‘Council’s financial sustainability in the longer term remained questionable, with its cash position weakening significantly in the last year’ (OLG, 2014, p. 3).

14 March 2013. The NSW Treasury Corporation (TCorp, 2013), commissioned by the Department of Local Government to conduct a review of the financial sustainability of each council in NSW, published its *Central Darling Shire Council Financial Assessment, Sustainability and Benchmarking Report*. TCorp’s (2013) review of Central Darling Shire’s sustainability concluded that ‘we consider Council to be in deteriorating financial position and

to be unsustainable' (TCorp, 2013, p. 33). Moreover, the Report noted that 'Council will face liquidity pressures and will have limited capacity to service its debt commitments' (TCorp, 2013, p. 4).

April 2013. The Department of Local Government (DLG) appointed Mr Geoff Wise, former General Manager of Bourke Shire, as mentor to Central Darling Shire.

10 May 2013. The DLG appointed mentor, Mr Geoff Wise, wrote an 'Urgent Central Darling Report' to Mr Grahame Gibbs, Deputy Chair of the NSWLGGC, and copied same to Deputy Chief Executive of the DLG (Steve Orr), stating that 'I totally support the Mayor and Council management in immediately bringing this predicament to your attention, and through you to the Minister, and additionally I recommend on to the Premier' (Wise, 2013). Mr Wise also wrote that delegates should be given the opportunity to 'seek an external funding commitment to supplement the budget'. Mr Wise concluded his 'Urgent Report' with the following observations (Wise, 2013):

Council's primary problem is a liquidity problem, with Council having no control over generation of any sizeable income, and extremely limited abilities in cutting costs without cutting essential services. I suspect we are seeing at Central Darling Council the tip of the iceberg of the ongoing imposts, demands and expectations placed on all Councils (including cost shifting and one size fits all requirements) in a situation where there is extremely limited ability to absorb such externalities.

September 2013. A delegation from the Shire attended the regional cabinet meeting in Broken Hill and stated 'council's financial position was perilous' (Department of Premier and Cabinet, 2014, p. 57).

4 November 2013. Mayor Ray Longfellow wrote to 'Local Member, seeking, among other things, an immediate cash injection of \$2 million for Central Darling Shire from the State Government' (OLG, 2014, p. 5).

14 November 2013. Minister for Local Government wrote to the Shire requesting further information on its financial predicament (Longfellow, 2013).

22 November 2013. Mayor Longfellow responded to the correspondence from the Minister, stating that 'Council strongly urges the State Government to support the equitable distribution of the FAGS ... the current contribution is insufficient to provide Council with the funds for servicing the basic needs of our communities'. In particular the Mayor called for a 'redistribution of FAGs (for the 2014/15 financial year) to provide an equitable and viable share for Central Darling' (Longfellow, 2013).

23 December 2013. The Minister for Local Government appointed Mr Greg Wright (former General Manager of Camden Council) as Interim Administrator for three months.

March 2014. Minister for Local Government extended the period of Administration for a further three months.

14 March 2014. Report by consultants RSM Bird Cameron (commissioned by the OLG) was published. The desktop analysis stated that 'it does not make sense for Council to conduct non-core activities, particularly where these are loss making'. Such activities included a Westpac banking agency, Post Office, aerodromes, swimming pools, community busses and aged care facilities. RSM Bird Cameron did not acknowledge that the council conducts the activities in response to market failure or cost shifting. For instance, the Post Office⁸ was taken on by the Shire after it entered into receivership and the ownership and maintenance

⁸ The next closest Post Office to Wilcannia is at White Cliffs (83 km north).

obligations for the aerodromes were cost-shifted to local government from the Commonwealth (ALGA, 2015). Moreover, the airports are operated principally for the benefit of the Royal Flying Doctor Service, Rural Fire Service and State Emergency Service. It is therefore somewhat surprising that the consultant report recommended ‘either cessation or scaling back of ‘non-core activities’ that have been taken on by Council’ (RSM Bird Cameron, 2014, p. 13).

June 2014. Interim Administrator’s Report outlined a ‘recovery plan’ for the Shire. This included ‘returning’ two of the three community transport contracts to TransportNSW, ensuring all non-core services are fully funded, seeking a third party to operate the swimming pools, refusing RMS contracts which are not fully funded and ‘work[ing] constructively with LGNSW, the Grants Commission and other appropriate stakeholders to have the Financial Assistance Grants formula revised to better meet the needs of rural and remote Councils’ (Wright, 2014, p.14). The Interim Administrator’s Report concluded with the following sobering assessment of the Shire’s recovery:

The issues facing the Central Darling Shire Council are serious and complex and they will take some considerable time to resolve. Indeed, I am not certain that the resolution of all the issues and the attainment of long term sustainability for the Council will – ultimately – be something that the community will be prepared to accept. The long-term solutions involve substantially pared back services and, in all probability, fewer jobs at the Council. The alternative, however, would be more unpalatable still.

The final step into long-term suspension of the democratically elected body was the Public Inquiry conducted by Commissioner Colley and assisted by Angus Broad. We now turn our attention to this.

5. PUBLIC INQUIRY

On Tuesday 12 August 2014, Commissioner Richard Colley opened the Central Darling Shire Public Inquiry pursuant to s438(U) of the Local Government Act 1993. The Commissioner went to considerable pains to contrast the ‘rules’ of the inquiry to those which might operate in a regular court. In particular, the Commissioner noted that ‘the mere fact that a critical comment is made during the hearings or contained in the report of the inquiry is not of itself sufficient to open up that comment to scrutiny on the grounds of denial of procedural fairness’ and that the ‘findings cannot be impugned for want of procedural fairness no matter how distressing the criticism or condemnation might be to the individual concerned’ (Department of Premier and Cabinet, 2014, p. 3). The Commissioner also made reference to the RSM Bird Cameron report, before noting that ‘it is not intended to call any of its authors to appear at the public hearings’. Finally, the Commissioner noted that the purpose of the hearings was to allow him to make recommendations to the Minister, but emphasised that the Minister and Governor would be responsible for decision making.

5.1 *Conflict of Interest?*

Given the claims of inequitable FAG allocations made by the Mayor (Longfellow, November 2013) and Interim Administrator (Wright, June 2014), along with the direct involvement of the Deputy Chair of the NSWLGGC (May 2013) in the events preceding the Administration, it is somewhat surprising that Richard Colley – incumbent Chair of the NSWLGGC – was appointed by the Minister for Local Government as Commissioner for the Public Inquiry. Indeed, Mr Colley’s background has led some to question whether the Inquiry was conducted

in accordance with the rules of procedural fairness, given that there may have been some grounds for a reasonable apprehension of bias.⁹

Richard Colley disclosed his position as Chair of the NSWLGGC well into the proceedings (after the luncheon adjournment on Wednesday 13 August, 2014) in the following exchange captured in the transcript of proceedings (but not in the Commissioner's Report), when he interjected to correct a witness who had incorrectly stated that FAG were tied grants:

COMMISSIONER. I probably should declare a – not an interest, but a – what would you call it?

MR BROAD: Defactive (*sic*) background.

COMMISSIONER: I happen to be the Chair of the New South Wales Grants Commission (Department of Premier and Cabinet, 2014, p. 116).

The exchange suggests that (i) the Commissioner recognised that his position as Chair of the NSWLGGC provided him with specialised knowledge relevant to the Public Inquiry and (ii) that the Commissioner was at pains to avoid the term '[conflict of] interest'.

5.2 Evidence on FAG Allocations

Councillor Rhoades, President of the NSW Local Government peak body (LGNSW), provided evidence to the Inquiry on its first day of hearings. Councillor Rhoades spent some time on the matter of inadequate FAG allocations and stated that (Department of Premier and Cabinet, 2014, p. 20):

Councils such as Central Darling and many others should be receiving a greater share of that federal money than the way that the formula is used a lot of the times based on population.

Moreover, Councillor Rhoades emphasised that the fiscal predicament of the Shire was not an isolated case (*idem*, p. 22):

Yes this may have been the first of the pins to fall but that's not to say there's other pins that may not fall as well if certain things within the structure of Local Government in New South Wales don't change.

On the second day of hearings the matter of FAG allocations was raised by Jennifer Thwaites, Acting CEO of the Wilcannia Local Aboriginal Land Council. Her early comments cut right to the heart of the HFE principle (*idem*, p. 116):

I would also argue very strongly in the equity areas that the services covered by this council that are being looked at as being non-essential, or essential services that have been cut back, go through the list, waste removal, water, sewerage, service centres, swimming pools, community busses, air strips or aerodromes used for the Royal Flying Doctor, post offices, aged care and community housing, property management, waste tips, cemeteries, animal registration, environmental planning, they are essential services and the residents of this Shire have the right to expect adequate service provision in those areas. Certainly we're never going to match the service provision of the bigger urban areas, but why should we be penalised because we are living in a council area that is huge but has limited population and a socio-economically disadvantaged population?

It is a claim that the residents of Central Darling were not 'able to function, by reasonable effort, at a standard not lower than the average standard of other local governing bodies in the state' (Local government (Financial Assistance) Act 1995, s6(3)(a)). Ms Thwaites then went on to assert that the NSWLGGC were not allocating grants equitably, and this led to the Commissioner's interjection and disclosure of a 'defactive (*sic*) background' (*idem*, p. 116):

⁹ 'Actual bias or a reasonable apprehension of bias on the part of the decision maker are a breach of the rules of procedural fairness' (Butt, 2004, p. 49).

Well I'm not saying I'm an expert in it, but I've certainly gone through the guidelines for the federal assistance grants. The two highest priorities of that are socioeconomic disadvantage and Aboriginality. This Shire obviously, as the second highest socioeconomically disadvantaged community in NSW, and with an, I believe Aboriginal population of somewhere between 55 and 60%, has to qualify with both of those

Councillor Page also spent some time expounding on what he perceived to be inadequate FAG (idem, p. 154):

I have lobbied the Federal Government in regards to the funding, the FAGs grant, I met with Joyce Wheatley 15 years ago, she was the Chair of the FAGs committee, that the FAGs committee was not giving the councils in the outback the funding that it should have been getting

Councillor Page also provided a succinct summary of the relationship between adequate FAG and the sustainability of regions (idem, p. 170):

I think, you know, councillors do have a good intent to make things better for their community so we need to have lobby groups lobbying so we have more funding coming in from FAGs, but at the same time, yes, we do need to have some housekeeping done as well ... it's talking about the long term survival of outback Shires and councils and a lot of young people living in the outback now need to be given that bit of encouragement that things will get better in the future.

A number of other witnesses also commented on FAG allocations (see, for instance, Councillor Astill's evidence in Department of Premier and Cabinet, 2014). It is therefore somewhat surprising that the Commissioner's 102-page report makes just the one reference to equity in FAG allocations and, in doing so, draws not on the evidence provided at the Inquiry, but rather on a selected text from the Interim Administrators Report (Colley, 2014, p. 94):

Equity in the financial assistance grants system would be beneficial, but is not the panacea for council's ills. The real and pragmatic answer is to cut costs.

5.3 Reduction in Services

Reduction in 'non-core' services advanced in the RSM Bird Cameron and Interim Administrator Reports had started to take place at the time of the Inquiry. For example, the community bus contracts had already been returned to TransportNSW and significant cuts to staffing had been executed (full-time equivalent staff had been reduced by almost one-fifth, from 54 in 2011/12 down to just 45 in 2013/14) (OLG, 2015).

The other strategy employed by the Interim Administrator to reduce the size of the overdraft facility (which had peaked at well over \$3 million) was to defer maintenance expenditure. The implications of this strategy were recognised by Councillor Sullivan (Department of Premier and Cabinet, 2014, p. 95):

The council, if it stays like it is under its current structure, the recovery plan will only postpone the inevitable ... You're not doing the workforce re-employments, you're not replacing the housing, you're not doing any work on the housing, you're not replacing plant and equipment right. So if you don't replace those you don't spend the cash on them, you hold the cash in hand, right but somewhere along the line those things have to be fixed.

The association between cuts in municipal staffing and services on the one hand, and the flow-on economic implications for the town on the other, was made by Councillor Page (Colley, 2014, p. 94):

If you do make cuts it affects your employment in the town, it affects the morale of the town. You need to look at both sides of it. Yes, we could be financially viable if [we only did] roads rates and rubbish, but if you look at the other side of it, what would be the overall outcome and the results, it's not an easy option to take.

This apparent reticence of Councillors (see also Looney in Department of Premier and Cabinet, 2014, p. 152) to accept cuts to services was cited by the Commissioner in his concluding remarks as justification for his recommendation to suspend the council until September 2020:

It is difficult to see the current Council having the capacity to do so [implement the Recovery Plan], let alone, establishing a foundation for a sustainable future.

5.4 The Role of HFE in Central Darlings Shire Liquidity Crisis

The principle of HFE which underpins the FAG grants rests on two key concepts:

- The need for councils to exert reasonable revenue effort; and
- The normative proposition that all councils exerting reasonable revenue effort in the country should have the same potential in providing an average standard of services.

As established in Section 2, Central Darling Shire has the highest residential revenue effort in the state. Therefore, it is reasonable to assume that the first principle has been satisfied. The question then hinges on whether the FAG provided to Central Darling Shire are sufficient for it to provide the average of the standard of services provided in the state. This is highly questionable. For instance, 1541km (or 96%) of the Shire's roads are unsealed. Cuts have been made to swimming pool opening hours. The Shire does not have a library. Aerodromes provided for the benefit of the Royal Flying Doctor service are considered 'non-essential', as are cemetery facilities. Only one of the four principal towns making up the Shire has sewerage. White Cliffs does not have garbage collection but residents are required to cart their rubbish to the tip and *volunteers* attend to the management of the tip (RSM Bird Cameron, 2014). It is very difficult to argue that the residents at Central Darling Shire receive the standard level of services provided to other citizens of NSW.

Table 4: Changes to Financial Assistance Grant Allocations to Central Darling Shire, 2013–2015

Period	General Purpose Component	Road Component	Total FAG
2012/13	\$2,200,748	\$1,409,193	\$3,609,941
2013/14	\$2,645,837	\$1,478,181	\$4,124,018
2014/15	\$2,944,280	\$1,480,917	\$4,425,197

Source: NSW Local Government Grants Commission (2014).

Thus, there is *prima facie* evidence to suggest that the FAG allocation for Central Darling Shire was inadequate according to the HFE principles embodied in the enabling legislation. Moreover, since the period of Administration the Shire has been the beneficiary of some rather large increases to FAG allocations (see Table 4 above). In particular, the NSWLGGC Report on FAG allocations presented by Richard Colley (in his capacity as Chair of NSWLGGC) dated October 2014 – the same month as the Commissioner's Report on the Public Inquiry – increases the total FAG allocation for the Shire by just over 7% during a period in which the state allocation actually decreased marginally (–0.1%).¹⁰ One may question whether the Interim Administrator's report or the evidence heard at the Public

¹⁰ The Commonwealth has frozen indexation of FAGs for a period of three years, hence the near-zero movement in State allocation.

Inquiry influenced this significant increase in FAGs. One must also question whether the additional \$815,256 pa received in grants from 2012/13 levels might have avoided the unprecedented liquidity crisis faced by the Shire on 4 November 2013.

6. CONCLUDING REMARKS

It is interesting to contrast the flurry of media and scholarly attention engendered by the bankruptcy of the Municipality of Detroit in July 2013 with the dearth of analysis associated with the liquidity crisis experienced by Central Darling Shire at around the same time (see, for instance, Davey and Walsh, 2013; Stiglitz, 2013; Chung, 2014). One important reason for this disparity is the operation of an active municipal bond market in the United States (for varying accounts of the operation of the municipal bond market in the U.S., see, for example, Doty, 2012; Feldstein and Fabozzi, 2008; Johnson *et al*, 2014). However, it is also clear that the remote location of the Shire may explain why so little attention has been given to Australia's first example of government financial failure.

Horizontal Fiscal Equalisation grants are an essential component of a strong federation and play an important part in ensuring sustainable futures for communities in rural and remote regions. However, it is clear from the preceding analysis that the existing FAG allocations have not achieved the objectives enshrined in statute. Key recommendations to ensure FAGs achieve HFE objectives include: (i) changes to legislation to remove the stipulation for a minimum quantum based on population size and (ii) changes to NSWLGGC algorithms to remedy identified deficiencies. There is evidence that a number of other rural and remote councils are experiencing acute fiscal distress. It is thus very important that prompt attention is given to implementing changes to FAG legislation and allocation practices.

A second outcome of this study is that it has cast light on some unsatisfactory processes leading up to the extraordinarily long period of Administration for Central Darling Shire. Suspension of democratically elected representatives for lengthy periods is an action of the utmost gravity. It is therefore reasonable to expect procedural fairness, thorough investigation and complete transparency. In particular, there should be no cause for the suggestion of apprehended bias. Moreover, it seems reasonable to expect that claims regarding the cause of Central Darling's financial predicament might have been investigated thoroughly in a manner akin to this study. It also seems reasonable to expect that reports arising from Public Inquiries might be responsive to the evidence recorded in the transcripts of proceedings.

For the residents of Central Darling Shire, Administration has meant significant cuts to services, employment and the level of maintenance expended on critical transport infrastructure. This serves to underline the importance of the aforementioned recommendations if we are to ensure that rural and remote communities might enjoy sustainable futures.

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Influence of Regional Factors on the Implementation of Public-Private Partnerships to Promote Competitiveness of Regional Value Chains (VC): A Comparative Case Study of the Value Chain “Cocoa/Chocolate” in the Regions of Santander and Antioquia (Colombia)

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ABSTRACT

The paper addresses the influence of regional factors on value chain-based development strategies. First, it elaborates on the development trajectory of the regions included in the study. Second, the main elements of the territorial embedding of value chains are discussed to put in context the economic structure in which they are situated. Third, it elaborates on the differences in societal embedding of the value chains and their influence on the outcomes of competitiveness agreements, taking into account business systems' variables such as the role of the state, the role of the regional elite and its connections and, the state business relationships. The research approaches the interaction between value chain factors and regional factors in the context of multi-stakeholder agreements at the value chain level. The specific type of analysis developed is same sector and value chain problematique but different regional settings. The selected cases were the value chain 'cocoa-chocolate' in the north-eastern region and in Antioquia (Colombia).

1. INTRODUCTION

This paper analyses the influence of regional factors on value chain (VC)-based development strategies. It addresses the most dynamic regional factors that help or hinder the optimal functioning and outcomes of the regional VC competitiveness agreements. A horizontal analysis is carried out taking into account the embeddedness of firms and other actors in the territory (see Blandon, 2012).

The data comes from a comparative analysis of two Colombian regional VCs located in the same sector (cocoa) and with similar VC characteristics, but located in different regional settings (Antioquia and Santander), including their competitiveness agreement (CA) signed during the period from 1998-2003. This period constituted a key landmark of this policy.

The study applies stakeholder techniques to develop the ex-post analysis of the CA for the selected value chains. In regards to the information sources and primary strategies for data collection, it is important to state that the primary sources are composed by VC stakeholders, non-chain stakeholders, and experts. There were used 'in-depth semi-structured interviews' with key informants. The secondary sources are composed by minutes of the Regional

Council for Competiveness and the National Council for Competiveness, executive summaries and detail technical reports of VC technical Secretariats, as well as databases (public and private sector).

A comparative analysis of the regional business systems of Santander and Antioquia in relation to the multi-stakeholder development partnership for the VC cocoa/chocolate was carried out to expand our understanding of how regional factors favour or hinder development interventions at the level of VC. The business systems approach is applied from the regional perspective, given the attention paid to VC interventions in different regional governments (Departments) in Colombia. In the analysis of social and territorial embedding, various issues of this theory are included such as the role of the state, the characteristics of firms and the nature of their interaction with others in the VC and particularly in the competitiveness agreements (CAs). Likewise, this research takes into account the regional institutional endowment and especially the way local-regional governments and business interrelate.

The paper is divided into six parts beginning with an introduction; second, a theoretical framework is presented. Third, the regional economic trajectory where the VCs are located. Fourth, a discussion of the main elements of the territorial embedding of the VCs. Fifth, the differences in societal embedding of the VCs and their influence on the outcomes of VC competitiveness agreements are discussed taking into account business systems' variables such as the role of the state, the role of the regional elite and its connections and, the state-business relationships. Sixth, concluding remarks.

2. THEORETICAL FRAMEWORK

The concept of agro-industrial value chain (VC) is used in this research to describe the set of productive (value-added) activities that are necessary to bring a product from its conception and design throughout different stages, up to its end use. This process includes amongst others: the sourcing of raw materials, production and agro-industrial processing (incorporating the input of producers' services (and in a number of cases physical transformation), distribution, retailing, final consumption and disposal after use. The concept also comprises the inherent power relations (organization and control) that take place amid the chain's stakeholders in the process of coordination of production and the geographical spread of the links (Barrientos, 2003; Gereffi, 1999; Kaplinsky and Morris, 2000; Mayoux, 2003; McCormick and Schmitz, 2002; Sturgeon, 2001).

Gereffi (1994, p. 97) presents three main dimensions within its analytical framework. First, there is an *input output structure*, defined as the series of economic interrelations within the links in the commodity chain in a sequence of value added activities. Second, there is a *territoriality (geography)*, related to the 'spatial organization of production in the commodity chain' (ibid). Last, the framework contains *governance structure*, which embodies the 'authority and power relations that determine how financial, material, and human resources are allocated and flow within the chain' (ibid). In this sense, the concept relates to the 'power relations in the chain and the institutions which mould and wield this power' (Kaplinsky and Morris, 2000).

The policy of competitiveness agreements is multilevel and expands to (sector and region). The scheme draws on several VC stakeholders like business, agricultural and livestock producers, their associations, universities, the government, and others to work in different types of partnerships with the purpose of improving the productivity of firms and farms and their overall competitive position amidst the process of internationalization of the Colombian economy. The coordination of the CA is done by the VC national and regional councils for competitiveness, which embody a modality of public/private partnership to promote VC

development. Also, there is a technical secretariat in charge of direct coordination of the regional council and the activities across the VC

Finally, it is important to point out that most VC research that is, projects and cases have been conducted with a clear bias towards governance issues including upgrading and other dimensions (input output structure, geography and systemic efficiency) have clearly been neglected. The latter have not been widely developed as analytical categories in the VC realm. Now it is time, as understood by a number of scholars (Blair, 2008; Hess, 2008; Humphrey and Navas-Aleman, 2010; Kaplinsky and Morris, 2008; Mayer-Stamer, 2004; Morris, 2001 and 2002; Schmitz *et al*, 2004), to advance in the VC's relevance for policy delivery, for development cooperation, for private social accountability promotion and for locational policies in developing areas among others. In this line of thought, in this research we strived for a VC analysis more centred on the territory (local and regional issues) and consequently on the use of VC framework for local development policies.

Table 1: Value Chains and Regional Trajectory

Region/ Value Chain	Trajectory	Colonial Period-1900	1900-1989	1990-2005
Antioquia Cocoa/ chocolate	-Toward a modern industrial and financial conglomerate.	-Gold mining, trade, coffee and rapid expansion of the regional economy in sheer size.	-Transition to manufacturing in early industrialization period, which provided a boost for later import substitution period and the consolidation of the 'Antioqueño entrepreneurship'.	-Positioning of large financial and industrial conglomerates. Consolidation of Antioquia as a diversified and export-oriented regional economy. It is the second largest economy of Colombia. Solid public finances; strong government and institutions (e.g. business incubators, competitiveness plan for Medellin and Antioquia).
Santander Cocoa/ chocolate	-Toward a bifurcated economy: fast growing oil related industry and family based SMEs in farming and manufacturing.	Cocoa, tobacco, small-scale manufacture.	-Oil exploration and refinery, petrochemical industry. - Family-based SMEs in agricultural and livestock production. -Largest cocoa producer in the country. Other crops (oil palm, coffee). -Family-based SME in manufacturing: textile, garments, leather.	-Creation of support mechanisms for regional competitiveness in the areas of research, technological development and science and technology. -Stronger manufacturing VCs than agro-food VCs. Agricultural production (cocoa, oil palm, coffee).

Source: Authors.

3. REGIONAL ECONOMIC TRAJECTORY

The analysis of the evolution of the regional economy contributes to the understanding of the relative importance of a VC in relation to that economic structure. In fact, the nature of a regional VC is moulded by the historical regional development trajectory. As Andriessse *et al.* (2011) observe, ‘different development trajectories are matched by different regional institutional arrangements [which include] different regional networks of inter-firm cooperation’.

The analysis of the development trajectories contributes to the explanation of issues such as why a region is specialized in the production of a given raw material that supplies the input requirements of industrial VC governors located in other regions and why a VC’s major industrial firm is located in one region. In addition, why is a regional government so active and why is a regional government so passive in a CA. Finally, what has been the nature of its historical relations with the other links of the regional VC, including backward and forward linkages and the regional organizations?

3.1 Economic Trajectory of Antioquia

The development trajectory of Antioquia has led it to become an industrial and export region based on a strong entrepreneurial leadership and public-private sector cooperation schemes.

The early development of the industry in Antioquia arose at the end of the 19th century and beginning of the 20th century. Antioquia lived an early industrialization in the 20th century in advance of other places in Colombia and before other Latin American cities except Monterrey (Mexico), Sao Paulo (Brazil) and Buenos Aires (Argentina)).

The historic regional development trajectory of Antioquia has led it to become an industrial and export region with solid entrepreneurship and an outstanding history of public-private sector cooperation. Several factors characterize this trajectory: the sheer size of the expansion of the regional economy; its transition to manufacturing in the early industrialization period, which provided a boost for later import substitution period; and the consolidation of ‘Antioqueño entrepreneurship’. Currently, the department has a very dynamic and diversified economy and it has consolidated as the second largest economy in the country after Bogotá. As stated above, the chocolate industry in Antioquia is a clear example of the main traits of the regional economy as described in its trajectory.

3.2 Development Trajectory of Santander

The development trajectory of Santander is divided into four key periods beginning with a prosperous agricultural and specialized artisan manufacturing industries during the colonial period. Second, came integration to the national economy and economic restructuring (1900-1950). Third was petrochemical import substitution industrialization and the rise of SME manufacturing. Finally toward a bifurcated economy: fast growing oil related industry and family-based SMEs in farming and manufacturing. The analysis of the economic trajectory of Santander shows that for that region the cocoa/chocolate VC in relative terms is not of great significance. Thus, the contribution of the business systems to the CA is lesser than in Antioquia. Finally, it is important to recall that the region has experienced conflict and illegal crop production across the decades. Most of the illicit crops were located in sloped zones, which historically have been areas of conflict. Paramilitary groups and guerrillas became a risk factor for investment in the region. In this context, international and national resources poured into the region and supported the development of cocoa to substitute illicit crops and promote employment and income among impoverished inhabitants.

In summary, the regional trajectory shows Santander as a diversified economy whose main item is oil production and petrochemical industry. The economy of Santander is bifurcated. On the one hand the fast growing oil-related industry, based on FDI and Ecopetrol (Colombian Petroleum Company) and on the other hand, family-based SMEs in farming and manufacturing, which formed before national market integration. The great regional biodiversity and the availability of land have consolidated solid regional agro and livestock sectors. Permanent crops have an important place in the agricultural and livestock structure; many of them have been historically cultivated in smallholdings and in mountainous areas. Most of these crops have followed a long trajectory since the colonial period playing a key function in the regional economy and consolidating Santander as the main producer of such commodities at the national level.

4. TERRITORIAL EMBEDDING

Concerning territorial embedding, it ‘considers the extent to which an actor is “anchored” in particular territories or places. Economic actors become embedded there in the sense that they absorb, and in some cases become constrained by, the economic activities and social dynamics that already exist in those places’ (Henderson *et al*, 2002, p. 452). Territorial embedding is analysed taking into account features of the regional economy such as sectoral composition, dominant interests, natural resources, violence and conflict.

A brief description of the regional nuclei of the VCs included in the study shows that the northeastern region is rich in natural resources, has the largest oil refinery in the country, accounts for about 70 per cent of the domestic production of this industrial sub-sector, and shares an extensive common border with Venezuela. Historic violent episodes (armed conflict) and the production of illicit crops take place in the region. Second, Antioquia is host to the largest economic conglomerate of Colombia,¹¹ has an outstanding history of public-private sector cooperation and a very dynamic and diversified economy, which is primarily orientated toward exports (Table 1). These aspects consolidate it as the second largest economy of the country after Bogotá. A solid regional institutional thickness has accompanied its strong industrialization history. Antioquia has been affected by decades of political violence and has been the scene of armed conflict due to the presence of guerrilla and paramilitary groups. The cultivation of illicit crops and processing of illegal drugs is also a distinctive characteristic of the region.

4.1 Sectoral Composition of the Regional Economies

The regional economies have presented changes over the period (1990-2004), which denote the growth and/or decline of them. Antioquia economy is larger than Santander’s. In general, the economy of Santander had the best performance of the two regions during the period and presented significant gains in the regional composition of the GDP of the nation, particularly in agriculture and industry. Santander also held the greatest per capita GDP growth (47.2%) during (1990-2004). The agriculture in Antioquia presented difficulties during the period, having an important drop in 1998, during the time of the economic crisis, though at the end it grew in relation to 1990; the industrial sector had a steady participation with a small reduction

¹¹ The syndicate Antioqueño (Grupo Empresarial Antioqueño) is the largest entrepreneurial group of Colombia. During the last decade, it has concentrated its economic activity in three main subgroups: meals, cement and finances. The group is organized in three holdings: ‘Inversiones Nacional de chocolates’ (chocolates national group), Cementos Argos and Suramericana, which constitute the investment matrices for their respective groups. The ‘Grupo Empresarial Antioqueño’ has adjusted and taken advantage of the economic internationalization of the Colombian economy. It has established alliances with other international firms and has bought other firms in Latin America to support its expansion plans.

at the end of the period. In terms of production, the contribution of the two regions to the gross domestic product of Colombia (GDP) presented a slight decrease in Antioquia and a steady increase in Santander during the period (1990-2004) (see Table 3).

Table 2: General Aspects of the Departments of Antioquia and Santander, 2005

Regional aggregates	Antioquia	Santander
Extension	63,612 km ²	30,537 km ²
Population	5,682,276	1,957,789
Regional population/ national population	13.25%	4.56%
Regional GDP US Dollar (million)	US\$ 18,503	US\$ 7,813
Regional GDP / National GDP	15.05%	6.35%
GDP per-capita	US\$ 3,256	US\$ 3,990
VA Agro-livestock –fishing, forestry	12.3%	14.2%
VA industry	20.1%	25.6%
VA commerce	6.7%	8.3%
Unemployment rate	14.0%	14.3%
GINI Coefficient (2000)	0.56	0.50

Source: DNP, Agenda Interna Regional Antioquia and Santander, 2007. DANE, Departmental accounts of Colombia; Great Integrated Household Survey, Population Census, 2005.

Antioquia is an export-oriented economy and participates with around one-third of exports and imports nationwide. Santander presented an increase in its participation in the total imports and exports during the period (2001-2004). In 2004, it participated with 3.50 per cent in exports and 2.50 per cent of the total imports of the country (see Table 3).

The evolution of the regional trajectory in terms of competitiveness indicators for the different Colombian regions between 1992 and 2004 shows that: first, Antioquia is consolidated as the second leading region in the country after Bogotá. Second, Santander has a high global competitiveness ranking and has been gradually improving its competitiveness, upgrading its position from 9th place in 1992 to 4th in 2004.

4.2 Natural resources and geography of Colombia

Colombia is an Andean country whose economy is still resource based and though exports have increased since the economic opening (1990s-onwards), it has opened its doors to competing imports. The country has a vast geography, a privileged geopolitical location and is endowed with different ecosystems. It is amongst the 30 largest countries in both population and geographical size. It has coasts on the Pacific and Atlantic oceans, and a large expanse of Amazon Jungle. It is divided into 32 administrative departments. Most of the Colombian population is located in the Andean region. The country is rich in natural resources including oil, carbon, nickel, emeralds and gold and has large areas dedicated to agriculture and livestock. In 2004, it was the fifth largest Latin American economy in terms of GDP after Brazil, Mexico, Argentina and Venezuela. However, measured through the purchasing power parity, the per capita income of Colombia was US\$6498 in 2005; below the Latin American average and places it amongst low-medium income countries (Cardenas, 2009, p. 31).

Table 3: Comparative Economic Structures by Departments (1990-2004)

Regional Aggregates (%)	Year	Antioquia	Santander
Regional GDP/GDP COL.	1990	16.47	5.06
	1994	15.11	5.09
	1998	14.51	5.44
	2000	15.17	5.88
	2004	15.41	6.11
Per capita GDP growth	1990-2004	11.41	47.2
AGRICULTURE* Regional GDP/GDP COL.	1990	14.52	3.84
	1994	14.42	3.73
	1998	11.88	5.07
	2000	13.94	5.73
	2004	14.92	6.08
INDUSTRY: Regional GDP/GDP COL.	1990	19.50	5.09
	1994	19.47	5.14
	1998	19.63	6.00
	2000	19.42	7.41
	2004	18.81	7.80
IMPORTS* Regional Imports/Nation	2001	30.26	2.98
	2002	32.13	3.13
	2003	34.67	2.94
	2004	30.15	3.54
EXPORTS** Regional Exports/Nation	2001	29.46	2.20
	2002	29.89	1.81
	2003	34.16	2.10
	2004	32.05	2.50

Notes: * Data provided by DANE and BR does not include imports and exports (FOB) from Bogotá and Cundinamarca. ** Non-traditional exports FOB.

Source: DANE, Banco de la Republica de Colombia.

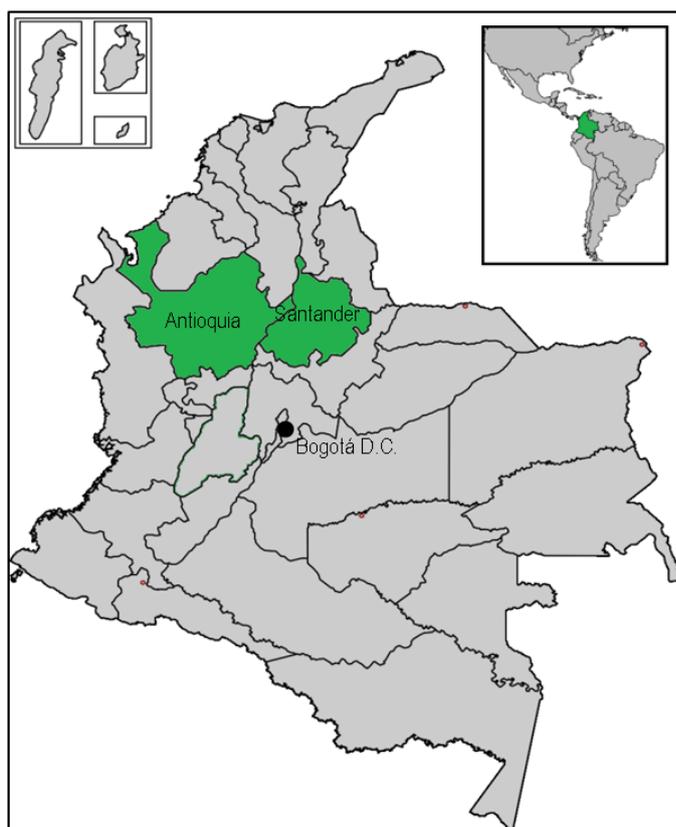
Natural resources offer the leading industrial firms of a VC the opportunity to benefit from rents in a given region endowed with exceptional natural agricultural resources compared to other regions of a country. The leading firms can consolidate their competitive position in the region through the location of their factories or by means of the establishment of comprehensive commercializing schemes. According to Kaplinsky (2008, pp. 287-300), 'rents arise from the control of scarce valuable resources, and to be appropriated, require protection from competition. This is reached by taking advantage of, or by creating, barriers to entry.... [Resource rent] arises as a natural bounty of nature, in which natural resources of varying yield are unevenly distributed spatially'. The public-private partnerships for VC development in a region with a natural resource competitive advantage generally draw the participation of the leading industrial firms since they want to enhance their control over the supply of raw materials or at least to maintain and/or avoid the weakening of their initial position by agreements that might involve other firms. The absence or limited availability of natural resources that support the sourcing of raw materials by the VC governors limit their support to a CA of a regional VC.

Table 4: Ranking of Regional Competitiveness (CEPAL)

Factor of Competitiveness	Year	Antioquia	Santander
Economic strength	2000	3	6
	2004	2	6
Human capital	2000	4	5
	2004	3	4
Infrastructure	2000	3	8
	2004	4	8
Science and technology	2000	2	3
	2004	2	5
Public finances	2000	11	18
	2004	2	20
Environment	2000	19	18
	2004	15	17
Global competitiveness ranking	1992	2	9
	1998	3	7
	2000	2	5
	2004	2	4
Ranking position	*	Leading	High

Note: * Ranking position among 23 departments (CEPAL).

Source: Parra –Pena Rafael y Ramirez Juan C. (2009) Escalafón de la competitividad de los Departamentos en Colombia. CEPAL, 2009.

Figure 1: Geographical Distributions of the Case Studies (Colombia)

Source: Researchers, based on IGAC (2011).

Santander counts with large areas specialized on cocoa production, and a long-standing tradition of cultivating the crop. This advantage attracts support from the leading companies toward the CA. Meanwhile, the cocoa production in Antioquia is less concentrated and dispersed around its geography. The lead firms of the VC cocoa-chocolate in Antioquia do not enjoy natural rents. However, the largest companies in particular CNC S.A. support the CA in Antioquia based on the potential natural rents they can enjoy from the consolidation of the region as a key player in the production of cocoa. It is important to point out that there is a large supply of land for cocoa programs in the ‘Cordon-rubber-cocoa’.

The natural resources influence the outcomes of a CA in the sense that the different natural resource endowments across regions support or hinder the achievements of the agricultural and livestock production targets, and the productivity goals in the short and medium term. The availability of good quality land facilitates attainment of the production goals of the CA since natural resources are not a constraint to reach them. The leading firms of the VC exert direct control over the yields of these natural resources through production of the crop in their own farms. Moreover, indirectly through comprehensive commercialization schemes such as the cases of CNC S.A. and Casa Luker S.A., which purchase most of the cocoa produced in the country. The positioning in the commercialization link of the VC provides the VC governors with additional rents in relation to their competitors (see Table 5).

Table 5: Natural Resources and VC Competitiveness Agreements

Region	Natural Resource Endowment	Natural Rent	Influence on the CA
Antioquia	<ul style="list-style-type: none"> -Large supply of land for cocoa programs. -Production is not concentrated geographically and the farms are dispersed in the region. - The yields are likely to increase as the new areas consolidate their production activity. 	The leading firms do not have natural rents in the region in the short term but potentially might enjoy them in the long run given that some of the new planting projects are specialized in the crop and have an entrepreneurial foundation.	CNC S.A. supports the CA since the company wants to develop a regional supply base where its key chocolate manufacturing factory is located.
Santander	<ul style="list-style-type: none"> -Large supply of high quality land for the expansion of the crops. -Some areas have been certified for cocoa of origin. -Enough availability of land, water supplies from rivers, rain, sun and shadow. 	<ul style="list-style-type: none"> -It originates in the geographic concentration of quality cocoa crops in the region. -The large manufacturing firms are positioned in the region with large cocoa purchasing points. 	Leading firms (CNC S.A. and Casa Luker S.A.) support the development of the input supply base, which is in their own interest.

Source: Authors.

4.3 Violence (Armed Conflict and Illicit Crops)

Security is a key issue to ensure peace and prosperity in a region and to promote competitiveness improvements in agro-industrial VCs. According to van Wijk *et al.* (2009), stability in the socio-political environment is crucial to the proper functioning of VC development intervention for two main reasons. ‘[F]irst, wide social divides among the population could hamper agricultural production, generate distrust among market actors, and may render market institutions less effective.... On the other hand, as far as instability is related to poverty, increased commercial opportunities for agricultural products may have a mitigating effect on social divides’ (idem). This outcome depends on whether poor agriculturalists are included or excluded in the CA of the VC, and if this inclusion actually improves their living standards. In other words, violence hampers the process effectiveness of

development interventions at the VC level, though it is acknowledged that, in spite of the presence of political instability, armed conflict and other manifestations of violence, there is a need to promote socioeconomic development in affected areas, hence, VC interventions and CAs within them can support this endeavour.

There was an especially strong presence of armed conflict in Santander and Antioquia during the period 1987-1995 with a high frequency of conflicts between guerrilla and paramilitary groups. These regions were highly affected by killings, kidnapping and population displacement, including agricultural producers. Throughout this period, the conflict affected cocoa cultivation and other economic activities, such as cattle ranching. Because of great improvements in security during the last decade, investment has increased in cocoa regions, along with the recovery of cocoa plantations, the renewal of crops and the planting of hundreds of new cocoa hectares, including those from peace schemes and illicit crop substitution projects.

In the northeastern region, the role of public/private sector and NGO partnerships has been crucial in particular in the cocoa production projects by means of 'Plan Colombia' and other public programs and NGO-led projects funded by international donors. The general aim of such programs is to substitute illegal crops (coca and poppy) for legal crops and to incorporate guerrilla and paramilitary militants that are part of peace deals with the government into civilian life. In this environment, public-private partnerships for VC development have been crucial to promote the inclusion of small agro producers in the VC.

The most important regional factors that contributed to the formulation and outcomes of the CAs in Antioquia related to the favourable regional business system and the presence of armed conflict and illicit crops. These factors have prompted the development of cocoa projects with the support of NGOs, Fedecacao and funding from regional, national and international sources. Surprisingly, the specific regional characteristics in terms of armed conflict and illicit crops have facilitated the influx of resources to the development of cocoa cultivation projects. Additionally, the availability of adequate natural resources, existing infrastructure and qualified human resources has provided an adequate environment for the undertaking of such projects. Thus, on the one hand, the illicit crops are a curse, undermining the local economy, its institutions and social capital; on the other hand, the resources to contain or eliminate these crops help the rebuilding through CA.

In short, the fact that there have been additional facilities for reconstruction (an influx of financial and technical resources) and an opportune response on the part of NGOs and other VC stakeholder, suggest that the net influence of the violence factor or security policies on the CA outcomes has been positive, such as in the case of cocoa planting and production targets. Simultaneously, there has been a drastic reduction of violence during the government of President Alvaro Uribe because of its peace strategy, called democratic security.

Paradoxically, violence has created economic opportunities in certain rural areas affected by armed confrontation between rebels, paramilitary forces and/or the army. The peace deals between government and rebels have opened the path to promote income and generate employment through crops such as cocoa, which are in high demand and have the potential to be cultivated in most of the conflict regions. Likewise, the presence, in the same or other geographic areas, of illicit crops such as coca and poppy, which in one way or another are linked with actors involved in the conflict, has also opened opportunities for the cultivation of alternative crops to substitute the illegal ones in Antioquia and Santander. As we can see, the VC development interventions are responses to issues from two trajectories: violence to poverty and poverty to violence. The former trajectory might be a partial explanation to the situation created in certain regions by the influx and development of illicit crops that attract

violent actors and distort the legal economic activities, and, in the boom's aftermath, the region is left with severe social and economic problems (a dismantled economic base and poverty). The second trajectory (from poverty to violence to productive development interventions) is more difficult to document since according to the experts (Echandia, 1999), there are few comprehensive studies focused on areas free from illicit crop cultivation and long-standing presence of guerrilla groups.

5. SOCIETAL EMBEDDING

According to Hess (2004, p. 165), 'embeddedness is mostly conceived as a "spatial" concept related to the local and regional levels of analysis'. In this context, the regional business system framework is very useful. Hence, in this section, the differences in societal embedding of the VCs in various regions are analysed taking into account business system variables such as the role of the state, the role of the regional elite and its connections and the state-business relationships.

5.1 Role of the State

The leadership exerted by local-regional governments in the business system enables the establishment and development of public-private partnerships especially when accompanied by political commitments and resource allocation within a regional public policy framework. Regional government participation is crucial to assure the continuity and policy process effectiveness of a CA because it helps to institutionalize the process. Public resources are systemically enhanced by cooperation with other stakeholders involved in the CA including universities, firms, agro-producer associations, business interest associations and decentralized agencies, as well as co-funding from national government, NGOs and international donors. Likewise, regional government can mobilize local actors to access national policies, which provide important resources and opportunities for local development initiatives. Within this scheme, the regional government must signal the other members of the council that its coordination or active participation in the CA does not mean any loss of independence on the part of the regional council. In fact, this collective body is conceived as an independent, non-bureaucratic network of public/private sector organizations.

One of the key functions of the regional government is the promotion of economic development in its territory. Since government participation is not meant to substitute or overshadow the role of the other VC stakeholders, local and regional governments play a proactive role but not a leading role in the multi-stakeholder development partnerships at the level of VC. On the contrary, the leading firms of the VC and in general of the private sector must have greater participation in the CA, since it is the direct beneficiary of the meso-level policies for VC development. This facilitates and increases the coherence and integrity of the sectoral and regional policies aimed at improving the conditions of the agricultural sector, which have a great influence on employment and income generation. Hence, the synergies obtained in the CA with other social and economic sectors from different VC's links enhance regional government capabilities and the pertinence of its policy interventions and, in general, promote the competitive integration of the agricultural sector in the VC.

Above all, a CA cannot be reduced to occasional information exchanges and it is necessary to assure sustainable VC linkages. The lack of active public sector involvement in the regional competitiveness council for a given VC does not mean that the VC's coordination will not work, even though this participatory scheme would be strengthened by the qualified participation of the key regional VC stakeholders including the regional government.

The role of the government in the regional VC shows several differences according to the region. For instance, the regional government of Santander played a marginal role in the CA. Indeed, it did not participate regularly in the meetings of the regional council and did not coordinate adequately its agricultural policy (cocoa) with the VC's technical secretariat. Consequently, the technical secretariat took the leading role. Antioquia, on the contrary, had a strong will to participate in the CA based on the need to develop its social agenda (employment and income generation in conflict areas of the region). The regional and municipal governments of Antioquia played a proactive role and participated with resources in cocoa production projects.

The historically well-established relationship between the government and the private sector (in this case, the chocolate companies) also contributed to the functioning of the CA. The most important producer association is Fedecacao and there are few other producer organizations. The culture of association has been promoted through a type of contract agriculture schemes in the context of the CA. Meanwhile, in Santander, there was a lack of commitment on the part of the regional governments regarding the CA. In this case, alternatively, the NGOs and Fedecacao fulfilled key functions in the implementation of the CA.

Finally, 'the extent to which the state is actively involved in coordinating and steering economic development, especially in helping to construct particular kinds of organizational capabilities' (Whitley, 2007, p. 38) is greater in Antioquia, followed by Santander. This situation influenced the outcomes of the CAs and in particular supported the development of the CA in Antioquia.

5.2 Role of the Regional Elite and its Connections

The role of the regional elite and its connections has been of great importance in the development process of Antioquia, and to lesser degree in Santander.

An important characteristic of the Antioqueño entrepreneurial trajectory is the conformation of large and influential economic conglomerates, which at present are amongst the largest in the country. The process of concentration by means of mergers and takeovers of firms began taking place in Antioquia and then stretched to the national level as early as 1920. In addition, there was a process of vertical integration undertaken by different firms such as Cementos Argos (cement), Compañía Nacional de Chocolates S.A. and in the textile industry, it took place in firms such as Coltejer, Fabricato and Tejicondor.

Taking into account the gains accumulated along its economic trajectory during the previous centuries, the regional elite of Antioquia was the group that took more advantage of the industrialization policies and public works promoted by the successive conservative governments during the first three decades of the 20th century. The industrial activity also had a great dynamism during the following decade of liberal governments, which shows a great degree of political adaptability of the entrepreneurial Antioqueño elite.

In short, large economic units control part of the economy of Antioquia and in the case of the chocolate industry; CNC S.A. is part of a 'financial conglomerate' type of business system with low degree and high scope in the level of ownership cooperation and low level of alliance integration (Whitley, 2007, pp. 13-15).¹² The societal embeddedness of CNC S.A. is

¹² According to Whitley (2007, pp. 13-15) 'Financial conglomerate business systems are dominated by large, diversified holding companies that rarely integrate the disparate activities conducted by subsidiary companies through companywide procedures, routines and careers. Organizational knowledge, capabilities and skills are primarily generated and improved through the integrative direction of business activities by the managers of subsidiary firms rather than by those at the holding company level, who focus mostly on financial asset allocation and performance monitoring.'

based on strong relations with members of the Antioqueño community and with other actors including the government and firms associated with the conglomerate in which it is immersed specifically in its place of origin (Antioquia). ‘Local companies that have emerged from particular social and institutional contexts evolve over time on the basis of trajectories that are in part a reflection of these contexts’ (Henderson *et al*, 2002, p. 451). The history of the company is closely associated with the trajectory of the business system in Antioquia. CNC S.A. evolved from a region (Antioquia) that undertook an early industrialization process in the country based on a tradition of entrepreneurship supported by close public-private sector cooperation, and at present is one of the leading firms of the largest economic conglomerate in the country.

Santander had a flourishing agriculture and specialized rural household manufacturing throughout the colonial period, largely based on free labour carried out by independent settlers. During the period 1900-1950, the region experienced a process of economic restructuring. Commercial elite grew in Bucaramanga because of the capital accumulated by tobacco and bluing exporters and invested in imported goods. These imported goods have adversely affected traditional regional manufacturers (artisans) in subsectors such as furniture, shoes, textiles and garments (Kalmanovitz, 1985, p. 205). In this phase, activities such as tobacco exports and cultivation of agricultural (e.g. cotton, cocoa, sugar cane) and extensive livestock production played key function in the regional economy.

During the last decade of the 20th century, strategic alliances between the private and public sectors, and academia to promote regional competitiveness became a key feature of the region, which shows the capabilities of the business system of Santander.

5.3 State-Business Relationships

In Antioquia, the state is more proactive and relations between state and businesses are strong and interlocking. The way of doing business in Antioquia differs from the rest of the state where Antioqueño families are used to engaging in joint ventures. Santander is somewhere in between (e.g. SME family-owned enterprises). For instance, the government of Antioquia had a crucial role in the regional CAs allocating resources to their development and contributing to the operation of the regional councils for competitiveness. Conversely, the regional government of Santander had a passive attitude toward the CA and did not commit meaningful resources to its implementation. Although it is important to point out that the support of the local/regional governments of Santander to other meso-institutions such as the Productivity and Technological Development Centers, the Metropolitan Corporation for Planning and Development of Bucaramanga, indirectly provide vital aid to VC development. Certainly, these institutions support product and process upgrading of the local and regional micro and small firms through the adoption of new technological innovations, the development of built structures and the promotion of business support services to support the regional competitiveness.

6. CONCLUDING REMARKS

Since, the national state issues and provides the VC policy framework for the different VCs is important to find out about the contribution of the role of the regional state (regional leadership) to the implementation and outcomes of the public-private partnerships for VC development at regional level. The specific regional characteristics (economic and non-economic factors) where the VCs are embedded play a complementary role, preventing or supporting the interventions and their outcomes at the VC level. The regional embedding of VCs presupposes the interplay between VC and non-chain actors and the constructive role of the institutions, including public organizations in the definition and outcomes of VC multi-

stakeholder development partnerships such as the CAs of VCs at the regional level in Colombia.

The differences within the regional business systems of Antioquia and Santander manifested in the contribution of the regional business systems to the quality of the CAs of the VCs embedded in their territories. There are differences at the regional level in terms of stronger regional governments as with Antioquia and to a lesser degree Santander and marked differences in terms of the participation of the regional and local governments in the CAs. The case of Santander shows less participation of the regional government though it supports the VCs through other participatory schemes (for more details see Table 6). In terms of policy process effectiveness, the financial cooperation of the Ministry of Agriculture and Rural Development to the Regional Council on Competitiveness of the VC cocoa/chocolate in Santander has been important to assure its continuity. This cooperation was suspended in the case of Antioquia. However, a key distinctive feature of the regional business system in Antioquia emerged since the regional government undertook the technical secretariat of the CA and was trying to invigorate the CA after it lost its funding and was dismantled.

Table 6: Regional Business Systems and the CAs

Region/ Value Chain	Trajectory	Nature of the Firm and Inter-Firm Relations	Intentions and Capacities of the State to Shape Economic Development	Relationships between State and Firms
Antioquia Cocoa/ chocolate	-Toward a modern industrial and financial conglomerate.	-Antioqueño entrepreneurship -Export orientation -Strong competition along with solid cooperation schemes -Fluid inter-firm relationships (joint efforts) -Ec. conglomerates	-Strong government with financial and administrative strengths and a comprehensive institutional endowment -High support for the CA	-Public-private sector partnership-culture -High technological support through business incubators, technological development centers, strong financial conglomerates
Santander Cocoa/ chocolate	-Toward a bifurcated economy: fast growing oil related industry and family based SMEs in farming and manufacturing.	-Small and medium scale manufacture -Rivalry among firms -Medium degree of cooperation amongst firms	-Strong public finances -Low support to the CA but support for other cooperation schemes	-Support mechanisms for regional competitiveness in the areas of research, technological development and science and technology

Source: Authors.

The natural resources are another regional factor that helped the CA of Santander to fulfil its goals. The availability of high quality land and appropriate weather for the crop is better than in Antioquia. It was reinforced by another localized factor such as ‘violence and illicit crops’. This factor promoted the influx of important resources in the two regions, primary to incorporate guerrilla and paramilitary militants that are part of peace deals with the government into civilian life, and to substitute illegal crops (coca and poppy) for legal crops.

Finally, it is important to point out that the mere localization of a VC in a favourable industrial policy setting, though it is a necessary condition; is insufficient criteria to predict the success of a CA for such VC. Therefore, the analysis of regional factors should be complemented with the study of specific VC characteristics, which at the end could make the difference in regards to the policy process effectiveness of the CAs for VCs located in the same territory.

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Regional Small Business as an Underappreciated Response to Globalisation-induced Socio-economic Instabilities

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ABSTRACT

The realities of subgroups of regional small businesses (regional-SBs) are essential for proper policy process but are under-researched. This study explores and seeks to reduce the aforementioned gap. Firm-and-manager-specific attributes of regional-SBs (drawn from a sample of 500 Australian regional-SBs) are evaluated to determine if they differ from common perceptions of small businesses (SBs) and have predictive power in terms of regional-SBs. It was found that regional-SBs: Differ significantly from urban-SBs; Contribute significantly to regional socio-economic stability; Are far more robust and credit-worthy than generally perceived; and are influenced by the gender of their entrepreneurs. These findings can greatly serve the national interests of Australia and other countries. Specifically, as globalisation and technological change compel primary and secondary sectors to shed labour, regional-SBs sustain the socio-political stability of their regions by providing a means to soak-up redundant labour.

1. INTRODUCTION

Small businesses (SBs) are a prolific source of employment in developed countries and are a vital means of soaking up much of the labour being continuously shed by mid-to-large, primary-and-secondary sector firms (Baptista *et al*, 2008). Given the mounting competition arising from globalization, examining the attributes and differences of SBs based on locational and other differentiations is timely (Collits and Rowe 2015). SB data is rarely differentiated by location and mixed cohorts are heavily biased to urban/metropolitan SBs. Thus, the realities of regional small business (regional-SBs) are under-represented (Kennedy and Tennent, 2006). Common SB perceptions that form the basis for many business decisions/policies are derived from studies of urban SBs or undifferentiated SBs (Aoyamma, 2009; Papadaki and Chami, 2002). This lumping of disparate SBs is further exacerbated by a failure to differentiate micro-businesses (those with under-five employees, SB₀₋₄). Hettihewa and Wright (2007) assert that regional-SBs help sustain the socio-economic stability of regional communities and flows to regional centres and on to large-urban centres.

The objectives of this paper are to examine: i) Adequacy of agglomerated-SB data to represent regional-SBs; ii) Relationship between regional-SB financing and firm- and manger/owner-specific variables; and iii) Size differences of SBs, to better focus regional policies. This study seeks to determine whether aggregate SB information misrepresents the situation of small regionally-based enterprises by adding a regional-SB dimension to a SB literature

that is often dominated by studies of urban-SBs.

This study draws key firm-specific and manager-specific attributes of regional small businesses (regional-SBs) from a sample of 500 regional-SBs, from a growing regional city in Australia. In this study, the term SB encompasses all small businesses **without** regard to location or size. Undifferentiated-SB data (dominated by urban-SBs) risks deficient policies that may damage regions (Australian Government, 2009; DIISR, 2012), fail to consider locality as a key productivity determinant (Backman 2014; Tomaney, 2012) and do not understand that regional-SBs tend to endure operating environments that are more capricious than those of urban-SBs. Thus, it is vital that regional-SBs be evaluated apart from urban-SBs. That awareness is vital to the construction of policies to promote regional-socio-economic sustainability and to decrease the on-going people drain to urban areas.

Consistent with common usage, this study uses SBs as a generic term that does not differentiate by location (urban or rural) or by size within the SB range of 0-19 employees. In SB research, micro-businesses are often either lumped in with SBs that have 5-19 employees, or ignored. This study highlights the *SB-differentiation* gap in the literature by examining regional-SBs separately and further sub-classifying for micro-businesses. The dearth of research on regional-SBs is acknowledged (Fritsch, 2008). Many business and policy decisions are derived from an undifferentiated view of SBs (Papadaki and Chami, 2002). Entrepreneurial objectives and practices are shaped by distinctive regional norms Aoyama (2009). As a result, regional policies do not reflect regional-SBs and SB-subgroups including micro-businesses realities; (Kennedy and Tennent, 2006).

The importance of size difference is highlighted by the Australian Bureau of Statistics (ABS) (2015) observation that most actively-trading businesses had annual turnover under \$200,000 and (in 2014) 61 percent of actively-trading businesses in Australia had no employees while 27, 10, 2, and 1 percent had, respectively, 1-4, 5-19, 20-199, and 200 or more employees. However, the tendency to subsume regional-SB unique attributes was exacerbated when the ABS (2010), as a cost-cutting measure, started relying on Australian Taxation Office (ATO) data for SBs (i.e. the ATO considers only SBs with \$10,000 to \$5,000,000 annual incomes/expenses and ignores those below that range). More comprehensive regional-SBs data is needed because rising globalization is eroding distance-and-border barriers that once protected regional-SBs (Hettihewa and Wright, 2007; Sorensen, 2015) and the primary industries in which many regional-SBs subsist. This study asserts that while SB attributes and needs differ greatly by location, firm size and owner/ operator gender, those differences can be overlooked in common perceptions that arise from a general view of agglomerated SBs. This gap is the focus of this study.

1.1. SBs and Regional-SBs in Australia

The ABS definition of SBs (enterprises with 1-20 employees) is used in this study. Nearly a third of Australian SBs operate in regional Australia (DIISR, 2011). The relative importance of SBs to the Australian economy is high-lighted in Table 1, with SBs representing over 95 percent of firms, an employment share that rose from 38.3 to 44.0 percent from 2000-14, and over a third of economic value-added.

Given that majority of SB entrepreneurs are between 35-54 years (DIISR, 2012), it is important to determine if SBs are soaking up the workers being shed from medium-to-large firms. In that role, regional-SB performs a key stabilizing role by curtailing rural-labour migration to major cities. Regional-market lassitudes/barriers (Kotey and Sorensen, 2014) may have allowed regional-SBs to be less competitive than urban-SBs. Further, globalisation and internet with new challenges may put less-technically-savvy regional-SBs at risk.

Table 1: Distribution of Firms and Employment for Australia's Private Sector

Paid Employees	Share of firms (%)				Employment ¹ (%)		Value-added
	2000	2006	2011	2013	2000	2011	2011
0	48.7	58.9	61.2	60.8	0.0	} 0.0	} 33.7
1-4	32.8	25.2	23.9	27.1	13.2		
5-19	15.0	11.6	10.8	9.5	25.1	45.7	
20-99	3.0	} 4.1	} 3.8	} 2.4	22.4	} 24.3	} 23.4
100-199	0.3				8.8		
200+	0.2	0.3	0.3	0.2	30.4	29.9	42.9

Note: In June 2014, 61% of actively trading businesses in Australia had no employees, 27% had 1-4, 10% had 5-19, 2% had 20-199, and less than 1% had 200 or more.

Source: DIISR (2012) and ABS (2002, 2008, 2012 and 2014).

The fast-growing region of Ballarat (Australia), with 95,021 residents in 2012 and forecasts of 100,834 and 128,331 for 2015 and 2031 is selected as the sample area, based on the assumption that, if there are significant differences between urban SBs and regional-SBs from a region like Ballarat, those differences are more evident for stagnant/declining regional-SBs.

The following research questions based on extant-SB literature are addressed in the study:

- Do SB attributes (including financial concerns) differ with the firm location, size, etc.?
- Do the regional-SBs behave differently from other SBs, based on the gender of the entrepreneur?

The remainder of this article is organized with: Section 2 providing a review of literature; Section 3 presenting research methodology; Section 4 giving model specification, findings and future research; and Section 5 presenting policy implications; limitations; and conclusions.

2. REVIEW OF LITERATURE

2.1 Theoretical Foundation – Capital Structure and Financing

The theoretical relationship between economic performance and financial facilities are extensively discussed and the debate goes back decades (Schumpeter, 1911). Institutional environment and local setting are key determinants of a firm's financing choices/decisions (Demirguc-Kunt and Maksimovic, 2008). The capital-structure-to-growth link is well studied for SBs (Reid, 1996), while knowledge gap in regional-SBs are recognised. If regional-SB-credit decisions are based on information that reflects urban-SBs, then the policy on financing of regional-SBs is likely to be Pareto sub-optimal (Guiso *et al.*, 2004).

Given that capital-structure decisions (Terpstra and Olson, 1993; Modigliani and Miller, 1958) are critical to firm survivorship, suboptimal policies are likely to degrade regional-SB survivorship. Huynh and Petrunia (2010) found that leverage and initial size are positively correlated to new-SB growth. Pettit and Singer (1985) suggest that its growth stage affects a SBs need for, and availability of, financing. Berger and Udell (1998) find that smaller, less transparent, firms are more reliant on insider finance, trade-credit and angel capital than mature firms and that they have fewer financing choices.

Pecking Order Theory (Myers, 1984; Myers and Majluf, 1984) suggests that firms prefer internal finance and, if external finance is required, prioritize it on the basis of safety-and-ownership dilution (Sayed and Hettihewa, 2007). Freear *et al.* (1995) found that bootstrap financing was more creative than traditional financing approaches.

Following on from these extant studies, this study seeks to determine the significance of differences between SB sub-groups:

Financial risk: Many SBs suffer disproportionately from tight-credit policies (DIISR, 2011). Hoad and Rosko (1964) found a positive link between financial market development and firm performance. Thus, credit availability can influence SB performance.

Trade credit: is vital to regional-SBs as a source of low-cost ready financing. Niskanen and Niskanen (2006) found that larger, older firms use less trade credit. The reality of regional-SBs is yet to explore.

2.2 Perceptions of Continuity/Survivorship

SB survivorship is heavily researched (DIISR, 2012) but is limited for regional-SBs. This study asserts that the common perception that most SBs have low-continuity rates SBs (Mason, 2010) is biased by an inappropriate averaging of significantly different SB sub-groups and that some SB subgroups (including regional-SBs) are inappropriately tagged as high-risks borrowers.

Bickerdyke *et al.* (2000) support a SB-high-risk perspective by contrasting a (by decade) mean-cessation rate of 43.5 percent (i.e. 1 – continuity rate) for SBs and 27.1 percent for medium-to-large-businesses. Hammond, (2012) looking at one million SBs found that 55 percent attained low-risk ranking.

DIISR (2012) using Australian data gives a (2007-11) survivorship of all firms of 60.0 percent and of large, medium and small firms of, respectively, 74.3, 75.8 and 59.7 percent. Law and MacLellan (2005) argue that low-continuity rates reflect dynamism, rather than fragility. This paper suggests that perceived low-continuity rates for SBs are more an artefact of averaging than a reality for some SB subgroups.

Table 2: Cumulative Survival-rate (percentage) by Firm Size and Inferred Annual Loss-rate

Firm size (employees)	Survival rate from Jun/2007 to				Survival rate from Jun/2009 to			
	Jun/08	Jun/09	Jun/10	Jun/11	Jun/10	Jun/11	Jun/12	Jun/13
Non-employing	80.4	67.7	60.1	54.0	83.8	72.9	64.5	57.2
1-4	89.5	79.9	72.9	67.0	90.4	82.1	75.5	68.4
5-19	92.7	85.3	79.2	74.0	93.7	87.6	82.1	76.1
20-199	94.0	86.5	80.6	75.8	95.9	91.6	87.4	82.7
200+	93.9	86.5	78.3	74.3	89.8	86.1	83.1	79.6

Source: ABS (2012) and ABS (2013, Table 15).

Table 3: Firm-age-distribution of Participating Regional-SBs

Firm age (yrs)	Regional-SBs by firm size (employee numbers)							
	% of sample			Cumulative %			Annual continuity %	
	0-4 Emp	≥ 5 Emp	All	0-4	≥ 5	All	≤ 4	≥ 5
< 1	2.5	0.0	1.3	100.0	100.0	100.0	100.0	100.0
1-3	20.0	7.9	14.1	97.5	100.0	98.7	98.7	100.0
3-5	20.0	7.9	14.1	77.5	92.1	84.6	93.8	98.0
5-10	25.0	39.5	32.1	57.5	84.2	70.5	92.9	97.7
> 10	32.5	44.7	38.4	32.5	44.7	38.5	92.7	94.8
Total	100.0	100.0	100.0					

Table 4: Continuity and Firm Size

Firm Size	≥ 4 yrs survival (%)			REGIONAL-SB	REGIONAL-SB
	REGIONAL-SBs* in Sample	SBs† to 2011	SBs† to 2013	Ratio/ SB Ratio to 2011	Ratio/ SB Ratio to 2013
All	84.6	59.5	62.1	1.42	1.36
0-4 employees	77.5	55.5	56.5	1.40	1.37
5-19 employees	92.1	74.0	76.1	1.24	1.21

Source: * Adapted from questionnaire responses and Tables 1 and 2; † Adapted from Tables 1 and 3.

Table 2 lists the survivorship of regional-SB₅₋₁₉, regional-SB₀₋₄, and non-employing regional-SBs (2007-13) as, respectively, highest, much lower, and by far, the lowest. Table 3 lists firm age (a continuity proxy) of the regional-SBs participants. Among the regional-SBs reviewed in this study, regional-SB₅₋₁₉ has the highest survivorship and urban-micro-businesses have the lowest (Table 4).

2.3 Gender Issues in Regional-SBs

Female participation in SB is far from representative of their proportion in society. The ratio of female SB proprietors in 2008 was 32 percent and is little changed in 2014 (ABS). The relationship between gender and other variables are heavily researched using SMEs and larger firms but there are few studies on regional-SBs. Marlow and Patton (2005) suggest that females have difficulty financing their firms but SME FDI (2006) and Stiglitz and Weis (1981) saw little evidence of gender-based discrimination. Statistics Canada (2006) found no evidence of discrimination, but Papadaki and Chami (2002) suggest indirect discrimination. Storey's (2004) review of racial-and-gender discrimination in the micro-firm credit market found no significant gender-driven issues. Shim and Eastlick (1998) say it is common to find that female entrepreneurs have less organizational-and-managerial experience than male entrepreneurs. Smeltzer and Fann, (1989) found that, if non-financial returns are considered, female-owned firms are equally successful. Sirinivason *et al.* (1994), note that female-owned firms tend to be smaller, with lower financial performance and slower growth. Ropper and Scott (2009) found that women are around 7.4 percent more likely to discover financial obstacles to business start-up.

2.4 Other Predictor Variables

Technology and globalization: The sheltered markets that allowed regional-SBs to be blasé about change are being eroded by *Globalization*. The import of networking to SBs is well researched (O'Donnell, 2014). However, the dearth of research on regional-SB-new-technology usage is worrisome, as competition that previously focused on *large-firms primary and commodity products* is starting to encompass the *low-and-high-tech-manufacturing market* domain of SB and Regional-SB markets (Nassimbeni, 2001).

Management-specific Variables: Parry (2010) researching barriers to growth in micro-firms highlighted the importance of business and owner attributes. Human capital contributes greatly to firm performance (Bharadwaj, 2000) and to productivity (Almeida and Carneiro, 2009; O'Mahony, 2012).

Firm-specific Variables: Much of the research on firm growth, size, age, and survivorship has yielded diverse results (Dunn and Hughes, 1994) rather than support for Gibrat's Law (Eeckhout, 2004).

3. RESEARCH METHODOLOGY

In this quantitative study, research questions and propositions are derived from a review of literature and contrasted with responses to an Australian regional-SB survey and substantiated via hypotheses testing. In the quantitative evaluation, ordinal-logistic- and binary-logistic-regression models examine: i) The relationship between regional-SB's perceived financial condition and independent variables; ii) Whether attributes can predict a regional-SB entrepreneur's gender, and iii) Whether the perceived financial condition, attributes, financing choices and entrepreneur characteristics can predict a regional-SB's age (sustainability).

3.1 Discussions, Research Questions and Propositions

Cressy (1996) noted that younger firms have lower survival rates, and Honing (1998) suggests that firms with employees are more successful in securing bank loans.

Discussion 1: Statistics (Table 2) and research show that survival/continuity and firm size are positively correlated (Eeckhout, 2004). SB data are mainly dominated by urban-SBs, but some research suggest that regional-SBs have higher-continuity rates because many are family-based, generations-old firms that put quality-of-life choices over profit (Floren et al., 2010). Given that continuity-rates likely vary with firm size, this study splits regional-SBs into micro-businesses (regional-SB₀₋₄) and other regional-SBs (regional-SB₅₋₁₉).

Question 1a: Is regional-SB-continuity as low as that perceived for SBs?

Question 1b: Does the microbusiness continuity show a different picture to regional-SB₅₋₉?

Proposition 1: *Regional-SBs have a lower continuity than SBs.*

Proposition 1a: *regional-SB₀₋₄ have a lower continuity than SBs.*

Proposition 1b: *Regional-SB₀₋₄ has a lower continuity than regional-SB₅₋₉.*

Proposition 1c: *The ratio of regional-SB₀₋₄ over regional-SB is much lower than the ratio of microbusinesses in SBs and that difference contributes significantly to a higher regional-SB continuity rate.*

Discussion 2: Given that regional-SB entrepreneurs have often lived in their region for decades they are more interested in lifestyle than economic growth (Hettihewa and Wright (2010). Jaouen and Lasch (2015) found that micro-firms focus more on short-term income and less on growth.

Question 2: Is there a correlation between regional-SB's attributes and its entrepreneur's attitudes, and attributes?

Proposition 2: The perceived financial condition, attributes, financing choices and characteristics of a regional-SB entrepreneur can predict its age.

Discussion 3: Geographic-and-transportation isolation in regional Australia suggests that many of its regional-SBs lack facilities, to upgrade/maintain entrepreneur knowledge. This isolation suggests that Australia's regional-SBs may be slow to uptake new technology and internet marketing.

Question 3: Are regional-SBs less likely to adopt new technology?

Proposition 3: *Regional-SBs are less willing to adopt new technology.*

Discussion 4: Location can affect financing issues and family-and-community ties can provide funding for regional-SBs (DIISR 2012). Distance from highly-competitive-banking environments may reduce access to external finding facilities.

Question 4: Do regional-SBs differ from (urban-dominated) SBs and do regional microbusinesses behave differently to overall regional-SBs?

Proposition 4a: Regional-SBs and urban-dominated SBs have different perceptions of the relationship between financing problems and firm-and-management-specific determinants.

Proposition 4b: The attributes, financing choices, and characteristics of regional-SBs can predict their perceived financial condition.

Discussion 5: SB research findings on gender issues are diverse.

Question 5: Are there unique gender issues for regional-SBs?

Proposition 5a: Regional-SBs and urban-dominated SBs display significant variation in gender issues.

Proposition 5b: A Regional-SB's attributes and non-gender characteristics of its entrepreneur can predict the gender of its entrepreneur.

3.2 Hypotheses

Null-hypothesis (H₀) 1: Australian regional-SBs are sufficiently similar to (urban-dominated) SBs that regional-SB statistics do not materially differ from those of Australian SBs. An affirmation would suggest that all SB sub-groups are sufficiently similar that averages do not materially distort the representation of any SB subgroup; its rejection suggests that such averages are inappropriate.

Null-hypothesis (H₀) 2: The gender of proprietors has no influence on their managerial choices, decisions and/or access to resources. An affirmation will suggest that: the attributes of regional-SBs are not correlated with the proprietor's gender, those attributes cannot predict the gender of a regional-SB owner and there is no need for gender-based affirmative action.

Null-hypothesis (H₀) 3: The attributes of a regional-SB do not influence its survivorship. An affirmation suggests that there is little-or-no value in profiling firms for credit/investment purposes and that managerial decisions have little-or-no influence on firm survivorship. A rejection suggests that management decisions/outcomes do influence a firm's survivorship.

3.3 Data Collection

Questionnaires were distributed to regional-SBs selected via a stratified-random process from Ballarat's Business Directory (2,195 firms). In a second selection-stage, drawn firms were vetted-down to 500 based on size and industry, using online information and phoning the business if the information was either unavailable online or was unclear.¹³ The response rate of 33.8 percent is reasonable (Baker, Singleton, and Viet 2011).

3.4 Realities

Regional-SB continuity: The four-year-continuity rates for SBs and regional-SBs (derived from Tables 2 and 3 and listed in Table 4) show significantly lower rates for regional-SB₀₋₄ than those for SBs and much-lower than those of regional-SBs and supports proposition 1a (Table 4). An explanation for the continuity-rate difference in Tables 2 and 3 is that relatively larger SBs and regional-SBs have higher continuity than regional-SB₀₋₄ (which supports proposition 1a). Also, micro-businesses dominate national-firm numbers with a share that

¹³ Given that restaurants typically make-up a very large proportion of SBs, this study stratified the sample to limit the restaurant representation to 30 percent of the regional-SBs sent questionnaires.

rose from 81.5 to 87.9 from 2000-13 (Table 1). The share of firms represented by SBs with 5-19 employees steadily fell from 15.0 to 9.5 percent during that period.

In the responding firms, regional-SB₀₋₄ tended (Table 3) to be significantly younger than regional-SB₅₋₁₉, which supports proposition 1b. Information in Tables 2, 3, and 4 should interest creditors and policy makers, as it suggests that: 1) regional-SBs are likely more credit-worthy than what is generally supposed 2) Relatively larger regional-SBs may, based on higher survivorship, be more credit-worthy than micro-businesses.

Internet usage: Table 5 is consistent with Clark *et al.* (2012) and show that regional-SBs are making progress in adopting the internet (respondents' who used/use/will use the internet: three years ago, currently, and expect to in three years are, respectively, 5.6, 21.8, and 39.0 percent). However, a majority of responding regional-SBs do not see the internet as a serious marketing tool. Thus, the qualitative analysis sustains proposition 2 and requires policy opportunities to support regional-SB internet marketing.

Table 5: Share (%) of Sales Generated by the Internet

% internet sales	3 yrs ago	Currently	Expected in 3yrs	Accumulated	Clark <i>et al.</i> (2013)	
					Goods	Services
00	97.4	78.2	60.3	100.0	55.0	72.0
00-05	0.0	2.6	10.3	39.7	20.0	14.0
05-10	1.3	5.1	6.4	29.5		
10-15	0.0	5.1	0.0	23.1		
15-20	0.0	6.4	1.3	23.1		
20-30	0.0	0.0	3.9	21.8	10.0	4.0
30-50	1.3	1.3	12.8	17.9		
> 50	0.0	1.3	5.1	5.1		
Total	100.0	100.0	100.0	0.0	100.0	100.0

Source: Questionnaire responses, this study.

4. EMPIRICAL ANALYSIS – MODEL SPECIFICATION, FINDINGS AND FUTURE RESEARCH

4.1 Model Specification

The regional-SB's perceived financial concern, gender of its entrepreneur, and firm-age are examined using multiple regression models of the general form:

$$y = \beta_0 + \sum_{i=1}^n \beta_i x_i + \sum_{i=1}^m \lambda_i z_i + \sum_{i=1}^k \delta_i p_i + \varepsilon \tag{1}$$

where:

y = dependent variable;

x_i = firm-specific variables;

z_i = management-specific variables;

p_i = perceived-risk variables; and

ε = unexplained error.

Three models are drawn from equation (1) to test financing, gender, and continuity issues. Each model re-classifies one variable as dependent, leaving potential independent variables that are reduced to a small set to mitigate over-specification and multicollinearity. After using a stepwise process, the reduced equations are given as equations (1.1), (1.2) and (1.3) for financing, gender and continuity (see Table 6) and were analysed using SPSS-statistics 19.

Table 6: Variable Description for Equations (1.1), (1.2) and (1.3)

Variable description/Symbol		Abbreviation	Variable Effect	Parameter
1 Employment	χ	Emp	Firm-specific	β_1
2 Revenue	χ	Rev	Firm-specific	β_2
3 Firm age	χ	FAge	Firm-specific	β_3
4 Internet future access	χ	Ifa	Firm-specific	B_4
5 Trade credit capital	χ	KapTC	Firm-specific	β_5
6 Short-term bank loans	χ	KapBS	Firm-specific	β_6
7 Medium-term bank loans	χ	KapBM	Firm-specific	β_7
8 Difficulty with interest rate	χ	IR	Firm-specific	β_8
9 Financial difficulty	χ	FC	Firm-specific	β_9
10 Respondent education	φ	REd	Management-specific	λ_1
11 Respondent gender	φ	RGen	Management-specific	λ_2
12 Respondent age	φ	RAge	Management-specific	λ_3
13 Respondent management experience	φ	RMEExp	Management-specific	λ_4
14 Respondent work experience	φ	RWExp	Management-specific	λ_5
15 Perceived total risk	γ	TR	Risk Factors	δ_1
16 Perceived cash-flow risk	γ	CFR	Risk Factors	δ_2
17 Perceived size risk	γ	SR	Risk Factors	δ_3
18 Perceived new-market risk	γ	NMR	Risk Factors	δ_4

4.2 Analysis and Findings

Model 1 (Finance Concerns): The dependent variable in this model reflects the respondent's assessment of their business's funding problems on a scale of 1-5 (1=strongly agree). The regression analysis uses 156 observations. The dependent variable is regressed with 13 predictors using the ordinal-logit function of SPSS 19:¹⁴

$$\begin{aligned}
 FC = & \beta_0 + \beta_2 Rev + \beta_4 Ifa + \beta_6 KapBS + \beta_7 KapBM + \beta_8 IR \\
 & + \lambda_1 REd + \lambda_2 Rgen + \lambda_3 RAge + \lambda_4 RMEExp + \lambda_5 RWExp \\
 & + \delta_1 TR + \delta_3 SR + \delta_4 NMR + \varepsilon
 \end{aligned}
 \tag{1.1}$$

The likelihood-ratio-chi-square test assessed the significance of (1.1). The model fit with χ^2 (13, N=156) = 55.63, $p < 0.001$; indicating that the estimated coefficients significantly differ from zero, at a 1% significance. Model 1.1 explained 34% of the variance (Nagelkerke R^2).

Seven independent-variables make statistically significant contributions to predicting the dependent-variable (Table 7). Results show that internet access in future, short-term bank loans, interest-rate concerns and perceived total risk are highly significant. Consistent with Nassimbeni (2001), findings for larger firms, our findings underscore the importance of internet access to the viability of regional-SBs and link future-internet access to regional-SB financial concerns. These findings suggest that policy makers may need to focus on firm internet use to strengthen the ability of regional-SBs to meet accelerating change, competition, and opportunities due to globalization and technology. Huynh and Petrunia (2010) found a positive correlation between indebtedness and sales growth. While this study did not look at firm growth, three attributes associated with firm growth (entrepreneurial experience and awareness of: total risk and new-market risk) were found to be positively correlated with the entrepreneur's financial concern. Bank short- and medium-term loans and interest-rate concerns are negatively correlated with financial concerns, as is entrepreneur-

¹⁴ The ordinal nature of the finance variable suggests that an ordered-logit or ordered-probit model is most appropriate for analysing this data set (Greene and Hensher, 2010). The ordered-logit model was used in this study.

work experience. Such findings are eminently sensible (i.e. experience makes entrepreneurs more aware of risks). It is unsurprising that high total-risk and new-market-risk perceptions flow to higher finance concerns or that high-internet usage and finance concerns are correlated, but it is difficult to prove the direction of causality.

Table 7: Statistical Results for Equation (1.1) Link function: Logit

Variables	Estimate	Std. Error	Sig.
REV	-0.197	0.159	0.216
Ifa	4.549***	1.147	0.000
KapBS	-4.535***	1.495	0.002
KapBM	-1.705*	0.981	0.082
IR	-0.752***	0.258	0.004
REd	-0.268	0.190	0.159
RGen	0.443	0.462	0.338
RAge	0.312	0.286	0.276
RMExp	-0.294	0.211	0.164
RWExp	0.395**	0.193	0.040
TR	0.656***	0.242	0.007
SR	-0.236	0.192	0.220
NMR	0.455**	0.195	0.019

Note: * Significant at 10% ** Significant at 5% *** Significant at 1%.

Model 2 (Gender Issues): This model explores whether a regional-SB’s attributes are an indicator its entrepreneur’s gender. The dataset includes 60 women and 96 men. The *binary-logit* model is adapted from equation (1) into:

$$\begin{aligned}
 RGen = & \beta_0 + \beta_2 Rev + \beta_5 KapTC + \beta_8 IR \\
 & + \lambda_1 REd + \lambda_3 RAge + \lambda_4 RMExp + \lambda_5 RWExp \\
 & + \delta_1 TR + \delta_3 SR + \delta_4 NMR + \varepsilon
 \end{aligned}
 \tag{1.2}$$

A *Hosmer and Lemeshow* chi-squared test assessed the equation (1.2) goodness of fit as good. Garson (2014) asserts that this test is more robust than traditional chi-squared tests. Omnibus Tests of Model Coefficient for Model 2 give an overall indication of the model’s performance. The results are: χ^2 (10, N=156) =90.71, $p < 0.001$; indicating that the estimated coefficients significantly differ from zero, at a 1% significance. Model 2 explained 44.1-59.9 percent of the variance (Cox and Snell R^2 and Nagelkerke R^2).

Seven independent variables made a statistically significant contribution to the model; male entrepreneurs tend to be: more experienced in management, older, more concerned with new-market risk, and better at accessing trade credit; and, female entrepreneurs tend to have greater worries over interest rates, more education, and lower revenue. These findings suggest better access to lower-cost credit may assuage female-entrepreneur interest-rate worries.

Further research should investigate why female entrepreneurs tend to be younger with less management experience. It may be linked to the important role that women play at home, especially if a female entrepreneur is married and/or has children. Moreover, male entrepreneurs may either be drawn to markets with higher new-market risk, or perceive them as being riskier, or may be more likely to take greater risks, fail and either try again or withdraw. Thus, the lower-end of the firm-performance distribution may be somewhat truncated for males.

Table 8: Statistical Results for Equation (1.2)

Variables	B	S.E.	Wald	df	Sig.
Rev	-0.635*	0.299	4.520	1	0.034
KapTC	3.588**	1.521	5.567	1	0.018
IR	-1.362***	0.479	8.066	1	0.005
REd	-0.558*	0.283	3.893	1	0.048
RAge	1.274***	0.402	10.066	1	0.002
RMExp	1.357***	0.375	13.112	1	0.000
RWExp	-0.303	0.239	1.607	1	0.205
TR	0.010	0.343	0.001	1	0.978
SR	-0.362	0.281	1.663	1	0.197
NMR	0.600**	0.253	5.635	1	0.018

Note: * Significant at 10% ** Significant at 5% *** Significant at 1%.

Model 3 (Continuity): This model seeks to identify factors influencing firm continuity. Responses of a firm's age were collected as "<1", "1-3", "3-5", "5-10" and ">10" years of operations. The ordinal nature of the firm-age variable suggests that an ordered logit model is appropriate:

$$FAge = \beta_0 + \beta_1 Emp + \beta_2 KapTC + \beta_3 KapBM + \lambda_3 RAge + \lambda_5 RWExp + \delta_2 CFR + \delta_3 SR + \varepsilon \quad (1.3)$$

The findings (model 3) show the likelihood ratio, $\chi^2 (7, N=156)=89.67$, $p<0.001$; indicating that the estimated coefficients significantly differ from zero, at 1% significance. Model 3 explains 43.7-46.9% of the variance (Cox and Snell R^2 and Nagelkerke R^2). All of the independent variables are significant indicators of how long a firm has operated; with the number of employees, respondent age, respondent work experience, and regional-SB-size risk positively correlated; and trade credits, Bank-medium-term loans, and cash-flow risk are negatively correlated.

Table 9: Statistical Results for Equation (1.3)

Variables	Estimate	Std. Error	Wald	Sig.
EMP	0.209***	0.034	37.051	0.000
KapTC	-1.599**	0.696	5.276	0.022
KapBM	-5.898***	1.064	30.725	0.000
RAge	0.889***	0.247	13.001	0.000
RWExp	0.601***	0.150	16.030	0.000
CFR	-0.365***	0.128	8.094	0.004
SR	0.389***	0.140	7.707	0.005

Note: * Significant at 10% ** Significant at 5% *** Significant at 1%.

The positive strong correlation for employee numbers, respondent work experience, and respondent age with the regional-SB age may be an artefact of the regional-SB age (e.g. older firms have more employees and an older entrepreneurs may gain experienced as they and their firm age). The positive correlation between regional-SB-size risk and age may reflect the importance of experience in identifying risks. Overall, this study highlights the value of maturity and experience to firm survival.

Strong-negative correlations for bank-medium-term loans and cash-flow risk with regional-SB age suggest that either regional-SBs are able to divest themselves of their medium term loans as they age or that medium-term loans reduce regional-SB longevity. The strong negative correlation between cash-flow risk and regional-SB age is an indicator of the importance of cash-flow to firm survival. The weaker but still robust negative trade-credits-and- regional-SB-age correlation is consistent with young firms having less access to other forms of funding. This finding is in line with Freear *et al.* (1995). The findings of Berger and Udell,(1998) that smaller less transparent firms rely on insider and trade finance are consistent with this study's finding.

In summary, the negative correlation between regional-SB age with medium-term loans, high-cash-flow risk, and high reliance on trade credits indicate that regional-SBs wishing to survive into the long-term should reduce any reliance on medium-term loans and trade credit.¹⁵ Clark et al. (2012) note that few nascent Australian SBs use trade credit. While using trade-credit funding is often seen as a weakness, being able to access some credit is better than none.

This study did not find the same dynamism that Anderson (2000) found in Scottish regional-SBs. However, that difference is explained by noting that regional populations in the relatively young countries of Australia, Canada, and New Zealand are still draining. Whereas, regional Scotland was extensively drained of people over the past three centuries and now changes in infrastructure are encouraging a small backflow.

5. POLICY IMPLICATIONS, LIMITATIONS AND CONCLUSION

This study found SB subgroups experience different *survivorship* rates with regional-SBs having much higher survivorships than SB averages. Also, SB-subgroup survivorship varies with firm size. Other relationships revealed include those between survivorship and: credit worthiness; financing-source differences; interest-rate and financing concerns; inter-net use and financial concerns; manager-specific characteristics and gender-based finance issues; firm continuity and firm-specific variables; firm continuity and manager-specific variables; firm continuity and financial concerns.

Regional-SBs tend to have attributes, behaviour, and needs that differ greatly from those of urban-SBs. Thus, policies based on average-SB attributes may yield inefficient outcomes for regional communities.

SBs, are vital to regional socio-political stability. Regional-SBs are key facilitators of the migration of labour from other sectors to tertiary-sector and their value added with multiplier effects tend enrich their regions and (via flow-on-effects) larger urban centres. Given the pivotal role that regional-SBs play in sustaining dynamic socio-economic stability, not supporting regional-SBs may drive more people to urban areas, shifting regional sources of wealth and culture to poverty and unrest. It is vital that government policy helps regional-SBs rise to the challenges and opportunities raised by rising globalization. This study's findings are relevant to all developed economies. Limitations include not examining: 1) the effect of taxes, infra-structure, grants, etc. on regional-SBs; 2) a range of Australian regions and 3) other countries. These limitations mostly involve scope and are opportunities for future research.

¹⁵ Cash-flow risk was ranked in the questionnaire on a 1-5 Likert scale (very-high risk to very-low risk).

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Food Bowl or Empty Bowl? Climate Change, Farm Exits and Regional Economies

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ABSTRACT

This paper reports on research which follows the difficult process of farm families preparing for and subsequently leaving farming. The period of exit covers the millennium drought of 2000-2010 in four case study areas in Victoria, Australia. It is concerned with families still of working age, in order to trace their subsequent employment outcomes. Identifying exiting farmers from a larger quantitative survey, it uses semi-structured in-depth interviews conducted with twenty-nine farmers, spouses and couples between 2012 and 2013 and frames the research through adaption of an evolutionary economic geography approach. The research finds that push and pull factors must be considered in understanding why the farm business ceased to operate. Most farmers took up work as farm hands or in small business but spouses' career trajectories underwent little change. Farms were sold to neighbours, leased or were, at the time of the interview, non-operational. Most families are better off economically but a significant minority have less personal fulfilment. There is no natural 'shaking out' of the less competitive farmers. Bad luck and global economic conditions, filtered through local area characteristics, play a major role. Further, the decision to quit is a household-scale decision influenced by multiple non-farm considerations. A major structural issue is the state of job markets in rural areas which are tied to the fortunes of the rural sector. In other words, the broader challenge lies not only in 'drought proofing' farms, but through regional planning and other measures drought-proofing communities.

1. INTRODUCTION

Interest in the status and future of Australian agriculture has recently been heightened by the prospect that it could serve as the 'food bowl of Asia' and form an integral part of 'developing Australia's north'. While these narratives are intended to produce an optimistic outlook for rural economies, they shift focus from community-level outcomes. In particular, more knowledge is required on the process and experience of farmers and their families who leave the sector, their subsequent fate and the issues this raises for the capacity and potential of regional economies. This paper provides deep insight into the contemporary status of the sector, not via a grand narrative of productive potential but through the eyes of the farmers themselves. Specifically, through twenty-nine in-depth semi-structured interviews with farming couples, individual farmers and spouses across four case study locations in Victoria, Australia, it reports on the victims of the productivist paradigm, farmers forced from their land during the millennium drought of 2002-2010. The discussion traces the effects of the drought on farms and farming households and unpacks the difficult decision making

processes which led some farmers to leave the land. The central task of this paper is to identify enablers for exit. In this task it critically engages with an evolutionary economic geography approach.

The rest of the paper is structured as follows. The next section introduces previous research on farm exit and argues that it has taken insufficient account of women, gender relations, off-farm work and what became of the farm in terms of ownership and land use transfer. The middle section reports on the interviews. The penultimate section discusses policy and research implications and is followed by the conclusion.

2. FARM EXITS: THE AUSTRALIAN EXPERIENCE

Agricultural policy makers in Australia have for many years taken the view that structural adjustment of the farm sector is both necessary and desirable. Numerous programs have been created to encourage the upgrading of viable enterprises and the exit of smaller or marginal farms. Policy settings have evolved incrementally. As the 1970s ‘rural reconstruction’ scheme was replaced in the 1980s and 1990s with a Rural Adjustment Scheme (RAS), policy settings have increasingly focused on encouraging farmer self-reliance and the on-farm management of farm risks including the risk of drought and by providing support to farmers lacking long term prospects to exit (Botterill and Wilhite, 2005). Since the 1992 *Rural Adjustment Act*, drought is no longer considered a natural disaster, but a persistent feature of Australia’s environment that a prudent farmer takes into account.

This has not been a straight-forward process. Identifying and evaluating better management practices and long term prospects – and therefore the type of farmer who is likely to exit - is complicated by lack of definition and the naturally volatile condition of the industry in Australia (Cockfield and Botterill, 2006; Keogh *et al*, 2011). Moreover, regardless of incentives to exit, farmers have often preferred to persist with farming and the farming lifestyle, despite its modest returns (Lawrence *et al*, 1992) especially if the farm has been operated over many generations (Marsden *et al*, 1989). The creation of re-establishment grants in the 1990s did not appear to alter the rate of exit (McColl *et al*, 1997), an outcome that Botterill and Wilhite (2005) attributed to structural adjustment policy’s insufficient acknowledgement of farmers’ agrarian value systems. Still, as with any industry sector, changes in the overall stock of farms includes an incessant flow of exits and new entrants. In the years 2010-2014, the number of farms in Australia decreased by 15,188 or 7.6%, including 54,159 entrants and 74,676 exits (ABS, 2015).¹⁶ The role and effectiveness of government exit strategies, particularly exit grants, is ambiguous at best, with many farmers leaving by their own means and even those receiving grants suggesting they would have left anyway (Cockfield and Botterill, 2006). Policy evaluations suggest business exits in agriculture are more complex than those in other sectors (IAC, 1976 and 1984; McColl, 1997). Farm exit is not a random event, but rather the culmination of multiple, complexly related influences including opportunities for technological innovation, labour issues, financing issues, institutional structures and household issues (Boehlje, 1992).

The complex issues governing individual exits in Australia have been revealed in previous empirical research studies, first of male farmers (Bell and Nalson, 1974; Paul, 1976; BAE, 1977; Woods and Chamala, 1977; Barr *et al*, 1980) and more recently of farm couples and households (Bryant, 1989; Ginnivan and Lees, 1991; Webb *et al*, 2002; Wilkinson, 2010). Personal factors such as farmers’ age and health, risk perception, expectations about future income and household relationships have an important influence on the propensity to exit

¹⁶ The Australian Bureau of Statistics aggregates agriculture with the far smaller sectors of forestry and fishing.

(Cary *et al*, 2001). Older farm couples are more likely to persist, perhaps reflecting their poorer job prospects in other sectors (Dumas *et al*, 1995). Comparative studies have struggled to discern points of differences - in age, education, farming experience, financial status and farm size – between exiting and non-exiting farms, suggesting that the decision to quit is not based purely on farmer and farm conditions.

In Australia’s productivist context, farmers operating modern, capital-intensive farming businesses have become complexly dependent on capital borrowings that lock them into continuing cycles of indebtedness (Argent, 1997). Despite foreclosures being relatively rare, banks denying farmers additional or bridging loans has the same result (Bryant, 1989). Debt is the recurrent factor in exits, but the question of what caused the debt is rarely explored. It seems to be assumed rather than demonstrated that overly-indebted farmers had made poorly judged borrowing decisions in the past (Paul, 1976; Bureau of Agricultural Economics, 1977; Ginnivan and Lees, 1991). In the late 1960s, no one predicted the extent to which Australian agriculture would be exposed to market forces or the extent to which other agricultural economies would continue to protect their own producers. The effects of the resulting oversupply of agricultural outputs, shrinking or restricted overseas markets, depressed prices and declining terms of trade were exacerbated in the early 1990s by unprecedented high interest rates associated with changes in macroeconomic policy. Drought was ever-present in exit decisions but rarely explicitly acknowledged as a reason for leaving farming (Bryant, 1989). The value of a farm’s landholding relative to its income-generating capacity appears to influence the decision to break from the treadmill and exit. This produces a spatial patterning in which exits are more likely in high amenity locations attractive to ‘tree changing’ urban buyers. Sector specific farm characteristics such as the arduous demands of the dairy industry or changed market conditions for citrus were important. Restriction of water supply did not occur in the Murray Darling system until 2006; the state government allowed separation of land and water titles the following year (Smith and Pritchard, 2014). Hence these critical junctures in water policy were not an issue in earlier studies.

In recent years, farming households have depended increasingly on paid employment in the wider labour market (Eversole and Martin, 2006). With women doing more off-farm work (Alston, 2000), they have become critical players in farm businesses decisions (Bryant, 1989; Alston and Kent, 2004). Exit was more likely when farm wives had established non-farm employment (Barr *et al*, 1980). The decision making process also involves accountants and bank managers, but tends not to be discussed in formal or informal social networks (Bryant, 1989). The length of time in considering selling varies, but Ginnivan and Lees (1991, p. 18) note that some families “either fail to recognise or refuse to accept that their financial situation is such that they should at least consider selling...too late to be able to negotiate a reasonable lead time with creditors”.

Documenting former farmers’ quality of life after farming has been important to policy’s objective of breaking down barriers to exit. Typically former farming men find work within a few months of leaving the farm, and usually strongly gendered ‘bloke’s work’ in farming-related labouring positions. Here, past research notes a correlation between loss of independence in the new role and levels of dissatisfaction. Women’s post-exit employment and the impact of exit on couple relationships are seldom explored, but it seems that farm exit does not affect women’s work.

When exiting farmers relocate, they usually stay close to their farming location and social networks, often moving to the nearest town. The policy recommendations arising from this work recognise that “transitions that improve economic or environmental sustainability at a broad industry or sectoral level do not necessarily represent successful transitions at the

grazing family level” (Webb *et al*, 2002, p. 99). To reduce adverse outcomes, farmers should be in a position where they can extend the exit process, taking time to organise financial and resettlement matters (Ginnivan and Lees, 1991). Observers recommend retraining for new jobs or assistance establishing new businesses, as in urban structural adjustment programs (Bell and Nelson, 1974; Barr *et al*, 1980). However, retraining leading to a non-rural sector was rare in practice, inhibited by lack of services and farmer reluctance. Others recommended financial literacy training (Barr *et al*, 1980), social support or counselling services (Bryant, 1989; Ginnevan and Less, 1991).

Whilst this work provides a solid foundation for contemporary research on farm exits it is overly focused on the farm as a lifestyle and as business, rather than on the household and its relationship to the wider rural economy. Some previous research has ignored farming women or cast women as silent supporters of the farm enterprise. None of the previous studies has encountered the impacts of water privatisations that change the fundamental cost structures of irrigated farms.

The ‘Path of Least Resistance’? Adapting Evolutionary Ideas to Farm Exits

The conceptual framework through which the paper interprets the restructuring of the Australian farm and farming draws on a geographical interest in evolutionary and path dependent regional development. This approach attempts to incorporate both historical legacies and spatial influences in its understanding of regional change and to acknowledge how the two influence each other. Evolutionary economic geographies view regional change as an organic and emergent process, impelling us to examine the ways in which the forces making for economic change, adaptation and novelty shape and reshape the geographies of production, distribution and consumption, and with how the spatial structures and features, so produced, themselves feedback to influence the forces driving economic evolution. (Boschma and Martin, 2007, p. 539)

In this interpretation, the legacies of the past irrevocably influence relationships in the present, with taken-for-granted practices and methods and various types of local institutional arrangements in effect accretions of the past events - living expressions of what has gone before. Institutions range from Country Women’s Associations, Landcare groups, established forms of social organisation like the nuclear family, regulated labour markets or privately owned farms. They extend to the meso-level institutions with which farmers interact on a regular basis: supermarkets, regulatory boards, governments. Traditions and institutions persist when they continue to have practical efficacy but wither when they no longer serve a useful purpose or are made obsolete by new arrangements. Change can in this sense be understood as analogous to the processes of Darwinian biological evolution, although there is the acknowledgement that social change is produced by the interaction and inter-influence of structure and agency as actors, in their response to presenting challenges and opportunities, prompt new practices and novel reinterpretations of guiding frameworks.

The contingencies that shape change processes find their origins at all of many geographical scales. In rural regions, the direction of change might be shaped by farmers’ individual skills and ambitions; by farm household considerations; by local economic issues like the closure of a local grain silo, processing plant or training college; by national issues such as changes to agricultural or drought policies, currency exchange rates or bank interest rates, or changes in the way that buyers of outputs or suppliers of inputs are organised, or by changes in global conditions including financial crises, export prices and changing weather patterns. The comprehension of the ‘local’ scale is interpenetrated by events at all these other scales. The perception and effect of external influences is likely to vary from place to place depending on pre-existing contextual conditions. The trajectory of change is path dependent: “... a process

or effect that is locally contingent and locally emergent, and hence to a large extent ‘place dependent’” (Martin and Sunley, 2006, p. 409). Economic evolutionary theory conceives of development as a process of continuity *and* change and of spatial connections that subtly or sometimes abruptly expand and contract over time. Neither space nor time are conceptually discreet of the other.

The evolutionary character of development in rural Australia is demonstrated by change which remains partly anchored in the past: the gradual transition to more multifunctional land uses (Holmes, 2006) without jettisoning the overarching productivist paradigm (Argent, 2002); the persistence of family farming as the social organisation core in the transition to business practices (Pritchard *et al*, 2007), the continuing and visible links to an imagined pioneering past (Watson, 2014), local labour markets that remain resolutely agrarian-based (McGann and Moss, 2012), and the dark legacy of poor land management resulting in persistent environmental problems such as salinity, erosion, species loss and invasion of exotic flora and fauna (Lawrence *et al*, 2013). It can also be seen in the intermittent episodic shifts to which the countryside has been subjected with shifts in environmental, economic and policy conditions (Tonts *et al*, 2012; Tonts *et al*, 2014). Although the millennium drought passed, the slow progression of environmental damage wrought by unsustainable farming practices, climate change and other environmental impacts continues to threaten established ways of operating and institutional norms. The emergence of new, more sustainable arrangements is inhibited by insufficient knowledge of viable solutions and capital deficits (Cockfield and Botterill, 2006).

Endurance is indeed is the by-word here (Anderson, 2014); farmers have attachments to their localities, with the social, emotional and mnemonic anchors forged over a long period of time constructing the perceived landscape as a social as much as a physical reality (Vanclay, 2003). The sense of connection and continuity is reinforced by the agrarian vision of farming as a quintessentially an exercise in independence and self-sufficiency (Webb *et al*, 2002). Rural social networks tend to locally proximate, so knowledge of labour market opportunities is also localised (Becke *et al*, 2013). In this context it can be seen how farm exit is a dramatic change within a slow moving institutional, social and economic environment. The ‘path of least resistance’, to extend the analogy, is the trajectory with the least number or severity of obstacles (Liversage, 2009). Because farmers are unavoidably embedded in existing institutional arrangements (Edwards, 2003; Botterill, 2011), the possible paths available are constrained. The options are not like walking across a trackless paddock with an infinitely random variety of possible directions. Rather, institutions are constraining, effectively creating multiple tracks, some more well-trodden than others.

Context

The agricultural sector has evolved: we find a trajectory of enhanced international competition, declining terms of trade, marketization of the structures governing product sales, increasing farm indebtedness, increasing fuel costs, and changing relationships with downstream industries (Tonts, 1999; Gray and Lawrence, 2001). Changes in Australia’s regulatory structures have led to the withdrawal of many services from regional towns, declining infrastructures, rising inequality and declining rural populations (Beer *et al*, 2003; Pritchard and McManus, 2000). Prolonged drought, climate change and the resulting water crisis are intensifying these pressures. By September 2009, the Australian state of Victoria had experienced drought conditions for almost ten years. Although it is almost a cliché to say drought is a recurrent feature of the Australian environment, this was a longer period of drought than had been experienced before, so bad, indeed, that even the most cautious and risk-averse farmers had exhausted their reserves. It was, in the words of the Productivity

Commission, not just a drought but an *irrigation* drought, overwhelming the most ‘drought proof’ of infrastructure (Productivity Commission, 2009).

Coincidentally, the drought came at a time when the cumulative effects of years of agricultural and regional policy deregulation had introduced new stresses to farms and farming communities. This drought was also different because it was increasingly linked with the broader phenomenon of climate change, and the associated implication that the recent warmer weather and constrained water availability would be permanent. In this context, insufficient environmental flows in the inland Murray Darling river system could be attributed to the over-allocation of scarce water resources to irrigation – as a result of lack of policy coordination among Australia’s States (Smith and Pritchard, 2014). The national Murray Darling Basin Plan (MDBP) had been created to address the crisis by reallocating and repricing water (Murray-Darling Basin Authority, 2011). In 2009, under the early versions of the MDBP, farmers across northern Victoria faced the prospect of dramatically reduced water access and increased water costs. While the final version of the plan moderated the anticipated effect, the 2009 draft Plan was the source of considerable anxiety and political mobilisation in farming areas.

Government response to drought, including relief programs and exit packages, are mostly administered through the National Drought Policy (NDP) which was adopted in 1992 (Australian Government, c. 1992). Other assistance includes financial advice, counselling, interest rate subsidies (abolished in 2013 as interest rates fell to record lows) and the equivalent of unemployment benefits. This assistance applied to areas where ‘exceptional circumstances’ (EC) had been declared, not individual farms.¹⁷ That is, any farm within a declared area was eligible to apply, but none outside that area. Community and industry bodies could present a case for declaration, which required detailed written material, to state governments. All parties would then apply jointly to the Commonwealth. The process could take twelve months. Applicants needed to show conditions in their area were both “rare” and “severe” (Productivity Commission, 2009). Individual farmers needed to show that their farms were economically viable in the long term. For example, drought proofing was now seen as a component of economic viability and likewise the farmer’s cost.¹⁸ The overarching philosophy of the NDP, one which distinguishes it from previous drought policy, is that drought is a recurring feature of the climate, not an unexpected disaster and is therefore a farm management issue (Harris, 1970; Botterill and Wilhite, 2005).

Policy has been re-orientated in three closely related, fundamental ways. First, the focus is on the ability or otherwise of the individual farm business to successfully engage with markets (Pritchard, 2005). Second, the priority is firmly placed on matters of production at the expense of non-economic needs of communities (Hogan *et al*, c. 2010). And third, drought policy has become an internal farm matter, the responsibility of the individual farmer and has ceased to be a collective issue (Stehlik, 2005). On that note, it has been argued this undermines the tradition of drawing on community resources (skills, mutual help, ‘a sense of belonging’ and crucially, job networks) which forms the basis for withstanding and moving forward from shocks such as drought, or what a great deal of the academic and policy literature refers to as ‘resilience’ (Stehlik, 2003).

¹⁷ In 2012, exceptional circumstances declarations and the controversial ‘lines on the map’ they produced were abandoned in favour of farm-level case-by-case assessments. Australian Government Department of Agriculture and Queensland Government (2014). Drought Concessional Loans Scheme Brisbane Australian Government Department of Agriculture and Queensland Government: (s11c, p. 80).

¹⁸ Examples of drought proofing include modification of grazing practices, improved water use, introduction of more drought-tolerant varieties and most radically of all, conversion from irrigated to dryland agriculture.

There are three irresistible labour market-related trends which influence farm exit outcomes in Australia and these are accentuated by drought conditions. First, the established trend is one of consolidation of farm ownership as farmers purchase neighbouring properties (Barr, 2007). Second, the family as a traditional source of labour is breaking down as spouses are more likely to work off farm (Alston, 2006) and children are less likely to be groomed for inheritance (Wheeler *et al*, 2012). And third, labour shortages may emerge in the post-drought recovery period due to the loss of the working age population during the crisis (Hunter and Biddle, 2011). The sum effect in some areas may well be that farm labour is likely to both in demand with the supply issue partly resolved by farm exits.

The ‘managed risk’ regime has been questioned on several fronts. First, the viability trigger for drought relief is poorly defined (Keogh *et al*, 2011). Second, the regime does not seem to have resolved the issue of farmers living in poverty. That is, there is a cohort of farmers who for reasons that need further investigation can neither improve management of their properties nor leave their properties (Alston, 2006). They fall between the cracks of eligibility for exit packages on the one hand and sufficient equity in their property to extinguish debt on the other. In short, they are trapped. Finally, such had been the prevalence of declarations of ‘exceptional’ circumstances – a process involving, in effect, (an often successful) lobbying of government – that the regime resembled the emergency relief approach it sought to supplant (Botterill, 2005; Productivity Commission, 2009). The paradox then is that while actual exit packages are extremely difficult to come by, EC declarations are relatively easy to achieve. This ensures a sort of stasis when it comes to individuals and economic regions in crisis. They cannot move forward in a genuine way or at least, to use the terms of evolution, succession is very slow indeed.

Second, the criteria and operation of farm exit grants is similarly unclear. Grants require farm sales but this is a major issue. Seasonal and market conditions impact on property values and attractiveness for sale as a review of a Western Australian government pilot scheme recently found (Keogh *et al*, 2011). Uptake of grants is low, partly because farmers will stay on the land for non-economic reasons, in particular, attachment to the land (Doxey, 2011).

And third, regional and land use planning options form very little of the substance of drought policy. Recent research by regional planners found that two hundred years after settlement, there was no comprehensive inventory of the carrying capacity of Australian farmland (Budge *et al*, 2012). The position of the Productivity Commission (2009, p. 239) is that ‘retaining all farmers currently in the industry and maintaining country towns should not be the driving objective of drought or climate variability policy’. In other words, it considers regions in an undifferentiated way; the viability of towns are not considered separately from the viability of the agricultural sector. The focus has been and continues to be assistance for the individual farm household with little emphasis on economic diversification of the region in which the farm (and therefore exiting farmers) are located.

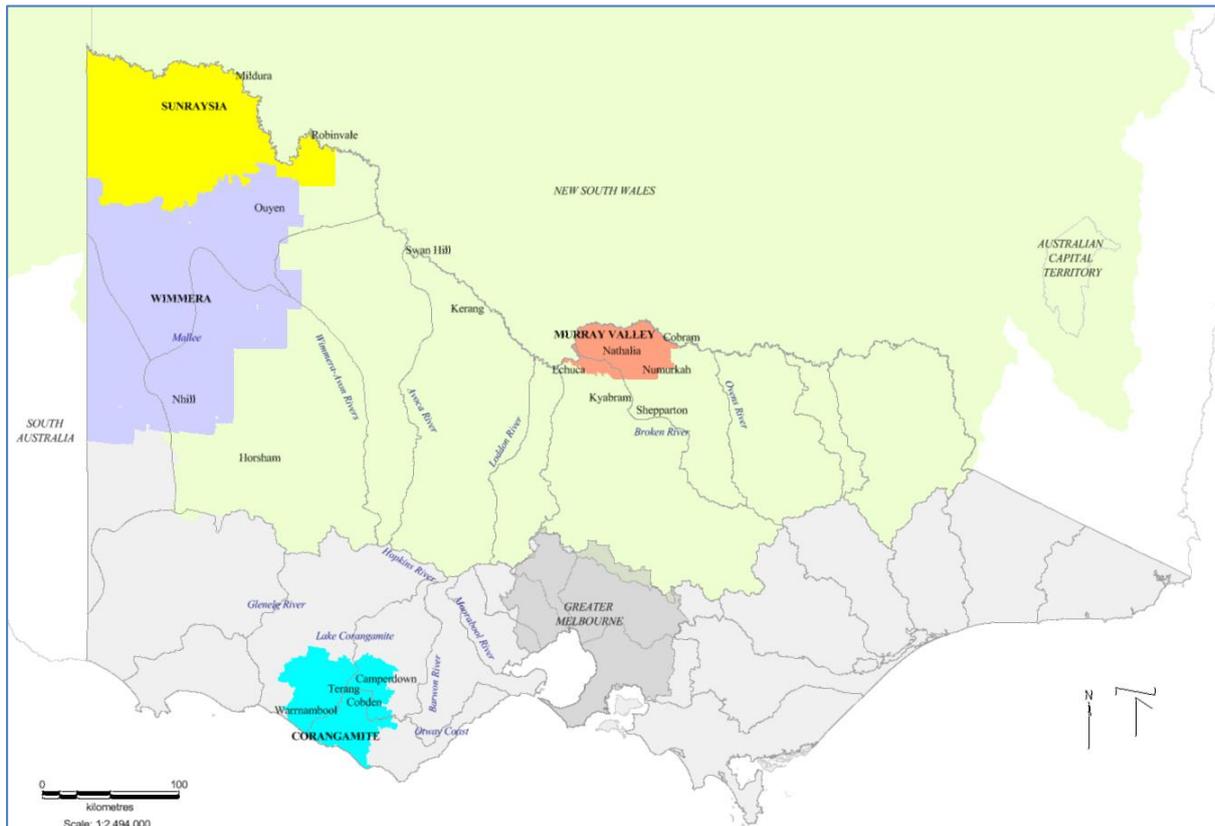
Research Approach

Many previous studies rely on structured questionnaires and interviews that restrict farmers’ capacity to tell their stories, explain their interpretations and inject their facts with meaning. To capture this sense of exit requires an approach that seeks to locate the decisions of individual farm households in the wider context of rural restructuring processes. This requires putting the exiting farmers at the centre of the research endeavour and asking them open-ended questions about goals and processes; about the fulfilment or abandonment of farming aspirations; and about their sense of control – or lack of it - over the unfolding situation. Our study examines farmers’ constructions of their household’s position in broader webs of circumstances and events - in contracts, bank loans, markets, supply chains, deregulation, off-

farm work, water supply restrictions and water trading – as well as what became of their land. We think that exiting farmers are in the best position to provide advice for others who are contemplating leaving farming and for governments bent on restructuring water rights and rural economies and to identify interventions that might have smoothed the process or elevated its trajectory.

The project from which this paper arose aimed to trace the effects of the drought and MDBP in four selected farming areas in Victoria (Figure 1). It focused on three of the most affected farm specialisations across four case study locations: irrigated grape-growing (Mildura), irrigated dairying (Murray Valley), non-irrigated dairying (Corangamite) broad-acre farming (Wimmera).

Figure 1: Case Study Areas



Key: Murray-Darling

The main project involved repeated surveys of a random sample of farmers in the selected locations and industry specialisations. A smaller subsample of farms that had or who were preparing to exit was identified from the respondents in the first 2010 data collection. In contrast to previous studies, which have identified exits through the lists of clients of government structural adjustment projects or by ‘snowball’ sampling, this method produced a small but randomly selected group of potential exiting farmers. Semi-structured in-depth interviews sought to elicit respondent’s understanding of the process of exit and the significant events triggering change in the context of the structural conditions in which, and with which, these agents engaged. To frame the research approach, five critical areas were examined: why did they leave, what became of the farm, what became of the farm family; financial well-being; personal well-being.

3. RESULTS

Why Did They Leave the Farm Business?

'Push' Factors

With drought such an obvious part of the landscape we might expect it would be given at least as the starting point for leaving. However, this was not the case. Rather, it was (what can be seen in hindsight) the outcomes of drought but equally, the pressures on farmers to increase productivity, a regime which had been in place for some time. There were both 'push' and 'pull factors'. The key summarising factor for leaving was debt, just as the key attraction for exit was the chance to resolve debt.

As the drought wore on, in the mid-2000s, water allocation to farmers from irrigation systems were reduced by up to 30%. Vineyards in particular were forced to simply 'dry off' some or all of their plantings. For broad acre farmers, drought meant first and foremost the need to purchase expensive feed. However, the unfortunate timing of purchasing more land prior to the drought increased debt burdens. In some cases, this was on the back of already considerable investment in improving original parcels which were sub-standard in quality or size when purchased.

Commodity prices fluctuated during the drought period, particularly during the Global Financial Crisis (GFC). Milk prices for example declined 30%. A major wine manufacturer collapsed during this period leaving contracted farmers with no sales option. In spite of the intended 'equilibrium' effect of marketization, farmers found themselves contracted to grow chardonnay grapes that by harvest time were in a state of global over-supply. Relationship breakdown, sibling conflict and ill-health were cited in a minority of cases. The toil of farming life and in a minority of cases, soft-tissue injuries that had left their legacy was often mentioned in the context of the relief at having such a burden lifted.

'Pull' Factors

There were a number of enticements which led farmers to first seriously consider and then actually cease the farm business. The government-funded Rural Financial Counselling Service was used by a minority; this is a reflection, not of the service, but of the depth of financial literacy of the farmers themselves. In some cases, spouses played the role of financial advisor 'Even the accountant loves her too because everything's always down to the last cent organised.' More generally, some spouses were clearly 'the brains of the operation: 'I did the book work as well and that used to drive me nuts because he would think you just pull a figure out of your head and it works, I said no it doesn't.' This effect was enhanced by the impression both in terms of general demeanour at interview and concrete responses that married couples were a team. 'We' made decisions together about the farm and about leaving the farm. This impression was conveyed regardless of whether spouses were interviewed together or separately.

The nature of the land and water market and farmers' decision making process enabled a generally smooth farm exit, financially if not emotionally. Farmers could to some extent control the pace and scale of sales. One farmer was able to hold off on sale until prices improved. Another staggered sales of land parcels over several years to minimise tax. Generally, people had breathing space of at least six months to consider selling. Once the decision was made, it was made quickly, in the character of a business transaction and was purchased without delay. The contemporary structure of farm labour and of local labour markets which are based on the farm sector provided a demand that ex-farmers could fulfil. Intergenerational farm labour was rare; this was reflected, writ large, in the broader farm

labour market. Thus, labour was in demand. If the pressure of deregulated markets led to overstretch through extra land acquisitions, it also provided an additional asset in the form of tradable water. Exit packages played a minor role; only two respondents, both of whom were successful, applied for exit packages. However, the realisation that a package was forthcoming was the crucial ‘tipping point’: “There’s the exit grant.” He [the financial counsellor] said, “You can both take this, I’ll give you the forms.”

What Became of the Farm Family?

All farmers (all but one of whom were men) found work either immediately or within a few months. Most jobs were found through personal contacts, an indication that informal networks remain strong. Most had held the same job since leaving farming, a sign that their work was ongoing. Almost one quarter (six) found employment as farm workers. A similar number established or bought their own business. Three reverted to the trade for which they already had qualifications. In one case a man returned to his trade from thirty years before. He found ‘It was difficult because things had changed in the industry. They’ve now computerised equipment. I wasn’t trained in that area. And, thank goodness, they still needed somebody with manual experience’. There were three labourers, three dairy industry trainers, two truck drivers, an environmental remediation worker, a teacher (who had farmed part-time), and a parson who returned to his position full-time. Two were farming again, but on a part-time basis. They deliberately planned a future where off-farm work would be a permanent source of income. As it so happens, these were the only families to move out of their local area; they had a total break from farming to consider their future. A further case obtained worked intermittently and had held a variety of retail and banking jobs. This ex-farmer, one truck driver and one farm worker were cases which could be described unambiguously as having post-farming experiences of precarious employment (Weller and Webber, 2001), that is, there were periods when work could not be found when wanted, resulting in periods of dire poverty: ‘Last year we’ve had probably more times where it’s [money] run out ... And we seem to be doing that more and more.’

The influence of location on job outcome was apparent. The irrigated grapes area of Sunraysia produced only one farm worker job of the twelve Sunraysia respondents, with four ex-farmers embarking on their own small business. There was a similar result for the southerly location of Corangamite; one out of five. For Murray Valley, there was a different outcome again. The higher skills required for the dairy sector meant two things: the availability of training jobs and ‘transferable skills’ for the two cases where farming had been taken up again. In contrast, the Wimmera produced four of the six cases of farm worker, an indication of the location’s isolation and dominance by one sector. More detail on these outcomes are provided in the Appendix.

In general, the career aspirations of both farmer and spouse was low. There was little discussion of future prospects or plans. A very small minority had taken on training post-farming. There did not seem to be a concern to increase disposal income. Those whose narrative was generally more enterprising were indeed those who tended to purchase a small business and these in turn lived near major regional towns.

Most spouses worked on the farm in some capacity. In some cases, this took up a considerable amount of ‘free’ time, including working during holidays and prior and after a full working day. However, very few women expressed ambitions to assume a better employment position, in spite of the removal of the burden of what was effectively a second job; post-farming, there was little movement up the career ladder. As one woman put it, ‘it’s a small school in an isolated location; there is no ladder.’ Again this is partly a matter of the geography of opportunity; there was a small spread of employers to choice from the range of industries

women usually work. As another describes, ‘I just felt stifled because we’re in this remote area.’

What Became of the Farm?

All farmers surveyed left the farm *as a business*. However, a variety of arrangements were arrived at relating to the ultimate relationship between the farm family and the farm. Of the twenty-nine respondents, sixteen sold the farm outright. However, of these, five retained ownership of the farm house and continued to live there. Other strategies were retaining ownership but leasing the farm, and keeping the farm property but not in operation. Thus the farm was kept as an investment and as a source of income. By selling stock and equipment, debt could be eliminated or curtailed. Some never lived on the farm; while they sold the farm they retained higher value properties in the local town. Two resumed farming; these were two of the only three cases of ex-farmers who moved out of the area. Farmers would do whatever was necessary to clear their debt, which they largely succeeded in doing; but where they could, they retained a link to the property. This degree of flexibility was afforded farmers who not only sold their stock and equipment, but in irrigated areas, sold their water. These results contrast with those found by earlier research, where the farm was sold outright in every case. The distinction is that in the current period, the imperative of ever-increasing productivity leads to the purchase of additional assets which drove farmers into debt but which ironically enough they can then dispose of to clear that debt. A spread of assets, therefore, including water rights, augers well for a more controlled exit strategy which in the end, often does not mean actually having to sell the farm. Another remarkable point is that farms were sold or leased to neighbouring farm families. The only exception was one case where the property was purchased by an interstate buyer. All farms remained farm land. Therefore, the crisis of the drought merely perpetuated and perhaps accelerated the long-term trend of farm consolidation through other farm families purchasing their neighbours’ properties, but did not, at least in the case of the farms surveyed here, result in the alienation of farm land.

Financial Outcomes and Sense of Well-being

There are two examples of achievement which remarkably, were shared by almost all respondents: the farm was sold, part-sold or leased without great difficulty and work was found immediately for the vast majority. Almost all respondents reported that they were better off financially: ‘At least now we know what we make is our own – it’s not all going back into the farm’, although some reported in ambivalent tones: ‘We are in a better position, but we would have been in a better position had it not been so much of a struggle’. There were three unambiguously negative responses: As one said, ‘I’m not better off, no. When I was making money, I was making good money...[now with factory work] at \$26 an hour, would you call that good money?’ And another: ‘I don’t feel like we’re faring very well...it [income] comes and goes’. What these three cases had in common was deep dissatisfaction with another aspect of the transition: dissatisfaction with fellow-work mates, family breakup, conflict in the extended family.

Around three-quarters of respondents reported they were happier: ‘Much, much happier, because the hours of work are contained within a reasonable timeframe, like eight to five’; ‘I’m less stressed – a lot less stressed.’ But the benefits of ‘the farming lifestyle’ and a sense of loss were acknowledged: ‘There were some good things about working your own land and for yourself... but you also need to be financially viable too for it to work.’ The sardonic disposition of the Australian farmer was evident: ‘I’m happier in that I’ve been able to eat’; ‘I don’t feel like killing myself today.’ For minority, there was ambivalence: ‘today was brilliant. I just need to lose the manager’; ‘I can still remember the buzz I used to get if the cows were in a great paddock... everything was just magic. I can still remember that euphoria

and I'll never get that in this job.' For a smaller minority still, there was grievance associated with the terms of the new job: "John" is doing long hours [truck driving]... farming was a great thing to be doing... being on a farm with family is fantastic'; 'I have to put up with this bullshit [of other workers] every day at work. So, through no fault of mine, I'm stuck in a factory. It stinks but what do you do?'

Financial and personal well-being were linked by removal or lessening of the burden of debt, tied as it was to the visceral sense of degeneration drought was having, on their properties, and for that matter, as far as the eye could see. As one spouse described her husbands' disposition at the time, 'It was like he failed, and every time we went outside we were surrounded by dead wine grapes'. But it was also tied to a release from the burden of work: 'it was just too much of it all the time. Christmas day we would be out there working picking, forty-seven degree heat.'

Most respondents were left unfulfilled by their experience. Aspirations varied between a desire to really just make a living, 'I guess the main thing was to make money, which we didn't really', an enjoyable lifestyle, 'No, because we thought it would be a good life...But it was a lot more work than we ever thought...' and more business-orientated proposals to expand and improve production techniques: 'I still have a feeling that I left there incomplete; we just didn't get a chance to complete the plans and the dreams we had for the property.' Sometimes a strong sustainability ethos was woven into plans for farm improvement: 'Doing things better either in crop nutrition or general practises, well we only just started to touch on that...I'm pretty unfulfilled I think'. One respondent had already advanced plans to construct a bale straw house, water self-sufficiency, natural fertilisers, solar and methane power. But it all came to nought in the end.

The extent of disappointment discounts pretty clearly the idea that farmers who leave are farmers who lack forward thinking or plans for improvement. Some of these plans were already half-implemented, cut short by circumstances utterly beyond their control, killed, by drought, water restrictions and price fluctuations: 'I was hopeful, I was still hopeful, I was still looking at a plan, "This will work, we just need water'.

4. DISCUSSION

Drought assistance will not keep farmers on farms. The majority of those surveyed received drought assistance of some kind, but still left. On the other hand, the vast majority did not receive an exit grant. Most report mitigating circumstances engendered by deregulation, in particular fluctuations in prices and demand for commodities. These difficulties are accentuated by drought. Further, the research raises doubts about both the notions of 'viability' and the fate of 'self-reliant' farmers. Assumptions about farmer competence need to be reassessed; farm families who are able to sell their farms and stock at the right price, who can time the sale to maximise returns and find and keep off-farm work - all in the most trying of conditions - display all the traits of self-reliance and viability and yet they have left. There is no natural 'shaking out' of the less competitive farmers. Bad luck and global economic conditions play a major role. This raises an uncomfortable possibility. Is it perhaps the case that it is the more competent who are able to leave and the less competent who remain trapped by negative equity, debt, ageing or illness?

It should also be recognised that the decision to quit is a household-scale decision influenced by multiple non-farm considerations, detailed in this paper as 'pull factors': non-farm work, non-farm skills, a desire for (in some aspects at least) a non-farm life. We found that financial well-being and personal well-being were linked by removal or lessening of the burden of debt against the despairing landscape of the country in drought. We need to consider then, that

contemporary farming in Australia has endured a schism. Whereas previously it could be argued that farming *was* the lifestyle, what the burden of debt also seems to have ‘achieved’ is to break the nexus between the positive sense of lifestyle (own boss, own land, open air, freedom for the farmer and his family) and an increasingly problematic experience of farming as a business or a ‘workstyle’.

A major structural issue is the state of job markets in rural areas which are tied to the fortunes of the rural sector. Generally, these produce seasonal, poorly paid work with little or no scope for advancement. In other words, the broader challenge lies not only in ‘drought proofing’ farms, but in drought-proofing communities through regional development and decentralisation. The assumed role of planning has been to direct or at least encourage certain activities in certain locations. In reality, planning follows the trend rather than creates it; this can be seen in the facilitation of multi-faceted land uses in high amenity locations where the population trend is irresistible, but a vacuum of thought when it comes to the future of other locations which just happen to comprise a large area of the state (including the locations where these case studies were conducted), where the most pressing environmental concerns are present and where drought has the greatest material and physical impact. To date, the vacuum has been filled by the (Productivity Commission, 2009), whose competitive economic outlook has led to a recommendation to abandon areas of the state. More broadly, the Commonwealth’s current priority is to develop virgin areas in Australia’s north rather than diversify already populated locations in the south (Commonwealth of Australia, 2015).

The ex-farmers interviewed for this research faced multiple stresses and the direct effects of drought could not be entirely separated from the effects of drought-related policy changes, including access to government Exceptional Circumstance drought support and changes in irrigation water allocation policies. In irrigated locations in particular, the challenges of earning a reasonable return from competitive productivist farming were as much, if not of more, of a concern than environmental conditions because drought was in effect experienced as a shift in irrigation water pricing and allocation policy. The introduction of water trading allowed some farmers to trade water to reduce debt. When it was available, off-farm work maintained farm households and allowed marginal farms to continue to operate, but also broadened farmers’ horizons to consider work futures after farming.

The central determinant of farm exit was not week-to-week farm income but farm capitalisation, with exit more likely among farms with high levels of debt. The decision to exit was (for the vast majority who were in relationships) without exception a joint decision of farming husband and wife. When farmers exited, properties were sold to farming neighbours who would continue to care for the land and whose enterprise would benefit from the resulting improved economies of scale. In fact, this was a major indirect determinant of exit because it allowed exiting farmers to pass on their deeply felt responsibility for the land.

Through the lens of evolutionary economic geography can be seen the manner in which links to the land are not so much broken but restructured. When selling the farm eliminated the debt, former farmers were in a better position financially and (to a less extent) happier, than they had been as farmers. Many exiting farmers who sold their farm land retained the farm house, continued to live in the farming community and to work locally. Former farming men mostly found farm-related work, while farming women retained their pre-exit employment status. There is a need to reconsider farm ‘exit’, as for these farmers who have successfully found a way out of the farm business, the ability to ‘mix and match’ a variety of outcomes meant that certain benefits accrued, including a continuation of income from the farm (through leasing), continuing links to the land (by retaining the farm house or leaving the land fallow) or at the very least, by remaining in the area. On a less sanguine note, it can also be

seen in the transfer from the precarious business of farm operator to the precarious work of a rural proletariat. The geographically-driven path-dependent nature of the exit process is revealed most tellingly in the calibre of jobs that are taken up. For the isolated, farm dominated Wimmera, farm labourer positions prevailed. For the more diverse Sunraysia, small business opportunities arose.

5. CONCLUSION

This paper contributes to our understanding of contemporary rural Australia by directing attention from large scale narratives about the Australian ‘rural condition’ to the day to day experiences of farmers and contextualising these experiences through the relationships and the range of institutions with which they engage. Also, it not only examines why and what happens to those who leave farming but *how* they leave. Its contribution to policy considerations, then, is to highlight that farm exits are the product of conditions beyond the farm gate - including the policy context, the conditions in regional labour markets and the viability of surrounding farms - rather than being the isolated consequence of farming conditions on particular farms. Further, policies should avoid the implication that farm stress is the consequence of incompetence on the part of individual farmers, should recognise the decision to quit is a household-scale decision influenced by multiple non-farm considerations and should focus on facilitating farm consolidation at the neighbourhood scale. The paper’s theoretical contribution has been to show how evolutionary economic geography can be applied to farm exits, revealing in fact, that ‘exit’, though more dramatic a term, is inaccurate. It is more credible, if more cumbersome, to describe the experiences of these farmers as a clear break from the farm business, but a graduated transition from the land itself.

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APPENDIX

First interview	Area	Year Interviewed	Age of Interviewee(s)	Ceased Farm Business	Ex Farmer Job
Male	Corangamite	2013	60s	2010	Own business (Accommodation)
Male	Corangamite	2013	40s	2012	Environmental remediation worker
Couple	Corangamite	2012	30s	2010	Labourer
Couple	Corangamite	2012	60s	2012	Farm worker
Male	Corangamite	2012	30s	2012	Stonemason
Couple	Murray Valley	2012	50s	2012	Farmer
Couple	Murray Valley	2013	50s	2010	Trainer, dairy education
Female spouse	Murray Valley	2013	50s	2012	Truck driver
Couple	Murray Valley	2013	60s	2010	Trainer, dairy education
Male	Murray Valley	2012	50s	2008	Own business, (Retail)
Male	Murray Valley	2013	50s	2007	Trainer, dairy education
Couple	Murray Valley	2012	50s	2010	Farmer
Male	Sunraysia	2013	50s	2010	Tradesman
Female farmer	Sunraysia	2012	50s	2009	Services sector, various
Female	Sunraysia	2012	40s	2006	Truck driver
Female	Sunraysia	2013	50s	2006	Tradesman
Male	Sunraysia	2013	60s	2009	Shop keeper
Couple	Sunraysia	2013	60s	2008	Own business (Domestic services)
Couple	Sunraysia	2012	40s	2009	Own business (Transport)
Male	Sunraysia	2012	50s	2009	Teacher
Male	Sunraysia	2012	40s	2009	Farm worker
Male	Sunraysia	2012	50s	2007	Own business (Advertising)
Male	Sunraysia	2012	40s	2010	Parson
Male	Sunraysia	2013	40s	2007	Labourer
Couple	Wimmera	2013	50s	2008	Farm worker
Male	Wimmera	2013	70s	2006	Farm worker
Male	Wimmera	2013	70s	2007	Labourer
Male	Wimmera	2013	60s	2010	Farm worker
Couple	Wimmera	2013	30s	2009	Farm worker

Industry Structure, Transaction Services, Remoteness and Income in Functional Economic Regions

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ABSTRACT

This paper extends previous studies (O'Malley, (2011, 2012a, 2012b) of the effects of local transaction services on regional incomes by using linear regression and correlation analysis to investigate relationships between income, the transaction services industries, the remaining transformation industries, and remoteness in the 140 functional economic regions of Australia for 2006. The measure of transaction services excludes the transaction services provided by employees of non-transaction industries. This provides a richer analysis of the distribution of incomes across regions. Transaction services, as defined and measured by Wallis and North (1986), take many forms, arise in all industries, are unevenly distributed across regions, and facilitate the transactions which convert local products into income. Thus the scale of local transaction services can affect local income.

1. INTRODUCTION

This paper investigates the effects on income in Australian functional economic regions in 2006 of the shares of the regional labour force engaged in the transaction services industries and in each of the remaining transformation industries, and of regional remoteness.

Regional disparities in income are a source of disadvantage and can have consequences for social and economic development and growth (ALGA, 2015). The 17th *State of the Regions* report argues that there is an “association between income inequality at a regional level and economic growth on a national level” (idem).

Responding to income disparities can become a significant drain on national and regional budgets. For example, concerns about widening regional inequalities accounts for the bulk of the European Commission's budget (Nazarczuk, 2015; Arbia *et al*, 2010).

2. TRANSACTION SERVICES AND REGIONAL INCOMES

Wallis and North (1986) estimated that from 1870 to 1970 in the United States the transaction sector grew from 25 percent to 50 percent of GDP. Wallis and North (1986, p. 121) conclude that:

... transaction costs are a significant part of the cost of economic activity. One implication of this is that, throughout history, the costs of transacting may have been as much a limiting factor on economic growth as transformation costs.

Wallis and North (1986) defined the transaction services sector as including all the activities involved in conducting transactions, exchanging and reallocating resources, such as sales, search, inspection, negotiation, management, enforcement, finance, insurance, administration. They define the transformation sector as including all the activities involved in transforming resources into tradable goods and services, such as farming, mining, manufacturing, transport, education, health, etc.

Transaction services assure the integrity of the search, inspection, negotiation, contract agreement, control and enforcement of rights activities which are necessary for trade (Furubotn and Richter, 2010). A growing literature notes the importance of transaction institutions to regional economic development Saxenian (1994).

Wallis and North (1986) note the complementary roles of transaction and transformation services in economic history. Neglecting transaction services may limit economic opportunity. Wallis and North (1986) introduced measures of transaction services for the United States of America, demonstrated their growth over time, and argued for their growing role in economic development.

Sassen (2000) notes the increasingly urban concentration of transaction services around the world. These changes in the pattern of settlement shift transaction services out of remote and outer regional areas, thus limiting the potential for local innovation and economic development.

Political and economic institutions support the transactions necessary to generate economic growth and income growth (Coase, 1937; North, 1987). Transaction services capabilities exist, to a greater or lesser extent, in all industries where they support the transactions required to sustain productivity by purchasing or reallocating resources, and to convert products and services into incomes through sales (Wallis and North, 1986).

By sustaining trade, transaction services convert into income the goods and services which regional industry produces by transforming raw materials and ideas. Transaction services assure the integrity of the search, inspection, negotiation, contract agreement, control and enforcement of rights (Furubotn and Richter, 2010) which is necessary to sustain trade. Transaction services account for more than half of the Gross Domestic Product of the United States of America (Wallis and North, 1986) and of Australia (Dollery and Leong, 1998).

Few traditional explanations for regional income disparities (Nazarczuk, 2015) involve regional transaction services. However, the emerging literature, including Farole *et al.* (2010) and Saxenian (1994), focuses on the institutional structures which govern transactions, and drive economic growth and incomes in regions.

Farole, Rodriguez-Pose and Storper (2010) argue that explaining economic trajectories requires taking into account the role of both formal and informal local and society-wide institutions. They review the institutional approaches to economic development, including the role of transaction services and cost.

Sassen (2006) suggests that the multinational firm has evolved to supersede much of national authority, elevating the significance of global cities and the connections between them in the globalization process. (Blakely and Leigh, 2010, p. 4).

Regional development practice has tended to seek growth in regional incomes by promoting and recruiting transformation industry rather than by promoting and developing transaction services.

Blakely and Leigh (2010, p. 3) argue, citing Friedman (2005) on the challenges of globalization for local communities, that “the solutions ... called for an orientation away from

traditional business development and recruitment toward ensuring all participants in a local economy have adequate preparation to make maximum contributions.” Adequate preparation would include the capability to develop new markets and new local capabilities, capabilities which arise from transaction services.

Globalization drives change in every locality as traditional businesses may fail and new ones may grow. Continuous reinvention is needed “through new technologies, innovations and renewed commitments to ethical leadership” (Blakely and Leigh, 2010, p. 3). All of these require transaction services to make new markets for the distinctive features and ideas of the place, as well as the innovations, the new technologies and the practices required to build ethical communities and leaders.

Transaction services matter to regional incomes because they give remote buyers of regional goods and services the confidence needed to trade with the region. Transaction services can therefore play a role in linking distinctive capability to market opportunity.

Best (2001, pp. xii-xiv) argues that:

An understanding of the dynamic between distinctive capability and market opportunity is critical to understanding both business performance and regional processes of growth and decline. Regions that enjoy a high per capita income are generally regions with a critical mass of business enterprises with the capacity to add value to the resources they use. The idea of regional specialization implies that firms do not compete alone in the global marketplace but as members of networked groups of firms sharing and building on distinctive regional capabilities. A region's capacity to initiate and sustain high value added production depends upon its capability to foster and reproduce entrepreneurial firms. The point is that sustainable regional growth depends not upon the longevity of specific firms but upon a networked population of interacting, specialist business enterprises. Greater specialization within a region shifts the patterns of inter-firm relationships which rebound back on the specialization process within firms. Understanding these relationships is crucial to distinguishing dynamic from static clusters. The term ‘cluster dynamics’ signals interactive processes of capability development and specialization within and amongst firms within a region.

Best (2001, p. 69) reminds us that the institutional structures of a region, such as transaction service workers and institutions, do not guarantee growth. He poses “the idea of the entrepreneurial firm as the driver of cluster dynamics and regional growth.”

Saxenian (1994, 1996, p. 112) argues that “most companies or stable regions pursue a single technical option and, over time, become increasingly committed to a single technological trajectory. A network-based regional economy like Silicon Valley, alternatively, generates and pursues a rich array of technological and organizational options.” The ability to recombine which transaction services provide enables a wider range of options to be pursued.

Yeung (2015, p. 1) argues that “a self-contained and endogenous view of regions and regional development can no longer hold water in this world economy characterized by increasingly interdependent economic activities that are organized through cross-border value chains and production networks spearheaded and governed by global leading firms.” This world economy view ignores regions which are isolated from global production networks and value chains.

In this paper it is argued that localized transaction services are necessary to sustain regional trade with the outside world, and therefore have a critical role in extending global production networks into remote regions.

3. REMOTENESS AND TRANSACTION SERVICES

Increasing remoteness is a modern feature of Australian human geography.

One of the strongest features of the nineteenth-century Australian economy was the high proportion of the population living in non-metropolitan towns. ...Small towns benefited from the direct relationship between farm production and the need for farmers to have regular access to supplies and commercial services. ...Small town firms were protected by distance as services had to be consumed on the spot and high transport costs restricted competition from producers in other regions. (Frost, 2008, pp. 72-73)

Frost (2008) notes that improved transport and communication services lead to the drift of population out of non-metropolitan regions. As transport, storage and communications infrastructure improved small town firms were no longer protected by distance, and the larger 'sponge' towns "grew ...by creating jobs ...with strong links to their rural hinterlands, while also looking to Melbourne and Sydney for products and access to larger markets" (Frost, 2008, p. 78).

What became of the institutional resources supplying transaction services to the settlers and producers who sought to make their lives by applying their skills to transforming local resources into tradable goods and services?

Improved transport, communications and technologies shifted mobile transaction services out of the hinterlands, destroying local jobs, reducing local populations and amenities, and concentrating transaction services in regional and capital cities. The increased scale of transactions services in the 'sponge' towns and cities can be expected to have increased the efficiency of these services, through improved specialization, thus benefiting even the now more remote settlers and producers in the hinterlands. However, increased specialization may diminish both the capacity of the resident population in the hinterlands to recognize opportunity and the capacity to access the transaction services required to innovate and to build trusted connections with faraway markets.

Previous Studies

Using multiple regression analysis of estimates of the transaction services labour force in functional regions drawn from the 2006 Australian population census, O'Malley (2011, 2012a, 2012b) found that employment in local transaction services makes a larger contribution to regional incomes than employment in transformation activities of agriculture, mining, manufacturing and public administration. This paper extends the analysis across all industries.

A recent study (Mardeneh and O'Malley, 2014) using both cluster analysis and regression analysis of the same data set on functional regions in Australia (O'Malley, 2011, 2012a, 2012b) reveals associations between regional incomes, social institutions, including health services and recreation and sport, transaction industries and transformation industries. Some social institutions cluster in high income regions.

This paper extends the range of industries included in the analysis. The estimates indicate the effect on the median weekly income of persons living in the 140 functional economic regions of Australia in the year 2006 of: the share of employment in regional transaction services industries; the share of employment in public administration (itself a transaction service); the share of employment in regional transformation industries, which also contain some employees providing transaction services; and the remoteness of the region.

4. DATA AND STATISTICAL ANALYSIS

The principal hypothesis of this paper is that the transaction services have a primary role in income determination in regions. The paper aims to explore and compare the contributions made to regional incomes by the combined transaction sector industries and by each of the remaining (transformation) industries.

A secondary aim is to explore the effect of remoteness on the relationship between incomes and transaction services.

Appendix 1 describes the sources of data used and how the data were assembled to construct estimates of income, transaction services, and remoteness for each of the 140 functional economic regions considered in this study.

This paper uses occupation by industry data from the 2006 Australian population census (ABS, 2007) and the definitions of transaction service occupations and industries used by Wallis and North (1986) to construct estimates of the share of transaction services employment in the labour force of each of the 140 functional economic regions defined for 2006 by (Mitchell and Stimson, 2010). Each functional region is classified to one of five remoteness categories, based on the remoteness category in which the median population of the functional region resides. Median income is calculated from Australian Bureau of Statistics (ABS) tables from the 2006 Population Census for Statistical Local Area (SLA) and Indigenous Status (INGP) by Individual Income (weekly) (INCP).

The measure used to represent the transaction sector for each functional economic region in this study is the sum of employment in the region in the industries of Wholesale trade, Retail trade, Information Media and Telecommunications, Financial and Insurance Services, and Rental, Hiring and Real Estate Services expressed as a share of the employed workforce in the region. The transaction services provided by managers, sales employees and administrative workers are omitted from the transaction services measure but are included within their transformation industries. Public Administration and Safety is classified as a transaction industry and is presented separately in this analysis.

All the data, except Median Weekly Income, are expressed as ratios in the range 0 to 1.

Simple Correlation Analysis

Income: Only Transaction services (0.373, $p < 0.01$), Public Administration (-0.297, $p < 0.01$) and Very Remote regions (-0.402, $p < 0.01$) have coefficients of correlation with Income which are statistically significant. Of these only Transaction Services are positively correlated with income.

The positive correlation of Income with Transaction services, and the lack of any significant correlations with any other industry sector, suggests that policies to stimulate the regional Transaction sector may be an effective means of reducing regional income disparities or of enlarging opportunities in poorly performing regions.

The negative correlation of Income with Public Administration and with Very Remote regions may reflect some substitution effects between these variables. Public Administration may locate in low income functional regions and Very Remote regions are also low income functional regions. The Public Administration employment in four Very Remote functional regions exceeded half of the employed workforce.

Transaction Services: In addition to their correlation with Income, Transaction Services also are strongly and positively correlated with Other Services (0.288, $p < 0.01$), with Major Cities (0.292, $p < 0.01$), and with Inner Regions (0.238, $p < 0.02$). The positive correlation with

Major Cities and with Inner Regions is consistent with Sassen (2000) who argues that transaction services concentrate in major cities.

The positive correlation of Transaction Services with Other Services is unexpected and suggests further examination of ways in which Other Services complement transaction services. Under the 2006 Census Classification, Other Services includes 94 Repair and Maintenance, 95 Personal and Other Services, 96 Private Households Employing Staff and Undifferentiated Goods and Service-Producing Activities of Households for Own Use. Within 95 Personal and Other Services are Civic, Professional and Other Interest Group Services: these include business, professional, labour and other association services, such as Chambers of Commerce and unions, which employ people in many regions who play a role in transaction services.

Transaction Services are also positively correlated with Manufacturing (0.223, $p < 0.05$), Construction (0.228, $p < 0.05$), Transport (0.199, $p < 0.05$), all of which are substantial users of the finance and insurance services component of transaction services. Transaction Services are negatively correlated with Health Care and Social Assistance (-0.196, $p < 0.05$), which has a strong and positive correlation with Public Administration (0.244, $p < 0.02$).

Transaction Services are strongly and negatively correlated with Public Administration (-0.462, $p < 0.01$) and with Very Remote functional regions (-0.455, $p < 0.01$), and weakly and negatively correlated with Health and Social services (-0.196, $p < 0.05$). The negative correlation of Transaction Services with Public Administration and with Very Remote regions reflects the wide distribution of Public Administration across functional economic regions and the relative concentration of Transaction Services in Major Cities (Sassen, 2000).

Public Administration is also strongly and positively correlated with Very Remote regions (0.578, $p < 0.01$) reflecting the large share of employment in Public Administration in Very Remote regions. This may reflect employment under the Community Development Employment Program which was classified as employment in the 2006 Census (ABS, 2006a).

Public Administration is also negatively correlated with Manufacturing (-0.451, $p < 0.01$), Other Services (-0.410, $p < 0.01$), Transport (-0.538, $p < 0.01$), Accommodation and Food (-0.241, $p < 0.02$), Electricity Gas and Water (-0.222, $p < 0.05$) and Inner Regions (-0.214, $p < 0.05$).

Agriculture is positively correlated with Outer Regions (0.412, $p < 0.01$) and negatively correlated with Major Cities (0.429, $p < 0.01$), which reflects the geography of Agriculture. Agriculture is also negatively correlated with Construction (-0.243, $p < 0.01$), and with Arts and Recreation (-0.399, $p < 0.01$).

Mining is positively correlated with remote regions (0.404, $p < 0.01$) but not significantly with regional income or the regional Transaction Sector. Transaction services for both Mining and Agriculture tend to be managed in head offices of miners and bulk handling of commodities trading businesses.

Appendix 2: Table 1 provides the complete set of correlations.

Multiple Linear Regression Analysis

The multiple linear regression result (standard error of coefficient estimate in parentheses) is as follows.

$$\begin{aligned}
 \text{Income} = & 828 + 394*\text{TSec} - 516*\text{PubAd} - 639*\text{Agric} - 525*\text{Mine} - 655*\text{Mfg} - 221*\text{ElGW} \\
 & (193) (148) \quad (212) \quad (246) \quad (283) \quad (368) \quad (1994) \\
 - & 1507*\text{Constn} - 895*\text{AccomFd} - 581*\text{Trnspt} - 1592*\text{EdTr} - 862*\text{HlthSoc} + 267*\text{ArtRec} \\
 & (584) \quad (370) \quad (1142) \quad (825) \quad (414) \quad (1935) \\
 - & 547*\text{OthSvc} - 76*\text{MjrCty} + 54*\text{InReg} + 58*\text{OutReg} + 121*\text{Remote} + 10*\text{VryRem}. \\
 & (1521) \quad (84) \quad (84) \quad (86) \quad (93) \quad (99)
 \end{aligned}$$

The r-squared statistic for this multiple linear regression is 0.32 which is significant ($p < 0.01$) (Mills, 1955: 771). The F statistic is 3.15; for a regression with 121 degrees of freedom (v_2) and v_1 of 18 the F99 value is 2.19 (Mills, 1955: 777). The regression reveals a statistically significant relationship between the variables $p < 0.01$.

The regression has six constants, allowing for 5 remoteness values and the regression constant, so that $n = 140 - 1 - 1 - 5 = 133$. The t statistic for the regression coefficients $n = 120$ is 2.358 for $p < 0.01$, 1.98 for $p < 0.025$, and 1.658 for $p < 0.05$ (Christ, 1966, p. 667).

All the coefficients, including the constant, are large numbers because all the independent variables are in the range 0 to 1. Across all regions the average share of the Transaction Sector in the employed workforce is 0.216; the largest share of all the variables. The share for Public Administration is 0.118.

The positive regression coefficients for which $p < 0.01$ are for Constant and Transaction Sector; the negative coefficients with $p < 0.01$ are for Public Administration, Agriculture, Construction, Accommodation and Food. Health and Social Service has a negative coefficient with $p < 0.025$, and Mining, Manufacturing and Education and Training all have negative coefficients with $p < 0.05$.

The only statistically significant and positive regression coefficients are Constant and the Transaction Sector.

The Remoteness of the region does not have a significant effect on regional incomes, while all but Major Cities make a positive contribution to incomes. Every transformation industry makes a negative contribution to incomes, with the exception of Arts and Recreation.

Summary of Analysis

One hypothesis for this analysis has been that the transaction sector has a significant and positive relationship with incomes in Australian functional economic regions. Both the correlation and regression analyses demonstrate a strong and positive relationship between local income and the share of local employment in the transaction sector. This is supported by the findings.

While transaction services are not the only factor affecting regional incomes, in this model they appear overwhelmingly as the most important factor.

The negative regression coefficients for Public Administration, Health and Social Services, Manufacturing, and Education and Training may reflect redistributive or labour cost reducing location choices by these industries. The result for Agriculture reflects drought conditions in 2006 (ABS, 2008) and these effects may also be reflected in negative coefficients for Construction, and for Accommodation and Food.

On balance the results suggest that decentralizing Public Administration is not likely to improve regional incomes, but decentralizing transaction services may improve regional incomes.

The negative correlation and regression coefficients between Mining and Income may reflect the tendency for regional employment in mining to concentrate in Outer Regional and Remote regions, which have lower incomes.

A secondary hypothesis has been that remoteness presents a barrier to the development of transaction services and therefore to income. The remoteness zones, with the exception of Major Cities, attract positive but not statistically significant regression coefficients for their effects on regional income. Remoteness by itself does not consistently bring a significant change in income.

This may result if the more remote regions have relatively closed local economies, which protect local traders and limit the leakage of incomes to other regions. A stronger transactions sector could disrupt a closed economy.

5. DISCUSSION

The aim in this paper has been to assess and compare the effects on regional incomes of variations in the shares of local employment accounted for by the transaction sector, other industries and the remoteness classification of the region.

The strong performance of the local Transaction sector as a contributor to local incomes in this regression and correlation analysis is consistent with the findings of Dollery and Leong (1998) about the significant contribution of the transaction services sector to Australia's National income. This result challenges, once again, the predisposition of regional economic developers to recruiting transformation businesses.

The concentration of the transactions sector in cities and high income regions is well known (Sassen, 2000). Limited access to transaction services has implications for regional incomes.

These results, however, do not confirm the direction of this connection between income and transaction services. Transaction services, such as retail trade, are attracted to regions exhibiting high incomes. Some high income regions have limited Transaction services. Transaction services exist in every region, and they will be attracted to regions with opportunities for economic growth and development.

Regional development policy makers seeking to grow local incomes should consider ways of enlarging the accessible range of local transaction services as a means of stimulating economic development by better connecting existing and potential industries to customers and investors.

Further Research

The work reported here decomposes the effect on regional incomes of the transformation industries but does not decompose the contributions of transaction services. Further research is required to define which element of transaction services most contributes to regional incomes, or how these elements interact. This would contribute to the research needed to integrate the transaction sector into models of regional development.

Further research is required to understand how transaction services in regions are changing over time. Studies show consistent growth in national transaction services in Australia (Dollery and Leong, 1998) and in United States of America (Wallis and North, 1986).

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APPENDIX 1. DATA AND MEASURES

The data used in this study were originally prepared for a previous paper delivered to the International Rural Network Forum. This appendix is drawn from that paper.

Functional Economic Regions

Income and local market making resources are drawn from the Australian Census of Population and Housing 2006 (ABS, 2007) for 1,426 individual Statistical Local Area (SLA). The tables collected are ‘Occupation 06 (ANZSCO) (OCC06P) by Industry of Employment (ANZSIC06) (IND06P)’ and ‘Indigenous Status (INGP) by Individual Income (weekly) (INCP)’. Cells in these tables have been randomly adjusted by the Australian Bureau of Statistics to avoid the release of confidential data. The aggregated tables therefore include the summation of these random adjustments.

Australian Bureau of Statistics CDATA table building software, now replaced by Table Builder, was used to assemble data for Statistical Local Areas into the 140 Australian functional economic regions previously defined by Mitchell and Stimson (2010). Functional economic regions, in this case, are defined to contain most journeys to work within the region, thus improving confidence that the labour force reported by place of usual residence actually works within the same region.

Measuring Market Making Resources in Regions

The share of the employed labour force aged 15 years and over which was engaged in transaction industries or occupations in 2006 was obtained from published tables of the Industry of Employment and Occupation of employed persons from the 2006 Australian Census of Population and Housing based on place of usual residence (ABS, 2007). Total employment in transaction work is calculated as total employment in transaction industries plus total employment in transaction occupations within the transformation industries.

The Australian Census of Population and Housing industry data uses the ANZSIC06 (IND06P) industry classification (ABS, 2006b:72-95). The following classifications were used from ABS (2006a) in defining the private and public sector transaction services sectors: (F) Wholesale Trade; (G) Retail Trade; (K) Financial and Insurance Services; (L) Rental, Hiring and Real Estate Services; and (O) Public Administration and Safety. To these are added (J) Information Media and Telecommunications; and (M) Professional, Scientific and Technical Services from ABS (2006a).

While the (J) Information Media and Telecommunications industry class of ABS (2006) does facilitate search, inspection, sales and procurement through publishing, websites, telecommunications, broadcasting, newspapers and libraries, Wallis and North (1986) do not identify this class as a transaction industry. However, since Wallis and North (1986) conducted their study, this industry class has changed from print and wireless publishing to Internet services and search, expanding the range of information, advertising, search and inspection tools available to buyers and sellers.

The (M) Professional, Scientific and Technical Services industry class of ABS (2006a) is added to the transaction industries in order to capture the (693) Legal and Accounting services provided by professional firms, which are transaction industries. Most of the other services in this class are business services related to defining requirements, search, marketing and management, and therefore can be treated as transaction services; these are (691) Scientific Research Services; (692) Architectural, Engineering and Technical Services; (694) Advertising Services; (695) Market Research and Statistical Services; (696) Management and Related Consulting Services; and (70) Computer System Design and Related Services.

However, the class also includes transformation services such as (697) Veterinary Services; and (691) Professional Photographic Services. (ABS, 2006a)

Wallis and North (1986) do not include professional services in their transactions industries; they use instead data on the number and income of persons employed in the legal and accounting occupations in transformation industries.

The Australian Census of Population and Housing industry data uses the Australian and New Zealand Standard Classification of Occupations (ANZSCO) (ABS, 2006c) which is reported as OCC06P in ABS (2006a:115-129). The occupational classification (2) Professionals in ABS (2006: 117-120) in OCC06P contains the subclasses: (22) Business, Human Resource and Marketing which includes accountants; (26) Information and Communications Technology; and (27) Legal, Social and Welfare. While these contain transaction occupations together with the social and welfare transformation occupations, the balance of the occupational class (2) Professionals also includes: (21) Arts and Media Professionals; (23) Design, Engineering, Science and Transport Professionals; (24) Education Professionals, and (25) Health Professionals. This suggests that using the occupational class (2) Professionals from OCC06P for each transformation industry would result in a large overestimate of the transaction sector. This suggestion was confirmed when compiling the data.

The estimates therefore exclude (2) Professionals from the transactions occupations but add the (M) Professional, Scientific and Technical Services industry to the transactions industries. The industry class (M) Professional, Scientific and Technical Services omits the business, human resource, marketing, ICT and legal services occupations within the transformation industry sectors but captures the specialist external service providers of accounting, legal and other services.

The industry classification (I) Transport, Postal and Warehousing is omitted from the transaction sector because, while Wallis and North (1986) include postal services as a transaction industry, they omit transport and warehousing, and because postal services have declined as information technology has grown as a transactions service. Similarly, the industry classification (N) Administrative and Support Services is omitted because it includes Building Cleaning, Pest Control and Other Support Services, which are transformation functions, while including transaction services, such as employment, travel and credit reporting services, within the subclass Administrative Services.

The result may be a conservative underestimate of the transaction services industry, because it omits accounting and legal services in the transformation industries, while including Veterinary and Photographic services. However, it avoids a large overestimate.

The transformation industry classes used are (A) Agriculture, Forestry and Fishing; (B) Mining; (C) Manufacturing; (D) Electricity Gas and Water Services; (E) Construction; (H) Accommodation and Food Services; (I) Transport, Postal and Warehousing; (N) Administrative and Support Services; (P) Education and Training; (Q) Healthcare and Social Assistance; (R) Arts and Recreation Services; and (S) Other Services. While each of these industries employs staff whose occupation is to service the transactions of the enterprise they remain in the industry classes used in this paper.

The occupation data are defined from the Census Dictionary (ABS, 2006a) OCC06P classification of occupations which is based on the ANZ Standard Classification of Occupations (06 ANZSCO) (See ABS, 2006c).

The estimate of the transaction sector from the Census uses tables classifying employed persons by industry and occupation, omitting from the calculation all data classified as Not stated, Not applicable or Inadequately described. The estimates of the transaction sector

consist of the sum of all persons employed, except those recorded as Not stated, Not applicable or Inadequately described, in the transaction industry classes (F) Wholesale Trade; (G) Retail Trade; (J) Information Media and Telecommunications; (K) Financial and Insurance Services; (L) Rental, Hiring and Real Estate Services; (M) Professional, Scientific and Technical Services. (O) Public Administration and Safety is treated as a distinct industry. The sum of the persons employed in these industries and occupations is divided by the sum of all employed persons with the exception of those classified as Not stated, Inadequately described or Not applicable.

Measuring Industrial Structure

Separate measures of the share of total employment were calculated for each industry using the same selection of data, omitting those classified as Not stated, Inadequately described and Not applicable.

Measuring Income

Income measures are calculated as medians of interval data on gross weekly income of individuals by indigenous status which has been aggregated from Statistical Local Areas into functional economic regions. The upper income range in these data is open, and it is not possible to calculate a mean income measure from these data ABS (2007).

Remote and Rural Regions

Each functional economic region is made up of a selection of Statistical Local Areas. For each of the Statistical Local Areas, the Australian Bureau of Statistics provides a Remoteness Index, ranging from 1 (major city) to 5 (very remote), for the year 2006 (ABS, 2006d). The data are aggregated from the employed labour force located within each remoteness index class for each functional economic region and the functional economic region is assigned the remoteness index of the Statistical Local Area containing the 50th percentile of the labour force in the functional economic region.

Notes: TSec: The share of the employed regional workforce reported as working in the Australian Census (ABS, 2006a) consisting of all persons employed, except those recorded as Not stated, Not applicable or Inadequately described, in industry classes (F) Wholesale Trade; (G) Retail Trade; (J) Information Media and Telecommunications; (K) Financial and Insurance Services; (L) Rental, Hiring and Real Estate Services; and (M) Professional, Scientific and Technical Services. The sum of the persons employed in these industries and occupations is divided by the sum of all employed persons.

Income: Median individual weekly income derived from downloaded Australian Census 2006 tables of Statistical Local Area (SLA) and Indigenous Status (INGP) by Individual Income (weekly) (INCP). Counting: Persons, Place of Usual Residence. (ABS, 2007).

All data on occupation by industry of employment was collected from downloaded ABS source tables for Statistical Local Area (SLA) and Occupation 06 (ANZSCO) (OCC06P) by Industry of Employment (ANZSIC06) (IND06P) (ABS, 2007). Counting: Persons, Place of Usual Residence

PubAd: The share of the employed regional workforce reported as working in the Australian Census (ABS, 2006a) industry classification (O) Public Administration and Safety.

Agric: The share of the employed regional workforce reported as working in the Australian Census (ABS, 2006a) industry classification (A) Agriculture, Forestry and Fishing.

Mine: The share of the employed regional workforce reported in the Australian Census (ABS, 2006a) industry classification (B) Mining.

Mfg: The share of the employed regional workforce reported in the Australian Census (ABS, 2006a) industry classification (C) Manufacturing.

ElGW: The share of the employed regional workforce reported in the Australian Census (ABS, 2006a) industry classification (D) Electricity Gas and Water Services.

Const: The share of the employed regional workforce reported in the Australian Census (ABS, 2006a) industry classification (E) Construction.

AccFd: The share of the employed regional workforce reported in the Australian Census (ABS, 2006a) industry classification (H) Accommodation and Food Services.

Trnpt: The share of the employed regional workforce reported in the Australian Census (ABS, 2006a) industry classification (I) Transport, Postal and Warehousing.

EdcTr: The share of the employed regional workforce reported in the Australian Census (ABS, 2006a) industry classification (P) Education and Training.

HlthSoc: The share of the employed regional workforce reported in the Australian Census (ABS, 2006a) industry classification (Q) Healthcare and Social Assistance.

ArtRec: The share of the employed regional workforce in the Australian Census (ABS, 2006a) industry classification (R) Arts and Recreation Services.

OthSvc: The share of the employed regional workforce reported as working in the Australian Census (ABS, 2006a) industry classification (S) Other Services.

MajCit: Major City remoteness class (ABS, 2006d).

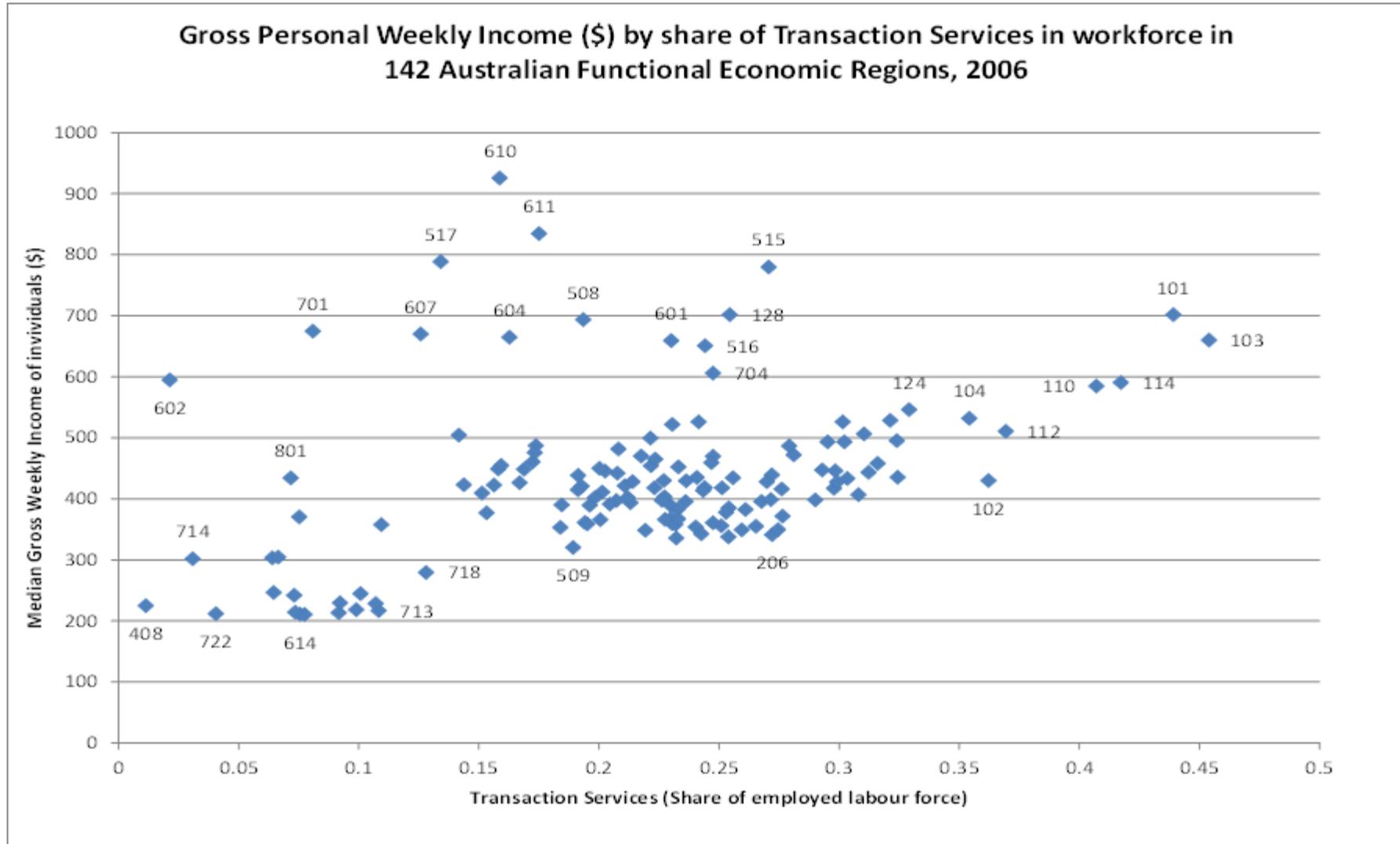
InnReg: Inner Regional remoteness class (ABS, 2006d).

OutReg: Outer Regional remoteness class (ABS, 2006d).

Remt: Remote remoteness class (ABS, 2006d).

VRem: Very Remote remoteness class (ABS, 2006d).

APPENDIX 3.



Location Codes for selected Functional Economic Regions in Chart 1

Code	Location	Code	Location	Code	Location
101	Inner & South Sydney	508	Albany and Surrounds	701	Inner Darwin
102	Inner West Sydney Canterbury Bankstown	509	Bunbury Collie South WA	704	Palmerston Litchfield East NT
103	Sydney North	515	Ashburton-Roebourne	713	Groote Eylandt and surrounds
104	St George Sutherland	516	Port Hedland	714	Borroloola and surrounds
110	Bathurst Orange	517	Broom West Kimberley	718	Yuendumu NT
112	Muswellbrook Upper Hunter			722	Petermann-Simpson NT
114	Shoalhaven	601	Hobart		
124	Far North Coast NSW & hinterland	602	Sorrell Tasman Peninsula		
128	Griffith Darling	604	Glenorchy Derwent Valley Tas		
		607	Launceston and Surrounds		
206	Frankston Mornington Peninsula	610	Meander Valley Tas		
		611	West Coast Tas		
408	Port Pirie Flinders Ranges SA	614	Flinders Tas		

