# REGIONAL MIGRATION IN AUSTRALIA: LABOUR MARKET RESPONSE OR PURSUIT OF AMENITY?

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**ABSTRACT:** The persistence of differential labour market outcomes has led to the recognition that labour mobility may be influenced by both labour market variables and non-pecuniary factors such as amenity and quality of life. Using regional-level panel data and a fixed-effects estimation procedure, we examine the relationship between labour mobility decisions and unemployment levels, amenity, as well as variables related to previous migration experience, location, the mining boom and the presence of a program designed to encourage labour mobility to regional areas. We find that labour market factors influence mobility decisions, but that these are moderated by amenity, and that mobility is also influenced by anthropocentric amenity. The findings with respect to anthropocentric amenity as well as the program designed to encourage regional relocation provide evidence of the potential effectiveness of government policies designed to overcome labour market impediments.

**KEY WORDS:** Regional migration; unemployment; amenity; policy.

## 1. INTRODUCTION

Spatial divergence of labour market outcomes is well established in the economics literature. Debate, however, continues regarding the interpretation of these divergences. It has, for example, been argued that

the data are captured at different points in the transitional phase between common equilibria which would eventually be achieved in each of the regions in the absence of further shocks (Andrews *et al*., 2011). However, others have argued that the equilibria differ spatially, and that regionally specific policy is required to remedy the labour market disadvantage of less fortunate regions. Geographers, taking a slightly different tack, attribute the observed divergences (and the failure of labour markets to adjust) largely to non-pecuniary factors which, at least partially, compensate for the persistent labour market disequilibrium (Biagi *et al*., 2011).

At the heart of these different perspectives is whether migration flows are able to provide a sufficient labour market adjustment mechanism which moves all regions toward the same labour market outcome, or whether there are other factors that lead to persistent disequilibrium. That is, can labour be expected to flow from areas of labour surplus (with lower wages and higher unemployment) to areas of labour deficit thereby bringing about a convergence in both wage rates and unemployment rates between regions. Or are their impediments to these flows that could result in intractable differences between regions that require policy intervention if these differences are deemed necessary to eliminate?

From the traditional neoclassical economic perspective, internal migration was seen as a disequilibrium phenomenon. For example, Hicks is reported as having written, long ago, that "differences in net economic advantages, chiefly differences in wages, are the main cause of migration" (Williams *et al*., 1999). Modern economic analysis of migration begins by first considering the probability of migration of a single household (Pissarides and McMaster, 1990). A household will move when the gross utility of moving exceeds the cost of moving. The cost of moving is determined by a range of observable and non-observable household characteristics that are randomly distributed across a population within a region. The higher the gross utility of moving into a given region, the higher the ratio of immigrants (and the lower the ratio of emigrants) to the region's population. Net migration is defined as the region's immigration less the region's emigration, and is expressed as a proportion of the region's population. The net migration rate of a region is expected to be a rising function of the gain from moving into the region.

While recognising that mobility decisions are driven by both the benefits and costs of moving is helpful, questions nonetheless remain about what drives mobility decisions. A number of studies have demonstrated that variables related to labour market conditions alone do not sufficiently explain mobility decisions (Ahan *et al*., 1999; Avalos, 2010; Williams *et*

*al*., 1999). Consequently, other studies have sought alternative explanations, including those that embrace non-pecuniary factors such as amenity (Carlsen, 2000), various socio-demographic variables (eg. Andrews *et al*. 2011; Hughes and McCormick, 1981), and technology (Bartley 2006).

The importance of non-pecuniary variables in explaining regional migration in Australia has been established by a number of researchers—in particular factors relating to amenity and quality of life. Burnley and Murphy (2004) surveyed the sea change phenomenon and concluded that there were many reasons why people moved to high amenity areas. Holmes (2006) argued that, given the extensive supply of land in Australia, rural occupance was being transformed by the enhanced consumption of land for its market driven amenity value and the growing acceptance of the need for sustainability and preservation. The establishment of an amenity index in the Australian context (Argent *et al*., 2007; 2011) found that it correlated well with migration into rural communities. While Argent *et al*. (2013) noted that creative people were attracted to the regions by lifestyle amenity, they also established that the inflow of this group did not appear to translate into a significant enhancement of regional economic growth.

Notwithstanding this, Argent *et al*. (2014) adopted the Holmes (2006) concept of a multifunctional transition in rural areas to argue that, in many respects, the production, conservation and amenity value of regional land need not necessarily conflict. This conclusion is consistent with the findings of a number of researchers who have found that regional migration in Australia can be explained by a range of economic and non-economic factors—see for example Parr (2019) and Osbaldiston (2020).

Structural changes to the labour market brought about by the advent of the internet may be increasing the relative importance of nonpecuniary determinants of mobility. Hence, further work is needed to identify the factors influencing labour mobility, and the relative importance of both economic and non-economic factors in both motivating and creating impediments to mobility, to inform the design of effective policy instruments.

In this paper we add to the literature examining the relative importance of economic and non-economic factors in explaining labour mobility. Specifically, we focus on the role of wage differentials and amenity in mobility decisions at a regional level, and also examine the role of other covariates related to economic conditions and a government policy attempt to overcome labour market impediments. In doing so we add to the growing literature on internal migration in Australia. We first review, in Section 2, previous research on the theory of internal migration before

turning, in Section 3, to a discussion of our proposed method for assessing the drivers of net migration based on the propositions considered in our review of the theoretical literature. Section 4 describes our data and our results are presented in Section 5. Section 6 discusses our findings, draws some policy implications and provides some direction for future research and Section 7 concludes.

## 2. REVIEW OF PREVIOUS RESEARCH

The regional unemployment rate is expected to impact on the net migration rate in two ways. First, the probability of moving is considered to be higher for the unemployed (Pissarides and Wadsworth, 1989; Boheim and Taylor, 2002), so a relative rise in a region's unemployment rate should result in increased emigration and a fall in the region's migration rate. Second, differences in regional unemployment rates will proxy differences in employment probabilities in the regions (Pissarides and McMaster, 1990) although this has its critics (Carlsen *et al*., 2006). Since workers are likely to move from regions with a lower probability of employment to regions with a higher probability of employment, a relatively higher unemployment rate in a region is likely to be associated with a higher emigration rate, a lower immigration rate and a lower net migration rate.

Migration will also be influenced by relative wage rates, with the standard view being that the net migration rate of a region will rise if the region's relative wage increases. Relatively higher wages in a region will decrease the expected benefit from moving out of the region and increase the expected benefit from moving into the region.

However, empirical evidence suggests that labour market conditions—including unemployment and wage rates—often imperfectly explains migration, and that labour market discrepancies often persist despite migration. Avalos (2010) concluded that market forces alone were not sufficient to correct unemployment discrepancies across regions, while Williams *et al*. (1999) reported that Australian research has generally found long run differences in wage and unemployment levels across Australian regions, which population movement appears unable to eradicate. Evidence of the differences as important drivers of migration were also mixed—with little evidence of wage differences being a factor and some evidence of an impact of unemployment on migration. Ahn *et al*. (1998) found no evidence that the duration of unemployment of an individual resulted in an increased propensity to migrate. Measures of labour market tightness such as the ratio of unemployment to vacancies or

house prices also have produced conflicting outcomes (Andrews *et al*., 2011).

The inability of labour market conditions, based on the unemployment rate alone, to explain movements in migration has led to the development of other explanations for this phenomenon. An alternative model is presented by Carlsen (2000) who argued that labour market congestion, or a change in the rate at which unemployed individuals can find a job, impacted migration decisions. Biswas and McHardy (2004, 2005), on the other hand, pointed out that workers will also move to where their skills can be put to good use. Biswas and McHardy (2004) constructed an index of the balance of migration (between European countries) and argued that migration is generally balanced or tending towards balance. That is, there is no surge of immigrants from any one country in Europe to any other country in Europe. This is because less developed regions will experience an inflow of technology and this, in turn, will give rise to a flow of skilled workers back into the region. Thus, balanced migration should be associated with labour mobility. We conclude that there is reason to believe that labour market movements do not occur because of wage differentials alone.

Clearly, while providing alternative explanations for how labour markets adjust, the models of Carlsen (2000) and Biswas and McHardy (2004; 2005) continue to assume that workers (and or jobs) are adjusting to labour market conditions within their regions—resulting in or constraining a decision to move. However, more recently writers have raised concerns about the focus on labour market activity alone as an explanation for regional migration movements (see Carlsen (2000) for a list of the earlier proponents of this perspective). Biagi *et al*. (2011), for example, found areas of high unemployment and low wages being positive recipients of migration flows. These findings suggested that alternative explanations needed to be found. They, therefore focused on non-pecuniary factors that may be generating this outcome. Non-pecuniary factors included physical amenity—such as climate and environment. However, non-pecuniary factors can also include human produced amenities such as the cultural, social and skills base. The amenity model argues that households migrate to areas with favourable living conditions and firms expand in regions with favourable producer conditions (Carlsen, 2000). According to this line of thought the presence of large and persistent regional disparities in labour market outcomes were no longer considered a disequilibrium problem. Rather the amenity (non-pecuniary) model argued that in fact these observations were equilibrium outcomes. Better living conditions were said to offset labour market issues of low wages and high unemployment.

There have been a range of other non-pecuniary factors put forward to explain internal migration. For example, demographic factors such as population size and distance between regions (gravity models), age distribution, education and socio-economic status. Andrews *et al*. (2011) found that females were less likely to move than males, families with children were less likely to move than families without children and, in keeping with these findings, a number of researchers have found that the propensity to move falls with age (Hughes and McCormick, 1981; Pissarides and Wadsworth, 1989; Boheim and Taylor, 2002; Andrews et. al., 2011). Research has also found that an individual's level of education is associated with the probability of migration, with the less educated tending to move less (Hughes and McCormick, 1981;1985; Coleman and Salt, 1992; Andrews *et al*., 2011). In many respects education and occupation are closely associated, with manual workers regarded as less educated. It is not surprising therefore that research has shown that manual workers have a lower propensity to migrate because their employment is more industry specific and, therefore, often more regionally specific (Hughes and McCormick, 1994; Evans and McCormick, 1994). One challenge to note with these non-pecuniary factors is that few of these factors (apart from education), unlike economic factors, can be influenced by policy (Williams *et al*. 1999).

Despite these arguments for the importance of non-pecuniary factors in driving migration, other researchers have sought to demonstrate that financial factors remain the primary determinant of migration. The results from research conducted by Berger and Blomquist (1992) suggested that quality of life and housing costs have no impact on migration while differences in incomes and the costs of moving were major determinants. However, countering this was the work of Cameron *et al*. (2005) who looked at migration within England and Wales and found that high housing prices could choke off migration that labour market conditions might otherwise have generated. Another point they made was that housing prices could be used as a proxy for cost of living when no other data are available.

Furthermore, while Biagi *et al*. (2011) considered that non-pecuniary factors could be important in regional migration decisions, they conceded that at different times and in different countries the relative impact of pecuniary and non-pecuniary influences could differ. Similar findings were produced by Bonasia and Napolitano (2012). They analysed the fluctuation in migration movements in Italy since the Second World War. They found that changes in both unemployment rates and real incomes across regions explained only part of the regional migration history of that country. In

addition to these two variables, they also examined the impact of house prices, carbon dioxide emissions, and crime. They were also able to look at how the determinants of migration impacted differently on skilled and unskilled migrants. Housing prices, for example, were important in the case of the unskilled, but less so for the skilled. They show how the model introduced by Harris and Todaro (1970) predicts that an increase in a region's wage rate and a fall in the wage rate of other regions will increase a region's migration. Any increase in local job opportunities will increase a region's migration and any rise in the cost of migration will reduce migration. Their contribution revolves around the last factor as they defined costs to include both monetary and non-monetary costs. Thus, their work extended the Harris and Todaro model.

One potential explanation for why the determinants of migration change over time is because of changes in technology. Hence if technological advance frees one to work in a location of their choice, then non-pecuniary factors—especially quality of life—could become more important in determining migration flows as hypothesised by Florida (2002) and Kotkin (2000). Evidence about the utility of this explanation is provided by Bartley (2006) who examined whether technological change impacts on the range of locations in which people can work. Bartley found that migration did favour regions that had high concentrations of finance and high technology industries and people seemed to be leaving areas with high concentrations of manufacturing. However, she could find no evidence that quality of life factors had risen in importance. To the contrary, quality of life factors appeared to have declined in importance.

Overall, Bartley's work tended to support the importance of a labour market explanation for migration. She examined Hoover's (1971) prediction that out migration would be greater in regions where younger groups form a higher proportion of the population. This hypothesis is based on the assumption that human capital is greatest among the young and that they will be more willing to move to take advantage of their investment in human capital as they have a longer expected working life over which to make the move profitable. Bartley's results supported this hypothesis.

An additional factor introduced by Bartley (2006) was the role that women play in the decision to migrate. Bartley's worked showed that the increased participation of women in the workforce reduced mobility. The explanation for this was that two jobs now had to be found if the family was to move. Also important here, would be the perception of discrimination against women in the work force, making it harder for women to find jobs and therefore to seek to move.

## 3. METHOD

In reporting his research, Andrienko (2010) noted that internal migration can be studied from either a macroeconomic or a microeconomic perspective. Andrienko chose a microeconomic approach and was able to establish, in an Australian context, that employed individuals were less mobile than unemployed individuals and those not in the workforce, and that the desire to avoid living (and working) in remote regions and the attraction of higher wages were key incentives to migrate. In addition, his results were somewhat conflicting in that he found that individuals benefitting most from migration were the better educated *and* the lower paid—with the latter gaining the greatest utility from moving and therefore having the greatest propensity to migrate.

Our approach will take a macroeconomic perspective as our primary interest is in how policy can impact the net migration of a region to the benefit of that region. This question differs from, although it may be related to, the objective of explaining the decision of the individual to move. In our research, we assume that both labour market factors and amenity factors may be important determinants of the net migration rate experience of a region. As the unemployment rate for a particular region increases, holding all other factors—including amenity—constant, outbound migration (emigration) will increase and inbound migration (immigration) will decline. Net migration is the difference between the two and, at a given positive unemployment rate (unique to the region), will be zero. If the region's unemployment rate rises above this unique level, net migration will be negative and this negative value will rise as unemployment continues to rise above the regional unemployment rate that delivers zero net migration and fall as unemployment falls back towards the unemployment rate that gives zero net migration. Similarly, at an unemployment rate less than this unique value, net migration will be positive and this positive value will rise as unemployment continues to decline below the unique level and fall as unemployment rises back towards the unique level.

Changes in other factors—including changes in amenities—will impact the unique level of unemployment that delivers zero net migration. Thus, for example, an increase in regional amenities is in a region, at any given unemployment rate, will result in the number of persons wishing to emigrate declining because of the enhancement in local amenities. Similarly, at any given unemployment rate, the number of persons wishing

to immigrate will rise as the enhancement in amenities increases the attractiveness of the region to those living in other regions.

Thus, we can argue that total net internal migration per head of total population—or the net immigration rate (*NIM*)—is a decreasing function of the total regional unemployment rate (*UR*) and an increasing function of the level of amenity in a region (*AMEN*), or

$$NIM = a + b_1 UR + b_2 AMEN + x\delta + u \quad (1)$$

Where it is expected that $b_1 < 0$ and $b_2 > 0$, $x\delta$ is a range of other explanatory variables to be discussed below and $u$ is the error term.

In estimating this general equation, we will endeavour to find support for our hypothesis that the net migration rate for a region is influenced by both labour market factors and amenity factors.

Given the limited nature of our data, to be discussed below, we are restricted in terms of the range of explanatory variables we are able to employ.

## 4. DATA

The following analysis utilises data based on ABS Statistical Area Level 4 (SA4) as defined in ABS (2016). An advantage of using this geographic classification is that the classification is specifically defined to represent labour markets within each State or Territory. Because our research focus is net migration in regional communities, we have excluded SA4s located in capital cities (except Canberra which is included in the ACT SA4). The areas included in our analysis are listed in Table 1.

ABS (2007) describes the determination of the classification of Australia into areas of relative remoteness. The classification comprises: Major Cities; Inner Regional; Outer Regional; Remote and Very Remote. In this paper, ABS (2019) was used to classify each of the SA4s as Metropolitan (*METRO*) (dominated by a major city and generally on the coast); Coastal (*COAST*) (usually dominated by an inner or outer regional classification, but on the coast); Inland (*INLAND*) (dominated by an inner or outer regional classification but located largely away from the coast); Remote (*REMOTE*) (dominated by a remote or very remote classification). Our decisions with respect to the remoteness classification of each SA4 are provided in Table 1.

**Table1.** Regions (SA4s) and Means of Selected Data over Period 2006/07 to 2015/16.

| STATE | SA4 NAME | Classification | NIR | UR | AMEN |
|---|---|---|---|---|---|
| NSW | Capital Region | Inland | 3.4 | 4.1 | 14.8 |
| | Central West | Inland | 1.0 | 5.4 | 15.2 |
| | Coffs Harbour - Grafton | Coastal | 2.7 | 6.3 | 15.6 |
| | Far West and Orana | Remote | -9.0 | 4.8 | 15.8 |
| | Hunter Valley exc Newcastle | Inland | 6.1 | 5.6 | 12.7 |
| | Illawarra | Metropolitan | 1.2 | 7.2 | 15.7 |
| | Mid North Coast | Coastal | 7.6 | 7.0 | 13.5 |
| | Murray | Inland | -3.2 | 5.9 | 13.9 |
| | New England and North West | Inland | -2.4 | 6.6 | 14.1 |
| | Newcastle and Lake Macquarie | Metropolitan | 2.5 | 5.7 | 16.9 |
| | Richmond - Tweed | Metropolitan | 5.6 | 6.1 | 15.8 |
| | Riverina | Inland | -6.3 | 4.8 | 15.0 |
| | Southern Highlands and Shoalhaven | Coastal | 8.7 | 7.4 | 13.8 |
| Vic | Ballarat | Inland | 7.0 | 4.9 | 17.2 |
| | Bendigo | Inland | 7.1 | 6.7 | 17.8 |
| | Geelong | Metropolitan | 9.1 | 5.5 | 18.0 |
| | Hume | Inland | 0.6 | 5.2 | 15.0 |
| | Latrobe - Gippsland | Coastal | 6.6 | 4.9 | 14.7 |
| | North West | Remote | -7.0 | 5.7 | 14.8 |
| | Shepparton | Inland | -2.4 | 5.9 | 13.2 |
| | Warrnambool and South West | Coastal | -3.0 | 5.0 | 15.4 |

Source: Calculated by the Authors from ABS (2018a; 2018b; 2019)

**Table 1 (Continued).** Regions (SA4s) and Means of Selected Data over Period 2006/07 to 2015/16.

| STATE | SA4 NAME | Classification | NIR | UR | AMEN |
|---|---|---|---|---|---|
| Qld | Cairns | Coastal | 1.6 | 7.3 | 15.8 |
| | Darling Downs - Maranoa | Inland | -2.0 | 2.5 | 13.6 |
| | Fitzroy | Coastal | 0.6 | 4.8 | 14.2 |
| | Gold Coast | Metropolitan | 6.6 | 5.6 | 17.5 |
| | Mackay | Coastal | -2.9 | 4.6 | 13.8 |
| | Queensland - Outback | Remote | -15.9 | 6.7 | 12.5 |
| | Sunshine Coast | Metropolitan | 11.8 | 6.2 | 17.3 |
| | Toowoomba | Inland | 0.4 | 4.4 | 18.8 |
| | Townsville | Remote | 2.2 | 6.5 | 17.0 |
| | Wide Bay | Coastal | 7.5 | 8.4 | 13.7 |
| SA | Barossa - Yorke - Mid North | Inland | 3.5 | 5.6 | 13.3 |
| | South Australia - Outback | Remote | -6.0 | 5.3 | 14.3 |
| | South Australia - South East | Coastal | 0.3 | 5.8 | 13.5 |
| WA. | Bunbury | Coastal | 10.2 | 4.1 | 15.2 |
| | Western Australia - Outback | Remote | -8.3 | 4.6 | 13.5 |
| | Western Australia - Wheat Belt | Remote | -3.3 | 4.4 | 12.4 |
| Tas | Launceston and North East | Inland | -2.8 | 6.0 | 16.1 |
| | South East | Inland | 3.3 | 6.6 | 11.8 |
| | West and North West | Inland | -2.2 | 6.6 | 14.3 |
| NT | Northern Territory - Outback | Remote | -10.7 | 5.1 | 16.2 |
| ACT | Australian Capital Territory | Metropolitan | 0.7 | 3.8 | 15.6 |

Source: Calculated by the Authors from ABS (2018a; 2018b; 2019)

Data on internal migration was sourced from ABS (2018b) and Table 1 reports mean annual net internal migration per 1 000 of population (from ABS, 2018c). The data ranges from the highest mean of 11.8 per 1 000 per annum on the Sunshine Coast to the lowest of -15.9 per 1 000 per annum

in Queensland – Outback. The data in the table suggests that net migration is inversely related to the unemployment rate from ABS (2018a) and directly related to what we have labelled as AMEN—the percentage of total regional employment engaged in Arts and Recreation, Education and Training, Health Care and Social Assistance, and Retail Trade (also from ABS, 2018a). Gao and Melser (2016) used these four industries in their attempt to identify the determinants of the quality of life in Australia (as they had measured it) and argued that, by doing so, they were able to proxy the existence of human-made amenities.

## 5. DATA ANALYSIS

Next, we turn to the estimation of equation 1 utilising data across the ten years for which data are available, giving 420 observations. Our data are panel data across 42 entities (the selected SA4 regions) over a ten-year time period (2006-07 to 2015-16). Thus, the use of ordinary least squares estimation could result in bias arising from the omission of a time-constant variable (Woolridge, 2006). In endeavouring to avoid this problem we are confronted with the choice between a Fixed Effects (FE) and a Random Effects (RE) estimation. Each has its drawbacks. FE is appropriate when we are primarily interested in analysing the variables that vary over time (Torres-Reyner, 2007)—such as *UR* and *AMEN*. However, FE is not appropriate when a key explanatory variable is constant over time (Woolridge, 2006) and we expect that regional classification dummy variables may have an important impact as immigrants seek a 'sea-change' or a 'tree-change'.

One way to choose between RE and FE is to conduct a Hausman (1978) test of the results from RE and FE estimations (Torres-Reyner, 2007). In the context of our data, Hausman tests consistently supported the use of FE in preference to RE and we therefore report only FE estimations in our results.

However, this leaves us with the problem of how to account for the impact of regional classification which is fixed over time and therefore cannot be used directly in our estimations. One possibility is to interact this variable with variables that do vary over time and this is an approach we pursue.

Building on the work of others, our analysis considers a small number of additional variables. Furceri (2006) argued that the net migration rate of a region in previous periods would capture the autoregressive nature of migration due to the fact that immigrants tend to move to regions where

family and friends have successfully settled as doing so reduced the social cost of moving. This, in large part, is because information on all aspects of settlement in the region can readily be provided by those who have gone before. Indeed, one can go further and argue that evidence of successful settlement in a region by previous immigrants (even those who are not acquaintances) can have a large demonstration effect on those now considering a change of location. To reflect this, we include the net immigration rate in the previous period ($NIR_{t-1}$) as an additional explanatory variable. Further, and in relation to our argument in the previous paragraph, we expect the impact of $NIR_{t-1}$ to differ depending on the classification of the region. For example, we might expect it to be stronger in coastal areas where the pull of a sea-change is likely to be stronger than that of a tree-change offered in inland areas. To reflect this we introduce three interactive variables which interact $NIR_{t-1}$ with three of our four regional classifications ($NIRMETRO_{t-1}$, $NIRCOAST_{t-1}$ and $NIRINLAND_{t-1}$). Because of data constraints, incorporating lags reduces our observations to 378 over nine years.

Unemployment's impact on net migration may also be different across regions. Carlsen (2000), for example, has argued that regions with higher amenity value—coastal regions for instance—will have higher unemployment rates notwithstanding that they will also have higher net immigration rates. Thus, the interactive variables *URMETRO*, *URCOAST* and *URINLAND*, which interact the unemployment rate with the regional classifications, are included in our model.

Introducing lagged variables into our analysis also permitted us to experiment with the impact of the change in variables. In this respect, the change in amenity in a region (*CHAMEN*), as opposed to the level of amenity in a region, proved more productive in our empirical work. Our hypothesis with respect to this variable is that increases in amenity will be accompanied by higher level of net immigration. This is because if we assume that the population distribution is otherwise at equilibrium, it is the change in amenity that then drives migration.

It is possible that economic shocks will impact on the net immigration rate of a region (Furceri, 2006). Of particular importance over our period of study for regional Australia has been the fortunes of the mining sector—a prominent industry in the economies of regional Australia. For a number of regions, mining development resulted in substantial increases in population through the attraction of mining workers. The end of the boom can be expected to have had the reverse affect. Stevens (2015) reports that the mining boom peaked in 2011. We therefore include a dummy variable

to capture the impact of the post-boom period on net immigration (*ENDBOOM*).

Finally, governments, particularly local and state governments, conduct policies that endeavour to impact immigration. One notable campaign in the context of our research is the introduction of the 'Evocities' campaign in NSW in 2010 which engaged cities in the SA4 regions of Murray (Albury), New England and North West (Armidale and Tamworth), Central West (Bathurst and Orange), Far West (Dubbo), and Riverina (Wagga Wagga). This campaign unashamedly attempted to attract city residents to move to regional Australia. In order to capture the impact of this strategy we included a dummy variable (*EVO*) which takes the value of one for each year from the campaign's introduction in each of the five SA4s engaged (McArthur, 2019).

The results of our regression analysis are reported in Table 2.

**Table 2.** Fixed Effects Regression Results for NIR as Dependent Variable.

| | | |
|---|---|---|
| $NIR_{t-1}$ | 0.480*** | (0.129) |
| $NIRMETRO_{t-1}$ | 0.133 | (0.163) |
| $NIRCOAST_{t-1}$ | 0.289* | (0.157) |
| $NIRINLAND_{t-1}$ | -0.160 | (0.131) |
| UR | -0.046*** | (0.014) |
| URMETRO | 0.044* | (0.023) |
| URCOAST | 0.044* | (0.023) |
| URINLAND | 0.048** | (0.020) |
| CHAMEN | 0.015* | (0.008) |
| ENDBOOM | -0.002* | (0.001) |
| EVO | 0.003*** | (0.001) |
| _cons | 0.000 | (0.000) |
| Obs. | 378 | |
| R-squared | 0.393 | |

Note: Standard errors are in parentheses.
*** p<0.01, ** p<0.05, * p<0.1. Source: the Authors.

## 6. RESULTS AND DISCUSSION

The results reported in Table 2 indicate that the migration rate for the previous period ($NIR_{t-1}$) is of the expected sign and statistically significant. This supports the hypothesis that a region's net immigration outcome in a given period will be impacted by previous experience. Indeed, of all of the variables in our model, this variable dominates the determination of the net immigration experience. The influence of previous experience is even stronger for coastal regions (as indicated by the sum of the statistically

significant coefficients on $NIR_{t-1}$ and $NIRCOAST_{t-1}$). The coefficients on $NIRMETRO_{t-1}$ and $NIRINLAND_{t-1}$ are not significant, although it is instructive that the negative coefficient on the latter only just falls short of the significance cut-off providing some evidence that the impact of previous experience in inland Australia is not as strong as in non-capital city metropolitan Australia. These results imply that coastal (particularly) and metropolitan areas will continue to be the main beneficiaries of net immigration. Further research is required to establish why this is the case, if it is a phenomenon that will continue and if anything, in a policy sense, can be done to alter the outcome.

The negative impact of higher unemployment rates overall is confirmed in our results but there are interesting regional differences. For both coastal and metropolitan areas, the net impact is a small negative—supporting the earlier suggestion that people moving as a result of the attraction of amenity are likely to be less concerned about employment conditions. For inland Australia, the results suggest that the net effect is actually positive. That is, there is a positive association between higher unemployment levels and higher net immigration rates. This outcome may be explained, at least in part, by the peculiar labour market circumstances in inland Australia. Sharma *et al*. (2016; 2017) have indicated that the Riverina suffers a skilled labour shortage. This outcome is likely typical of other inland Australian regions. To the extent that regional firms are successful in their endeavour to recruit skilled labour from outside of the region, net migration can rise along with the unemployment of the unskilled locals who are being replaced—especially if these low-skilled unemployed lack the resources to emigrate to regions offering enhanced job prospects as suggested by Golgher (2012). Further research needs to be undertaken in relation to this explanation in order to establish if it is correct and if better education and training of locals would alter the situation to provide better access to skilled workers by local firms along with jobs for local workers.

The positive and significant coefficient on the variable *CHAMEN* provides limited evidence that man-made amenity (as appose to amenity that is geographically fixed, e.g. the beach) can be enhanced and, in so doing, increase the attractiveness of a region to people. More research on this aspect needs to be undertaken to establish if policies for developing regional infrastructure and services are an efficient way of enhancing the net migration fortunes of regions.

Remote areas are clearly disadvantaged with respect to net migration (Becker *et al*. 2013). Their amenities are far less attractive—in fact one could argue that they are burdened with the problem of dis-amenity (isolation, heat, lack of services etc). In addition, in recent years, they have

had to bear the burden of the end of the development phase of their most important industry as the mining boom has come to an end. Further research is needed to establish how these communities can be supported.

Finally, our research does provide some evidence that communities can successfully undertake strategies that can favourably impact their net immigration experience. Although the coefficient on *EVO* is small, it is highly significant. Further research is needed to establish what it is about such programs that make them effective and how their effectiveness can be enhanced. In addition, such research should also be directed to establishing what other types of policies initiated by local governments might be successful in attracting people to the region.

## 7. CONCLUSION

The analysis of internal migration is a topic of interest to many Australian regions—especially those looking to grow their economies. Analysis can be made at either the micro- or macro-level. Because our primary interest is in identifying the potential for policy—particularly at the regional or local level—which may influence migration outcomes we have pursued a macro approach. Nevertheless, many factors which are likely to determine migration outcomes will be common to both approaches. Two factors which are consistently seen as being important in determining migration decisions are labour market circumstances and lifestyle amenities. Our investigation seeks to incorporate each, along with a number of other factors that are likely to impact.

We endeavoured to model the determinants of net immigration for forty-two, non-capital city regions utilising the unemployment rate as an indicator of labour market conditions and the ratio of employment in selected service industries as a proxy for human generated amenity. Non-human generated physical amenity is proxied by allocating each region to one of four types—metropolitan, coastal, inland or remote—while human-generated physical amenity is measured by the change in amenity in a region.

Because of the panel nature of our data, which covers a ten-year period, we use a fixed effects estimation procedure—rejecting random effects on the basis of Haussmann tests. This decision required us to interact our time invariant dummy variables for physical amenity with time variant variables. We also investigated, through the use of a lagged dependent variable, the influence that previous regional migration experience has on current regional migration experience and, through the use of dummy

variables, the impact of the end of the mining boom and the introduction of the Evocities program in NSW.

Our results indicate that previous migration experience is a dominant factor in the determination of net migration across the regions—being stronger for coastal regions than for other regions. Location also modifies the impact of unemployment on net migration, reducing it for metropolitan and coastal regions. However, for inland regions, the impact of unemployment is actually positive (the positive regional effect is larger than the general effect). We attribute this finding to the effort made by local firms and regional governmental bodies to recruit skilled workers from outside of the region, while less skilled workers move into unemployment, but remain resident locally because of a lack of resources to make the move to a new region offering greater work opportunities for the unskilled.

The differential findings with respect to regions, particularly the coastal region, demonstrate the importance of amenity in driving mobility decisions. Furthermore, our results demonstrate that mobility decisions are not just influenced by the amenity originally bequeathed to an area, but are influenced by man-made amenity. This has implications for government policy as it provides another potential avenue for influencing migration decisions (Morrison and Dowell, 2015).

Economic shocks, such as the end of the construction phase of the mining boom, have the expected impact on the migration rate, although there is some evidence that public policy is capable of raising the migration rate of a region. However, further research will need to be conducted to identify ways in which such policy can be enhanced.

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