

# The Devil is in the Detail: What's Behind Manufacturing Growth and Decline In Melbourne, 2001-2011

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## Abstract:

In the tale of the apparent decline of the Australian manufacturing sector, overall job numbers, and the location of jobs, have been presented and analysed. Less examined and understood are changes at the sub-industry level of manufacturing, its changing geography and what this may mean for economic planning. Focussing on the city of Melbourne, this preliminary examination considers these issues, using Census and Worksafe Victoria data from 2001 to 2011 to compare the recent metropolitan-wide fortunes of three major manufacturing sectors and two key industrial regions. The research finds manufacturing in relative decline but in key locations and sub-sectors jobs numbers have increased. The two regions exhibit different patterns and prospects. We closely examine the more resilient sectors and industrial areas to gain insight into the implications of their apparent success. We conclude by considering the course of further research, calling for a multi-scalar understanding and approach.

## Introduction

While the closure and downsizing of individual manufacturing firms is played out very visibly in the media, the position of the Victorian government and that of the previous Australian government, is that manufacturing has a central place in future economic development. In 2012, the Commonwealth Government released *A Plan for Australian Jobs* (DIISRTE, 2013), which laid out a strategy for employment generation. The report is centrally concerned with the future of manufacturing. That is, it strongly assumes there *is* a future, albeit one that faces formidable challenges. The narrative presented on manufacturing is hardly rosy but equally, the Australian Government was clearly reluctant to countenance some form of 'post-manufacturing' future. An indication of this was the commitment to 'innovation precincts', of which manufacturing 'hubs', one in Melbourne and one in Adelaide, were to be the first cabs off the rank.

At the level of the Victorian state government, the key policy document concerning manufacturing (DBI, 2011) is, as are many glossy policy documents issued at all levels of government, short on costings and specific benchmarks or targets. While the authors of that document acknowledge the familiar positive aspects attributed to clustering of firms (co-operation, supply chains, innovation, spillovers, trust) the emphasis is on development at the level of the individual firm, where from within, it is assumed, productivity stems. Thus, sectors or collections of firms that are, or that have the potential to be, vertically or horizontally integrated are not a central concern.

Manufacturing, then, continues to attract the attention of governments, albeit with varying levels of clarity and commitment. To what extent is this apparent faith in the future of manufacturing warranted, not only in policy terms but as an ongoing research agenda?

## Why manufacturing still matters

There are important reasons why governments are correct in continuing to promote manufacturing, why research and policy development should continue to investigate its structure and prospects and why its death has been greatly exaggerated. The narrative of local manufacturing as inefficient or 'propped up' and of an inexorable trend towards off-shore processing needs to be tempered by just how skewed the Australian dollar had become – and therefore how uncompetitive manufacturing exports had become – due to the *super* competitiveness of the mining sector (Dufty-Jones 2013). However, at the time of writing, there are unmistakable signs of the tapering off of the mining boom and a consequent fall in the Australian dollar, thus an increase in value of exported manufactures (Hutchens 2013). There is evidence that the 'circuits of capital' (Harvey 1981; Pritchard and Fagan 1999) – Chinese 'communist capital' - having 'done with' the mining sector, is turning greater attention to investment in manufacturing

(HSBC 2013). Furthermore, manufacturing is not just about jobs within factories, but about the services it creates, and these links are increasingly interrelated (Sheehan and Pappas 1998). For example, servicing of products continues post-production and most certainly, the expectation by the consumer this should be so is increasing. Moreover, we broadly subscribe to the idea that manufacturing jobs are, comparatively speaking, 'good jobs' for low-skilled members of society, including newly arrived migrants. Manufacturing, unlike other emerging industries for the low-skilled such as cleaning, security and to a lesser extent tourism, hospitality and retail is, relatively speaking, well-paid, secure and unionised. Nonetheless, there a number of key, largely unresolved issues and policy questions which tend to be addressed separately, rather than integrated, where proposals for economic development are discussed and put forward. What is it that manufacturing should actually do, where and in connection with what other sectors? Should, for example, local and regional economies specialise in manufacturing or indeed, a particular sub-sector of manufacturing?

On the other hand, an essentialist view of 'the local' is clearly problematic. There are obvious ways a local economy may owe its development to exogenous factors, including industrial knowledge being 'pipelined' from abroad (Bathelt *et al*, 2004) or in more general terms, an inevitable connection to the global economy at some level (Amin and Thrift 1992). There is also the danger of conflating an interest in local development with apologist arguments for neo-liberal ideology with policy makers 'dumping' responsibility onto under-resourced local or regional authorities who in turn compete with each other for resources (Peck and Tickell 1994).

### **Why 'the local' still matters**

So given these concerns, why continue to pursue this contentious if not ambiguous idea of 'the local'? What attracts us still is that element which of all others can be said to be quintessentially 'local'. There is something of a 'labour turn' in thinking about economic development: this stems from international research; one leading scholar lamented that in seeking evidence of interaction between firms 'we have failed' However: 'while goods, money and certain types of information can indeed travel the world with little friction, people can't' (MalMBERG 2003: 156). But the comparative 'stickiness' of labour markets is a two-edge sword, and this leads to a second reason why, like manufacturing, 'the local' matters. The series of publications by Baum and others (Baum *et al*, 1999; Baum *et al*, 2002; Baum 2008) shows over several Census periods particular characteristics, positive and negative, for different geographical 'fault lines' in Australian cities and towns. A more sanguine stance is taken by O'Connor (2012) (also a co-author of the 'fault line' studies) who, in suggesting there are *five Melbournes* thinks more in terms of self-containment than segmentation, of regions within cities as well as city-regions. Such regional 'stickiness' is enhanced by the enduring link between housing and labour markets (O'Connor and Healy 2002; Weller and van Hulst 2012; Beer and Tually 2011). A common theme is not only that low cost housing and low income employment tend to congregate together; to some extent they 'move' together. In other words, Melbourne, and other Australian cities, are becoming more polarised.

Our conceptual approach, which we can summarise as 'local manufacturing matters', underlies our choice and understanding of the data that follows. The conceptual centrality of labour influences our interest in employment numbers; the fact labour is, overwhelmingly still, attached to firms, influences our interest in firm numbers. And finally, the contentious question of 'specialisation versus diversity' underlies our concern with shifts both geographical and numerical, not only in manufacturing *in toto* but in its constituent, varied sub-sectors.

### **Methodology**

This paper presents preliminary analysis on the changing spatial organisation of manufacturing in Melbourne, Australia. It lays groundwork to answer a crucial question, *in what locations and through what structures does manufacturing growth and decline occur?* It approaches this question by examining data at both the sectoral and regional level. We use longitudinal data from 2001 and 2011. Census data is

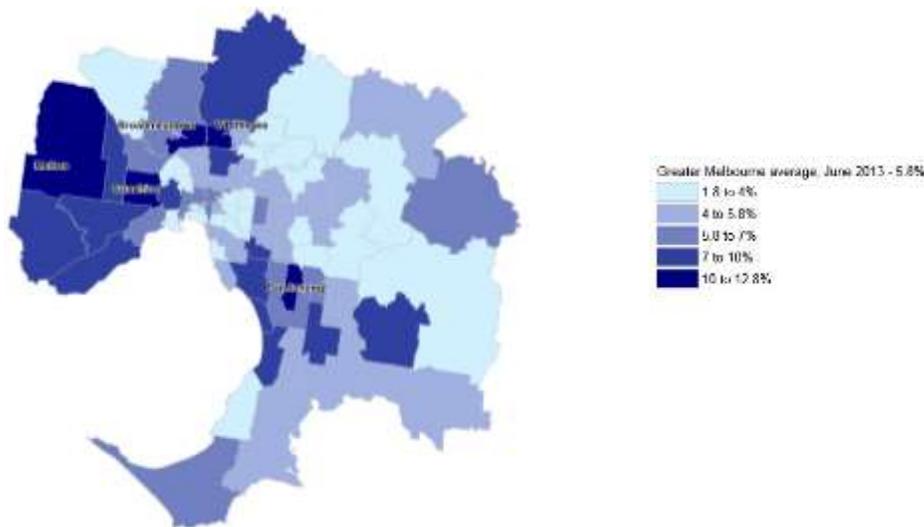
used to examine job numbers and Victorian Government Worksafe <sup>1</sup> data is used to examine firm numbers. We focus on three 'indicator' subsectors: Food, Textiles, Clothing and Footwear (TCF) and Automotive Manufacturing. Finally we engage the 'regions within cities' thesis by focussing on two distinct locations in Melbourne.

### ***Choice of case studies and time periods***

Restructuring of manufacturing since the 1980s has resulted in different impacts on different sub-sectors with policies applied in different ways. Our choice of sub-sectors as case studies is an attempt to capture these divergent fortunes. Risking caricature, we broadly see Food Manufacturing (a 2-digit level ABS category) as the 'great survivor', maintaining steady job gains over the last 20 years, in spite of the fact that it is generally speaking a low-skill sector; TCF (also 2-digit level) is 'the abandoned case', the sector most effected by tariff cuts for which government subsidies have not compensated. Finally from the 2-digit level category of Machinery and Equipment, we explore at the 3-digit level Automotive Manufacturing in order to capture information on the car industry - the 'supported' case, having endured tariff reductions, but also attracting significant government subsidies.

Turning to our choice of case study locations, higher rates of unemployment generally correlates with those regions that were, or still are, manufacturing strongholds. Figure 1 demonstrates the spatial pattern.

**Figure 1. Melbourne unemployment rates by SLA, June 2013**



Source: DEEWR 2013

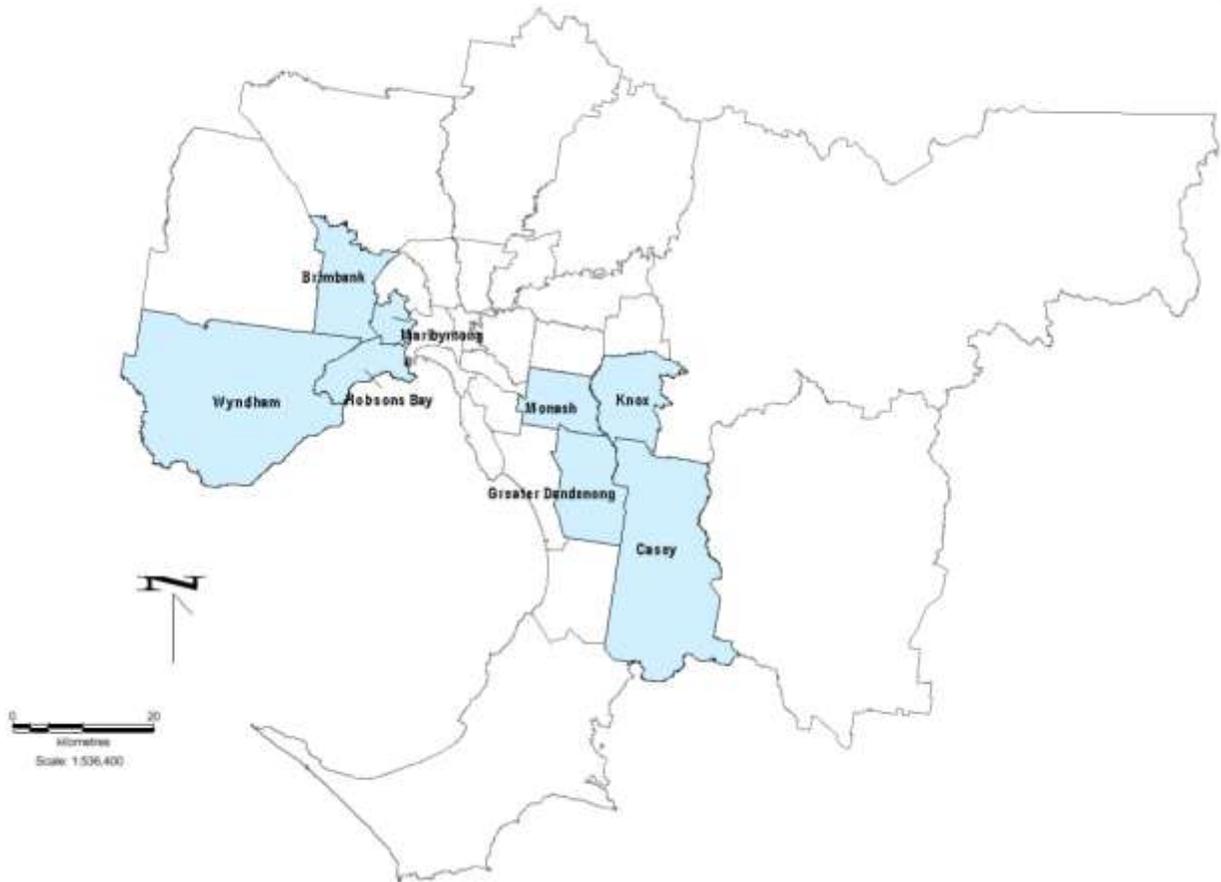
Our choice of case study Local Government Areas (LGAs) is then influenced by several interrelated matters. Not only is there the ongoing dilemma of geographically concentrated unemployment, as shown in Figure One; we wish to engage the 'five Melbournes' thesis by choosing regions with quite separate geographies and industrial histories. Furthermore, in terms of present and ongoing development, the direction in which Melbourne is and will develop in the future now points very strongly to the West (DPCD 2008) and as such it provides an important contrast to the south east regarding the course that manufacturing is taking. In the West, major population and residential development is occurring,

<sup>1</sup> Worksafe Victoria is the Victorian state government's occupational health and safety insurer. It collects data on the number of firms at any given time.

underpinned by a massive transport infrastructure development program which will separate metropolitan and regional railway lines and upgrade key railway stations to regional hub status (DoT 2013). We are also interested in whether the general historical sweep of manufacturing geographically outwards from the centre has translated into not merely a shift in manufacturing overall, but a relocation or emergence of particular manufacturing sub-sectors.

Development occurs in different directions for the two regions and this also influences the choice of case study LGAs. For the south east, towards the city, residential zones restrict manufacturing activity while outwards, the Dandenong Ranges presents a formidable barrier. Hence strictly speaking, 'outward' development takes a southerly direction. Figure 2, below, displays the case study LGAs.

**Figure 2. Case study LGAs**

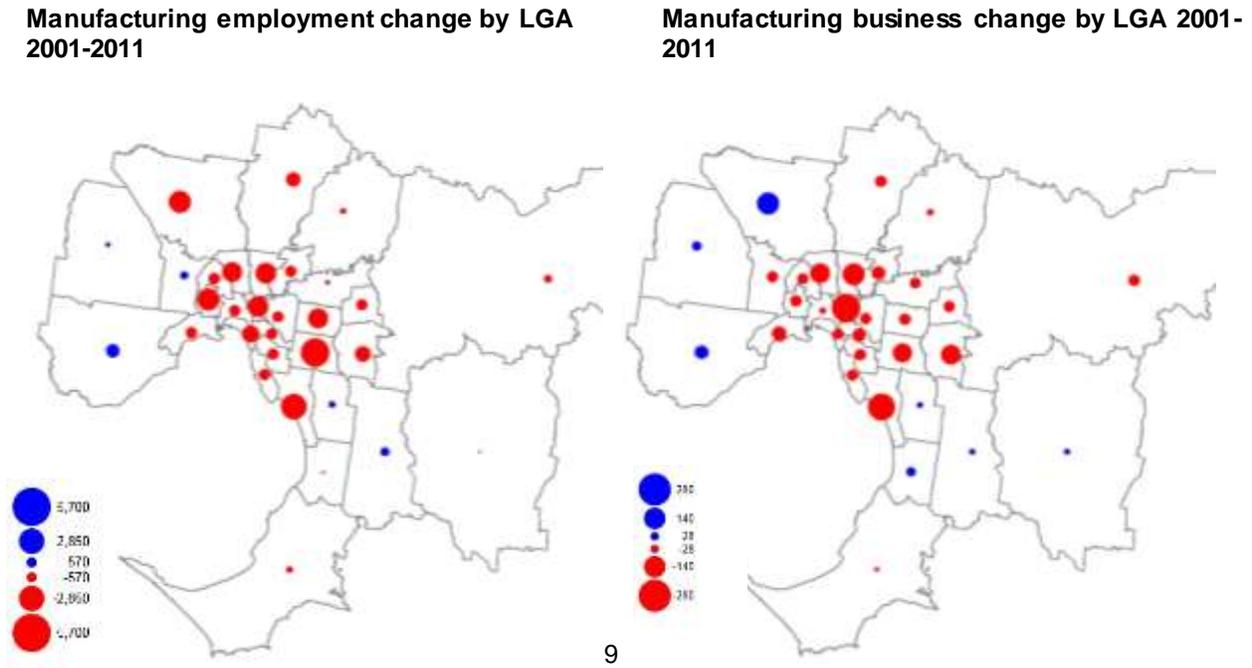


The timeline we choose is the period 2001-2011. This allows for an examination during or shortly after a period of complex and difficult economic circumstances: a rapid rise in housing prices (from 1996 onwards), the impact of the Global Financial crisis and its aftermath (2008 onwards) and the resource boom which contributed heavily to the steep climb in the Australian dollar (2009 onwards) which consequently had a significant impact on the value of Australian manufactured exports.

### **Manufacturing gains and losses – the metropolitan wide picture**

First we turn to the overall picture. Figure 3 illustrates substantial losses, both in terms of jobs and business, that occurred in manufacturing activity across Melbourne, but importantly, also some small gains.

Figure 3. Changes in manufacturing employment and number of firms, Melbourne, 2001-2011



Source: Source: ABS 2003a, 2012a; Unpublished Worksafe Victoria data

Figure 3 shows the expected general pattern of shifts in manufacturing employment outwards from the centre, with exceptions. Some outer regions have fared better than others; the north has struggled. Manufacturing job growth has mostly occurred within or adjacent to the two case study regions. To gain insight into what lies behind the aggregated figures we now examine the fortunes of the three case study sub-sectors.

### Food processing

In terms of change over the ten years, Figure 4 shows increases in the central area, inner west and north and adjoining SLAs along the western ring road and the south east. Decreases occurred throughout the inner eastern and inner bay side suburban area, other inner suburban SLAs and the outer east around Knox and Monash.

Figure 4. Food processing employment, Melbourne

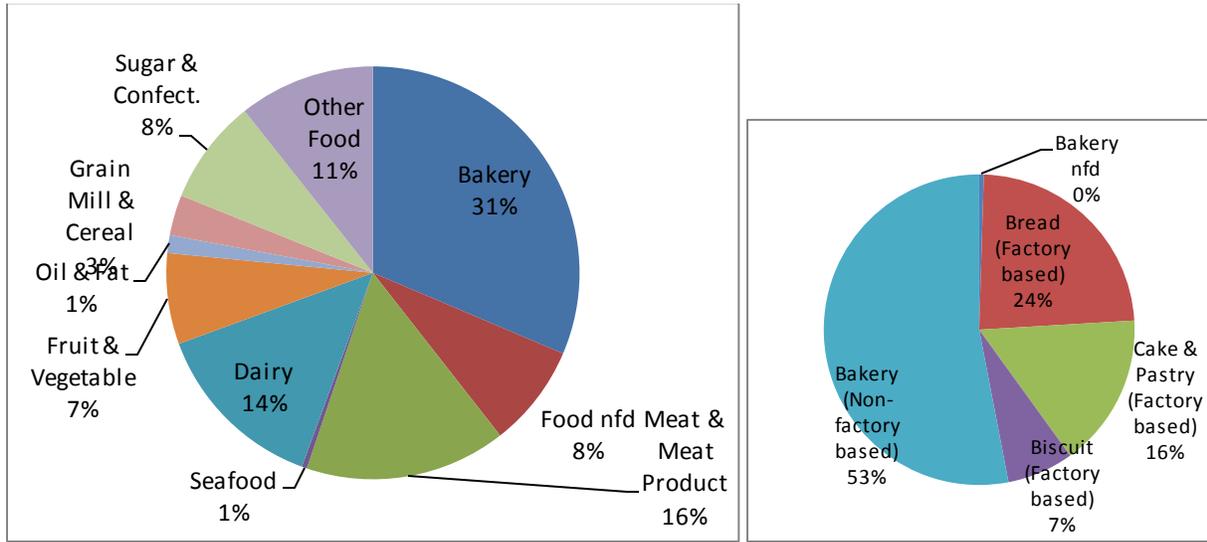


Source: ABS 2003a, 2012a

The data presented in Figure 4 supports the 'great survivor' thesis: employment has increased in most areas of Melbourne. There are two points to be made here however. First, the apparent 'manufacturing' job growth in the central area of Melbourne is, in all probability, head offices of food firms. This presents a methodological issue we will return to when we consider the future course this line of research could take. Second we can see reflected in the more specific data for food a similar pattern to that of manufacturing overall. Food manufacturing jobs have not increased in all middle and outer locations, having declined in the east. In other words, in spite of its general resilience, the sector has not withstood the general trend of manufacturing, with the exception of the northern region of Melbourne.

As food has succeeded in increasing jobs across much of the metropolitan area, a deeper understanding of the figures is called for. This can be gleaned by further disaggregating the data to finer grained levels. Figure 5 displays the breakdown of employment in 2011 metropolitan wide, on the left, to the 3-Digit level and on the right, to the 4-Digit level for the key sub-sector of Bakeries.

Figure 5. 2011 Census Food Product Employment 3-digit level, Bakery 4-digit level, Gt. Melbourne



Source: (ABS, 2012a)

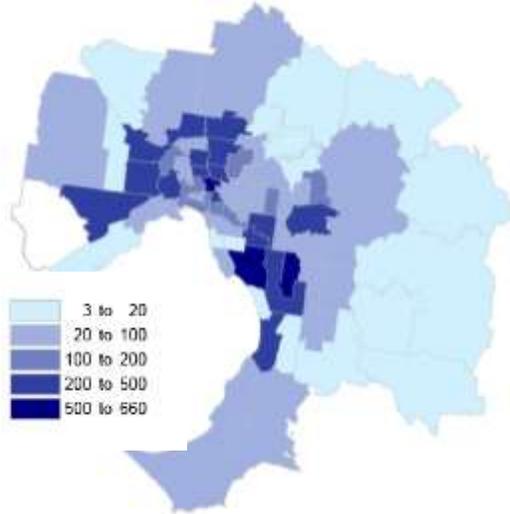
What Figure 5 clearly shows is the dominance of three sub-industries: dairy, meat and meat product and particularly, bakery. A closer look again, at bakery at the 4-digit level, is warranted. Here, we find that 53% of jobs are 'non-factory based' (ABS 2012a). In other words, franchise bakery chains provide the bulk of employment in 'bakery product manufacturing' and due to the nature of questions asked in the Census, that is, the type of business in which the respondent works, a sizeable proportion of these jobs are in fact retail. This is confirmed by cross-referencing non-factory bakery by occupation, which shows 49% of jobs are 'sales' (ABS 2012a). However, this can be read two ways. It is both evidence that the increase in 'manufacturing jobs' is to some extent illusory. But it also shows how manufacturing creates flow-on jobs, in this case, the sales people who sell the products of 'real' bakers.

### ***Textile, Clothing and Footwear Manufacturing***

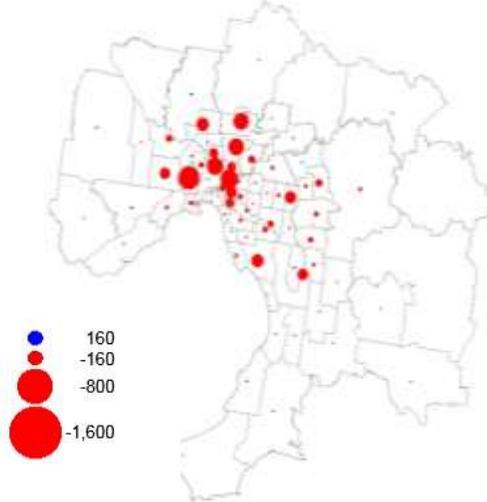
Turning to TCF, Figure 6 shows job decline in all areas of Melbourne bar some very small increases in some outlying suburbs.

**Figure 6. TCF employment, Melbourne**

**Overall TCF employment, metropolitan Melbourne 2011**



**Employment TCF change, metropolitan Melbourne 2001-2011**



Source: ABS 2003a, ABS 2012a

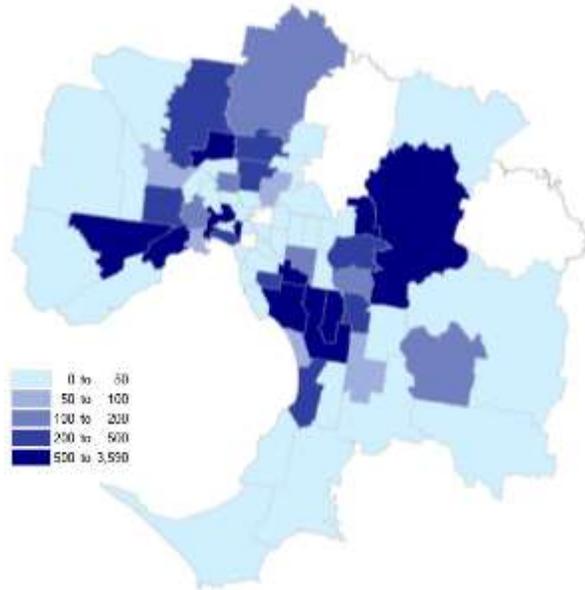
However, TCF footholds remain in the inner north, south east and west. While job numbers have clearly declined, jobs are still there. In some LGAs there are significant numbers of jobs of 500 or more. And yet it is TCF that is generally regarded as being in 'terminal decline' and as having owed its existence to the dismantling of tariff barriers. This raises the question of whether the much-maligned sector, rather than being abandoned, is in fact another survivor, albeit on a smaller scale.

### ***Automotive Manufacturing***

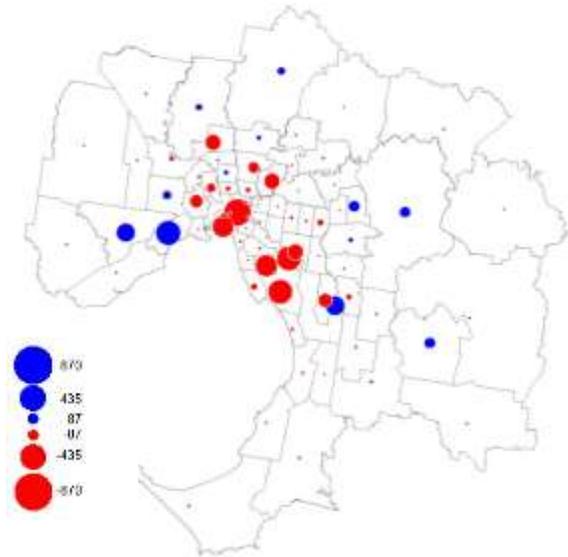
Figure 7 shows, for Automotive Manufacturing, the more 'classical' pattern of geographical shifts in employment, as movement has occurred from the inner to outer suburbs. Here we see very significant job loss in the inner, inner northern and south-eastern regions – but job gains elsewhere.

**Figure 7. Automotive manufacturing employment, Melbourne**

**Overall Automotive Manufacturing employment, metropolitan Melbourne 2011**



**Employment Automotive Manufacturing change, metropolitan Melbourne 2001-2011**



Source: ABS 2003a, 2012a

### **Two regions: West and South East**

We now examine the change in manufacturing activity across two distinct manufacturing zones of Melbourne each comprising four LGAs (Figure 2, above). The western Melbourne region comprises the following LGAs. Maribyrnong and Hobsons Bay represent 'old' inner city manufacturing prominent from the post war period through to the era of tariff cuts beginning in the 1980s. There has been a large decline in manufacturing jobs; Brimbank and Wyndham represent newer manufacturing closer to the urban boundary, where manufacturing jobs have increased. The south-eastern region comprises the following LGAs. Monash and Knox are locations that specialise in high-technology manufactures, capitalising on a higher skilled residential workforce. Nonetheless, both have seen a loss of manufacturing jobs; Greater Dandenong has a broad range of manufacturing activity and job gain and Casey is an emerging, outer urban manufacturing hub, where jobs have also increased. Table 1 presents a socio-economic profile of the case study LGAs.

**Table 1, Key socio-economic indicators, case study LGAs**

|                    | % of jobs manufact-uring |      | No of manufact-uring firms |      | % Unemploy-ment |      | % Labour market participation |      |
|--------------------|--------------------------|------|----------------------------|------|-----------------|------|-------------------------------|------|
|                    | 2001                     | 2011 | 2001                       | 2011 | 2001            | 2011 | 2001                          | 2011 |
| <b>LGA</b>         |                          |      |                            |      |                 |      |                               |      |
| <b>S-East</b>      |                          |      |                            |      |                 |      |                               |      |
| <i>Casey</i>       | 10                       | 8    | 2465                       | 2492 | 6.1             | 5.9  | 67.1                          | 65.5 |
| <i>Dandenong</i>   | 31                       | 27   | 3601                       | 4322 | 11.2            | 8.9  | 53.8                          | 53.5 |
| <i>Knox</i>        | 26                       | 19   | 1344                       | 1200 | 5.0             | 4.6  | 67.8                          | 66.8 |
| <i>Monash</i>      | 20                       | 13   | 899                        | 717  | 5.9             | 6.2  | 59.6                          | 58.4 |
| <b>West</b>        |                          |      |                            |      |                 |      |                               |      |
| <i>Wyndham</i>     | 16                       | 13   | 4200                       | 5833 | 6.3             | 6.3  | 66                            | 66.9 |
| <i>Maribyrnong</i> | 24                       | 13   | 380                        | 284  | 12.4            | 7.0  | 54.2                          | 62.4 |
| <i>Hobsons Bay</i> | 32                       | 24   | 395                        | 304  | 7.8             | 5.6  | 58.9                          | 60.9 |
| <i>Brimbank</i>    | 22                       | 18   | 832                        | 767  | 10.9            | 8.3  | 57.8                          | 56.3 |

Source: ABS 2003a, 2003b, 2012a, 2012b, Unpublished Worksafe Victoria data

Table 1 provides an indication of several important characteristics and distinctions between the case study areas. The extent of decline in the proportion of jobs that are manufacturing varies, although the more dramatic declines can be seen in LGAs from both sides of the city. However, for 2001, in Knox and Monash, unemployment was lower and has seen a comparatively gentle increase (Monash) and decline (Knox). Maribyrnong, however, has seen a quite dramatic turnaround in unemployment levels – and manufacturing. The decline of the latter seems to have been compensated for by job growth in other industries. This is also reflected in improved figures for labour market participation. Another noticeable feature in the data is that both Dandenong and Wyndham, which saw comparatively slight declines in the proportion of jobs, also saw, against the general trend, marked increases in the number of firms. New and possibly smaller entrants have provided enough manufacturing jobs to render declines in proportions less marked than elsewhere.

There is some distinction in the predominate sub-sectors for each side of the city, although by 2011, this distinction had weakened. For all south-eastern case study LGAs, Machinery and Equipment and Transport Equipment were in 2001, and still were, in 2011, the first or second largest employer. For the West, the history is quite different. In 2001, TCF was the leading employer in both Maribyrnong and Brimbank. By 2011, TCF had vanished from the list of any of the top four employers. This contrasts with the south east, where TCF was not one of the top four in 2001 in any of the LGAs. In the West, the leading employers are now Transport Equipment (Hobsons Bay, as was the case in 2001), Machinery and Equipment (Maribyrnong), and Food (Brimbank and Wyndham). This information suggest two indicators that inform us about the differing structures of manufacturing in each region and consequently the challenges or advantages for each over the ten year period and in the future. The predominance across south-eastern LGAs of Machinery and Transport Equipment and across Western LGAs of TCF, replaced, to some extent by Food, suggests two distinct and large geographical clusters of similar firms, each having their own requirements in relation to transport, labour, information, suppliers and the geography of their markets, existing or aspirational, local, national or global. This does then support the idea of distinctive ‘Melbournes’, with differing characteristics and requirements.

We now focus on those sub-sectors that saw significant job loss or decline over the ten year period. We define a significant outcome as one where the sector in question had at least 500 jobs in either 2001 or 2011 and has had at least a 100 job gain or loss over the same period.

**Table 2. Case Study LGAs, Significant Job Growth or Loss, 2001- 2011**

| <b>West</b> |  |   |   |  |
|-------------|--|---|---|--|
|             | <b>Maribyrnong</b>   | <b>Hobsons Bay</b>  | <b>Brimbank</b>   | <b>Wyndham</b>   |
| <b>+</b>    | Food 122   | Transport equipment 748   | Food 592<br>Fabricated metal 352<br>Transport equipment 188<br>Polymer & rubber 119   | Food 298<br>Primary metal & metal 239<br>Basic chemical & chemical 155 |
| <b>-</b>    | Textile, clothing, footwear 1517<br>Polymer & rubber 531<br>Basic chemical & chemical 443<br>Machinery & equipment 141 | Polymer & rubber 346<br>Petroleum & coal 307<br>Basic chemical & chemical 235<br>Non-metallic mineral 115 | Textile, clothing, footwear 565<br>Furniture & other 284<br>Primary metal & metal 117 |  |

| <b>South East</b> |   |  |   |                             |
|-------------------|---|--|---|-----------------------------|
|                   | <b>Monash</b>   | <b>Knox</b>  | <b>Greater Dandenong</b>  | <b>Casey</b>                |
| <b>+</b>          | Pulp, paper & converted 334   |  | Primary metal & metal 541<br>Transport equipment 438<br>Food 368<br>Fabricated metal 312<br>Polymer & rubber 174<br>Pulp, paper & converted 154 | Machinery and equipment 102 |
| <b>-</b>          | Machinery & equipment 1,305<br>Transport equipment 1,078<br>Food 527<br>Furniture & Other 484<br>Fabricated metal 371<br>Textile, clothing, footwear 337<br>Polymer and rubber 137<br>Basic chemical & chemical 136 | Fabricated metal 530<br>Furniture & other 355<br>Food 337<br>Polymer & rubber 334<br>Transport equipment 224<br>Textile, clothing, footwear 220<br>Non-metallic mineral 157<br>Basic chemical & chemical 119<br>Wood 112<br>Printing 111 | Machinery & equipment 557<br>Basic chemical & chemical 298<br>Non-metallic mineral 135  |                             |

Source: ABS 2003a, ABS 2012a

There are two points that can be gleaned from Table 2. The first and perhaps the most obvious is that quite divergent outcomes are apparent. Maribyrnong, Monash and Knox saw jobs losses across a range of subsectors that were in no way compensated for by job gains in other sectors; Brimbank and Greater Dandenong fared better, losing jobs in some sectors but gaining in others; Wyndham was the most successful at job gains across a range of sectors. Conversely, the influence of location is less strongly felt for some sectors than others. Thus TCF (with nation-wide tariff cuts) saw significant declines across four LGAs whereas Food (arguably with less reliance on technical inputs and skilled labour more apparent in some locations than others and, as we saw, with a significant 'sales' orientation) saw gains across four LGAs. However, the only instance where petroleum and coal registered 100+ job loss or gain (and had more than 500 jobs in 2001) was Hobsons Bay, a reflection of the specialised nature of that sector in that location.

Second, no sub-sector aggregate job numbers have increased as we move geographically inwards whereas several have moved outwards. In the west, Maribyrnong lost Polymer and Rubber jobs to Brimbank and Basic Chemical and Chemical to Hobsons Bay and Wyndham. Brimbank lost Primary Metal and Metal to Wyndham. In the south east, Monash lost Machinery and Equipment to Casey and Transport Equipment, Food, Fabricated Metal, Polymer and Rubber, to Dandenong; Knox lost Fabricated Metal, Polymer and Rubber, Transport Equipment to Dandenong. Dandenong lost Machinery and Equipment to Casey.

In summary, the outward move of manufacturing sub-sectors is as expected, however when these jobs remerge in new locations there are fewer of them and in some cases such as Casey's machinery and equipment, the decline has been dramatic. Restructuring in the south east has been more pronounced and one LGA in particular, Dandenong, has been the major beneficiary. We examine the question of changing geographies in more detail in Table 3, below, with a preliminary exercise in assessing the extent of diversification or specialisation. We detail the number of sub-sectors that comprise 50% or more of jobs (column one) and the proportion of jobs held by the largest sub-sector (column 2).

**Table 3. Diversity and specialisation, selected case study LGAs, 2001**

|                                   | No. of sub-sectors to reach 50% employment <sup>a</sup> | % of jobs of largest sub-sector |
|-----------------------------------|---|---------------------------------|
| <b>LGAs with job losses</b>       |   |                                 |
| <i>Maribyrnong (West)</i>         | 4   | 27% (TCF)                       |
| <i>Monash (S-East)</i>            | 4   | 22% (Machinery & Equipment)     |
| <i>Knox (S-East)</i>              | 5   | 18% (Machinery & Equipment)     |
| <b>LGAs with job gains</b>        |   |                                 |
| <i>Wyndham (West)</i>             | 4   | 16% (Food)                      |
| <i>Brimbank (West)</i>            | 5   | 15% (TCF)                       |
| <i>Greater Dandenong (S-East)</i> | 5   | 13% (Transport equipment)       |

a. We have calculated this by continuing to add the largest sub-sector, followed by the second largest, etc, until the 50% margin is passed.

Source: ABS 2003a

Table 3 shows that in comparison with the 'job loss' LGAs, in 2001 all 'job gain' LGAs had a smaller proportion of jobs provided by the largest sub-sector with two of three having five firms taking it over the 50% job mark, with the reverse being true for the 'job loss' LGAs. On face value then, it appears that diversity in 2001 leads to better outcomes in 2011. However as Table 2 indicates, it is far from strongly the case that it is the more dominant industries, in particular, that are responsible for the bulk of the job loss. For example, in 2001, Machinery and Equipment was the biggest employer for both Knox and Monash, but for this sector, significant job loss only occurred in the latter. Knox 'broke even', in spite of job losses across a range of other sectors, again suggesting some sub-sectors are more vulnerable to 'aspatial' effects.

In the following section we further refine the analysis by selecting from Table 2 those sub-sectors with employment increases of 300 or more over the ten year period and examine in detail selected characteristics.

**Table 4. Location quotient and skills for growth subsectors, 2011 Census**

|  | Location Quotient <sup>a</sup> | % Trades & Technicians / % Labourers <sup>b</sup> |
|--|--------------------------------|---|
| <b>Gt. Dandenong</b> Primary Metal & Metal | 1.42                           | 23/11   |
| <b>Gt. Dandenong</b> Transport Equipment   | 1.05                           | 29/19   |
| <b>Gt. Dandenong</b> Food                  | 0.65                           | 15/35   |
| <b>Greater Dandenong</b> Fabricated metal  | 1.48                           | 24/16   |
| <b>Monash</b> Pulp, paper and converted    | 1.30                           | 15/9  |
| <b>Brimbank</b> Food                       | 0.82                           | 19/37   |
| <b>Brimbank</b> Fabricated Metal           | 1.83                           | 28/11   |
| <b>Hobsons Bay</b> Transport Equipment     | 3.86                           | 26/33   |

- a. LGA - % subsector jobs of all manufacturing jobs/Melbourne % subsector jobs of all manufacturing jobs
- b. The proportion of all jobs in this sector in this LGA, rounded to the nearest whole number

Source: ABS, 2012a

**Table 5. Firm size, LGA growth sectors, 2001- 2011**

| LGA, growth sector                              | Firm size 2001 % (n) <sup>a</sup> |              |              |             |              | Firms size 2011 % (n) |              |              |             |              |
|---|-----------------------------------|--------------|--------------|-------------|--------------|-----------------------|--------------|--------------|-------------|--------------|
|   | Micr.                             | Sm.          | Med.         | Lge.        | TOT.         | Micr.                 | Sm.          | Med.         | Lge.        | TOT.         |
| <b>S-East</b>                                   |                                   |              |              |             |              |                       |              |              |             |              |
| <b>Dandenong: Primary Metal &amp; Metal</b>     | 61.1<br>(11)                      | 16.6<br>(3)  | 16.6<br>(3)  | 5.6<br>(1)  | 100<br>(18)  | 56.5<br>(13)          | 13.0<br>(3)  | 26.0<br>(6)  | 4.3<br>(1)  | 100<br>(23)  |
| <b>Dandenong: Food</b>                          | 70.8<br>(63)                      | 8.9<br>(10)  | 16.1<br>(14) | 2.2<br>(2)  | 100<br>(89)  | 64.7<br>(66)          | 10.2<br>(10) | 23.5<br>(24) | 1.9<br>(2)  | 100<br>(89)  |
| <b>Dandenong: Transport Equipment</b>           | 55.6<br>(50)                      | 7.7<br>(7)   | 30.0<br>(27) | 6.6<br>(6)  | 100<br>(90)  | 59.3<br>(54)          | 9.1<br>(10)  | 24.1<br>(22) | 5.4<br>(5)  | 100<br>(91)  |
| <b>Dandenong: Fabricated Metal</b>              | 73.1<br>(199)                     | 11.3<br>(31) | 15.0<br>(41) | 0.3<br>(1)  | 100<br>(272) | 66.6<br>(222)         | 15.9<br>(53) | 17.1<br>(57) | 0.3<br>(1)  | 100<br>(333) |
| <b>Monash: Pulp Paper &amp; Converted Paper</b> | 73.1<br>(9)                       | 7.6<br>(1)   | 7.6<br>(1)   | 15.3<br>(2) | 100<br>(13)  | 53.3<br>(8)           | 0.0<br>(0)   | 26.6<br>(4)  | 20.0<br>(3) | 100<br>(15)  |
| <b>West</b>                                     |                                   |              |              |             |              |                       |              |              |             |              |
| <b>Brimbank: Food</b>                           | 89.2<br>(25)                      | 3.5<br>(1)   | 7.1<br>(2)   | 0.0<br>(0)  | 100<br>(28)  | 80.5<br>(29)          | 8.3<br>(3)   | 5.5<br>(2)   | 5.5<br>(2)  | 100<br>(36)  |
| <b>Brimbank: Fabricated Metal</b>               | 74.6<br>(94)                      | 10.3<br>(13) | 14.2<br>(18) | 0.7<br>(1)  | 100<br>(126) | 76.1<br>(112)         | 11.5<br>(17) | 11.5<br>(17) | 0.6<br>(1)  | 100<br>(147) |
| <b>Hobson Bay – Transport Equipment</b>         | 65.6<br>(21)                      | 3.1<br>(1)   | 25.0<br>(8)  | 6.2<br>(2)  | 100<br>(32)  | 66.6<br>(24)          | 2.7<br>(1)   | 27.7<br>(10) | 2.7<br>(1)  | 100<br>(36)  |

a. Percentages rounded to the nearest decimal point

b.

Source: Unpublished Worksafe data

The location quotient (Table 4) in combination with the number of firms (Table 5) gives an indication of the drawing power of particular locations for particular industries and the potential for agglomeration benefits provided by co-location of firms. Looking at the data with these indicators in mind, we find that both Dandenong and Brimbank have by a significant margin the most number of jobs and strong location quotients. On the other hand, food in both these locations had a location quotient below one. That is, compared with metropolitan-wide trends, job concentration is weaker. The success of food as reflected in job numbers therefore needs to be kept in perspective. Food also represents the lowest proportion of trades and technical workers and the highest proportion of labourers (Table 4). In other words, food is an excellent source of employment for low-skilled workers, but undoubtedly it is in the other growth sectors where opportunities for advancement via a trade or technical qualification are mostly found.

The data in Table 5 shows that in most cases, job growth has been spread across all categories of firm size.<sup>2</sup> Therefore it is far from the case that there is an irresistible trend towards smaller firms for those sub-sectors and locations where manufacturing 'lives on'. An obvious exception is Fabricated Metal in Dandenong. This has seen the strongest job growth and it is clearer here than in other sectors that micro, small and medium firms have produced this growth. Less strongly, Fabricated Metal in Brimbank has seen job growth but mostly in micro and small firms. Brimbank also saw job growth in Food, focussed at the micro level, again a reference to the presence of franchise-style bakeries. In all cases, the number of large firms has remained mostly static or in decline.

## Conclusions and implications from the research

Here we summarise the main findings and issues arising from this preliminary research.

Between 2001 and 2011, manufacturing was in relative decline but not absolute decline across the board. Job growth has occurred, in key sectors in key locations, more modestly than before but in spite of the various economic 'hits' during and preceding the period.

More specifically, however, the data casts some doubt on the 'great survivor' status of food manufacturing. A significant number of jobs counted as 'manufacturing' are in fact sales positions in franchise bakeries. To that end, however, we make the point this is a case of manufacturing (the actual bread making process) propelling jobs in what are (on closer observation) other sectors. The implications are similarly equivocal when it comes to the continuing low-skill status of food. Should food manufacturing be encouraged when it produces a high proportion of low-skilled jobs? We would suggest yes, because as we noted in our introduction, they are indeed manufacturing jobs, affording conditions and security superior to other low-skilled positions. Conversely, food has a poor location quotient in comparison with other growth sectors, suggesting agglomeration benefits may not accrue as easily as the sector in other locations, or other sectors in the same location.

For TCF we found, predictably, a decline in job numbers metropolitan-wide. However, decline is not the same as extinguishment. We suggested, in fact, that somehow TCF jobs have indeed survived in spite of the sector being perhaps the hardest hit from tariff productions. It is therefore important to understand what TCF has evolved into and what lessons this may hold for globally-exposed manufacturing as a whole.

For automotive manufacturing we found a more 'classical' pattern of geographical expansion outwards. However, we note that this process has involved very large job losses in former inner region strongholds and suburban growth, reasonably strong but not matching inner region losses. This sector is characterised by massive geographical turnovers suggesting strong currents are at work.

More generally it is important to continue to update the line of work of Sheehan and Pappas (1998) on the links between 'real' manufacturing, in the form of the actual production process, and closely related activities. The example of 'non-factory bakeries' is but one example of how manufacturing job figures can be misread, but also how closely linked process manufacturing is linked to the retail, service and other sectors. From another angle we saw 'food manufacturing' grow in the inner urban area. We strongly suspect this is not a site of food production per se but of its management and administration. What requires further examination is whether these city locations in food and other sectors are in fact linked to suburban locations and which ones. Or are they branches of transnational firms?

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<sup>2</sup> Estimating firm size by number of employees presents particular problems. The ABS Census only records data for the month of the Census (August) and also does not record second jobs. Worksafe Victoria data records the number of employees at the time of registration, which could be as early as 1983, the year Worksafe commenced. We use annual turnover as a proxy for number of employees. This method is described in detail at Appendix A. We then slightly modify the conventional method of the ABS (ABS, 2001) in defining firm size to concord with turnover ranges provided by Worksafe. Hence: *micro* – less than 10 employees, *small* – 10-18 employees, *medium* – 19-180 and *large* 181 or more.

Turning to the case study regions, we find general evidence to support the 'regions within a city' approach and concomitantly, support for a policy approach tailored to some extent to the features of such regions. First, as has been well appreciated, the west has endured more severe unemployment partly as a result of the previous predominance of TCF manufacturing. By 2011, Food had become the more dominant sector (and we have noted ambiguous or negative connotations with some aspects of this sector). Historically then each region differed in the more dominate manufacturing subsector although there has been some convergence.

The data is ultimately equivocal on the question of diversity versus specialisation. Those LGAs with more dominant industries have greater job losses. However, they experience these losses across a range of sub-sectors. Two neighbouring LGAs, Knox and Monash had different outcomes for Machinery and Equipment. Particular local circumstances seem to be at play here, possibly explained by the closure of one or a few large firms in one location but not the other. Jobs shifts were as expected in the sense that they are moving outwards. However, in doing so, jobs are lost and churning in the predominate sub-sectors has occurred. We also found that it is far from the case that there is an irresistible trend towards smaller firms for those sub-sectors and locations where manufacturing 'lives on'.

We readily concede that as a preliminary investigation, this research points to some answers but also raises questions. Part of the overall task is more data, more refined, at deeper levels. At the Digit-4 level, it is probably possible to identify individual firms and from there embark on an examination of company reports, media reports, interviews and analysis of grant applications and allocations. Overall, to better grasp the crucial fundamental question of what causes manufacturing growth and decline, we argue a multi-scalar approach and understanding is essential. The multi-scalar approach counters the fatalistic narrative of leviathan-like global impacts on the one hand, an essentialist view of 'the local' as foci of economic development on the other or in some cases, an ordained logic of an oxymoronic if grossly unequal dance between the two. Matters that need to be more closely examined and understood are, at the macro level, the impact of tariff cuts, the Australian dollar, international competitiveness; at the meso level, allocation and withdrawal of grants and other subsidies and federal and state policy and at the micro level, the role of local circumstances, including local policy and in particular, local labour markets. Regarding local policy we envisage qualitative interviews with local and regional economic planners given that the generic approach and content of local policy documents may not do justice to what people have attempted and continue to attempt on the ground. On labour markets, what would complement a firm level appreciation of the impacts on changes in manufacturing is an understanding of the reaction of the manufacturing workers themselves over time. In other words, as manufacturing has shifted and restructured, where have the workers gone? Do they stay and travel or move location and this question again points to links between labour and housing markets as a path towards a deepened understanding of economic development.

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### Appendix A: Calculations for firm size

If the average wage for a manufacturing employee was \$66,606.80 in 2013 (ABS Cat. no. 6302.0 Average Weekly Earnings, Australia) the table below calculates the number of manufacturing workers per business establishments according to turnover range.

| Turnover range       | Approx number of staff |
|----------------------|------------------------|
| Up to \$600,000      | 0-9                    |
| >\$600,000 to \$1.2M | 10-18                  |
| >\$1.2M to \$2.4M    | 19-36                  |
| >\$2.4M to \$3.6M    | 37-54                  |
| >\$3.6M to \$4.8M    | 55-72                  |
| >\$4.8M to \$6M      | 72-90                  |
| >\$6M to \$12M       | 91-180                 |
| >\$12M to \$18M      | 181-270                |
| >\$18M to \$24M      | 271-360                |
| >\$24M to \$30M      | 361-450                |
| >\$30M to \$60M      | 451-900                |
| Over \$60M           | 900 and over           |