The Location of Employment in Metropolitan Areas

International Perspectives, Melbourne Context and Research Directions.

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1. Background

There are rapidly expanding suburban and fringe employment markets in most metropolitan areas today as firms use these locations as a key part of their production systems. These jobs are usually dispersed across the metropolitan area as they emerge from forces that do not necessarily produce centres within the suburbs. The research reported here explores these patterns in the context of economic structural change and the production systems of modern firms which, along with a range of other factors, influence employment location. This form of suburbanisation of employment is likely to remain a strong part of the future metropolitan job growth.

This outcome has several policy implications. The issue of the availability of jobs for a growing and dispersing population has an equity dimension: will the dispersed population have access to a range of employment, and in particular “good” jobs, “good’ in terms of pay, diversity of skill, opportunity and stability? A related issue is the accessibility to these jobs: they may be in the suburbs but can they be reached conveniently, and (to meet another set of policy objectives) can they be reached by public transport and have the benefit of short, low energy-use trips? Hence understanding reasons for the evolution of the employment base of these new patterns can have implications for transport supply and planning. More broadly, understanding the type of employment, and motivations for its location, could enrich approaches to urban policy that to date seem to focus primarily on the location and density of resident populations. That pre-occupation is well illustrated in a recent twenty page summary of current “smart growth policy for suburban areas” that has no reference to job location or type (Blakely Centre for Sustainable Suburban Development 2005).

Some work on the suburban location of employment explores it as a smaller scale version of the location in the CBD (where activity relies on face-to-face contacts in networks of producers) so that employment change in the suburbs simply reflects dispersal or spillover. However, to account for the scale of suburban employment identified in a number of cities we need a stronger set of explanatory factors. In particular, we need to comprehend the location of new firms, ones that are born locally or who move into a suburban site from outside the metropolitan area. In essence we need to know more about the operation of suburban firms. Do they reach out to global and national markets from their suburban sites, or are they in effect operating in a secondary market as sub-regional suppliers? Put more crudely, do suburban locations provide a serious option for a nationally or globally focused firms? What sort of services are there? Is local area face-to-face contact relevant to their location, or do they have other network structures and communication mechanisms? What is it about the suburban business park or suburban sub-centre environment that meets their needs? Are many of them generating high quality jobs?

2. Getting Suburban Employment Development in Context

A prominent theme in urban research in recent years has been the very substantial expansion of employment in producer services along with associated tourism, government and allied activities in the inner parts of big cities, especially those that are labelled "global cities". This outcome relates to conceptual perspectives developed by Sassen (2001) who showed that face-to-face contact was central to the productivity of the what she called the "producer services complex". The general ideas she developed have been refined and extended by Storper and Venables (2004) who show how face-to-face contact is in fact connected to learning and is expressed in product refinement and enhancement. In this way it is embedded in the production system particularly of knowledge intensive services. The outcome of this concentration of production has been also been seen as a local expression of globalization, involving "myriad flows between the office blocks that typify world city skylines" (Taylor 2003: 5). These forces have a fundamental impact: In the 13 largest US metropolitan areas, the small area of the downtown office market still accounted for 43% of all office space in 1999 (although, as will be shown below, that share has been falling (Lang 2003).

It is important to understand that this service-focussed employment growth has not just been in the CBD. Research has shown producer services other than finance and business services have a strong presence in CBD fringe sites, often involving re-use of old industrial buildings. Examples include advertising and media in Hamburg (Lapple 2004), design in Vancouver (Hutton 2000) and graphic design in Melbourne (Elliott 2005). Illustrating these ideas, Hutton (2004) has drawn on research in London, San Francisco, Vancouver and Singapore to suggest a distinctive economy is emerging from the location of “new economy” functions in the inner city of many metropolitan areas. Searle (1998) working on Sydney found that producer services that left the Sydney CBD over 1981-91 mainly moved to near-CBD locations so that the inner city of the metropolitan area remains the dominant location for these activities.

Hutton’s perspective on inner city change is enriched by the high housing costs created by the demand from relatively well-paid labour employed in these locations. Hence it would seem that a variety of producer services have maintained and re-enforced an old pattern of activity where the inner city is the pre-eminent labour market in a metropolitan area. For some commentators this outcome represents a “return to the city” and an end of suburbanisation (Graetz and Mintz 1998).

Although there is no doubt inner cities in most cities have become more prominent in terms of population and employment (and relative house prices) compared to their position over twenty or so years ago, it is important to recognise that these areas have not usually accounted for an increased share of all metropolitan jobs in the past to or three decades. For Melbourne that can be seen in the fact that the share of metropolitan employment in the inner city has not increased much since 1986 (see table 1).

Table 1: Share of All Metropolitan Area jobs in the Central Region* 1961-2001

Census Year	1961	1971	1976	1986	1991	1996	2001
Share	55	54	37	28	29	27	28

* defined as the City of Melbourne, Port Phillip, Yarra and the Prahran SLA of Stonnington, as a best correspondence to the area used for 1961-1996 which included the original Collingwood, Fitzroy, Richmond, St Kilda, South Melbourne, Port Melbourne and Melbourne.

In effect the inner city is experiencing rapid growth in jobs (and locally resident labour) in a specialised part of the metropolitan economy. The inner city (and the CBD within it), though prominent as a high density specialized labour and housing market is now just one employment location among many in most large metropolitan areas. So understanding future employment will need to take heed of shifts in the character of the inner city, but will need to be especially aware of employment in suburban locations. That perspective will recognise that the continued spread, internal re-orientation and re-structuring of the suburban part of most metropolitan areas will be its most significant change.

Recognised initially simply as residential and manufacturing re-location, this outcome has been complicated as a wider array of employment has been found dispersed across most metropolitan areas. The scale and impact of this change has been a major focus of research of a number of scholars. For the US this outcome has been comprehensively analysed by Glaeser and Kahn (2001, 2003). They note that even "by 1996 in the average metropolitan area only 16 percent of jobs are within 3 miles of the central business district (2001:2); the median employee works eight miles from the city center and the median resident lives nine miles from the city centre" (2001:3). To relate this to the Melbourne context, data assembled for 1991 by O'Connor and Rapson (1994) showed the median employee was six miles from the CBD, and the median resident nine miles out (O'Connor and Rapson (1994).

These outcomes have been felt in Europe too. Knapp and Schmidt (2003; 15-16) observe:

> "Current innovations in the urban region are not just taking place in inner cities but also at the periphery. There is increasing evidence that a new phase of development of the "urban periphery" is emerging which is no longer characterized predominantly by quantitative growth i.e a wider array of economic functions and qualified jobs. The new spaces-of-growth poles show a broad variety of spatial forms and functional specializations, forming in line with infrastructural networks "new intermediate zones" around suburbia with new centralities and peripheries".

These "new intermediate zones" probably provide the foundation of the polycentricity in European mega city regions confirmed by Hall and Pain (2006).

The data in table 2 below provides the Melbourne context for these comments. It shows the scale of employment in municipalities and also explores the patterns of recent growth.

Table 2: Employment by Municipality 1996 and 2001, Melbourne Statistical Division

Place of residence	No. of jobs in area 1996	Rank 1996	Rank 2001	No. of jobs in area 2001	Rank in changing number of jobs	Change 1996-2001 Jobs	Change 1996-2001 as % of 1996
Melbourne (C) – Inner	123,071	2	1	145,234	1	22,163	18
Melbourne (C) - Remainder*	123,411	1	2	130,466	6	7,055	6
Monash (C)	77,493	3	3	83,275	12	5,782	7
Gr Dandenong (C)	61,754	5	4	66,979	13	5,225	8
Kingston (C)	63,602	4	5	66,855	16	3,253	5
Port Phillip (C)	56,432	6	6	63,923	5	7,491	13
Whitehorse (C)	49,325	10	7	57,416	4	8,091	16
Hume (C)	49,095	11	8	57,205	3	8,110	17
Boroondara (C)	53,314	7	9	55,765	20	2,451	5
Yarra (C)	53,285	8	10	55,179	27	1,894	4
Knox (C)	49,616	9	11	53,444	15	3,828	8
Stonnington (C)	39,921	13	12	42,516	18	2,595	7
Darebin (C)	44,106	12	13	38,890	32	-5,216	-12
Brimbank (C)	31,622	16	14	38,310	8	6,688	21
Maroondah (C)	32,449	15	15	34,606	24	2,157	7
Mornington Peninsula (S)	27,868	20	16	34,143	10	6,275	23
Banyule (C)	30,680	17	17	32,938	23	2,258	7
Yarra Ranges (S) - Part A	26,646	23	18	32,852	11	6,206	23
Casey (C)	24,404	25	19	32,840	2	8,436	35
Moreland (C)	33,312	14	20	31,279	31	-2,033	-6
Frankston (C) **	26,765	22	21	30,623	14	3,858	14
Moonee Valley (C)	27,496	21	22	30,062	19	2,566	9
Maribyrnong (C)	30,476	18	23	30,000	30	-476	-2
Whittlesea (C)	23,042	26	24	29,498	9	6,456	28
Glen Eira (C)	27,915	19	25	28,980	29	1,065	4
Hobsons Bay (C)	25,719	24	26	27,634	26	1,915	7
Wyndham (C)	20,033	28	27	27,032	7	6,999	35
Bayside (C)	20,797	27	28	23,443	17	2,646	13
Manningham (C)	19,058	29	29	21,350	22	2,292	12
Cardinia (S)	9,331	31	30	11,444	25	2,113	23
Nillumbik (S)	9,474	30	31	11,038	28	1,564	17
Melton (S)	5,499	32	32	7,861	21	2,362	43
Total	1,297,011			1,433,080		136,069	10

This data shows that the CBD and its surrounding fringe is still the dominant and fastest growing employment location, but that there are a number of prominent locations of employment in suburban Melbourne. For example, in 2001, the City of Monash was the third largest municipality in terms of employment and that the continuous arc of suburbs from Kingston through Monash and Whitehorse had over 200,000 jobs; if extended to include adjoining Knox and Greater Dandenong this large south eastern arc had around 320,000 jobs in total. An inner eastern core of high status residential suburbs

(Boorondarra, Stonnington and Glen Eira) had 135,000 jobs while the high status CBD edge of Moreland, Yarra, (double counting Stonnington for this illustration) and Port Phillip accounted for 190,000 jobs. The Western Ring Road arc including Hume, Brimbank and Wyndham had around 120,000 jobs. Most of these elongated and crude geographical zones have more jobs than the CBD or its immediate fringe

The perspectives confirm the major absolute and relative change in suburban employment. An important question is what activities are driving these new outcomes.

Identifying the activities in the new spatial pattern is an important question in conceptual terms as we need better understanding of the process of change. It is possible that the outcome is primarily concerned with consumption so that retail and personal services underpin its operation. Given the scale and rate of growth of some personal services like health and education in many cities this is an aspect not to be ignored. At the same time it is well known that aspects of manufacturing and distribution operate from the suburban business parks and greenfield sites, maintaining a role established in their earlier suburbanization. However whether the range of employment extends beyond manufacturing and distribution to a wider array of services (or more fundamentally whether the service activities are closely integrated with local manufacturing and distribution) is not so well known. More insight on this matter would extend our understanding of the way that the metropolitan economy shapes suburban outcomes.

3. Some Explanations of Suburban Employment Change

Given the obvious role that the service sector has played in employment change in recent times, it is not surprising that investigations into suburban employment growth have largely been directed at understanding the location of office jobs. The scale of these outcomes is perhaps best captured in Lang’s (2003: 77) research on office activity, which shows shares of new office building construction are greater in the suburbs than the central city in all US metropolitan areas other than New York and Chicago. In a smaller market, monitoring of office construction in Melbourne and Sydney over the past five years has shown that “the share of office space in the Melbourne and Sydney CBD's has dropped below 50% for the first time ever and continues to fall”.(Personal Communication, CBRE Research Australia) .

There is little debate that the suburban economy is different from that centred on the CBD. That is confirmed by Green-Leigh's (2000) research on Atlanta and Chicago. She found that the extent of suburbanization was reflected in the mix of class A to class B office space: Chicago with a larger set of functions willing to pay class A rent was more centralized than Atlanta which had more Class B users. Atlanta provides an extreme case of dispersal: Fujii, Yamashita and Itoh (2005) show three suburban centres in Atlanta each have more FIRE jobs than its CBD and when combined the suburban centres have 4.7 times the number of FIRE jobs of the CBD. It does provide an indication of future patterns of this activity under certain circumstances. Chicago too has been seen as an indicator of future patterns, although interpretations of the local outcome have differed. Lang's (2003) found the balance in construction favours the inner city, while Glaeser and Kahn (2001) have observed: "The surprise for us, was Chicago………we had expected Chicago to resemble New York or at least to lie half way between Los Angeles and New York. While there is slightly more employment centralization in Chicago than in Los Angeles, Chicago looks like L.A. much more than it looks like New York". *The Economist's* recent survey on Chicago found its inner city labour market vibrant, but acknowledged that here was much more job growth occurring in the suburban parts of that metropolitan area.

This research indicates that we can connect the inner city and suburban office employment outcomes with different global and national roles of these parts of cities. We are left with the question however whether the class B space of the suburbs accommodates class B jobs and whether the employment base in these areas misses out on the "good" jobs.

So who are the users and the reasons for their location in suburban office space markets?. A tentative step has been taken in the production of table 3. This table distils some information reported on the state of the office space markets in the suburban sections of some US and UK cities. The information is derived from commercial real estate agents reports (predominantly from CBRE). A tabulation presented in Appendix 1 lists the firms that have been involved in "major recent lettings" in early 2005 and the main economic sectors mentioned as important in the local economy of these markets.

Table 3: Sectors Generating Demand for Office Space:

Major International City Suburban Office Space Markets 2005

Sector Identified by Commercial agents	**Number of Markets Mentioned**
Technology: IT, Biotech	7
Banking and Finance, Financial services	6
Professional and Business Services	5
Media	2
Public sector	3
Pharmaceuticals and Health care	3
Education	2
Research	2
Trade	2
Transportation	1
Tourism Services	1
Telecoms	1

Source: see Appendix 1

Table 3 suggests that apart from the role of technology, the character of office space demand in the suburban markets might not be very different from that in the CBD: Finance and Professional and Business Services are the second and third most important sources of demand. A scan of the firms involved would reinforce that perspective: ING Direct, Citibank and GE could all be from a CBD list of tenants. Motorola, Lenovo and ITT show the technology edge of the markets. However, Sara Lee, Home Depot, Readers Digest and Samsonite, along with some Universities, suggest that suburban space is also used by a set of firms for whom the CBD financial services cluster would be a strange place.

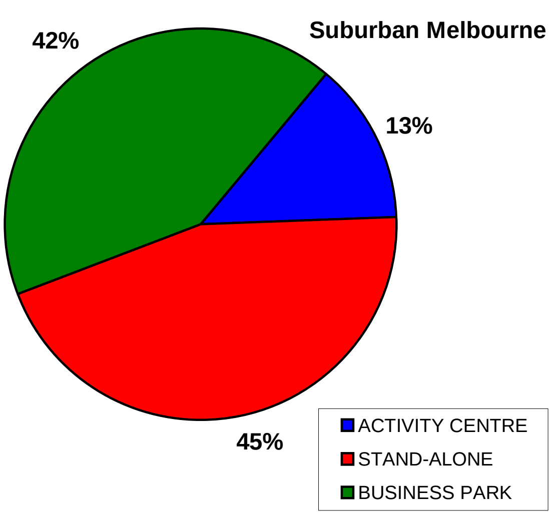
On the issue of why these firms might be there, the wide range of research carried out on the intra-metropolitan location of service jobs, especially producer services, has been comprehensively summarized by Boiteux-Orain and Guillan (2004). They have opened up two dimensions on this research issue. First, whether the growth of service employment in suburban locations illustrates that information technology has changed in some way the necessity of face-to-face contact and so the need for an inner city location, and, second, whether the firms locate in a centre within the suburbs or move to a dispersed location. Those lines of thinking seem to deal in particular with the re-location of firms from the centre to the suburbs, in a sense replicating the way that we have studied manufacturing location. That is reflected in Lang's (2003:23) perspective: "..if work can be shipped to the suburbs , it will be" and Boiteux-Orain and Guillan (2004:556) observation that "…empirical studies of North American cities show that high order producer services tend to leave the CBD ..". This approach implies that re-locations might be mainly back-office functions, with the CBD remaining the anchor for the higher-level services. The Boiteux-Oraim and Guillan (2004: 573) research and Searle's (1998) work on Sydney suggest there is a "…increased intra-metropolitan specialisation depending on producer services reliance on face-to-face contacts for conducting their business". In effect some services can operate from the suburbs while others cannot.

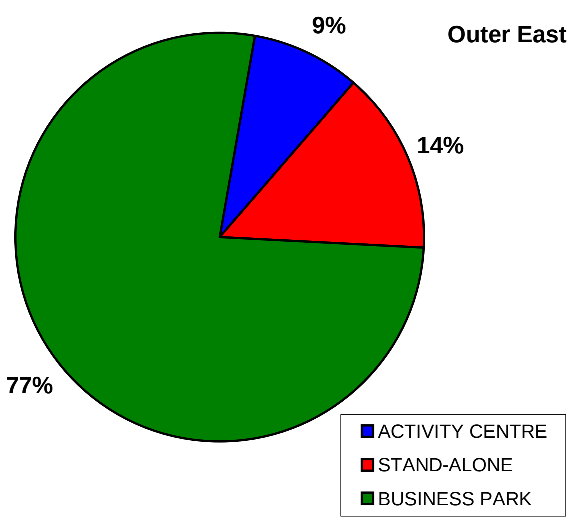
It is apparent that some important producer services can operate from the suburbs. The clustering of the IT industry and research and development activity in suburban areas, often associated with some key institutions such as Universities and research hospitals is the stand out example. However it is not clear whether the model of face-to-face contact derived from our understanding of the finance and commercial service clusters in the CBD is relevant to suburban location decisions.

Empirical observation and some conceptual thinking suggest it is not relevant.. The empirical evidence involves the tendency for suburban office employment to not cluster in centres. Centres, however defined, have not typically had the major share of suburban employment. The work of Boiteux-Orain and Guillan (2004) cited earlier reviews these outcomes and found centres have not been a major focus in the spread of producer service employment. Anas et al (1997) have observed (with respect to total employment) : "Remarkably, centers account for less than half of all employment in the areas studied: 47 percent in San Francisco, one-third in Los Angeles, and less than one-fourth in suburban Chicago. The polycentric pattern, interesting and important though it may be, coexists with a great deal of local employment dispersion". Coe and Townsend (1998), working on service location in the London region believe there are no "localised agglomerations" but that service firms utilise the whole of the South East UK for production contacts and markets.

Robert Papaleo of *Charter Keck Cramer* has collected data on suburban office construction in Melbourne since 2000. He finds that an "analysis of all buildings above the 1,000 sq.m. threshold in suburban Melbourne …..show(s) a heavy weighting towards Business Park development. Co-incidentally when looking just at a group of eastern suburbs, he finds "….since 2000, this form of development has accounted for three-quarters of total new supply in the Outer East" ((Monash, Whitehorse, Manningham, Knox, Maroondah)'. His data is displayed in figure 1.

Figure 1: Suburban Melbourne & Outer Eastern Study Region New Office Stock since 2000





This is consistent with most US city case studies and the findings of Parolin and Kamara (2003) in Sydney.

That outcome may be related to an idea developed by Gordon, Richardson and Yu (1998) that agglomeration economies for many activities are less spatially anchored than they have been in the past. For them, the availability of a metropolitan wide road system (and region-wide broad band and mobile phone networks) has meant that firms can draw upon agglomeration benefits of a metropolitan region at a broader scale than just in a core or at a regional centre. Even in the high tech sector, the series of city studies reported in Simmie (2001) showed that the spatial pattern of contacts between firms was usually well outside the local area. In Woods' (2001:238-239) terms, clusters of innovative firms "do not depend on close proximity to other businesses, but more on general facets of the "metropolitan milieux". …these include the availability of qualified and flexible staff capable of supporting innovation, access to international information and markets through airports and other transport networks and the international status of major firms". Confirming that perspective, McDougall and O'Connor (2005) found that local scale inter-firm connections among a spatial cluster of firms within an industry often involved many low level tasks and activities; the more complex ties involved connections at a broader scale. Gertler's (2003:87) wide ranging review of the role of tacit knowledge in production (and in turn the importance of face to face contact) introduces the idea that "*organizational context* as the crucial social environment…. in place of *local context*" (his italics) although he does not deny the need for strong personal networks.

An interesting issue here is whether firms have organizational structures to deliver the benefits of face-to- face contact in the lower density suburban context? Glaeser and Kahn (2003: 40) are insightful here:

> "While no one doubts that dense areas are more productive than the wilds of Saskatchewan, it is less obvious that downtown Detroit is more productive than Silicon Valley (a textbook example of sprawl). It is possible that some form of agglomeration actually requires working in a walking city… But we suspect that most agglomeration effects are based on ready access to other human being(s). …….It is exactly this type of reasoning that makes us suspect that sprawl is not so bad for productivity. After all well functioning sprawl is full of people. The only difference between sprawl and conventional downtowns is that sprawl is built around the automobile,, not around walking and public transportation. As such we suspect that some sprawling car cities are more productive, and others less so, just as some traditional cities are more productive and others not. Sprawl cities with

higher levels of density and better transportation infrastructure appear (as in the case of Silicon valley and Route 128) to be able to deliver very high levels of connection indeed."

Exploring this situation empirically they find first that "per capita incomes are higher in MSAs with higher levels of density" but then, crucially, "…the degree to which these jobs are centralized in the central city appears to be irrelevant" (Glaeser and Kahn 2003:41).

Hence some office development in the suburbs could nurture production systems that are successful without the walking distance face-to-face benefits that we often think are critical to inner city office locations. One important element could be cost and quality of real estate and buildings. Suburban locations provide cheaper points of operation with broad access to other firms (and the CBD if and when needed) so service firms could manage their network of contacts, both within their own organizational structure and with other firms, at a much lower cost than they would face from a CBD site. This might be especially relevant for new and young firms. Another factor could be labour supply. Although the CBD is often the peak place in terms of labour access, suburban road networks and suburban residential distributions of some elements of the professional workforce means that suburban sites can be attractive locations to draw in labour.

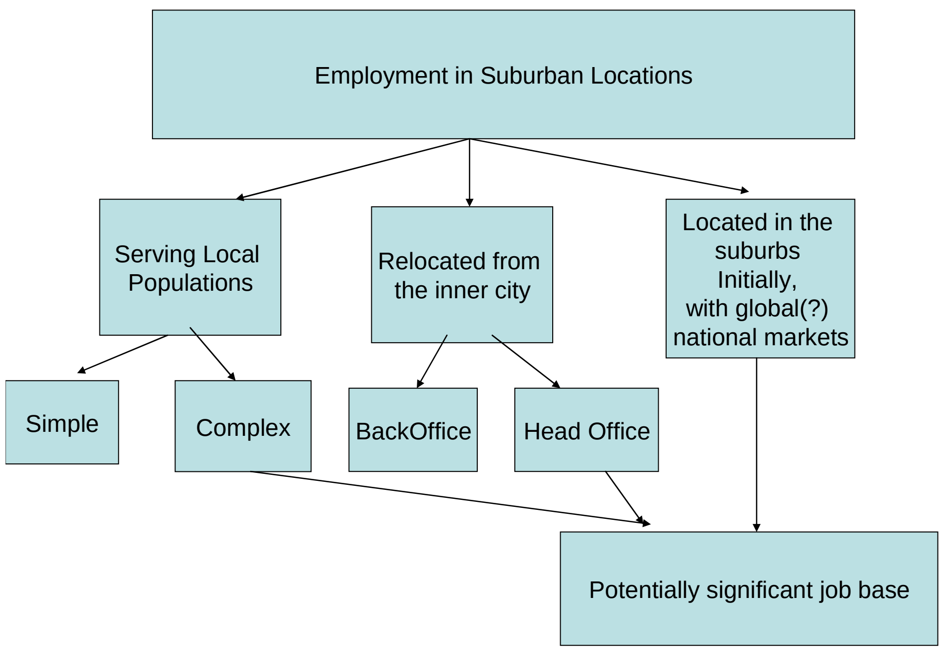
In summary there could be two categories of activities here - suburban locations may be attractive (a) to low face-to-face intensity firms for whom density is relatively unimportant, as well as (b) to high face-to-face intensity firms who achieve the contact they need at lower densities in the suburbs because of available transport infrastructure and communications technology, or by travelling to the CBD when necessary. So understanding the actual or potential role of services in suburban economic development might require better understanding of their communication methods.

The aspects of milieu outlined above together create a context that allows firms to select a location consistent with their own perceived need for space, labour contacts and networks of suppliers and co-producers. We may need to understand this context more thoroughly to begin to account for and predict the location of producer service jobs in suburban regions.

4. Toward a New Perspective on Suburban Employment Change

The following framework has been developed to create a set of ideas that can focus research attention to produce the insight we need here. This suggests that suburban employment growth can be broadly seen as falling into one of three categories: responding to local population trends and needs, relocated from the central city because of traditional cost pressures and congestion, or drawn by the advantages of the suburbs, and a third category which includes firms located in the suburbs by choice and from an initial starting point in business. Within these categories there are some separate groups of firms. These are discussed in turn below.

Figure 2: Suburban Employment Types



Population-Serving Activities

The long term history of suburban employment change has been associated with changes in residential population. That association has been a cloudy one as it has been difficult to specify whether the "jobs follow the people" or "people follow the jobs"; different answers were found at different times, and for different jobs and over different time periods. There is no doubt however that residential population growth stimulates the demand for some particular elements of suburban employment. Retail and personal services are the obvious cases. However, the substantial scale, speed of growth and geographic selectivity of suburban job growth in most cities has to mean that it is driven by forces other than the market created by local area residential population growth.

In addition the way the population-serving activities respond to population is changing, which will be felt in local geographic outcomes. Retailing, especially when it is seen as a broad category of personal goods and services consumption encapsulating entertainment has produced another wave of large sub-regional concentrations, so that its employment growth does not necessarily match population growth in all local areas. There has been considerable attention paid to the possibility of the "fall of the mall" (Lucas 1996) in the face of changes in consumer taste and shifts toward inner city high density style living within cities. Recent analysis in the US has in fact detected a shift in the function and organization of malls to accommodate some of these changes, so that "malls targeted at upper-end clientele will continue to grow while mid-priced regional malls will become more centers of entertainment and service" (Barnes 2005:7). Hence suburban employment growth in this sector is expected; its sub-regional level distribution may be changing.

Activities Relocated from the Inner City

The re-location of firms from the centre to the suburbs has also been a central dimension of suburban employment growth. That was first understood in work on manufacturing, but it is now understood as a key influence upon the service jobs other than those like retail and personal services.

When looking at reasons for firm re-locations, it has been common to differentiate between firms that were "pushed" from the inner city by crowding, congestion and shifts in production technology requiring larger sites, and those that were "pulled" to the suburbs, usually by their labour. It is possible that early in the manufacturing shift from the inner city the push factors predominated. As services are now a more important part of any relocation pattern, push factors (other than the cost of rent) may not be as significant as the pull actors. The overwhelming pull factor is labour. Significantly, Glaeser and Kahn's (2001:37) statistical analysis of employment change in suburban areas found that "..in cases where the workforce is predicted to live in suburban areas the firms will also locate in suburban areas. This suggests to us that the primary determinant of the degree of suburbanisation is the demand of workers for suburban lifestyles".

That observation introduces the complex interdependencies that exist between job and housing markets into any explanation of employment growth in the suburbs. That complexity emerges in part from the way that housing markets create opportunities for households in a variety of locations. Those opportunities emerge within a set of social (Hanson and Pratt (1988), economic (Randolph 1991) and institutional (Pratt 1996) concerns that shape residential choice and th significance attched to job location in residential location decisions. The strength of these connections can be seen in the data in table 3 showing the main patterns of travel to work at a regional scale within Metropolitan Melbourne.

Table 3: Interregional work trips Melbourne Regions 2001.
Share of a Region's Residents employed in a Region of Work.
Only shares over 10% are shown

Regions of Residence	**Regions of Work**							
	Central	**Western**	**North western**	**North**	**Inner East**	**Outer East**	**Inner Southern**	**Western Port**
Central	71							
Western	31	53						
North western	31	15	39					
Northern	27		10	46				
Inner Eastern	30				43			
Outer Eastern	13				20	52		
Inner Southern	33				12		43	
Western Port					11		14	61

This table shows first that work within the home region is important, but also trips to adjoining regions are also significant especially for residents in middle and outer suburbs, usually involving strong flows to an adjoining region in the CBD direction (see Outer

East to Inner East; Western Port to Inner Southern) or across suburbia (Inner Southern to Inner Eastern, Northern to North Western). Note too that in all cases the local trip is more important than the trip to the central region, even for the high status commuter zone of the Inner East.

The pairing of jobs and resident population is considerable stronger than is often realised. Figure 3, reproduced from Glaeser and Kahn (2003), shows that the spatial distribution of jobs and population by distance bands in US cities is almost a mirror image one of the other. There is a spatial emphasis in favour of jobs in the closer-in locations of no more than 5%, which narrows after 5 miles out.

Figure 3: Shares of Jobs and Population by Distance Bands US MSAs
Source Glaeser and Kahn (2003)

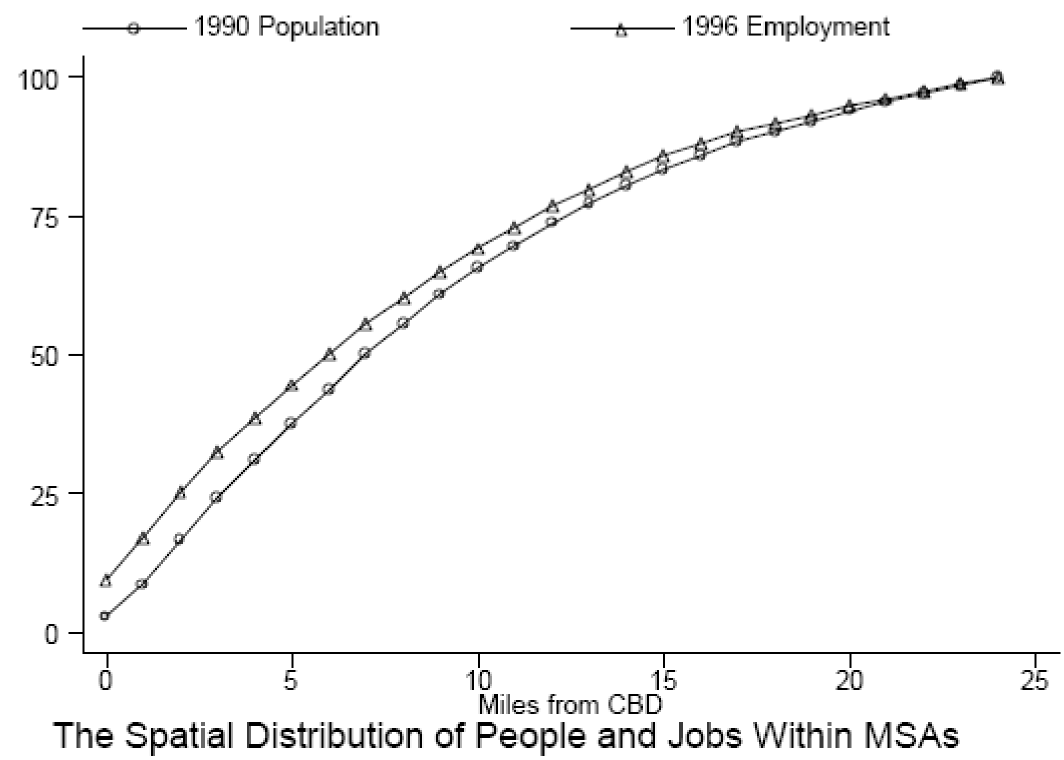


Figure 3: Share of Population and Jobs By Distance Bands Melbourne 2001
Source O'Connor and Healy (2004)

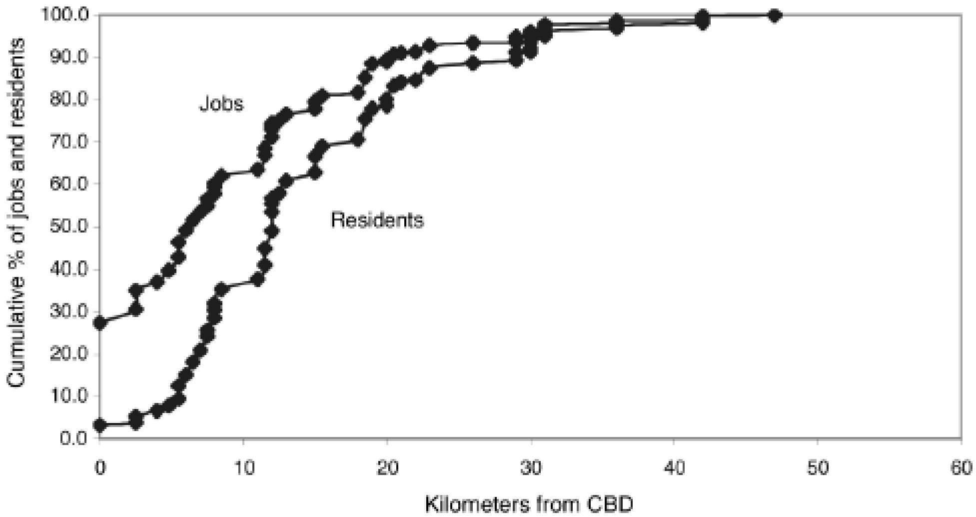


Figure 4 illustrates that the spatial concentration of work is stronger in Melbourne, although there too the distributions converge after about 15 kilometres, only to widen again with local job concentrations.

Hence it seems that the spatial distribution of jobs is intimately connected to the spatial distribution of residents. If Filion et al (1999) are correct and dispersion is the favoured residential site selection for a significant share of households, their decisions could be the force behind the matching of jobs and residences in suburban areas in a wide array of locations, including the UK (Breheny 1999, Office of the Deputy Prime Minister 2006), US and Canada (Gordon and Lee 2003), Australia (O'Connor et al 2001), Italy, (Dematteis and Governa 1999), Sweden (Warneryd 1999), Germany (Muller and Siedentop 2004) and France (Bretagnolle et. al. 2002)).

It is likely that suburban employment growth will probably continue to respond to the "pull" of the suburbs. We need to know the extent to which this involves head office as well as the previously considered back-office functions.

Activities Located in the Suburbs Initially

A third category of suburban employment has been created by firms that have selected a suburban site as an initial site, perhaps for some of the reasons associated with the "milieu" that is available as discussed above. For the current purposes these firms are expected to be supplying goods and services other than those needed by the suburban population. The global scale of a wide array of previously local activities (as diverse as engineering, environmental planning and management and design) provide major opportunities for many small firms that could be based in a suburban location. The near ubiquitous use of IT systems in business, the ease of global contacts even for smaller firms and electronic business-to-business transactions has created global opportunities for suburban firms. It has also boosted suburban-based producer services that supply IT and telecommunications support for example, as well as logistics (in a wide array of forms from parcel delivery through to global component movement).

In essence this involves the location of activities with national and global markets in suburban sites as observed by Muller (1997). Keeble and Nachum (2001:24) have found “growth of small new consultancies in decentralised locations of outer southern England” although these are smaller than the firms in their sample clustered in Inner London. In summary they observe “..over half the decentralised firm entrepreneurs responding to our survey were not previously working in the region where they established their firm, implying either migration to that region coincident with firm formation or previous long distance commuting, probably to London” (Keeble and Nachum 2001: 28). It is important to add that these smaller decentralised firms were very different from their counterparts in inner London; that is not at issue here. Rather their existence and growth illustrates that nationally and (in a limited way) globally significant activity can operate from non-central locations.

The high technology industry sector has shown that this outcome can be expected. Citing earlier work Keeble and Nachum (2001: 24) note that “..within particular knowledge intensive clusters such as high-technology SMEs in Cambridge and Oxford, it is the most globally networked firms which are the most locally-embedded in terms of collaborative and research linkages”. That outcome is well illustrated in case studies of innovative activities in European cities (Simmie 2001) and has long been part of the understanding of US high tech location (Saxenian 1994). On that theme Button and Stough et al (1998) have shown that the suburban airports of metropolitan areas are a magnet for high tech businesses.

It is difficult to determine the size and scale of this sector in a metropolitan area, and it is possible that it could range from small to large, creating the spectrum of suburban productivity scenarios that Glaeser and Kahn have alluded to. However the framework reproduced above suggests that it could be enriched by firms and activities drawn from the other two categories. The population serving sector has activities and firms that are dealing with products and services reaching well beyond the local market. As an illustration of that idea, in one of the markets reviewed to create table 3 (and see appendix 1) Readers Digest was identified as a prominent office space user in Westchester County, NY. This firm deals directly with consumers, however it is likely that that the Readers Digest Building in Westchester County employs in an array of skills involving IT, logistics and the management of financial subscriptions that produce a labour demand for a range of skilled staff. Not many of these employees will need high local contact networks, though their occupations will be part of producer services and may have the levels of pay we associate with some layers of producer service employment.

In medical services as well, specialist facilities and even high-level medical research can be found in suburban locations today; the employment in that activity is not in any way shaped by the local demand. Education, too, can involve global networks in research and industry links, but perhaps more importantly now includes international student enrolments at its suburban campuses.

That enrichment of the suburban employment mix, along with some of the national headquarters functions and firms with global and national markets create the "*Potentially Significant Job Base*" in figure 2. Where this draws in all three sorts of firms it could have a strong impact on the employment growth and trigger flow-on effects in terms of hotels, restaurants, allied commercial services like printing and computing support that will lift the labour market in some parts of the suburbs to new and important levels of size and growth. This will influence demand for skilled professional labour and help shape the occupational structure of employment in sub-regions of the metropolitan area in a particular way, which in turn could influence residential location choice in favour of the suburbs by some higher skilled staff.

5. Research Directions

To understand the likely future of employment and its share between the inner city and the rest of the metropolitan area, along with its distribution within the suburbs we need to take two important steps.

1. Establish better data systems on the location of employment. This could involve a continuation of experiments of the usefulness of *WorkCover* data in collaboration with ABS, along with careful monitoring of construction data. The later would benefit from close contact with commercial agents (as seen in the Charter Keck Cramer data used here) who play a role in creating and letting the space created in the suburbs.

2. Carry out case studies of current employment in carefully selected inner, middle and outer locations to establish the mix of activities in categories like those outlined in figure 2, and find reasons for their location, and recent and likely future changes.

Appendix 1: Report on a Selection of Major Metropolitan Area Suburban Office Space Markets 2005.

Suburban office market	**Source**	**Recent Company Tenacies**	**Main economic sectors listed**
Thames Valley and M25, UK	CBRE	Motorola Metropolitan police Middlesex University University of Hertfordshire Surrey Satellite Technology ING Direct	Technology, media and telecoms Public sector Education Banking and Finance
M25	Knight Frank		Banking and Finance (15%) Financial services (6%) Public sector (9%) Pharmaceuticals and Healthcare (13%) Professional services (10%)
Westchester County, NY	CBRE	Readers Digest Bridgecomm International Lenovo Group Ginsburg Development Altria TransAmerica Greywolf Capital Encore Credit Atlantic Express WRRNN-TV American Council of Foreign Studies Citibank	Finance Media IT Research
Long Island NY	CBRE	1-800 Flowers OSI Pharmaceuticals	Professional and Business services Health Education
Northern New Jersey	CBRE	Verizon Vonage South Pole Delta Dental Plan	
Northern Virginia	CBRE	KBR (Haliburton) Germane Systems Virginia Commerce Bank Network Solutions iDirect Triple Canopy	Business Services IT
Suburban	CBRE	TJX	Technology/Software

Boston		NeTegrity (Computer Associates International) Samsonite Home Depot Acopia Networks EasCorp OneBeacon Staples	companies (35%) Biotech/Medical (20%)
Contra Costa County SFO	CBRE	SynPop Corp Land America Financial	Health care Residential Finance Corporate services
Silicon Valley	CBRE	Foundry Networks Atheros Communications	
Chicago Suburban		ConAgra Career Education DeVry University Sara Lee BP Newco GE AIU Encore Long beach Mortgage/WAMU	Trade Transportation Utilities
Inland Empire	CBRE		Business services make up 14% of non farm employment
Suburban Maryland	CBRE	National Institute of Health ITT World Space ViaSat Startec Global Communications	Life Science Biotech
Orange County	CBRE		Technology International Trade Financial services Leisure and Business travel
M42 Corridor Birmingham (Solihull)	Knight Frank (2004)	Interleasing Radiant Point	
Baltimore Suburban	Colliers Pinkard	Traveller's Insurance All Risks Insurance Symphony Health Services Future Health Crawford Advisors Miles and Stockbridge GSA Paychex Ultrabridge LMC properties Pearson	

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Hi Kevin,

I was just having a look at your paper and found just a small thing. In Figure 1 the proportion of employees in the central area is for 2001 should be 29.2% or 29% (277,204 Melbourne, 64,393 Port Phillip, 55,282 Yarra and 23,026 for the Prahran part of Stonnington with 1,437,855 for the MSD). I think you missed out on the stonnington part in your original table (which would make it 27.6% or 28%). Just a little factual point but I thought I'd give you a heads up just in case someone else picks it up.