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EMPLOYMENT
IN THE ÎLE-DE-
FRANCE REGION**

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INTRODUCTION ¹

In a context of rapid urbanisation and metropolitan expansion, the second half of the twentieth century has witnessed the birth of a new type of settlement: satellite towns or suburbs, in the periphery of urban agglomerations, spaces of residence and economic activity at the urban fringe. Although, to begin with, their growth could be attributed to urban expansion - they also acted as vessels for the overflow of activity from central cities - these spaces are increasingly perceived as following a more distinct and autonomous development path: they are now fully fledged elements of the geographic system, no longer - necessarily - subordinated to their central neighbours. The latest stage in the development of these new suburbs is the formation of 'edge cities' (Garreau, 1991) and suburban downtowns (Craig & Kohlhase, 1999). These result from the location there not only of land hungry manufacturing and population-sensitive consumer services, but increasingly of headquarter activities and high order services. Such activities, which epitomise the need for centrality and a downtown location, are in some cases finding a more favourable environment in suburban spaces. Another recent trend is the scatteration of employment: after a phase of polynucleation, Gordon & Richardson (1996) suggest that employment may increasingly disperse outside employment centres across the metropolitan territory.

Studies of these phenomena have tended to seek empirical verification of hypotheses linked to location factors, to cumulative and/or sequential processes (growth of population, growth of consumer services, growth of high-order functions) and to factors of repulsion (the flight from down-town) (Shearmur & Coffey, 2000; Freestone & Murphy, 1998; Polèse and Chapin, 2000).

In this paper we propose to add a new dimension to the analysis, a dimension suggested by Shearmur & Coffey (2000) and Pfister et al (2000) but not elaborated upon: the role and possible influence of public policy. To do this we have chosen to study the Ile-de-France region.

There are two principal reasons for this choice. First of all, this region is a "world city" (Beaverstock et al, 1999), and its geography is marked by high densities and historical continuities. In such a context, a wide variety of forces are at work (Sassen, 1991; 1998; Pfister et al, 2000), making the region of general interest in and of itself. Second, and to some extent in contradiction with the "world city" claim, regional policy in Ile-de-France has been strong and fairly stable over long periods (White, 1998): it is not only global market forces which have shaped the development of Paris. The role of markets and of agglomerative forces have been mediated, since the immediate post-war

¹ We would like to acknowledge the assistance of Vincent Gollain, from the IAURIF, who kindly provided us with the data and has supported us in our research on the Ile-de-France.

period, by the sustained intervention of public bodies. Rules and policies designed to constrain the location of economic activity have been implemented: regional plans, taxes, location permits, urban 'free zones', the deliberate creation of peripheral centres (*villes nouvelles* (new-towns), la Défense...). In this context, we feel that it is worthwhile to analyse the intra-metropolitan location of total employment and of producer services (PS) and FIRE (Finance Insurance and Real Estate) in order to assess the extent to which they have grown in areas focussed upon by public policy.

In two previous articles we have analysed the distribution of high-order services across the Ile-de-France without reference to policy: the aim was to describe the variety of patterns observed and emit certain hypotheses regarding explanatory factors (Alvergne & Shearmur, 1999; Shearmur and Alvergne, 2000). This work begins an exploration of these factors - and seeks specifically to assess the impact which public policy has had upon the location of employment..

The first part of this paper provides a brief description of regional planning policies in the Ile-de-France with emphasis upon those likely to have affected high-order services. In the second part we describe our approach and methodology. In the third part we present our empirical work: in it we analyse the extent to which peripheral centres² defined as such in the context of public policy documents have emerged as employment growth centres and as centres for high-order (PS and FIRE) services. This raises the question of the 'autonomy' of these centres. Without pretending that it is possible for a suburban centre to develop in isolation from the agglomeration as a whole, we nevertheless posit that strong growth of high-order services in suburban poles is an indicator of the extent to which they are developing as 'suburban downtowns' or 'edge cities' as opposed to suburbs still fully dependent upon Paris for high-order and decision making functions.

REGIONAL DEVELOPMENT IN FRANCE AND ITS CAPITAL REGION

The general context

The Ile-de-France region is characterised by various forms of concentration: French administration, politics, population and economy are focussed upon Paris. The city itself is amongst the most built up in the world. Tokyo alone has similar densities over such a wide area, and within Europe Paris stands out with densities substantially higher than other major production centres such as the Randstad or the Ruhr.

² In this paper the term employment "pole" is reserved for an employment centre defined on the basis of quantifiable criteria. The terms employment "centre", "zone" and "area" refer to the general concept of intra-metropolitan employment agglomerations, including the definitions of these outlined in policy documents.

A few statistics can serve to illustrate the phenomenon. Whilst the region is one of 22 such administrative entities in France, it is home to 18% of the population, 20% of all employment, and a very high proportion of the most qualified personnel (40% of executives³, 30% of university employment and 60% of all researchers). It accounts for 25% of total household income, 30% of value added, and a majority of corporate headquarters. Its GDP is 50% higher than that of Belgium and represents 80% of Spain's - the GDP of any one of its wealthiest *départements* is larger than that of Greece. Thus, the heart of French economic and social activity is concentrated on only 2% of the nation's territory - 12,000km². A variety of heterogeneous spaces have emerged within the region: tertiary, university and research zones, places for leisure and tourism, old industrial areas, brown-field sites, and extensive rural territories - particularly to the east and around the fringes of the region. The combination of high densities and a wide variety of competing land uses has led to substantial development pressure, and has exacerbated the centripetal and centrifugal forces engendered by agglomeration and proximity (Anas, 1998).

The adjective hypertrophic - with its negative connotations - is often used to describe this concentration of activity in the Paris region, and this negative perception has served as a background to strong and persistent efforts to plan not only the region's internal development, but also its relationship with the rest of France. Over the last 50 years the French state has erected a battery of policy measures aimed at redistributing economic and political activity across the country. The origins of this negative perception and of the policy effort can be traced to the publication, in 1947, of the evocatively titled "Paris et le désert français"⁴ (Gravier, 1947). In it the capital is presented as a monster "devouring the national substance". This book raised the French elite's consciousness of matters of territorial development, and led to measures aimed at countering the hypertrophic tendencies.

The guiding principles of French regional planning: 1950 to mid 1980's

France's regional planning policies were elaborated from the 1950's onward. They rested on a two pronged approach. On the one hand, development was actively encouraged in provincial regions. On the other hand, the location of activity within the Ile-de-France was strictly controlled, and - to the extent that this was possible - was directed towards the outlying areas. Until the 1980's, emphasis was put on slowing growth in the Paris region. Efforts were made to counter polarising forces evident at the national level and to relocate all activities for which a Parisian location was not essential. Many

³ The percentage is that of "cadres supérieurs", which corresponds to a well defined rank in the French corporate and administrative hierarchy - the term "executive" somewhat understates the implied seniority of this occupational category, whilst "senior executive" substantially overstates it.

⁴ Which can be translated as: Paris and the French Desert.

arguments were developed to support this anti-metropolitan bias: cities generate high costs, congestion, pollution, stress, low quality of life and so on. In this way, the fight against Parisian growth became a fight for the good life, and thus became one of regional policy's fundamental objectives.

Strict and highly constraining regulations were in place as early as 1955. To an already tightly regulated planning and development process (strict zoning regulations, detailed procedures for obtaining building permits), a new constraint was applied in the Paris region: the requirement to obtain an administrative authorisation for the location of any new economic activity above size thresholds which have varied according to the period. This authorisation (*agrément*) was implemented in 1955, not without considerable controversy: it was argued that this impinged on the freedom to conduct commerce, and that it contravened some of the founding republican principles established at the time of the revolution. For a long time this authorisation was required for all new buildings and in all cases where premises changed occupants or use. These arrangements - quite apart from creating resentment within the Paris region - also gave international investors and businesses the impression that France had a tightly regulated economy: to the local and national was added an international dimension.

On top of these very visible measures, a series of fiscal regulations were implemented with intent to limit and regulate the location and growth of activity - particularly office-based activity - in the Paris region: these measures comprised a tax on the creation of office space, employers' contributions to public transport costs, an annual office tax and other similar rules.

These measures, which were in place essentially unchanged for 30 years, appear to have successfully pushed out of Ile-de-France activities which did not absolutely require a central location (at the national scale). However, the effect was to filter out those activities which were of the very highest order - at a time of fast growth in high order service activities. Thus, whilst the absolute growth of Paris and its region was contained, the concentration in the Ile-de-France of key decision-making and value-added activity was, if anything, exacerbated. The gap between the Ile-de-France and other regions widened, making Paris the strategic centre of the economy.

These measures were criticised throughout their period of implementation: in particular they were blamed for the de-industrialisation of Paris and its surrounding areas. It is indeed the case that manufacturing employment began declining in the Ile-de-France well before it did in outlying regions, and the decline has been a greater magnitude: between 1962 and 1975, over 50% of the capital region's manufacturing employment disappeared, although service growth provided commensurate employment gains - without leading to sizeable overall growth. Sources of criticism have been varied: liberals were unhappy with state intervention in markets, Parisians accused the state of unfair discrimination, whilst others argued that the Ile-de-France was losing its lifeblood.

The reversal of objectives: mid 1980's onwards

Not until the mid-1980's did planning objectives begin to change. A variety of reasons combined to effect this change: the legitimisation - under Thatcher and Reagan - of liberal currents, the growing recognition of worldwide trends towards metropolisation, economic crises... In addition, a new concept came to fruition during this period under the impetus of increasing European integration: that of Europe's "blue crescent" of wealth creating regions, stretching from London to Northern Italy, with Paris on its western edge. To exaggerate only a little, Paris was no longer perceived by the French élite as the centre of France but as a city in danger of joining the periphery of Europe. Europe now became the scale at which regional policy should be conceived, and large metropolises were put forward as key elements of the new Europe.

Whereas since the late 1940's France's weaknesses had been blamed on Paris's hypertrophy, the perspective now changed: a weak Paris was now seen as the reason for France's peripheralisation. Needless to say, this perspective did not gain unanimous support, especially in the regions, but policy emphasis clearly shifted towards accompanying and supporting Paris in its international vocation and towards enabling it to fulfill its functions as a world-city. In parallel it was recognised that efforts should be made to relay growth and activity from the Ile-de-France towards other regions.

Other arguments were also advanced to justify this radical change in policy emphasis: statistics published in the early nineties show that the city of Paris is losing population, jobs and tax revenue. The economic swings of the 1980's (recession followed by a boom, and then by another recession in the early nineties) were amplified in urban areas, especially in the city of Paris where high-order service functions - particularly in finance, insurance and real estate - bore the brunt of the early nineties downturn. In addition, large disparities were becoming evident at the intra-metropolitan level: the contrast between the northern suburb of St.Denis - an area badly hit by industrial decline, and the focus of urgent social problems - and the western suburbs stretching from la Défense to the Yvelines - desirable residential locations benefiting from growth in high-tech, light-industrial and high-order services - became a symbol of this polarisation.

This reversal of planning objectives led to the abolition, in most cases, of the *agreement*⁵, and to measures in favour of developing employment centres within the Ile-de-France. Henceforth regional development policies were designed to respect two somewhat contradictory objectives: control the location of growth within the Ile-de-France without inhibiting the region's development.

⁵ It remained in force, but was used to (largely unsuccessfully) channel office development towards disadvantaged areas *within* the Ile-de-France.

The institutional framework and its weaknesses

An analysis of the impact of public policy within the Ile-de-France is not straightforward, if only because of the region's multiple functions: world-city⁶, European pole, national capital and regional centre. The overlap of institutions and the intertwining of mandates, characteristics of French organisation, are amplified in Ile-de-France. This explains the complexity of its administrative map. The Ile-de-France can be understood as one of a series of interlocking parts: the city of Paris, the surrounding *departments*⁷, the Ile-de-France region⁸, and the Parisian basin (comprised of Ile-de-France and 7 other regions: Picardie, Bourgogne, Champagne, Ardennes, Basse-Normandie, Haute Normandie, Centre, Pays de la Loire). These various administrative entities - some of which are not directly elected - have only recently obtained their current status and responsibilities. For instance until 1975 the city of Paris only had municipal powers: in that year, it became a *département* with both municipal and *départemental* powers. The first election of regional councillors at the Ile-de-France level took place in 1986.

To this complex and evolving framework must be added a fragmented territorial organisation (population of 10 million in 1300 municipalities) which accentuates the difficulty of deciphering public policy. Each level of government has its own priorities and follows its own logic: the French state, through the services which it offers, wishes to limit the weight of Paris relative to other regions, whilst at the same time making Ile-de-France a development pole for the nation. The regional council, in seeking to plan and develop the territory under its mandate (Paris and the *couronne*⁵), does not necessarily have the same objectives as the state. The departmental councils, which have jurisdiction over their respective parts of the Ile-de-France, and the 1300 municipalities, which also have some planning and development powers, are most directly concerned with intra-metropolitan polarisation, and are least concerned with national or Europe-wide trends unless they can be harnessed for their own purposes.

Thus, companies seeking to locate in Ile-de-France are faced with a multitude of public bodies, each with partial jurisdiction and each applying different rules and regulations. This makes a precise description of policy - over and above the general trends outlined above - difficult if not impossible. The consequence of territorial fragmentation has been a certain lack of articulation between the objectives of economic development projects, regional planning and infrastructure development. These inefficiencies would have been less noticeable in a context of strong overall growth, but

⁶ White (1998) provides a critical review of the 'global city' hypothesis as it relates to Paris and Tokyo. In particular he emphasises the role which the state has played in planning matters. Sassen (1998) comments on these arguments.

⁷ These are collectively referred to as *la couronne* (the crown), and are further distinguished as being part of *la première couronne* (the inner crown - Hauts-de-Seine, Seine-St.Denis, Val de Marne) and *la grande couronne* (the outer crown - Seine-et-Marne, Yvelines, Essonne, Val d'Oise).

⁸ The region is constituted of, but administratively separate from, Paris and its *couronne*.

as it stands they prevent the effective resolution of the various disequilibria noted above. The lack of supra-regional development policies at the level of the *Bassin Parisien* - due to the lack of effective supra-regional (but sub-national) co-ordination - prevents the implementation of European level strategies to deal with development issues at a continental level (in particular issues related to the *Bassin Parisien's* presence within the "blue crescent") and the planning of large infrastructure projects (such as by-passing of the Ile-de-France by road and rail). Intra-regional divisions also hamper the implementation of international projects.

A distinction should be made between the policy *objectives*, which, as we have seen, have sometimes been contradictory and have not always been co-ordinated, and policy *implementation*, which has been consistent over the long term: thus, the course charted in the 1950's and early 1960's has by and large been followed for thirty years. Even the shift noted in the late eighties has not led to the abandonment of support for *villes-nouvelles* or to a reduction in commitment to rapid intra-metropolitan public transport networks. This long-term approach can be attributed to a general consensus - at least within France's élite - regarding the objectives' relevance, the circumscribed autonomy of the various regional and municipal actors, and, most importantly, to the French state's ultimate guidance and enforcement of the development plans' guiding principles. This mixture of consensus building, bounded autonomy for sub-national institutions and ultimate authority of the state is a characteristic of much French policy-making.

Public Policy and multipolar territorial development

As has been seen, planning policies implemented at the national and regional levels had one major objective - limiting growth in the Ile-de-France. This did not preclude, however, regional level policies destined to structure territorial development at the intra-metropolitan scale: indeed, continued development within the Ile-de-France was conceived, in the 1965 regional plan (SDAU, 1965), as proceeding through economic and demographic multipolarity. The plan was developed at the state level, with local authorities required to adapt their objectives to the master plan. It defines large scale objectives in view of co-ordinating public action and providing medium term guidance. The plan does not, however, preclude the existence of competing policies at the *départemental* or municipal levels, nor, indeed, selective and evolving interpretation of it at other levels of government.

In the 1965 regional plan, intra-metropolitan centres were identified and their growth encouraged. In particular, five⁹ 'new towns' or *villes nouvelles* were identified: these new towns had little or no regional significance in 1965, and each consisted merely

⁹ Initially eight *villes nouvelles* were proposed. This number was brought back to 5 in 1969.

of a group of existing communes in rural or semi-rural areas centred upon an existing small town or village. It is important to emphasise that the *villes nouvelles* differ significantly from their British cousins: whereas in England, new towns were established approximately 70km from London and were intended to develop as autonomous urban areas, the French *villes nouvelles* were initially conceived of as vessels to contain an overflow of population from Paris. They are located closer to Paris (approximately 30km) and over the 1965 to 1994¹⁰ period the RER (Regional Express Rail-network) has been developed linking these new towns to the Paris core. This reflects an explicit hypothesis underlying the policy, namely the regional nature of Ile-de-France's labour market.

Another key provision of the 1965 plan is the further development of la Défense, an area about 5km to the west of Paris, overlapping three communes, destined to receive the bulk of new central office space development. The intention was to create a second CBD for Paris (Piercy, 1999), partly as a way of controlling the location of future development, partly as a result of stringent planning regulations within the city of Paris itself.

These six major centres did not originate in the 1965 plan: the body which has managed the development of la Défense was created in 1958, and the general idea of multi-polar development within the Paris region was already present in the 1960 regional plan. However, the 1965 plan provided a coherent framework for these various policies and it recognised more explicitly than before the necessity of managing growth within the Paris region. Perhaps most importantly, over the 1965 to 1975 period concrete measures were taken to implement it. In particular, the five *villes nouvelles* (Cergy-Pontoise, Saint-Quentin en Yvelines, Melun-Sénart, Evry, Marne-la-Vallée) were established, the first high-rise buildings went up in la Défense, and the RER network was begun.

Despite the fact that *villes nouvelles* were intended principally as population centres, local authorities - and in particular authorities in charge of developing them - did not perceive their mandate so restrictively. Economic development soon became an explicit policy aim. It is not our intention to provide detailed analysis of specific measures used to encourage the location of economic activity in each of the *villes nouvelles*. In general, most of the restrictive policies described above - designed to limit development in the Paris region - did not apply to development within the borders of the *villes nouvelles*. Thus, for example, the *agrément* was not required, the *redevance* (office tax) was very low compared to similar zones and the transport tax was substantially lower.

Given this overall context, the specific questions which we address in this paper are the following: is there evidence that development (employment growth) occurred

¹⁰ In 1994 a new regional plan was adopted, which enshrined the basic measures described for 1965 but which extended the number of areas focussed upon: in particular a series of communes at the periphery of Ile-de-France have been designated 'relay towns' - to act as links between the region and the surrounding regions - and a number of economically significant zones (such as Roissy, Massy, plaine de Saclay) have been explicitly recognised (SDAU, 1994).

primarily in the zones identified in the 1965 regional plan? If so, are these zones developing their own high-order service functions or are they still reliant on Paris for these core activities? In other words, can it be said that the *villes nouvelles* are developing as suburban downtowns and/or edge cities?

A positive answer to either of these questions can not be construed as definitive evidence of the influence of government policy. However, bearing in mind the rural nature of the *villes nouvelles* in 1965, and the 'non-descript suburban' nature of la Défense at the time, their development as economic poles was not easily predictable in the early 1960's. Thus evidence of growth and concentration of employment, specifically of high-order service employment, around these areas would at least suggest that government policy has had an effect on the location of activity in the Paris region.

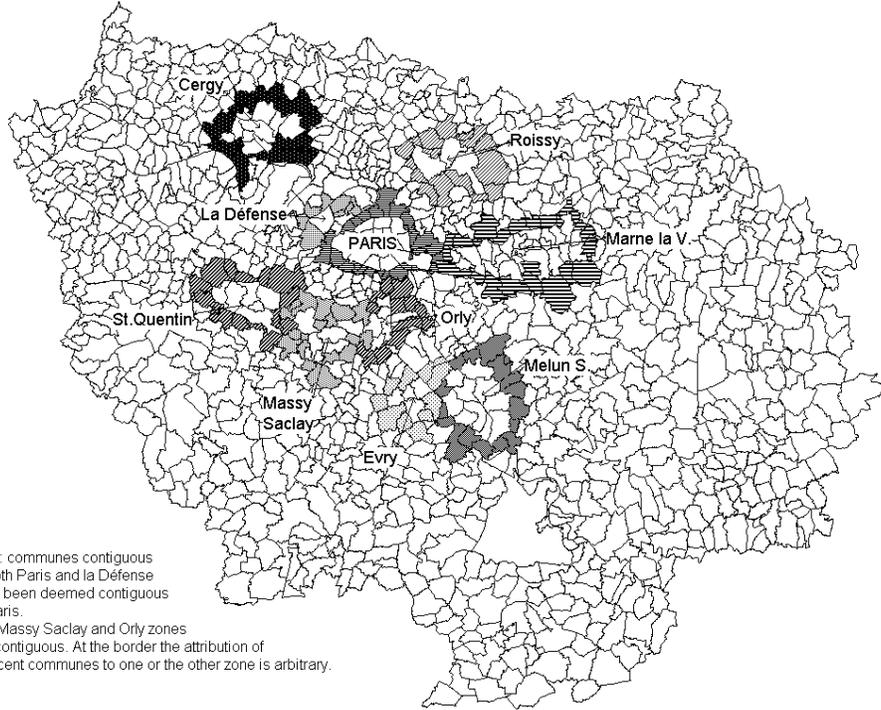
These questions are framed by two wider interrogations: first, is employment within Ile-de-France tending to scatter across the region, or is it nucleating in employment centres? Second, in a context of globalization, can the intra-metropolitan development of 'world cities' be influenced by public policy intervention?

DATA AND METHODOLOGY

In order to ascertain whether La Défense and the *villes nouvelles* emerged as employment poles after implementation of the 1965 regional plan, two approaches have been used. First, employment poles have been defined following Forstall & Greene (1997) and Coffey & Shearmur (2000) for both 1978 and 1994: see Map 1. The differences between the 1978 and 1994 poles are examined. The purpose of this approach is to ascertain whether *villes nouvelles* emerge as employment poles on the basis of a policy neutral definition.

Map 1

Map 1: The ten employment centres and their contiguous communes



If they do, and if few or no other suburban poles emerge over the period of study, then this indicates that development in these areas has differed from development in other areas of Ile-de-France and that a case can be made for studying them as employment poles comparable to those identified in the literature on intra-metropolitan economies (such as Gordon & Richardson, 1996; Stanback, 1991; Pfister et al, 2000). If there is no evidence that they qualify as poles in the sense given to this term in the literature, then our analysis of *villes nouvelles* will have less general relevance.

The second approach is based upon an analysis of employment centres defined according to administrative criteria. The administrative boundaries Paris, la Défense¹¹ and the *villes nouvelles* are taken, and the evolution of employment within these entities, and within the rest of Ile-de-France is analysed. This enables growth rates to be compared between areas identified in policy documents, and the relative concentration of high-order services within them to be identified.

Data

Our data are from the 1978 and 1994 Ile-de-France employment surveys (ERE) conducted by the IAURIF¹², the DREIF¹³ and the APUR¹⁴. These data, gathered at the establishment level from a mixture of administrative sources and direct survey, enable jobs to be assigned to communes and arrondissements at a detailed sectoral level. The 1978 data are classified according to the NAP 600 (Nomenclature des Activités Professionnelles) industrial classification, whereas the 1994 data are classified according to the new NAF 700 (Nomenclature d'Activités Française). Both of these classification systems are similar to a 3digit Standard Industrial Classification (SIC). They are not, however, entirely compatible, and the sectors analysed in this paper have been aggregated in order to ensure comparability (see annexe 1): the sizeable 'other producer services' category is a result of aggregating residual 3 digit sectors which could not be aggregated into meaningful sectors. The data do not include self-employed workers.

Once comparable sectors have been identified, they have been further aggregated for ease of presentation. Details of the composition of the sectors analysed can be found in Annex 1: these sectors are: Finance, Insurance and Real Estate (FIRE) and Producer Services (PS). Five components of the PS sector have been analysed separately: technical services (TS), management services (MS), cultural services (CS), temporary work agencies (WS) and other producer services (OS).

¹¹ For la Défense, the three communes of Nanterre, Puteaux and Courbevoie are taken, even though, strictly speaking, la Défense does not cover their entire territory.

¹² Institut d'Aménagement et d'Urbanisme de la Région Ile-de-France.

¹³ Direction Régionale de l'Équipement Ile-de-France.

¹⁴ Atelier Parisien d'Urbanisme.

The Paris region consists of 1280 municipalities and 20 Parisian arrondissements, across which the employment data are assigned.

Period of study: 1978 to 1994

The ideal period of study would, of course, be the 1965 to 1994 period - i.e. the period between the first and second major regional plans. However, the earliest date for which place-of-work data are available is 1978 (IAURIF, 1996). By that time most *villes nouvelles* were well underway, and la Défense had emerged as a significant centre of economic activity. Thus, our 1978 data do not reflect the rural phase of the *villes nouvelles* (although Marne-la-Vallée and Melun-Sénart were only established in the mid 1970's): by 1978, local and regional authorities had begun developing three of the five zones, and economic actors knew which zones were going to be developed as the other two *villes nouvelles*. Neither do the data capture the 'non-descript suburban' phase of la Défense. Rather, the 1978 data capture a region in which the 1960's policies are taking effect and the 1978 to 1994 period is one over which the momentum (if any) created by these policies should be evident.

Analysis

Before exploring the possible effects of government policy on employment distribution within the Ile-de-France over the 1978 to 1994 period, a brief description of the region's overall employment performance will be given.

Table 1 provides a summary of employment growth in the Paris region, for total employment and for the sectors which we will cover more specifically in this paper. The most striking feature of the table is the fact that there has been little or no employment growth in the Paris region over the period analysed. This is in keeping with macro-analysis of the European job market (Thurow, 1996; Mouqué, 2000): one of the key conclusions of such analysis is the low level of job creation in Europe over this period, due to a combination of slow population growth, increases in productivity, and labour costs substantially higher than in North America. However, low job growth in Ile-de-France is somewhat surprising in the light of the processes of metropolisation which are documented for regions and nations across the globe (Scott, 2000). In the case of Paris, three factors have combined to produce this result. First, unlike in North America where there has been steady population growth over the period, France's population has grown very little over the eighties. Thus, whilst other factors could be expected to lead to job growth (such as women entering the workforce), the basic demographic impetus has

been absent¹⁵. Second, the tendency towards metropolisation - the concentration of economic activity in large urban areas - may have effectively been countered by the policies described in the introductory part of the paper (White, 1998). Third, the Paris region suffered significant job losses over the 1991 to 1994 period. Indeed, between 1990 and 1994 approximately 120 000 jobs were lost, particularly in the manufacturing, construction and financial sectors (IAURIF, 1996).

Although total employment has remained stagnant, there has been considerable growth in the producer service sector, in keeping with French (Moulaert & Gallouj, 1996), European (Moulaert & Todtling, 1996) and North American (Coffey & Shearmur, 1998) trends. Over the 1978 to 1994 period there have been declines in manufacturing (-550 000) and construction (- 90 000) employment. PS is the fastest growing sector with overall gains of over 300 000 jobs: the only other sector which displays significant job growth is public administration (+ 110 000), but most service sectors have displayed modest employment growth.

Despite overall stagnation in employment numbers, there has been major structural change in the Ile-de-France economy. The extent to which the redistribution of jobs has benefited the zones earmarked in the 1965 regional plan will now be examined.

Table 1 - Total, FIRE and Producer Service Employment in Ile-de-France, 1978-1994

Year	Total	FIRE	Producer Services					
			All	Technical	Managem.	Cultural	Temp. Work	Other
1978	4 459 254	318 913	381 939	112 022	43 914	45 567	58 596	121 840
1994	4 517 592	315 613	735 845	183 982	191 096	65 845	55 804	239 118
1994-1978	58 338	-3 300	353 906	71 960	147 182	20 278	-2 792	117 278
% gth	1,3%	-1,0%	92,7%	64,2%	335,2%	44,5%	-4,8%	96,3%

¹⁵ Over the period of study Ile-de-France population has grown 8%, and job growth has been 1.3%. There has thus been a significant increase in the overall dependency rate (ratio of employed workers to total population) in the region.

EMPLOYMENT POLES WITHIN THE ILE-DE-FRANCE

Definition of Employment poles

The definition of employment poles is problematic, and there exist a variety of methods commonly employed to identify them (Forstall & Greene, 1997; Coffey & Shearmur, 2000; Pfister et al, 2000). In this article, an employment pole consists of any contiguous group of communes where *each* commune contains at least 5000 jobs *and* where there are more jobs than resident workers (E/R ¹⁶ ratio over 1). The threshold of 5000 is to some extent arbitrary: however, in a region where there are over 4 000 000 jobs, it is felt that a concentration of fewer than 5 000 is not of regional significance. A primary pole is one in which at least one commune contains over 12 500 jobs, remaining poles being secondary. The second condition is more intuitive: indeed, a commune where there are more jobs than workers is one to which workers tend to commute. In other words, it is a commune which has a more marked economic than residential function.

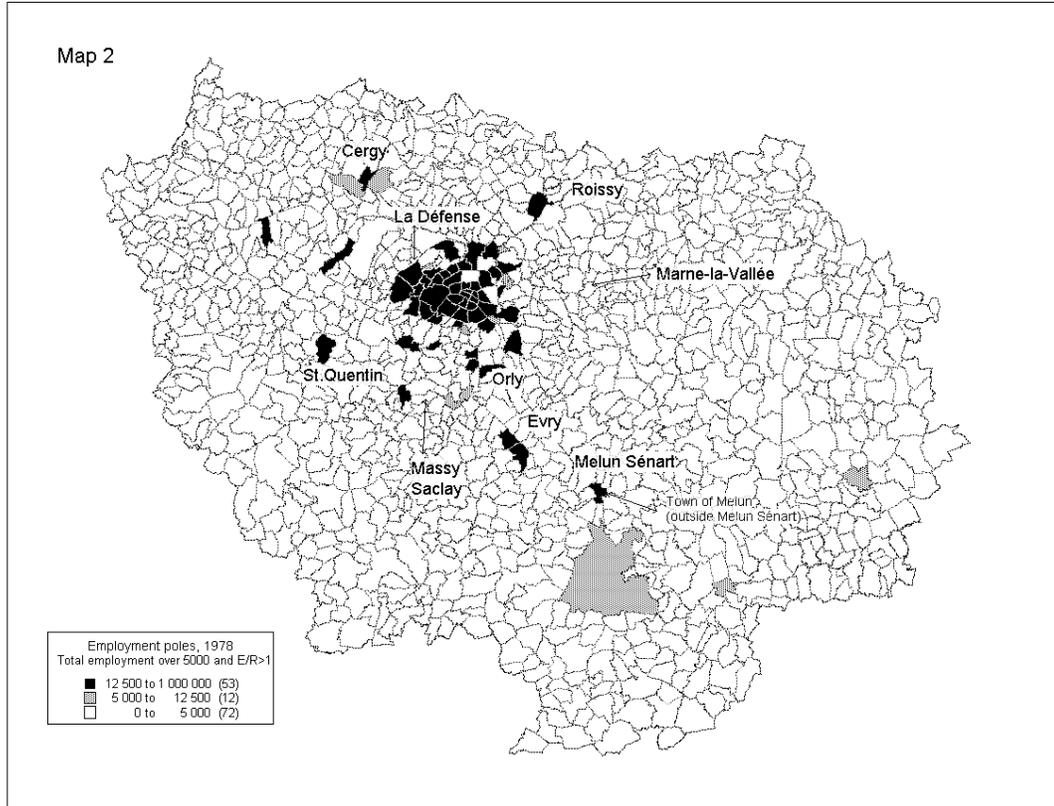
Map 2 displays the communes which emerge as employment poles for 1978, and Map 3 those which emerge for 1994. Not surprisingly, in both years the city of Paris and its immediate suburbs are highlighted as poles, as is la Défense (which, by 1978 already had over 1,5 million m² of office space - Piercy, 1999). The poles most relevant to our analysis are those in the suburbs. As can be seen when comparing Map 1 with Maps 2 and 3, there is evidence that by 1978 some *villes nouvelles* had reached the status of employment poles. The cores of St.Quentin-en-Yvelines, Cergy-Pontoise and Evry emerge as primary poles with over 12 500 jobs in a single commune. Marne-la-Vallée and Melun-Sénart, on the other hand, do not appear as poles in 1978.

By 1994 (Map 3), the situation has changed. Whilst the geographic extent of the Cergy pole remains identical to 1978, those of St.Quentin and Evry have extended. Furthermore, five of the Marne-la-Vallée communes have emerged as secondary poles (poles with between 5000 and 12 500 jobs). Melun-Sénart is the only *ville nouvelle* within the boundaries of which no commune has emerged as an employment pole.

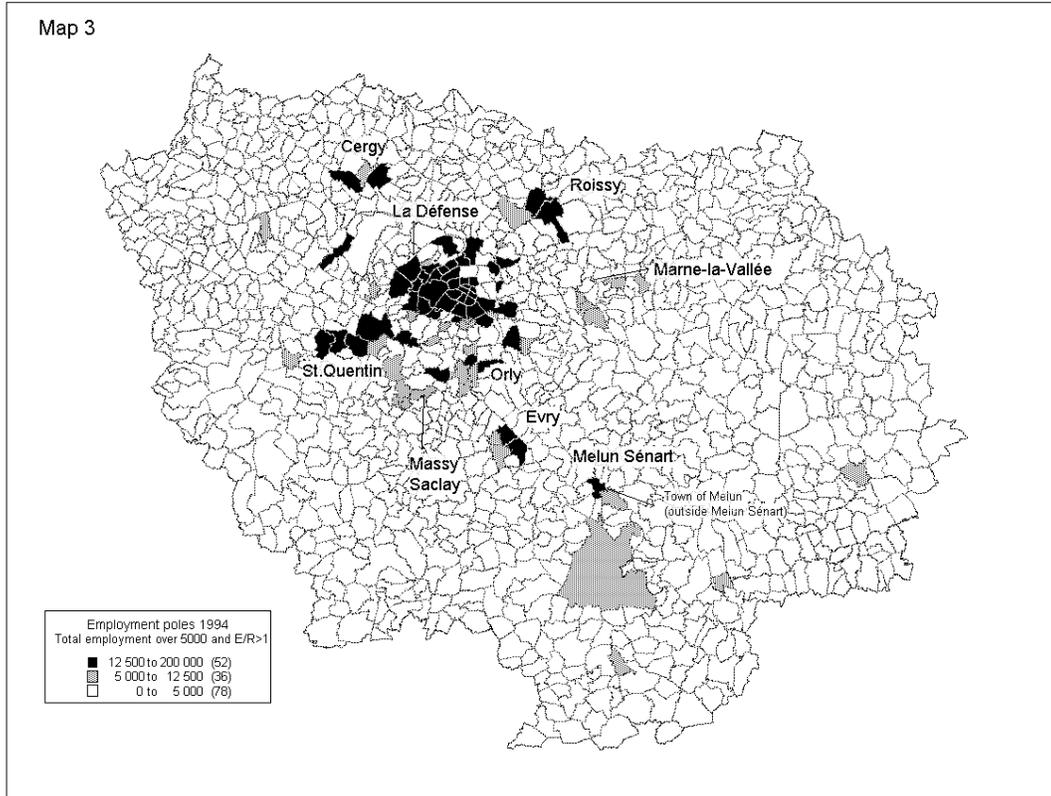
Had there been a proliferation of new employment poles between 1978 and 1994, these observations would be trivial. However very few new poles have emerged. To the east of St.Quentin, the plaine de Saclay / Massy / Orly corridor has fleshed out (this zone corresponds to Paris's, and indeed France's, 'technopole' - Castells & Hall, 1994). The area around Roissy airport (to the north-east of Paris) meeting the definition of an employment pole has also extended.

¹⁶ E/R ratio: Employment to Resident worker ratio.

Map 2



Map 3



Finally, a commune to the south-east of Melun has also emerged, but both the Melun primary pole and its extension are outside the Melun-Sénart *ville nouvelle*. Barring these three exceptions - and abstracting from changes in the immediate periphery of Paris - the only suburban areas which have emerged or expanded as employment poles are within four of the five *villes nouvelles*.

In short, over the period analysed employment poles in the suburbs have emerged and/or extended in two types of area. First they have emerged and/or extended around airports (Roissy and Orly), and along Paris's 'high-tech' corridor running (loosely) from Orly to St.Quentin-en-Yvelines. Second, they have emerged and/or extended in and around *villes nouvelles*.

These results are of interest because they support the view that *villes nouvelles* have played a significant role in the redistribution of employment, a role which can be distinguished from the rest of Ile-de-France. Furthermore, they show that it is legitimate to consider these new-towns as employment poles in the sense understood in the cited literature. These results do not, however, quantify this role. In the next section a closer analysis will be made of employment growth within these zones.

Employment growth and high-order services in Paris, la Défense, *villes nouvelles* and other strategic zones (OSZs)

In this section our objective is to assess whether *villes nouvelles* stand out as having grown substantially faster than other areas in the Ile-de France. In particular, we seek to assess whether they can be said to be becoming 'edge-cities' or suburban down-towns, and we are using the presence of high-order services as an indicator.

In the previous section the Orly - Massy - Saclay corridor was identified as an emerging employment pole, as was Roissy. These zones, referred to subsequently as 'other strategic zones - OSZs) have therefore also been included in the analysis. If these zones display similar rates of growth as *villes nouvelles*, then our conclusions regarding the role of government policy will be weak since these zones have not benefited from the same development incentives as *villes nouvelles*. If *villes nouvelles* appear to outperform all types of areas analysed, then this will indicate that the government's regional plans may have had a marked effect upon the distribution of economic activity in the Ile-de-France.

We have analysed the areas in two ways. First (Table 2), we look at the zones themselves as delimited in the 1965 regional plan (or, for Massy/Saclay, Orly and Roissy, the 1994 plan). Second, we include the communes immediately adjacent to each zone (see Map 1). In this way we capture the possible spill-over effects. This is particularly relevant in the case of Paris and la Défense, areas for which it could be argued that some form of saturation existed in 1978: in our opinion this is not the case, particularly for

la Défense where substantial development has occurred since 1978 (Piercy, 1999), but we allow for the possibility.

Table 2 - Percentage of Ile-de-France employment 1978 and 1994, and shift between 1978 and 1994, for Paris, la Défense, *villes nouvelles* (VN), and 'other strategic zones' (OSZ)

Pole	Year	Total	FIRE	Producer Services					Other	Population
				All	Technical	Managem.	Cultural	Temp. Work		
Paris	1978	41	74	60	41	67	66	82	62	22,6
	1994	34	59	38	32	42	42	54	36	19,9
	Shift	-6,9	-15,0	-21,8	-9,2	-25,9	-24,2	-28,7	-26,0	-2,7
La Défense	1978	3,5	5,7	4,3	8,1	1,5	1,3	1,1	4,5	1,9
	1994	4,5	7,7	7,7	9,8	12,0	3,1	2,4	5,3	1,8
	Shift	0,9	2,0	3,4	1,7	10,5	1,8	1,3	0,8	-0,1
VN	1978	2,7	1,2	1,7	2,9	1,4	2,5	0,3	1,2	3,3
	1994	6,6	4,8	5,8	6,7	5,1	3,6	5,8	6,5	6,2
	Shift	3,9	3,7	4,1	3,8	3,7	1,1	5,5	5,2	2,9
OSZ	1978	3,3	0,6	2,2	4,7	0,6	0,8	0,6	1,8	2,3
	1994	4,6	0,7	5,0	8,9	1,5	1,0	3,3	6,3	2,3
	Shift	1,3	0,1	2,8	4,3	0,9	0,2	2,7	4,5	-0,1
Reste	1978	49,4	18,7	31,6	43,5	29,1	29,0	15,5	30,4	69,9
	1994	50,1	27,9	43,1	42,9	39,9	50,1	34,6	45,7	69,9
	Shift	1	9	11	-1	11	21	19	15	0,0
Total	1978	4 459 254	318 913	381 939	112 022	43 914	45 567	58 596	121 840	9 950 507
	1994	4 517 592	315 613	735 845	183 982	191 096	65 845	55 804	239 118	10 777 651

Distribution of total employment

Over the period analysed the city of Paris has lost over 250 000 jobs, the total number having declined from 1.83 million to 1.55. This means that Paris, which in 1978 gathered 41% all jobs, in 1994 only gathered 34%. The three other types of area (la Défense, *villes nouvelles*, OSZs), together with the rest of the Ile de France, all gained employment. However, most of the employment shifted from Paris to one of the three types of centre: the 'rest of Ile-de-France' only increased its share of jobs by 0.7%. Thus, unlike in Los Angeles (Gordon & Richardson, 1996), Paris does not exhibit a tendency towards scatteration. The decline of the regional core has led to the growth of suburban employment centres.

The fastest growth, has occurred in *villes nouvelles*. Collectively, their share of Ile-de-France employment rose 3.9% from 2.7 to 6.6%. La Défense increased its share by 0.9%, and the OSZs by 1.3%. If growth rates are considered, employment grew 149% in *villes nouvelles*, 28% in la Défense, 41% in the OSZs.

If these areas are considered together with their immediately surrounding communes (Table 3), a similar story emerges. The city of Paris and its immediate suburbs declined from 55% to 47% of Ile-de-France's employment, i.e. a shift of 8% away from the core. Therefore, the immediate suburbs have also been losing jobs (the shift is greater when they are included), and it cannot be said that the decline in Parisian employment is merely a local move to outside the Paris city limits¹⁷.

The area immediately surrounding la Défense has attracted considerable employment, since, once this zone is included, la Défense's share of Ile-de-France jobs rises 3.6% over the period to reach 7.1%. The OSZs gain 1.8% of Ile-de-France employment, and the *villes nouvelles* 4.9%. If these enlarged employment poles are considered, then employment in the rest of Ile-de-France declines significantly (shift away of 2.3%). Thus, far from a scattering of employment, there is a marked concentration of employment in and around suburban employment centres and away from Paris, its immediate suburbs, and the rest of Ile-de-France.

Our analysis of the distribution of total employment leads to the conclusion that the best performing areas have been the *villes nouvelles*. It could be argued that the comparison of five *villes nouvelles* with la 'Défense' and three OSZs is biased to the extent that, inevitably, a larger number of units (particularly ones which cover large surface areas) will gather a larger share of employment. This criticism would be unjustified because, of the three types of centre analysed, *villes nouvelles* comprised the smallest share of Ile-de-France employment in 1978. By 1994 they comprised the largest share. Of the three, *villes nouvelles* display the fastest employment growth. The question is therefore not whether *villes nouvelles* outperformed other suburban zones in terms of job growth - they clearly did - but whether this job growth was in high-order services.

¹⁷ Although this article will not delve into the detailed location of employment shifts, it is the eastern and south-eastern immediate suburbs (the 'red' or industrial suburbs) which have declined whilst the western ones (the crescent stretching from Issy to Clichy) have benefited from employment growth. To some extent, particularly for certain high-order services, there *has* been a local move out of Paris.

Table 3 - Percentage of Ile-de-France Employment 1978 and 1994, and shift between 1978 and 1994, for Paris, la Défense, *villes nouvelles* (VN), and 'strategic zones' (OSZ) including their immediately adjacent communes

Pole	Year	Total	FIRE	Producer Services						Population
				All	Technical	Managem.	Cultural	Temp. Work	Other	
Paris	1978	55	80	71	52	75	83	85	75	34,3
	1994	47	70	54	47	60	69	65	49	30,6
	Shift	-8,0	-10,1	-16,5	-4,8	-15,4	-13,7	-20,3	-26,2	-3,7
La Déf.	1978	6,4	6,7	6,5	12,4	2,7	2,0	3,0	5,9	5,2
	19 94	7,1	9,4	11,5	12,7	17,0	5,3	5,2	9,4	4,9
	Shift	0,7	2,7	5,0	0,4	14,3	3,3	2,2	3,4	-0,3
VN	1978	7,0	3,8	4,9	7,3	5,4	4,7	2,3	3,9	10,9
	1994	11,9	7,4	9,4	9,4	7,7	7,6	9,8	11,1	14,2
	Shift	4,9	3,6	4,5	2,0	2,2	2,9	7,5	7,3	3,3
OSZ	1978	8,0	1,7	5,6	11,1	2,9	1,4	1,9	5,0	10,4
	1994	9,8	2,4	9,1	15,2	3,4	2,2	7,3	11,4	10,0
	Shift	1,8	0,7	3,5	4,1	0,5	0,7	5,4	6,5	-0,4
Reste	1978	26,8	8,9	14,3	21,9	14,8	9,4	9,1	11,5	39,3
	1994	24,5	11,1	15,7	16,0	12,0	15,5	12,5	19,2	40,4
	Shift	-2,3	2,2	1,3	-5,9	-2,9	6,0	3,3	7,6	1,1
Total	1978	4 459 254	318 913	381 939	112 022	43 914	45 567	58 596	121 840	9 950 507
	1994	4 517 592	315 613	735 845	183 982	191 096	65 845	55 804	239 118	10 777 651

Producer service and FIRE employment

From Tables 2 and 3 it can be seen that the decline in Paris's share of producer service and FIRE employment has been even larger than its decline in overall employment. Despite the continued concentration of these sectors in Paris (in 1994 59% of FIRE and 38% of PS employment is there), the specialisation of Paris relative to its suburbs is weakening.

If the actual zones are analysed without their adjacent communes, then the *villes nouvelles* once more display the fastest gain in employment share for both FIRE and PS. However, if the contiguous communes are included, then la Défense stands out, particularly in terms of its share of PS employment: over 11% of all PS employment in Ile-de-France is located in or immediately adjacent to la Défense, against a still respectable 9.4% for the *villes nouvelles* and 9.1% for the OSZs.

There has been some scattering of PS and FIRE employment over the period of study: even if contiguous communes are included with employment centres, then the rest of Ile-de-France has increased its share of FIRE employment by 3.1% and its share of PS employment by 3.5%. These figures are significant since this type of high-order service is reputedly most likely to seek out central locations. It is worth noting that it is the 'cultural services' (CS) and the temporary work agencies (WS) which have tended to grow faster in the rest of Ile-de-France: these sectors have already been identified by Shearmur & Alvergne (2000) as being the most dispersed.

Not all high-order services behave in the same way. In 1994, technical services (TS) are very strongly present in and immediately adjacent to la Défense (12.7% of Ile-de-France employment) and OSZs (15.2%). In la Défense the share has remained stable, in the OSZs it has grown by 4%, whereas the comparable shift for *villes nouvelles* is 2%. The share of la Défense in management and cultural services (MS and CS) has grown faster than the *villes nouvelles*' share, but the latter have grown faster than OSZs. The *villes nouvelles* only stand out when temporary work agencies are considered: their share of Ile-de-France employment rose from 2.3% to 9.8% over the period of study.

The comparison of Tables 2 and 3 reveals that all employment poles have a similar 'attractive' effect on PS employment: in 1994 4.8% of all PS employment was located adjacent to la Défense, 4.1% adjacent to the OSZs, and 3.6% adjacent to the *villes nouvelles*. A broadly similar effect exists for FIRE employment, but it must be noted that although FIRE jobs are located in communes adjacent to OSZs, there is scarcely any such employment within them..

With respect to FIRE and PS employment, the *villes nouvelles* have performed moderately well when compared to the other zones. Clearly high-order management services (MS) have shifted out of Paris to la Défense¹⁸ and to Paris's immediate suburbs (a shift of 10.4% to the immediate suburbs). Cultural services have shifted to the rest of Ile-de-France (+21%), in particular to Paris's immediate suburbs (+ 10.5%). Technical services have tended to decline in Paris, and grow in la Défense and in the 'OSZs': this is in keeping with the fact that these zones are the 'high-tech' areas of the Ile-de-France, and that the TS sector is dominated by computer oriented jobs. Finally, temporary work agencies have grown fastest in *villes nouvelles* and in OSZs.

This may seem to indicate that the type of producer service which has emerged in the *villes nouvelles* is of a lower order than that emerging in the other zones. This is not necessarily the case since the *villes nouvelles*, without out-performing the other zones, have benefited from a considerable increase in their share of all types of producer service. This shift has, however, tended to be commensurate with the shift in total employment. In other words, *villes nouvelles* have not been increasing their degree of

¹⁸ There has been a shift - but it is not possible, in this exercise, to determine whether it is those who have left Paris that have gone to la Défense. Moulaert & Gallouj (1995) suggest that it is.

specialisation in PS or FIRE, whereas la Défense has for all PS sectors, and the OSZs have for PS, and particularly for TS. Only the rest of Ile-de-France has increased its specialisation in FIRE employment.

DISCUSSION AND CONCLUSION

The main purpose of this paper has been to investigate the extent to which a link can be established between regional planning policies implemented in the Paris region in the 1960's (and carried through to the 1990's) and employment growth and geographic shifts over the 1978 to 1994. Two methods have been used: to begin with, a definition of employment poles has been applied to Ile-de-France data with no a-priori definition of where the poles would be. Then, the employment centres as defined in planning documents (principally the 1965 plan, but also, for comparative purposes, some strategic zones identified in the 1994 plan) have been analysed in order to establish their employment growth characteristics as compared to other areas of Ile-de-France. A secondary purpose of the paper has been to establish whether the employment poles as defined in regional planning documents have tended to attract high-order service jobs, since this would serve as an indicator of the emergence of 'edge cities' or 'suburban downtowns'.

Villes nouvelles and La Défense as employment centres

The results of our first approach show that over the 1978 to 1994 period the communes which emerged as employment poles were either within *villes nouvelles* or were within three 'strategic zones' identified (*a posteriori*) in the 1994 regional plan. Thus, although planners in the 1960s do not appear to have pinpointed *all* the development poles in the region, it is clear that the areas identified in the 1960's as suburban growth poles did in fact emerge as such.

When the growth characteristics of the *villes nouvelles*, la Défense, Paris and the OSZs are compared, it can be seen that the *villes nouvelles* have benefited from markedly higher growth rates. Although there is no hard evidence that this is attributable to policy, it is nevertheless worth noting that amongst the areas studied it is the *villes nouvelles* which experienced the largest positive shift in employment share. These new-towns only accounted for 2.7% of all Ile-de-France employment in 1978, but by 1994 they gathered 6.6% of all employment. In both absolute and relative terms this growth is remarkable.

From Tables 2 and 3 it can be seen that the *villes nouvelles* are the only areas to experience a gain in their share of population: this gain is roughly equivalent to Paris's loss, and it is tempting to interpret it as a transfer from Paris to the *villes nouvelles*, in keeping with the initial policy aims enshrined in the 1960 and 1965 regional plans. The

relationship is no doubt not as simple, but whatever the underlying dynamics the data reveal that whilst *villes nouvelles* act both as employment AND population centres, the other economic zones identified (la Défense, OSZs, and the city of Paris) have a primarily economic function (to the extent that their share of jobs outstrips their share of population).

This may explain why *villes nouvelles* do not stand out as major producer service or FIRE centres. Whilst producer services and FIRE sectors have grown fast in the *villes nouvelles*, there is little evidence of specialisation: the percentage of total employment in these areas is similar to the percentage of PS and FIRE employment. The three other types of area (Paris, la Défense, OSZs) are *specialised* in the provision of at least some high order services. It is therefore not possible to say that the *villes nouvelles* display typical edge-city characteristics: neither is it possible to say that they are merely dormitory suburbs. Parts of them emerge as employment poles, and they contain a significant percentage of total, PS and FIRE employment.

Polynucleation or scatteration of employment

During the course of our analysis some wider issues have been touched upon, most notably the redeployment of jobs across the Ile-de-France region. Whereas Gordon & Richardson (1996) identify a certain degree of scatteration in Los Angeles, Pfister et al (2000) and Shearmur & Coffey (2000) point out that this phenomenon is not generalised. In our analysis, ten employment centres have been analysed¹⁹ which together account for 50% of all employment both in 1978 and 1994. Despite the continuity in this number, there has been a marked shift of employment out of Paris, and a marked shift towards *villes nouvelles* and 'strategic zones'. On the whole this pattern of shifts is replicated when producer services are considered, although in general higher percentages of employment in these sectors are found within poles.

If the ten employment centres are augmented by communes immediately adjacent to them, then employment concentration is even more evident: in 1978 73.2% of all jobs were to be found either in or adjacent to the centres, and in 1994 the number is 75.5%. Jobs in the Paris region have tended to concentrate within and around employment centres: a process of polynucleation at occurring.

The effect of policy

It is of course risky to draw policy conclusions from an analysis of data, and it is possible that the effects which we have observed have been caused by other factors. However, it is striking that the five *villes nouvelles* designated and acted upon in the 1965 regional plan are the five centres which have displayed the fastest employment growth in

¹⁹ Cinq villes nouvelles, Massy/Saclay, Orly, Roissy, Paris, La Défense.

the Paris region. Furthermore, four out of these five centres emerge and/or strengthen over the 1978-1994 period when a policy-neutral definition of employment poles is applied to our data.

In addition, the data tend to understate growth which occurred in these centres, since by 1978 the *villes nouvelles* had for the most part been established and were in the process of growth. Bearing in mind the essentially rural nature of these areas in 1965 (even in 1978 they only accounted for 2.7% of Ile-de-France employment), the fact that by 1994 they contained over 6.6% of the region's employment is noteworthy. This figure is all the more noteworthy because no other centres displayed similar growth rates or positive shifts in employment.

Unlike in other centres, including la Défense, growth in the *villes nouvelles* has been balanced: these cities have served as both population and economic centres. Our study shows that employment growth is not only attributable to the rise in population (which would have entailed a rise in consumer service employment) since their shares of regional PS (in particular TS and MS) and FIRE employment have grown as fast as their share of total employment, which itself has grown faster than total population share.

Whereas the other centres analysed are the primary economic engines of the Ile-de-France, relying to a large extent on labour drawn from outside their boundaries, the *villes nouvelles*, whilst economically significant, tend to display a balance in terms of population and jobs. This is not to say that there is no commuting between these centres and Paris: indeed, the RER and SNCF lines, not to mention the highways into and around Paris, attest to substantial movement between the *villes nouvelles* and the rest of the region. However, nearly as many people commute into the *villes nouvelles* as out of them - and it is this characteristic which leads us to qualify their development as 'balanced'.

The original policy objectives set out in 1965 were to direct new population towards the *villes nouvelles*. This has apparently succeeded, with 14.2% of the Ile-de-France population now living within or directly adjacent to a *ville nouvelle*. A secondary objective, which rapidly emerged as the *villes nouvelles* took root and as local decision makers began to orient policy implementation, was economic development. Here too, the objective has been met - except in Melun-Sénart where no employment poles emerge, even in 1994. Whether or not one can justifiably maintain that there is a causal link between policy and outcome, it is undeniable that the overall objectives set out in 1965 have been met. Finally, it is apparent that the *villes nouvelles* are of a different nature than Garreau's (1991) 'edge cities' or Stanback's (1991) suburban downtowns. It is a paradox that, in Britain, new-towns which were designed to grow as balanced communities are often perceived as residential suburbs. In France, the *villes nouvelles*, intended as residential suburbs for Paris and initiated on the premise of a region-wide labour market, have emerged as balanced economic and residential centres.

Although no proof can be given, we believe that this paper provides enough circumstantial evidence to claim that the regional policy framework described in the

introduction has had a strong, if not over-riding, influence on spatial outcomes in the Ile-de-France. In our opinion this policy framework attained its objectives for a number of reasons:

- it was enhancing existing or emerging suburbanization trends;
- despite the fragmented institutional framework, the strong arm of the French state ensured *coordinated* transport, fiscal, land and regulatory policies;
- owing to the consensus regarding general policy aims and the state's commitment to them, the policies were implemented over the long term.

Pfister et al (2000) suggest that policy may have an effect on urban form, and Shearmur & Coffey (2000) suggest a variety of hypotheses, of which different regional policy is one, to explain the various intra-metropolitan patterns observed in Canadian cities. White (1998), from a different perspective, argues that 'global cities' do not develop solely along market driven lines and that policy is an important factor, particularly in the case of Paris.

In this paper, a detailed analysis of regional policy reveals a close fit between policy objectives, policy measures and spatial outcomes. This suggests that *policy matters*. Pfister et al (2000), following Gordon & Richardson (1996), write that "there may be an entrenched employment pattern that is more dispersed than polycentric, despite all the rhetoric of edge cities and public policies designed to encourage employment nucleation". This may be true in Los Angeles and Sydney. In Paris, over the 1978 to 1994 period, the evidence suggests an effective policy induced trend towards polynucleation.

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Annex 1: Sectors Analysed

	NAF700	NAP600*	Classification
Financial intermediaries	651A to 652F	8900 to 8999, 8007, 8122	FIRE
Insurance	660A to 660G	8800 to 8899	FIRE
Financial and insurance auxiliaries	701A to 703E	7800 to 7899	FIRE
Real estate	701A to 703E	7900 to 7999, 8100, 8111, 8121	FIRE
IT consultants and programmers	721Z, 722Z	7703	TS (technical)
Data entry and management	723Z, 724Z	7704	TS (technical)
Research and development	731Z, 732Z	8300 to 8399, 9300 to 9399	TS (technical)
Engineering consultants	743A, 743B	7706, 7701	TS (technical)
Legal services	741A	7708	MS (management)
Accounting services	741C	7709	MS (management)
Management consulting	741G, 741J	7707	MS (management)
Architecture	742A, 742B	7705	CS (cultural)
Advertising	744A, 744B	7710, 7711	CS (cultural)
Opinion polls and market studies	741E	7702	CS (cultural)
Temporary work agencies	745A, 745B	7713	WS (temporary work)
Other producer services	725Z, 726Z, 743A, 743B, 746Z, 747Z, 748A to 748K, 711Z to 714B	7700, 7714, 7715, 7712, 7720, 8000, 8001, 8002, 8003, 8004, 8005, 8006, 8008, 8708	OS (other producer services)

* The notation xxxx to yyyy indicates all sectors with a NAP600 code within the range. All numbers within the range do not correspond to a sector.

The classification Technical (TS), Management (MS), Cultural (CS), Temporary Work (WS) and Other (OS) is based upon a similarities between the sectors and similarities in location patterns identified in Shearmur and Alvergne (2000). They analyse seventeen FIRE and PS sectors in Ile-de-France for 1994 and conclude that certain sectors display similar location patterns. We have loosely relied on this classification to group the sectors together, the purpose being to reduce the number of sectors to a manageable level without losing too much information.