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Integrated Fare Systems for Local Public Transport: A Regional Prospective

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1. INTRODUCTION

Any integrated fare system consists of two essential elements: different levels of prices (generally according to the distance of the journey) and a zoning of the integrated territory. While fares generally depend on economic factors like citizens' income, demand and supply of services, zoning is very close to both the territorial structure where it insists and the governance of the metropolitan area. In this analysis the focus will be centred on the dynamics providing certain patterns of partitioning the integrated fare systems.

All the cases listed in the following analysis are part of the European continent, where the usage of public transport regards a range generally between 35% and 55% of the whole modal share. This approach might be not entirely applicable in other western country like North America in which the modal share in favour of the public means is lower than 10%.

2. LITERATURE REVIEW

2.1. DECENTRALIZATION

How have scholars in political science responded to the unravelling of central state control? One intellectual response to the diffusion of authority has been to stretch established concepts over the new phenomena. Scholars of federalism have applied their approach to power sharing among as well as within states. International relations scholars are extending theories of international regimes to include diffusion of authority within states. Another response has been to create entirely new concepts, such as multi-level governance, polycentric governance, multi-perspectival governance, condominiums, and fragmentation.

In European Union studies multi-level governance has been common currency among scholars and decision makers. Multi-level governance initially described a "system of continuous negotiation among nested governments at several territorial tiers-supranational, national, regional and local" that was distinctive of European Union structural policy (Marks, 1993; Hooghe, 1996), but the term was also applied to the European Union more generally (Grande 2000; Hooghe and Marks, 2001). Europeanists also analyzed the diffusion of decision making to informal and overlapping policy networks (Ansell, 2000; Kohler-Koch and Eising, 1999; Peterson 2001). While some conceived multi-level governance as an alternative to hierarchical government, others viewed policy networks as nested in formal government institutions (Peters and Pierre, 2000; Rhodes, 2000).

Dispersion of governance across multiple jurisdictions is more flexible than concentration of governance in one jurisdiction. Efficient governance adjusts jurisdictions to the trade-off

between the virtues and the vices of centralization (Alesina and Spolaore, 1997; Marks and Hooghe, 2000). Large (i.e. territorially extensive) jurisdictions have the virtue of exploiting economies of scale in the provision of public goods, internalizing policy externalities, allowing for more efficient taxation, facilitating more efficient redistribution, and enlarging the territorial scope of security and market exchange. Large jurisdictions are bad when they impose a single policy on diverse ecological systems or territorially heterogeneous populations. One criticism of centralized government has been that it is insensitive to varying scale efficiencies from policy to policy. Economies of scale are more likely to characterize the production of capital-intensive public goods than of labour-intensive services because economies accrue from spreading costs over larger outputs. Under multi-level governance, jurisdictions can be custom designed with such variation in mind. Centralized government is not well suited to accommodate diversity. Ecological conditions may vary from area to area. Preferences of citizens may also vary sharply across regions within a state, and if one takes such heterogeneity into account, the optimal level of authority may be lower than economies of scale dictate. In short, multi-level governance allows decision makers to adjust the scale of governance to reflect heterogeneity (Marks and Hooghe, 2003).

2.2. TWO OPPOSING MODELS

Beyond the bedrock agreement that flexible governance must be multi-level, two different models have been proposed. Based on the conceptual work undertaken by Richard Scott and John Meyer, two of the founders of the neo-institutionalist movement in the 1970s, four crucial organizational dimensions that are relevant for administrative behaviour were identified: centralization/decentralization; territorial consolidation/fragmentation; degree of professionalization; and form of political control. These four analytical dimensions will be used as a framework to conceptualize the models of metropolitan governance of the neo-progressive and of the public choice school, respectively, that oppose each other on each of these dimensions.

2.2.1 NEOPROGRESSIVE MODEL

The neoprogressive model of metropolitan government was rooted in the U.S. progressive reform tradition, which started as a political movement of puritan intellectuals against “the poisonous atmosphere of city government, the crooked secrets of state administration, the confusion, sinecurism, and corruption ever and again discovered in the bureaux at Washington” (Wilson). The progressive reformers’ program recommended a strict separation of the administrative from the political sphere and of applying the principles of so-called “scientific management” (Gulick and Urwick), which Felix Nigro and Lloyd Nigro summarize as follows:

1. organizational structure, coordinated by management, is the key to rational-efficient administration;
2. whenever possible, division of labour and specialization (of organizational units) are desirable;
3. unity of command or direction by only one supervisor is essential, multiple supervision creates confusion and conflict;
4. those held responsible for tasks in the organization must be given the authority to carry them out;
5. tall hierarchies with narrow spans of control are often needed to maintain control;
6. systematic planning is a necessary administrative function: through planning, management creates the organizational foresight necessary for long term survival and prosperity.

2.2.2 PUBLIC CHOICE MODEL

The public choice perspective applies the axioms set by Anthony Downs to the analysis of public administration: “We assume that every individual, though rational, is also selfish. Throughout our model, we assume that every agent acts in accordance with this view of human nature. Thus, whenever we speak of rational behavior, we always mean rational behavior directed primarily towards selfish ends.” In the public choice view, democracy is a free market where the public well-being is no more than the aggregate of individuals’ aspirations. In this perspective, state intervention by definition interferes with the individual pursuit of happiness.

Public administration is the main means of state intervention and is therefore to be judged negatively in the first place. Even worse, since bureaucrats are also egoistic, rational utility maximizers, there is a vicious circle inherent to public administration that leads to a constant growth of administrative budgets, which thus diminishes individual freedom in a nondemocratic manner (Niskanen).

The state has failed (nonmarket failure) and the application of market mechanisms provides a better solution by way of the so-called quasi markets, meaning the separation of public service provision from production. This includes “contracting with a private producer, contracting with another government, establishing a producer organization in cooperation with other governments, licensing private firms to operate on a franchise basis, and providing citizens with vouchers to make their own arrangements with producers” (Ostrom, Bish and Ostrom).

In the following table, the effects of the two models in the metropolitan government are explained:

Metropolitan government structure			→	Policy coordination
	Neoprogressive	Public Choice		
Centralization	<i>centralized</i>	vs. <i>decentralized</i>		Formal rationality
Consolidation	<i>consolidated</i>	vs. <i>fragmented</i>		Substantial rationality
Professionalization	<i>high</i>	vs. <i>low</i>		Implementation
Autonomy from political sphere	<i>clear distinction</i>	vs. <i>no clear distinction</i>		

[Table 1] – Neoprogressive vs. public choice models

2.3. METROPOLITAN GOVERNANCE AT EUROPEAN LEVEL

The appreciation of local contexts has represented a major shift away from the model of reform based on mechanisms of centralised, bureaucratic, “top-down” implementation that dominated until the 1970s. With the exceptions of Greece in the 1990s and Great Britain in the 1980s, there was not a single European state that did not attempt to integrate local actors, being they elected politicians or members of civil society, into these reforms. It is on the basis of this shift that a very clear transition was noticed towards an operating model based on the principles of governance, resting on the dilution of authority and accountability, and an increase in the number of actors of different statuses with the capacity to aggregate their local interests and to defend them collectively vis-à-vis other levels of government, particularly in a context characterised by globalisation. The institutional reforms affecting the cities of Europe offered an opportunity to fundamentally change the *raison d’être* of local institutions. Until this point, in the framework of a relatively clear division of labour between these and the state, local institutions occupied a secondary role limited to the provision of local public services and to the generation of economies of scale as well as rational land management (Jouve, 2005).

During the 1980s (in the first place in Great Britain) and then throughout the 1990s (in all the other European countries), this managerial logic was supplemented with an entrepreneurial logic that made cities essential spaces in globalisation (Hall and Hubbard, 1998; Harvey, 1989). The reforms of urban institutions were aimed at optimising the delivery of collective services, in the context of very constraining budgetary policies, utilising the precepts of the new public management (Larbi, 1999). They were also intended to mobilise local societies to engage in a competition amongst the cities aimed at attracting new businesses, new investors and the well-to-do classes. These reforms were designed to generate a collective dynamic at the urban level and to generate projects that would bring together a large number of local actors from diverse spheres of civil society. The attention given to collective action when the new decision-making structures were put into place counts just as much as, in fact more, than the institutional logic (Pinson). There was, therefore, a very clear evolution from the dynamics of reform in the 1970s. To use the typology of Simon (1970), from that time on, procedural rationality won out over substantive rationality.

It is also in this that these reforms fit into a set of major modifications that affect modern societies and that lead to a questioning of the organisational principles of politics that, until the present, have been based around the centrality of elected officials in decision-making processes and around elections as the sole mechanism for aggregating individual preferences. It is no longer possible to touch urban institutions without ensuring the participation of civil society in the reforms. The failure of the referenda on the “City-Provinces” in the Netherlands or on the fusion of Länder of Berlin and of Brandenburg in 1996 were entirely revealing of this deep-seated tendency in European societies. The transformation of urban institutions fitted undeniably into an evolution of all modern societies which have become much more critical and demanding of the political sphere. Most of all, they are demanding an end to the model of integration “from above” associated with “Fordist compromises” to the welfare-state during the years of strong economic growth (Hamel et al., Mayer, 1995). This evolution extends well beyond the institutional reforms of European cities. It concerns the very terms of definition of the political order and justice (Habermas, 1975; Macedo, 1999; Dryzek, 2002).

Beginning in the 1980s and 1990s, the institutional dynamics in Europe have gone well beyond the search for an optimal urban structure. They have transcended the traditional debate between, on the one hand, supporters of Public Choice (Ostrom et al., 1961) and, on the other, the reformers (Wood, 1961). The transformation of European states that grants a more important place to the cities, the international competition that produces large metropolitan regions as well as aspirations in civil society towards participatory democracy, aspirations that have been interpreted by some as contributing to a new political culture (Clark and Hoffman-Martinot, 1998), all of this seems to be converging to transform cities into pluralist political spaces. The implementation of numerous participatory proceedings aimed at incorporating civil society into the definition of “metropolitan projects” attests to this dynamic: the development councils in French cities of more than 50,000 inhabitants, the strategic planning experiences in Italy (Turin, Florence, Venice, Genoa), Spain (Barcelona), the United Kingdom (Manchester, London, Birmingham, Belfast), Germany (Stuttgart, Munich), the Netherlands (The Hague, Utrecht), Belgium (Antwerp) and in Austria (Vienna) illustrate this change to relations between the urban institutions and the local civil societies.

2.4. METROPOLITAN PLANNING ORGANIZATIONS

According to Gerber and Gibson (2009) the policies of regional governance arrangements in general, and of MPOs in particular, are shaped by two main factors: the preferences of their members and the rules that aggregate those preferences into outcomes. The preferences of members are, in turn, affected by their formal positions — whether they are elected officials or public managers — and the contextual factors of their environments. The incentives that derive from individual decision makers’ positions shape their choices regarding MPO policy. Four types of actors participate in MPO decision making:

- (1) county and local elected officials appointed by their local governments (typically a county board or city council) to represent their jurisdiction on the MPO;

- (2) state, county, and local government staff (such as city managers or planning directors) and transportation professionals (typically transportation department staff) who bring land use, engineering, or transportation policy expertise (we use the term “public managers” to refer to this group);
- (3) non-political appointees, such as residents or representatives of business, labour or educational organizations;
- (4) MPO staff, responsible for the day-to-day operations of the MPO, including much of the technical work involved in producing long-range and short-term regional transportation plans.

Individuals from the first two categories — elected officials and appointed public managers — typically comprise an MPO’s governing council (hereafter MPO board). How MPO members act on the preferences generated by their formal positions and their local and regional circumstances is conditioned by the rules and procedures embodied in an MPO’s institutional structure. MPO members interact and bargain within the context of formal institutions characterized by explicit powers and constraints, formal rules and procedures, and informal norms and practices. These institutions shape how decision makers interact, the aggregation of their preferences, and the translation of those preferences into outcomes.

In terms of their basic powers, MPOs resemble voluntary associations in which members enter into agreements in order to achieve goals that cannot be reached individually and thus may be subject to the difficulties explored by studies of collective action (Olson 1965), such as group size and uncertainty. Regarding size, the total costs of negotiation generally increase with the number of actors involved and thus reduce any individual actor’s expected payoff from the collective good. Negotiations involve determining and seeking to compromise over a range of policy preferences. With each additional actor, the number and range of preferences can increase the number of interactions necessary to reach a collective decision (Mueller 1989, Sandler, 1992).

The distinction between local and regional projects is a matter of degree: all projects within a metropolitan transportation system may increase the effectiveness of the larger system and so have region-wide impacts. Even the most locally concentrated project may have important regional impacts if it involves, for example, opening a bottleneck that then allows improved traffic flow through the wider area. And regional projects may trump local ones in terms of actual moneys allocated to any single jurisdiction. Still, in terms of the political calculus relevant to decision makers within an MPO, geographic scope matters. Locally focused projects require less coordinated governance and concentrate benefits within one or a few jurisdictions. Projects with more dispersed activities distribute benefits more widely and demand greater levels of coordination. The difference in scope thus affects opportunities to engage in credit claiming, as discussed in the previous section (Gerber and Gibson, 2009).

2.5. TRANSPORT ORGANIZATION MODELS

Cox (1986) examined three forms of organising public transport systems in metropolitan areas, taking into consideration seven issues: role of the public agency, ownership of the service franchise, responsibility of the service planning, operation of the service, economic applicability, service orientation and driving factor in service delivery choices. Wilson (1991) identified five types of relations between agents in the planning and operation tasks, and Cox and Love (1991) classified five service structures taking into consideration government involvement in three functions (overall system planning, service design and operation of services), and also the nature of competition. Andersen (1992) considered the role of the public sector and entry conditions to the market, and Berechman (1993) defined four regulatory regimes analysing the constraints to decision parameters. The classification proposed in [Table 2] with forms of organising the urban public transport system focuses on two features: service co-ordination and competition between operators. The strength of this formulation is that the organisational options/models correspond to the four options of combining the two features and to different arrangements in the market structure, conduct and performance.

ORGANIZATIONAL MODELS	CO-ORDINATION	COMPETITION EXAMPLE
Modal services	No	No
Authority and operator	Yes	No
Authority and multiple operators	Yes	Yes
Deregulation	No	Yes

[Table 2] – Classification of urban transport organizations according to Berechman (1993)

According to Costa (1996) different market conduct can be observed for each transport organizational model .

MODELS	1	2	3	4
Management strategy	Largest possible network	Largest possible network	Largest possible network	Short run marginal cost recovery
Pricing goals	Satisfying goals	Satisfying goals recovery ratio	Satisfying goals recovery ratio	Profit
Pricing policies	Cross-subsidisation	Cross-subsidisation	Cross-subsidisation	Pricing down to marginal cost
Pricing procedures	Second-degree and third-degree discrimination	Second-degree and third-degree discrimination	Second-degree and third-degree discrimination	Second-degree and third-degree discrimination
Productive and allocative efficiency	Allocative and scale efficiency	Allocative and scale efficiency	Allocative and technical efficiency	Product choice and technical and dynamic efficiency and economies of scope

[Table 3] – Market conduct of urban transport organizations

(where numbers correspond to: 1 = modal services, 2 = authority and operator, 3 = authority and multiple operators, 4 = deregulation)

Management strategy represents the central focus of management decisions. In the first three models the objective is generally to maximise some physical criteria such as the number of passengers carried or route kilometres served and the strategy is to move the production function outwards. In the last model the market is much more important and so the objective is to realise a “positive profit” (Alchian, 1950). Transport services exist only on profitable routes in this last framework and management strategy in this case is often limited to recovering short run marginal costs.

Pricing goals are the objectives to be achieved with the pricing system. In the first model the objectives can be very different and may include macroeconomics ones - e.g. prices may be kept artificially low in order to control cost push inflation. In the second and third models the authority usually has a cost-recovery ratio target. In the last model the objective is to price so as to maximise profit.

Pricing policies concern the relationship between production and the pricing mechanism. The pricing policy is related to management strategy. In the first three models the strategy is to have the largest possible network and this is possible by cross-subsidising unprofitable routes with the revenue from profitable ones and also with subsidies from the authorities. In the last model the policy is to raise as much profit as possible.

Pricing procedures are the tactics used in pricing products. Second-degree price discrimination procedures (quantity discounts) are usually implemented through the use of single ride tickets and monthly passes which offer discounts to frequent users. Third-degree price discrimination procedures (consumer discrimination) are usually implemented by selecting people according to their characteristics such as age or occupation.

In several metropolitan areas of the western world the organisation of transport systems recently changed. In some cases, attributing a specific organisational model to a particular metropolitan area is debatable because more than one model could apply. This is the case, for example, in the cities where model 3 was chosen. In all the cases cited, there remain a number of services not tendered but, operated under licence, as is the case under model 2.

In some cases, the date is also difficult to establish because it took time to introduce change. The date established for model 2 was the date when the authority took charge of the system and for number 3 it was the date of the first tendering. After passing of legislation allowing the introduction of tendering contracts, there had been a period of transition enabling the public enterprises to rationalise their services and to prepare to compete with private competitors during the tendering process. These enterprises, when the services were put out to tender, became more competitive and, in the cases where they were allowed to bid, they won the majority of the contracts. At the end of the transition period from model 2 to 3, the organisation of the market was still as in model 2 but public enterprises would seem to be attempting to improve the technical efficiency which was consistent with an enterprise in the market of the model 3 type.

In this context metropolitan areas have developed different integrated fare systems fitting their needs to regulate and price their public transport services. In the following chapters an attempt to define a model of zoning their territory will be provided.

3. ZONING METROPOLITAN AREAS

Before explaining the different zoning of public transport fares, it is interesting to define the expression “integrated fare system”.

According to Chris Nash (1988) the argument over public transport integration really is the traditional one of central planning versus the market. “In a system which is not integrated, individual routes, the modes and services are planned separately by a variety of operators and authorities, perhaps some acting purely commercially and others acting socially to fill the gaps. [...] In contrast, in an integrated system, a single authority takes an overview of fares and services throughout the area, and seeks to plan these to achieve its objectives best subject to the constraints it faces”.

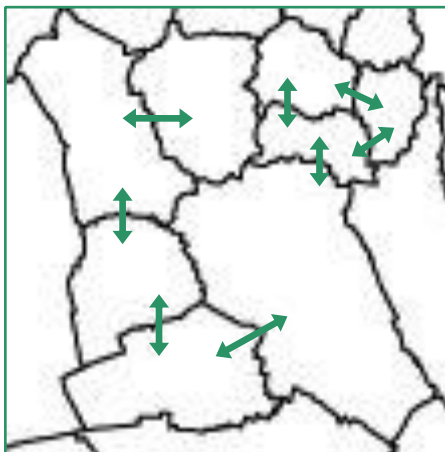
In the analysis of Adt, Anselmi, Binaghi, Diosma, Magliano, Mazzitello, Priori and Tagliaretti (1997) the integration “is the current system in an area where all trips within it are possible with a single travel document, using different means of transport. The requested price does not depend on the type or number of services used. In particular, a journey is called integrated when it is possible to use a single travel document for which the price does not depend on the type or the number of the means used, but only by the quantity of transport purchased”.

3.1. THE FOUR STRUCTURES

Except for the so-called flat rate, which provides for the use of a single ticket at a fixed price regardless of the journey, the following four criteria have been used in the planning strategies (nouns are not official):

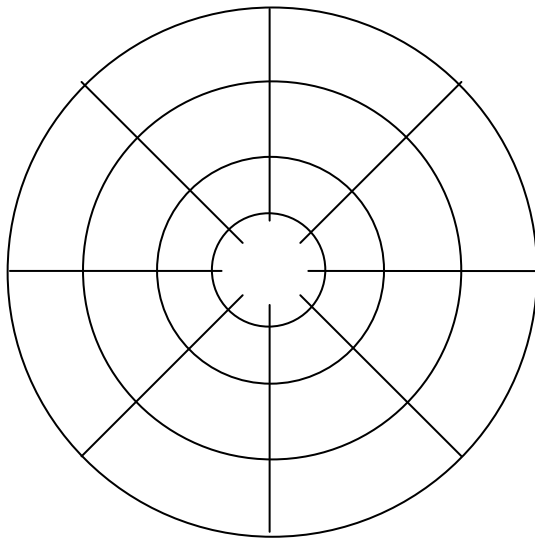
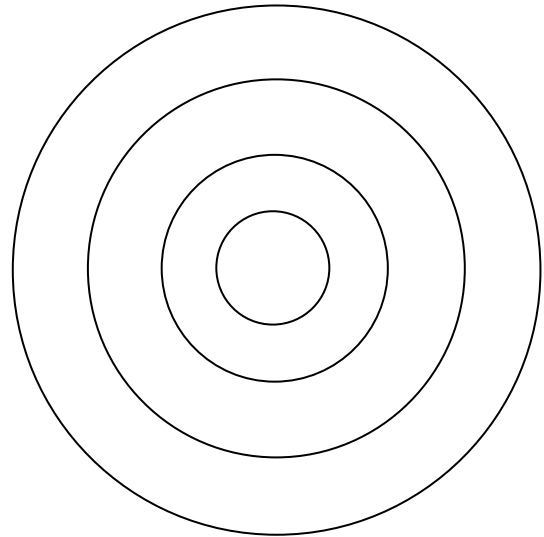
- cooperative fares;
- rings fares;
- sectors fares;
- hive fares.

For each of them a brief description is provided below.



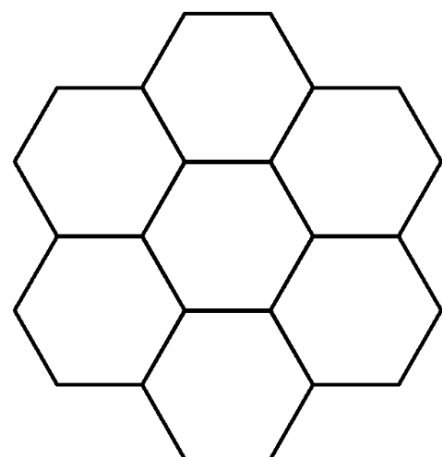
In the cooperative pattern the borders of the zones usually correspond with the perimeter of the local authorities inside which different fares are organized. A common fare is provided between each administration whose price is voluntarily arranged through a formal agreement. Therefore, for customers, the price of the journey is proportional to the amount of local entities crossed; instead, no common framework is established inside every single administration.

In the partition into rings the price is defined according to the circles that are crossed. If customers are travelling tangentially through a unique ring, only a single zone is charged. Generally this solution is justified as an equity measure to reduce the difference in the level of service between the city centre and the hinterland; in fact, in these cases, the majority of public transport supply is offered downtown and along the corridors.



Even if the sectors fares seem to be very close to the rings ones, the principle of zoning does not match with previous description. In this pattern zones correspond with cloves and therefore also journeys through the hinterland are charged more similarly to kilometre-based fares. This tariff is often organized when the supply is more distributed among the whole metropolitan area and the zones fit the dimensions of the smaller towns covering the outlying territory.

Where the hive fares are applied the distance between each zone is almost the same, as if this system were a perfect kilometre-based tariff: in fact, the price charged by the tickets is proportional to the area covered by the zones. For instance, travelling in a city centre costs twice than between small towns in the neighbourhood. Technically, the enabling factors are generally both a homogenous landscape of the area and the existence of a neuralgic network based on a foremost mean of transport whose stops are almost equidistant.



3.2. THE DECISIONAL EFFECTS

The four patterns described above do not seem to be independent from the political choices of the actors who have led to the foundation of the metropolitan area where the integrated fares insists. Quite all the metropolises appear to have followed a common history in the strategic planning and the overriding factor would lie in the role of the leading institutional actor(s).

- (1) In the first case, the integration is voluntarily arranged between the local authorities insisting in the area, which are generally part of the same level of government and whose dimensions are comparable (in terms of territorial extent, inhabitants and provided services). This inter-institutional agreement could rise either from the proposal by few local entities or under the pressure of higher levels of government; the initiative is often taken by the actor who owns the financial and organizational resources. The activation of this tariff model is strictly related to efficiency objectives, in fact the intervention on transport belongs to a common wider policy to integrate different public services like water supply, waste management, electricity distribution, land use and sometimes health facilities together with the local authorities of the area.
- (2) The rings fare usually arises from the need of the “capital city” of the metropolitan area to expand outside its administrative boundaries in order to satisfy some fundamental functions which the city cannot preside and to mitigate the externalities caused by the urban sprawl. If the leading actor of this process coincided with the inner city government, the proneness would be to keep intact the services provision inside the boundaries of the main municipality while extending the same organizational model in the neighbourhoods, designing the circles every certain distance from one zone to another one. Using this approach, the governance turns to be concentric and therefore the mobility policies are also affected by this view; the far majority of the investments will be focused on the service in the inner city and along the corridors that facilitate commuters to travel from hinterland to downtown and vice versa.
- (3) Trying to solve the same problem of the urban sprawl and delocalization of important services, an institution at higher level (as county, province, region, etc.) is more likely to intervene. This happens mostly for two reasons: because the “regional” administration is interested in being considered as the principal actor in regulating the metropolitan area, however above all the sole city may have not sufficient resources to come to a satisfactory solution. On the opposite site of the capital city policy, the “region” have to deal with all the other lower administrations in the area, so its target regards not only the inner zone, but more mobility requirements which include the journeys inside the neighbour land. To assure a homogenous tariff scheme, the immediate periphery of the city is divided into cloves where, outside del city boundaries, each sector corresponds to the perimeter of a single smaller town or a group of villages.
- (4) The last model is an extension of the previous one and regards the introduction of an independent transport authority in the actors arena; this choice often derives from both the need of the leading administration to gain a specialized unit in the transport

planning and the demand of both the other involved institutions and the multiple companies to be impartially guaranteed about the future decisions. This agency, being technically in charge of strategic planning, management and control of the transport system, would design a very consistent zoning, close to a kilometre-based one. Almost every zone would be traced around intermodal centres like stations, bus terminals or big malls and the distance between these points is constant; in downtown, where the gap is usually bigger, the price of the fare is double or triple in order to keep an equal value of the journey.

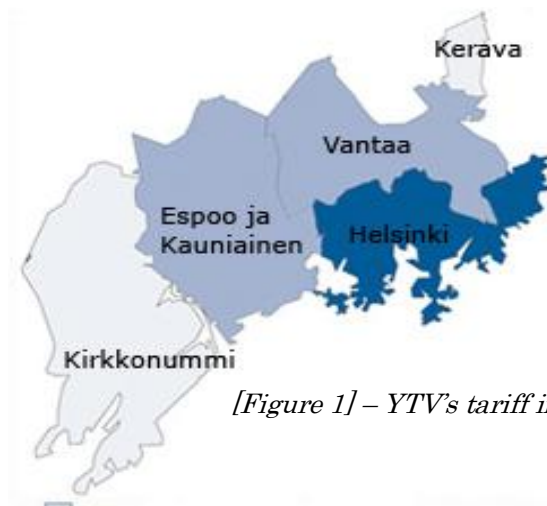
In the following paragraphs the most significant examples of these governance experiences will be described.

3.3. HELSINKI

The story of the tariff integration in the Helsinki metropolitan area (HMA) officially begins in 1972 when a technical agency (YTV, Pääkaupunkiseudun yhteistyövaltuuskunta = Helsinki Metropolitan Area Council) was established to coordinate the municipalities of Espoo, Helsinki and Vantaa in order to deal with a common organization for water supply and waste management, therefore a mere agreement based on efficiency measures. At that time the relationships between these cities were not many, mostly because the majority of the residences and activities were concentrated inside Helsinki city borders. During the following years two different circumstances were happening: a fast urban sprawl were in operation (today's inhabitants of Helsinki are one third of those in 1960's) into the neighbouring towns, mostly Espoo, Kauniainen and Vantaa, and the State Railways were going to activate the suburban rail services, including station in the wider metropolitan area. Besides, the national government decided to move into a more strict financial policy, requiring efficient choices also to municipal governments: in fact, in some cases the Finnish state managed to merge some of them – mostly in the countryside – to save money, where neighbouring towns were running doubled welfare services. According Niilo Järviluoma (former transportation director of YTV) the national government were forcing also the municipalities in HMA to cooperate to economize their services, instead of risking to become an unique administration. To sum up, here is the pattern of the actors at the beginning of the 1980's:

ACTORS	RESOURCES	PREFERENCES
Helsinki LPT authority (HKL)	Informative	Keep planning decisions inside Helsinki
Ministry of Finance	Legal Financial Political	Make local governments more efficient
Ministry of Transport and Communications	Legal Political	Common fitting of LTP standards in compliance of EU legislation
Municipalities of Espoo and Vantaa	Legal Financial Political	Keep control on transport and land use
New bus companies	Legal Financial	Enter transport market in Helsinki area
State Railways (VR)	Legal Informative	Increase in public subsidies for commuter services

[Table 4] – Actors in Helsinki metropolitan area at the beginning of 1980s



[Figure 1] – YTV's tariff integration

In 1985 the municipalities of Espoo, Helsinki, Kauniainen and Vantaa decided to cooperate for a common planning of the transport services crossing their borders and created an integrated fare system based on the sole regional tickets (i.e. for trips between each city or among the whole area). The supervision of network was appointed to the Metropolitan Area Council, the former YTV, which has wielded its authority until December 2009.

The start of the changing in the Helsinki metropolis governance took place in November 1992 when an audit commission led by the Canton of Inner Basel (CH), the City of Goteborg (S) and the State of Wien (A) published for YTV a dossier where – at point 5.2 – it was advised to “establish an effective supreme organization for coordinated actions to be taken on both regional and local levels, and on various sectors”, clearly in contrast with the simple cooperation that was in operation. Some attempts have been made in the following decade in order to seal the activities of YTV into a more strict form of governance, with unsatisfactory results, mostly because of the opposition of Espoo and Helsinki to yield powers to each other.

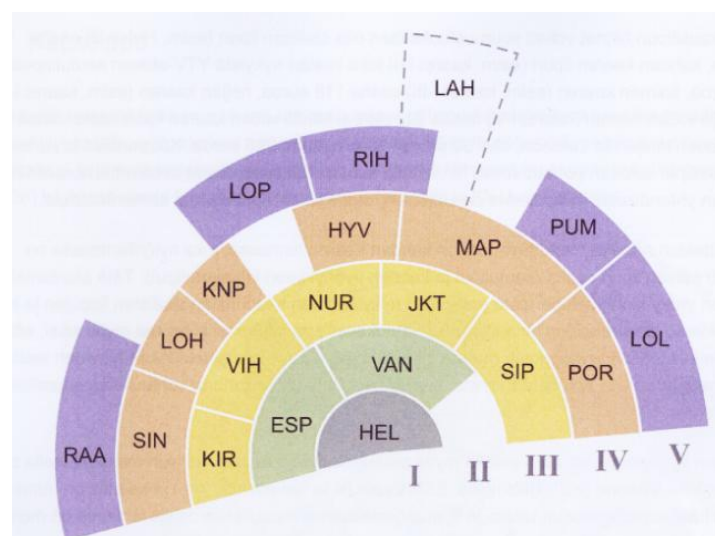
From 2002, revised in 2007, a strategic mobility plan was established with a long vision until 2030, which would have involved the extension of the Metro line into Espoo, a new railway line covering Helsinki, the international airport and Vantaa, a tram line along the Ring Road I even including the municipalities of Kirkkonummi and Kerava. However, in 2008 the turning point was facilitated by a law proposal demanded by the intercity bus companies (in Finland they are privately-owned) whose aim was to obtain the monopoly for inter-municipal services not only in the countryside. The Ministry of Finance – who was in charge of the local administration policies too – still interested in improving the efficiency of municipalities, proposed not to include in this law the institutionalized metropolitan areas. Not only the YTV's cities, but also 14 other towns asked Helsinki for entering a formal metropolitan area;

the same request was put forward by both the transport companies in the HMA, which were afraid of losing their contracts in favour of other private entities, and the newborn Uudenmaan Maakunta (a sort of federal region of Helsinki) which was immediately going to release its planning power.

ACTORS	RESOURCES	PREFERENCES
Bus companies operating in YTV	Informative	Increase in quantity of services provided in HSL area
Helsinki LPT authority (HKL)	Financial Informative	Planning services outside the city
Helsinki Metropolitan Area Council (YTV)	Legal Informative	Leadership in planning the metropolitan area
Ministry of Finance	Financial Political	Restructuring of local governments
Ministry of Transport and Communications	Legal Political	Common fitting of LTP standards in compliance of EU legislation
Municipalities of Helsinki, Vantaa and Espoo	Financial Legal Political	Whole control on transport and land use
New municipal members	Political	Getting rid of the monopoly of private bus companies
Private bus companies lobby (Matkahuolto)	Political Informative	Conservation of the monopoly in long-distance services
State Railways (VR)	Legal Informative	Increase in public subsidies for commuter services
TeliaSonera (provider of TLC in Nordic countries)	Financial Informative	Development of contactless technology in LPT

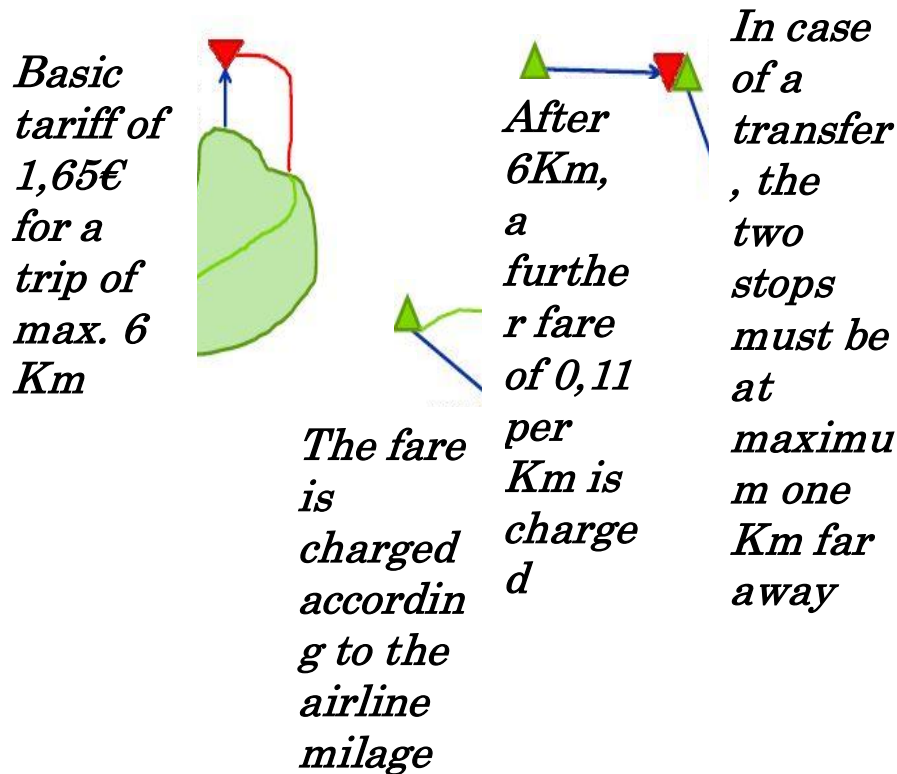
[Table 5] – Actors in Helsinki metropolitan area in 2009

In order to summarize the different needing of the actors and to guarantee a role to the new municipalities, an independent authority in charge of planning, contracting and controlling the whole transport supply, began operating from January 2010 (HSL, Helsingin Seudun Liikenne = Helsinki Regional Transport Agency) which will be a part of the future HMA administration. The deadline for the complete revision of the fare scheme designed by HSL is 2014 and will involve two different structures: for subscriptions a different pattern of zones will be implemented as drawn below.



[Figure 2] – HSL's integration proposal for subscriptions after 2013

At the same time, using the GPS technology, for single ride a perfect kilometre-based tariff will be implemented. With a hop-on/hop-off system, every card will be charged as the amount of kilometres travelled; the price scheme will correspond to a flat fare for the first six kilometres of journey, than a fixed price for each added kilometre.



[Figure 3] – HLS's integration proposal for "pay-as-you-go" system after 2013

3.4. BARCELONA

The recent history about fare policy in the capital city of Catalonia could get off the ground in 1974 when the so-called Corporació Metropolitana (Metropolitan Cooperation) was established whose duty was to coordinate the transport supply between the City of Barcelona and its closer neighbourhoods. During the following decade the importance of this institutions was growing, mostly thanks to the financial contribution offered by the municipality of Barcelona and the role in expanding the underground assets.

This tight-knit cooperation of the small area of Barcelona did not last several years because the regional government of Catalonia in 1987 abolished the existence of the metropolitan institution by the law, substituting it with a inter-municipal syndicate (EMT, Entitat Metropolitana de Transport = Metropolitan Trasport Organization). The aim of this administrative change was to create a sort of Barcelonan authority in charge of the planning

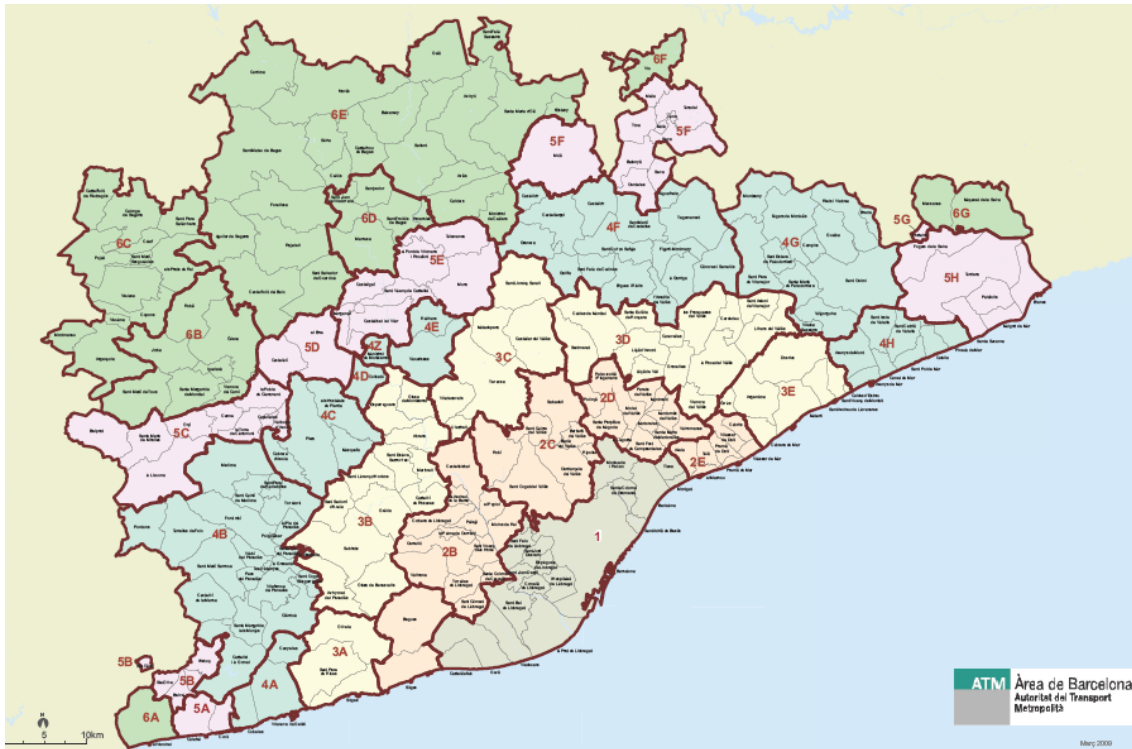
and the supervision of transport services, while the Catalan government would decide about the infrastructural assets of the entire region. However, during its first important test, the expected cooperation met its failure: in 1992 the Region proposed a far-seeing integrated plan for the mobility in the wider area to which EMT should have participated; actually during the following year a big debate rose both between the two planning authorities and also within the other political bodies involved.

According to the analysis led by Buseti (2009) the reason why this plan was abandoned in the end of 1993 is to be sought in the “substantial lack of infrastructure planning causing the lack of coordination of the financial system. The state participated to the financing, but EMT and Catalonia – both managers of the means transport within the metropolitan area – led separate negotiations with the State Administration, the Region for its rail service (FGC), while EMT for the metro and buses in the metropolitan area (managed by the holding company TMB). The state therefore had no way to coordinate their financial contribution in the provision consistent with the requirements”. In the mid-1990s the positions of the principal actors were the following:

ACTORS	RESOURCES	PREFERENCES
Authority of Barcelona (EMT)	Legal Political	Metropolitan area
Municipality of Barcelona	Political	Metropolitan area
Region of Catalonia	Financial	Central coordination
State Railways (RENFE)	Financial	Unique authority

[Table 6] – Actors in Barcelona metropolitan area in the mid-1990s

Based on a collaboration proposal by the councillor for “Land use and public works policies” of Catalonia toward the mayor of Barcelona two years before, in 1997 a brand new transport authority was founded (ATM, Autoritat del Transport Metropolità = Metropolitan Transport Authority) whose governance was in charge of the Region, the City and its surrounding towns. Actually, the final decisions has always been taken with the essential agreement of Catalonia, thanks to the majority of councillors demanded by the regional government to join the authority. The most important change ATM has been able to make regards the extension of the metropolitan governance into further municipalities, increasing the radius of ATM up to 70 kilometres from the city centre (de facto, the largest metropolitan area in Europe), including circa 200 municipalities and more than four million people. Besides, ATM introduced the tariff integration in 2001, whose pattern is:



[Figure 4] – ATM's tariff integration since 2003

Both tickets and subscriptions are charged according to the amount of zones crossed; there are six principal rings, divided into sectors where for each sector corresponds one zone. The total number of zones are 34, although the maximum quantity of charged zones per trip is six.

3.5. LONDON

The recent history of public transport in London (and the tariff system applied) is strongly connected with the troubled events that led to the creation of the Greater London Authority (GLA). Before the introduction of the TravelCard, tickets for the London Underground were purchased only for point-to-point services between the two stations, either as a simple round trip or as subscriptions: the price was fixed according to distance travelled. Tickets for journeys on the British Rail and London Buses were purchased separately; the TravelCard was introduced as the third step in a series of major tariff revisions that had started in 1981.

On October 4th 1981, following the first election of the Greater London Council (GLC), the Labour administration simplified tariffs in London with the introduction of four new fare zones for bus and two central areas for the London Underground, known as City and West End, where a flat pricing was applied for the first time. This was accompanied by a reduction in prices by about two thirds and was touted as the “Fare-Fare” campaign. After a beginning success, a legal action was brought against it and won by the 21st March 1982. The bus fares were doubled and then the London Underground tariffs increased by 91%; however, the two

central areas were preserved and prices for all other stations were reformulated to be graded at intervals of three miles.

In 1983 a third review of the charges and was started and simultaneously a new inter-modal TravelCard subscription was introduced, which covered five new areas, involving an overall cut in prices by about 25%.

In 1986, the Greater London Council was abolished by the Conservative government. Many people have surmised that the decision to abolish the GLC was made because of the existence of a high-spending left-wing Labour administration under Ken Livingstone, although pressure for the abolition of the GLC had arisen before Mr. Livingstone took over, and was largely driven by the belief among the outer London Borough councils that they could perform the functions of the GLC just as well.

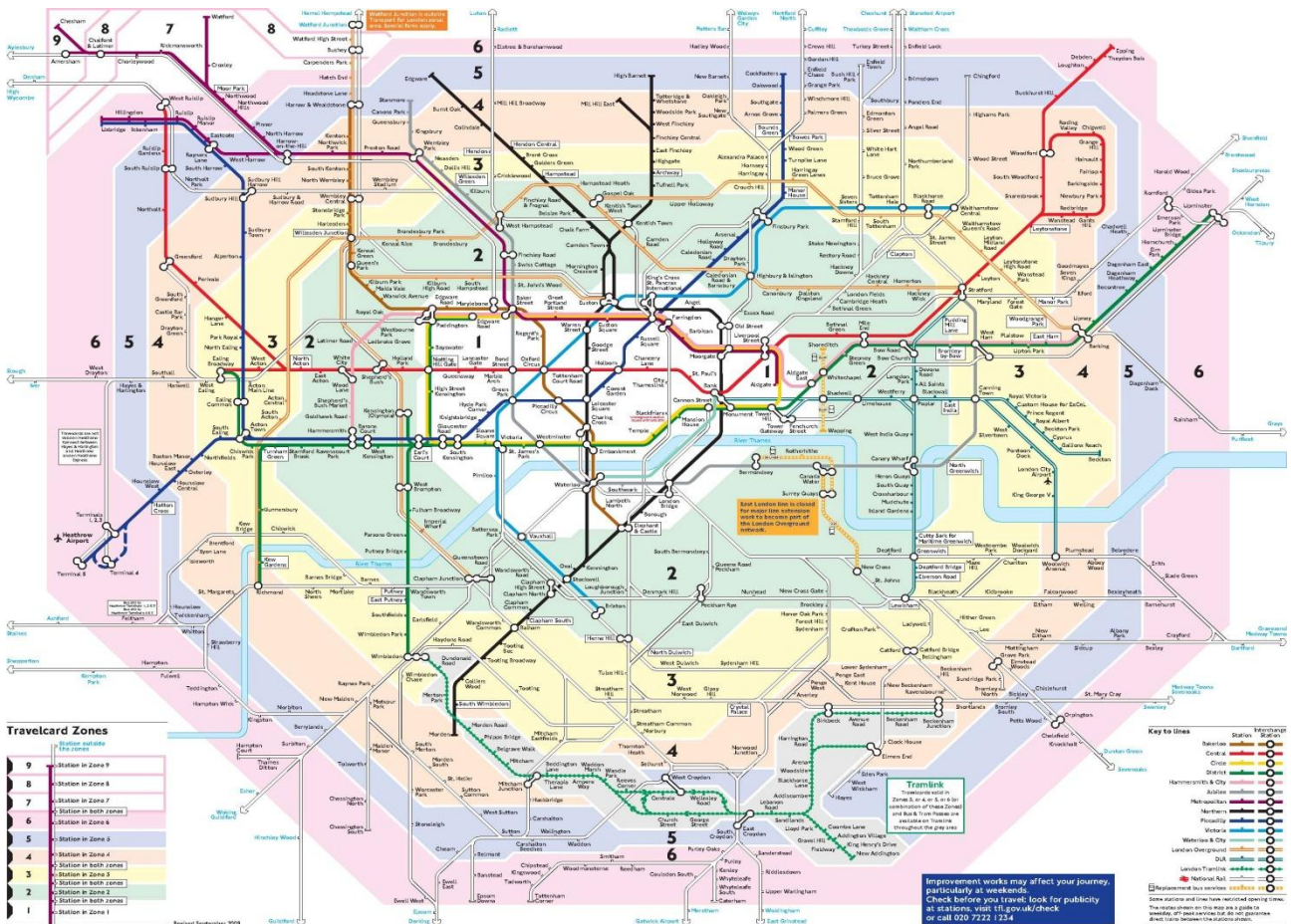
On abolition, the strategic functions of the GLC were transferred to bodies controlled by central government (for transport: shared competences between Ministry of London and Department of Transport) or joint boards nominated by the London Borough councils. Some of the service delivery functions were transferred down to the councils themselves. For the next 14 years there was no single elected body for the whole of London. In addition, in January 1991 Zone 5 was divided into two parts to create a new Zone 6.

After the Labour party won the 1997 general election, the policy was outlined in a White paper entitled "A Mayor and Assembly for London" (March 1998). Simultaneously with the elections to the London Borough councils, a referendum was held on the establishment of the GLA in May 1998, which was approved with 72% of the vote. The Greater London Authority Act 1999 passed through Parliament, receiving the Royal Assent in October 1999. In a controversial election campaign, the Prime Minister at the time, Tony Blair, attempted to block Livingstone's nomination and imposed his own candidate. In reaction, Livingstone resigned from the Labour party and subsequently he was elected Mayor of London in March 2000 as an independent candidate. Following an interim period in which the Mayor and Assembly had been elected but had no powers, the GLA was formally established on 3rd July 2000. According to Busetti's thesis (2009) this was the actors arena about the establishing of GLA:

ACTORS	RESOURCES	PREFERENCE
Department of Transport	Infomative	Conservation of control on trasport
Districts	Political	Strategic but not operative authority
Gordon Brown	Political	Public expenditure containment
Governamental Office for London	Informative Political	Executive major with direct powers on trasport and economic developmet
John Prescott	Political	Financial stability, reuse of congestion charge revenues and safeguard of public personel
Labour party	Legal Political	Metropolitan level rebuilding
Liberal party	Political	Directly elected major
London First	Electoral	Unitary government, congestion charge and increase of trasport subsidies
Tony Blair	Political	Directly elected major
Tories party	Political	Inter-district assembly

[Table 7] –Busetti's actors arena about the establishing of GLA.

Since 2003 the TravelCard season tickets were available on electronic smart card type, known as OysterCard, and from 2005 TfL stopped selling subscriptions on paper device, even if it still continues to be distributed at National Rail stations. The current charging system implies a six-rings zoning, centred on Piccadilly Circus, which includes all transport operators administered by the Greater London Authority, that are the underground, buses, trams, surface railways and the navigation of the Thames; this pricing covers three further zones toward Waxford Junction. The payment system used by far is the OysterCard that can be also purchased outside national borders even for temporary travel within TfL. The biggest factors in OysterCard success are both a maximum daily spend for each area (where all subsequent journeys are free) and a consistent discount on single trips. Since the use of the subway during peak hour is becomming greater than the supply of London Underground, the introduction of a special fare for crossing the city in the early hours of the day by underground – like a sort of “congestion charge” – is being considered.



[Figure 5] – TfL's tariff integration after last revision in 2009

Relationships with operators are regulated in different ways, but always putting the competition as a primary factor in the allocation of services, except for the London Underground and DLR that are directly managed by TfL. Regarding to bus lines, they are allocated according to market competition held regularly and the evaluation system is a relationship between the price offered by the companies and the average time to resolve conflicts in traffic (punctuality , regularity, etc.). Finally, the rail is regulated by the Department of Transport, although during the last two years TfL is buying the rail network within the London area to complete a suburban rail called “London Overground”.

3.6. ZURICH

The first half of the twentieth century was a particularly favourable for public transport in Switzerland. After 1950, however, the car started to compete heavily with it: in many towns unprofitable trams lines were closed and replaced by buses, and generally public transport projects on a large scale were facing a difficult time. In 1962, the inhabitants of the city of Zurich rejected plans for a tram network crossing underground the city centre through a dedicated infrastructure. In 1973, residents of Canton restated the negative choice about

building a regional metro, bringing the City of Zurich, which had already invested a substantial amount of money in this project, into a financial crisis; besides the congestion downtown and in the suburbs was reaching a high level. With the help of the people's awareness to environmental issues, in 1981 the government of the Canton of Zurich presented to the electorate a referendum to establish a new regional rapid rail system (called "S-Bahn"), mostly improving the underemployed rail network; the project was approved by a consistent majority of two thirds. The works were completed in 1988 and simultaneously was being formed the legal basis for the establishment of ZVV (Zürcher VerkehrsVerbund = Zurich Transport Community) authority, which the voters again agreed with. The political arena came about at the beginning of the 1980s could be schemed in this way:

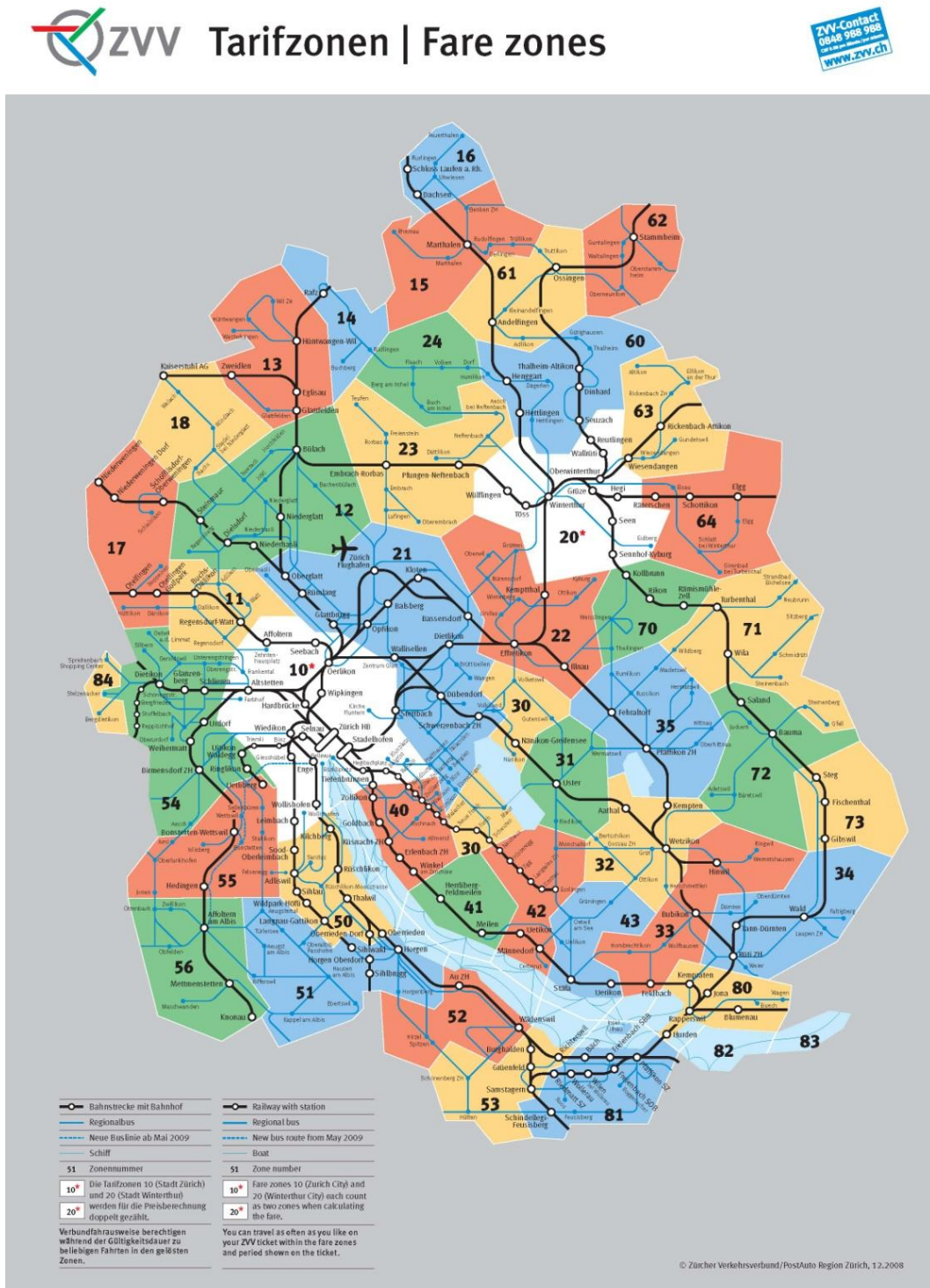
ACTORS	RESOURCES	PREFERENCE
Canton of Zurich (ZH)	Financial Legal Political	Creation of a suburban public traffic network
Commuters in Zurich	Electoral	Increase of services and quality in the canton
Federal government	Political	Reduce of federal funds in metropolitan areas
Federal Railways (SBB)	Financial Informative Legal	Increase of services in metropolitan area
Municipal company (VBZ)	Legal Informative	Reconstruction of the budget
Municipality of Zurich	Legal Political	Building of underground services
Principal LTP companies	Legal Informative	No competition in their areas

[Table 8] – Actors in Zurich metropolitan at the beginning of 1980s

The idea behind the integrated transport system used in Zurich has currently not yet been developed elsewhere in Switzerland. Individual transport operators do not relate any more to the citizen as separate companies, each with its own system of tariffs and markedly related to the territory, but as part of a single system. Today the authority sets the strategic objectives and organizes the system, manages and monitors the financial activities and takes care of strategic marketing. The whole territory has been split into eight regions where in each a transport company has a global responsibility: these eight companies are responsible for ensuring that public transport performs in the catchment area, the services are operated under the scheduling planned and that the budgetary targets are met. They coordinate the activities patented to other smaller contracted transport operators, whose primary function is to provide the service on lines not strategic for the eight carriers.

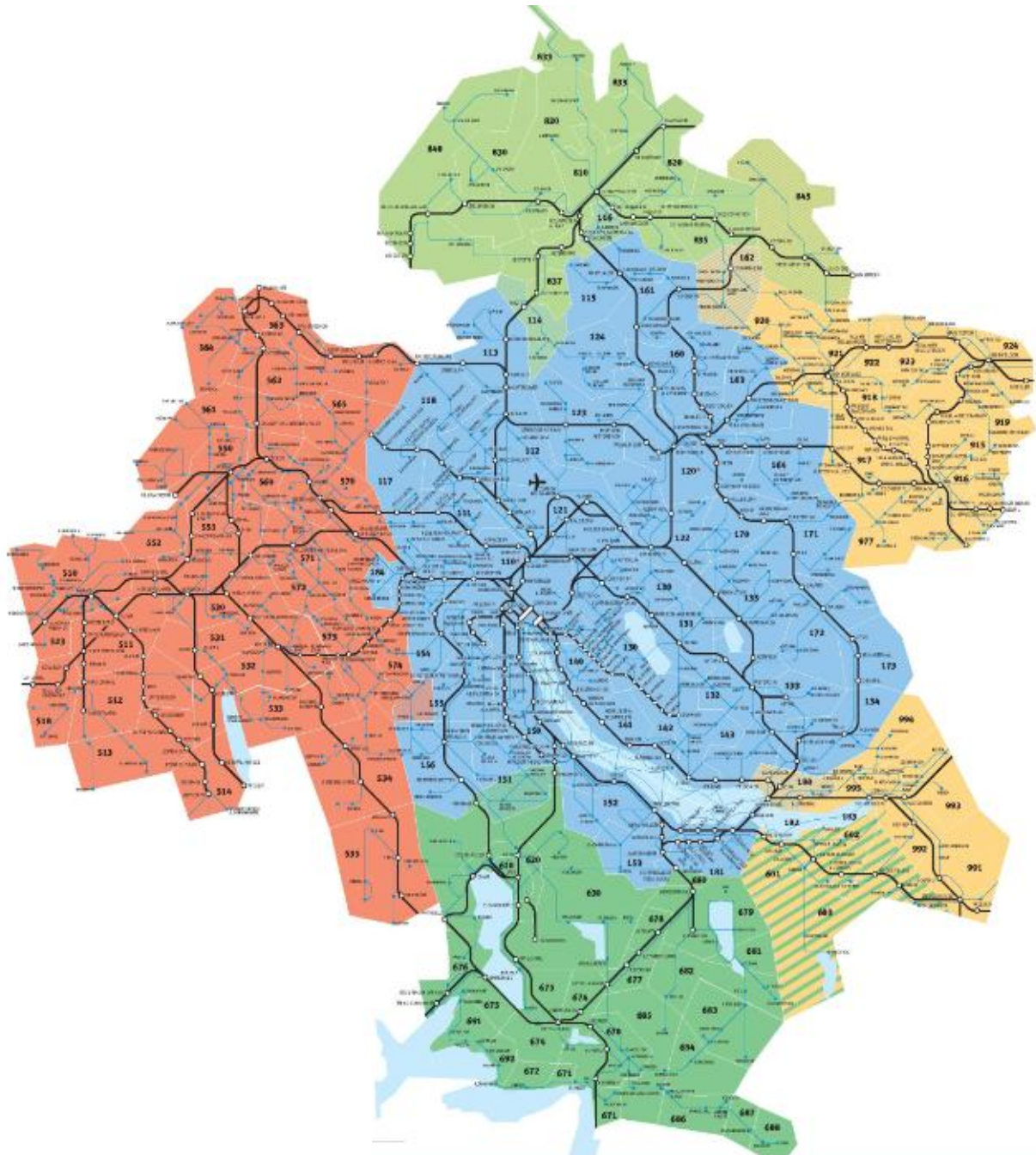
Therefore, at the moment, there is no competition for transport supply for the eight largest firms, since they are bound to ZVV with regards to quantity and quality of services; in case one of these two factors would not be respected, ZVV could introduce competition. Different is the relationship between these companies and outsourced operators: in this case all the tenders are gross-cost bids

The Canton of Zurich has been divided into fare zones without radial elements, but each area has a diameter equal to a tariff brackets of Swiss Federal Railways, (circa five kilometres), with the exception of the municipalities of Zurich and Winterthur only, whose dimension is two zones.



[Figure 6] – ZVV's tariff integration according to an advertisement leaflet in 2008

In addition to the area of canton, recently the ZVV system was extended to neighbouring cantons of Aarau, Saint Gallen, Schaffhausen and Schwyz, through the Z-Pass, that is a subscription that allows passengers to cross all five cantons, keeping unchanged the principle of the zoning of each canton. This is a completely different approach that may refer to the cooperative model, in fact the pricing of journeys differs inside every single canton, but is equalized in the trips involving a trespassing.



[Figure 7] – Z-Pass pattern from 2009

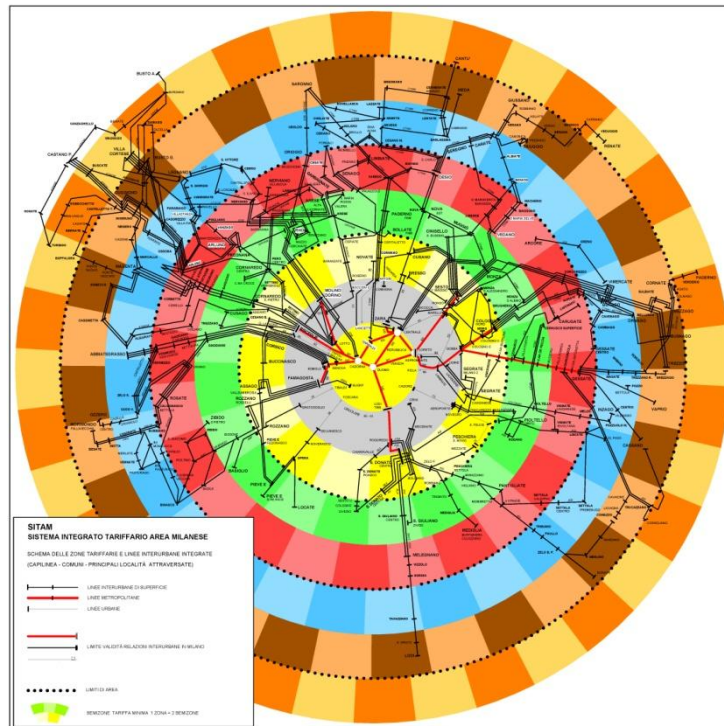
4. MILANESE CASE

Differently from the previous examples, the Milanese metropolitan area has not achieved the introduction of an integrated tariff system. However, during the past decade some attempts have been made in order to share a common vision among the local institutions who should have been involved, but problems about the governance of the structure are still unsolved.

4.1. THE FOUNDATION OF SITAM

The sole fulfilment of this objective happened in the City of Milan where all means of transport can now be used in the same fare scheme. In fact, the first experience of tariff integration in Milan dates back to 1977 and covered the urban services. Metro Line 1 was already in operation since 1964 and line 2 from 1969, with a higher price than tram and bus tickets. For all the city services the fare system allowed passengers to make one ride only, which generated dissatisfaction in users who had to buy more tickets to complete their journey in case of changes, and a consequent demand for an extension of the ground lines. The solution adopted in 1977 was to rationalize ground services, drawing a network essentially conveying bus lines up to the Metro and introducing the hourly fare for the entire public transport supply.

In the early 1980s, an integration between the urban network with the interurban services managed by ATM (Azienda Trasporti Milanesi = Milanese Transport Company) was designed and, in addition to the existing fares (inner city and separately hinterland), a third kind of ticket was introduced: the cumulative ticket which allowed customers to travel with a single document for both the hinterland and the urban network of ATM only. In 1988 the ATM integration extended to bus lines operated by another company (STIE, Società Anonima per Trazione e Imprese Elettriche = Company for Traction and Electrical Enterprises), founding SITAM (Sistema Integrato Tariffario Area Milanese = Integrated Tariff System for the Milanese Area). That system had continuously improved until it assumed its current configuration in which the integration covers every bus, tram and metro lines, excluding all the rail services.



[Figure 8] – Present pattern of SITAM network

The structure consists of a series of coloured rings internally divided into quads called semi-zones, where there are bus lines (black segments) and metro corridors (red segments). The single fare corresponds to how many zones (i.e. two semi-zones) are crossed. For subscriptions, a simplified pattern is in operation.

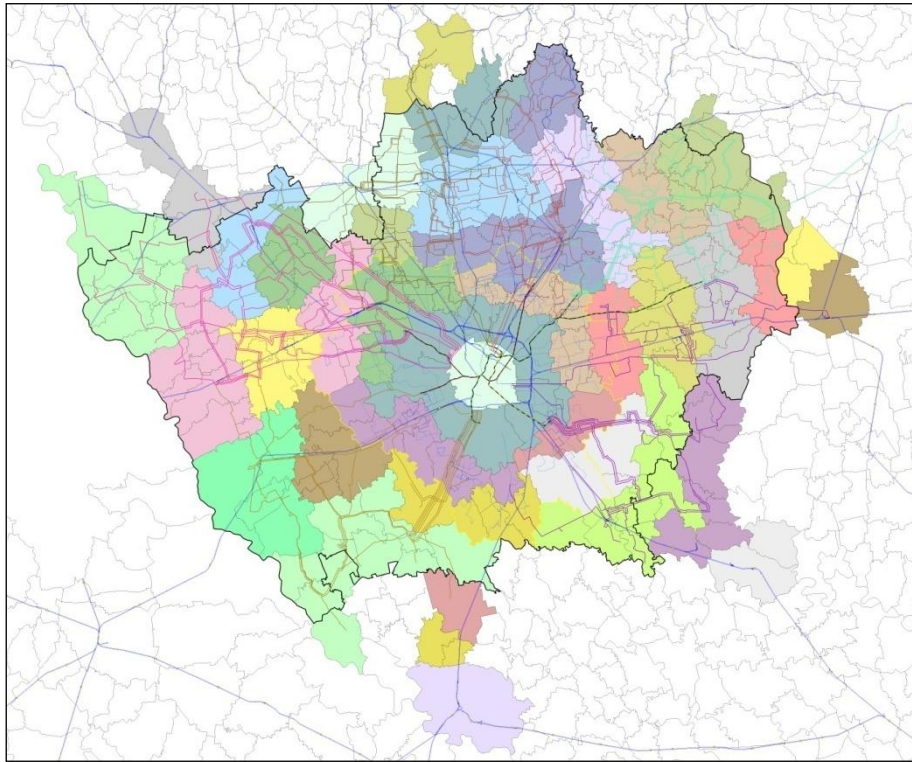
Because SITAM was still based on private contracts between ATM and the other transport companies, with no obligation to renew the agreement at their expiring date, and also there was no public transparency of the provisions included, an unique contract was signed and sealed by a regional decree with the operators in 1992 and afterwards renewed in 2002, corresponding to quite the same contents of the original SITAM.

Several questions about the present integration has risen in this decade which may be summarized in the following points:

- (1) prices depend on the chosen route, regardless the destinations of the trips;
- (2) sometimes municipalities are divided into more than one zone, unpredictably by users;
- (3) tangential journeys are difficult because fares are higher and the supply is scarce;
- (4) distribution of revenues among the operators is still partially unclear;
- (5) intermodal journeys are discouraged by the lack of integration between bus and rail.

4.2. FIRST REGIONAL PROPOSAL

The first attempt was made in 2004 by Region Lombardy that appointed a consultancy company to draft an alternative scenario: this setting had to be characterized by a new zoning of the territory, with a different tariff system whose levels and criteria for allocation of multi-operator revenues should have been transparent. The results of this study led to a brand new proposal which is here simplified. First of all, the territory should be divided according to UTMs pattern (Unità territoriali minime = minimal territorial units); according to this principle, the bus service should gravitate around the metro or railway lines, in order to connect directly any town to at least one station. In any zone the core should be the train station and the borders would correspond to the external terminals of the bus routes leaving from the station. Two ring zones would be dedicated for the city of Milan.



[Figure 9] – Zoning proposed by Region Lombardy in 2004

Except for the area corresponding to the boundaries of Milan where the fare would be unchanged, it was originally planned that only integrated tickets should be bought for both urban and suburban journeys. However, evaluations highlighted the opportunity to achieve this aim gradually to avoid excessive price increases for some rail users (because SITAM fares are still higher than the rail ones). In particular, a transitional period was proposed during which the sole people who was using rail services would not buy integrated subscriptions. The amount of possible zones crossed in order to cover the entire metropolitan area was fixed at a maximum level of eight and the price for each stage would be very close to the values of the each cumulative stage of SITAM's.

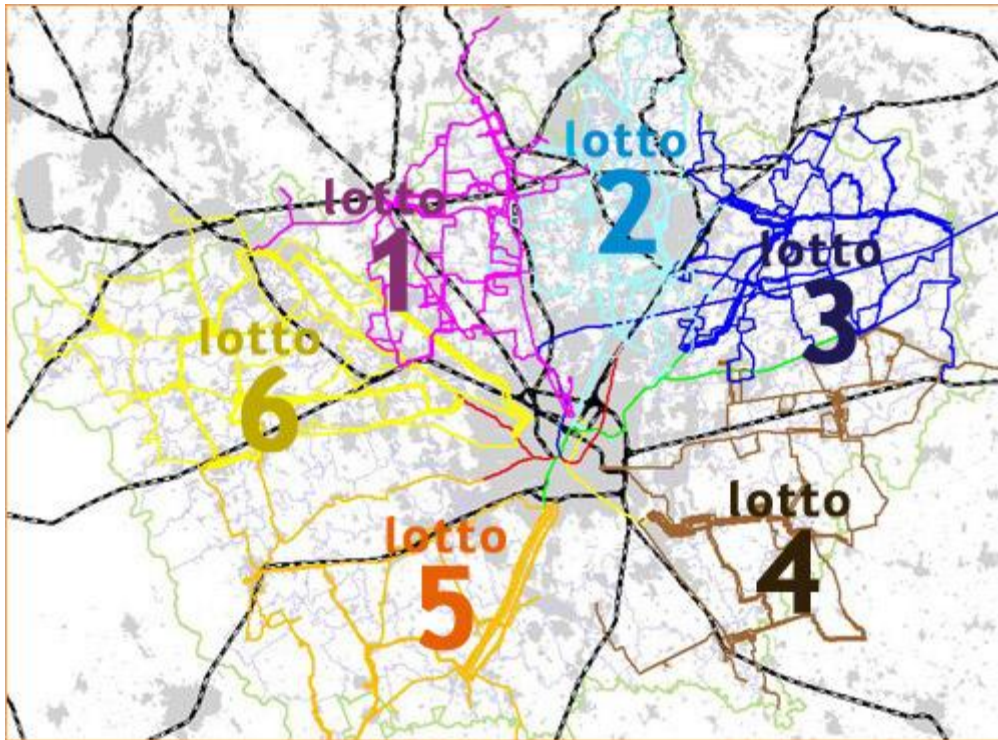
This project, supported by the civil servants in Region Lombardy and other administrations, never exceeded a first political assessment. At that time the conditions were being created to complete the long-term Passerby Railway Line and contextually new rail services had to be planned, besides it was decided to create a sort of competition for few regional routes including one of the new suburban line. The whole operation would cost the use of many financial and decisional resources for the Region Lombardy, which could not afford to include also the issue of tariff integration that could have involved a further postponement in the principal objectives.

4.3. ALTERNATIVE SOLUTION BY THE PROVINCE OF MILAN

About one year later, another solution was proposed by the Province of Milan when it suggested a development of the tariff system based on eight allotments plus one corresponding to the inner city of Milan, as highlighted in the underlying representation. For each of the eight lots, which supposedly traced the main corridors to downtown, there was a further subdivision following the administrative boundaries of the municipalities with some consistency.

The plan of the Province was opposed by several groups, mainly because no joint action had previously been agreed with all the actors who could legitimately decide on that strategies; so that, upon submission of the plan to local authorities, the two main players (i.e. the Region and the City of Milan) opposed the project with two distinct reasons: if the Region disputed the right to decide on the tariffs of the railway service, the City of Milan required both a certain degree of autonomy in setting the tariff on its jurisdiction, and not to face any reduction in services for its municipal company (ATM) in the Province.

The natural evolution of this experiment was a reduction of planning activities of the Province, therefore limited to bus services on interurban routes and inside smaller towns. The consequence of this policy was the start of net-cost tenders, dividing the territory outside Milan in six lots, each of which would be contracted to a single operator. As conclusion of those calls for bids, there was a new design of suburban services: particularly, the North-East and South-West areas remained firmly in the hands of ATM, while in the South-East and North almost all services were assigned to a private company partner of the multinational Transdev (AGI, AutoGuidovie Italiane = Italian Bus Conveyors) and finally in the North-West a syndicate company was formed picking up the small operators existing before the competition.



[Figure 10] – The six lots according to which the Province of Milan was divided

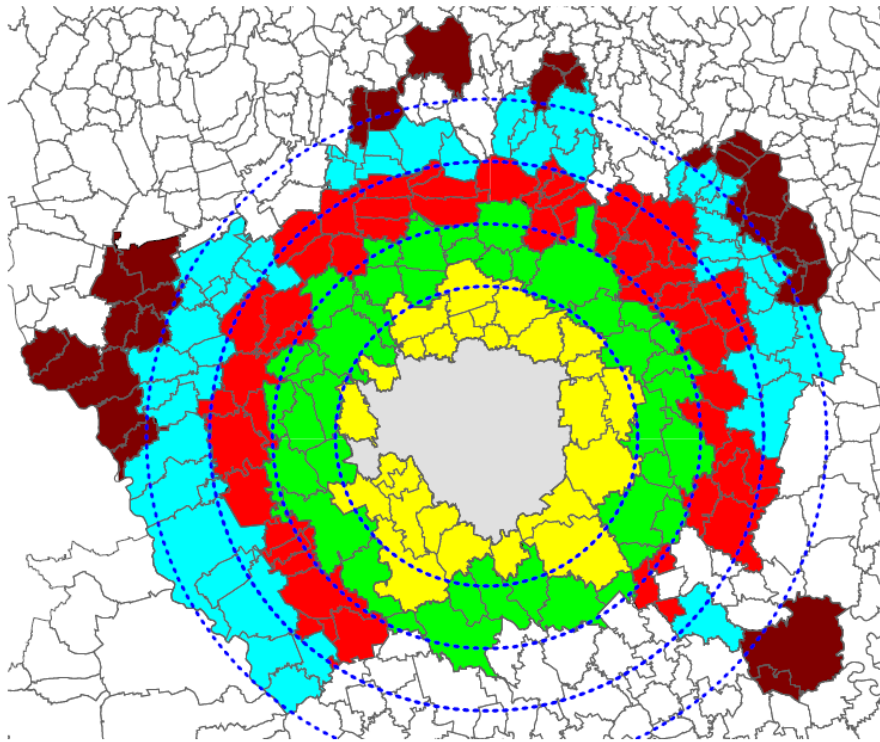
4.4. LAST ATTEMPT BY REGION LOMBARDY

Pushed by the signing of the “Pact for Local Public Transport” at the end of 2007, as outlined in articles 14 and 17, a priority was to create tariff integrations in all provinces of Lombardy by the acting subjects that would represent at best the institutions and local transport companies, like a sort of mobility agencies. Having been considered the situation of the metropolitan area of Milan as the most critical, it was decided to intervene in this area involving the largest number of actors, coordinated by the Region. This group in 2008 acquired an innovative proposal studied by the Milanese transport agency (former AMA, Agenzia Mobilità e Ambiente = Agency for Mobility and Environment) and the Bocconi University research centre (CERTeT, Centro di Economia Regionale, dei Trasporti e del Turismo = Centre of Regional, Transport and Tourism Economics).

The objectives of this project can be here listed :

1. complete intelligibility of the zoning and the fare levels for the customers;
2. correspondence of the tariffs with the real length of the trips;
3. integration between all the modes of transport;
4. optimization of the routes in order to reduce the breaking points;
5. application of best practice experiences taken from national and international context;
6. simplification of tickets supply in order to facilitate the use of public transportation.

The new integrated system would provide another different zoning with concentric belts around Milan. These belts were assumed by concentric circles of fixed radius from Milan downtown (conventionally attributed to the cathedral dome) and using for the centroid of the neighbouring towns as discriminator for their inclusion in a zone rather than another one. In particular, it was assumed a reduction in the current tariff sections from seven to six and their redefinition according to the municipal boundaries. Moreover, the municipal level was defined as the minimal pricing unit where there it would be independent for customers where they would access the public service within their town.; the City of Milan would be considered as an unique zone.



[Figure 11] – Solution put forward by the AMA-CERTeT analysis

Aiming to simplify the current system, it was decided to decrease the current range of fares and tickets available to travel inside the metropolitan area. In particular, unique tariffs would be set for connections between municipalities regardless of the means of transport used and the route as follows:

- Urban (U) relative to the journeys between any town in the hinterland and the Milan centre;
- Extra-urban (E) relating to journeys between municipalities excluding the City of Milan.

The debate about a possible application of this study found difficult to overcome two points: first, the financing of eventual lost revenue that the new system would give rise to and above all its governance that essentially coalesced on one hand the Region, provinces and AMA, and on the other hand the City of Milan and ATM.

Just ATM promised to produce a counter-proposal with the two rail companies which never came to a definitive document accepted by the group of actors. Meanwhile, due to the impending regional elections, the stakes were changed, arguing that the problem was not

integration itself, but the level of tariffs paid by citizens. The result was a task of customer satisfaction on service quality perceived by users, which would define the future fare upgrade.

These initiatives had, as we have seen, a common denominator: in all cases the proposed changes to SITAM came from an institution of higher government or even outside the metropolitan area of Milan. In addition, proposals have drawn a tariff system which divided the land into clove lots relative to the city centre, leading to a form of quasi-independent agency along the lines of AMA, but extended to the entire metropolis.

ACTOR	RESOURCES	PREFERENCES
Private bus companies	Informative	Get released from the informative monopoly of ATM about revenues
Municipality of Milan	Legal Political	Extension of the SITAM tariff to rail services and different modal share
Neighbouring municipalities of Milan	Political	Different modal share and access to the decision-making process
Province of Milan	Legal Political	Creation of an integrated tariff system to plan the metropolitan services
Rail public companies	Legal Informative	Reach the same level of subsidies as bus companies
Region Lombardy	Financial Legal Political	Creation of an integrated tariff system in whole region
Transport agency of Milan (AMA)	Informative	Intend to candidate as the principal transport expertise
Transport company of Milan (ATM)	Financial Informative	Confirm the transport leading role on the metropolitan area

[Table 9] – Grid containing the list of actors regarding to the transport governance in Milanese area

Analyzing the resources available to actors and dwelling especially on the City of Milan and its entities more or less depending from it, it is notable that they are concentrated in this extended special-interest group which can still autonomously support the policies of the mobility for the immediate hinterland. It follows therefore a somewhat difficulty to impose from outside a redesign of the tariff system which does without contextual involvement and approval of the “Milanese System”.

4. CHARGED TARIFFS

After the description of the attempts to put the tariff integration in operation, the question is about the values of the present fares in order to find a possible design of an eventual implementation. The aim is to compare the Milanese scheme with those of other metropolitan areas in Europe where an integrated system has been established, close to the objective of defining a possible ranking.

4.1. CHOSEN METROPOLISES

Barcelona: it belongs of one of the Four Motors of Europe, its population's figures are very close to how many people live in the Milanese area and the mobility network traces out the same pattern as Milan does, because of a consistent suburban rail service (with a tunnel in the city centre), a capillary metro lines, the rediscovery of trams in the suburbs.

London: in the transport literature it is always taken as an example of the most expensive reality in fares, above all about the underground services, and therefore it will be used as a comparison to validate this sentence.

Stuttgart: although the inhabitants of the Region Stuttgart are three fourth of those living in Milanese metropolitan area, they correspond with the Province of Milan; besides, the industrial structure of that part of Germany is comparable with Region Lombardy, and the urbanized territory has a similar pattern as northern Italy (cities surrounded by big towns)

Zurich: the Canton of Zurich is the densest in population among the other Swiss administrations and the hearth of the Helvetia service and financial companies, but also is the city in the western countries with the highest modal share in favour of the public transport (more than 60%), even if its prices are not cheap at all.

Every assessment will be shown in a table where the interpretation key corresponds to the price for every further five kilometres from downtown. Each metropolitan area will be represented in one column, except for Milan where two columns are dedicated because they is no tariff integration (therefore bus and rail fares are divided). Here is an example of the table:

		KIND OF TICKET				
		Barcelona	London	Milan	Stuttgart	Zurich
Distances from the city centre →	Downtown					
	5 Km					
	10 Km					
	15 Km					
	20 Km					
	25 Km					
	30 Km					
	35 Km					
	40 Km					
	45 Km					
	50 Km					
	55 Km					
	60 Km					
	65 Km					
	70 Km					

Group of metropolitan areas →

↑ SITAM fares ↑ Rail fares

Values of fares →

4.2. SINGLE FARES

In the following tables an assessment about single ride fares is provided. In the green table there are the absolute values of the prices, while in the blue one the figures of a relative proportion with the average income of the citizens (Eurostat and Federal Department of Statistics, 2008) are listed. The exchanges used for Pounds and Swiss Francs are: GBP/EUR = 1.21242, CHF/EUR = 0.752942.

SINGLE TICKET						
	Barcelona	London	Milan	Stuttgart	Zurich	
Downtown	€ 1,40	€ 4,65	€ 1,00	€ 1,00	€ 2,20	€ 2,85
5 Km	€ 0,80	€ 4,65	€ 1,55	-	€ 2,20	€ 2,85
10 Km	€ 0,80	€ 4,65	€ 2,05	€ 2,35	€ 2,20	€ 4,40
15 Km	€ 1,60	€ 4,65	€ 2,75	€ 2,65	€ 3,30	€ 5,65
20 Km	€ 1,60	€ 5,25	€ 2,95	€ 2,90	€ 4,40	€ 6,90
25 Km	€ 2,15	€ 5,25	€ 3,25	€ 3,20	€ 5,65	€ 8,20
30 Km	€ 2,15	€ 6,40	€ 3,80	€ 3,50	€ 5,65	€ 9,45
35 Km	€ 2,75	€ 8,10		€ 3,75	€ 6,65	€ 10,85
40 Km	€ 2,75	€ 8,10		€ 4,05	€ 6,65	
45 Km	€ 2,75			€ 4,60	€ 6,65	
50 Km	€ 2,75				€ 6,65	
55 Km	€ 3,20					
60 Km	€ 3,40					
65 Km	€ 3,40					
70 Km	€ 3,40					

SINGLE TICKET						
	Barcelona	London	Milan	Stuttgart	Zurich	
Downtown	0,08%	0,16%	0,05%	0,05%	0,10%	0,06%
5 Km	0,05%	0,16%	0,08%	-	0,10%	0,06%
10 Km	0,05%	0,16%	0,11%	0,12%	0,10%	0,10%
15 Km	0,10%	0,16%	0,14%	0,14%	0,15%	0,13%
20 Km	0,10%	0,18%	0,15%	0,15%	0,21%	0,15%
25 Km	0,13%	0,18%	0,17%	0,16%	0,26%	0,18%
30 Km	0,13%	0,22%	0,19%	0,18%	0,26%	0,21%
35 Km	0,16%	0,28%		0,19%	0,31%	0,24%
40 Km	0,16%	0,28%		0,21%	0,31%	
45 Km	0,16%			0,24%	0,31%	
50 Km	0,16%				0,31%	
55 Km	0,19%					
60 Km	0,20%					
65 Km	0,20%					
70 Km	0,20%					

[Tables 10 & 11] – Single fares, absolute values and related to income

Looking at this first comparison, the fares of Barcelona seem to be not so high as the other metropolitan areas. Except of the city, in the Barcelona integration there is no proper card for single journeys, but a multiple-trip ticket called T-10 is in use: this allows customers to make ten rides according to the number of zones purchased. Therefore, to make the T-10 comparable with the other tariffs, it has been simply divided into ten; anyway, it is possible that a level of discount was included by ATM.

Also the price of London single tickets are distributed on four belts only, however this strategy was devised by TfL in order to discourage the use of one-ride-tickets and to market the Oyster Card system.

Making a first attempt to assess these figures, there are a lot of disparities among the prices in the left table, but, looking into details on the right, these differences seem to narrow, especially in the range between 15 Km and 25 Km.

4.3. DISCOUNTING CARDS

Another analysis that has been carried out pertains to facilitations through “loyalty cards”. These cards allow customers to obtain discounts if they make longer journeys or often choose the public transport service instead of private motor vehicles. The following transport authorities has introduced loyalty cards: London (Oyster Card), Stuttgart (BahnCard 25, 50 and 100), Zurich (Half-Price and General Subscription AG).

In London, “the Oyster” is a prepaid and rechargeable electronic card which provides cheaper fares for single rides and defines a maximum level of price for an entire day. The cost of purchasing this card consists of a not-refundable fee of £3 (about 3.5€) plus a refundable part of £12.

In Germany and Switzerland special cards guarantee a cut of half price for all journeys inside their corresponding boundaries and they are respectively called “BahnCard 50” and “Half-Price Ticket”; in German states the “BahnCard 25” (reducing prices of one fourth) is also in operation. The cost of each of these loyalty cards are: 54€, 125 Francs (about 88€) and 230€.

In this analysis no general subscriptions like the German BahnCard 100 or Swiss AG have been taken into account because they do not effect journeys in the metropolitan areas, but give the opportunity to travel for one year in the whole rail services – or in Switzerland on almost all urban lines too – with no further variable prices.

The following purpose is to demonstrate the actual convenience of the usage of these discounting cards for single trips. In order to explicit these values, a table with the breakeven point (i.e. number of minimum trips to get a discount) related to kilometres is shown:

	BREAKEVEN TRIPS		
	OysterCard	BahnCard 25	Half-Price
Downtown	2	97	65
5 Km	3	97	103
10 Km	4	97	40
15 Km	4	66	29
20 Km	5	48	24
25 Km	5	38	20
30 Km	5	38	17
35 Km	4	31	15
40 Km	4	31	
45 Km		31	
50 Km		31	

[Table 12] – Breakeven points for OysterCard, BahnCard 25 and Half-Price

It is simple to understand that German and Swiss cards are intended to facilitate a further use of public transport on long distance services instead of focusing on local lines, because discounts on subscriptions are far cheaper than travelling with these alternatives. For the same reasons, the BahnCard 50 has not been included in the table: a 230€ fixed price would have been more discouraging. Different discussion regards the Oyster where the facilitation starts sometimes from the second or third ride. So it is necessary to update the previous table on single fares:

	SINGLE TICKET				
	Barcelona	London	Milan	Stuttgart	Zurich
Downtown	€ 1,40	€ 2,15	€ 1,00	€ 1,00	€ 2,20
5 Km	€ 0,80	€ 2,75	€ 1,55	-	€ 2,20
10 Km	€ 0,80	€ 3,20	€ 2,05	€ 2,35	€ 2,20
15 Km	€ 1,60	€ 3,70	€ 2,75	€ 2,65	€ 3,30
20 Km	€ 1,60	€ 4,50	€ 2,95	€ 2,90	€ 4,40
25 Km	€ 2,15	€ 5,00	€ 3,25	€ 3,20	€ 5,65
30 Km	€ 2,15	€ 5,60	€ 3,80	€ 3,50	€ 5,65
35 Km	€ 2,75	€ 7,10		€ 3,75	€ 6,65
40 Km	€ 2,75	€ 7,10		€ 4,05	€ 6,65
45 Km	€ 2,75			€ 4,60	€ 6,65
50 Km	€ 2,75				€ 6,65
55 Km	€ 3,20				
60 Km	€ 3,40				
65 Km	€ 3,40				
70 Km	€ 3,40				

	SINGLE TICKET				
	Barcelona	London	Milan	Stuttgart	Zurich
Downtown	0,08%	0,07%	0,05%	0,05%	0,10%
5 Km	0,05%	0,09%	0,08%		0,10%
10 Km	0,05%	0,11%	0,11%	0,12%	0,10%
15 Km	0,10%	0,13%	0,14%	0,14%	0,15%
20 Km	0,10%	0,15%	0,15%	0,15%	0,21%
25 Km	0,13%	0,17%	0,17%	0,16%	0,26%
30 Km	0,13%	0,19%	0,19%	0,18%	0,26%
35 Km	0,16%	0,24%		0,19%	0,31%
40 Km	0,16%	0,24%		0,21%	0,31%
45 Km	0,16%			0,24%	0,31%
50 Km	0,16%				0,31%
55 Km	0,19%				
60 Km	0,20%				
65 Km	0,20%				
70 Km	0,20%				

[Tables 13 & 14] – Single fares, absolute values and related to income (with the addition of the OysterCard)

Even if no such a great difference can be appreciated in the absolute values of fares, the percentage bearing on the citizens' average income is very close among all the experiences in the range between 5 Km and 30 Km. This might mean that public fares has spontaneously reached similar impacts on their own societies, without any coordination between transport authorities.

4.4. DISCOUNTS FOR GROUPS

A further form of discount consists of reductions for groups travelling together within a certain expiring time. The most famous example is the so-called “Land Ticket” operating in Germany where customers can buy one ticket allowing up to five person to travel in a whole state for an entire day, except for the peak hour in the morning. In the following tables discount tickets for groups are highlighted; two alternatives have been selected, i.e. facilitations for groups up to five and to ten persons. If no discount is applied, the day pass for one traveller is multiplied either for five or ten times. Rail tickets in the Milanese area are not included because neither day pass nor group ticket are sold.

	GROUP TICKET (5 persons)				
	Barcelona	London	Milan	Stuttgart	Zurich
Downtown	€ 29,50	€ 43,05	€ 15,00	€ 9,95	€ 18,00
5 Km	€ 29,50	€ 43,05	€ 23,50	€ 9,95	€ 29,15
10 Km	€ 29,50	€ 51,45	€ 31,75	€ 9,95	€ 45,20
15 Km	€ 46,50	€ 59,85	€ 38,75	€ 16,20	€ 58,35
20 Km	€ 46,50	€ 75,40	€ 38,75	€ 16,20	€ 70,70
25 Km	€ 58,75	€ 88,55	€ 38,75	€ 16,20	€ 84,60
30 Km	€ 58,75	€ 96,95	€ 43,75	€ 16,20	€ 97,70
35 Km	€ 66,25	€ 96,95		€ 16,20	€ 112,30
40 Km	€ 66,25	€ 96,95		€ 16,20	
45 Km	€ 66,25			€ 16,20	
50 Km	€ 66,25			€ 16,20	
55 Km	€ 75,00				
60 Km	€ 84,00				
65 Km	€ 84,00				
70 Km	€ 84,00				

	GROUP TICKET (5 persons)				
	Barcelona	London	Milan	Stuttgart	Zurich
Downtown	0,35%	0,30%	0,15%	0,09%	0,08%
5 Km	0,35%	0,30%	0,24%	0,09%	0,13%
10 Km	0,35%	0,35%	0,33%	0,09%	0,20%
15 Km	0,56%	0,41%	0,40%	0,15%	0,26%
20 Km	0,56%	0,52%	0,40%	0,15%	0,32%
25 Km	0,70%	0,61%	0,40%	0,15%	0,38%
30 Km	0,70%	0,67%	0,45%	0,15%	0,44%
35 Km	0,79%	0,67%		0,15%	0,50%
40 Km	0,79%	0,67%		0,15%	
45 Km	0,79%			0,15%	
50 Km	0,79%			0,15%	
55 Km	0,90%				
60 Km	1,01%				
65 Km	1,01%				
70 Km	1,01%				

** group ticket up to five persons in use*

	GROUP TICKET (10 persons)				
	Barcelona	London	Milan	Stuttgart	Zurich
Downtown	€ 59,00	€ 44,30	€ 30,00	€ 19,90	€ 28,80
5 Km	€ 59,00	€ 44,30	€ 47,00	€ 19,90	€ 46,70
10 Km	€ 59,00	€ 44,30	€ 63,50	€ 19,90	€ 72,95
15 Km	€ 93,00	€ 44,30	€ 77,50	€ 32,40	€ 93,40
20 Km	€ 93,00	€ 44,30	€ 77,50	€ 32,40	€ 116,75
25 Km	€ 117,50	€ 44,30	€ 77,50	€ 32,40	€ 137,15
30 Km	€ 117,50	€ 63,45	€ 87,50	€ 32,40	€ 155,10
35 Km	€ 132,50	€ 63,45		€ 32,40	€ 180,90
40 Km	€ 132,50	€ 63,45		€ 32,40	
45 Km	€ 132,50			€ 32,40	
50 Km	€ 132,50			€ 32,40	
55 Km	€ 150,00				
60 Km	€ 168,00				
65 Km	€ 168,00				
70 Km	€ 168,00				

	GROUP TICKET (10 persons)				
	Barcelona	London	Milan	Stuttgart	Zurich
Downtown	0,35%	0,15%	0,15%	0,09%	0,04%
5 Km	0,35%	0,15%	0,24%	0,09%	0,04%
10 Km	0,35%	0,15%	0,33%	0,09%	0,04%
15 Km	0,56%	0,15%	0,40%	0,15%	0,07%
20 Km	0,56%	0,15%	0,40%	0,15%	0,07%
25 Km	0,70%	0,15%	0,40%	0,15%	0,07%
30 Km	0,70%	0,22%	0,45%	0,15%	0,07%
35 Km	0,79%	0,22%		0,15%	0,07%
40 Km	0,79%	0,22%		0,15%	
45 Km	0,79%			0,15%	
50 Km	0,79%			0,15%	
55 Km	0,90%				
60 Km	1,01%				
65 Km	1,01%				
70 Km	1,01%				

** group ticket up to ten persons in use*

[Tables 15 → 18] – Groups facilitations

The most convenient ticket seems to be the VVS Group Ticket in Stuttgart which might reduce the higher price for single ticket. Also in London the ten-person ticket is significantly lower than a normal single ticket and is very close to the Oyster Card's values. Besides, even the day pass of ZVV in Zurich is affordable and the discount for groups of ten people increases this facilitation.

The sole cities that do not provide any incentive to use public transport with family or friends are the Latin ones which in fact suffer of disaffection in choosing public services during leisure time. To run for cover, Barcelona has introduced the T-Familiar ticket offering 70 transferable journeys, valid for 30 consecutive days.

4.5. SUBSCRIPTIONS

In order to compare the transit passes available in the assessed metropolitan areas, the monthly ticket has been chosen because it is the most common subscription used almost in all the European countries and the other subscriptions are generally its multiples (like weekly, half-yearly, annual, etc.). Here data are shown:

MONTHLY SUBSCRIPTIONS						
	Barcelona	London	Milan	Stuttgart	Zurich	
Downtown	€ 48,85	€ 114,65	€ 30,00	€ 30,00	€ 69,40	€ 54,15
5 Km	€ 48,85	€ 114,65	€ 45,50	-	€ 69,40	€ 54,15
10 Km	€ 48,85	€ 134,20	€ 64,50	€ 50,00	€ 69,40	€ 79,45
15 Km	€ 70,45	€ 163,60	€ 70,00	€ 54,50	€ 92,20	€ 105,45
20 Km	€ 70,45	€ 195,55	€ 70,00	€ 58,50	€ 115,50	€ 130,75
25 Km	€ 95,20	€ 211,50	€ 70,00	€ 63,00	€ 136,60	€ 156,75
30 Km	€ 95,20	€ 211,50	€ 75,50	€ 67,00	€ 161,50	€ 156,75
35 Km	€ 113,00	€ 263,90		€ 71,00	€ 184,50	€ 156,75
40 Km	€ 113,00	€ 300,80		€ 74,00	€ 184,50	
45 Km	€ 113,00			€ 80,00	€ 184,50	
50 Km	€ 113,00				€ 184,50	
55 Km	€ 130,00					
60 Km	€ 138,50					
65 Km	€ 138,50					
70 Km	€ 138,50					

MONTHLY SUBSCRIPTIONS						
	Barcelona	London	Milan	Stuttgart	Zurich	
Downtown	2,93%	3,95%	1,54%	1,54%	3,25%	1,22%
5 Km	2,93%	3,95%	2,33%	-	3,25%	1,22%
10 Km	2,93%	4,62%	3,31%	2,56%	3,25%	1,78%
15 Km	4,22%	5,63%	3,59%	2,79%	4,32%	2,37%
20 Km	4,22%	6,74%	3,59%	3,00%	5,41%	2,93%
25 Km	5,71%	7,28%	3,59%	3,23%	6,40%	3,52%
30 Km	5,71%	7,28%	3,87%	3,44%	7,56%	3,52%
35 Km	6,77%	9,09%		3,64%	8,64%	3,52%
40 Km	6,77%	10,36%		3,79%	8,64%	
45 Km	6,77%			4,10%	8,64%	
50 Km	6,77%				8,64%	
55 Km	7,79%					
60 Km	8,30%					
65 Km	8,30%					
70 Km	8,30%					

[Tables 19 & 20] – Individual subscriptions, absolute values and related to income

Except for Zurich – where the salaries are triple than Milan – the prices of monthly tickets are considerably higher than Milan both as absolute value and as percentage of income. This tariff policy involves further public subsidies to the transport sector that should mean an increase in passengers travelling with public services. On the contrary, reducing the price too much sometimes involves such a devaluation in services as customers consider public transportation not reliable.

4.6. TIME DEPENDENCE

Another consideration regards to the cost per minute onboard suburban rapid services. The aim is to demonstrate that the speed of travelling along transit corridors is not priced in the same way among the metropolitan areas considered. The first step is to look up the time needed to cross the neighbourhoods from the city centre. These are the results:

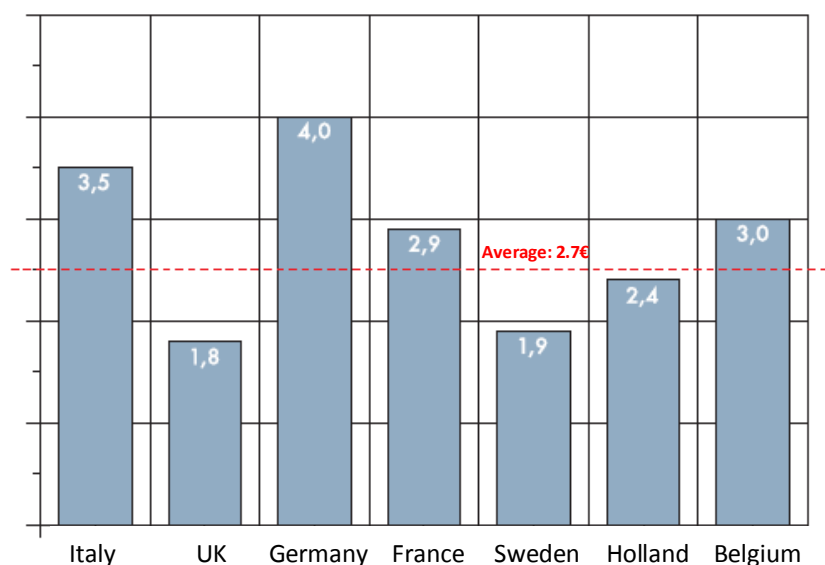
	TIMETABLES				
	Barcelona	London	Milan	Stuttgart	Zurich
5 Km	8'	11'	9'	5'	6'
10 Km	14'	14'	15'	15'	9'
15 Km	19'	20'	20'	17'	18'
20 Km	23'	28'	25'	20'	20'
25 Km	27'	33'	30'	25'	26'
30 Km	32'	42'	34'	30'	36'
35 Km	41'	47'	38'	32'	47'
40 Km	47'	51'	43'	36'	
45 Km	52'		50'	43'	
50 Km	58'			46'	
55 Km					
60 Km					
65 Km	1h				
70 Km					

[Table 21] – Travel time between downtowns and the boundaries of the metropolitan areas

According to the figures acquired, the boundaries of all the metropolitan areas are reached by fast corridor lines in about 50 minutes. This might mean that the speed of a corridor is closely dependent by the density of the metropolis: in fact, it is coherent that in London the underground stops are not far, instead of the fast suburban rail in Stuttgart. Therefore, an analysis of the value of time onboard would not be relevant, because the prices seem not to be related neither to the travelled distance nor to time spent onboard

4.7. COSTS

The last point is about the eventual relationship existing between fares and operative costs. Unfortunately there are very few data published by either the transport companies or the metropolitan institutions which can be considered comparable, because this kind of analysis are rarely published by regulated firms or their regulators and the indicators may not correspond. One of the most recent comparative studies dates back to 2006 and was held by ATM; in the [Table 16] results are shown:



[Table 22] – Operating cost per kilometre (2002)

Making an exploratory evaluation between the metropolitan areas previously compared (Milan, London, Barcelona and Stuttgart) with these national average figures, it seems that there is no connection between the amount of costs and the values of the tariffs. Every single country (and even among cities in the same country) differ in regulation patterns and policies regarding the cut in costs of service production; in addition, urban plans affect the choice of the means of transport suitable for specific areas which turn out to be more or less costly. Corridors are good examples: sometimes the best choice falls on rapid buses, in other cases falls on underground lines which are more effective, although are more expensive.

5. CONCLUSIONS

The experiences described in the third chapter seem to confirm the existence of different models. Of course, they are not the sole case for each model, because they may be generalized for other metropolises among Europe: for instance, the sector zoning is very common in several German, Austrian and Swiss sites, as the rings structure is in operation in many region capitals like Birmingham, Glasgow, Lyon, Paris, Prague, Rome, Stockholm, Warsaw, etc.

All these models are neither definitive nor static in the course of time. An example is the Helsinki case, but it is not the only one: in fact another Nordic metropolitan area is transforming, that is Copenhagen. At the beginning of 2007 the institutional pattern of the Danish state changed at the middle level, modifying the thirteen federal counties into six less powerful regions. Since the capital city was included in the first county, its government managed to create a sector fare system – the so-called “Movia” – including the surrounding municipalities. Nowadays, after the loss of mobility planning competence, the Region of Hovedstaden is no more in charge of organizing Movia and therefore all the activities are split between the municipality which are still discussing how to redesign the fare system of the Copenhagen metropolitan area, possibly trying to collaborate with the county of Scania.

Regarding to the Milanese context, it seems that all the proposals to upgrade the present SITAM organization have not involved the principal actors, i.e. the City of Milan and its company. In order to meet the requirements recently demanded (with the aim of a complete tariff integration), there would be possible stopgap which might not displease the decisions makers: a simple extension of the present SITAM to the rail services, creating a public body to supervise the distribution of costs and revenues of the integration.

However, further research are needed to transfer the zoning models into an economic theory explaining the fiscal impacts at local level of such a distribution.

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