

Fiscal decentralization and urban public transport

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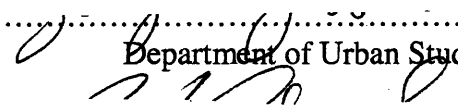
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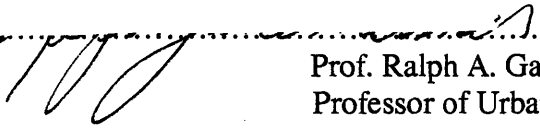
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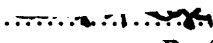
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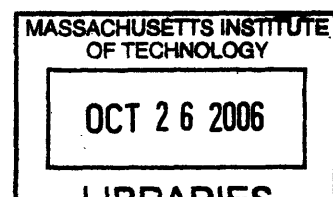
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Abstract

Financing public transport through public funds is a common practice that can be justified on different grounds: equity, natural monopoly and, particularly with the increasing motorization rate, externalities produced by private transport (congestion, pollution, road accidents) especially in urban areas. In addition, there is a belief that transport investments support economic growth, in particular transit investments because they help fostering the agglomeration effect. Whether local or national tax sources should be used for subsidizing public transport is a fairly recent question, at least in Europe where, historically, countries used to be very centralized.

Several national policy reviews as well as academic papers suggest that the reforms aiming at decentralizing power and responsibility for urban public transport management lead to successful outcomes. Yet, there is no literature on the effects of decentralization of tax raising on public transport provision although an increasing number of subnational governments reports a mismatch between transferred resources and devolved responsibilities and the public finance literature indicates that decentralization of finance authority can improve the results of decentralization reforms .

The objective of this thesis, thus, is to test if the theoretical benefits of fiscal decentralization (i.e. decentralization of taxing power in addition to management responsibilities) apply to the urban public transport sector and to what extent.

Using a sample of five European cities (Madrid, Barcelona, Paris, Milan and Stockholm) in decentralized countries as case studies, the thesis identifies three major outcomes of fiscal decentralization. First it increases the expenditure in public transport infrastructure. Second it increases the entrepreneurship of the local policy-makers. Third it generally improves the predictability of the revenues and therefore helps planning in the medium to long term. On the other hand, the research also shows that there is no increased willingness to tax at the local level therefore the stability of funding and its adequacy to the needs is not guaranteed by local fiscal autonomy. The thesis moreover suggests that a mixed system of national dedicated taxation and local capacity to incrementally adapt the tax rates is an optimal scheme for financing local public transport.

Finally, in light of the case studies, the thesis provides some recommendations to Transport for London (TfL), in order to guide the ongoing debate on the necessity of increased fiscal autonomy for the local authorities in the UK to solutions that are likely to improve TfL's situation.

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Chapter 1: Introduction

Fiscal decentralization: what do we mean and why do we care

Over the past two decades most European countries have been through decentralization reforms. This phenomenon has been supported by the notion of subsidiarity, one of the fundamental principles adopted by the European Union, and by the regional policy of the European Commission.

There are various types of decentralization but whatever its form, decentralization has significant impact on public service delivery because it changes the allocation of responsibilities and resources. Decentralization, therefore, cannot but have an impact on urban public transport provision.

Generally, the argument is seen from the expenditure point of view (i.e. how the devolved competences impact the quality of the service provided) without looking at the source of revenues. This thesis will focus more on the source of the financing, i.e. on the degree of fiscal autonomy of the subnational governments. To refer to this specific aspect of decentralization, we will talk about fiscal decentralization.

The concerns of Transport for London

The United Kingdom has a very centralized fiscal system and the funding of the public transport services in London reflects this national trend. Transport for London, the local transport agency, in fact, relies heavily on central government grants for covering both its operating and investment costs. These grants are assigned through a discretionary process and in the past this has led to a very unstable revenue stream which made it extremely difficult to realize strategic visions on the medium-long term. Moreover, in the last three decades the central government failed to invest in infrastructure renewal and maintenance

leading to a poor quality of the public transport assets and has only rarely invested in expansions of infrastructure¹ leading to an undersupply of public transport capacity.

Transport for London claims that to support the economic growth of the city more transit infrastructure developments are necessary, but their strong dependence on central government, coupled with inadequate and unreliable national funding, inhibits these investments. In particular, Transport for London is a strong proponent of Crossrail², a project that had been discussed since the 1970s and has become the symbol of London's struggle to develop new infrastructure. Transport for London is therefore interested in exploring the effectiveness of fiscal decentralization as a way to enhance the quality of the public transport service in a metropolitan area.

It is interesting to underline that this thesis comes at a time when the debate over devolution of fiscal powers to the English local authorities is extremely lively. In 2004, indeed, the UK Government commissioned to Sir Michael Lyons an independent inquiry to consider the opportunity of changing the present system of local government funding in England and make recommendations. The Lyons Inquiry was extended in 2005 and local authorities, such as Transport for London, are called to participate to the debate and contribute with their proposals.

At the same time, a second study, the so called Eddington Review, has been commissioned by the Government to assess the long term impact of transport on the UK's economy. This thesis will not investigate this specific issue. On the contrary, accordingly to the first results of the Eddington Review, we will take the assumption that investing in transport, particularly in public transport, does have positive impacts on economic growth and we will see if fiscal decentralization encourage these investments.

¹ The expansion of the Jubilee Line and the Dockland Light Rail are the most noteworthy network developments, but most of the rail system is beyond, at or close to capacity.

² Underground railway line across the city center which should link existing lines that terminate at edges. Crossrail should relieve the congestion on the underground and improve the integration of the rail network.

Outline

To understand if fiscal decentralization has an impact on urban public transport delivery, the thesis will first define fiscal decentralization and the theory that underpins decentralization reforms.

Chapter 1 will address these issues through an extensive literature review.

Chapter 2 will define the rationale for subsidizing public transport and what are the sources of these public subventions.

The research questions and methodology will be set out in chapter 3.

Chapter 4 is dedicated to the case studies. Five European metropolitan areas in countries where significant decentralization has occurred will be described both from a fiscal point of view and from a public transport perspective.

Our analysis of the case studies will be presented in chapter 5.

Chapter 6 will describe the situation in London and will provide recommendations in the light of the assessment of the case studies.

Finally, in chapter 7, the main findings of the thesis will be summarized and some suggestions on possible follow up of the research will be provided.

Chapter 1: Literature Review

1.1. *What is decentralization?*

Decentralization can be defined as the assignment of fiscal, political, and administrative responsibilities from a higher level of government to lower levels of government. Decentralization takes different forms and proportions, however a common distinction is between deconcentration, delegation, and devolution (Rondinelli, 1981 and 1989).

Deconcentration happens when the central government allocates responsibilities for a certain number of services to its subnational branch offices. This type of process does not entail any transfer of authority to lower levels of government therefore cannot be properly considered a form of decentralization. Deconcentration, indeed, hardly leads to the potential benefits (or drawbacks) of decentralization.

We usually talk about delegation when the central government transfers responsibility for decision-making and administration of public functions to local governments or semi-autonomous organizations that are accountable to, but not totally controlled by, the central government. In a delegation context, the subnational entities normally have a large discretion in decision-making.

Finally, devolution is a wider form of decentralization. We talk about devolution when the central government transfers authority for decision-making, finance, and management to local governments. In other words, devolution couples the transfer of power and responsibilities with an increased fiscal autonomy of the local authorities.

All those forms of decentralization are likely to involve a change on the fiscal structure of the country but also on the organization of its activities. However, the decentralization process does not imply that the central government is no longer responsible for the delegated areas of intervention. It is more a change of role: from delivery services to regulating and monitoring the efficiency and equity of services delivered by local

governments (Litvack et.al, 1998). Usually, central governments should maintain at least the responsibility for macroeconomic stabilization, the redistribution function and the provision of national public goods.

In this thesis, we will focus on the shift from delegation (the actual situation in London) towards devolution (the actual situation in many European countries). In particular, we will pay attention to the finance aspect of devolution (where the money comes from) and the degree of fiscal autonomy (which we will refer to as fiscal decentralization) gained by the subnational government in a devolved system.

1.2. Rationale for decentralization

The main argument for decentralization (Musgrave, 1983; Oates, 1972; Tiebout, 1956) is to attain allocative efficiency: the local government, being closer to the people, should be more responsive to the particular preferences of its citizens and should be able to provide the services they need in a more efficient way. Oates' Decentralization Theorem (Oates 1972) states that *“in the absence of cost-savings from the centralized provision of a good (economies of scale) and of inter-jurisdictional externalities, the level of welfare will always be at least as high (and typically higher) if Pareto-efficient levels of consumption are provided in each jurisdiction than if any single, uniform level of consumption is maintained across all jurisdictions”*. Local level decision making, indeed, can reduce bias of asymmetric information both on the local preferences and on the local cost conditions leading to an optimum provision of public goods. Decentralization therefore should maximize welfare gains³.

A second argument for decentralization is more political and closely related to the issue of democracy and citizen's participation: good governance is closest to citizens.

³ In particular, *“potential gains from decentralization [...] vary inversely with the price elasticity of demand. There is a large body of econometric evidence that finds that the demand for local public goods is typically highly price inelastic. This suggests that the potential welfare gains from decentralization may well be quite large.”* (Oates, 1999)

Finally, another justification for decentralization can be founded in the effort to conciliate regional autonomy and unity of the nation, especially in highly - ethnically or linguistically - fragmented countries.

Nevertheless, according to Smoke (2001), the potential benefits of devolution need three main requisites:

- A viable local political mechanism to determine local preferences and to hold the local government accountable to their constituents
- Local governments must have the institutional, technical and managerial capacity to deliver the services demanded
- Local governments must have access to the financial resources required to meet their responsibilities

1.2.1. Fiscal decentralization

It's opportunities...

The Tiebout model (Tiebout, 1956) can be considered as one of the pillars of the theory of local public finance. His thought-provoking paper, indeed, shows that, contrarily to the Musgrave-Samuelson assumption that “there is no mechanism to force the consumer-voter to state his true preferences”⁴, there exists a mechanism to solve the free rider problem and it can be applied in the specific case of local public goods. In the Tiebout model, taxes function like prices in private market and citizens, “voting with their feet”⁵, express both their preferences for local public goods and the marginal cost of providing these goods, in a decision that generates a Pareto-efficient outcome as would a system of competitive market (Oates, 2005). One of the implications of Tiebout’s article is therefore the need for local policy-making and the associated need for fiscal

⁴ Musgrave (1939) and Samuelson (1954) assert that there is no market-type solution to determine the appropriate level of expenditure for public goods (and therefore there is no way to determine an optimal allocation of public resources) because there is no way to force the consumer-voters to reveal their true preferences for public goods (free rider problem). Tiebout (1956) argues that, if this can be true for central government spending, there is a model based on local government provision of local public goods that can conceptually solve the problem.

⁵ Tiebout (1956)

decentralization, i.e. power to determine the taxes to levy, the tax base, the tax rate and the tax enforcement.

According to the theory of fiscal federalism, subnational governments should have a significant power to determine their revenues in order to achieve greater accountability and more efficiency. Accountability is indeed often promoted by establishing a clear and close link between the costs and the benefits of public service (Litvack et.al, 1998). The “principle of fiscal equivalence” (Olson, 1969) suggests that citizens should pay taxes to each level of government corresponding to the benefit they receive from each tier.

If the expenditure mix and the tax rates are determined closer to the people, local public services will improve⁶. In order to have effective control of their expenditures, subnational governments need to control their revenue sources therefore they should be enabled to affect their revenues considerably at the margin through their own fiscal policy.

Empirical studies find that state and local government spending is much more responsive to increases in intergovernmental receipts than it is to increases in the community’s private income (Oates, 1999). In other words, spending behaviors are influenced by the political effort to raise money. Local taxation therefore contributes to the efficiency in resource allocation⁷ and is thus an essential component of decentralization reforms (Bird and Smart, 2002).

Some scholars, then, assert that the overall resource mobilization should be increased through fiscal decentralization because local-government can tax the fast-growing parts of their economic base more easily than the central government⁸.

⁶ Yet, some scholars underline that political constituency can be stronger at local level and therefore there is a risk of inappropriate behavior of the local politicians if the central government does not have any control on local spending.

⁷ For example through a better integration between local policies.

⁸ Conversely the Baumol effect (1967), competition among jurisdictions and political power of growing local sectors (see next section about fiscal decentralization’s threats) all suggest likelihood of inadequate willingness to tax or at least a lag in adequate support.

Finally, more local fiscal autonomy can also impose a harder budget constraint on subnational governments, reducing the problem of moral hazard⁹. While borrowing, for instance, subnational government that are highly dependent on national transfers may increase their expenditures above their capacity for financing them, hoping for a national bailout.

From a practical point of view, it is important to stress that rating agencies grant higher creditworthiness to subnational governments that demonstrate greater revenue flexibility. As a matter of fact, they measure the level of modifiable revenues (i.e. taxes, fees or operating revenues that the local government can modify by adjusting the tax rate or base) to assess the ability to raise revenues if needed¹⁰.

Empirical evidence as well as theoretical agreement on the relationship between fiscal decentralization and economic growth is debated. Nonetheless, analyzing a large set of indices for eighty nations, Huther and Shah (1996) at the World Bank founded a statistically significant and positive correlation between increased decentralization and improved economic performance. This correlation (in contrast with the findings of other more circumscribed studies¹¹) does not mean causation, especially because in many cases devolution is the result of broader political and economic influences.

..and its threats

Macroeconomic policies are more complicated to implement in decentralized countries where the central government loses the complete control of such a key policy instrument as fiscal policy¹².

⁹ Propension to risk (or immoral behavior) of an agent that does not bear the (complete) responsibility of the consequences of his action.

¹⁰ Note that rating agencies assess the capacity to repay a debt, not the efficiency on spending.

¹¹ Zhang and Zou (1998) regression analysis suggests that fiscal decentralization has a negative effect on economic growth but they use the subnational share of total government expenditure as key independent variable. This approach raise questions about the interpretation of their results.

¹² J.k. Galbraith's work, for instance, suggests that fiscal policy is a powerful economic tool to retain at the central government level.

Besides the difficulty for the central government to effectively control the stability of the country, one of the most important concerns with local fiscal autonomy is equity. Unless an appropriate system of horizontal equalization is put in place, local fiscal autonomy can lead to important differences between services provided by subnational government with different tax potential. Moreover, more local fiscal autonomy makes revenue more dependent on local economic performance and is therefore more risky for subnational entities.

There is then the issue of the “race to the bottom”, meaning that a suboptimal provision of public goods will appear if local governments fear to lose business or residents because of tax differentials. This theory somehow contradicts Tiebout and other scholars’ views (Breton, 1996; Salmon, 1987) asserting that horizontal competition should lead to a perfect competition in the public sector, therefore increased efficiency. In addition, central government control on the allocation of funds can guarantee a minimum level of service in all jurisdictions while competition between jurisdictions can lead to strong disparities and, to some extent, segregation.

According to some scholars, moreover, an increased local fiscal autonomy could lead to less experimentation and policy innovation. Faced with a hard budget constraint, local governments could become risk-adverse and wait for others to test new technology or promote ambitious projects (free rider problem).

Finally, from a practical point of view, local authorities need to build technical capacity in order to administer their fiscal power and, unless the taxes are collected by the central government, they need to implement a system of collection and enforcement.

1.2.2. The tax assignment problem

The settlement of the vertical structure of taxes (i.e. which taxes for which level of government) is a very complex issue. Some countries completely separate the tax bases for different levels of government, while others allow different levels of government to use the same tax base.

The tax assignment strategy should take into account redistributive equity matters, macroeconomic management, economies of scale in tax administration and stability of the source. Taxes, furthermore, can influence the resource allocation and, from a spatial point of view, produce locational inefficiencies if the taxed subjects can choose to move to more convenient jurisdictions.

The literature therefore suggests that local governments should tax highly mobile economic units only with benefit taxes in order to create a strong relationship between the levy and the supply of public good. In other words, local government should rely essentially on taxes on goods that are difficult to move (like real property), or user charges or taxes that hit the activities that strongly benefit by the services provided.

In practice, this means that subnational governments' own revenues would hardly cover the expenditure responsibility for which they are normally responsible. That's why the design of intergovernmental transfers covering the vertical fiscal imbalance is extremely important to the success of decentralization.

1.2.3. Other forms of revenues for the subnational governments

Intergovernmental grants

Besides filling the gap between local expenditures and revenues, the literature points out several roles of grants like the internalization of spillover effects, fiscal equalization (horizontal fiscal balance) and risk sharing between the levels of government (stabilization function).

Because of the asymmetry of information between central and local tiers, designing an intergovernmental fiscal system requires a substantial amount of information to assess the needs, the level of service required, and the fiscal capacities of the different jurisdictions. The total amount to be transferred can be determined as a fixed proportion of central government revenues (revenue sharing), on an "ad hoc" basis (i.e. discretionary or

negotiated transfers) or on a formula-driven basis (based on needs, capacity or effort indicators).

The idea of local autonomy is normally associated with a limited share of external revenues, nevertheless a properly designed grants system can support the local sovereignty through regular, transparent and predictable transfers. Politically negotiated transfers therefore have to be limited if not banned.

The grant system is indeed a very delicate balance between the need for stability of local governments in order to budget rationally, and some degree of flexibility for the central government in order to achieve its stabilization goals. That is why the literature suggests that the best way to provide both of these elements is to establish a fixed percentage of all central taxes (or current revenues) to be transferred (Bird and Smart, 2002)¹³. Nonetheless, in the real world, when tax sharing is applied the norm is often a tax-by-tax sharing. The problem with this type of arrangement is that it gives the central government an incentive to concentrate its collection and enforcement efforts on the taxes that are either not shared or shared to a lesser degree. Moreover, the central government also has an incentive to concentrate rate increases on those taxes, and this can bias the tax system (Ter-Minassian, 1997).

Transfers can furthermore be divided in matching and unmatched (lump sum) grants that can in turn be conditional (i.e. restricted to a specific use) or unconditional. The problem of conditional grants is that they normally do not provide incentives for expansion and they reduce incentive for self decision making¹⁴. They are, in a certain way, against the essence of decentralization.

In principle, matching grants are designed to provide the optimal quantity of public good, taking into account the associated externalities. The literature thus suggests that the

¹³ The rating agencies normally consider a fixed share of the local proceeds of a national tax as part of the tax revenues of subnational government. That is thus the way we classed them in chapter 4.

¹⁴ Earmarked transfers are perceived negatively from credit rating agencies because they increase rigidity, unless they are earmarked for debt repayment.

matching rate (subsidy) should be higher the greater the degree of central interest and the lower the price elasticity and income elasticity of the local recipient. Matching grants may induce allocation of subnational governments' own resources to the sectors chosen by the central government, at a cost for the local provision of other services or lead to greater local willingness to tax, decreasing private consumption. Also, matching requirements may place poorer, resource-constrained regions at a disadvantage vis-à-vis richer ones in the utilization of federal grants (Ter-Minassian, 1997). On the other hand, such grants may be particularly important in capital investment projects that normally require financial efforts that cannot be borne by local resources alone. Infrastructure, indeed, may involve significant externalities and may represent important elements of the national development strategy. These capital grants, given the discrete nature of infrastructure construction, are normally not assigned as a permanent transfer to the local authorities. Properly designed, matching grants can internalize spillover effects and introduce an element of local commitment and accountability for the projects.

Unconditional grants, particularly suitable for revenue sharing and equalization purposes, are the most suitable from an efficiency point of view but require responsible local authorities and a high level of accountability so that the central government does not need to interfere with local expenditure choices. Moreover, central governments do not receive any credit for the projects realized with this kind of subsidies, and therefore tend to prefer other kind of transfers.

Finally, there is a political dimension of the grants. Sometimes, for instance, it is necessary to fund jurisdictions that do not really need resources just to make it politically feasible to finance other local governments. Or, in other cases, the fund structure becomes rigid because of the difficulty of changing the amount of the transfers, therefore major political developments are needed to reform intergovernmental fiscal arrangements.

User Fees

User charges, according to the principles explained in section 1.2.2, have largely been used by local governments as a way to finance public services. The clear link between the fee and the enjoyment of a good or a service increase the political support of pricing initiatives and facilitate their implementation. Moreover, nowadays, new technologies offer a wider range of application of the user fee concept.

Borrowing

Another tool for the local government to fill the gap between revenues and expenditures is debt finance. Own resources and transfers should, in principle, cover local recurrent expenditures while borrowing should be used for capital budget.

The economic rationale of borrowing is spreading the burden over long periods, especially for long life projects. Borrowing from the private market, moreover, increase responsible behavior creating a hard budget constraint if decentralized governments base their reliance on their own sources of revenues. Nevertheless, if the sole reliance on market discipline is not perceived as trustworthy, national legislation can limit local access to borrowing through different approaches: cooperation by different levels of government in the design and implementation of debt controls; rules-based controls; administrative controls. Particularly, Ter-Minassian (1997) and other scholars argue that subnational governments should be restrained especially from borrowing abroad and thus adding to the national obligation to service foreign debt.

Chapter 2: Devolution and Public Transport: Why Does It Matter?

2.1. Financing Public Transport: why?

There are two different components of financing public transport: the financing of the infrastructure and the financing of the operations.

Similarly to the road network, the financing of public transport infrastructure is largely born by the taxpayer. Unlike the use of private vehicles that is born by the user, public transport operations are paid through a combination of fares, other commercial revenues (such as advertising or property rentals) and public subsidies aimed at compensating social fares and other public service obligations, or as an incentive to increase access and reduce auto use.

Subsidies are also granted in a less direct way, i.e. through tax exemptions accorded to public transport companies (e.g. vehicle and fuel taxes, VAT exemption for public transport tickets). The public transport provision is thus largely subsidized in the majority of the industrialized countries and this is not because transit is per se inefficient or non-viable, but because through public transport policies (especially in urban areas) policy makers are normally pursuing multiple objectives. In particular, public regulation, financial support and, often, ownership of public transport companies is usually based on three major justifications: economic grounds, the social role of public transport, and political realities.

2.1.1. Economic justification for public transport subsidy

Market failures, in particular externalities and monopoly, are a major rationale for public transport subsidy.

Negative externalities like traffic congestion, pollution and accidents imply that the marginal cost of driving a private vehicle is less than the marginal social cost.

In an economically efficient transport system, motorists would face higher charges (especially during peak hours) which would limit their vehicle use. If it is impractical for road use to be fairly and efficiently priced, there is an argument for subsidizing its substitute. Subsidies are therefore a 'second best' but politically necessary compensatory solution. A good public transport system contributes therefore to transfer the transport demand to more environmental friendly modes.

Then there is the natural monopoly argument that can be applied, especially for rail systems that have huge fixed costs. Public transport companies normally operate under their capacity (except at peak periods) therefore marginal costs for an additional rider are low. If price is fixed at the marginal cost in order to maximize social welfare, public transport companies would show a loss, the marginal cost being lower than the average cost. (Ubbels et.al, 2003). Keeping fares low therefore requires financial support.

Finally, economic development policies definitely require good accessibility of the activities they promote. In urban areas, where the congestion is increasing and the road network is constrained by the morphology of the city, public transport may be the only way to efficiently sustain urban vitality. Whether improved transport increases economic growth is a highly debated question. Some economists simply argue that transport investment affects the distribution of economic activity within a metropolitan area, but not the absolute amount of growth. Others underline that the growth measured could be only the symptom of multiplier effect: increased activity in construction and labor intensive transport services.

Nevertheless academics in the last 15 years (particularly Aschauer (1989), Venables (2004) and Graham (2005)) show a positive connection between transport improvement and economic growth, especially for the service sector, which is the dominant sector in most western metropolitan areas. Graham's analysis, in particular, suggests a calculation that a conventional cost-benefit analysis of a transport project (based on time savings and environmental impacts) underestimates benefits by 25%, and points out agglomeration economies as the likely sources of these economic growth benefits. It is important to note

that densities required to support agglomeration are generally higher than those allowed by auto access, which, by the way, undermines economic vitality through road congestion. Therefore economic growth caused by the agglomeration effect is more likely to occur when public transport investments are realized.

2.1.2. Social justification for public transport subsidy

There are services and goods which are regarded as essential for the citizens' welfare, therefore guaranteed by the government. Public transport allows access to these essential services and goods (education, health, jobs) by those who do not have access to a car.

Equity and social inclusion, thus, represent a strong justification for subsidizing public transport. Subsidy allows the redistribution of income, in the form of public services, to transport underprivileged groups (such as low income individuals, children, elderly or disabled people) and depressed regions.

This redistributive effect of public transport services has nonetheless to be assessed in a case-by-case basis because in many regions public transport investments are concentrated in the central business district (generally the most dense therefore the most suitable for public transport design) where the higher income dwellings live. In these cases, the environmental and economic justification for funding collective transport can be dominant, but maintaining affordability may continue to be an important social objective.

2.1.3. Political justification for public transport subsidy

Taylor (2004) makes the distinction between two different types of economic benefits of transport expenditures:

- the transport effects, i.e. the stimulation of economic transactions and social interactions due to the lowering of transport costs (e.g. increased speed or reliability, reduced emissions or accidents)
- the expenditure effect, i.e. the direct effects of spending on transport (e.g. creation of jobs, purchasing of material and the resulting multiplier effect)

Policy makers, indeed, often justify their support to transport projects in terms of the jobs they create (especially in the case of public transport whose operation is labor intensive).

In addition, jobs related to transport investment target low-skilled workers and therefore government spending in transport infrastructure can be used as a social policy.

Finally, large infrastructure projects are highly visible therefore popular with the electors and if the environmental or congestion issue is very strong among the population, public transport investments can gain even more consensus.

2.2. Central and local government roles: who should pay for urban public transport?

As seen above, central and local authorities make finance available to public transport for economic, social, environmental and political reasons. Yet public transport can take different forms and cover different spaces. This thesis focuses on urban public transport, especially in metropolitan areas, therefore this section will analyze the role of national and subnational governments in funding urban public transport systems.

As pointed out by Oates (1999), according to the traditional theory of fiscal federalism, decentralized level of government have their *raison-d'être* in the provision of goods and services whose consumption is limited to their own jurisdiction. From this point of view, a distinction can be made between “local public goods”, “regional public goods” and “national public goods” and each of them should be financed by the corresponding level of government. Nevertheless, because of the overlapping nature of most public-sector goods and the limited traditional resources of subnational governments, higher levels of government are called to contribute.

Urban public transport, because of its limited range of action, can be considered a local public service¹⁵. However there are multiple reasons that justify the financial participation of higher level of government. First of all, public transport beneficiaries (users and non users) go beyond the urban boundaries. Economic and cultural activities provided in urban areas attract the so called “city users” that don't contribute to the urban fiscal pot, especially in those cities that have been particularly affected by urban sprawl.

Second, the positive spillover effects of the reduction of private traffic in urban areas (like the impact on air quality or on global warming¹⁶) can be fully internalized only at a broader spatial level. Then, for social reasons, the level of service provided is often regulated by national standards and national public service obligations. As a logical consequence, the national government should contribute to maintain those standards. Moreover, the redistributive effects of public transport make more sense at a macro level, therefore this equalization function should be attributed to the national government.

Finally, cities are the fulcrum of the economic activities in all western countries. Large cities, in particular, are highly productive and their economies can be damaged if their transport systems are not of adequate quality or offer inadequate capacity to sustain their development (Glaister, 2004). It is therefore a national concern to promote cities' competitiveness and capacity to attract investments, especially in a global economy where international locations can take away from the nation significant opportunities of economic development.

2.3. Specific problems in transport funding

Public transport investments suffer from several serious problems: the disparity between the short electoral mandate and the time horizon of most of the infrastructure projects (Glaister, 2004) and the fact that every public transport investment normally requires an increase in services plus expensive maintenance.

Operation costs, moreover, tend to increase in line with wages, which rise faster than the general rate of inflation according to the so called Baumol effect¹⁷. Because of the high labor content therefore it is difficult to find a source of funding that keeps pace with the growing gap between operating expenses and revenues.

¹⁵ Public services are services provided by government to its citizens (either directly or by financing private provision of services) but are not necessarily public goods (i.e. non rival and non excludable).

¹⁶ Although global warming is a supra-national environmental issue, the Kyoto protocol requires a national reduction of greenhouse gases; therefore the promotion of local public transport as a way to reduce gas emissions should be supported by the central government.

Finally, in the last decades there have been trends, such as urban sprawl and car oriented land use, that have increased public transport costs making it increasingly costly to provide a demand oriented service.

2.4. Urban Public Transport: sources of subventions

Public subventions allocated to collective transport commonly come from general taxation, whether local or national. There are examples of earmarked taxes or fees for public transport and they generally refer to three broad principles (UITP classification):

- **Polluter Pays:** those who cause a problem (i.e. the motorists) compensate for the cost imposed on the community. The compensation may then be used to fund less polluting forms of transport
- **Beneficiary Pays:** those who gain benefit from a service meet its costs. Thus employers, developers, property owners and retailers all gain from the provision of public transport services which give them increased accessibility¹⁸.
- **General Public Pays:** whether or not they are public transport users, because they benefit in a general way from reduced air pollution, increased economic activity and accessibility.

Another source of revenues is cross-subsidy. Cross-subsidy from other sectors (such as water, electricity or gas) is still used only in Germany where public utilities are in some cases provided by a single City Public Services company (Stadtwerke). Cross-subsidy within public transport networks is on the contrary more common and often used as services integration tool.

¹⁷ Baumol (1967): "Macroeconomic of unbalanced growth: the anatomy of urban crisis".

¹⁸ Auto drivers who benefit from relief of congestion created by tolls and congestion charges can also be considered beneficiaries.

Table 1: Earmarked sources of subventions

Type of scheme	Category	Principal features
Employee/employer taxes	Beneficiary pays	Usually a local charge per employee, sometimes banded with highest payments in areas of best public transport; sometimes relief for employers who provide public transport support to staff.
Property taxes	Beneficiary pays	Tax upon property in areas of public transport "user pays" concept: intended to capture some of the rise in property values generated by public transport usually earmarked business tax. Often used to pay loans/bonds.
Developer levies	Beneficiary pays	Can be applied in a variety of ways, including by private developers. Often linked to planning permission.
Parking charges and fines	Polluter pays/ Beneficiary pays	Applied by both private and public authorities. Makes use of existing local powers.
Road space charges	Polluter pays/ Beneficiary pays	Includes tolls, congestion and road user charges. May require new powers.
Motor taxes	Polluter pays	Includes levy on fuel and excise taxes.
Consumption taxes	General Public Pays	Local taxes on a variety of consumption goods and services. May be a general goods/services tax or on a particular good (e.g. beer or gambling). Used extensively in the US.
Cross utility financing	General Public Pays	Where multi-utility companies provide a subsidy to public transport from their other operations.
Miscellaneous	Combination	Rest category including airport landing charges and student fees to pay for public transport.

Source: Ubbels et.al (2003)

2.4.1. Local earmarked taxes

As seen in paragraph 2.4, in most countries support for public transport has traditionally been financed from general taxation. This means that there is no direct link between the source of revenue and what it is used to finance. Nevertheless, especially for local taxation, the benefit link is extremely important to legitimate the levy mainly if imposed on mobile economic units (see 1.2.2 The tax assignment problem).

This thesis focuses on the assessment of the potential benefits of local fiscal autonomy on urban public transport therefore one of the first questions that arises is if local authorities have sufficient power and capabilities to develop a system of local charges and taxes.

Ubbels et.al's (2003) research on local earmarked taxes gives us an idea of the potential of locally raised earmarked revenues and points out that they can be substantial, as shown in the table below:

Table 2: Fund raising potential of local earmarked taxes

Category, case	Share in operating budget (annually) or investment
Employer tax, Versement (France)	Funded in 2004 39% of the operating budget of Ile-de-France Region ¹⁹
Employer tax, Portland (U.S.)	Funded 56% of the operating budget of the local transport authority in 1985
Development levies, San Francisco (U.S.)	Funded in 1996 about 2% of the operating budget of the municipal railway (Muni)
Parking charges, Amsterdam (Netherlands)	In total parking revenues will fund 1.5% of the total infrastructure costs of the IJtram
Charges for the use of road space, Golden Gate Bridge San Francisco (U.S.)	Funded 49% of the operating budget of the bus and ferry organization in 1997
Consumption taxes, Washoe County, (U.S.)	Funded 50% of the operating budget of the public transport company in 2000
Consumption taxes, Fort Worth (U.S.)	Funded 71% of the operating budget of the public transport company in 1996
Utility levy, Pullman (U.S.)	Funded 40% of the operating costs of the local transport company

Source: Ubbels et.al (2003)

¹⁹ Source: GART

Chapter 3: Hypotheses and Methodology

3.1. *The research questions*

Over the last few decades, most European countries have gone through a decentralization process. The United Kingdom is an exception. Its fiscal system, in particular, remains extremely centralized. Local governments, in fact, collect only 4% of the nationwide tax revenues.

On the other hand, with the creation of the Greater London Authority in 1999, the UK capital has gained a statutory power on local decision making, especially in local public transport planning. Nevertheless, Transport for London, Greater London's transport agency, heavily relies on central government grants both for operating costs and capital investments. These grants are assigned through a discretionary process and in the last fifteen years they have been extremely unstable.

The dependence on central fiscal planning, therefore, seems to undermine the possibility for the transport agency to implement a long term strategy and invest in the necessary assets for the local economic growth.

The literature review has revealed a series of theoretical benefits deriving from fiscal decentralization, and Transport for London believes that increased fiscal autonomy will actually help them to provide a better public transport in London.

The aim of this thesis is therefore to find some evidence to answer to the following questions:

- Does fiscal decentralization benefit the urban public transport system?
- If so, which set of local fiscal instruments should be the most suitable to develop and maintain a sustainable public transport system?
- Under what conditions can fiscal decentralization be beneficial to London?

3.2. Hypotheses

From the literature on fiscal decentralization, we can draw a set of potential advantages of local fiscal autonomy. The following theoretical advantages are the hypotheses that we tested:

- Devolution creates more accountability therefore an increased willingness to pay (both for taxpayers and the business community)
- Devolution increases flexibility in decision making therefore it enhances the entrepreneurship of the local government/transport agency
- Devolution improves efficiency (for instance through a better control on the costs or an increased interaction with land use and other policies)
- Devolution increases the stability of funding allocated to public transport
- Devolution increases the participation of private sector in the public transport sector

3.3. Methodology

3.3.1. Case studies

To test the hypothesis, we analyzed a sample of five European metropolitan areas presenting a certain degree of fiscal autonomy:

- **Madrid and Barcelona:** we chose two Spanish metropolitan areas because the decentralization reform in Spain was particularly interesting. First of all, urban public transport has always been a responsibility of the Spanish cities while decentralization reforms are more recent. Spanish cases, thus, were an extraordinary ground for testing the effects of local fiscal autonomy on the public transport system. Second, the decentralization reform in Spain was asymmetric, meaning that new responsibilities were devolved to the different regions in different times. Finally, we wanted to control for the fact that normally capital cities receive more support from the central government because of their status and the increased service provision it requires.
- **Paris:** France has long been a very centralized country. During the first decentralization reform (1980s), Paris was left out and only last year the Central Government decided to concede more autonomy to the regional transit agency.

Paris' decentralization is thus extremely recent but it was interesting to understand the process that led to this increased autonomy. Finally, French urban transport is largely funded by a local earmarked tax, a unique example in Europe.

- **Milan:** we chose the Italian business capital to represent Italy's interrupted devolution process and the problems it created. Local public transport decision-making, indeed, has been decentralized since the mid-1990s, but the majority of the public funding comes from a national earmarked transfer that is only partially linked to the local economy and, more importantly, is not indexed to inflation.
- **Stockholm:** Sweden is an interesting case because it has a long tradition of local fiscal and policy-making autonomy. Stockholm, its capital, is the most populated urban area and it operates roughly half of the public transport offer of the country. As in the London case, a single supra-municipal government tier (the County) is responsible for the provision of collecting transport but the operating costs are completely borne by County.

The situation in London was also studied in more details.

The table below illustrates the main characteristics of the metropolitan areas described in this thesis:

Table 3: Description of the 5 cities studied

	Population	Area (km²)	Density (people/km²)	Motorization (cars/1000 people)
Madrid (Region)	5,625,000	8,026	701	414
Barcelona (Metropolitan Region)	4,399,390	3,237	1,359	458
Paris (Ile-de-France)	10,952,000	12,012	912	454
Milan (Metropolitan Area)	2,848,000	1,052	2,707	494
Stockholm (Region)	1,872,900	6,519	287	400
Greater London	7,400,000	1,589	4,657	370

Source: EMTA Barometer of Public Transport in the European Metropolitan Areas (2002) and AMA-Milan (2002)

Finally, the table below summarizes the main competences of municipalities and regions in the analyzed countries:

Table 4: Roles and duties of municipalities in the four countries studied

	Spain	France	Italy	Sweden
Municipalities	Urban public transport Street maintenance Refuse collection Sewerage Public parks Libraries Municipal police Social services Fire prevention Water supply	Urban public transport Street maintenance Refuse collection Sewerage Municipal police Social services Water supply Economic development Public parks Libraries Housing Shared power with Regions Economic development	Urban public transport Street lighting and maintenance Waste collection Public parks Libraries Kindergartens and primary schools Social services Water supply	Social services Education Planning and building Environment Waste collection Sewerage Water supply Rescue services Civil defense Libraries Housing Shared power with Regions Public transport Voluntary tasks: Leisure and culture Technical services Energy provision Street maintenance
Regions	Territorial and urban development Culture Savings banks Roads and public transport (except rail) Shared power with central government : Education Healthcare Environment	Professional training and secondary school maintenance Regional public transport	Healthcare services Regional public transport infrastructure Economic development Environment Coordination and supervision lower tiers	Health and medical care Coordination and supervision lower tiers Voluntary tasks: Culture Education Tourism

3.3.2. Assessing fiscal decentralization and transport performance

In order to decide what kind of data we needed to gather for testing the hypotheses, we defined a set of indicators which helped to translate the hypotheses into measurable effects.

In particular, we chose the following set of indicators to assess if the devolution has significant impacts on:

- **Accountability** and **willingness to pay** especially for public transport (both for taxpayers and for business)

Indicators:

- *creation of new local taxes or increase of the tax rate or base (i.e. use of devolved taxation power)*
 - *local taxes earmarked for transport*
 - *implementation of “unpopular” measures targeted toward more revenues for transit (parking fees, congestion charging,...)*
- **Flexibility**, therefore more **entrepreneurship** of the local agency

Indicators:

- *creation of new funding streams*
 - *involvement of other actors than the public authorities (investors, developers, creation of new structures or companies,...)*
 - *rapidity of implementation of the projects*
- **Efficiency**, therefore **better spending** in public transport

Indicators:

- *increased interaction with other local policies (land use, private transport, social policies,...)*
 - *ridership and investments*
 - *cost reduction or cost control*
 - *rapidity of implementation of the projects*
- **Stability of funding**

Indicators:

- *historical series of expenditures both in infrastructure and operations*
- **Participation of the private sector**

Indicators:

- *number of public-private partnerships*
- *local taxes on business*
- *risk-sharing with public transport operators*

Appendix 1 details the list of data needed to build these indicators and to analyze each case. The financial data and fiscal structure of the public authorities were found essentially in the rating agencies' credit analysis. The transport data were collected essentially from the websites of the transit agencies and local authorities or from the annual reports of both the agencies and the public transport companies. Nevertheless, some data are not public (or publicized because of the competition) and we needed to get in contact with the local actors to obtain them.

3.3.3. Interviews

During the data collection and the data analysis phases, we interviewed (face to face, via telephone or via e-mail, according to the availability of the interviewee) some relevant local experts in order to obtain a more accurate picture of each case study. Local actors, in fact, are an extremely valuable resource for completing our understanding of the local dynamics and supplementing the data with qualitative information.

Fiscal decentralization, in fact, is not merely an economic issue and therefore cannot be analyzed only through numbers. Similarly, public transport has tremendous social repercussions. Both fields, indeed, have extremely important political implications that need to be contextualized. A view from inside the system can help us to understand the political situation and the relationship between the actors. Although these interviews were not meant to be a questionnaire, in an attempt to be as rigorous as possible we asked the same set of questions to each interviewee. Appendix 1 shows the framework for the interviews.

Chapter 4: Case Studies

4.1. Madrid (Spain)

4.1.1. National fiscal system

During the Franco dictatorship, Spain was an extremely centralized country. All policies and investments were centrally planned. General Franco died in 1975 and the Spanish Constitution was approved in 1978. Since that time, Spain has undertaken a gradual decentralization process to transfer many governmental responsibilities from the central government to regional and local authorities.

The Spanish model of decentralization is characterized by two features: asymmetry and incrementalism. Moreover, as observed by Loughlin and Lux (2004), Spain's membership in the European Union (EU) has influenced its decentralization reforms, not only indirectly (because subsidiarity is an essential element of European good governance and therefore decentralization has been adopted by the majority of the European member countries), but also directly because EU regional funding has been an important rationale and motivation for regionalization.

Asymmetry and incrementalism

First of all, there have been two consecutive different political decentralizations:

- The transfer of political and policy responsibilities, functions and resources from the central government to regions called Autonomous Communities (ACs) in a process known as “the first decentralization” (1978-2002);
- The further transfer of political and policy responsibilities from both the central state and the ACs to the provinces and municipalities, known as “the second decentralization”, less powerful than the first and still ongoing.

Second, the Spanish government has made distinctions between the Autonomous Communities (ACs) and treated each group differently in the process of decentralization:

- **Foral Regime** : The Basque Country and Navarra have an unusual degree of autonomy over tax collection and use. Navarre and the Basque Country have their own tax system. They levy and collect their taxes but in return pay a subsidy to the Spanish central government for the public services they receive (such as foreign policy or national defense), and for inter-regional solidarity purposes. Since 1978 they have been responsible for education, health care, and police
- **Five Fast Track Regions**²⁰: These ACs were given a broad range of devolved responsibilities immediately, and since 1978 they have been responsible for education and health care, even though more fiscal autonomy followed several years later
- **Ten Slow Track Regions**²¹: Before becoming ACs, these regions were required to wait five years and to hold popular electoral referendums to gain AC status. These regions obtained responsibility for education in 2000, and health care in 2002.

Autonomous Communities

The governmental competencies have been transferred at 5-year intervals (25 years in all between 1978 and 2002). However, these transfers of power were not always accompanied by the necessary financial resources, often leaving the ACs in very difficult situations. At times, this mismatch led to an explosion of debt on the part of the ACs as they resorted to borrowing to meet their commitments. The following sections summarize the key aspects of the 5-year reforms of the fiscal system of the ACs.

1982-1987 Reform

The ACs shared the proceeds of national taxes (“Participaciones en Ingresos del Estado”, PIE) proportionately according to the costs of their decentralized responsibilities.

²⁰ Catalonia, Galicia, Andalusia, Valencia and the Canary Islands are fast track regions.

²¹ Madrid is a slow track region as well as Aragon, Principality of Asturias, Balearic Islands, Cantabria, Castile-La Mancha, Castile-Leon, Extremadura, La Rioja and Murcia.

1987-1995 Reform

The PIE receipts change and were assigned according to objective criteria such as demographics and regional fiscal effort.

1992 Reform

The ACs obtained 15% of the regional tax on petroleum products collected on their territory.

1997-2001 Reform

Before 1997, the ACs had no leeway to adjust the rate of taxes. Table 5 summarizes the introduction of increasing fiscal flexibility for the ACs between 1997 and 2001:

Table 5: 1997-2001 Fiscal reform for AC

Taxes	1997	2001
Income tax (impuesto sobre la renta de las personas físicas - IRPF)	Introduction of the 'tax co-responsibility principle' which allowed autonomous communities to benefit from 30% of income tax receipts raised in their area. Most importantly from the point of view of their financial autonomy, the ACs were given the power to adjust the rates of tax and the tax base, within certain defined limits. They had the power to set the tax base and could determine levels of rebates on half of this sum and received the other half in the form of a 'territorial share'. The personal income tax represented over 36% of regional tax revenues in 1997.	The power to set tax rates is extended to cover the full 30 % of income tax receipts.
Wealth tax	Since 1997, autonomous communities have been able to levy taxes on wealth, real estate transfers, donations, inheritances, and games	
Transfer tax on real estate		
Tax on donations and inheritance		
Tax on games		

Source: Loughlin and Lux (2004)

2002 Reform

In 2002, Spain undertook a broad reform of the ACs' authority over, and entitlement to, national taxes. The range of taxes was enlarged, and the regions' fiscal autonomy was

increased, essentially concentrated in the IRPF (the only requirement for the ACs was to retain the same number of bands established by the central government). In practice, however, none of the regions have modified their IRPF rates. The ACs have so far (2006) utilized their flexibility by integrating tax deductions.

Table 6: 2002 Fiscal reform for AC

Taxes	Tax base	Leeway
Income tax	Increased share of income tax receipts: from 30% to 33%	ACs were given the power to adjust the tax rates on this share within a margin of +/- 20% of the central government tax rate. ACs were also granted the power to modify the tax base with tax deductions or rebates.
Wealth tax	Assets	AC were given the power to set the rates of these taxes within certain limits.
Transfer tax on real estate	Real estate transactions	
Tax on donations and inheritance	Inheritance and donations	
Tax on games	Games	
Tax on sewerage	Sewerage services	
Vehicle tax	Transfer of the entire vehicle tax proceeds to the autonomous communities	Autonomy to set the rates
Surtax on fuels	Local tax on fuels earmarked for the health sector	Autonomy to raise it
Excise duty on beer, alcohol, industrial fuel and tobacco	Transfer of the 40% of the proceeds	No discretion over the tax rates
Tax on electricity	Transfer of the entire tax proceeds to the autonomous communities	Autonomy to set the rates
VAT	35% of the proceeds	No discretion over the tax rates
Discretionary Taxes	Autonomous communities may also (at their own discretion) create certain taxes, for example games taxes and taxes on vacant property. Extremadura introduced a tax on banks and saving banks (0.3-6% of deposit) Catalonia introduced a tax on large surfaces commercial activities.	

Source: Loughlin and Lux (2004)

The financial regime set in 2002 applies to all regions (except for the Basque Country and Navarra) and provides ACs with sufficient resources to autonomously carry out the devolved responsibilities. In short, the 2002 reforms reflected significant progress toward more closely aligning the Spanish Regions' new powers and obligations with financial independence.

2005 Adjustment

The central government reached a new agreement on health care funding with the presidents of the Autonomous Communities in September 2005 which led to:

- Increased tax-setting powers on excise duties;
- Cash advances on shared taxes (from 98% of the estimated tax proceeds for each region under the 2002 law to 100%);
- Extra funding earmarked for health expenditure.

These measures will come into force between 2005 and 2007.

Equalization System

Autonomous Communities are also entitled to receive central government transfers between regions as part of a tax revenue-sharing arrangement in Spain to maintain national solidarity (Centre for Cities, 2005).

Municipalities

Negotiations for devolution between the central government, ACs and municipalities began in 2002. As a result of these negotiations, the three tiers of government drew up local pacts (pactos locales). As pointed out by Loughlin and Lux (2004), because of the structure and the inter-dependent nature of the decentralized system of government in Spain, any move to increase the power of municipalities must involve both the central government and the AC, largely because this involves shifting certain functions from the AC level. Although the pacts are not legally binding on any of the levels of government, they have played an important role in preparing the way for legislative changes resulting in more power for the municipalities.

Mid-1990s

The first group local pacts was negotiated in the mid-1990s between central government and the municipalities directly. Consequently, legislative changes at the national level in 1998 and 1999 increased municipal authority.

Among other changes, this pact dealt with matters such as security in public places, transport, parking, and environmental protection.

However, because the first local pact was directly between the central government and the local authorities, it did not involve the ACs. As a result, its scope was limited to those matters which were not under the jurisdiction of the ACs.

2002

A second set of local pacts separately negotiated between the ACs and their municipalities resulted in the devolution of a number of responsibilities to the local level. The central government also played an important role, as its remit is to define the general principles governing the shift in responsibilities and authority from the AC level to the municipal level. The changes in this 2002 reform are outlined below:

Table 7: 2002 Fiscal reform for municipalities

Mandatory taxes	Tax base	Leeway
Tax on property	Registered value of the land and buildings determined by the state and updated by about 3 to 4 % on an annual basis	Discretion to set the tax rate each year (within limits defined by the state)
Business Tax	Profits from industrial, commercial or artistic activities	Municipalities can set their own rates within limits defined by the state and based on their population figures
Tax on motor vehicles	Vehicles	Limited discretion to set tax rates or base, which are both determined by the state based on the type of vehicle and its engine power. However, municipalities can vary the rate based on the size of their population
Optional taxes	Tax base	Leeway
Tax on construction, installations and works	Real cost of construction, installations or works	Minimum reference rate is set by national law, but municipalities have limited power to increase it in proportion to the size of their population
Tax on capital gains in urban areas	Real estate transactions	Municipalities have a degree of discretion to set rates within state-imposed limits

Source: Loughlin and Lux (2004)

2003

The central government reformed the business tax (IAE), granting exemption to companies with annual turnover of less than EUR1m and compensating the reduction of municipalities' tax base through an equivalent transfer.

2004

A new financial system for municipal governments in Spain came into force. Central government transfers to cities of more than 75,000 inhabitants and to provincial capitals (excluding municipalities in the Basque Country and Navarra) were partially replaced by a share of the following national taxes:

Table 8: Taxes rates in the 2004 fiscal reform for municipalities

Shares of central government taxes	Comments
1.6875% of the personal income tax	Central government collects all proceeds and redistributes the municipalities' share after deducting the 33% transfer to autonomous communities
1.7897% of VAT	Collected by central government after deducting the 35% transfer to autonomous communities. The municipalities' share is calculated according to an index of regional consumption, adjusted for the local population
2.0454% of special taxes (taxes on alcohol, gasoline and tobacco)	Collected by the central government after the 40% transfer to autonomous communities. The basis of the calculation is the same as for VAT

Source: Fitch Ratings (2006)

The cities however do not have regulatory power over these taxes which are set and collected and redistributed by the central government.

Future changes

Madrid and Barcelona are requesting from the central government specific financing systems to offset the additional costs they bear as large capital cities, namely service provision to a large commuter population (who pay taxes to other suburban municipalities), and the increasing costs of social services, which are sometimes a responsibility of higher layers of government.

Both cities claim that the current financing system has provided insufficient revenue increases to compensate for the costs of services to support their growing economies. Madrid and Barcelona require additional shares of state taxes and/or new local taxes so that revenues can be linked to a greater extent to the dynamism of their economies.

4.1.2. Local fiscal autonomy

Who is in charge of public transport financing?

In this case study we will focus on the budget of both the Municipality and the Region (Autonomous Community) of Madrid because, besides the central government, they are the key financing actors of the public transport services in the Madrid region.

Local taxes

Municipal taxes

The operating margin of Madrid has been gradually declining since 1999²² essentially because of the rapid increase in operating costs coupled with both the city's urban sprawl and higher service standards. Tax rates, on the contrary, have remained practically untouched. According to the rating agencies, in fact, tax burden in Madrid is one of the lowest of the country's largest cities. In particular, Madrid has the lowest real estate tax of the seven largest cities in Spain. Given the large scope for tax increase Madrid enjoys high revenue flexibility.

The 2002 and 2004 fiscal reforms increased the fiscal autonomy over municipal taxes but at the same time reduced Madrid's modifiable revenue base by reducing the scope of the business tax²³. The replacement of the state transfers by a share of income tax, VAT and special taxes represented only 6% of Madrid's operating revenues in 2004.

Table 9 shows the evolution of the city's operating revenues and expenditures.

Table 9: Financial Statistics for the city of Madrid

(Million €)	Actual				Forecasted	
	2001	2002	2003	2004	2005	2006
Operating revenue	2,070.0	2,225.9	2,305.4	2,609.2	2,833.3	3,334.9
Operating expenditure	1,701.1	1,853.9	2,045.1	2,293.2	2,650.5	3,192.8

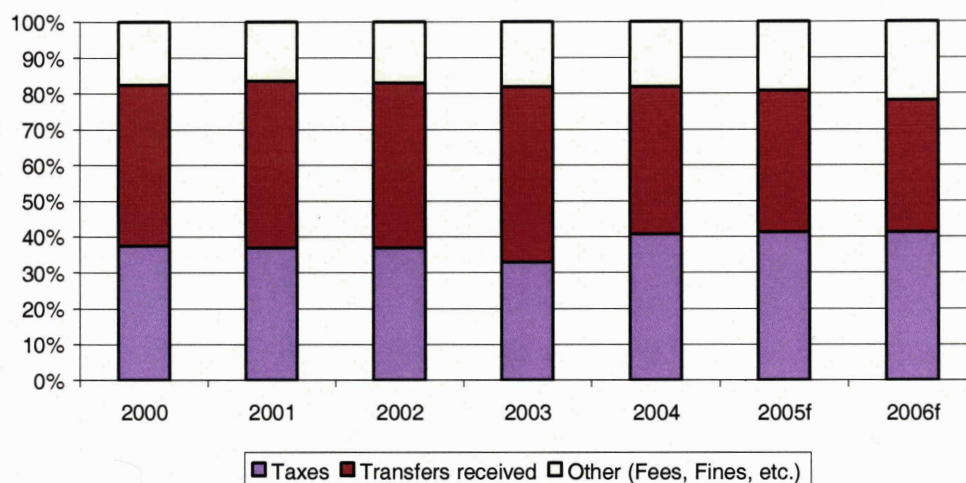
Source: Standard and Poor's – City of Madrid, 2006

²² The operating margin is the ratio between operating income (i.e. total operating revenues minus total operating expenditures) and total operating revenues. In Madrid, it went from a peak of 27% of operating revenues to 6.5% estimated at year-end 2005 (Standard & Poor's, 2006).

²³ IAE partial phase out accounted for 88% in Madrid's case (Standard and Poor's, 2006).

The following graph illustrates the different sources of the city's operating revenues; we can notice the increased share of the tax revenues after due to the 2004 fiscal reform.

Figure 1: Operating revenue breakdown for the city of Madrid



Source: Standard and Poor's – City of Madrid, 2006

Regional taxes

Since 2002, the Autonomous Community of Madrid enjoys a substantial fiscal autonomy: 88% of revenues are expected to come from taxes in 2006, of which 62% are fully modifiable.

Table 10: Financial statistics for the autonomous community of Madrid

(Million €)	Actual				Forecasted			
	1999	2000	2001	2002	2003	2004	2005	2006
Operating revenue	4,238.6	5,522.7	5,772.6	9,747.9	11,427.0	13,018.0	14,028.0	15,677.0
Operating expenditure	3,426.5	4,591.7	4,914.6	8,471.6	10,154.0	11,254.0	12,046.0	13,705.0

Source: Standard and Poor's – City of Madrid, 2006

Moreover, the region's revenues from shared taxes are now more closely linked to consumption-based taxes, rather than only to income-based one, the raising of which, according to Standard & Poor's, can be a sensitive political issue.

The region's fiscal strategy is on one hand to keep stable (or possibly reduce for selected categories) fiscal pressure, and on the other to increase the collection rate through fraud reduction and improved collection process. However, Madrid was one of the few Spanish regions to use its additional tax-raising powers to levy the surtax on petrol.

Central government grants

The city of Madrid receives about 40% of its operating revenues from transfers.

Fiscal autonomy is much more significant in the case of the regional government. The central-government transfers to the autonomous community of Madrid, in fact, represents less than 6% of the operating revenues budgeted for 2006. Before 2002, it was in average 30%-35% (Standard and Poor's, 2006). These data confirm the substantial impact of the new fiscal system.

User fees

As shown in Figure 1, at the municipal level fees represent the less important source of revenues. Nevertheless their impact of the city budget has increased since 2002 (from 18% to 22% in 2006) and they are going to be selectively raised to fully cover the cost of the services on which they are levied.

Borrowing

Despite Spain's decentralization, the national government maintains tight fiscal controls on the regions and cities. The 2003 law on budgetary stability, increased the state's control over the subnational governments. Since 2003, each regions' compliance with the multi-annual agreements on budget consolidation is strictly monitored, and the regions are obliged to balance their budgets. If they do not manage to do so, they are required to present a financial plan to the central government, including restructuring measures that will lead to future budgetary equilibrium.

The same law similarly increases central government control over the municipalities. That is why the city of Madrid has recently submitted a restructuring plan to the central government according to which the municipality undertakes to progressively return to balanced budgets before debt repayment by 2008. According to Standard & Poor's, Madrid's plan to meet this goal is based on the city's growing tax base, together with

management's determination to control operating costs and increase fees to fully cover the cost of services²⁴.

4.1.3. Public transport in Madrid

Spain's decentralization process did not explicitly concern the organization of public transport in the sense that public transport was not one of the decentralized sectors. According to the Spanish Constitution, in fact, metropolitan transport has always been legally a responsibility of the regional government, while city councils are responsible for local urban transport services. Therefore, the central government technically could not impose any organizational model on urban and regional transport systems although, for environmental and social reasons, since the 70's it used to subsidize public transport, especially in big metropolitan areas.

Nevertheless, in the 1990's the central government in practice intervened in urban transport policy, creating the impression that local public transport in Spain for the last 10-15 years has been in a certain sense partially "re-centralized".

In 1985, the law on Local Regime Basis states that every Local Authority belonging to a City Council of more than 50,000 inhabitants must provide its citizens with urban public transport services, but does not prescribe any organizational system for public transport.

In 1985 the Regional Transit Agency of Madrid (CRT) was created. In 1987, the law on Terrestrial Transport Regulation (LOTT) tried to coordinate public transport planning, particularly when public transport services affect more than one city, and created consortia to encourage more comprehensive and unitary planning. The part of this law concerning urban transport was nevertheless declared unconstitutional. During the 1990s, the Spanish national government introduced more formalized contracts with the different public transport authorities. These formal contracts are institutionalized in the form of framework contracts.²⁵ The central government introduced these contracts principally

²⁴ Note that tax rate increases is not planned.

²⁵ The first framework contract between the Madrid transit agency and the State was signed for the period 1990-1993.

because it wished to get a clearer linkage between its national financial contributions and various performance indicators of the different public transport systems and its operators.

The contractual instruments that were introduced and are used in the big metropolitan areas are the following:

- **Infrastructure Financing Agreements:** they are multi-annual agreements (in average 4-year agreements) for the construction of new infrastructures generally subscribed between the ACs and the central government; they normally are matching grants (1/3 of the costs is funded by the State, 2/3 by the local authority).
- **Contracts-Program:** they are designed to help covering the operational deficit of the public transport companies (operations, fleet renewal, network restructuring and deficit amortizations) and try to improve their economic performance²⁶ and the quality of the service they provide. The central government prefers to sign these contracts with the Transit Agencies; the usual duration of the contract is 3 years.

The “Consortio Regional de Transportes de Madrid” (CTM), founded in 1985, is the public transport authority in the autonomous community of Madrid. CTM is in charge of the general planning of public transport infrastructure, it plans and coordinates the services (all modes excluded commuter rail), it defines the fare structure and gives to the public transport system of the region of Madrid a unique image. CTM’s first mission was to improve the quality of the public transport (especially the quality of the rolling stock) in order to stop the declining of patronage. The consortium’s board of directors is made of representatives of the autonomous community of Madrid (5), the Municipality of Madrid (5), other municipalities members of the consortium (3), unions (2), industry (1), users (1) and representatives of the central government (2). Since its creation, 176 of the 179 municipalities in the region have voluntarily joined the consortium.

²⁶ Progressive increase of the farebox recovery ratio: although with variations according to the company in discussion, it is foreseen increases of 3-4 percentile points during the period, in order to achieve coverage ratios around the 70-80%.

4.1.4. Operations

Besides the fare revenues, CTM gets funds from the Municipality of Madrid, the Region of Madrid, the State of Spain and other minor contributions from smaller local authorities.

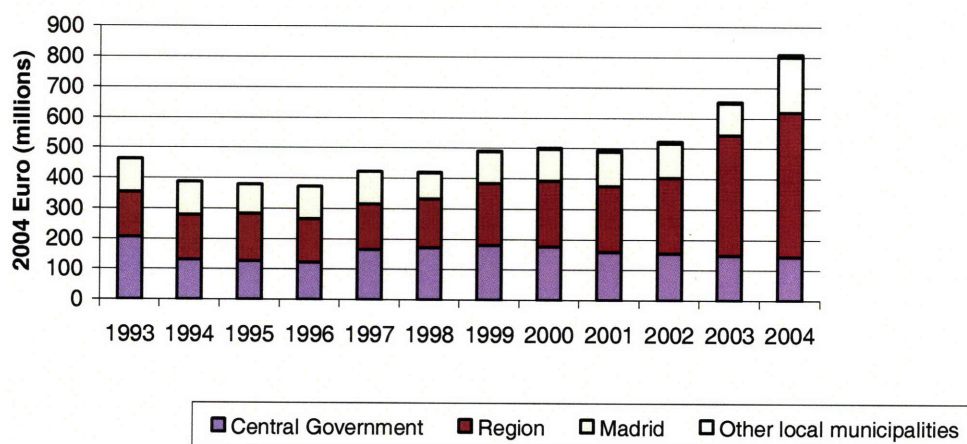
As said before, the subsidy from the State is negotiated politically in contract-programs that used to be four-year agreements and now are normally two-year agreements²⁷. The subsidies from the Region of Madrid and the municipalities are proposed by the CTM in its annual budget. In order to reach the break-even:

- the operational deficits within the city of Madrid (zone A) that are not covered by the central government, are covered 50/50 by the municipality of Madrid and the regional government
- the operational deficits of rest of services (zone B and C) that are not covered by the national government are covered by the regional government, except for those urban services within some small cities belonging to the geographical scope of the consortium, that are financed by local governments.

The following graph illustrates the evolution of operating subsidies in Madrid.

²⁷ Before 2004, the central government used to cover 45% of the operational deficit and 45% of the maintenance costs. Since 2004, the central government fixes a subvention based on CTM provisional budget and reviews it at the end of the year, based on the most convenient of three fixed coefficients.

Figure 2: Operating subsidies in Madrid



Source: CTM

Since 1996, the public subsidy to the public transport has been growing (+100% from 1996 to 2004). While the proportion of the contribution by the Municipality of Madrid has remained stable (around 20% of the total annual subsidy), the central government contribution has been decreasing both in absolute and in relative terms (from 35-40% to 20-25% in the last years) and the regional government has become the most important (in 2004, it contributed with 59% of the subsidies).

The services in the Madrid region are provided by:

- Metro de Madrid, a public company owned 100% by the CTM's Board of Directors which runs the urban metro services,
- Empresa Municipal de Transportes de Madrid (EMT), an entity owned by the City of Madrid running buses,
- Transporte Ferroviario de Madrid (a company owned 42% by Metro de Madrid, 25% by a local bank and 33% by three constructor firms) for the surface rail line 9
- Other operators of interurban buses and other services. There are about thirty companies in the Madrid area, mostly holding full risk contracts, but some holding service contracts, with the Consortium.

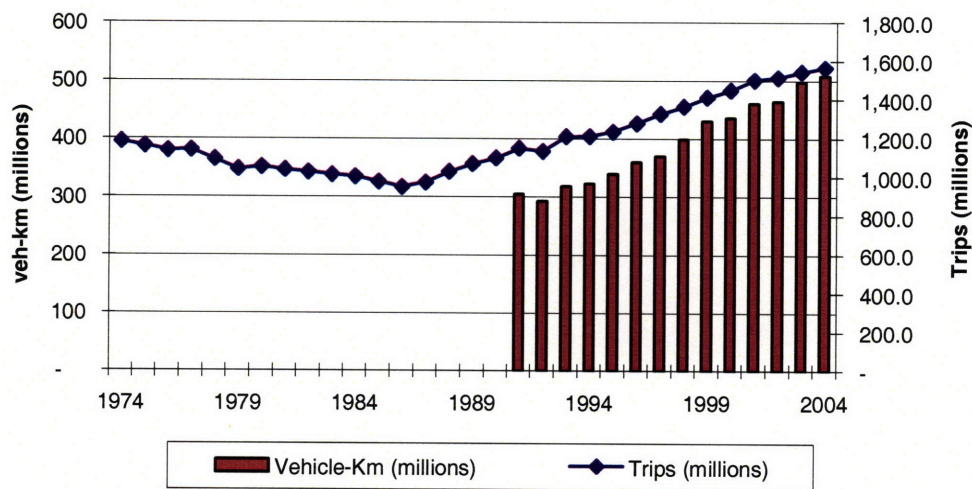
The CTM's contracts with EMT and Metro de Madrid have a duration of 4 years.

CTM also provides subsidies to the RENFE (national rail company) for the commuting rail services, but only in order to compensate for the passengers who use the RENFE network with an integrated multimodal ticket or pass²⁸.

The contract with RENFE is renewed every year.

Some Spanish regions, including Madrid Autonomous Community, are asking the central government to transfer them some regional lines of the RENFE to upgrade the trains, to plan their services and to have an integrated system of metropolitan transport.

Figure 3: Demand and supply of public transport in Madrid



Source: CTM annual report 2004

Between 1974 and 1985, the metro network doubled its length (see Investments) but total public transport trips decreased by about 20% essentially because of the lack of coordination between the networks and the insufficient investments on new vehicles²⁹.

The creation of the CTM reversed this trend. Since 1985, in fact, public transport ridership has steadily increased (+60% of trips compared to 1985 levels). The increased and improved offer of services has concerned both rail and road public transport:

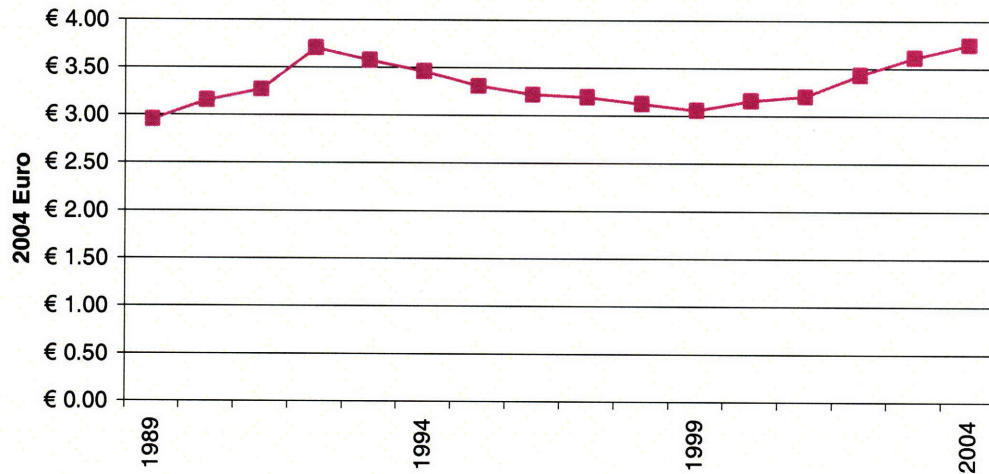
The interurban buses, indeed, have more than doubled their fleet in the last 12 years (from 778 vehicles in 1992 to 1603 in 2004) and their average age has decreased from 6 to 4.9 years in 2004.

²⁸ The central government subsidizes directly RENFE. Their relationship is also defined by a contract-program. CTM doesn't have the authority to plan RENFE commuter rail services.

The urban buses (EMT's fleet) passed from 1724 vehicle in 1985 to 1958 in 2004 (+14%) reducing the average age of the fleet from 7 to 4.9 years.

Operation costs, in terms of vehicle*kilometer, have been declining from 1992 to 1999 (-18% in real value) but, since then, they have gradually increased and fully lost the temporary gain, as shown in Figure 4.

Figure 4: Operating costs in Madrid



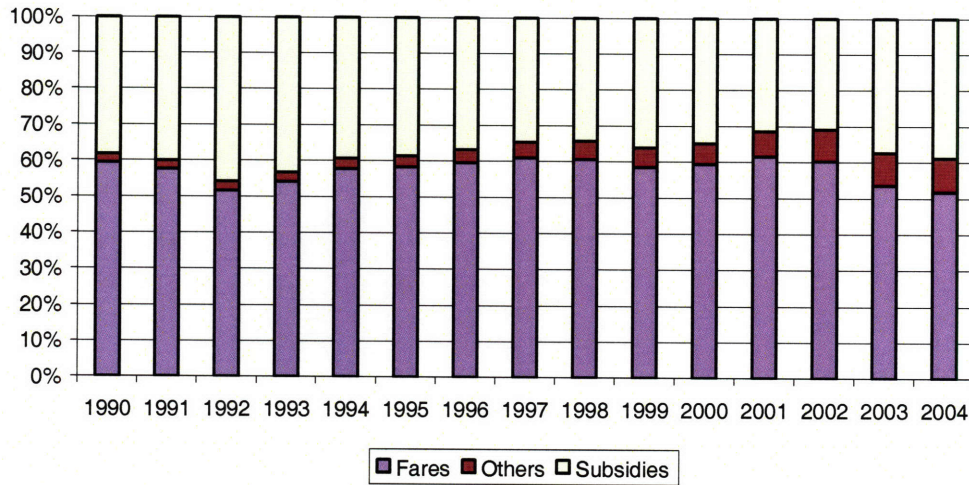
Source: Antos (2005)

Fares

The fare system is established and adapted by the CTM, whose priority has always been to increase the ridership by integrating the networks within the region. In 1987, indeed, CTM introduced an integrated zonal fare system, based on concentric rings around the city of Madrid. Then they introduced a monthly (and yearly) travel card valid for all modes and progressively lowered the cost of the metro pass in order to align metro and urban buses fares. By the late 1990s, pass holders made up around two-thirds of riders.

²⁹ MVA, 2005: "World Cities Research".

Figure 5: Farebox recovery ratio in Madrid

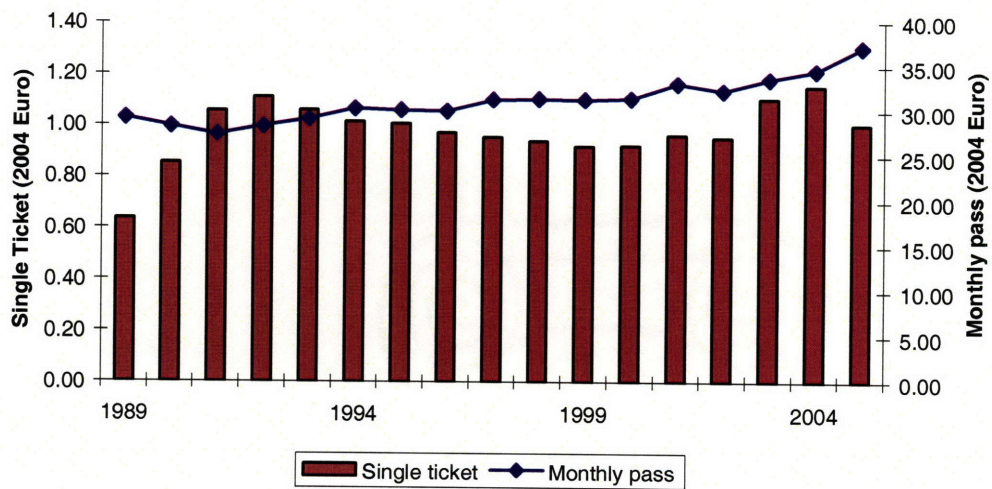


Source: CTM annual report 2004

Nowadays, the farebox recovery ratio is about 50% while in the late 1990s it was around 60%.

The following figure illustrates the evolution of the price of a single ticket and a monthly pass in zone A, discounted for inflation:

Figure 6: Evolution of a single ticket and a monthly pass price in Madrid



Source: CTM

4.1.5. Investments

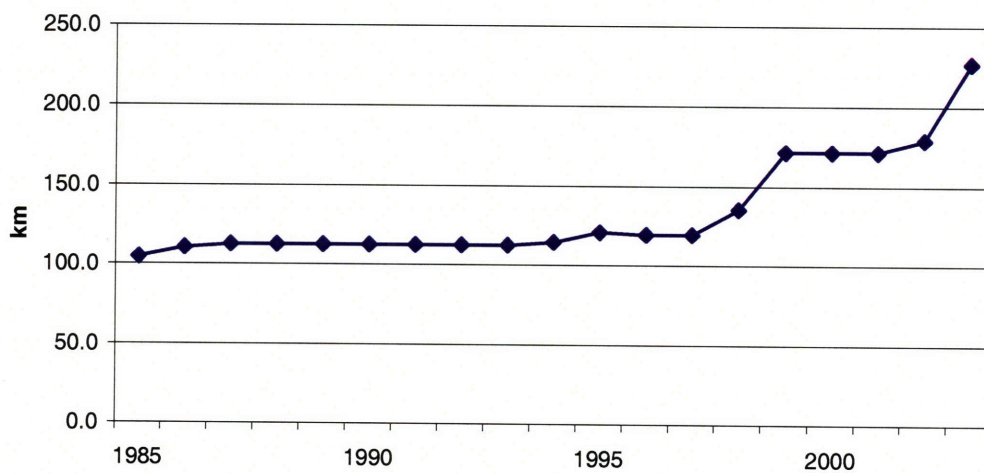
The responsibility of developing regional infrastructures is on the hands of the regional government and, since 1995, the provision of new public transport infrastructure (namely metro extension) has been a priority for the policy makers.

Major capital investments are therefore planned by CRT but financed and strongly driven by the Region of Madrid. In this paragraph we will deal only with the investments regulated by the so called Infrastructure Financing Agreements, i.e. the funds affected to the expansion of the infrastructure network. The renewal of the fleet as well as the network restructuring is financed by the operation grants (see contract-programs) and represent about 5-10% of the contract value.

Recent extensions of the network

Madrid has promoted an extraordinarily ambitious capital program over the past 10 years, doubling the size of the metro since 1995, as shown in the following graph:

Figure 7: Metro network development in Madrid



Source: UITP, 2003

Table 11: The previous plans of extension of the metro network in Madrid

Period	Extension	%	Projects
First plan of extension (1995-1999)	From 120 to 171 km From 164 to 201 stations Total budget: € 1,622.7 million	+ 43% + 23%	<p>Extension of lines 1, 4, 7, 9, and 10 as well as construction of two new lines (8 and 11) for a total cost of about € 1,622.7 million (including 223 million of rolling stock).</p> <p>Line 9 – PPP (18 km, mostly over ground), inaugurated in 1999 and implemented in three years (planning included) Total cost € 113.3 million: 20% of the investment capital required paid by the successful bidder, the remaining 80% was provided through a syndicated loan raised on the financial markets by the Caja de Ahorros de Madrid in collaboration with the EIB</p>
Second plan of extension (1999-2003)	From 171 to 226 km From 201 to 237 stations Total budget: € 3,356 million	+32% +18%	<p>MetroSur (40.5 km) circular line (1175 million Euros). Planning phase ended in 1998, design lasted one year, tendering procedure one year, works started in 2000 and the line was inaugurated in 2003. Financing started in 2001 and will continue over a 25-year period, involving various international banks. According to Standard & Poor's, the region's participation consists of annual transfers to MINTRA, which are not anticipated to exceed 4% of total regional expenditures in the 2008-2010 peak years.</p> <p>Extension Line 8 – to the airport (5.9 km) Inaugurated in 2002</p> <p>Extension Line 10 – connection MetroSur-City (7.1 km) and augmentation of the loading gauge along a 1.2 km</p>

Source: UITP (2002 and 2003) and CTM

These expansion projects appear to have been built more rapidly and at lower costs than in other European cities. The reasons of this successful implementation, according to Madrid's technicians, are linked not only to the nature of the soil and the urbanization, but also to management choices. Madrid metro extensions, indeed, have been realized

with innovative construction methods by small teams. The design³⁰ and implementation has been strongly supervised by local expertise. The projects, moreover, have gained a strong political support. The short schedule, suited for the four year electoral mandate of the regional policy makers, the visibility of these infrastructure projects and the increasing patronage have made public transport a focal point of the electoral campaigns.

Future extension projects

Public transport investments for the 2003-2007 term aim to increase Madrid's underground railway network capacity by 33% by 2008, for a total estimated cost of about €4.8 billion (MINTRA, 2006):

³⁰ The design, in particular, has been conceived in order to maximize the efficiency: simple and functional stations, for instance, have been created in order to reduce project and maintenance costs. (UITP, Shanghai conference, 2002)

Table 12: The future plans of extension of the metro network in Madrid

Period	Extension	Projects
Third plan of extension (2003-2007)	+ 79 new stations + 80.91 km of which 53.14 km of Metro and 27.77 km of light rail	Línea 1 : 3.1 km Estimated cost: € 257.6 million
		Línea 10: new station Estimated cost: € 29.74 million
		Línea 2: 1.6 km Estimated cost: € 95.01 million
		Línea 3: 8.7 km Estimated cost: € 619 million
		Línea 5: 2.4 km Estimated cost: € 189.7 million
		Línea 6: new station Estimated cost: € 50.99 million
		Línea 8: new station Estimated cost: € 39.8 million
		Línea 11: 2.7 km Estimated cost: € 172.3 million
		Línea 1 and 4 : 6.7 km Estimated cost: € 498.86 million
		Línea 7 (Metro est): 12 km Estimated cost: € 645.3 million
		Línea 9: new station Estimated cost: € 10 million
		Metronorte: 12 km Estimated cost: € 645.3 million
		Light rail line to Sanchinarro y Las Tablas, 5.3 km Estimated cost: € 262.25 million
		Metro Oeste : light rail, 13.7 km Estimated cost: € 210.53 million
		New depot Estimated cost: € 344.34 million

Source: www.madrid.org

According to Standard and Poor's (2006), the major part of these works will be financed through the regional budget. The purchase of the rolling stock (€ 1,220 million according to MINTRA), will be financed through 17-year concessions from 2008³¹.

4.1.6. Debt

Despite the nominal restrictions on borrowing, Spanish subnational governments, in order to increase their debt and access to capital without violating the Maastricht rules, have

³¹ The central government does not subsidize Madrid's plans of extension.

created several public companies whose balance sheets are not counted in accounts of the government.

In 2000, the AC of Madrid created a public sector entity named MINTRA to oversee the “Metrosur” project. The status of MINTRA was modified in 2000 by a regional law and all of MINTRA’s obligations (and not solely financial) are now guaranteed irrevocably by the regional government. Initially, the Spanish central government classified MINTRA as part of the regional administration’s public sector following its interpretation of ESA 95 (European System of Accounts 1995). However, the Region appealed to Eurostat, which ruled in favor of the Region. Consequently, the Bank of Spain excluded MINTRA’s debt load from Madrid’s direct obligations. In this way, Madrid successfully took the initiative to build Metrosur, a major €2.2 billion public transport project, through public debt finance.

On the contrary, since it is not incorporated as a private limited company, CTM cannot issue debt.

4.1.7. Alternative funding sources

Public Private Partnerships

Spain seems to have a fairly old tradition of PPP going back to the 19th century.

Madrid has recently implemented Design-Build-Operate schemes in the public transport sector and, according to the Rating Agencies, the region plans to transfer risks to the private sector through the use of PPP³² to conduct and finance the big investments (public transport, roads, and hospital infrastructure) that are part of its priority program for 2003-2007 term. In particular, the stretch of Line 9 running between Madrid and Arganda del Rey, and the Avenida de America intermodal transfer station were financed via concessions.

³² Standard and Poor’s (2006).

Line 9 of the metro

In 1996, the Autonomous Government of Madrid took the decision to construct this infrastructure using private funding and so offered a concession for the line for 30 years. After an invitation to tender, the concession was awarded in 1997 to a private company, Transportes Ferroviarios de Madrid SA (TFM). TFM had the following composition: Operator 42.5% (Metro de Madrid), Construction companies 32.5% (composed of NECSO 12.2%; FCC 12.2%; ACS 8.1%), and Financier 25.0%: (Caja de Ahorros de Madrid).

The successful bidder contributed 20% of the investment capital required and the remaining 80% was provided through a syndicated loan raised on the financial markets by the Caja de Ahorros de Madrid in collaboration with the European Investment Bank. The concession receives its revenues from two sources³³:

- Passengers : on the basis of approved fares similar to those of the rest of the public transport system for Madrid
- A public subsidy per passenger calculated on the basis of a mean rate of compensation per commuter multiplied by the number of passengers/day, for a maximum number of journeys stipulated for each year of the concession by the concession holder (1.79 euros per journey in 2002).

Avenida de América Interchange

This multimodal interchange was financed by a total private investment of 24.34 million euros in exchange of a 25 year concession for the transport interchange and the temporary public parking lot and 50 years for resident parking lot.³⁴ Every company utilizing the interchange pays a fee to the operator that receives revenues also from payment for parking facilities and for commercial areas.

³³ UITP, PTI 2003

³⁴ Luis Eduardo Cortes, 2002 UITP Asia Pacific Congress

Value capture

Madrid has also tested the value capture mechanism in order to partially cover the construction costs. Public transport investments (especially underground, light rail and commuter rail), in fact, improve the access of the areas they serve increasing the land and the property value in these areas.

Economic prosperity in the late 1990s has favored a more market-oriented approach to spatial planning: the regional vision has been gradually replaced by ad hoc planning, negotiated on a case by case basis between the regional or municipal governments and big developers. Public transport infrastructure provision has emerged as one of the key elements in these negotiations (MVA, 2005).

The three new commuter stations have been constructed by the public land developer Arpegio and the private property developers will contribute to the extensions to Line 1 (with a subvention of roughly Euro 24 million) and Line 10 which are part of the 2003-2007 plan of extension.

4.2. Barcelona (Spain)

4.2.1. National fiscal system

The Spanish fiscal system has been described in section 4.1.1.

4.2.2. Local fiscal autonomy

Who is in charge of public transport financing?

In this case study we will focus on the budget of both the municipality of Barcelona and the Region on Catalonia because, besides the Spanish national government, they are the main financing entities for the public transport in the Barcelona metropolitan region.

Local taxes

Municipal taxes

In 2004, local taxes collected by the City of Barcelona made up 34.0% of operating revenues, increasing from 32.1% the previous year. Nevertheless, Barcelona has limited revenue flexibility because, except for the property tax, local taxes are close to their legal ceiling and higher than other Spanish municipalities. Table 13 details Barcelona's operating revenues and expenditures since 1999.

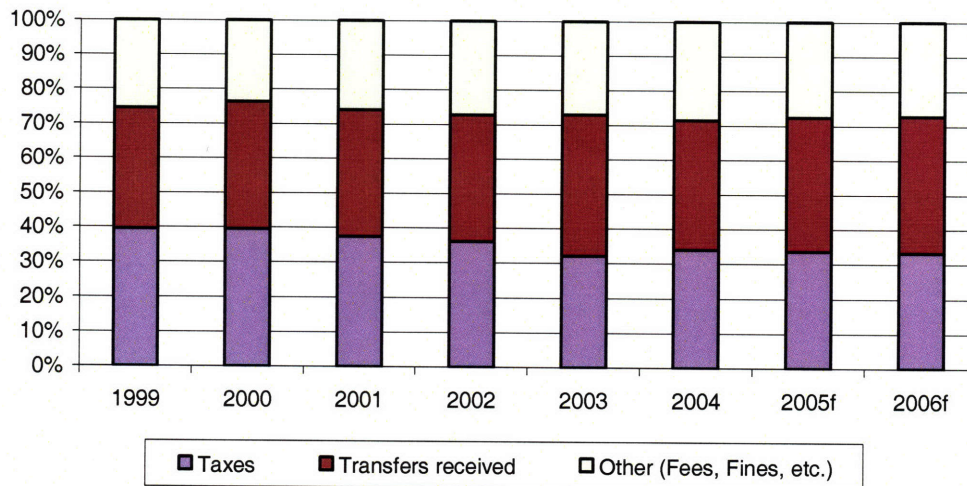
Table 13: Financial statistics for the city of Barcelona

(Million €)	Actual						Forecasted	
	1999	2000	2001	2002	2003	2004	2005	2006
Taxes	599.2	612.4	616.0	639.0	594.0	697.3	715.0	733.0
Transfers received	534.4	572.2	606.2	649.9	754.5	769.0	822.0	868.0
Other (Fees, Fines, etc.)	390.1	369.0	428.0	480.0	500.0	584.0	586.0	600.0
Operating revenue	1,523.7	1,553.7	1,650.2	1,768.9	1,848.5	2,050.3	2,123.0	2,201.0
Operating expenditure	922.3	950.1	1,022.2	1,127.9	1,194.5	1,354.6	1,416.0	1,474.0

Source: Fitch Ratings – City of Barcelona, 2005

The following figure illustrates the breakdown of the City's operating revenues where we can notice 2004's slight increase in local tax revenues

Figure 8: Operating revenue breakdown in Barcelona



Source: Fitch Ratings – City of Barcelona, 2005

The property tax, which made up 54.8% of tax revenues in 2004, is the most important municipal tax. To avoid increasing the overall tax burden, the city reduces the rate on the property tax each year and compensates for this reduction by gradually incorporating the newly revised cadastral values. A surcharge (0.105 to 0.2%, with a 60% deduction for residential use) on the property tax in Barcelona and the surrounding municipalities is earmarked for public transport and used to finance EMT (see below).

The City's fiscal policy for the 2003-07 term is to avoid increasing the tax burden.

Regional taxes

Operating revenues and expenditures of Catalonia are detailed in the following table:

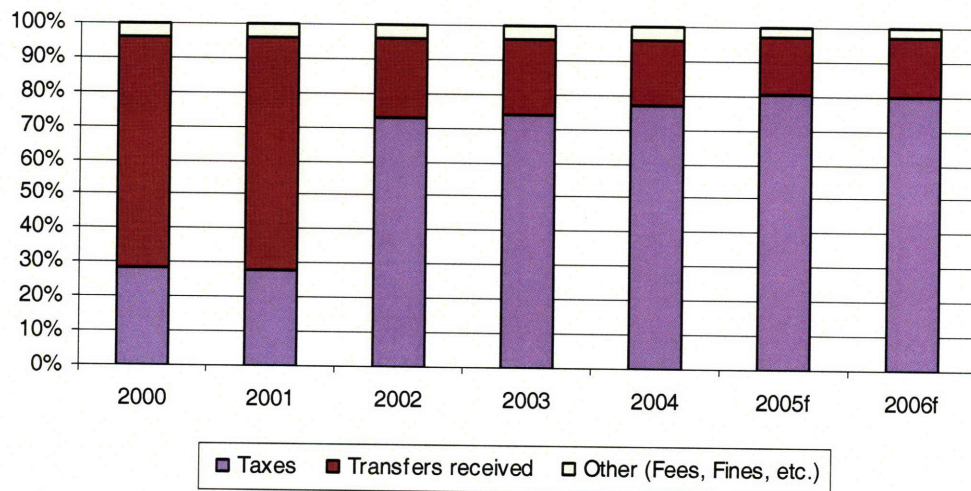
Table 14: Financial statistics for the region of Catalonia

(Million €)	Actual					Forecasted	
	2000	2001	2002	2003	2004	2005	2006
Taxes	3,116.2	3,225.2	9,433.8	10,404.3	11,953.8	13,468.5	15,152.0
Transfers received	7,350.0	7,811.0	2,940.5	3,057.6	2,945.9	2,785.2	3,274.6
Other (Fees, Fines, etc.)	435.7	503.0	545.7	584.4	642.6	522.0	556.5
Operating revenue	10,902.0	11,539.1	12,920.0	14,046.3	15,542.3	16,775.7	18,983.1
Operating expenditure	9,725.5	10,316.3	11,208.1	12,437.6	14,379.5	14,912.5	16,810.7

Source: Fitch Ratings – Region of Catalonia, 2005

Regional taxes (included the shares of the national taxes decentralized in 2002) made up 76% of the operating revenues in 2004, as illustrated in the following graph:

Figure 9: Operating revenue breakdown in Catalonia



Source: Fitch Ratings – Region of Catalonia, 2005

The two most important shared taxes are PIT (over which Catalonia has some discretion, although, like all its Spanish peers, it has not modified its rates and it is unlikely to do so in the short term) and VAT (over which the region has no leeway). Together accounted for 55% of tax revenues in 2004. Catalonia already used its higher tax-setting powers in 2003 deciding to apply a surcharge to hydrocarbon retail sales to offset the sharp increase in health expenditure.

The new responsibilities attributed to the Spanish regions, especially social services, education and healthcare, made up a large part of operating expenditure. In Catalonia,

72% of the budgeted expenditure for 2005 was designated to these sectors (including universities) . In particular, as the policy makers decided to improve the quality of public services provision, about 60% of the increase in the budget in 2004 was attributed to education and healthcare services.

In 2005 the regional parliament submitted to the national government a proposal aiming at increase Catalonia's autonomy to develop exclusive and shared responsibilities as well as its full tax autonomy and collection powers.

Central government grants

In 2004, transfers represented 37.5% of Barcelona's operating revenues compared to 40.8% in 2003. The 2004 fiscal reform, as in the Madrid case, had a mild effect on the municipality structure of revenues. Transfers include central government grants (roughly 87%), whose dimension is tied to national GDP growth, regional and European transfers. From 2006, Barcelona will also begin to receive EUR15.6m in extra revenues from central government to create equipment and infrastructure of national interest (especially museums and transport).

For the Catalan region, transfers (essentially from the central government but also from the EU) made up 19.0% of revenues in 2004. Compared to 2003, transfers decreased by 3.7% following the trend established by the 2002 fiscal reform that inverted the proportion of taxes and transfers in the regions budget.

Finally, although Catalonia is one of the richer regions in Spain, from an European point of view it is an Objective 2 region, therefore until 2006 (i.e. when new member States will become the center of cohesion policies), it will continue to receive EU funding equivalent to roughly 9% of the annual capital expenditure.

User fees

Revenues from fees in Barcelona increased by 16.8% in 2004 (compared to 2003 data).

Fees represented 28.5% of operating revenue of the municipality in 2004, thanks to Barcelona's strategy of applying a full coverage of costs by tariffs in selected services. On the contrary, for Catalonia fees and duties represent only 4.1% of 2004 revenues.

Borrowing

While the city of Barcelona has a very string financial discipline, according to the Budgetary Stability Law the Region had to submit an Economic and Financial Plan aimed at achieving balanced accounts in 2008.

4.2.3. Public transport in Barcelona

Public transport in the Barcelona metropolitan area has gone through several organizational changes in the last thirty years. In 1975, the creation of the Metropolitan Corporation of Barcelona allowed the integrated operations of the intermunicipal road transport within twenty-seven municipalities surrounding the Catalan capital recognizing the value of a coordinated approach. In 1987, the Metropolitan Corporation was replaced by "Entitat Metropolitana del Transport" (EMT), a local body formed by eighteen municipalities in the metropolitan area of Barcelona whose objective was to provide joint public passenger transport services (metro and buses) in its area.

Finally, in 1997 the Region of Catalonia, Barcelona City Council and the EMT, together with the Spanish central government, set up a consortium-type agency responsible for the public transport in the metropolitan region³⁵ of Barcelona called "Autoritat del Transport Metropolità" (ATM). ATM's board of directors is composed by Generalitat of Catalonia representatives (51% plus the appointment of the chairman) and the local authorities (49% between Barcelona City Council, EMT and the town councils that progressively join the consortium). The central government is represented in the board by two permanent observers.

ATM's role is to plan new transit infrastructure, to coordinate and monitor the metropolitan public transport system, to manage the relationship with the transport

operators, to draft the financial agreement between the funding public authorities, to establish the integrate fare system and to promote the use of the collective transport. ATM's main planning documents are the recent Plan of Infrastructures (PDI 2001-2010), and the Services Plan, a 4-year tool to design the services and coordinate the different operators.

4.2.4. Operations

ATM receives funds from the nation of Spain, the region, EMT³⁶ and the City of Barcelona. The level of the contribution is negotiated every 3-4 years in the contract-program between ATM and the sponsoring public bodies³⁷ nevertheless the regional administration is working on a new law on financing public transport (“Ley de Financiación del Transporte Metropolitano”) which should guarantee a more stable source of revenues, probably earmarking also some taxes on the use or ownership of private vehicles.

The first contract-program signed by the agency was a four-year agreement in 1998³⁸. The value of the 2002-2004 contract-program has increased by 35% (calculated in real terms on a yearly base) compared to the 1998-2001 one. The proportion of the contribution, on the contrary, has been stable: roughly 37% from the central government, 38% from the regional government, 13% from the city of Barcelona and 13% from EMT.

³⁵ 164 municipalities, 3,500 square kilometers, around 4.3 million people.

³⁶ As said before, EMT is funded by its members which collects parking fees and a surcharge of the property tax earmarked for transit.

³⁷ Although forecasted operational deficit are covered on a formula-base (e.g. for the TMB deficit: 45% by the State, 28.05% by the region, 13.75% by the city of Barcelona and 13.2% by EMT).

³⁸ The first attempt to establish a Contract-Program for Transports TMB in 1986 failed.

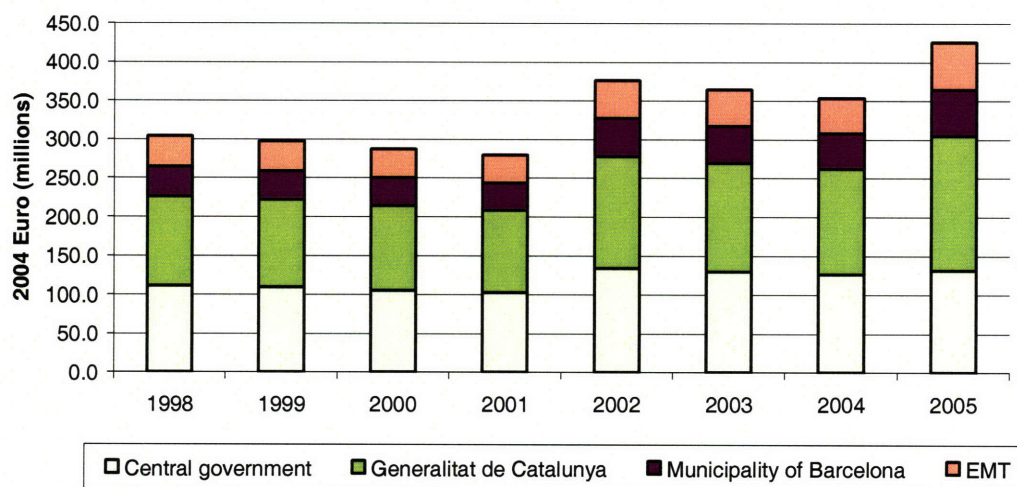
The first Contract-Program covered the period 1990-93, formalizing the relationship between the operators and the authorities. However, the contract was not based on regulations and specific details, therefore the economic and financial results were far from positive. Moreover, Region of Catalonia was not involved in the daily problems of transport.

The second Contract-Program was for a three-year period, 1995-97 and better defined commitments and solutions to several problematic financial aspects. The objectives that the authorities and companies had conceived were clearly defined and fulfilled for the first time. Moreover, defined and regular flows of funding were established to meet current expenditure and the investments necessary to the replacement of old material. Finally, the Region also signed the Contract-Program for the first time, putting the basis for the creation of AMT.

The 2005-2006 contract-program has increased the total subvention by about 20%, with a higher contribution of regional and local authorities (31% from the central government, 41% from the regional government, 14% from the city of Barcelona and 14% from EMT).

The last two contract program included also investments for the tramway line and other infrastructural interventions (Euro 32 million/year for 2002-2004 and Euro 48 million/year for 2005-2006) which are not eligible for central government subventions.

Figure 10: Operating subsidies in Barcelona



Source: ATM (2006). Data for 2002-2004 and 2005 include investments in the tram system

ATM is responsible for costs overruns and deficit. In the 2002-2004 period, indeed, the public funds allocated to the transport companies have not been sufficient to cover their operational costs and the consortium members (as well as the central government) agreed to cover the deficit in the next 15 or so years.

ATM signs funding agreements (contract-programs) with several public transport companies:

- “Transports Metropolitans de Barcelona” (TMB, urban bus services and underground metro lines) totally owned by EMT;
- “Ferrocarrils de la Generalitat de Catalunya” (FGC) the regional railways owned by the Catalonia (two lines);
- Tram (light rail lines);

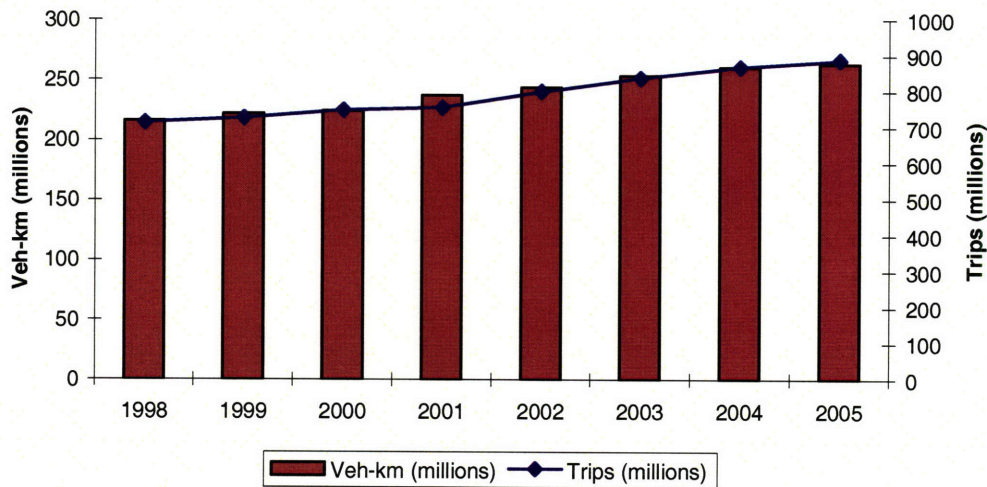
- Other private bus companies with a contractual relationship with EMT;
- Other private bus companies with a contractual relationship with the region.

As in the case of Madrid, the public transport consortium also has a financial agreement with RENFE which accepted to be part of the metropolitan integrated fare system.³⁹ Although the main transport companies operate in house, some elements of competition have been introduced, in particular in the area of competence of EMT.

In 2004, the average cost of vehicle*km in the Barcelona region was Euro 3.26, while the cost per passenger approximately Euro 0.91

Supply in terms of vehicle*km has been increasing by 22% since 1998, especially for the suburban services (commuter rail and suburban buses) that serves radial journey toward the attractive CBD.

Figure 11: Demand and supply of public transport in Barcelona



Source: ATM (2006)

The improvement of the local commuter rail network and the fare integration (2001) are part of the measures that contributed to the increase of the ridership: +24% since 1998.

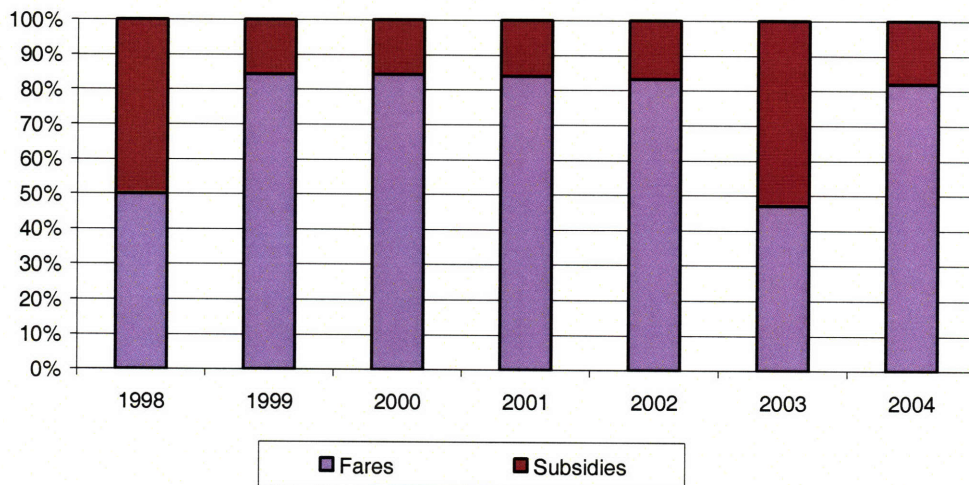
³⁹ RENFE's local rail network (essentially 4 lines) is totally funded by the central government. FCG's operational deficit is funded 45% by the central government, the remaining part by the region. TMB's operational deficit is covered 45% by the central government, the remaining by the region (28%), the city of Barcelona (14%) and EMT (13%).

The bus fleet, which carries roughly 203 million persons per year, has been completely modernized. However, the modal share of the public transport has decreased from 48% (only motorized modes, in all the metropolitan region) in the late 1990s to 43% since 2001.

Fares

Apparently, fare integration was delayed in Barcelona due to political differences between the city and the region. One of the most outstanding achievements of the ATM has been the implementation of an integrated fare system in 2001. The operators joined the integrated fare system voluntarily and keeping the existing institutional and franchise relations with the authorities under which they operate. Although the number of journey has been increasing (that was the primary goal of the integrated fares), since 2001 the farebox recovery has been slightly declining:

Figure 12: Farebox recovery ratio in Barcelona⁴⁰

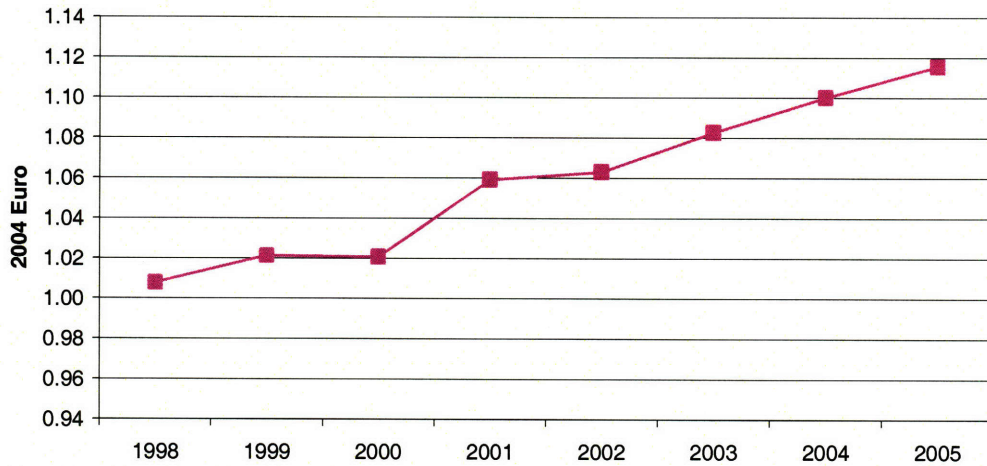


Source: ATM (2006)

The evolution of the cost of a single ticket (not integrated) in the central zone shows a peak in 2001 (+3.8%) and an increase by about 1.5% in the last three years, discounting the inflation:

⁴⁰ Subsidies for 2002-2004 and 2005 include investments in the tram system

Figure 13: Evolution of a single ticket price in Barcelona



Source: ATM (2006)

4.2.5. Investments

One of the first priorities for the region of Catalonia is to increase the infrastructure investment to compensate for past delays and public transport is the dominant part of the investment program. In fact, ambitious infrastructure visions of 1966 and 1974 were abandoned. For the 1992 Olympics Barcelona didn't invest in public transport infrastructure (although they invested in private transport) and before, in 1984, they deprogrammed a 50 km underground extension. Moreover, before the 2001-2010 Plan of Infrastructures (PDI), there was no comprehensive public transport infrastructure planning because of the lack of a wide-scale transport authority. In fact, every operator (underground, RENFE, FGC⁴¹) had their specific plan limited in scope and in time horizon.

The PDI, approved in 2002, is mainly railway oriented but also address the needs of better integration between the networks. From the financing point of view, it is based on:

⁴¹ Underground Plan 1984 ; Master Plan of the state railway network 1993 (RENFE -INECO); three-year Action Plans of the FGC, along with the TMB Business Plans; Rail Infrastructure Funding Agreements of 1995-97 and 1998-2000, between the State and Catalonia. Source: PDI.

- The five-year funding agreements between the State and the Region (essentially matching grants: 1/3 for the State, 2/3 for the Region) for the extension of the network and new infrastructure
- The Contract-Programs (with the participation of all tiers of government) for the renewal of the existing infrastructure and fleet
- Specific funding for the two tramways, with a deferred contribution of capital by the Region and compensation to the private franchisee according to the cost coverage rate plus investment
- Specific funding for Line 9 and the rail line Sarrià-Castelldefels, which is to be defined by the Region of Catalonia.
- Leasing or similar operations for the acquisition of rolling stock.

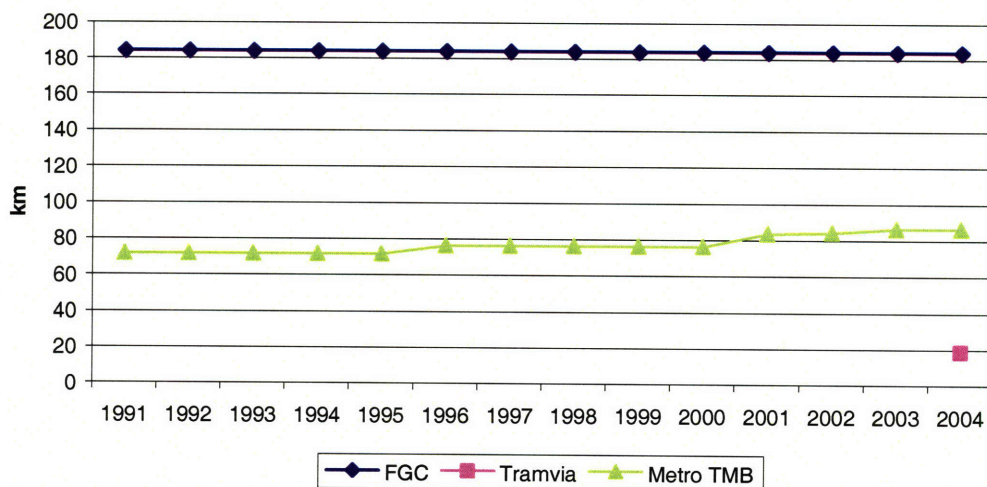
The public transport investments are mostly carried out by GISA, a public entity owned by the Region.

Recent extensions of the network

In the 1980s there have been minor extensions to the metro lines.

Since 1990, the metro network (including the urban lines of FGC) has increased by roughly 20%, while in the same period the underground network in Madrid had doubled.

Figure 14: Metro network development in Barcelona



Source: www.gencat.net

In particular, the major extension that we can notice in 1995 and 1997 correspond to the inauguration and the expansion of line 2, a new line completely adapted for the disabled. The other smaller increases correspond to the extension of lines 1, 3, 4 and 5. At the end of 2001 (i.e. before the approval of the PDI), with the opening of three new stations of the metro line 3 (2.4 additional kilometers) the Metro network of TMB was reached a total length of 83.6 km. Table 15 summarizes the investments in the last eight years, pointing out that since 2002 the Region is heavily investing in public transport infrastructures.

Table 15: Investments for infrastructure projects in Barcelona⁴²

(10 Millions €)	1998	1999	2000	2001	2002	2003	2004	2005
Network extension (Generalitat de Catalunya 2/3; Central government 1/3)	128	812	920	913	744	804	1,526	1,654
New metro line L9 (average, 100% Generalitat de Catalunya)					1,315	1,315	1,315	1,315

Source: ATM (2006)

Future extension projects

Globally, the PDI 2001-2010 budgeted about Euro 7.3 billion to the extension and the upgrade of public transport network in the whole Barcelona metropolitan region.

Once completed, it should provide 251 additional kilometers of metro and commuter rail and 29.5 km of tramway (with two lines: Tram Besòs and Trambaix).

The investment is classified in four main items:

⁴² Maintenance and tramway not included.

Table 16: Investments in future projects by activities

	Projects	Budgeted Cost	Funding per Administration
Network extension	Extension of existing lines and necessary rolling stock	€1,602 million	35% Central Government 61% Region 4% Local Municipalities
	Line 9	€2,248 million	6% Central Government 65% Region 4% Local Municipalities 25% European Union (Cohesion Funds)
	Two tram lines	€410 million	19% Central Government 70% Region 11% Local Municipalities
	Other local railway	€752 million	100% Region
Modernization and improvement	To update signaling and traffic control, track, stations and rolling stock	€855 million	40% Central Government 47% Region 13% Local Municipalities
Interchanges	To improve physical integration between modes and lines	€262 million	50% Central Government 50% Region
State rail network	Investments in the state rail network (RENFE)	€1,160 million	100% Central Government

Source: PTI 2001-2010

The largest project (38% of the budgeted expenditures) is the construction of Metro Line 9, an underground circle line, 42.6 kilometers long. The table that follows shows the mid-term assessment of the PDI implementation:

Table 17: Degree of implementation of PDI 2001-2010, December 2005⁴³

Program (Million €)	Budget	Estimated total cost	Adjudication first proposal	Work finally adjudicated	% executed
Extension of the network	4,431.9	6,667.9	3,386.6	3,162.9	15.6
Interchanges	226.2	310.2	95	84	11.7
Modernization and improvement	764.8	1,022.8	604.1	535	22.5
Total	5,423.0	8,000.8	4,085.7	3,782.0	16.4

Source: ATM (2006)

4.2.6. Debt

ATM can only engage in short term borrowing. The main public companies (TMB and FCG) can issue debt. As already seen for Madrid, the nominal restriction on public debt are avoided with a creative finance.

In 1990, preparing for the Olympic games of 1992, the region of Catalonia created GISA, a company responsible for designing and constructing public infrastructure. More recently, in December 2001, the regional government created “Infraestructuras Ferroviarias de Cataluña” (IFC), a public company whose function is to maintain and expand the regional railway infrastructure. One of its first undertakings was the design of metropolitan Line 9 in Barcelona. While GISA is responsible for monitoring the technical aspects of the project, IFC is the financial vehicle to build it.

Although those public owned entities’ budget is not consolidated in the accounts of the regional administration, their debt is considered as indirect debt of the regions by the Rating Agencies therefore the accountability link remains strong.

Spanish authorities have largely exploited the opportunity of borrowing from the European Investment Bank (EIB). The EIB’s important role in public transport infrastructure is clear from the following of recent large transport projects in Barcelona:

Table 18: Funding for Barcelona’s project from the EIB

Public Transport Projects	Total Cost	EIB Contribution	EIB %
Baix Llobregat	€280M	€138 M	49%
Glories Besos	€264M	€132M	50%
Barcelona Linea 9	€2,800M	€1,300M	46%
Barcelona R/Stock	€630M	€290M	46%

Source: EIB (2005)

4.2.7. Alternative funding sources

Public Private Partnerships

As in the case of Madrid, decentralized power and deficit constraints imposed by the central government led to increasing use of PPP. The two trams (Trambaix and Trambesos) in Barcelona have been developed under a PPP structure : a concession for the design, construction, financing and operation of the light rail system. Line 9 of the metro has been conceived as a leasing (Rebollo Fuente, 2005)

⁴³ 16% VAT not included

4.3. Paris (France)

4.3.1. National fiscal system

The French administrative and fiscal system is based on four tiers: central government, regions (22 elected regional governments created in 1955, in each of which there is a representative of national government, the prefect), departments and municipalities. Each tier, within its domains of competence, is autonomous, i.e. there is no guardianship of one tiers over another.

Paris's own structure of government is different from that of the rest of France. The city of Paris is one department among eight within the region of Ile-de-France. The three departments immediately outside the city are known as the "petite couronne", the four beyond them, the "grande couronne". Since 1975, the city of Paris has been allowed to elect its own mayor.

France has long been a highly centralized state, although in the last twenty years there has been significant devolution of power from the state to local authorities. Local autonomy indeed was given essentially by the 1982/1983 decentralization laws which transferred numerous national competences (between them the organization of the urban and departmental public transport) to the subnational governments.

In 2002, the national government decided to give a new boost to the decentralization process in order to increase local autonomy and started an important reform including modifications of the French constitution and organic laws. Since 2003, some new possibilities exist for local authorities such as the organization of local referenda or the "right to experiment" for each authority, on various issues, with a possibility to come back to the original situation. In 2004, an "organic" law relative to the financial autonomy of local authorities – which organizes transfers of funds at their benefit- was published as well as an "ordinary" law which organizes new transfers of responsibilities from the central government to regions and departments.⁴⁴

⁴⁴ Departments obtained essentially competence over social assistance (elderly, young people, housing) and minor public real estate. The areas of responsibility transferred to regions reflect their role of managing the

The basic principle of the devolution process, which is enshrined in the constitution, is that it will not be possible anymore to transfer responsibilities to the departments, municipalities and regions without transferring the funding that fully compensates the new expenses. However, Fitch Ratings thinks that central government's transfer of responsibilities may increase funding gaps in the medium term past because subnational governments have to be more reactive to voters' demands, and may therefore try to provide better services, and central government may underestimate the full cost of properly carrying out the devolved functions. Moreover, the "Observatoire des Finances Locales" (2005) points out that in 2004, the staff expenses of the regional administrations have increased by 9.4% and those of the departmental administrations by 19.9% (compared to 2003 data) due to the transfer of responsibilities. This phenomenon had been already observed in 2002, when the national government transferred to the regions the authority over regional rail transport and subsidies for elderly people.

4.3.2. Local fiscal autonomy

Who is in charge of public transport financing?

Although we provide some information about the fiscal structure of the municipalities and the departments, in this case study we will describe more in detail the budget structure of the Ile-de France Region. The regional government, in fact, is the most concerned by the last decentralization reform which has made it the first responsible for the financing of the public transport agency of the Paris region.

Local taxes

In 1979, before the first decentralization phase, the central government established a non earmarked grant ("dotation générale de fonctionnement") corresponding to roughly ¼ of the municipal revenues and 10% of the departmental revenues.

regions' long-term development. From 2005, all regions are responsible also for education in the areas of social and healthcare services, vocational training and economic development. Regions are expected to be responsible for managing non-teaching staff in high schools possibly from 2007. Municipalities didn't gain additional competences but can benefit from the fiscal autonomy granted to the associations of municipalities ("intercommunalité à fiscalité propre").

After the decentralization laws of 1982-1983, the earmarked transfers were essentially replaced by general grants and the guardianship of the national government over borrowing was removed. Moreover, associations of local authorities were allowed to levy special taxes. Nevertheless, since the late 1990s, several reforms promoted unilaterally by the central government substituted local taxes with central government transfers⁴⁵.

The second phase of the decentralization put an end to this centralizing trend. The Organic Law of July 29th 2004, indeed, guaranteed that a certain ratio between own resources⁴⁶ and other sources of revenues has to be maintained. The floor (corresponding to the 2003 level) was fixed for each sub national government as follow

Table 19: Ratio of resources as defined by the Organic Law of 2004

(Million €)	Municipalities	Departments	Regions
Own resources	54.80	23.5	5.58
Other resources	35.38	16.63	8.54
Total resources	90.18	40.13	14.12
Effective ratio for 2003	60.8%	58.6	39.5%

Source: Observatoire des finances locales, 2005

In 2005, Ile-de France Region has become the larger contributor to STIF, the public transport agency that manages public transport in Ile-de-France. The eight department also contribute to the public transport financing therefore, analyzing local taxes in the Paris area, we will focus on regional taxes.

Departments

Since the early 20th century, French subnational government have been endowed with local fiscal autonomy which provided them substantial revenues, although the national parliament is the only one that can create a tax and determine its base. In particular, since 1917 local governments can levy four main taxes⁴⁷:

- property tax on built land
- property tax on undeveloped land

⁴⁵ The share of tax revenues over the total operating revenues in Ile-de-France, for instance, has decreased continuously from 53.3% in 2000 to 34.9% in 2004 (Fitch Ratings).

⁴⁶ Resources coming from all type of taxes and fee on which the local government can choose the base and/or the rate, from real estate, from donations or legations and from financial operations.

⁴⁷ These taxes are overlapping and are shared between the three subnational tiers.

- housing tax
- business tax

Other minor local taxes (earmarked as the “versement transport” – explained after- or general) exist. In particular, within the last two years departments where given:

- a share of the national oil tax
- a share of the tax on insurance policies

Both shares were calculated by the central government in order to offset the additional costs generated by the decentralized responsibilities.

Regions

French regions can set the rate of property taxes, business taxes⁴⁸ and car registration tax. Since 2005, regions have received a share of the national oil tax as compensation for the newly devolved responsibilities but for the moment they have no leeway over this tax. However, from 2007 they will be able to set their own rates on a regionalized fuel tax system⁴⁹. Despite their limited power and budget (compared to other European regions that have legislative power and more responsibilities) French regions have indeed a quite strong fiscal autonomy.

Ile-de-France also receives proceeds from special taxes allocated by law to compensate for specific costs, particularly those related to transport: the office development fee and the additional tax on local equipment. The Region has no autonomy over the rates and bases of these taxes.⁵⁰

According to Fitch Ratings (2006), national tax reforms and Ile-de-France policy of keeping tax rates stable caused tax revenue to decrease by 5.1% p.a. on average between 2000 and 2004. In 2005, the Region has implemented an increase in both direct and

⁴⁸ “ Unlike other French regions, Ile-de-France does not receive the proceeds of traditional direct taxes (i.e. the business tax and the property tax) *stricto sensu*. Instead, it receives the “special equipment tax” (“TSE”, EUR387.2 million in 2004), which comprises all the proceeds of the direct taxes. TSE is calculated on the same tax bases as the traditional direct taxes, whose rates the Region sets. However, the largest share of the TSE (EUR354.4m in 2004) is recorded in the Region’s accounts as capital revenue and is earmarked for debt repayment and/or capital expenditure, which limits its budgetary flexibility.” (Fitch Ratings,2006).

⁴⁹ Source: Fitch Ratings (2006)

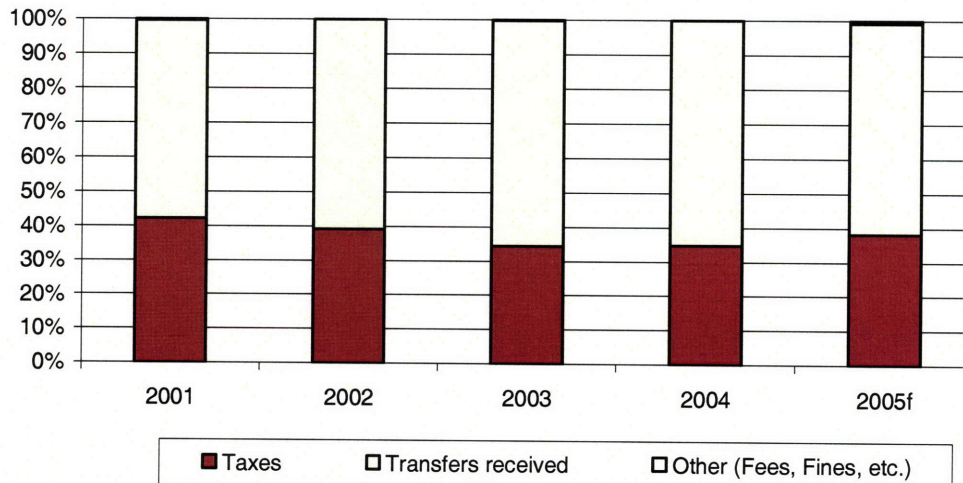
indirect tax rates: the rates of the business and property taxes were raised by 23.4% and 35.3%, respectively (increasing direct tax revenue by 4.5% of total 2005 revenue, excluding new debt). It also increased the car registration tax rate by 14.8%. With this tax increase the regional policy-makers intend to anticipate potential mismatch between the cost of the transferred responsibilities and the compensating funds from central government. The tax increase was also politically feasible because Ile-de-France has a very low tax burden (especially for the direct taxes) compared to other French regions. The following table illustrates the evolution of operating revenues and expenditures in Ile-de-France while figure 15 shows the increased weight of taxes due to the 2005 tax increase:

Table 20: Financial statistics for the region of Ile-de-France

(Million €)	Actual				Forecasted
	2001	2002	2003	2004	2005
Taxes	746.1	837.1	717.3	734.5	888.8
Transfers received	1,015.0	1290.9	1355.2	1368.7	1,420.7
Other (Fees, Fines, etc.)	5.6	0.6	1.5	0.8	15.2
Operating revenue	1,766.6	2128.4	2,074.0	2,104.0	2,324.7
Operating expenditure	708.8	903.0	986.8	1,080.8	1,280.1

Source: Fitch Ratings – Region of Ile-de-France, 2006

Figure 15: Operating revenue breakdown in Ile-de-France



Source: Ile-de-France (Budget 2005)

⁵⁰ Source: Fitch Ratings (2006)

In the 2005 budget of Ile-de-France, 24% of the expenditures were consecrated to public transport: Euro 401.5 million for investments (24% of total investment expenses) and Euro 325 million for operations (25% of total operation expenses).

Central government grants

The second decentralization phase modified also the structure of the government transfers to the subnational tiers.

The finance law for 2004 increased the pool of the so called operation grant of the local governments (“dotation globale de fonctionnement”) that included several other grants and the equalization fund.

The finance law for 2005 basically increased the equalization feature of the intergovernmental grants and attempted to base the equalization system on objective indicators.

Municipalities

The lump-sum grant (“dotation forfaitaire”) transferred to the municipalities is based on objective criteria like population (between 60 and 120 Euro/inhabitant, proportionally to the size of the municipality) and surface (3 Euro/hectare).

The Municipalities are no longer classified only according their fiscal potential but also according to the amount of the grants they receive from the central government.

Departments

Intergovernmental grants have not had substantial changes since 1985, except for the creation of a grant of urban equalization, based on the costs of the newly devolved competences measured in urban areas.

Regions

Transfers make the bulk of Ile-de-France revenues. As for the other French regions, they have increased since 1999, when new compensatory transfers were introduced following national reforms that reduced local fiscal autonomy. The main regional taxes that have been cut and offset by central government grants are:

- the property registration duty (“Taxe Régionale Additionnelle aux Droits d’Enregistrement”) abolished in 1998.
- the deduction of wages from the business tax base between 1999 and 2003
- the abolition of the regional housing tax (“taxe d’habitation”) in 2000.⁵¹

Borrowing

Since 1982 sub-national tiers of government have been allowed to borrow unlimited sums on the open market. On the other hand, French local authorities budgets must be balanced every year (the current balance plus capital revenue must cover debt repayments; if necessary, new debt must be issued to fund capital expenditure). Debt guaranteed by Ile-de-France is very low –EUR14.4m at the end of 2004 – and has been decreasing constantly since 2000. Ile-de-France has indeed high self funding capacities.

Finally, the Region of Ile-de-France extends loans, mostly to public sector companies and especially in the field of public transport. Indeed, it finances an important share of the capital expenditure of RATP, SNCF and RFF; some 10% to 20% of the Region’s funding took the form of long-term (often 25 years) low-interest loans to these public companies.⁵²

4.3.3. Public transport in Paris

Because of its strong economic power, its major political representativeness and the centralized nature of the French system, the national government created special institutions and mechanisms to manage and finance collective transport in Ile-de-France. Urban and regional public transport is indeed managed by a single transport agency, the “Syndicat des Transports d’Ile-de-France” (STIF), while in the rest of the nation regional public transport is managed by Regions (since 2002), departmental collective transport is a department’s responsibility (since 1982) and urban public transport has always been managed by municipalities. STIF was set up by law (unlike its provincial peers that are created on a voluntary base) in 1959 as “Syndicat des Transports Parisiens” (STP) and

⁵¹ Fitch Ratings (2006)

⁵² Fitch Ratings (2006)

grouped in its board the eight departments and the national government. Unlike the urban transport systems in other regions, therefore, public transport in Ile-de-France was closely monitored by the State and neither the Region nor the municipalities (except for Paris) were directly involved in the STIF decision making.

The second decentralization process affected STIF in a significant way:

- in 2000, the board of STIF involved the elected regional council of the Ile-de-France but the central government retained the majority vote within STIF⁵³
- in 2005 the central government completely withdrew from the board of STIF leaving the majority vote to the Region⁵⁴

The table that follows describes the sharing of decision making power and financial contribution of the different local governments included in the STIF board:

Table 21: Sharing of decision making and financial contributions in STIF

Local authorities	%
Ile-de-France	51.00
City of Paris	30.38
Département des Hauts-de-Seine	7.74
Département de la Seine-Saint-Denis	3.75
Département du Val-de-Marne	3.01
Département des Yvelines	1.59
Département de l'Essonne	0.98
Département du Val-d'Oise	0.91
Département de Seine-et-Marne	0.64

Source: STIF

STIF's responsibilities are to determine the service and its characteristics, to set fares and to plan infrastructure extension and modernization.

⁵³ Ile-de-France decentralization reforms did not strengthen the role of city councils. Municipalities in Ile-de-France, in fact, are only allowed to ask to the public transport companies changes on the routes or new services. They are allowed to pay for additional services in their territory within specific conditions. Moreover, since 2000, Municipalities (essentially those that are not served by metro or tramways) can group and receive delegation from STIF in order to plan the bus services within their territory. These inter-municipal transport authorities are called "autorités organisatrices de second rang". They have to contribute to the financing of the public transport services and they have to set services and fares according with the PTU of Ile-de-France and the STIF fare policy.

⁵⁴ The Region holds 15 of the 29 seats and the president of the Region is the chair. The department of Paris has five seats, the other departments of Ile-de-France have one seat each, the Regional Chamber of Commerce and Industry also has one seat and the inter-municipal groupings of Ile-de-France have the last one.

Although, contrarily to the rest of the country, Ile-de-France public transport is not tendered, in 2000 STIF introduced the contractualization of its relationship with its public transport operators (before, there was an automatic compensation of the companies' operating deficit). The three-year operating contracts include the compensation for operating deficits and a penalty-incentive system. It was the central government that promoted the contractualization in order to align Ile-de-France public transport companies to the European vision of open market and allow them to operate in other countries.

STIF is a financially autonomous body. Its own income comes from different sources:

- regional and departmental contributions. Since 2005 there are no more direct central government subventions: the withdrawal of the State was indeed coupled with a financial transfer to the Region equivalent to the annual operational subsidy of the National Government (the proposed amount was Euro 529 million/year)⁵⁵.
- 50% of proceeds from the road fines (traffic and parking) of Ile-de-France⁵⁶ normally used to finance quality improvement of the existing assets and rolling stock
- a hypothecated public transport tax, the "Versement Transport" (VT). The VT is a hypothecated payroll tax imposed on all employers with nine or more employees. The current rate varies between 1.4% and 2.6% of the payroll bill, according to the different departments. VT was created in 1971 and has been adapted several times, as shown in the following table:

⁵⁵ This decision was extremely controversial because Ile-de-France wanted the State to add a transfer for the renewal of the obsolete rolling stock as it did in 2002 when it transferred to the other Regions the responsibility for regional public transport (mainly regional rail services). According to Fitch Ratings (2005) the Region asked for supplementary EUR400million/year to upgrade the rolling stock and cover special fares decided by the French government. For eight months the Region refused to hold the STIF board but its contestation was not successful.

⁵⁶ The remaining 50% is split between the region (25%) and the local authorities (25%).

Table 22: “Versement transport” rate (in parenthesis, the maximum rate)

Year	Department		
	Paris / Hauts-de-Seine	Seine-Saint-Denis / Val-de-Marne	Seine-et-Marne / Val-d'Oise / Yvelines / Essonne
1971	1.7 (2.0)	1.7 (2.0)	0
1975	1.9 (2.0)	1.9 (2.0)	0
1978	2.0 (2.0)	2.0 (2.0)	0 (1.5)
1989	2.2 (2.2)	1.8 (1.8)	1.2 (1.5)
1991	2.4 (2.4)	1.8 (1.8)	1.2 (1.5)
1993	2.2 (2.2)	1.4 (1.4)	0.8 (1.3)
1996	2.5 (2.5)	1.6 (1.6)	1.0 (1.3)
2003	2.5 (2.5)	1.6 (1.6)	1.3 (1.3)
2004	2.6 (2.6)	1.7 (1.7)	1.4 (1.4)

Source: CERTU and GART (2005)

In particular, in 1991 the VT base was enlarged, passing from the “petite couronne” to the entire Ile-de-France region, and in 1993 the ceiling applied to the taxable amount was removed. Before the decentralization reform, the rate of the VT was set by a national decree while in the rest of the country local transit authorities could fix their rate within a certain allowed range. Since 2004, STIF has the power to set the VT rate (within the ceiling fixed by the central government) although the actual rates are at their upper limit. Moreover, the presence of the Regional Chamber of Commerce and Industry in the STIF board could limit the agency’s leeway.

The decentralization (or perhaps more a regionalization) of the public transport responsibilities in Ile-de-France has been perceived as a way to better integrate regional land use and transport. The increased autonomy of the local governments should indeed strength the coherence between the actions and the main planning orientations suggested by the strategic documents like:

- “Plan de déplacements urbains” (PDU): In 1996 a law concerning emissions and the rational use of energy resources required that towns and cities with more than 100,000 inhabitants draw an urban transport plans embracing passengers and freight transport. Since 2000, Ile-de-France has its own PDU.

- “Schéma directeur de la région Ile-de-France” (SDRIF): put together by the state and the region, it gives the planning guidelines for the medium-long term period integrating urban development, environment and infrastructures.
- “Contrat de Plan Etat-Région” (CPER) signed by Ile-de-France and central government is a key element of the Region’s investment policy

4.3.4. Operations

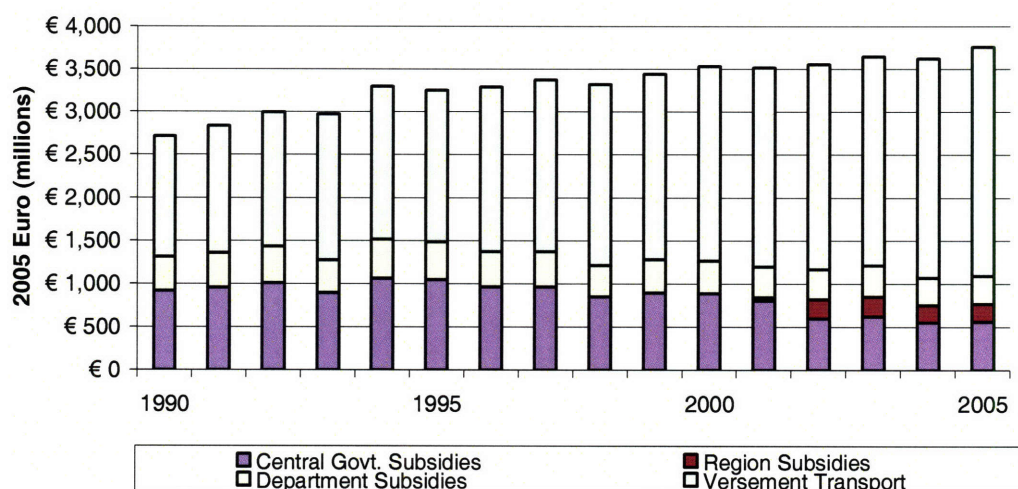
The main operators in Ile-de-France are:

- the “Régie Autonome des Transports Parisiens” (RATP), a state-owned company which carries about 75% of passengers in Ile-de-France and whose board is made by representatives of the state, of locally elected officials, RATP employees and passenger representatives. RATP managing director is appointed by the French Prime Minister. RATP runs the metro, buses within the central part of the city, and part of the commuter rail lines (RER).
- the “Société Nationale des Chemins de Fer Français” (SNCF), the French national railway company, which carries around 17% of passengers. It operates the rest of the RER system, and the regional rail network.
- the “Organisation Professionnelle des Transports d’Ile-de-France” (OPTILE) an association that include more than 80 private bus companies which operate within the suburbs and carries around 8% of passenger traffic.

Although STIF participates to investments⁵⁷, its revenues are essentially used to compensate the operating deficit of the transport companies. In particular, “Versement Transport” makes up about 70% of the public subsidies dedicated to public transport (investments and operations) in Ile-de-France. Its amount has increased both in absolute value and in relative weight (from 52% in the early 1990s to the actual 70%), while local (departmental) and central government subsidy have been slightly diminishing in the last decade.

⁵⁷ In direct (through the fines revenues) and indirect ways, as operating companies finance a substantial part of investments – see Infrastructure.

Figure 16: Operating subsidies in Paris



Source: STIF (2005)

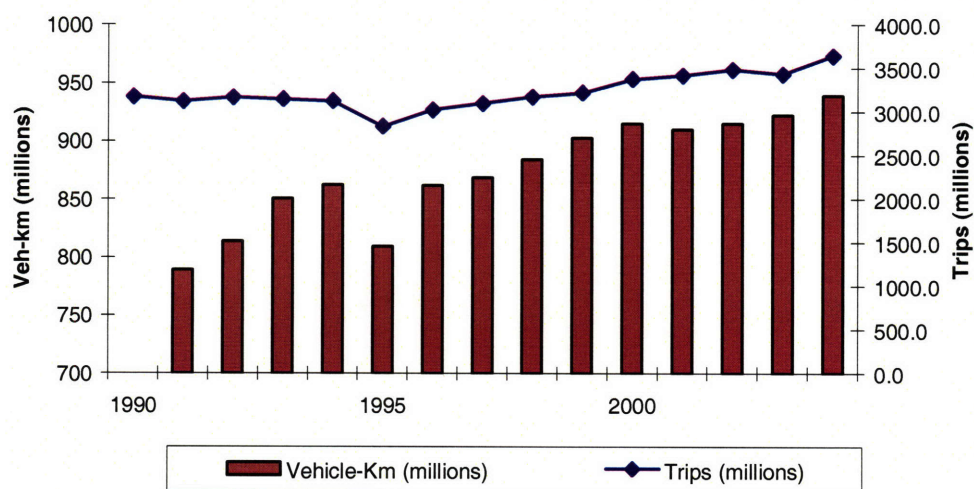
Focusing only on operations, farebox recovery ratio in the last five years has been quite stable at around 37%⁵⁸. Users contribution can actually be split into the money that the passengers pays to the operators (around 29%) and the contribution of the employers for transit commuting (around 9%). Since 1982, in fact, employers of Ile-de-France have to pay 50% of their employees transit pass.

The contribution of the passengers to the cost of the service is therefore relatively small. Compared to the rest of the French urban networks for which the central government contribution to operation was around 1-2% (2000 data), the State subvention to Ile-de-France operations (around 15%) was quite high.

Public transport supply in Ile-de-France in 2004 was around 940 million of vehicle*km. RATP produces 50% it, while SNCF provides about 38% of the vehicle*km. Since 1991, the supply has been increasing on average by 1-2% per year while the demand, after a small decrease in the early 1990s, has increased on 20% since 1996.

⁵⁸ If we consider the total costs (i.e. including investments) the farebox recovery ratio is around 34%.

Figure 17: Demand and supply of public transport in Ile-de-France⁵⁹



Source: STIF

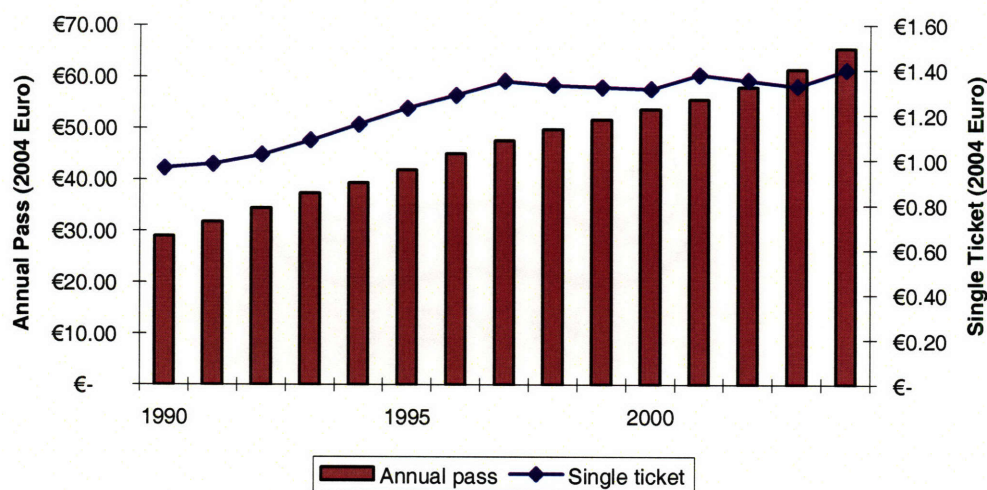
As said before, in 2000 STIF has drawn contractual agreements with the operators in order to encourage the companies to increase their productivity and the quality of their services. Nevertheless, the costs of productions apparently did not decline: in 2000 the overall cost per vehicle*km was €6.3 (6.8 in 2004 Euro), in 2004 it was 3% higher in real terms and in 2004 it should be around €7. In 2004, overall costs per passenger were approximately €1.8.

Fares

Public transport fares in Ile-de-France are set by STIF and are normally adjusted every three year or so. Fares increase roughly by 5% each year, discounting the inflation.

⁵⁹ Supply for 2002-03-04 partially deduced from trend; 1995 strikes

Figure 18: Evolution of a single ticket and annual pass prices in Paris



Source: STIF (2005)

The different public transport networks operating in Ile-de-France are well integrated. An integrated fare system for season pass was already in place in 1975 and since then several innovations have been introduced although the operators (especially RATP) seems to be the initiator of the new initiatives more than STIF. Fare revenues are managed at the operator level.

One of the first projects that Ile-de-France declared to be willing to promote when it became the most influent actor in the STIF board was related to the fare structure, nominally: limit the fare increase previously announced by the central government to the inflation rate, promote a study aiming at designing more equitable fare structure, especially for suburban areas and provide free tickets for unemployed and low income people.

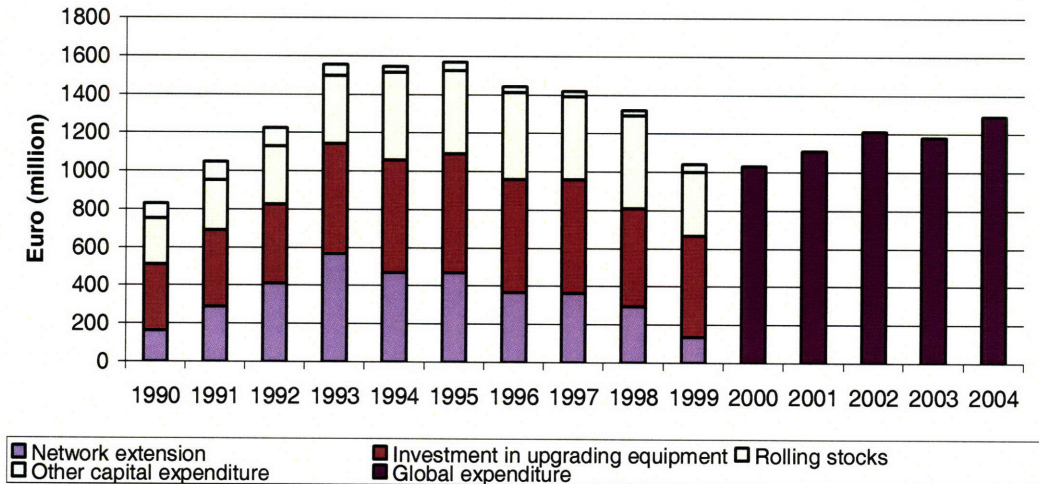
Indirect Central government subsidy:

In 1991, the VAT rate was reduced from 7% to 5.5%.

4.3.5. Investments

According to their specific type of funding, investments in Ile-de-France should be classified in three types: extensions to the system, new rolling stock and modernization of existing assets. The following graph shows a stable level of investment in renewal and upgrading and a pick of extension costs in the mid 1990s:

Table 23: Investment in Ile-de-France

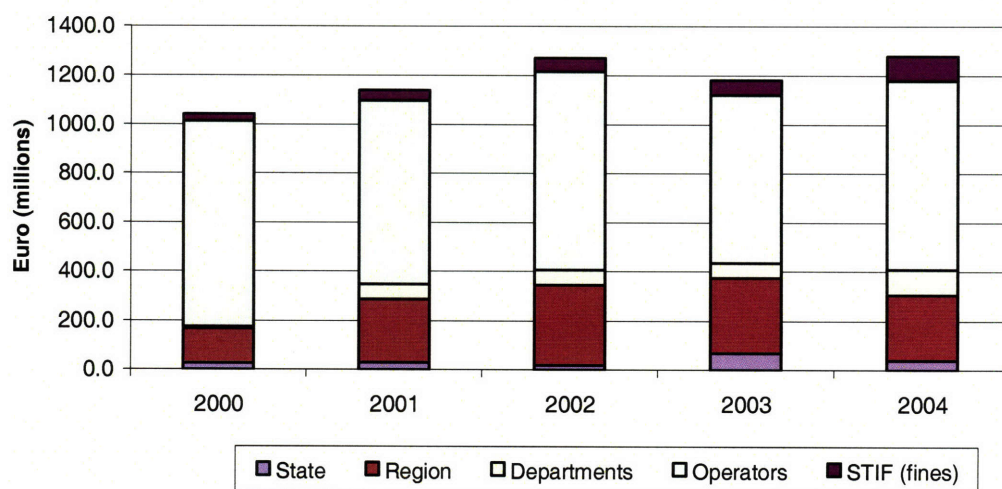


Source: Fitch Ratings (2003) and STIF (2005)

As the STIF's figures for 2000-2004 demonstrate, these investments are largely financed by the operating companies which, on the other hand, own the vehicles. Their contribution to the total investment has decreased in the last five years probably because of an increased spending in network extension (essentially subsidized by the public authorities). The subsidies from the Regions have doubled since its entry in the STIF board while the direct⁶⁰ contribution of the State, which is marginal, has been quite stable.

⁶⁰ The State is the sole shareholder of both RATP and SNCF, therefore central government indirectly pays and determine all decisions regarding the investment and infrastructure developments of the two operators.

Figure 19: Investment subsidies in Paris



Source: STIF (2005)

Extension of the network

Extensions to the system are agreed within seven-year development plans put together by the state and the region through STIF, the “Contrat de Plan Etat-Région” (CPER)⁶¹. Before 2005, STIF had only the right to approve and supervise the infrastructure project but couldn’t be the project manager and finance this kind of investments. Since the decentralization reform, STIF can perform these roles just like the other French public transport authorities.

The last CPER (covering 2000-2006) had a total value of Euro 7.7 billion, 63% of which was directed to infrastructure. In particular, CPER 2000-2006 affected Euro 2.5 billion to public transport infrastructures, 66% of which financed by the Region, the remaining 34% by the central government. Local authorities and public transport companies’ contribution for extension projects can be contemplated by the CPER but this normally does not exceed 20% of the total cost of the infrastructure.

⁶¹ The CPER is a key tool of the regional investment policy.

Rolling stock

New rolling stock is financed wholly by the public operators, RATP and SNCF, that, unlike in most of the French cities, own the vehicles. The private bus companies within OPTILE have their new buses partially financed by the region.

Modernization of existing assets

STIF makes direct contributions to the modernization and upkeep of existing assets. Until 2005 the general contribution was as described in the following table.

Table 24: General contribution to the modernization of existing assets

Project	STIF	Region
Bus stations and park & ride	50%	50%
Bus lanes	50%	50%
Multimodal information	40%	40%
Bus stops	50%	50%
Bus on board equipment	Between 33% and 50%	
Studies on the network design	Variable	50%
Clean vehicles (retrofitting and purchasing)	Variable (and include Paris Municipality subventions)	

Source: CERTU (2003)

Investments on modernization in the last fifteen years have always been equal or bigger than the spending on extensions.

Recent extensions of the network

In 2004, the rail network in Ile-de-France was made of 1296 km of SNCF commuter rail lines, 115 km of RATP commuter rail lines, 211.3 km of underground (metro) and 23,5 km of tramway (2 lines). Since 1990, the network has been steadily increasing, as shown in the following table.

Table 25: Extension of the metro network in Paris

Project	Details	Costs
Orlyval	Automatic (driverless) light metro connecting Orly airport Length: 7.3 km Operation started in 1991	
Metro line 1 - Extension	1992	
RER A – Extension	1992	
Tramway T1	Length: 9.1 km Part of the orbital transport network Operation started in 1992	
RER A and B- Extension	1994	
Tramway T2	Length: 11.3 km Part of the orbital transport network Operation started in 1997	
Metro line 13- Extension	Additional 1.4 km in 1998	
Metro line 14 (METEOR project)	Automatic (driverless) light metro Operation started in 1998 Length: 7.2 km; 7 stations	Total cost: € 940 million (114 € million/km) financed through three contracts de plan, of which 40% from the Region, 34% from the central government, 18% from RATP and 8% Municipality of Paris. Rolling stock entirely paid by RATP (thanks also to subsidized loan of the Region)
RER E (EOLE project)	Length: 2.7 km; 17 stations Operation started in 1999	Total cost: € 1221 million (financed through two contracts de plan) of which 50% from the Region, 30% from the central government, 20% from SNCF
Tramway T1 – Extension	Additional 2.9 km and five new stations in 2003	Cost of works : €80.9 million Cost of rolling stock : € 9.9 million
Metro line 14- Extension	Additional 0.5 km in 2003, after five years of works	€ 128 million
RER E – Extension	In 2003. Six new stations	€ 13.7 millions

Source: STIF (2005) and CERTU (2003)

The objectives of the CPER 2000-2006 in terms of infrastructure were extending the existing metro and RER infrastructure, increasing the tangential rail connections in order to facilitate mobility between suburban areas and starting to build a tramway ring just outside the city of Paris. This CPER is expiring but at the end of 2005 only 44% of the project had been realized. At the end of 2006, the rate of realization is expected to be 71.1%. In fact, on one hand the central government did not supply the expected

funding⁶², on the other hand the cost of the project had been underestimated by the Region with the intent of increasing the number of projects within the budgeted funding.

Future extension projects

Since the 1990s, the major metropolitan areas in France have been increasing the number of dedicated right-of-way public transport projects with a contribution of the State around 20-35% of the costs. At the end of 2003, however, the central government announced that it would cease providing subsidies to finance urban public transport infrastructure (outside Ile-de-France) and start offering loans at reduced rates for local authorities.

This withdrawal of the central government from financing public transport has been made clear also for Ile-de-France when the State refused to increase the transfer to the Region of the amount needed for renewing the rolling stock. A new “contrat de plan”, now called “contrat de projet Etat-Region”, for 2007-2013 is under negotiation but professionals expect a reduced contribution of the central government.

Nevertheless, since it holds the control of the board of STIF, Ile-de-France is expected to ask the transport agency to invest heavily to improve and maintain collective transport infrastructure and service in the region. Ile-de-France, in fact, intends to boost such projects as the completion of the tramway lines, the renewal of the SNCF fleet and particularly the improvement of the bus network, especially in the “grand couronne”.

This increased willingness to invest in public transport was already registered in France when the regional rail services were devolved to the Regions (2002). The Regions’ desire to improve the quality of the service, in fact, caused a substantial increase in operating expenses and regional investment, which rose 16% between 2002 and 2004 (Fitch Ratings, 2005) and was not fully compensated by national transfers. Both STIF and the Region are therefore expected to increase their borrowing.

⁶² According to Fitch Ratings, as of December 2003, Ile-de-France had funded 56.4% of its share in the CPER (through subventions or subsidized loans to the operators) and central government had funded only

4.3.6. Debt

Before the decentralization reform of 2004, STIF was not allowed to issue debt nor to be project manager for infrastructure investments. As of 2005, STIF can finance capital expenditure (including rolling stock) and can take on debt. The French transport professionals actually expect the transport agency to access the capital market and finance significant infrastructure investments in the region.

The major public transport operators (RATP and SNCF) are heavily indebted although these debts are not consolidated in the central government debt.

The Region of Ile-de-France extends loans to finance the capital expenditure of RATP, SNCF and RFF (owner of the rail infrastructure). These are normally long-term (often 25 years) low-interest loans.

4.3.7. Alternative funding sources

Public Private Partnerships

PPP were introduced into French law in 2004. The central government, in fact, decided to promote them essentially because they allow shifting the debt to the private companies even though the economic responsibility for its repayment is on the public sector.

For the moment, there are no examples of PPP in the public transport sector but the central government is envisioning this type of financing agreement for the rapid rail link Paris- Charles de Gaulle airport (CDG Express). This would be a national (not regional) project.

Congestion Charge

Congestion charging is illegal in France: road pricing is allowed only to pay back an infrastructure investment.

Parking

Local authorities in France can develop a parking strategy (zones, time limits, fares) but they are not allowed to fix and collect the amount of the fine. Parking fines, in fact, are

45.9% of its part.

collected by the national government and are extremely low (11€) therefore they are not enough deterrent. A decentralization of parking fines project of law has been presented to the central government but has not been approved yet. If it will, the revenue from of parking fines could be collected by local authorities and directly allocated to public transport.

4.4. Milan (Italy)

4.4.1. National fiscal system

The Italian administrative and fiscal system is based on four tiers: Central Government, Regions, Provinces and Municipalities. Italy had been a fiscally centralized country until the 1980s. The rationale for this choice was that a centrally controlled taxation would allow better control of public expenditures and a more uniform level of service across the nation (Antonini, 2003). The “centralized model” did not obtain the expected outcomes, both from the public expenditure (problems of soft budget constraints arose in several fields, among them local public transport) and the equality of social right points of view. Therefore in the 1990s the Italian government started a decentralization reform whose key steps are outlined below.

Table 26: Summary of the decentralization reform in Italy

Key stages	Changes
1995 (Law 549/1995)	All national transfer funds (earmarked or not), except for the National Health Care Fund, were abolished and substituted with a vertical equalization fund (not earmarked) and a system to share the proceeds of the national excise on gasoline. The central government decided the excise level, and the regional share was fixed in Lire/liter (per liter sold in each Region), not as a % of the national excise. The National Transport Fund was one of the abolished funds.
1997 (Decree 446/1997)	The National Health Care Fund was abolished and the central government transfers were basically replaced by two new taxes: - the regional business tax (IRAP), - a regional surcharge on personal income tax (IRPEF) of 0.5% . Until 1997, 85% of Italian regions' revenues were made up of national transfers. In 2005, the transfers received by the Lombardy Region were only 10.5% ⁶³ of its total revenues (Standard & Poor's, 2006). The same decree abolished some transfers to the Provinces and Municipalities and some local taxes in favor of new forms of taxation, among them the possibility of levying a tax on vehicle registration for the Provinces (the rates established by the central government can be increased by 20% by the Provinces)
1999	Municipalities and Provinces can levy a surcharge on personal income tax
2000 (Decree 56/2000)	The maximum rate of the regional surcharge on personal income tax was increased from 0.5 to 0.9% with a ceiling of 1.4%. The regional share of the excise on gasoline was increased. A regional share of the VAT was introduced (25.7% then raised to 38.55% in 2001), but the Regions don't have any leeway to raise or lower the tax rate.
2001 (Constitutional reform)	The Regions were granted some revenue flexibility on IRAP (possibility to increase the rate from 4.25% to a maximum of 5.25%, and to differentiate the rate depending on the type of activity) and the IRPEF surcharge. The 2001 constitutional reform opened the way to greater autonomy for subnational governments, especially the possibility for the Regions to create their own taxes and the attribution of shares of national taxes raised in their territories to Municipalities, Metropolitan cities, Provinces and Regions.
2002	In its financial law for 2003, the Italian government curtailed the regions' tax autonomy by freezing rates on IRAP and the PIT surcharge for 2003 and 2004.
2004	The freeze was removed in 2005, to allow for the coverage of health care deficits posted over 2002-2004. In 2004 the practice of earmarking the IRAP for health care expenditure was abolished.

⁶³ This figure does not include the share of the national taxes raised in the regional territory and devolved to the Region.

4.4.2. Local fiscal autonomy

Who is in charge of public transport financing?

In this case study we will focus on the budget of the municipality of Milan as well as on the budget of Lombardy because the two governments are jointly responsible for the financing of public transport services in the Milan urban area.

Local taxes

Municipal taxes

Italian municipalities' main source of revenue is the property tax (ICI) whose maximum rate (0.7%) is fixed by the national government. This tax is a non-cyclical source of revenue, providing substantially predictable revenue streams. Moreover, the national finance law of 2005 allowed the review of cadastral values.

The property tax base in Milan is quite significant and the rate applied by the city of Milan (0.5%) is the lowest of Italian large cities, meaning that Milan has a high revenue-raising flexibility. The municipality of Milan levies three other taxes: the waste collection tax (TARSU), the tax on the occupation of public spaces (COSAP) and the contribution for urbanization (Oneri di urbanizzazione). Milan has decided to not apply the municipal surtax on the national income tax (Addizionale Comunale IRPEF), as shown in the following table:

Table 27: Current revenues for the city of Milan

(Million €)	Actual				Forecasted
	2001	2002	2003	2004	2005
Property taxes – ICI	381.2	385,5	393.4	396.6	396.4
Waste collection tax	199.1	197.1	205.3	221.5	218.9
PIT surtax – IRPEF	0	0	0	0	0
PIT sharing – IRPEF		255.1	358.7	382.7	392.7
Other	54.4	57.5	62.7	64.9	59.0
Total Tax	634.7	894.7	1,019.1	1,065.5	1,057.0

Source: Fitch Ratings – City of Milan, 2005

Table 28 shows the evolution of Milan's operating revenues and expenditures since 2000:

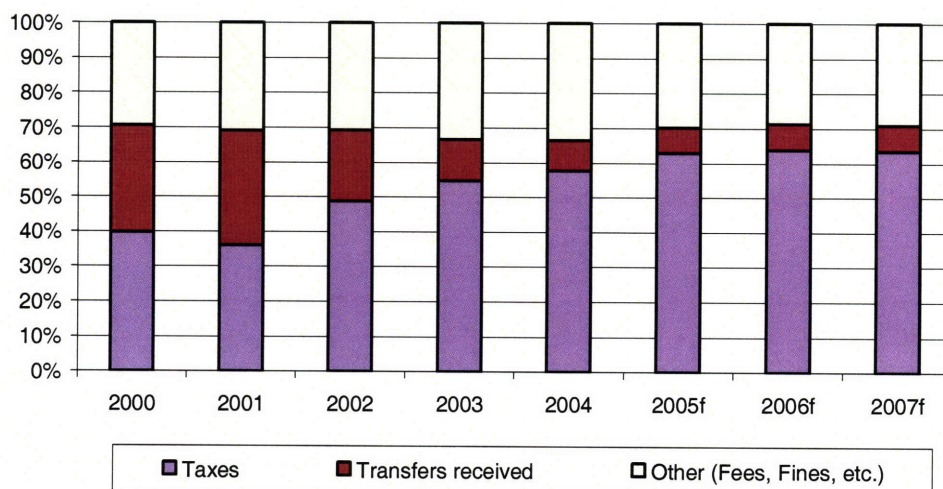
Table 28: Financial statistics for the city of Milan

(Million €)	Actual					Forecasted		
	2000	2001	2002	2003	2004	2005	2006	2007
Taxes	682.2	634.7	894.7	1,019.1	1,065.5	1,147.9	1,147.4	1,156.8
Transfers received	526.4	585.7	374.3	221.8	162.6	133.6	133.7	135.1
Other (Fees, Fines, etc.)	503.5	544.2	564.1	619.0	620.5	544.4	516.0	528.8
Operating revenue	1,712.0	1,764.6	1,833.2	1,859.9	1,848.6	1,825.9	1,797.1	1,820.8
Operating expenditure	1,451.2	1,577.3	1,597.1	1,596.3	1,586.6	1,648.6	1,601.6	1,611.6

Source: Fitch Ratings – City of Milan, 2005

Figure 20 illustrates the weight of the different sources of revenues and shows that since 2001 there has been a steady increase in the share of the taxes that in 2004 represented 57% of the operating revenues of the city.

Figure 20: Operating revenue breakdown for the city of Milan



Source: Fitch Ratings – City of Milan, 2005

In 2004, expenditures on public and private transport represented only 7% of the municipality operating expenses. When taking into account capital investments, in the last three years (2003-2005), the Municipality of Milan has budgeted € 800 million for local public transport, i.e. 37% of the funds for mobility policies⁶⁴.

Regional taxes

Lombardy's main source of revenue is its regional business tax (IRAP) followed by the share of the national VAT and the regional surcharge of the income tax ("Addizionale

Regionale IRPEF⁶⁴). Other minor regional taxes are: the yearly vehicle registration tax, the tax on university enrollment, the tax for the use of dumps, the tax on aircraft noise emissions (created in 2001 and earmarked for noise reduction measures), and the share of the national excise on gasoline.

In 2002 the Region began to apply different IRPEF rates depending on income levels, and to levy the maximum IRAP rate to the banking and insurance sectors. This tax increase was implemented in order to cover deficits and to fund supplementary healthcare services.

Table 29: Current tax revenue of the Region of Lombardy

(Million €)	Actual				Forecasted
	2001	2002	2003	2004	2005
Business Act. Tax - IRAP	6,940	8,016	8,353	7,802	7,929
PIT- IRPEF	938	1,371	1,296	1,495	1,432
Car registration tax	838	855	855	858	875
Petrol excise tax	463	481	458	500	441
VAT	2,428	2,688	2,872	3,818	4,769
Other	211	83	89	83	76
Total	11,818	13,494	13,923	14,556	15,522

Source: Fitch Ratings – Region of Lombardy, 2006

The historical series of operating revenues and expenditures of Lombardy is summarized in the following table:

Table 30: Financial statistics for the region of Lombardy

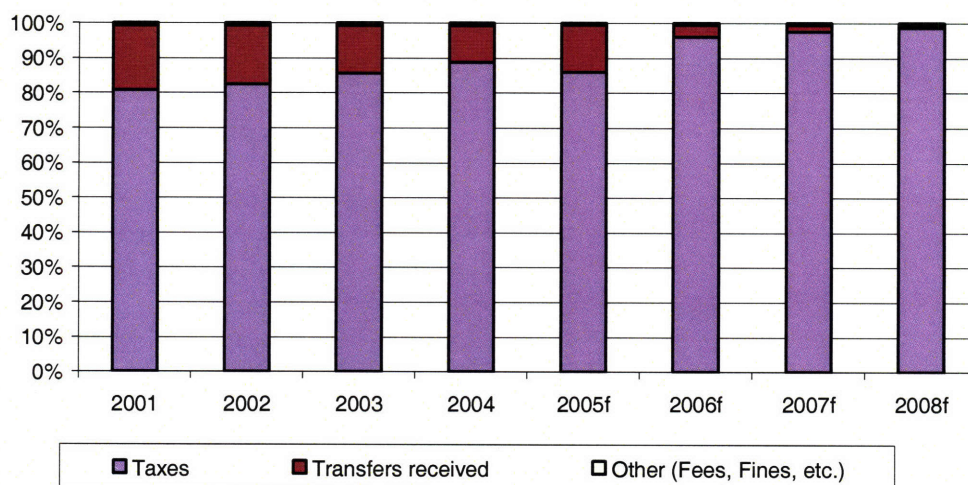
(Million €)	Actual				Forecasted			
	2001	2002	2003	2004	2005	2006	2007	2008
Taxes	11,818.0	13,493.0	13,922.9	14,556.4	15,522.0	15,869.0	15,934.0	16,138.0
Transfers received	2,711.0	2,754.0	2,206.9	1,733.2	2,414.0	566.0	306.0	133.0
Other (Fees, Fines, etc.)	91.0	101.0	126.2	104.6	100.0	80.0	77.0	73.0
Operating revenue	14,620.0	16,348.0	16,255.9	16,394.2	18,036.2	16,515.0	16,317.0	16,344.0
Operating expenditure	14,481.0	14,904.0	15,915.0	16,530.0	17,270.0	16,083.0	15,881.0	15,926.0

Source: Fitch Ratings – Region of Lombardy, 2006

⁶⁴ Source: www.comune.milano.it

As we can see in figure 21, taxes' share has been increasing since 2001. In 2004 they represented nearly 90% of the region's total operating revenues; transfers were roughly 10% and user fees were insignificant.

Figure 21: Operating revenue breakdown for the region of Lombardy



Source: Fitch Ratings – Region of Lombardy, 2006

Central government grants

At the municipal level, State transfers (less than 10% in 2004) have been almost entirely replaced by a fixed share of the national personal income tax. This national trend holds true for Lombardy: transfers (national and European) now account for only 10.5% of the total revenues of the region.

User fees

The municipality of Milan, as seen before, tends to avoid raising taxes, preferring the increase of fees and charges to cope with the increases in expenditures.

At the same way, Lombardy has introduced a fee for the health-care users in order to co-finance the cost of medicines and some services.

Borrowing

Since 1999, Italian municipalities have been required to help central government meet Maastricht financial criteria by complying with a number of restrictions, which have been reinforced for 2005-2007. These restrictions, which together constitute the National

Stability Pact, include such measures as a cap on the growth of total expenditures and a limit keeping interest expenses under 12% of operating revenues. In addition, debt can only be issued to finance investment projects that generate an increase in tangible assets. Both Lombardy and Milan have a moderate deficit that reflects their policy of making the implementation of large-scale investment projects contingent on the availability of capital transfers and/or asset sales.

Despite these nominal restrictions on borrowing, subnational governments, in order to increase their access to capital, can create public companies whose balance sheets are not counted as public debt. The Municipality of Milan, for instance, owns 100% of the shares of two such public companies: “Metropolitana Milanese” (MM), an engineering company whose core business is to design and build transit infrastructure, and ATM, the incumbent public transport operator in Milan. Both MM and ATM can issue bonds.

In 2004, the region of Lombardy created Infrastrutture Lombarde SpA (100% owned by the region) in order to manage regional real estate and develop and implement the infrastructure projects. In particular, Lombardia draw an ambitious 10 year investment plan which should be funded mostly by central government funds (essentially politically negotiated) and project finance initiatives.

4.4.3. Public transport in Milan

The Italian public transport reform aimed at opening the market started in 1997 (Law 59/97 and Legislative Decree 422/97) and in the last ten years has shaped public transport in Milan as well as the rest of the country. According the 1997 law, Regions are directly responsible for planning and financing regional rail transport, and they can delegate the responsibility of urban and inter-urban public transport to sub-regional levels of government (Provinces and Municipalities).

In 1999, the city of Milan established the Agency for the Mobility and Environment (AMA), a technical body whose responsibility is to support the planning, regulating and monitoring activities of the municipality. AMA is responsible for traffic, public transport,

parking as well as reduction of air and noise pollution in the Milan urban area.⁶⁵ The main planning document conceived by AMA is the Urban Mobility Plan 2001-2010 which assesses the necessary investments in road and public transport infrastructure, suggests organizational and operational innovations, and attempts to integrate urban planning, mobility, and emissions reductions efforts. Moreover, national legislation requires that every municipality with more than 30,000 inhabitants draw up an Urban Traffic Plan aimed at improving the mobility and the livability of the urban areas, stimulating the use of public transport, and reducing traffic and pollution.

Although Lombardy is one of the few Italian regions that have fully embraced the tendering philosophy promoted by the national public transport reform, the Municipality of Milan has deferred the tendering procedure until the beginning of this year.

4.4.4. Operations

As stated above, the National Transport Fund was abolished in 1995 by law no. 549/95 which radically changed the financing mechanisms for local public transport. As Regional governments became responsible for covering the deficit of regional and local public transport, they were given a share of the receipts from the national gasoline excise duty (350 Lire/liter -0.18 Euro/liter- in 1996⁶⁶). An equalization grant was nevertheless accorded to each region if the revenues from the share of the excise were lower than the 1995 national subsidy.

⁶⁵ From 2002, the competences of the Municipality of Milan have been widened to the public transport services covering the so called Urban Area, i.e. Milan and the surrounding 31 municipalities. This services are provided by 8 companies of which ATM, a joint stock transport company entirely owned by the municipality, is the most important (79% of the supply, 31 inter urban lines out of 45). Before the public transport reform, planning and operations were essentially performed by the public transport companies. In the analysis of the public transport financing in Milan that follows, we would therefore take ATM's data as a proxy for the public transport provision in the Urban Area in order to have a longer time series. This data doesn't take into account the regional rail system, which is planned and contracted out directly by the Region.

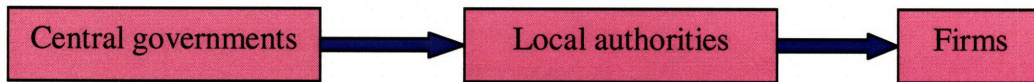
⁶⁶ 242 Lire/liter in 1998 and 250 Lire/liter in 2001. Finally, in 2005, the central government increased the excise of 0,05 % on gasoline and 0,1% on diesel fuel.

The new law required a complete overhaul of the entire financing system. The devolution of responsibilities and resources to the regional governments implied a change from indirect finance to direct finance:

Figure 22: Evolution of the local public transport financing system

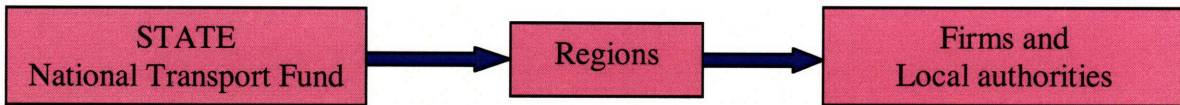
Past Situation

From 1972 to 1981



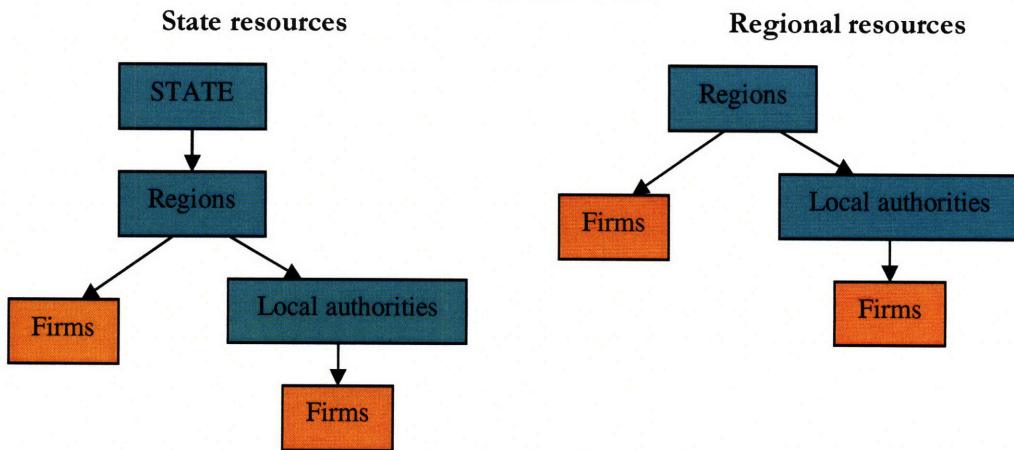
Municipal companies are financed by local finance system: the central government pays out funds to local authorities for covering deficits (ex-post compensation)

From 1981 to 1995



Financing takes the form of compensations for operation that are assigned to the regional governments on the basis of parameters such as standard cost, the estimated revenues from fares, the grants for covering the difference between standard cost and estimated revenues.

Current Situation



- Resources Allocation**
- Previous deficit coverage
 - Renewal collective agreement
 - Local rail funding

- Resources Allocation**
- Financing PT services (regional transport fund)

Source: ASSTRA, 2005

Currently, regional governments are required to establish a transport fund each year financed both by their own resources and by compensations from the central government. The fund is used to subsidize the so-called minimum local transport services (established by each region) and its amount is established each year in the Regional Finance Act. If local (municipal or provincial) authorities choose to provide supplementary services for their territory, they must pay for them with their own resources.

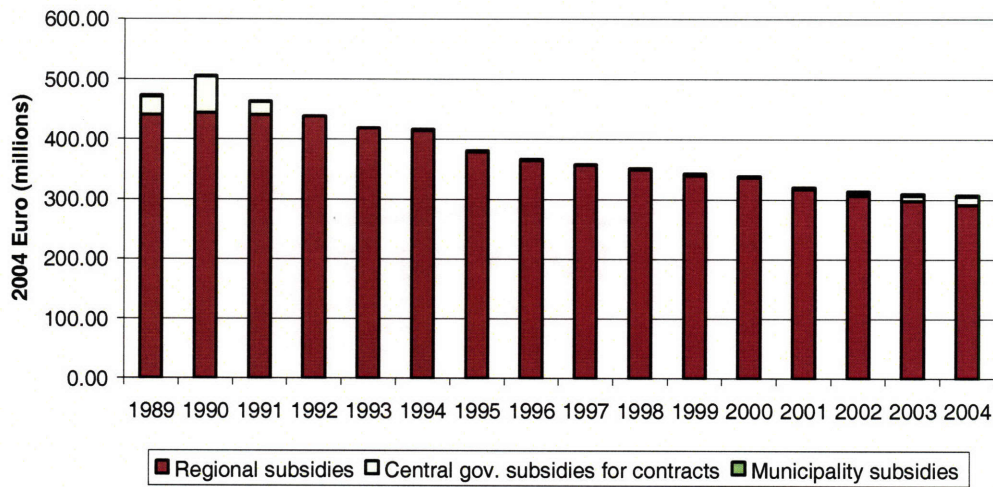
In 1999, Lombardy signed an agreement with its provinces and biggest municipalities defining the global amount of subsidies for the operation of minimum transport services. Since then, the fund has been substantially stable (506 million Euro in 2005) except for a reduction of 13 million Euro (4% of its regional subsidies) to ATM in 2001 because the company did not increase the fares to meet the required farebox recovery ratio set by the Region. In 2006, 15 million Euro⁶⁷ (3% increase of total regional subventions) have been added to this global subsidy to account for inflation, the rising fuel prices, and the limited cost reduction achieved by the tendering process (-1.5% is the average reduction due to contracting out in Lombardy). In 1998, ATM reached a budgetary equilibrium for the first time after 16 years. Since 2001, ATM has a credit balance.

Subsidies in real terms have been decreasing since the late 1980s. In particular, since the National Transport Fund was abolished in 1996, inflation has increased by 20%, and subsidies have remained stable in nominal value⁶⁸ (with a slight decrease of regional funds and a small increase in municipal contribution). This means that the metropolitan area of Milan was somehow penalized by the competition with the other public transport authorities in the region.

⁶⁷ This sum is entirely proceeding from the regional own budget (i.e. these are not Central Government transfers).

⁶⁸ At a national level, the figures is 20% of inflation versus 6% increase in nominal value.

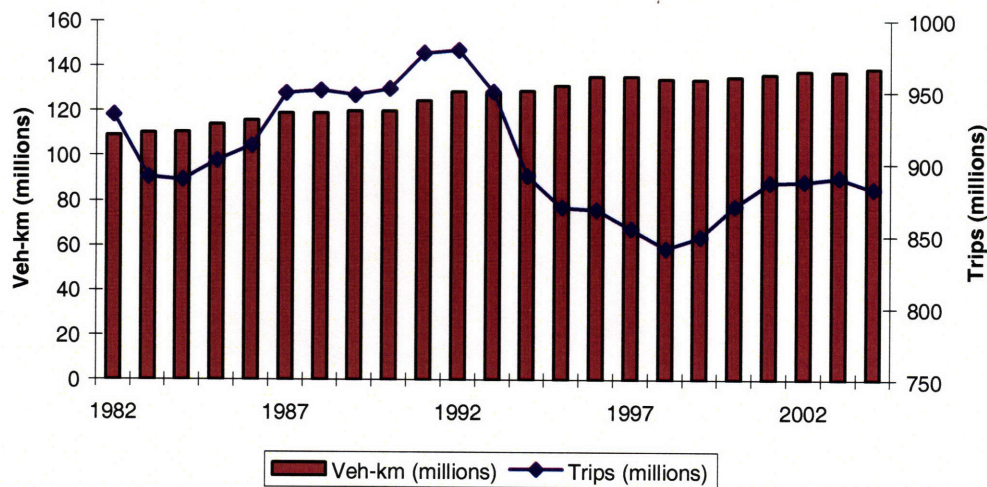
Figure 23: Operating subsidies for the city of Milan



Source: ATM

The number of trips had decreased dramatically before 1995, continued to decline until 1998, and have been slowly recovering since 1999, as shown in the following graph.

Figure 24: Demand and supply of public transport in Milan

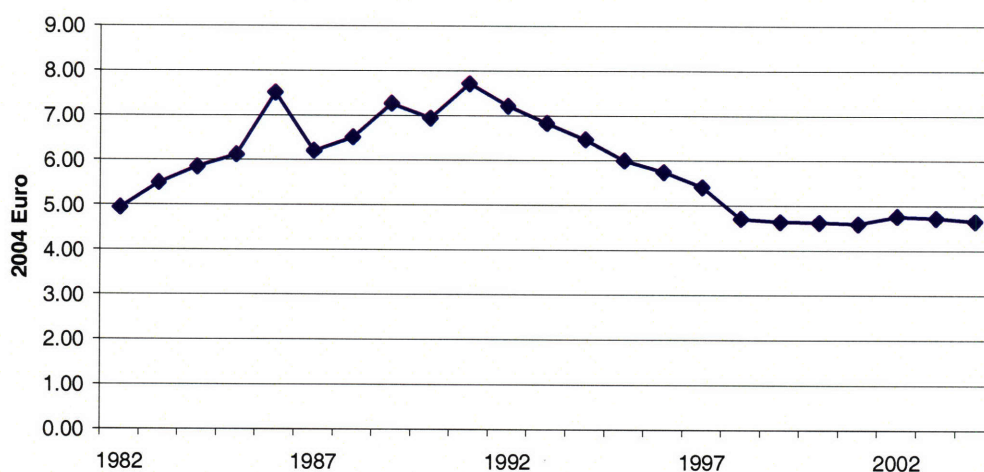


Source: ATM

ATM operating costs have dropped significantly since 1991, while its services have been globally increasing (+11% gain in vehicle-kilometer). As a result, the average cost per vehicle-kilometer has decreased by 40% from 7.7 Euro⁶⁹ in 1991 to 4.6 Euro in 2004.

⁶⁹ Value adjusted for inflation.

Figure 25: Operating costs in Milan



Source: ATM

Farebox revenues have been following the fluctuations of the public transport demand, while in recent years alternative sources of revenues (such as parking fees⁷⁰ and advertising) have increased.

Fares

The Public Transport Reform also changed the way fare policies and prices are set:

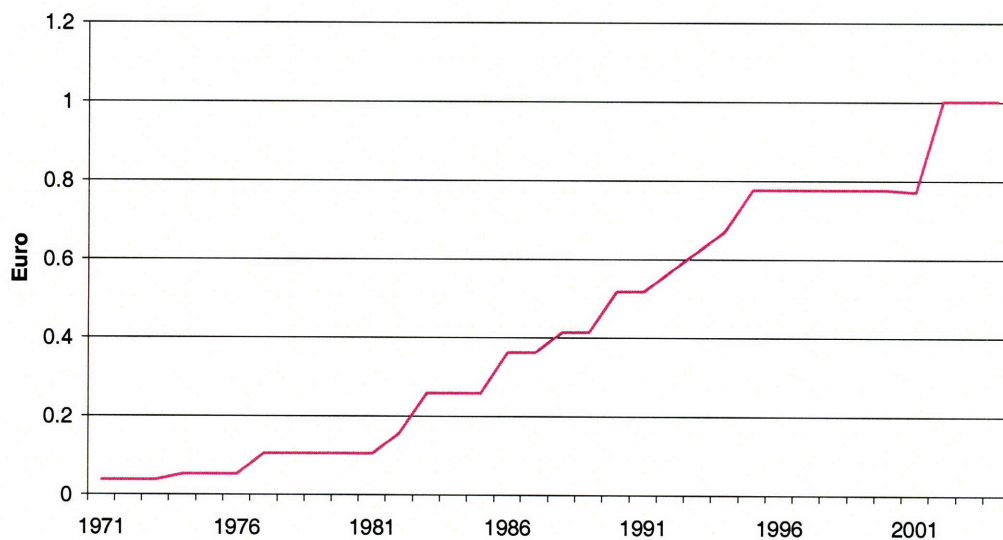
- Before legislative decree no. 422/97, the regional government (regional council) established fares for suburban services (according to a vehicle kilometer-based system) and set the boundaries within which the municipal authorities were allowed to set fares for urban services.
- According to legislative decree no. 422/97, the regional plan for the transport sector must contain general fare policy guidelines; the three-year regional public transport services plan sets prices and establishes fare integration criteria; finally the contracts between public authorities and transport companies must contain the actual fare amounts.

Each region applies its own criteria when drawing up fare policies and adjusting prices.

⁷⁰ ATM operates 17 parking structures (16,000 parking spaces) and the on-street paying parking spaces in the city center and in commercial areas (more than 23,000 spaces).

Though the systems adopted by local authorities are different, they are all based on two key elements: fare integration and a mandatory 35% fare recovery ratio. In the Milan urban area since the late 1990s, for instance, urban tickets have allowed transfers between all modes (buses, trams, metro and regional trains) within 75 minutes. This was one of the first integrated policies promoted by the Region. Since the 1995 reform, fares in the Milan area have been increased only once (in 2002). Fares are not automatically adjusted to the inflation level because the fare level is perceived as a very politically controversial subject.

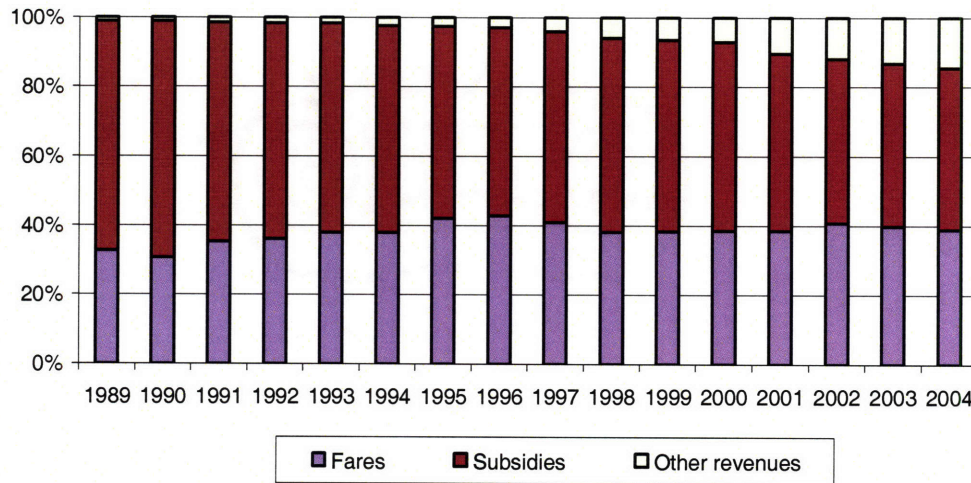
Figure 26: Evolution of a single ticket price in Milan (nominal price)



Source: ATM

Nevertheless, thanks to operating costs savings, the fare recovery ratio passed from 37% in 1994 to 40% in 2004 and, taking into account the total revenues (fares plus other revenues), the recovery ratio passed from 40% to 54% of the operational costs, as shown in the following graph:

Figure 27: Farebox recovery ratio in Milan



Source: ATM

Indirect Central Government Subsidy:

In Italy, the VAT on public transport fares is 10%, quite high compared to other European countries (6% in Sweden, 5.5% in France, 0% in UK).

4.4.5. Investments

Investments both in rolling stock and in infrastructure expansion in Italy are linked to national grants. Those grants are normally earmarked for specific projects (such as low emissions vehicles or tramways) and subsequently financed every year by the national financial law (“Finanziaria”).

The role of the region in funding urban public transport investments is limited to rolling stock, new technologies (like ticketing systems), and the renewal of existing infrastructure, especially intermodal facilities. The investments co-financed by the Region are agreed upon between the Municipalities and the Provinces in three-annual documents called “Accordi di programma”.

Rolling stock, new technologies and infrastructure renewal

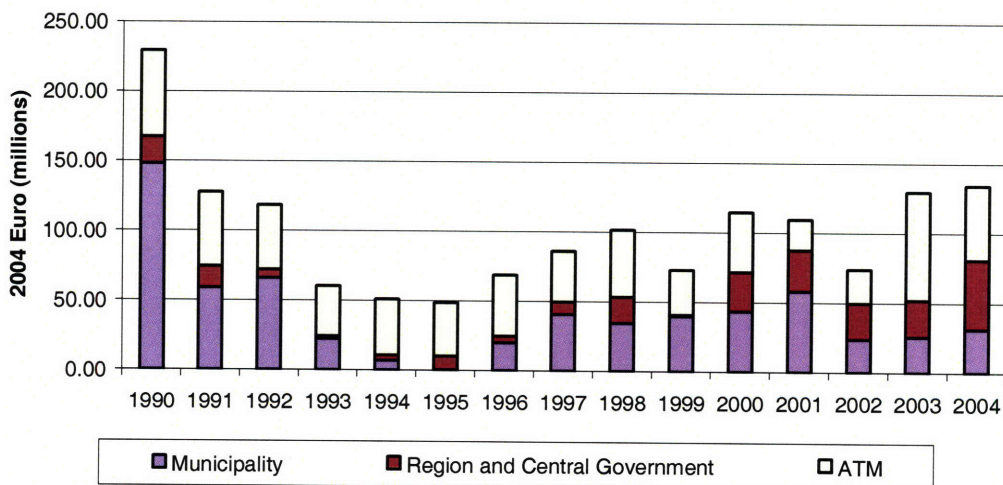
The current public compensation system for investments aimed at replacing and purchasing local public buses is based on national law no. 194/98 (aimed at replacing

local public transport buses older than 15 years and purchasing electric buses), national law no. 166/2002 (aimed at purchasing low-polluting vehicles and reducing polluting emissions) and subsequent financing laws. Law no. 194/98 establishes that on the one hand, regional governments are allowed to contract a loan or conduct other financial transactions to be able to replace the vehicles, and on the other hand the central government contributes to covering the debt service on these purchases. Law no. 166/2002 just provides earmarked subsidies.

In particular, in 2004 the Municipality of Milan and ATM signed an agreement with the Region to purchase 270 new clean buses (€ 27 million) and the construction of fuelling facilities for methane fuelled buses (€ 9,5 million), and the option of purchasing 95 more methane buses when and if the funds of the national law 166/2002 for the period 2005-2018 become available. In 2004 the Municipality of Milan and the Region signed an agreement to improve mobility in the Milan urban area in the medium term. This agreement includes € 110 million in Regional funds (of which only 10% comes from central government transfers) for the renewal of the metro rolling stock and operating equipment, 50% of the electronic ticketing system, and methane fuelling facilities.

The graph below show ATM's amount of investments in rolling stock, new technologies and infrastructure renewal over the last 15 years.

Figure 28: Investments subsidies in Milan



Source: ATM

New infrastructure

Normally, infrastructure extension has been funded by the Municipality and the central government. Up to 2001, these national grants were attributed through a sort of national tender essentially based on technical criteria. This system implied a direct negotiation between the central government and the Municipality.

In 2001, the so-called “legge obiettivo”⁷¹, a broad law aimed at financing strategic infrastructure works, changed the way urban public transport infrastructure is financed. Basically, each Region has to establish the strategic works to be realized in its territory, and an agreement is made between the region and the central government about the funds available for these projects. Moreover, the “legge obiettivo” promoted the use of public-private partnerships and required that a certain amount of funds was available at the local level before allowing the grant.

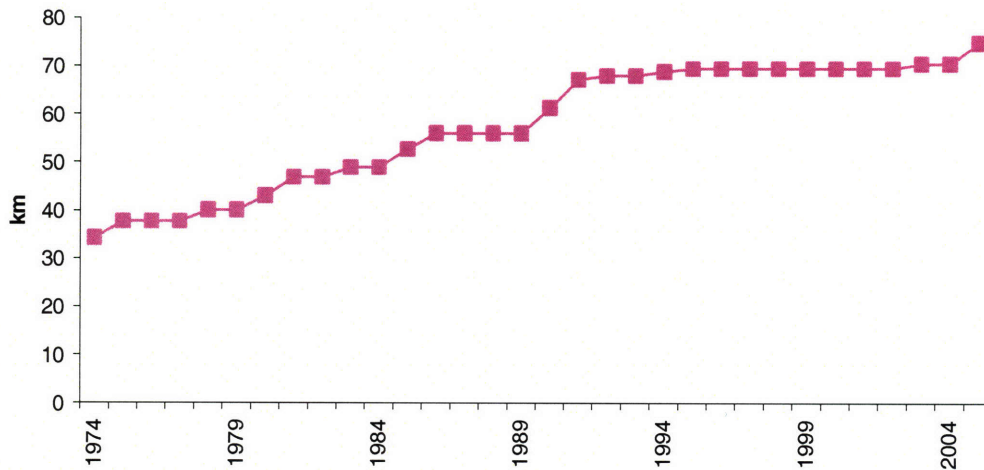
One of the major problems for the Municipalities is that bus lines, park-and-ride and rolling stock replacements are no longer eligible for central government grants in the framework of the “legge obiettivo”.

Recent extensions of the network

The following graph illustrate the development of the underground network, while table 31 gives more details about the last infrastructure investments in Milan’s urban area:

⁷¹ Delegation to the central government for the construction of strategic infrastructures and industrial developments and other interventions aimed at promoting productive activities (law 443/2001)

Figure 29: Metro network development in Milan



Source: ATM

Table 31: Extension of the transit network in Milan

Projects	Details	Costs
Line 1 : extension	December 2005: inaugurated a new station, Pero, the first inter-urban stop. This will create a debate about the cost of the ticket (urban or inter-urban tariff) Less then 3 years of works	Total cost : € 148 million for infrastructure, € 110 million for new trains (6 million given by the Region)
Line 2: extension	First phase delivered in 2005 Length: 1.4 km	Cost of the first phase: € 70 million
Passante Ferroviario (rail tunnel for the interconnection of the regional rail network)	Urban section of the Passante was started in 1984 and completed in December 2004. The long duration of the works is due to erratic availability of funds (the first part was operational in 1997). Total length: 11.5 km 6 underground stations, 1 surface station; 3 interchanges with the metro network (lines 1,2,3)	Cost of the urban section: € 900 million of which € 470 million is funded by the Region, € 430 million by the municipality
Tram lines north and south	10.35 km South 7.1 km North Opened in 2003 (3 years of works)	€ 117 million, 30% funded by the municipality, 70% financed by the region and the national fund dedicated to the creation of rapid transit systems (law n.211/92)

Source: www.comune.milano.it and www.regione.lombardia.it

Future extension projects

Table 32: Future extension of the metro network in Milan

Projects	Details	Costs
Line 5 :automatic (driverless) light metro	<p>Length: 5.6 km; 9 stations Connected with metro lines 2 and 3 and with the Passante (defined in table 31)</p> <p>Construction expected to start in 2006 and end in 2011</p> <p>PPP: the Municipality opened a call for tenders for the choice of the private partner. The tender was won by a consortium (Astaldi, Torno Internazionale, Ansaldo, Alstom and ATM) which will build and operate the line for 27 years.</p>	<p>Total cost: € 503 million of which € 311 million of public subsidies (€ 175 million from the central government) and € 193 million of private investment</p>
Line 4: metro line	Waiting for 2 years for central government approval	<p>€ 240 million from the central government € 350 million from the Municipality € 200 million from private investors</p>
Line 1 extension Sesto F.S.-Monza Bettola Molino Dorino-Rho Fiera	<p>3.3 km 2.5 km</p>	<p>Expected completion in 2007 € 185 million from the central government</p>
Line 2 –surface line: Famagosta-Assago underground : famagosta - Abbiategrasso	<p>4.7 km 1.3 km</p>	Expected completion in 2007
Line 3 Maciachini-Dergano-Affori- Comasina	3.9 km	Expected completion in 2007

Source: www.comune.milano.it and www.regione.lombardia.it

4.4.6. Debt

Besides the Municipality and the Region, ATM and MM can issue bonds.

4.4.7. Alternative funding sources

Public Private Partnerships

PPP have long been used by the Municipality of Milan for the construction of parking facilities (park-and-ride or garages), but the metro line 5 will be the first public transport infrastructure realized with the participation of private investors.

Congestion charge

A recent study by AMA demonstrated that a congestion pricing scheme in the inner center of Milan (“Cerchia dei bastioni”) should generate roughly €70 million/year (net of operating costs) with a tariff of €2 (free for residents). Despite the substantial potential revenue (equivalent to one kilometer of metro) and the high use of public transport in this very central area (72% of the trips are made by public transport), the City Council did not dare to implement this unpopular measure proposed by the transport councilor because of the possible political repercussions.

Residential Parking Permit

Another recent study conducted by AMA explored the possibility of introducing an annual residential parking fee for on-street parking in three concentric areas covering the whole municipal territory. According to AMA’s analysis, the residential parking permit system should generate roughly €82 million/year and would increase the actual public transport mode share of the central city trips from 48% to 60%. Again, there was no political consensus on this project.

Fines

In Milan, traffic fines are earmarked for improving traffic conditions. In practice, fines are used to cover the operation costs of the municipal police, the maintenance costs of the roads, and investments in soft modes (pedestrian zones and cycle paths).

4.5. Stockholm (Sweden)

4.5.1. National fiscal system

The Swedish fiscal system is based on three tiers: Central Government, Counties and Municipalities. In Sweden there are no earmarked taxes.

4.5.2. Local fiscal autonomy

Who is in charge of public transport financing?

In this case study we will focus on the County budget because the County is the only entity responsible for the provision of public transport services in the Stockholm region.

Local taxes

Both the county councils and the municipalities have their own power of taxation: they can levy a flat rate tax on personal income and they are free to set the rate. Although they cannot create new taxes, the right to levy the income tax gives them a high degree of autonomy. There is, however, an equalization system managed by the central government. It re-distributes part of the wealthiest local authorities' income between the low-income ones, in order to maintain uniform levels of local services within the country.

Stockholm is a donor county both for cost and income equalization systems. The following table shows the evolution of Stockholm County's operating revenues and expenditures in the last years.

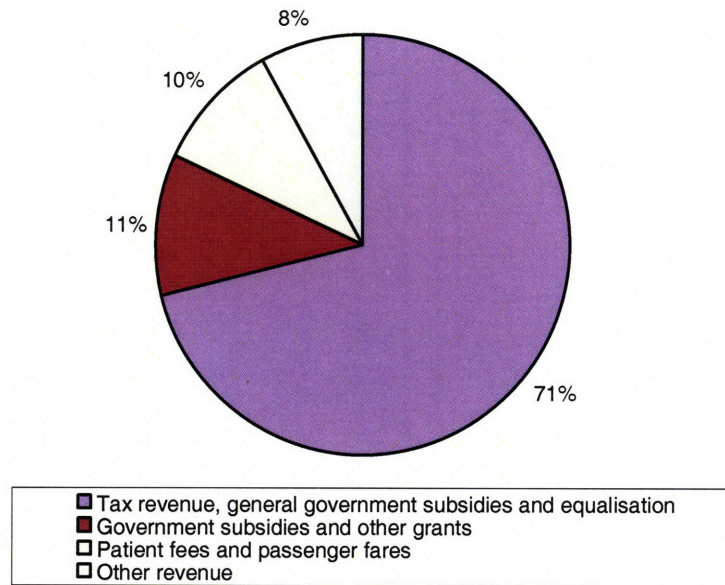
Table 33: Financial statistics for the county of Stockholm

(Million SKR)	Actual			Forecasted	
	2002	2003	2004	2005	2006
Operating revenue	43,511.0	49,448.0	52,431.0	54,924.0	56,838.0
Operating expenditure	46,383.0	49,489.0	49,826.0	52,607.0	54,450.0

Source: Standard and Poor's – County of Stockholm, 2005

In the County of Stockholm, the proceeds of the income tax accounted for 71% of the County budget in 2004, as shown in figure 30.

Figure 30: Operating revenue breakdown for the county of Stockholm



Source: Stockholm County Council Annual Report 2004

Since the last elections⁷², the rate of the County income tax has been raised twice (in 2003 and 2004) because of the increasing costs of labor intensive activities (health care and public transport) for which the County is responsible.

Table 34: Evolution of the County income tax

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Tax rate(%)	10.84	10.80	10.80	10.32	10.32	10.32	10.32	11.62	12.27	12.27	12.27

Source: Stockholm County Council

Central government grants

Prior to 1993, more than two thirds of the value of central government grants were in the form of conditional grants directed at specific local government services. The salient feature of the reforms introduced in 1993 was the reversal of the portion of conditional to unconditional grants so that approximately two thirds of central government grants became unconditional. This was done for two reasons: first, to promote greater efficiency through local autonomy to set priorities and realize the benefits of sound management; and second, to enhance the equalization aspect of the grant system.

⁷² County Councils have a 4 year mandate.

In 1996, to improve the equalization system, Sweden adopted a new equalization grant system based on three elements:

- A grant from the central government to each local authorities, based on population;
- A revenue equalization feature: local governments above the average per capita tax potential transfer funds (through the central government) to those below the average per capita tax potential (the transfer amounts to 95% of the difference and is therefore not total equalization) - these transfers were revenue neutral from the central government perspective;
- A cost equalization feature: local governments with below average 'standard' costs per capita transferred funds to those with above average 'standard' costs per capita - these transfers were again revenue neutral for the central government.

The calculation of the cost equalization feature⁷³ (in particular, the determination of these 'standard' costs) involves the computation of indices using roughly four to five variables for each index. In some instances, regression analysis is used; in others, the calculation is simply an arithmetic formula.

County councils also receive earmarked grants (often in the form of matching grants) from the central government. They can be annual or multi-annual. It is not uncommon that after a few years these grants are included in the general grants.

User fees

The County Parliament establishes the fees for health care and public transport services; therefore the County Council has full control of all the income sources. In 2004, user fees made up 10% of the total operating revenues of the County.

Borrowing

There are no central government restrictions on the borrowing of local governments in Sweden. Nevertheless, according to the current Local Government Act, local government

⁷³ For public transport, cost equalization factors are based on this indicators: density of settlement, workplace localization, sparseness of population and archipelago communities.

borrowing should be restricted to capital expenditures, and local governments must have balanced budgets over a three-year period.

According to Standard and Poor's (2005), Stockholm County's sound financial performance began to weaken considerably in the late 1990s because of increasing payments into the equalization system, increasing costs of the healthcare sector and heavy capital investments in public transport. In 2002 the County deficit after capital spending increased to more than 18% of total revenues.

4.5.3. Public transport in Stockholm

Since 1978 public transport in Sweden has been characterized by county-wide coordination under a Public Transport Authority, which is politically and financially responsible for all local and regional public transport within the county. Public transport authorities decide service levels, fare structure, how public transport should be operated (traffic operated by contractors or traffic operated under its own management), and how the operating deficit should be distributed.

The responsibility for local and regional public transport in the Stockholm region (buses, metro, light rail and regional rail since 1989) lies with the countywide Public Transport Authority, AB Storstockholms Lokaltrafik (SL). SL is a company created in 1967 and is 100% owned by the County Council. It is chaired by County Council Traffic Commissioner. The SL Board of Directors comprises 9 members and 9 deputy members, all appointed by the Stockholm County Council. Public transport⁷⁴ represents 1/5 of the annual expenditures of Stockholm County Council.

The Stockholm public transport authority is unique amongst Swedish transport authorities. In fact, Swedish public transport authorities are normally formed by County Council and Municipalities that share the responsibilities and the burden of public

⁷⁴ Mainly SL but also a company that runs special services for disable people (Fardtjansten, representing 8% of the County annual expenditure for public transport) and boat services for the islands without roads connection to the mainland (Waxholmsbolaget, representing 1% of the County annual expenditure for public transport).

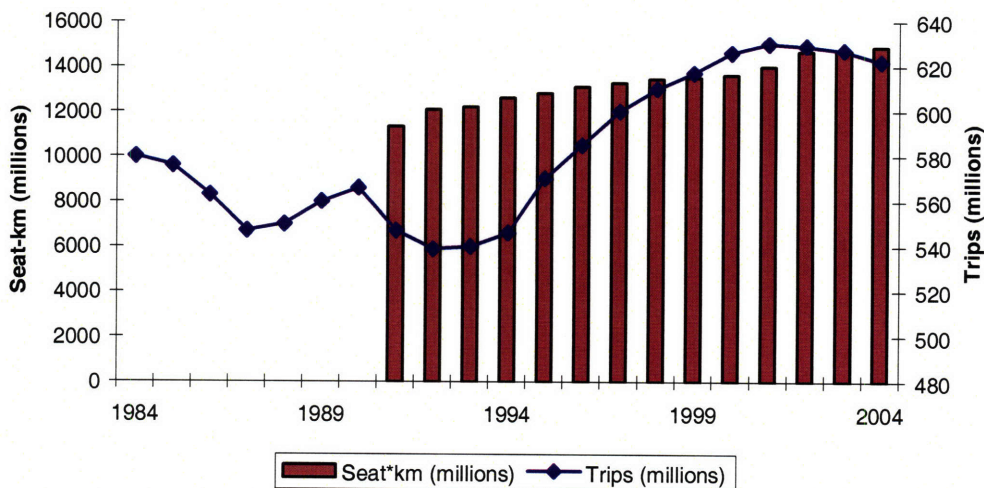
transport provision. This particularity gives SL more freedom in decision-making and more power to implement a more comprehensive transport strategy. For instance, SL applies the same price structure in the whole county to make public transport simple and attractive. For 35 years, SL has only one monthly travel card that is valid for the whole county. After May 1st 2006, there will be no "geographic zones" either for single journey ticket. On the other hand, the "SL model" lacks incentives for the municipalities to plan infrastructures and the traffic policies that favor public transport.

4.5.4. Operations

From 1991 to 1999, public transport supply in terms of seat*km has increased by 19% . In 2004, SL provided 14,855 million seat*km (a 31% increase over 1991 supply), and the modal share of the public transport, calculated as % of trips in public transport at the town entries at peak hour, was 73% (compared to 71% in 1992).

Figure 31 illustrates this trends.

Figure 31: Demand and supply of public transport in Stockholm

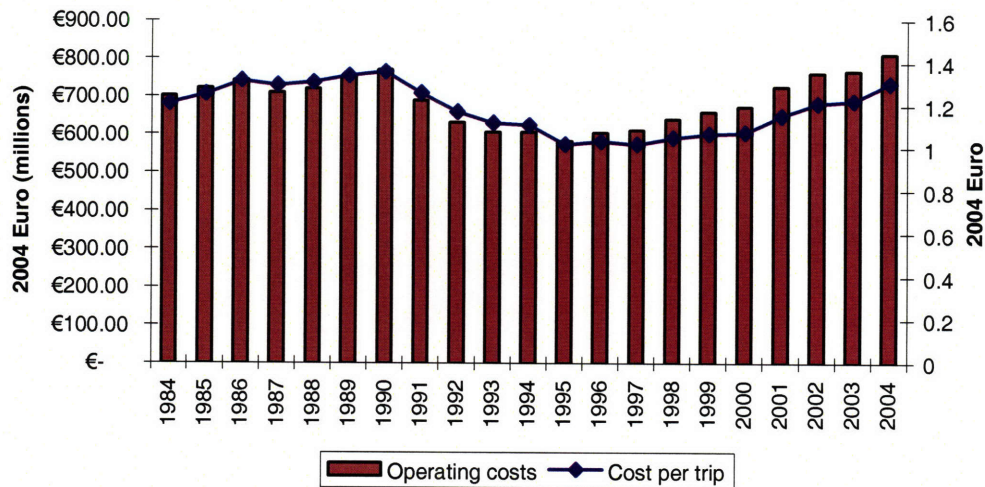


Source: SL

As we can see from the next graph, during the 1990s SL's operating costs (including maintenance) have significantly dropped (an average annual savings of €143.5 million (adjusted for inflation from 1991 to 1999)). This is due to the introduction (and subsequent extensions) of competitive tendering both for bus and rail services. SL, in fact, signs

contracts with 7 different operators. Contracts are gross cost and are generally issued for 5-year-periods (renewable for 5 more years).

Figure 32: Operating costs in Stockholm

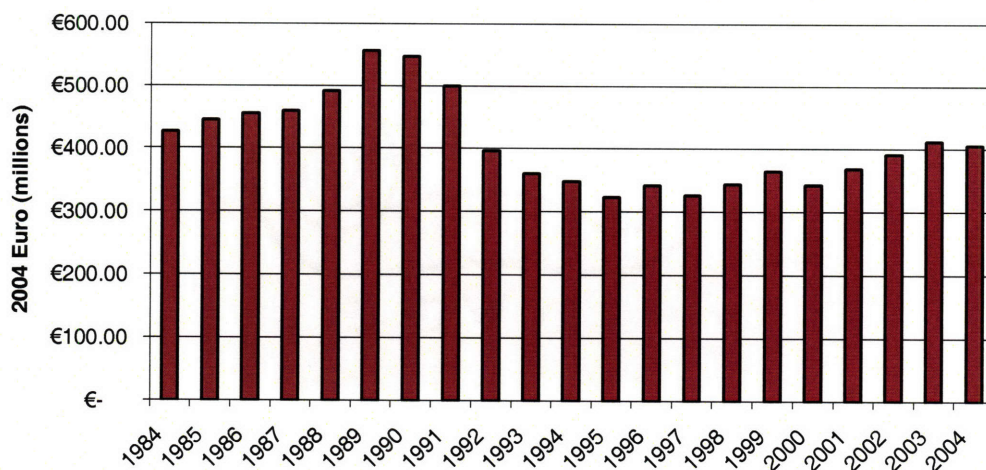


Source: SL

In Sweden the central government does not contribute towards the operational costs of local or regional public transport.⁷⁵ Therefore, SL's operating deficit is totally covered by a County subsidy that is the object of two-year budget plans.

⁷⁵ The only exception being a central government subsidy for regional trains since the attribution of the regional rail sector to the public transport authorities. In fact, the 1988 reform's rationale was to transfer a lump sum of money (the 1988 subsidy paid to the national railways with yearly index adjustments) to the local agency and then make local/regional governments choose in which way to use it. Local authorities were indeed allowed to substitute rail lines with buses, the net saving being allocated to the local authorities. The hope was it would be easier to abandon low-density lines at the local level, or at least that local government would have taken that discussion which had been in the lap of central government. The grant was supposed to be phased out after ten years but this has not happened.

Figure 33: Operating subsidies in Stockholm

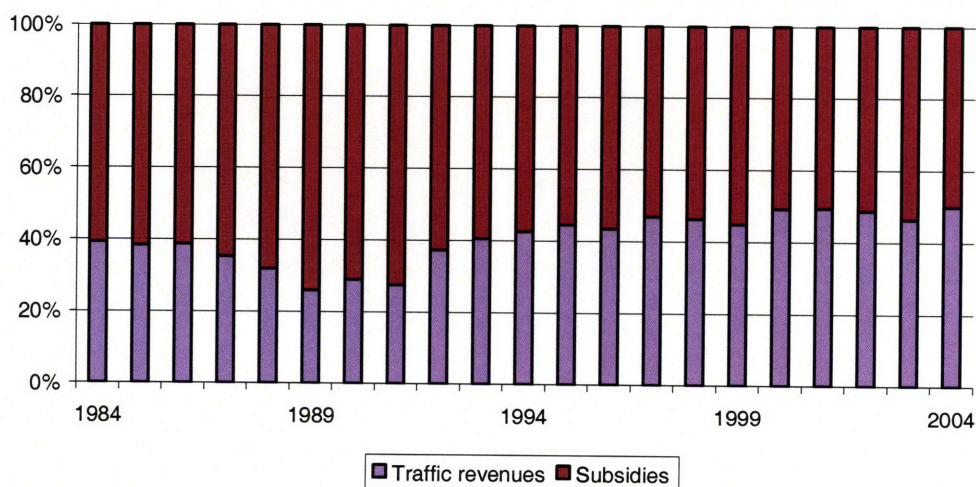


Source: SL

Fares

The County Council, as seen before, fixes fare levels according to a “soft guideline” that states that the cost of operations should be divided equally between the travelers and the taxpayers (income tax proceeds). This “rule” has been set in the last decade, since the 1993 SL Annual Report was less stringent saying that “the taxpayers should be responsible for paying no more that 60% of the operation costs incurred.”

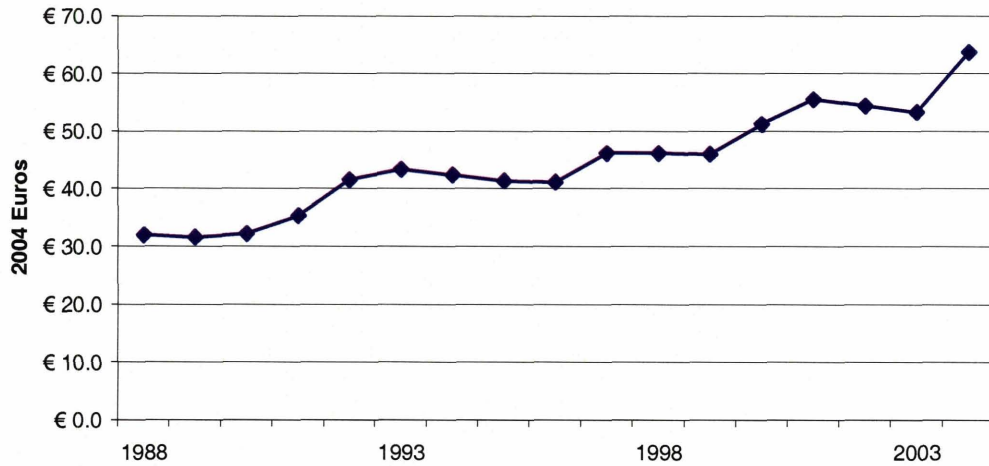
Figure 34: Farebox recovery ratio in Stockholm



Source: SL

Since 2000, fares have been increased twice, as shown in the graph below:

Figure 35: Evolution of a monthly pass in Stockholm



Source: SL

Indirect Central government subsidy:

In 1993 the VAT on public transport fares was reduced from 21% to 12%, and since 2001 it has been reduced further to 6%, increasing SL's net income.

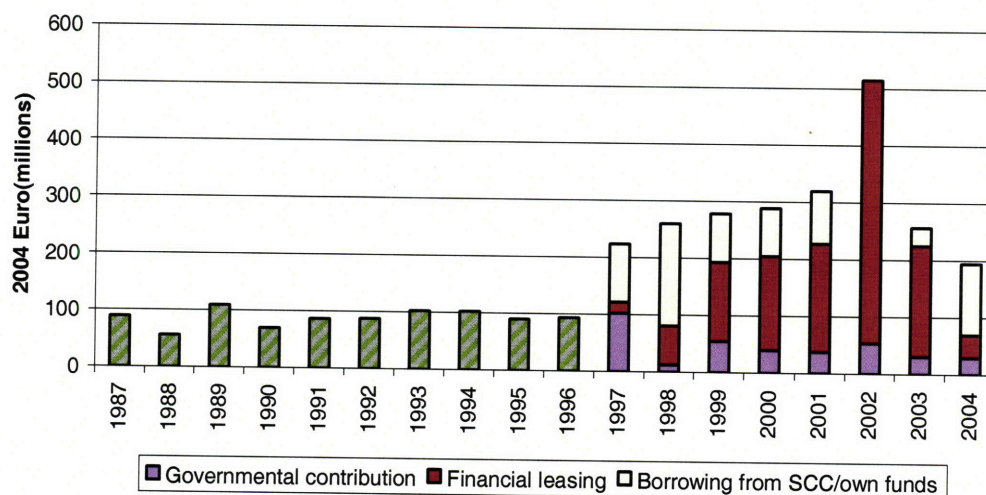
4.5.5. Investments

Capital investments are formally planned by the County through 5-year strategic plans. Investment expenses include infrastructure (tracks and stations) renewal and extension, new technologies (like smart cards or real-time information) and fixed-track vehicles purchase. Investments are partially subsidized by central government grants. Government contributions can be politically negotiated and inscribed in the County plan, part of larger long-term central-local agreements (like the Dennis Agreement⁷⁶), or granted according to nationwide plans (as in the 2004-2015 plan of Banverket, the national railroad authority).

⁷⁶ The so-called "Dennis Agreement" on infrastructure development was signed in 1991. This established a program of road (19 billion SEK – 2 billion Euro) and public transport investments (16 billions SEK- 1.7 billion Euro) for 1992-2006. The public transport grants were to be used for underground (T-bana) and suburban rail upgrading and renewal, and development of a peripheral light rail line in Stockholm. The Government unilaterally withdrew from the Dennis Agreement in 1997, nevertheless all the work on the public transit system was completed.

Since 1987, SL has invested more than €3.2 billion (30.3 billion SEK – 2004 value) in its infrastructure.

Figure 36: Investment in Stockholm



Source: SL

Since late 1990s, SL’s use of financial leasing has increased. Currently, to reduce financing costs, the procurement of all new carriages is financed through national or international leasing guaranteed by the County Council.

Recent extensions of the network

In 1991, a light rail system to link up the sections of the radial public transit system leading into downtown Stockholm, while providing rapid public transit in an area that was not well served, is included in the Dennis Agreement⁷⁷. The extension of the underground was not part of the agreement.

⁷⁷ The Dennis Agreement funds were frozen from 1995 until summer 1996 when they were reintroduced.

Table 35: Extension of the transit network in Stockholm

Projects	Details	Costs
Extension of the underground from Bargarmossen to Skarpnack.	Inaugurated in 1994 This project was not part of the Dennis Agreement.	
Gullmarsplan - Sickla Udde light rail	Works started in 1996 In 1999 a first 7-kilometre leg of light rail was inaugurated (Gullmarsplan - Liljeholmen)	Total cost: 2.3 billion SEK (244 million Euro) for the Sickla Udde-Alvik line (11.5 km, 17 stations)
	In 2000 a second 5-kilometre leg was opened (Liljeholmen - Alvik)	
	In 2002 Gullmarsplan - Sickla Udde leg was completed	

Source: SL

Future extension projects

In mid January 2004, the Swedish Government reached a political agreement on road and rail investment and maintenance. The investment scope in the 2004-2015 Rail Plan is SEK 107.7 billion, of which SEK 4.5 billion constitutes state grants for rolling stock in regional traffic. The Plan contains railway traffic investments in Stockholm. In particular, the City rail/Malartunneln (the railway tunnel under Stockholm for commuter train services) will be built during the years 2005-2011. Stockholm commuter train tunnel will be a double-track line with two underground stations, 6.5km of tunnels and 350m submerged tunnel. Construction work was expected to start in 2006 and be completed in 2011. €886 million (8.3 billion SEK) has been earmarked for the project, including some projects on the Mälars line.

The government also gave the green light for certain contributions towards the continued extension of the light rail (this is excluded from SL budget).

In March 2005 an agreement on the financing of the tunnel was reached between the Swedish Government (Banverket), the County of Stockholm, and the City of Stockholm. According to the agreement, the project was estimated to cost 7.5 billion SEK, with Banverket responsible for the building of the tunnels and the railway, and the regional

and local governments responsible for the building of the stations (75% of the costs for the regional government and 25 % for the local government). At the moment, cost estimates for the project are climbing and there are intense discussions between the Stockholm County Council and central government about who is going to pay for it. In fact, Banverket made a more detailed calculation of the costs and in a preliminary report to the government in February 2006, the budget estimate is between SEK 11,5 and 14 billion (a 80% increase). A new agreement will then be necessary between the three parties before construction can start.

Even if this particular tunnel will be used initially only by commuter trains, it will mean a lot for track capacity for all trains going through the congested "hornets nest" of downtown Stockholm (a couple of km with only two parallel tracks in the midst of Stockholm). A large proportion (nearly 75%) of all rail passenger services in the country would be at least indirectly related to this added capacity. Once built, the infrastructure will belong to the Swedish central government, through Banverket, and the train operators will pay the ordinary track fees for using it. The operating deficits of the companies will be covered by SL for regional traffic and by Banverket for national traffic.

4.5.6. Debt

SL cannot issue debt. All SL borrowing for investment projects occurs through grants from the County Council, as this organization has access to better borrowing rates.

In particular, SL (through the County) has obtained three loans for 1 billion SEK (106 million Euro) each from the European Bank of Investment. These loans approved in 2001, 2002 and 2003 have been used to finance the renewal of rolling stock.

Because SL is owned by the County and considered part of the County, SL's debt is considered public debt and part of the finances of the County as a whole.

4.5.7. Alternative funding sources

Public Private Partnerships

PPP are not common in Sweden. The only PPP in the Stockholm area is for the Arlanda airport line and has been promoted by the Central Government in 1993 as a new model for funding rail infrastructure. The Stockholm – Arlanda airport rail link is a public-private build-operate-transfer project that opened in late 1999. In return for partial private funding, the private consortium has been given control over revenue generated by railway operations for a 45 year period, with an option for a 10-year extension. After that, the infrastructure is to be handed over to the central government. The government can terminate the contract in 2010 if certain objectives concerning traffic volumes have not been achieved. Substantial losses of allocative efficiency, due to the number of passengers that is far below expectations, have undermined the viability of the project.

Congestion Charging

Stockholm congestion tax is a traffic congestion and environmental tax that will be imposed on most vehicles in Stockholm, for a trial period between January 3, 2006 and July 31, 2006. There will be a referendum in September 2006 for the residents of Stockholm municipality to decide whether to implement it permanently or not. The primary objectives of the trials are to reduce congestion, increase accessibility and improve the environment. All costs of the congestion charging program (including technical system and administration, extended public transport, the evaluation program, new park and ride facilities etc.) have been paid by the national government. The budget for the trial period is SEK 3.8 billion (€400 million).

Public transport has been extended with 197 new articulated buses and 16 new bus lines. Where possible, existing bus, underground and commuter train lines have been reinforced with additional departures. In addition, SL has postponed the retirement of old underground carriages in case underground services are to be increased.

The amount of the congestion charge depends on what time of the day one enters or exits the congestion tax area (24 km²) and varies from 10 to 20 SEK (€1-2) with a upper limit

of SEK 60/day. The tax is not in effect on Saturdays, Sundays, public holidays or the day before public holidays, nor during nights (18:30 – 06:29). The congestion charge is a central government tax because a municipality can only tax its inhabitants and "municipality fees" are allowed only as a payment for a service. In this case, there was not a real service as the roads already exist (parking fees are an exception because they were set in the 1960s when the law was different). Although Sweden does not have earmarked taxes, a special political agreement has been made that the revenues from this tax, minus the sum/depreciation for the first year for the investments, go back to the region to fund additional public transport.

The test period for the congestion charges is only 7 months, so the sum of tax proceeds will most likely be a lot smaller than the sum that public transport has already received for the extended public transport during the trial (about 1 billion SEK). The extended public transport services run 22 August 2005 - 31 December 2006 (i.e., much longer than the congestion charge trial). The assessment after the first two months of congestion charging shows that the number of cars entering the charging cordon during the month of January has fallen by around 25% (compared to an average autumn weekday in 2005).

The number of public transport trips over the charging cordon has increased by 65,000 per day compared to January 2005 (an increase of 8%⁷⁸). Buses and commuter trains have seen the biggest relative increases (11% and 16% respectively compared to January 2005). The revenues from the congestion tax have been 49 million SEK (€5.2 million) in January and 57 million SEK (€6.1 million) in February 2006.

⁷⁸ This increase is not just as a result of congestion charging, but also of background factors like fuel price changes and general economic trends. Public transport use has increased since last year in general: the number of journeys over the charging cordon increased by 15-20,000 (about 2%) between autumn 2004 and autumn 2005. Moreover ridership in January 2005 was unusually low, according to SL.

Chapter 5: Analysis

5.1. The impact of fiscal decentralization on urban public transport

5.1.1. “Decentralizability” of urban public transport

A key element that we can notice in the case studies is that urban public transport is one of the first services to be decentralized (compared to health care, education or environment⁷⁹) and to be financed through sources of revenue tied with the local economic situation. Indeed, the French *versement transport* has been created in 1971 and links public transport provision to the accessibility of the business activities; in Sweden local income taxes are the sole source for financing public transport operations and in Italy the decentralization reform, started in the mid-1990s, tied public transport financing to a part of the petrol excise duty raised in each region.

5.1.2. Low willingness to tax

The increased fiscal autonomy in all the examined subnational governments has strengthened the accountability of the local policy-makers rendering it politically more difficult to raise taxes. Our case studies, in fact, indicate that after fiscal decentralization municipal or regional authorities tend to keep constant the fiscal burden, unless there are budget deficits.

Milan, in fact, has not introduced the personal income tax surcharge (allowed in 1999) and has tried to generate savings by outsourcing municipal services or cutting bus services (in the late 1990s⁸⁰) to limit operating costs.

None of the Spanish regions has increased the personal income tax rate. The small increase in Catalonia's and Madrid's fuel tax (the only tax increase of our Spanish sample) has been used to offset the increased costs of the health care sector and,

⁷⁹ Utilities (water, electricity, waste collection) are also decentralized but they have been generally privatized and they normally do not require public subventions.

according to a credit analyst that we interviewed, the revenues derived have been minimal and used to force the central government to increase the level of transfers by showing a local taxing effort. Neither the municipality of Madrid nor the municipality of Barcelona have increased their tax rates.

In the Swedish case, the increased rate of the local tax has not been translated into a corresponding increase of the public transport operating subvention. On the contrary, the public transport fares have been increasing significantly.

The Paris case also seems to refute the hypothesis that the willingness to pay increases when the service is decentralized. In fact, the traditionally more centralized metropolitan area (Paris) has the higher rate of the versement transport (2.6% vs 1,8% ceiling in all other cities French cities) plus 50% of the transport pass paid by employers. All these levies have been created by the central government. Finally, Ile-de-France increased its taxes (which were substantially lower compared to its national peers) because of the fear that the national government decentralization reform will fail to cover the costs of the devolved responsibilities.

In general, the budget of the subnational governments analyzed, has been increasing because of the dynamic growth of the wealthy areas we took into account. The analyzed metropolitan areas, in synthesis, do not show an increased willingness to tax aimed at improving the level of services, in particular there is no evidence of willingness to increase tax rates to support operation subsidies for public transport. On the contrary, we can see that local user fees have been increasing in all the cities of the sample. The level of government also matters. Regions seem less reluctant to moderately increase the tax rate, although health care operation costs seem to be the spur which stimulated action.

⁸⁰ Since then, however, the vehicle*km have been steadily increasing.

5.1.3. Increased investments in public transport infrastructure

A 1995 study by the World Bank⁸¹ on a sample of twenty countries (industrial and developing) concluded that “*Decentralization tends to increase both total and subnational spending on infrastructure – possibly because the preferences of subnational governments in terms of quality and quantity of infrastructure are different from the central government's preferences*”⁸². The study analyzed different types of infrastructure spending (not only transport) but it underlines the same trend we found in our sample: increased spending in transit assets.

Public transport infrastructures, in fact, are extremely visible and local policy-makers, as confirmed by the interviews, make public transport investments a key point of their electoral campaigns. Moreover, thanks to new technologies, management techniques and the incremental approach (i.e. extensions of existing infrastructures), they are able to match the realization of the new infrastructures with their electoral time horizon. Fiscal decentralization, in fact, improves local governments' revenues flexibility and increases their access to the capital market.

Another indicator of this trend is the increasing recourse to the European Bank of Investment for financing local public transport infrastructure and rolling-stock. Local politicians, thus, are more likely to act like entrepreneurs and lend capital for long-life assets seeing debt as the more appropriate tool for financing this kind of investments. On one hand, we can say that the incentive to invest is higher when the tax revenues fall locally. Moreover local policy-makers, contrarily to the central government, have more room for reducing the risk associated with these large investments because they control other local policies such as land use. On the other hand, the idea of spreading the burden on the future generation (and especially on the future administrations!) is very appealing for a politician whose term is limited to four to six years. There is thus a substantial risk

⁸¹ “Does decentralization increase spending on public infrastructure?” by Estache and Sinha, 1994

⁸² The World Bank study, in fact, did not analyze the causes of the increased expenditure levels (i.e. increased inefficiency or just increased willingness to invest in infrastructures) nevertheless in our research nothing induces us to think that local governments are less efficient than central governments in delivering

that the increasing costs (especially those linked to the operations of the new infrastructures) of the transit system are not taken into account when capital programs get approved.

5.1.4. Participation of the private sector

We noticed both in Spain and in Italy an increasing number of public-private partnerships, but this was a consequence of the National Stability Pacts that reduce the possibility of taking on debt without breaking the Maastricht rules. The debt is therefore born by the private sector, although financially this is not convenient for local governments that could have access to better loans. To increase their capital spending without formally increasing public debt, in France, Spain and Italy local governments also make use of publicly owned private enterprises.

5.1.5. Central government funding remains essential

Local fiscal autonomy does not mean complete self-sufficiency, especially for big infrastructure projects. In all the case studies the subsidy of the central government was a critical element for the viability of big infrastructure projects: 1/3 of the costs of the Barcelona network extensions, around 35% of the capital investments of last Contrat de Plan in Paris, roughly 50% of the costs of the last network extension in Milan. In all countries central government contributes also (directly or indirectly, like in the case of Paris) to the renewal of the rolling stock.

Nevertheless, we have to notice that an increased revenue flexibility gives to the local governments a better way to react to contingencies. One emblematic fact is that Stockholm was able to pursue, although not easily, the ongoing projects when the Central Government unilaterally withdraw from the financial agreement. The same can be said for the French cities outside Ile-de-France which, since the announcement that the central government would cease providing subsidies to finance urban public transport infrastructure in 2003, have been able to go ahead with their projects.

public transport infrastructure (especially given the shorter realization time of the projects and the importance of the local expertise in managing and closely following the works).

5.1.6. Stability of funding

A common theme in the case studies is the graduated reform of financing local public services. From negotiated intergovernmental grants to shared national taxes to an increased leeway on local taxes. This has resulted in a more predictable source of revenues for the local governments and a way for the funds to keep pace with inflation.

Nevertheless, according to the experience of the cities we studied, the stability of funding is in big part a function of earmarked taxes rather than local taxation. The versement transport is an example. At the same way, according to our data, the cost reduction in Stockholm during the 1990s was not totally translated into public transport investments.

5.1.7. Efficiency

There was no clear evidence in the case studies that fiscal decentralization actually increases efficiency in public spending.

First of all, according to the interviewees, the devolution reform did not have significant impacts on the level of interaction between public transport and other policies. Although the subnational is the only appropriate scale for this integration, an increased fiscal autonomy does not seem to be an adequate stimulus.

Second, we noticed a reduction in public transport operation costs when local authorities are given more tools : in Sweden in was the contracting out and tendering; in Italy it was more the fear of the market competition; in Ile-de-France the contractualization in 2000 made the transport companies more accountable for the quality of the service they provide. All those reforms were pushed by the central governments and it was more the decentralization of power, the pressures of the central government and the budget constraint imposed on the local authorities that influenced the costs rather than the local fiscal autonomy. In fact, the French case shows high operating costs (therefore no efficiency) even though versement transport is a local tax. The accountability link between the business activities and the transit agency is weak.

Finally, the increased ridership is linked to the improved quality of the service (in terms of supply or network integration) and the increasing level of congestion in the cities and not to a strong anti-car policy pushed by the policy makers (the modal share, in fact is stable).

5.2. “Decentralizability” of taxes

The case studies also allow us to point out what are the taxes that the central governments have been willing to devolve to local and regional government and evaluate them. In particular, we can assess to what extent local and regional governments have been willing to use their increased fiscal autonomy and whether they have earmarked any source of revenue to public transport funding.

5.2.1. Property tax

Except for Sweden, where property taxes are levied by the central government, in the other case studies property tax represents the most important municipal source of revenue. Properly speaking, these taxes are not part of the decentralization schemes because they have been attributed to the subnational governments well before the decentralization reforms.

Property taxes, in fact, are particularly well suited for financing local governments because they are based on immobile goods (land and buildings) thus easy to enforce and not too expensive to administer. Moreover, they represent a fairly stable source of revenues as they are not fluctuating as much as the economy. Nevertheless, property taxes are largely unpopular with taxpayers for a lot of reasons. First of all they tend to be mildly regressive. In fact, in many cases (for instance in the case of pensioners) they are not proportional to the household’s income. Second, they are very visible since they are paid once per year in lump sums.

Finally, in the majority of the cases they are not earmarked for specific services therefore there is no direct link between the tax and the benefit and their rate can appear arbitrary.

All these reasons, and the fact that property owners are voters that are likely to stay in the jurisdiction thus are influential constituencies, can explain why in the case studies we analyzed, there are no examples of increased rates of the property tax. On the contrary, however, the proceeds from property tax have been growing because of the increased base (more real estate developments) and the increased value of the estate in the sample cities.

Concerning the use of property taxes to finance public transport, the main rationale is that improved accessibility increases the value of a property. In the cases analyzed, this increased value is partially captured through capital gain taxes, transfer tax on real estate or the re-assessment of cadastral values, nevertheless there isn't a systematic taxation of the gain that private owners (or developers) receive from a public investment.

5.2.2. Income tax

Income taxes are normally administered by the national government but both in Spain and in Italy the devolution process has led to a subnational income taxation: regional and municipal surcharge on income tax for Italy and shared income tax with leeway on the base and the rate for Spanish Regions. It seems therefore that the decentralizability of this kind of tax is related to the implementation of a piggyback system that lowers the implementation and enforcement costs.

The potential yield of income taxes is conspicuous, moreover they keep pace with inflation therefore they are a good candidate for funding local services that are highly labor intensive. Furthermore, local income tax implementation can be a tool to make non residents pay for the service provided in their workplace area.

Finally, income taxes are normally perceived as equitable (both horizontally and vertically). Nevertheless, although income taxes can be (and normally are) designed to be progressive, none of the Spanish regions has modified its personal income taxes rates (the only adjustment have been deductions) and, in the case of Milan, the municipal surtax on

income has not been applied. Our observations therefore suggest that the political cost of such a tax is high and local government tend to avoid it.

5.2.3. Business tax

Both in Italy and in France, subnational government can levy business taxes whose yield makes a substantial part of their total budget. In the Spanish case the central government recently decided to reduce the base of the municipal business tax but among the few discretionary regional taxes (i.e. taxes that the Regions can create) we can find a tax related to commercial activities.

Business taxes have the advantage of being quite easy to collect and, more important from the political point of view, they are not directly imposed on the citizen-voters but on activities.

In the Italian case the regional business tax was initially earmarked for health care expenditures. This created strong criticisms because of the weak benefit link between enterprises that had to pay for a service that is enjoyed by individuals. In the French case of the “Versement Transport”, on the contrary, the tax is earmarked for public transport and this makes clearer the benefit link: business pay for an increased accessibility of their location, although nowadays, except for Ile-de-France, the bulk of the commuting trips is made by private car. In both cases, the levy is applied on a large area (the metropolitan area or the region) in order to avoid distortionary effects like relocation of activity to peripheral areas.

Finally, business taxes can be modulated in order to promote specific activities that are tied with the local development plans. They represent, indeed, a local tool for economic development and recent studies (Fitch Ratings, 2004) tend to demonstrate that local tax are a secondary element (behind accessibility to customers/suppliers or quality of the transport and IT infrastructure) in the choice of location of firms.

5.2.4. Value Added Tax (VAT)

VAT is a highly regressive tax because it hits in the same way high and low income families. Nevertheless, its political acceptability is quite high because the tax is hidden in the price of products and it is not paid on a single lump sum but at every transaction. Moreover, thanks to their extremely large base, VAT can have a small rate (or a small increase) and raise a significant amount of money.

On the other hand, VAT proceeds are adjusted for inflation but highly dependent on the economic conditions. Population (or at least city-users) is increasing in these large cities so the yield increases without increasing the rate. The fact that the tax is paid by non-residents makes it particularly appealing, especially when the increasing number of city-users causes significant increases in the costs of locally provided services. However, there is no strong link between VAT and the financing of public transport.

5.2.5. Transport related taxes

There are two different categories of private transport – related taxes: those on vehicle ownership (mainly registration and property) and those on vehicle use (essentially fuel taxes and insurance).

The collection of both categories can be fairly easily realized at the subnational level because there are other accounting systems already in place (insurance policies, registers of vehicle ownership, oil companies accounts of regional sales).

If we have to evaluate the neutrality of these taxes⁸³, according to the Ramsey rule (tax more heavily goods that are more price inelastic in order to limit the distortionary effect) transport related taxes are extremely good candidates (Prud'homme, 2004). On the other hand, for the same reasons, they tend to be highly regressive.

A second benefit of these taxes is that they can fit the polluter payer principle and they are thus perceived as a user fee more than a tax. In addition, the fuel tax is a hidden tax: it

is difficult for the driver to separate the part of the tax from the price of the fuel. In fact, the Catalan government used its increased taxing power obtained through the 2002 fiscal reform to levy a surcharge on hydrocarbon retail sales to cover the huge increase in health expenditures. The Region of Madrid did the same.

Finally, fuel efficiency of vehicles has been improved, the price of oil has increased and alternative fuels have become an effective option for car users. The proceeds from fuel taxes can thus fluctuate over time. Moreover, in the Italian case, as the Regional share of the fuel excise is levied as Euro cents per liter sold (instead of a percentage of the fuel price), the yield has not kept pace with inflation creating a substantial mismatch between the cost of operations and the earmarked revenues for public transport.

Car ownership tax proceeds, on the contrary, are more likely to be stable (although linked to the cyclicity of the market) but the motorization rate tends to grow less fast than the rate of inflation (Goldman et.al, 2001).

5.2.6. Synthesis of the tax assessment

Table 36: Rating the taxes

	Equity	Stability	Adequacy	Feasibility	Political Acceptability	Link with Transit
Property	Low	High	High	High	Low	High
Income	High	Medium	Medium	Low (if not piggybacked)	Low	Low
Business	High	Medium	High	Medium	High	Medium
VAT	Low	Low	High	Medium	High	Low
Fuel	Low	Medium	High	High	Medium	High
Vehicle	Medium	High	High	High	High	High

Source: Adapted from Goldman et.al (2001)

⁸³ A tax is neutral when its effect on the allocation of goods and on the excess burden are limited.

Chapter 6: Recommendations for Transport for London

6.1. The Situation in London

The Greater London Authority (GLA) administers London metropolitan area. It was created in 1999 in order to better coordinate the policies of the city of London and the 32 London boroughs. GLA is guided by the Mayor of London who proposes its policy and its annual budget. GLA has four functional bodies corresponding to its main functions: Transport for London, the London Development Agency, the Metropolitan Police Authority and the London Fire and Emergency Planning Authority.

6.1.1. National fiscal system

United Kingdom has a very centralized fiscal system: the central government, indeed, collects nearly 96% of the total revenues raised by UK taxation.

6.1.2. Local fiscal autonomy

While giving a broader picture of the degree of autonomy of the British cities, this section will focus on the sources of revenues of the GLA, which are synthesized in the following table:

Table 37: GLA budget

(Million GBP)	2004/05	2005/06	2006/07
Specific grants	2,777.3	2,782.4	3,241
Fares, charges and other	2,827.7	3,234.8	3,367
Reserves	377.7	93.3	96
Grants	2,126.8	2,242.4	2,108
Collection fund	3.3	2.8	-
Council tax income	683.7	727.4	832
Gross expenditure	8,796.5	9,083.1	9,644

Source: GLA

Basically, given the annual amount of the several grants, the Mayor only has two degrees of freedom to meet the needs (gross expenditure): modifying the fares and the Council Tax rates.

Local taxes

Local authorities in UK are not allowed to discretionarily introduce new taxes. Local taxation is based on the Council Tax, a property tax on residential properties. Domestic residences are banded according to an assessment of their market value; individual local authorities then determine the overall level of council tax, while the ratio between rates for different bands is set by central government (and has not changed since council tax was introduced in 1993). The Greater London Authority collects a council tax precept (surcharge on the boroughs' council tax) which makes up roughly 8% of its annual gross expenditure. Part of precept has been earmarked by the Mayor to transport policing.

Non-residential property is also taxed, but in 1990 the Business Rates (property tax on business) were transferred from local to national control. A uniform tax rate was applied nationwide and the yield was redistributed to local authorities in direct proportion to their population. There was therefore low incentive for local authorities to promote business development in their areas because they had to bear the cost of the services needed by the development without gaining the increased tax revenues of it. In the last years, thus, local authorities pushed to recreate the link between business and local governments. The Central Government replied in 2005 creating the Local Authority Business Growth Incentive, a device that allows local authorities to receive a proportion of increases in local business rate revenues (70p for every Pound of increase) and is not earmarked. This additional local revenue is extremely variable and partially controlled by the Central Government through a system of ceilings and floors (Marshall and Finch, 2006).

Finally, another local source of revenues is the Section 106 Agreements (S106), a sort of value capture tool. S106, in fact, allows local governments to require developers to fund environmental and local improvements (transport infrastructure, affordable housing, etc.) in exchange for planning permission.

Central government grants

As local taxes make up on average only 24% of the British local authorities budgets (Travers, 2005), central government grants are the most important source of revenue for

subnational governments. Part of these grants are earmarked but the majority of the funding coming from the central government take the form of a formula-based bloc grant (the Revenue Support Grant). For the GLA, on the contrary, the earmarked grants (GBP 3,241 million in 2006-07 budget) are more than the general grants (GBP 2,108 million).

User fees

User charges represent a significant share of UK subnational governments' revenues. According to Travers and Esposito (2004) user fees accounted for 12% of gross local authority income in 2001/2.

In addition, the Local Government Act 2003 allowed local authorities to trade for profit in activities related to their core functions (although this new power is restricted by the Secretary of State) and to use any surpluses generated as they see fit (Marshall and Finch, 2006). Of course, the power of trading cannot be used in anything which an authority is statutory obliged to do in relation to a person.

Borrowing

Local borrowing counts as part of the national debt and Central Government control is very strict. In particular, before 2004 local authorities in UK were not allowed to use local public borrowing. Recently, the Local Government Act 2003 introduced a Prudential Borrowing framework for local authorities. This system is essentially based on self-regulation (i.e. subnational government don't have to ask for central government's approval) although Central Government set a certain number of conditions and criteria to respect.

As soon as this fiscal tool was available, the GLA began to use it for boosting its capital investments particularly in transport, as shown by the borrowing program illustrated in the above table.

Table 38: Borrowing required for funding GLA capital programs

(Million GBP)	2005/06	2006/07	2007/08	2008/09	2009/10
Metropolitan Police Authority	70.5	41.3	34.0	34.0	34.0
London Fire and Emergency Planning Authority	12.2	15.4	21.0	12.7	14.3
Greater London Authority	-	-	-	-	-
TfL	550.0	550.0	550.0	700.0	550.0
London Development Agency	-	-	-	-	-
Total	632.7	606.7	605.0	746.7	598.3

Source: GLA's Budget 2005-2006

6.1.3. Public transport in London

Transport for London (TfL) is the functional body of the GLA with responsibilities for London's Underground⁸⁴, light rail, buses, major roads, bridges, river services, taxi and minicab regulation. It was created in 2000 and it replaced the London Transport, a central government transport agency.

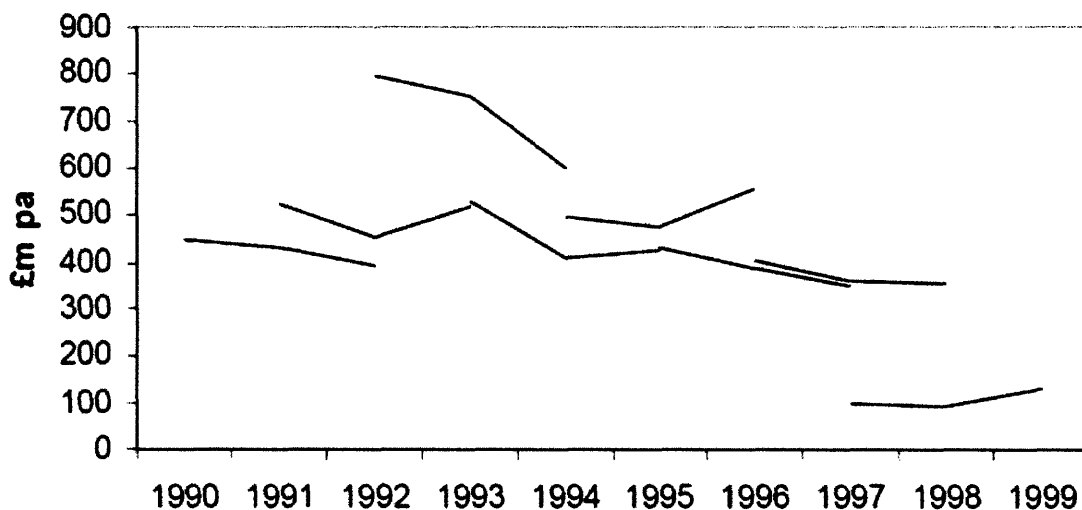
TfL is a local authority and therefore is subject to the general legislation affecting such institutions. TfL directly operates the Underground (976 million trips/year) while the light rail services (72 million trips/year) are operated under a Private Finance Initiative. Bus services (1793 million trips/year) are all operated by private companies under a concession regime regulated by five-year contracts between each bus operator and TfL. The most relevant transport plans for the London area are:

- the Mayor's transport strategy, published in 2001, which translated and integrated the government's Ten-Year Transport Plan (2000) at the local level
- TfL's Five-Year Business Plan (currently 2006–2010), a short-medium term planning document for operations
- the Five-Year Investment Programme for capital investments.
- the five-year plans are the result of an extraordinary five-year agreement with the Central Government.

⁸⁴ London Underground (LUL) was assigned to TfL only on 2003, after a controversial dispute on the PPP contract for its maintenance and refurbishing signed by the Central Government.

TfL, in fact, is mostly funded by the GLA transport grant, a block grant issued by the national Department for Transport (DfT). The transport grant covers both operating and investment expenditures and is earmarked for TfL, therefore the GLA cannot use it for other functions. The grant was normally negotiated every two years (with estimates of the funds likely to be granted in the third year) within the national Spending Review procedure but in 2004 London and the Department for Transport settled an agreement that secures the amount of the grant (GBP 14.5 billion) within a five year period⁸⁵. This agreement increased the stability of funding for TfL allowing a better medium-term planning. During the 1990s, on the contrary, central government's funding has been very variable as shown in the graph below⁸⁶. Each three-point line represents the announced grants for a three year period:

Figure 37: London Transport external finance settlements⁸⁷



Source: Glaister (2004)

In 2004/2005, GLA transport grant (GBP 2.133 billion) represented 45% of TfL total revenues while local taxed (i.e. GLA council tax precept) less than 1% of the total revenues (see figure 38). Other sources on revenues for TfL are fares (41% of total revenues in 2004-2005), congestion charging (4%), capital revenue (5%) and different

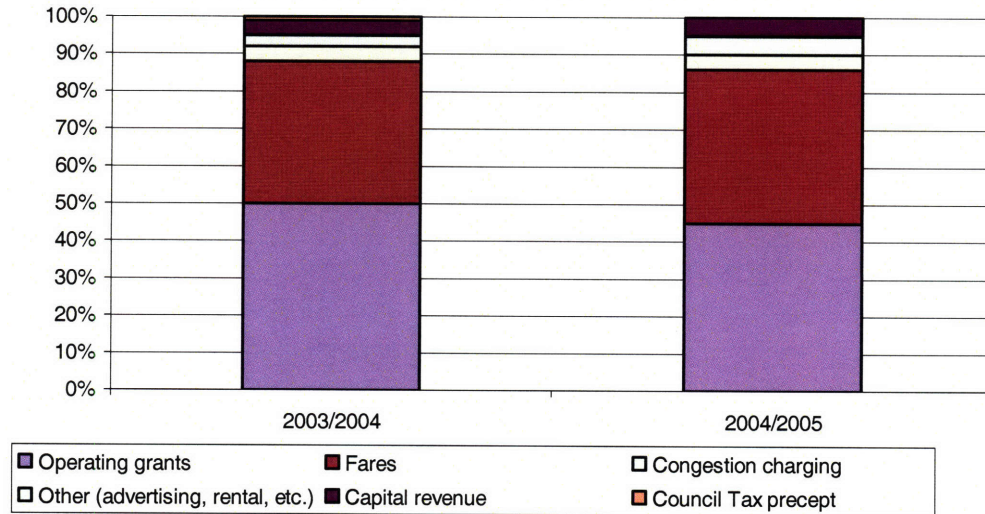
⁸⁵ The agreement is not formally binding for the central government nevertheless it is public and unlikely to be cancelled.

⁸⁶ Under the 1990s funding system, the grant was announced every year with an estimate of the funds available for the following two years.

⁸⁷ Core business at 1994 prices and each three-point line represents the announced grants

activities like advertising or renting (the remaining 4%). By statute TfL has to present a balanced budget.

Figure 38: Operating revenue breakdown for TfL



Source: TfL

6.1.4. Operations

The evolution of the operating expenditures of Transport for London since its creation and its operating revenues broken down into the different sources (local and national subsidies and fares) are synthesized in table 39. This table also contains the evolution of the annual capital spending of the transit agency:

Table 39: Financial statistics for TfL

	Actual					Forecasted
	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
(Million GBP)						
Taxes	7.4	10.1	35.8	57.8	25.8	20.0
Transfers received	573.5	1,177.1	1,771.4	2,559.6	2,133.5	2,168.0
Other (Fares, fines, etc.)	1,703.6	1,181.1	1,963.5	2,320.8	2,554.5	2,727.0
Operating revenue	2,284.5	2,368.3	3,770.7	4,938.2	4,713.8	4,915.0
Operating expenditure	-1,832.2	-2,400.5	3,124.9	-3,708.0	-3,575.4	-3,488.0
Capital revenue	154.5	100.1	159.3	180.5	252.8	185.0
Capital expenditure	-606.4	-650.9	-804.3	-849.9	-1,157.4	-2,192.0
Capital Projects (PFI-PPP)				-475.6	-712.1	-1420.0
Capital Balance	-451.9	-550.8	-645.0	-669.4	-904.6	-2,007.0

Source: Fitch Ratings – TfL, 2006

Table 40 describes the forecasted revenues based on the five-year funding agreement and the planned increased in the fare level:

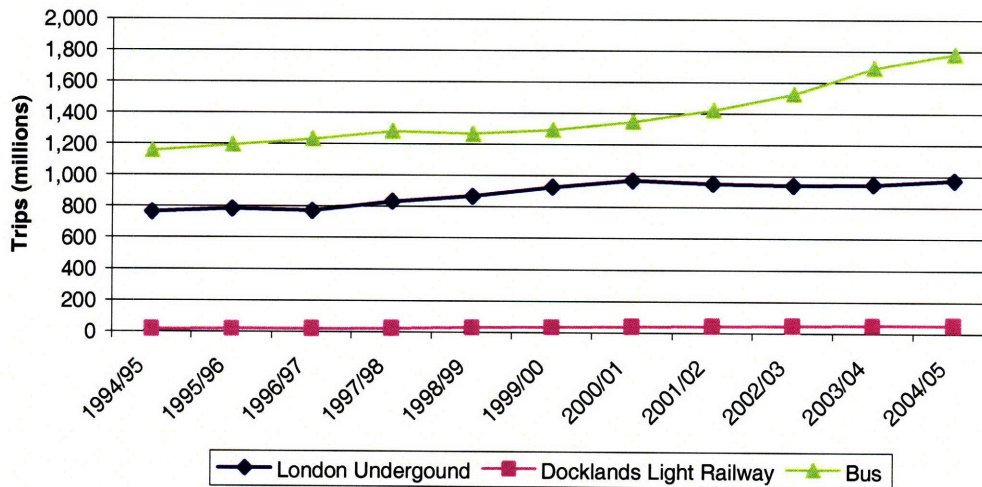
Table 40: Forecasts of financial statistics for TfL

(Million GBP)	Budget	Plan		
	2006/07	2007/08	2008/09	2009/10
Taxes	12.0	22.0	23.0	25.0
Transfers received	2,383.0	2,549.0	2,665.0	2,709.0
Other (Fares, fines, etc.)	2,956.0	3,194.0	3,361.0	3,506.0
Operating revenue	5,351.0	5,765.0	6,049.0	6,240.0
Operating expenditure	-3,821.0	-4,054.0	-4,248.0	-4,504.0
Capital revenue	236.0	194.0	132.0	123.0
Capital expenditure	-766.0	-1,149.0	-1,332.0	-1,034.0
Capital Projects (PFI-PPP)	-1,609.0	-1,332.0	-1,294.0	-1,368.0
Capital Balance	-2,139.0	-2,287.0	-2,494.0	-2,279.0

Source: Fitch Ratings – TfL, 2006

The following graph describes the evolution of the ridership in London:

Figure 39: Demand of public transport in London



Source: Department for Transport

The Underground trips are essentially stable since 2000. This is due to the fact that the Tube operates at capacity therefore there is no room for increase in underground ridership. Bus ridership, on the contrary, has been increasing in the past ten years and especially after the creation of TfL. Bus services, indeed, have been improving thanks to important investments in the fleet, increased supply and increased speed due to the Congestion Charge.

Fares

The Mayor sets the fares for public transport and taxis in London. This gives TfL a certain lever, in fact, unlike the majority of British local governments that only can count on their council tax, GLA can use the high fare proceeds for underpinning long-term repayments of the Prudential Borrowing.

Fares are quite high compared to other European cities (GBP1.5 for an underground single ticket paid by smart card, GBP3 –i.e. 4.4 Euro - if paid cash) but TfL and the DfT, within the five-year grant agreement, decided to substantially increase fare revenue by increases in bus fares substantially higher than inflation. The first two years (2005 and 2006) fares had to be increased by the retail price index+10% for buses and by retail price index+1% for the underground. A third increase by a similar amount has been already announced for January 2007.⁸⁸ Finally, TfL also envisages the use of tolls for new projects, in particular the Thames Gateway Bridge.

Indirect Central government subsidy

Domestic passenger transport is VAT-exempted.

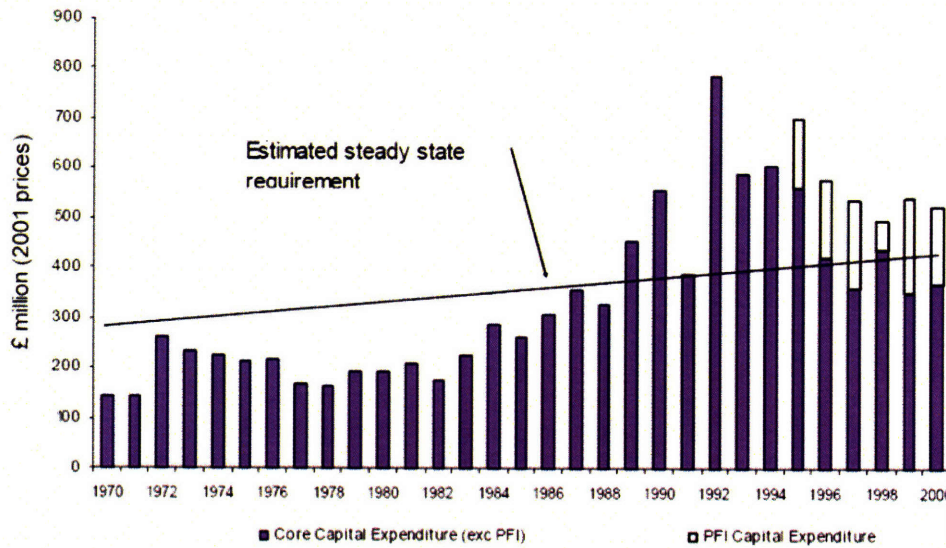
6.1.5. Investments

As the Transport Grant does not really make a distinction between capital and operating funds, and before 2004 TfL was not allowed to borrow, investments have already been a function of the surplus of operating funds.

These two elements can explain the historic under-investment in London's transport infrastructure, as pointed out in the following graph:

⁸⁸ The increases essentially apply to single ticket purchased for cash, while regular travelers normally use the pre-paid smart card.

Figure 40: Historic under-investment in the Underground



Source: Glaister (2004)

The graph shows that from the early 1970s to the mid-1980s there was a substantial lack of investments, while the late 1980s and early 1990s recorded an improvement (especially in the General Election year of 1992) which was nevertheless not enough to recover the historic underperformance. The graph also points out how investments in the core fell again in the mid 1990s. This was partly because the government chose that the unexpectedly high cost of the Jubilee Line Extension be partly paid for at the expense of investment in the existing underground assets (Glaister, 2004).

As there is not specific allocation of funds to operations or investments, it is difficult to distinguish the part financed by the Central Government from the funding coming from local sources. Nevertheless, given the weight of the Transport Grant in TfL budget, big infrastructure expansions have always been decided, approved and financed by the national government.

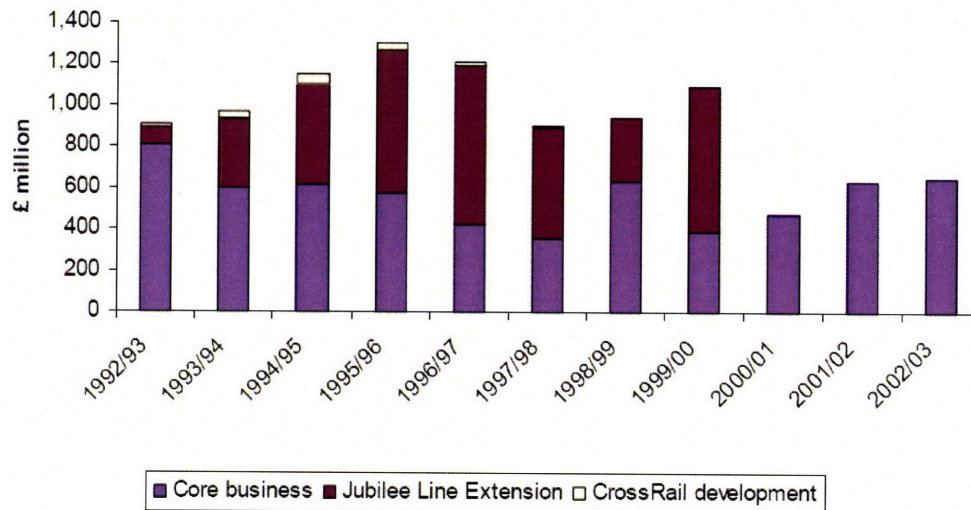
Recent extensions of the network

Since mid-1990s, London has implemented three major expansion projects: the Jubilee Line extension (15.9 km), the Docklands Light Railway extension to Lewisham (4.2 km), and the light rail Croydon Tramlink (28 km).

All those projects have been essentially funded on a pay-as-you-go basis by central government grants.

The following figure shows the capital investments in the London Underground system in the last years:

Figure 41: London Underground investment expenditure (2002/03 prices)



Source: Glaister (2004)

Future extension projects

TfL is accountable for the delivery of an ambitious capital spending plan (GBP 12.7 billion, including 5.1 billions for London Underground PPP-PFI), the Five-Year Investment Programme (2005-2010). This capital plan has been updated in December 2005, taking also into account the 2012 Olympics that will take place in London.

The revised Investment Programme includes additional spending in new projects and cost increases by GBP 2.7 billion :

- GBP 1.75 billion will be financed by third parties (Central Government for specific investments and capital receipts from commercial developers for development rights around TfL property):
- GBP 950 million will be funded mainly through an increase in TfL's own resources (primarily fares and fees).

The following table synthesizes the different sources of revenues of the Programme:

Table 41: Different sources of revenues of TfL Investment Programme

Funded by	2005-2010 Total Amount (GBP million)
Prudential Borrowing	3,104
Operating Surplus	742
Non-recurring funding	199
Third Party Funding	852
Capital Expenditure under LU PPP contracts	4,827
Capital Expenditure under LU PFI contracts	369
Payments to Operators, Boroughs, etc.	1,613
Capital Reserves Drawdown	646
Total Funding	12,353

Source: TfL Investment Programme (2005)

According to the 2005-2010 Capital Investment Programme, 88% of funds are assigned to the upgrading existing network (such as the London Underground PPP but also the increase in bus capacity by 5% bus*kilometers by 2010, improving frequency, reliability, and real-time information to passengers.), whereas 12% are dedicated to expansion projects such as the Dockland Light Rail extension or the East London Line. Crossrail, the underground GBP 10 billion rail bypass, is not part of TfL's Investment Programme.

6.1.6. Debt

London Transport (the predecessor of TfL) did not borrow because its capital expenditure was funded by government grant. Consequently, TfL started its mandate debt-free and was debt free until the Prudential Borrowing regime was introduced.

The ambitious Mayor's transport strategy needed substantial funds therefore TfL used the five-year funding agreement with the Department for Transport to establish a GBP 3.3 billion borrowing program for the period 2004/05 to 2009/10.

The issues will be denominated in pounds sterling only and the yearly amounts to be raised depend on the annual authorizations by TfL's board that for the moment approved:

- a maximum prudential borrowing of GBP400million for 2004-2005, of which TfL issued GBP 196 million (other GBP204million will be spread evenly over the remaining years of the investment program)

- a maximum GBP 550 million on additional borrowing for 2005-2006, of which GBP 18 million from the European Investment Bank (on a total line of credit of GBP 450 million over the next five years) and the remaining from a bond issue and the Public Works Loan Board a specialist lender to local governments.

6.1.7. Alternative funding sources

Public Private Partnerships

Before TfL took control of London Underground, the central government signed a controversial 30-year public-private partnership agreement aimed at providing a GBP 16 billion refurbish and maintenance program for the underground. The Mayor of London strongly opposed to the PPP deal.

The service charge on the PPP contracts costs about £1.1 billion per year and is funded by a national Treasury grant included in the GLA Transport Grant. Three privately owned infrastructure companies are responsible for maintaining and upgrading trains, stations, tracks and signals and at the end of the contract the assets will return to London Underground.

London Underground Public Private Partnership contracts are proving to be more expensive than had been anticipated nevertheless the PPP is providing much more money for infrastructure improvement than the historical trend and the commitment of the central government is more stable.

Congestion Charge

On 17 February 2003, TfL launched a congestion charge scheme. The scheme has reduced car traffic by 30% and increased the bus ridership nevertheless it has generated less revenues than forecasted:

Table 42: Congestion charging balance sheet

(GBP Million)	2002/2003	2003/2004	2004/2005
Revenue	18.5	186.7	218.1
Expenditure	-62.4	-122.9	-121.4
Deferred charges	-14.0	-17.2	1.7
Depreciation	-0.3	-1.1	-1.6
Capital financing charges	-0.1	-0.2	-0.4
Net revenue	-58.3	45.3	96.4

Source : TfL Annual Reports 2003-04 and 2004-05

In 2005 the congestion charge was raised from GBP5 to GBP8 and the Mayor approved the extension of the congestion charging zone to include the western portion of central London as of February 2007.

Parking

Parking permits, meters and fines are one of the few sources of revenues of the London boroughs besides the council tax. TfL therefore doesn't control the parking policy moreover it represents a source of controversy between the GLA and the boroughs included in the congestion charging zone which are concerned by the loss of parking revenues due to the traffic restriction.

Transport innovation fund

In 2004 the Central Government made public the intention to establish a Transport Innovation Fund aimed at giving incentives to develop and deploy innovative local and regional transport strategies. The Fund will support the funding of smarter, innovative local transport packages combining demand management measures with modal shift and improved bus services, supporting innovative mechanisms which raise new local funds and promoting national productivity. The Department for Transport will make available through the funds the following amounts starting from 2008/09:

Table 43: Transport innovation fund 2008-2015

(GBP Million)	08/09	09/10	10/11	11/12	12/13	13/14	14/15
Amount	290	600	930	1,300	1,680	2,100	2,550

Source : Department for Transport

6.2. Recommendations

The case studies in chapter 4 showed that fiscal decentralization can have positive impacts on local public transport, especially when new infrastructures are needed. Yet the literature suggests some requisites for implementing successful devolution reforms: locally elected politicians accountable for the policy-making choices, as well as the technical and managerial capacity to administer both the service provision and the administration of local taxes. London satisfies both the requisites, in particular the accountability clause thanks to the focal role of the Mayor.

In addition, an important lesson drawn from the case studies is that fiscal decentralization is a gradual process and can be implemented asymmetrically (in fact, in all the cases, except for Sweden, it has been asymmetric). That means that on one hand the reform could be implemented gradually lowering the risk for both the central government and the British capital; on the other hand London could be treated as pilot city if downsides of fiscal decentralization are feared for smaller or less dynamic cities.

Taking into account the high cost rigidity, the labor-intense service and the need for substantial capital investment, metropolitan public transport needs at least to be planned in the medium-term and this is possible only with a relative stability (or at least predictability) of the sources of revenues for the transit agency. For the same reason there is a need for clear rules (allocation of responsibilities, time of the reform,...). Milan, for instance, is suffering the uncertainty of the legal and fiscal framework related to public transport management and funding. Finally, in proposing a reform, it is important not to lose the financial support of the central government which, in light of the case studies, appeared as a necessary contribution even in the most devolved situations.

Based on what we learned from the analysis of the other European metropolitan areas, there are advantages using shared taxes instead of negotiated grants.⁸⁹ Tax-sharing is a

⁸⁹ Attention should be paid when a transfer is replaced by a share of a national tax, the year on which the national tax is taken as a base to define the share (to create a source of revenues that is equivalent to the

way to increase local autonomy (granting substantial revenue streams) and spending flexibility without losing the tie with central government. If decentralization is not only, and not primarily, an economic issue but a political issue it is necessary to take into account a counterbalance for the central government (in this case, the control over rates and base) when giving more autonomy to local authorities. Another advantage of the shared tax is that for the central government it is politically easier to justify a substantial amount of subsidies going to London on a “return to sender” base rather than on discretionary grants allocation.

As said before, central government transfers are legitimate and necessary especially for big infrastructure investments (such as CrossRail in the case of London). The case of Paris (and partially the Spanish cases if we look at the proportion of the operation subsidies from the central government) shows that more autonomy is normally coupled with a decreased support from the central government. The question here is how to make it accountable and make central government grants more stable and more efficient? Matching grants for infrastructure, with a substantial share for the local government, seem to create more accountability for both the government levels.

As for operating costs, when adequate local sources are available, local subsidies and fixed proportions of the contribution of the different actors (in order to limit bargaining and create more accountability for all) seem to be the preferred option. This is the French and the Swedish model (outside Stockholm). The Spanish one has fixed proportions, but a degree of uncertainty is introduced through the recurrent agreement with the central government⁹⁰.

Predetermined shared responsibility between regional authority and local municipalities appears to be a successful model. At the same time, the Stockholm County underlined it

cancelled transfer) can be a year where the tax receipts are particularly rich. The share, moreover, should be designed as a percentage, not as a fixed amount as in the Italian excise duty case.

⁹⁰ The uncertainty is given both by the short duration of the agreement and by the fact that governments change and when the party ruling the central government is different from the one elected at the local level, negotiated grants can be cut.

is sometimes difficult to integrate public transport planning with the road policy managed by the City of Stockholm, which does not have a real stake on transit optimization⁹¹. Similarly, the London boroughs, at the moment, do not have a role in financing public transport operations. The case studies thus suggest that, if increased tax autonomy should be given to the borough within a fiscal reform, this should be used as an opportunity to increase their responsibility in transit funding.

Finally, we would like to focus on the best candidates for tax decentralization. Since transport related taxes (fuel or vehicle related) are so important (see table 44) and are relatively easy to implement at the local level, the question of their decentralization should be envisaged.

⁹¹ Remember that the Municipality does not contribute to the public transport subsidies.

Table 44: Sources of tax revenues in UK (2004-05 forecast)

Taxes	2004-05 (£bn)	Proportion of total (%)
Income tax (gross of tax credits)	127.8	28.1
National Insurance contributions	77.7	17.1
Value added tax	73.1	16.1
Other indirect taxes		
Fuel duties	24.4	5.4
Tobacco duties	8.1	1.8
Alcohol duties	7.7	1.7
Betting and gaming duties	1.3	0.3
Vehicle excise duty	4.9	1.1
Air passenger duty	0.9	0.2
Insurance premium tax	2.4	0.5
Landfill tax	0.6	0.1
Climate change levy ⁹²	0.8	0.2
Aggregates levy	0.3	0.1
Customs duties and levies	1.9	0.4
Capital taxes		
Capital gains tax	1.5	0.3
Inheritance tax	2.8	0.6
Stamp duties	9.4	2.1
Company taxes		
Corporation tax	34.8	7.7
Petroleum revenue tax	1	0.2
Business rates	19.1	4.2
Council tax (net of council tax benefit)	19.7	4.3
Other taxes and royalties	13.2	2.9
Interest and dividends	4.9	1.1
Gross operating surplus, relevant tax credits, other receipts and adjustments	16.4	3.6
Current receipts	454.7	100

Source: Adam, 2004

The idea of a dedicated tax for public transportation can be difficult to introduce in the British system (at present, the concept of earmarking taxes is not used in the UK). Early in the last century, motorists were required to pay a *Road Fund Licence* to help fund the upgrading of roads to standards needed for motor vehicles. The earmarking of the funds to road improvements eventually ceased and the fund became a general source of tax revenue, the Vehicle Excise Duty (Ubbels et.al, 2003). We have to acknowledge that

⁹² The Climate Change Levy could be used to create a national fund earmarked for measures aiming at reducing the emissions of greenhouse gases like public transportation.

dedicating a car-use or car-property tax to public transport will be extremely unpopular, although the success of the congestion charging in London could contribute to set a precedent.

The business tax is also an extremely important levy, as demonstrated by the case studies. In particular, the English Business Rate is both a business and a property tax therefore it has an imbedded characteristic of stability. Nevertheless, a local surtax on business profits (Corporation Tax) would probably be more appropriate and progressive one. There is in fact evidence that the business community can recognize a link between improved accessibility of the activities and spending in local public transport. The risk of administrating this kind of tax will be local but the benefit of an increased economic development linked to the improved services the local authorities would provide will be also national.

Chapter 7: Conclusion

7.1. Fiscal decentralization: positive stimulus yet not enough

Our research suggests that fiscal decentralization helps public transport to move in the right direction, especially if capital investments are needed to improve the quality of the service. Nevertheless, it gives no guarantee of meeting the adequate level of resources (especially for big projects) and fails to solve some relevant issues like dealing with externalities or integrate public transport into a wider context.

7.1.1. Taxation and stability of resources

The case studies underline two different phenomena that influence the level and the stability of subsidies available for local public transport. On one hand there is the benefit theory of taxation that is fulfilled when the tax is local and when the tax is dedicated. These two conditions are likely to increase the taxpayer acceptance to pay because they contribute to create a clear link between the tax and the service provided⁹³. On the other hand, the more the government is closer to the taxpayer, the less it seems inclined to tax the population, particularly if the tax is imposed locally⁹⁴.

The following table synthesizes the effects of these two forces and suggests that the best way to guarantee stable public subsidies for local public transport is through a local earmarked tax created by the national government and levied locally, like in the case of the French dedicated business tax (versement transport):

⁹³ In Italy, for instance, the association of the municipalities pleads for the creation of new local earmarked taxes in the framework of the devolution reform.

⁹⁴ This phenomenon, coupled with the already mentioned macroeconomic stabilization, redistribution issue as well as tax assignment problem, strengthens the merits of a more centralized control of the fiscal system.

Table 45: Tensions between Local-National and Dedicated-General Taxes

	National tax	Nationally imposed - Locally raised tax	Locally imposed tax
General Tax	WTT : ++ WTP : -- Resources for local public transport : 0	WTT : + WTP : 0 Resources for local public transport : 0/+	WTT : - WTP : 0 Resources for local public transport : -
Dedicated Tax	WTT : + WTP : 0 Resources for local public transport : +	WTT : + WTP : + Resources for local public transport : ++	WTT : - WTP : + Resources for local public transport : 0

WTT = Willingness to Tax and WTP = Willingness to Pay

If dedicated taxes are a way to ensure a certain stability of the revenues for transit agencies, from a broader public policy point of view, there are different downsides of earmarking tax proceeds.

First of all they limit the opportunities of controlling the budget creating rigidities in the fiscal system. Second, earmarking can hamper an efficient allocation of the funds because it can result in allocating excessive revenues to some sectors (as we can suspect in the French case). In other words, dedicated taxes are contrary to the key rationale for fiscal decentralization that is promoting efficiency. Third, dedicated taxes can reduce the accountability of the policy makers, as they reduce their degree of freedom in reviewing revenues allocation.

However, if we believe that public transport spending has positive effects (on economic growth, externalities, social welfare), earmarking a tax (or a share of it) can assure the necessary level of resources for a minimum level of service, reducing the uncertainties of continuous negotiations and, above all, facilitating long-medium term planning.

In chapter 2, we pointed out that one of the most important problems in funding public transport is that it is a labor intensive sector therefore its costs generally increase more than the average index of inflation. It is therefore extremely important for a transit

planner to rely on a predictable source of funding which is also increasing (at least) as fast as the inflation rate.

In the case studies we saw a lot of different ways to finance public transport. We synthesize in the following table the principal pros and cons of the different solutions, always from a transit agency perspective:

Table 46: From negotiated transfer to dedicated taxation

	Negotiated transfer	Long time agreement	Return to sender (shared taxes)	Dedicated taxes
Pros of the financing tool	+ Adequate amount of resources (especially if big investments are needed) + Effective budget control	+ Adequate amount of resources (especially if big investments are needed) + Stability of the subsidies	+ Increase willingness to pay + Can provide substantial funds + Keep pace with inflation + If flexibility to add surcharges, more local accountability	+ Apply benefit theory and reduces reluctance to pay + Can provide substantial funds or at least assures a minimum level of funds + Allow long term planning
Pros of the financing tool	- Competition with other sectors: instability of funds - Instability due to political changes - Difficult to adjust for inflation	- Instability of the agreement due to political changes - Difficult to adjust for inflation	- Keep strong central government control - Local competition with other sectors	- Efficiency problem - Difficult to adjust when other priorities arise

7.1.2. Increased willingness to borrow

The increased willingness (and ability) to borrow that seems to emerge from the decentralized cases studies can have positive impacts on public transport, especially if we think that costs in this sector tend to rise rapidly and therefore postponed (or interrupted) investments have detrimental economic impacts. Nevertheless, besides the fact that excessive reliance on loans could be risky if the policy-makers are not prudent, there is no guarantee that the local ability to borrow will be adequate to the size of the project.

7.1.3. Dealing with externalities

Stockholm is the only case in which the local policy makers explicitly set a proportion between the costs to be bear by the taxpayer and those to be bear by the transit users⁹⁵. Yet, in the last decade the share borne by the taxpayer has been reduced from 60 to 50%. Our research, indeed, points out that, instead of raising the tax rates or imposing new taxes, local governments are more prone to increase fares (often at rates higher than the inflation rate). This goes against the rationale that transit use should be encouraged because it produces positive externalities; therefore we argue that fiscal decentralization (at least in the short run) fails to better deal with externalities although local authorities in the analyzed countries have started looking at polluter-payer devices such as congestion charging or regulated parking policies.

7.1.4. Public transport in a wider local strategy

It is important also to notice that the optimization of the local expenses through a better integrated vision of local policies has not been achieved. In particular, there is no clear integration between land use and public transport or private transport and transit.

In Spain, for instance, transit investments have been coupled with massive road investments and we can in fact notice that, despite the transit network expansion and the improved quality of the service, public transport modal share in Barcelona has diminished from 26.3% in 1995 to 18.8% in 2001, and in Madrid from 31.5% to 22.4% in the same period (UITP, Millennium database).

7.1.5. Need for Local-National Partnership

We noticed that successful results have been achieved when local and central government have been working together. Competition, for instance, has been imposed by the national governments but its implementation and monitoring at local level enabled improved efficiency in public transport spending. Similarly, congestion charging initiatives both in London and in Stockholm have been realized with the support of the central government.

⁹⁵ In Italy, the mandatory 35% farebox recovery ratio was set by the central government because of the enormous deficits generated by a soft budget constraint policy.

Finally, as emerging from the previous sections, the most sustainable transit funding is a balanced mix of subventions from different levels of government with an established share of responsibility. At the same time, nationally imposed - locally raised taxes seem to be the most effective way to guarantee stability of funding to the transit sector.

7.2. Theoretical Issues

While dealing with this research, we were faced with different issues.

First of all, the literature on public transport financing is narrow and there is no literature dealing with the impact of local fiscal autonomy on public transport spending. It has been therefore necessary to create our own framework of research in order to assess the impacts of fiscal decentralization on local transit provision.

Second, as already underlined, devolution is not only an economic but a political issue therefore the rationale of different choices (national and local) is sometimes hard to define. We tried to compensate with the interviews but still, the political context is difficult to include.

Finally, it is extremely difficult to separate the effects of fiscal decentralization from the effects of other policies (like decentralization of decision-making or privatization of the public transport sector) or other variables (economic growth, motorization rate, congestion, ...). In particular, it is hard to find evidence of the theoretical benefits of fiscal decentralization, especially with a small sample of cases.

7.3. Practical Issues

Devolution is a recent (in most cases still on-going) process therefore the information available to understand the influence of the increased local fiscal autonomy on public transport (or any other local policy) are limited. Transit agencies in the majority of the European cities are also relatively young, thus the historical series of data relating to public transport are quite limited. Moreover, it is extremely difficult to find detailed data

about local government's budget allocation and deduce the weight of transit compared to other policies.

Finally, this research has been carried out for TfL which needs to explore the experience of its European peers within a time constraint: the agenda of the Lyons Inquiry. Therefore the number of cases analyzed has been limited to five. The analysis in chapter 5 is thus not to be considered a statistically significant survey on the effects of local fiscal autonomy on public transport spending, but an indication of the trends which have emerged in the five cities. This thesis, indeed, should be considered as a framework of analysis and a starting point for future research.

7.4. Further Research

7.4.1. The American model

The thesis points out that, even in the most decentralized countries, local governments need the financial contribution of the central government in order to develop high quality transit systems. The US model has these characteristics therefore an interesting perspective for a further research should be studying in detail to the American system.

In particular, four peculiar aspects of it should be analyzed:

- the national framework which provides high proportions of national funds for both highways and transit, with requirement of minimum 20% local match and whit shares distributed to States based on formula;
- the federal provision which allows States, metropolitan areas and cities to “flex” highway money to transit but not vice versa;
- the local option transportation taxes (i.e., according to Goldman et.al, taxes that vary within a state, with revenues controlled at the local or regional level, and earmarked for transportation-related purposes);
- the pros and cons of the use of local referenda (particularly used in the West Coast) as a way to increase willingness to pay for transit investments.

7.4.2. Increasing the scope of the research

An interesting follow-up would be the analysis of a bigger number of case studies in order to have a larger view of the impact of fiscal decentralization on local transit and verify if the trends underlined by this thesis are confirmed. In particular, the German system should be included at least for two reasons: the federal nature of the country and the apparently good integration between public transport and land use. Finally, in order to have a broader vision, it would be interesting to include in the sample some small-medium cities.

7.4.3. Follow-up of the five cases

Given that fiscal decentralization reforms are still ongoing in the majority of the European countries, continuing to follow the evolutions of the five cases (especially Paris whose transit agency has just gained its autonomy) would add significant elements to this research.

Additionally, it would be interesting to study local expenditures in private transport (both infrastructure and operations, particularly taking into account the auto-related externalities) in order to compare public expenditures in transit with public expenditures (including the cost of externalities) in private transport.

7.4.4. The Baumol effect

Eventually, it would be interesting to test more in depth the consequences of the so-called Baumol's cost disease (i.e. the tendency of products with high labor content and low capacity for technological efficiency or import substitution, to experience inflationary costs higher than the average rate of inflation) on the local public transport sector. In fact, the Baumol effect on other public services (like education or healthcare, that normally are not locally financed) can lead the central government to reduce its contribution to local transit. At the same time, locally provided public transport is also a labor-intensive sector and therefore affected by the cost disease. The Baumol effect should thus be particularly problematic for local public transport.

References

- Adam, 2004: "A survey of UK tax system", Adam S., The Institute for Fiscal Studies, 2004
- Antonini, 2003: "La vicenda e la prospettiva dell'autonomia finanziaria regionale: dal vecchio al nuovo art. 119 Costituzione", Antonini L., in "*Le Regioni*", 2003
- Antos, 2005: "Financial Devolution in Transport: How Do Others Do It, and Does It Work?", Antos J., Transit Research Group Working Paper, MIT
- Aschauer, 1989: "Is Public Expenditure Productive?", Aschauer D.A., *Journal of Monetary Economic*, 23, 2 (March 1989): 177-200.
- Baumol, 1967: "Macroeconomic of unbalanced growth: the anatomy of urban crisis", Baumol W., *The American Economic Review*, Vol. 57, No 3 (June 1967)
- Bird and Ebel, 2005: "Fiscal Federalism and National Unity", Bird R. and Ebel R.
- Bird and Smart, 2002: "Intergovernmental Fiscal Transfers: International Lessons for Developing Countries", Bird R. and Smart M., *World Development*, 30, 6: 899-912.
- Bird, 1999: "Rethinking Tax Assignment: The Need for Better Sub-National Taxes", Bird R., Washington, DC: The World Bank.
- Breton, 1996: "Competitive Governments", Breton, A., Cambridge University Press.
- ECMT, 2002: "Implementing Sustainable Urban Travel Policies", European Conference of Ministers of Transport, Final Report
- Estache and Sinha, 1995: "Does Decentralization Increase Spending in Public Infrastructure?", Estache A. and Sinha S., Policy research working paper 1457, The World Bank
- Fitch Ratings, 2004: "The Role of Local Tax Differentials in Location Decisions", Fitch Ratings International Public Finance
- Glaister, 2004: "Investing in Cities, Report to Development Securities", Glaister S., Imperial College London
- Goldman et.al, 2001: "Local Option Transport Taxes in the United States", Goldman T., Corbett S. and Wachs M., Research report 2001, Institute of Transport Studies University of California at Berkeley

Graham, 2005: "Wider economic benefits of transport improvements: link between agglomeration and productivity - Stage 1 Report", Daniel J. Graham D.J., Centre for Transport Studies Imperial College London

Huther and Shah, 1996: Huther Jeff, Anwar Shah. 1996. Applying a Simple Measure of Good Governance to the Debate on Fiscal Decentralization

Litvack et.al, 1998: "Rethinking Decentralization in Developing Countries", Litvack J., Ahmad J. and Bird R., *World Bank Sector Studies Series 21491*, Washington, D.C.

Loughlin and Lux (2004): "Subnational finances in Spain: Lessons for the UK", Loughlin J. and Lux S., in *Balance of Funding Review*, Meeting 6, Paper 22.

Marshall and Finch, 2006: "City Leadership – Giving City-Regions the Power to Grow", Marshall A. and Finch D., IPPR –Centre for Cities

Martinez, 2005: "Anàlisi comparativa dels sistemes de transport públic col·lectiu a la Regió Metropolitana de Barcelona i la Comunitat de Madrid", Martinez E.U., Projecte de Tesina d'Especialitat, Escola Tècnica Superior d'enginyers de Camins, Canals i Ports de Barcelona, Universitat Politècnica de Catalunya

Musgrave, 1983: "Who Should Tax, Where, and What?", Musgrave R.A., in Charles McLure, ed., *Tax Assignment in Federal Countries*, Center for Research on Federal Financial Relations, Canberra, Australian National University

MVA, 2005: "World Cities Research", MVA, Report for Commission for Integrated Transport

Oates, 1972: "Fiscal Federalism", Oates W., New York, NY: Harcourt Brace Jovanovich,

Oates, 1999: "An Essay on Fiscal Federalism", Oates W., *Journal of Economic Literature*, XXXVII (September 1999): 1120-1149.

Oates, 2005: "The Many Faces of The Tiebout Model", Oates W., *Paper Presented at the Tiebout Conference organized by the Lincoln Institute of Land Policy*, June 2005 at Duke University.

Observatoire des Finances Locales, 2005: "Les finances des collectivités locales en 2005", Observatoire des Finances Locales

Olson, 1969: "The Principle of Fiscal Equivalence: The Division of Responsibilities among Different Levels of Government", Olson M. Jr., *American Economic Review*, Vol. 59, No. 2, Papers and Proceedings of the Eighty-first Annual Meeting of the American Economic Association (May, 1969) , pp. 479-487

Prud'homme, 1995: "On the Dangers of Decentralization", Prud'homme R., World Bank Res. Observer, pp.201-10

Prud'homme, 2004: "Transport and Decentralization", Prud'homme R., Report prepared for the 130th ECMT Round Table, Paris, September 23-24, 2004

Rebollo Fuente, 2005: "Global PPP/Infrastructure Yearbook 2005" Rebollo Fuente A., Asesores de Infraestructuras, Infra-News

Rondinelli, 1981: "Government decentralization in comparative perspective: Theory and practice in Developing Countries", Rondinelli D., *International Review of Administrative Sciences*, 47(2): 133-45

Rondinelli, 1989: "Decentralizing urban development programs: A framework for analyzing policy", Rondinelli D., U.S. Agency for International Development, Office of Housing and Urban Programs, Washington D.C.

Salmon, 1987: "Decentralization as an Incentive Scheme.", Salmon, P., *Oxford Review of Economic Policy* 3 (2): 24-43

Smoke, 2001: "Fiscal Decentralization in Developing Countries: A Review of Current Concepts and Practice", Smoke P., Geneva: United Nations Research Institute for Social Development

Standard & Poor's, 2005: "Western European Local & Regional Government Credit Survey 2005"

STIF, 2005: "TC 2005 – Les transports en commun en chiffres en Ile-de-France", Syndicat des Transports d'Ile-de-France

Taylor, 2004: "The Geography of Urban Transport Finance", Taylor, B. D., in *The Geography of Urban Transportation*, Third Edition, Susan Hanson and Genevieve Giuliano, Editors, New York: The Guilford Press.

Ter-Minassian, 1997: "Decentralizing Government", Ter-Minassian T., International Monetary Fund, <http://www.imf.org/external/pubs/ft/fandd/1997/09/pdf/ter-mina.pdf>

Tiebout, 1956: "A Pure Theory of Local Expenditures", Tiebout C., *Journal of Political Economy*, 64, 5: 416-424.

Tiebout, 1956: "A Pure Theory of Local Expenditures", Tiebout, C. M., *Journal of Political Economy*, 64, 5: 416-424.

Ubbels et.al, 2003: "Unfare Solutions", Ubbels B., Enoch M., Potter S. and Nijkamp P.,

UITP, 2003. "The Financing of Public Transport Operations", International Association of Public Transport, Position Paper.

Venables (2004): "Evaluating urban transport improvements: cost benefit analysis in the presence of agglomeration and income taxation", Venables A., Working Paper, London School of Economics.

Zhang and Zou (1998): “Fiscal decentralization, public spending, and economic growth in China”, Zhang T., Heng-fu Zou H., in *Journal of Public Economics*, 67 (1998) 221–240

General

MARETOPE, 2000: “Managing and Assessing Regulatory Evolution in local public Transport Operation in Europe D1 (Reference framework and harmonization of concepts)”, TIS.pt

EMTA, 2002: “EMTA, Barometer of public transport in the European metropolitan areas”, EMTA, July 2002

UITP, 2000: “Millennium Database of Towns and Regions”

Eurostat website: <http://epp.eurostat.cec.eu.int>

Case of Madrid

Standard and Poor’s – City of Madrid, 2006

Memoria del Consorcio Regional de Transportes Publicos Regulares de Madrid, Ejercicio 2004

Carlos Cristóbal-Pinto: “Public-Private Partnerships in Madrid - Best practice case”, *Public Transport International* 6/2003, UITP

José Luis Álvarez de Francisco: “Metro de Madrid - A wealth of experience”, *Public Transport International* 2/2003, UITP

José Ignacio Iturbe López, “MetroSur - An Underground line serving outlying areas”, *Public Transport International* 2/2003, UITP

City of Madrid website: <http://www.madrid.es>

Case of Barcelona

Fitch Ratings – Region of Catalonia, 2005

Fitch Ratings – City of Barcelona, 2005

PDI 2001-2010

AMT annual reports

City of Barcelona website: <http://www.bcn.es>

EMT website: <http://www.emt-amb.com>

TMB website: <http://www.tmb.net>

GISA website: <http://www.gisa.es>

Case of Paris

Fitch Ratings – Region of Ile-de-France, 2006

CERTU, 2003: “Les transports publics urbains en France - Organisation institutionnelle”, CERTU

CERTU, 2005: “Public Transport & Decentralization”, CERTU, Newsletter N° 1 - May 2005

GART, 2005: “L'année 2004 des Transports Urbains”, GART, *Publication spéciale - XXe Rencontres Nationales du Transport Public - octobre 2005*

STIF website: <http://www.stif-idf.fr>

Case of Milan

Fitch Ratings – City of Milan, 2005

Fitch Ratings – Region of Lombardy, 2005

ASSTRA, 2005: “The management of financial resources in local public transport”, ASSTRA, Internal Document

ATM annual reports (1992-2004)

Comune di Milano website: www.comune.milano.it

Regione Lombardy website: www.regione.lombardia.it

AMA website: www.ama-mi.it

Case of Stockholm

SL annual reports (1993-2004)

Stockholm website: <http://www.stockholmsforsoket.se>

Case of London

Fitch Ratings – TfL, 2006

TfL Investment Programme (2005)

TfL Annual Reports 2002/03-2003/04-2004/05

DfT website: <http://www.dft.gov.uk>

Acronyms

AC:	Autonomous Community (Spanish Region)
AMA:	Agenzia Milanese Mobilita' e Ambiente (Milan's transport agency)
ASSTRA:	Associazione Trasporti (Italian national association of transport operators)
ATM:	Autoritat del Transport Metropolità (Barcelona's transit agency)
ATM:	Azienda Trasporti Milanesi (transport operator in Milan)
CTM:	Consorcio Regional de Transportes de Madrid (Madrid's transit agency)
DfT:	Department for Transport
EIB:	European Investment Bank
EMT:	Entitat Metropolitana del Transport (Barcelona)
FGC:	Ferrocarrils de la Generalitat de Catalunya (rail operator in Barcelona)
GISA:	Gestio de Infraestructures (Barcelona)
GLA:	Greater London Authority
ICI:	Imposta Comunale sugli Immobili (Italian property tax)
IRAP:	Imposta Regionale sulle Attività Produttive (Italian regional business tax)
IRPEF:	Imposta sui Redditi delle Persone Fisiche (Italian income tax)
IRPF:	Impuesto sobre la Renta de las Personas Físicas (Spanish income tax)
LU:	London Underground
MINTRA:	Madrid Infraestructuras del Transporte
MM:	Metropolitana Milanese
OPTILE:	Organisation Professionnelle des Transports d'Ile-de-France
PPP:	Public Private Partnership
RATP:	Regie Autonome des Transports Parisiens (transport operator in Paris)
SL:	Storstockholms Lokaltrafik (Stockholm's transit agency)
SNCF:	Société Nationale Chemins de Fer Français (national railways operator)
STIF:	Syndicat Ile-de-France
TfL:	Transport for London
TMB:	Transports metropolitans de Barcelona (transport operator in Barcelona)
UITP:	International Association of Public Transport
VT:	Versement Transport

Appendix 1: Framework for interviews and data collection

DATA COLLECTION:

Important background information about the public transport authority:

- When was the transit agency created? Was it within the decentralization process?
- Which is the mission of the public transport authority: perimeter of influence, responsibilities (only PT or also other mobility policies i.e. parking, soft modes,...)
- Which are its degrees of freedom: can the agency create new services or new initiatives?
- What are its fiscal tools (can borrow money, can decide fares,...) ?
- Does it have an urban transport plan? Is it mandated by the central government? Was it imposed by the national Government after decentralization?
- Did the decentralization reform specify the relative roles of public and private sector (in service and infrastructure provision and financing)?

For each of the following sets of data, if possible, try to obtain the figures before and after the fiscal decentralization reform.

Expenditures:

- Historical series about public transport operating costs and investment costs⁹⁶
- What proportion of the expenditures (if possible, separate operation from investments) is decided by the local agency/government? What proportion is mandate from external stakeholders (central and regional government) and through what kind of procedure?
- What are the new projects (or new initiatives) implemented in the last 10 years?

Revenues:

- Historical series about sources of revenues, in particular:

CENTRAL GOVERNMENT

- What has been the historical trend of central government funding? (if possible, separate operations from investments)
- How are those grants decided (formula, share of central taxes, negotiation)? Are those grants planned on a yearly base or are they pluriannual?
- Are those grants matching grants? Are those grants earmarked to specific kind of interventions?

⁹⁶ Define what is operating cost and what is investment (capital) cost (especially maintenance and modernization).

- Does the central government mandate a certain level of public transport (i.e. does the city have public service obligations)?

LOCAL GOVERNMENT

- Historical series about operating costs and investment costs covered by the local government
- Is the budget allocated to public transport decided year by year or is there any financial plan that guides this allocation? How many years does the plan cover?
- Does it come from earmarked taxes?
- What kind of local taxes can your municipality levy? What share of the municipality budget do they represent?
- Are those taxes earmarked? (for public transport, mobility in general or other policies)
- Are those local taxes regulated by the central government (maximum or minimum rate, limitation on the tax base)?
- What share of the local budget goes to public transport? (if possible, separate operation from investments) Did this share increased since the devolution?
- Can the agency/municipality create new taxes? Did it create new taxes after the decentralization?
- Are those taxes subjected to citizens' approval? (referendum or other forms)
- Despite taxes, do you use special fees to cover public transport costs? (parking, tolls,...) Are those fees increasing or decreasing vis a vis general taxes?
- Can the agency (or the municipality) freely fix the transport fare (create its own fare system)?
- Can the agency (or the municipality) issue debts?
- What is the total amount of the outstanding debt?
- Which is its credit rating?
- Who is responsible for an eventual budget overrunning?

REGIONAL GOVERNMENT (if any)

- What is the role of the regional government in funding urban public transport?
- What is the relationship between central and regional government?
- Has regional government fiscal autonomy?
- What has been the historical trend of regional government funding? (if possible, separate operations from investments)
- How are those grants decided (formula, share of central taxes, negotiation)? Are those grants planned on a yearly base or are they pluriannual? Are those grants matching grants? Are those grants earmarked to specific kind of interventions?

Transport indicators: (historical series, if possible before/after fiscal decentralization)

- ridership
- supply (vehicle*km or seat*km per different modes)
- trend of the cost of single ticket and urban monthly pass
- modal share of PT
- new projects and initiatives

GUIDELINE FOR INTERVIEWS:

- Why does a city need fiscal decentralization to improve its public transport? Why administrative and policy-making decentralization is not enough?:
 - to strengthen the accountability
 - to increase the stability of the funding
 - to count on additional funds
 - to provide more financial flexibility to the policy makers
 - to foster the city's entrepreneurship
 - to speed the decision making process (less negotiations needed)
 - to improve the efficiency of the expenditure (aligning risks with beneficiaries)
 - I don't think fiscal decentralization is necessary
 - ...
- What are the advantages of relying on central government subsidies?
 - to share the risk (especially in big infrastructure projects)
 - to avoid myopic investments (being part of a national strategy)
 - to encourage local investments through earmarked matching grants
 - to ensure more stable support to public transit policies (when the city government change, the new leaders can be less supportive towards public transport)
 - to avoid the discrepancy between long-term nature of transport projects and short-term election cycles
 - backing of central government on credit rating of debt (the market can look more favorably to the local government if financially linked to the central government)
 - ...
- Do you think that in your city fiscal decentralization has improved the integration between public transport and other policies (mobility in general, land use, environment, social policies, energy,...)? How?
 - No, fiscal decentralization doesn't have any effects on integrating policies
 - Yes, before the fiscal decentralization public transport and private mobility were managed by different actors
 - Yes, the municipality has more responsibility over the budget allocation therefore policy makers have a more multidisciplinary view
 - ...

- Do you think that fiscal decentralization increase citizens' willingness to pay? Do you have any evidence?
 - Yes, a recent referendum
 - Yes, re-elections of the administration who raised taxes or made other "unpopular" fiscal choices
 - Yes, the general support of the citizenship to the administration projects
 - Yes, even if I have no tangible evidence
 - No
 - ...

- Do you think that fiscal decentralization lead to an increased private sector funding of the public transport system? Why?
 - Yes, PPP are more easily created if the local government has fiscal power
 - Yes, fiscal power gives to the local government more entrepreneurship
 - Yes, central government procedures are more rigid and time consuming
 - No, it doesn't matter if the subvention comes from local or central government
 - ...

- Did fiscal decentralization lead to more agility in decision making in your city?
 - Yes, consensus is easier to build
 - Yes, the administrative procedures are less time consuming
 - No, bureaucracy and consensus building are more difficult at local level
 - ...

- What are the problems associated with fiscal decentralization?
 - Insufficient sources of revenues
 - Too many unproductive sources of revenues and heavy collection costs
 - The local government lacks of technical capacity
 - Lack of integration with national transport policies
 - I don't see any problems
 - ...

- What are the improvements of public transport in your city that you think are related to fiscal devolution?
 - Increased capital investments
 - Better coordination between the modes
 - Increased ridership
 - Increased modal share of public transport
 - Projects more fitted to local needs
 - ...

- What amount of fiscal devolution does a local authority need to promote a better public transport?
 - Complete fiscal responsibility for operation expenses; central government's intervention only for capital investments

- Complete fiscal responsibility for operation and capital expenses
 - ...
- Why was fiscal decentralization promoted in your country?
 - political pressure from the municipalities
 - historical tradition
 - central budget constraints
 - ...
- In your country, was the policy of fiscal decentralization coupled with a liberalization/privatization reform of the public transport sector?
 - Yes
 - No
 - ...

Appendix 2: Contact persons

Sweden:

- Lennart Hallgren – SL
- Mårten Levin – Stockholm County Council
- Jan-Eric Nilsson - VTI (Swedish National Road and Transport Research Institute)
- Märta-Lena Schwaiger – SLTF (Swedish Association of Public Transport Authorities)

France:

- Chantal Duchène – GART (French Association of Public Transport Authorities)
- Nicolas Painvin – Fitch Ratings
- Remy Prud'homme - University Paris XII

Italy:

- Francesca Brun - City of Milan
- Irene Galimberti – Lombardia Region
- Giorgio Goggi – City of Milan
- Romolo Isaia – Fitch Ratings

Spain:

- Carlos Cristobal-Pinto - CTM Madrid
- Angel Ferrero – EIB
- Salvador Fornieles - Fitch Ratings
- Manel Villalante – FGC - Barcelona