# How to optimally organize the urban transit market




# in The Netherlands

Bachelor's Thesis International Bachelor Economics and Business

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## 1. Introduction

Ever since the emergence of urban public transport provisions in Europe, the correct policy treatment has been a controversial topic. Obviously, technological and welfare developments resulted in a variety of transit means and increased private car usage have constantly altered the market. Moreover, changing political views on desirability of governmental involvement and need for urban public transport have resulted in various policies over time. At the very beginning, transit companies used to face an unregulated market. Bus companies simply arose because of market demand without proper central planning, a situation which is nowadays still present in several post-colonial countries (Gwilliam, 2008). Resulting chaos in information provision, inefficient frequency levels and lack of quality standards have led most European governments to induce some form of regulation of the market. Apart from the historical facts[1], most studies also generally agree upon the eligibility of some state involvement. (Jansson et al, 2008; Mohring, 1972; Leornardo et al, 2010; Gwilliam, 2008; Savage and Small, 2010)

Basic economic theory of supply and demand would predict profitable lines to face higher densities of transit services. Some studies portend this to result in socially inefficient outcomes: Evans (1987) claims that firms will exploit their market power arising from consumer's waiting time costs, triggering excess entry and duplicated fixed costs with fares above socially acceptable levels. Gómez-Lobo (2007) adds that bus associations' coordinating dispersion of arrival times will be in firms' interest, allowing them to raise prices to monopolistic levels given the total frequency provided on a line. Combined with relatively high searching- and waiting costs for alternatives, price competition should not be expected to be tough. Excess profits will be dissipated by entrants attracted to the market, which however, in turn will result in duplicated fixed costs, and external costs related to congestion and environment. Alternatively Wang and Yang (2005) provide a multi-period game theoretical model in which incumbents may either choose an accommodation, deterrence or predation strategy in case of entry or potential entrants. Accordingly, creating a competitive environment induces the incumbent to provide higher service frequency levels and lower fares, because in most scenarios deterrence is the dominant strategy. Accommodation will occur when sunk costs are low and demand is high, and in the opposite case entry may be blockaded due to

[1] When urban public transport emerged no regulations were imposed by the government. Bus companies were free to serve a route if they expected this to be profitable. Problems with service coordination and service quality led to a system of administratively distributed route monopoly permissions. Ever since, the role of the government kept increasing, e.g. stimulating patronage through subsidization. After transit companies became not self-sufficient any longer, governmental influence increased even further and never disappeared in all western countries (Gwilliam, 2008)

market conditions. Therefore: deregulation of the transit market overall increases its attractiveness to customers and will bring benefits to society.[2]

The inefficiency resulting from duplicated fixed costs and the need for coordination already described by Evans (1987) and Gómez-Lobo (2007) could make one expect urban public transport to be best served by a monopolist. Even if a deregulated market would result in higher social welfare due to competitiveness, it remains questionable whether these gains would outweigh efficiency gains originating from economies of scale and scope. Historical data seem to confirm this thought, e.g. after a period of competition two Dutch railway companies merged and the bus market became characterized by firms serving regional networks while allowances to carry out a specific line were initially allocated to different companies. However, a significant shortcoming in both cited papers above is, that they do not recognize urban public transport to be generally heavily relying on governmental support. As for the Dutch case, the network serving companies required governmental subsidies to stay in business ever since 1967. Provision of solely profitable lines will obviously devaluate the network and infrastructure within the city and diminishes the accessibility and mobility for its inhabitants. Considering a full public transport network serving social needs by connecting governmental support seems justifiable. An important article on this topic was written by Mohring (1972). He indentifies increasing returns to scale for scheduled urban transport services because waiting times for customers form part of the costs of transportation. Higher frequency of services will thus reduce total costs due to reductions in customer's waiting time. Therefore, social welfare can increase even when the monopolist does not face increasing returns to scale in production since the sum of average operator costs and average consumer costs decreases. Many authors have adopted and further developed this model. The Mohring effect is often used as justification for general subsidization of public transport as including externalities into the profit-function of the private monopolist should enhance social welfare. Although some papers argue in favor of an unregulated market served by competing companies (Wang and Yang, 2005) or a private monopoly (Van Reeven, 2008), the general opinion is that governmental support and intervention are inevitable. However: the question is, to what extend?

As illustrated above the deregulated market is commonly believed not to result in efficient and socially optimal outcomes, either when served by a monopolist or by competing firms. On the other hand, state-owned enterprises are often believed to perform poorly as well: due to the absence of a competitive environment the enterprise faces lower stimulus to increase efficiency, no need for

[2] It should be noted Yang and Wang wrote their paper at Hong Kong University, a city in which approximately 90% of all urban travels occur through urban public transport. A biased view on the profitability and likelihood of competition for operators on each line is likely to be present, and applicability of the positive results for the European and the Dutch markets may be low.

dynamic adjustment, weaker compulsion to adjust demand to relative prices and possibly managerial slack (Kornai, 1986). A fashionable answer to the matter is to tender allowances to perform a certain service. Governments can set certain standards on frequencies, quality and service, and oblige an operator to perform all socially desirable lines as part of the reclaimed transit network. Other possibilities include allocation based on negotiation and mutual trust, yardstick competition[3], and tendering all lines apart to induce the highest possible level of market competition. The effectiveness and desirability of the different market designs and their impact on efficiency and social welfare will differ on a case to case basis.

Within Europe the London urban transport market has the highest degree of market competition, with companies competing for each line in a bidding market. Empirical data seem to indicate positive effects results deriving from this policy. On the other hand, French cities are, amongst others, tendered as a full network. Due to the *Wet Persoonsvervoer 2000 (WP2000),* the three largest Dutch cities were meant to competitively tender their urban public transport too[4]. The metro, tram and bus networks would have been tendered apart as a full network, although the eligibility of this policy switch was heavily debated. As mentioned before, different options for the market design are present, however, whereas competition on the market might work in London this does not provide any guarantee of successful implementation in the Netherlands. In this paper I aim to identify the relevant factors determining the likelihood of successful adaption of the different market designs, and apply them to the Dutch market to find its most desirable market design and policy measures.

The remainder of the paper will be outlined as follows: in the next chapter the apparent regulatory cycle will be described, showing the instability of policies regarding urban public transport over the past decades. Chapter 3 will provide some empirical findings on the results from competitive tendering in different cities and networks around the world. Chapter 4 provides some insights in the difficulties related to competitive tendering, indicating why competitive tendering has not resulted in outcomes aimed for in all countries, and subsequently evaluates the likelihood of such failure in the Netherlands. Chapter 5 focuses on the specific problems associated with competitive tendering of rail, which is important to the question whether transit modes should be tendered apart or as a full network, or whether the focus should lie solely on competitive tendering of bus services. Chapter 6 combines the insights obtained in the previous chapters and returns to the main question of how

[3] In the absence of direct competitors, authorities can evaluate the performance of an operator by benchmarking to other operators in more or less similar situations. The relative performance as compared to others determines the level of bonuses or penalties.

[4] On Friday 22-06-2012 the Dutch parliament chose to withdraw from the initial decision to make competitive tendering mandatory for the three largest cities in The Netherlands. Local authorities may now decide whether they competitively tender their transit services or whether they will be awarded to a specific operator.

urban public transport markets are best organized. For the services to be tendered, an evaluation of desirability for competition in the market or for competition for the market is performed. Chapter 7 concludes and summarizes this paper's overall findings.

2. Past policy changes

Like most European countries, the Dutch public transport market regulatory system has been through certain phases in the past. As was already mentioned in the introduction, the market was initially served by competitive privately owned firms. Due to the need for service coordination and the ease of administration and efficiency matters, line allowances were issued, and purchase and mergers led to network serving transit companies. Substitution possibilities such as private car usage resulted in lower demand and the need for governmental support. Subsidization became inevitable and increasingly significant as the main financing of the whole system. Therefore, up until the nineties, transit companies generally became state-owned enterprises, after which a more liberal political view emerged. Influenced by the ever increasing budget burden of the system, this resulted in policymakers favoring reallocation towards municipal authorities and reintroduction of market competition. With the mandatory competitive tendering of transit services imposed by the European Parliament to its member states, a regulatory cycle appears to be present. Although policymakers have not returned to the initial state of an unregulated market, free entry and involvement of private operators is the closest approximation we have seen over the past decades. Gwilliam (2008) observes the regulatory cycle in his paper, although he also notes the current state is neither a full circle nor any proof of an endless rotating process. Figure 1 displays the regulatory cycle for industrialized countries.

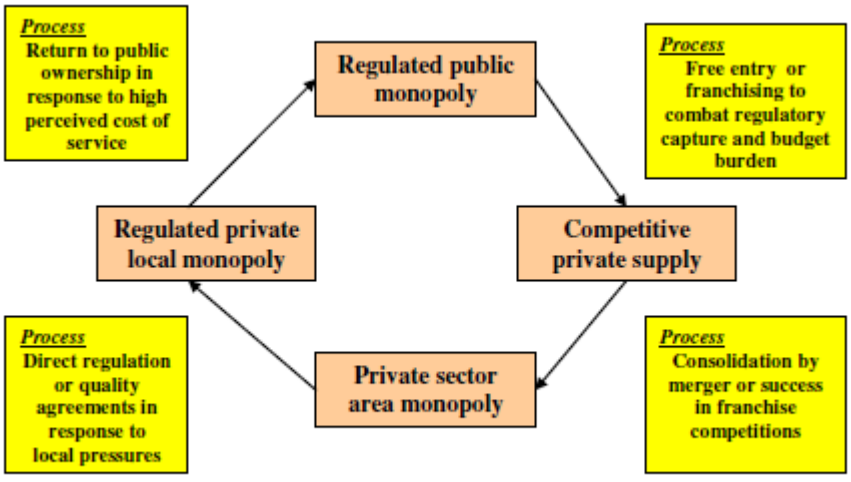



**Fig. 1.** The industrialized country regulatory cycle.

Although the circle above has not been fulfilled, history shows competition policy and governmental integration have been far from constant in the public transport market. Uncertainty about

governmental policy is often believed to be detrimental to investments made by private firms since it increases risks. The government shapes the environment in which the transit company will have to operate. Attracting firms to compete for transit services will require trust in stability of the current market structure. On the other hand one should not expect governments to change policies when markets are functioning perfectly, changes will be believed to induce improvements. The extreme changes in the urban transit market structure over the past decades might indicate there is no first-best solution available, or policy makers have been searching for one in vain ever since the emergence of mass public transport. Since many factors influence demand for the urban transit services (e.g. private car ownership, welfare level, congestion problems, environmental awareness, operators and changing legislators having different interests), changes in policy seem inevitable and desirable over time. Gwilliam (2008) concludes the following on the observed phenomenon:

"*There are clearly some drivers, particularly the adaptive, self-seeking behavior of suppliers and unrealistic aspirations of politicians, which ensure that stability will be hard to achieve. But by examining factors which have fed past cycles, it may be possible to find an outcome which is sufficiently general and flexible to accommodate changing patterns, to mobilize private incentives, to identify the proper limits of public sector intervention and to reconcile demonstrated scale and scope economies with competitive pressure. In some respects the competitively tendered franchising concept enforces a degree of reality of expectation by bringing the public costs of different expectations to the forefront of the process, while leaving scope for expansion and profit for the energetic and efficient entrepreneur. But for the system to survive it is necessary to have institutions and actors that are constantly aware of the need to maintain effective competition by preventing excessive structural concentration and collusive or predatory behavior."*

As mentioned, the competitive tendering was the market structure to be implemented in the three largest cities in the Netherlands (the G3 cities). Whereas bus services in Rotterdam (RET) and The Hague (HTMbuzz) have recently been tendered, tram and metro tendering in all cities and execution of bus services of Amsterdam were deferred. Although the annual reduction in subsidies of 17 million Euros achieved as a result of the competitively tendered bus market in Rotterdam looks promising, at this early stage inferences about quality or efficiency changes cannot be made yet. Consequently discussion on the desirability of mandatory tendering of transit services as imposed by the *Wet Persoonsvervoer 2000* is persistent. The next chapters will focus on results accomplished in various regions and evaluate the factors determining the success of competitive tendering. Comparison to other possible market designs will provide thoughts on the desirability of different systems for the G3 cities.

## 3. Empirical studies

The Dutch G3 cities are obviously not the first ones in the world facing the possibility of competitive tendering. Indeed, all other networks within the Netherlands have been competitively tendered and also within the rest of Europe such practice is common. Some studies on the effects of changing the public transport market structure will be introduced in this chapter, focusing mainly on the potential cost reductions and quality improvements.

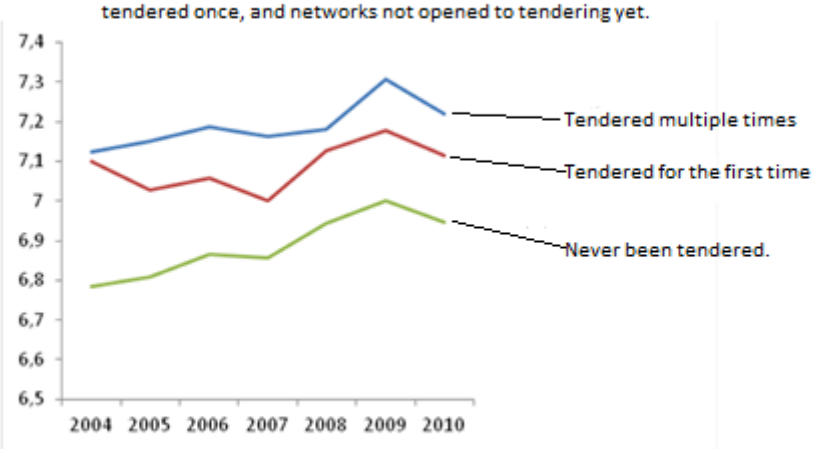
Firstly, we have to acknowledge that results acquired from different nations or regional transport may have limited applicability to the situation in the G3 cities, and are in no way any guarantee for success. This, however, is also one of the main reasons why it is hard to reliably implement the practice of yardstick competition. Because franchised monopolies usually have few incentives to reduce costs, their performance could be evaluated based upon performances of more or less comparable firms elsewhere. Usually, regulators will lack knowledge on the precise cost function of the transit firms and therefore will face troubles in evaluating a firms' requested subsidy level to perform the transit services. Although benchmarking practices will suffice as guideline to a certain extent, every city will have its own characteristics making direct comparisons difficult. Yardstick competition requires identical firms, or heterogeneity that can be accounted for. Every urban public transport company operates in another environment: differences in vehicles, congestion, city characteristics, attitudes towards public transport, perception on service and quality, and the interaction within the full transit network will create a unique situation in each municipality. A recent study indicates cost-complementary between the modes of urban public transport in a city, and moreover, proofs there exists significant variation in the impact of observed inputs and outputs across companies, which indicates unobservable externalities (Cullmann et al, 2010). Yardstick competition could diminish information asymmetry between the municipal authority and the specific transit firm. Policy and subsidy levels solely based on this, bear the risk of being biased and unsound though, and should not be favored over the possibility of competitive tendering, as I will discuss later. According to Klemperer (2000) competitive tendering should generally be preferred negotiated contracts. In his paper '*auctions vs. beauty contests*' he states: *'Occasionally – for example, when there are too few bidders, or large costs of supplying necessary information to bidders- a form of structured negotiations may be better. However, the general rule is that auctions treat firms fairly and transparently, and yield the greatest possible benefits for customers and taxpayers'.* Although such statements combined with results following in the preceding of this chapter could make one easily believe competitive tendering is the solution to governmental policy issues, obviously many nuances have to be brought in to place. Difficulties experienced and necessary requirements for successful implementation will be postponed to the next chapter.

Despite the substantial differences in cities described (retaining empirical results from being plenary proof), the effects observed from switching policies elsewhere do form an indication on the likelihood of certain outcomes. The regional public transport networks are mainly served by trains and busses in the Netherlands. In this case, only the bus, metro and tram markets are relevant to examine, since train transport is of scarce relevance in the urban public transport market. Regional bus networks have been tendered in the Netherlands after the introduction of the previously mentioned *Wet Persoonsvervoer 2000*. The local governments remain responsible for the public transport system; the execution of the system will be performed by the market though. The tendering may be organized in globally two ways. First: one could choose a model where routes, quality (as far as possible) and frequencies are fully specified by governments. Subsequently private operators will compete on lowest price or minimum subsidy requirements. Second: one might prefer to specify a certain price and let operators compete on deliverable quality and frequency levels. Different options for the G3 contract design[5] will be evaluated later, for now awareness of those options is satisfactory.

Changes in perceived quality following introducing competitive tendering to the market are striking. According to *Veeneman et al* (2006) quality perception rose from 6.8 towards 7.2 on a scale from 1 to 10 during the first six years upon introduction of competitive tendering, showing lowest improvements at the very beginning and highest after new policies had been in place for some years. Travelers' perception of service quality is higher in tendered networks than in networks without competitive tendering or without bidders (Groenendijk et al, 2005). A graphical display is provided by *Van Buiren et al* (2012), derived from large scale traveler satisfaction surveys and *provided by Kennis platform Verkeer en Vervoer (KpVV).*

[5] E.g. Gross cost contracts or net cost contracts. Main focus in contracting lays on the amount of risk the operator is willing to bear.

**Figuur 1** Average perceived quality of public transport on networks opened to tendering multi rounds, networks competitively tendered once, and networks not opened to tendering yet.




Bron: KpVV (2011) en KNV (2011).

Studies focusing on cost reduction or efficiency gains provide us with very similar data. Previous policy on public transport also aimed for introduction of market competition. However, with the transit service operators being owned by municipal authorities, in practice the situation was most similar to publicly owned ones. The regional network tendering in the Netherlands resulted in growth of bus-hours up to 30-60% at 5-10% lower costs in some cases and the effective price per bus-hour declined by about 30% (Van de Velde, 2008).

At an international level, focusing more on the urban areas comparable to the G3 situation, similar results were found. London may be seen as the most progressive and liberalized urban public transport market within Europe, having competition in the market instead of for the market, invoked by biddings for separate bus-lines. Although a chaotic period of abrupt transformation initially prevailed, overall efficiency gains and welfare effects are also found to be positive here (Gomez-Ibanez and Meyer, 1993) and (Mackie and Preston, 1996). Unit costs in Sweden dropped by 13% after introduction of competitive tendering (Alexandersson et al, 1998). One of the most important studies written on cost reductions was conducted by Hensher and Wallis (2005). In evaluating the regulatory options for urban public bus transport, they observe remarkably high cost reductions in nearly every nation after the switch towards competitive tendering. There are differences in magnitude of efficiency gains resulting from the variety of environmental settings in which transit companies have to operate, and whether the market was previously served by a public monopoly.

However, the overall average results are striking. In a study covering 20 cities in 10 developed countries[6] the short/medium term reductions in unit costs were summarized as follows:

Great Britain: 50-55 per cent

Scandinavia: 5-34 per cent

USA: 30-46 per cent

Australia: 22-38 per cent

New Zealand: 40 per cent for public operators, 5 per cent for private operators.

The markets studied were previously dominated by state-owned enterprises or served by a public monopoly. The study focused on the main cities of the respective countries and their bus transport. For rail services a whole different situation is apparent and results from tendering are completely different. For convenience, the topic of railway services will be discussed in a later chapter (chapter 5).

Unfortunately the results mentioned above are not as ideal as they seem at first sight. Of course the cost reductions accomplished on short/medium term after introduction of competitive tendering are impressive and desirable, however, there is no guarantee this will be the case in every scenario. In France competitive tendering did certainly not result in the goals aimed for. France faced a situation comparable to the recent Dutch market for which competitive tendering was not mandatory until 1993. Execution of services was awarded to companies for a period of 5 years, after which the period was generally extended after some tacit agreement. Thereafter the *Sapin*-act obliged local authorities to competitively tender transit services in an attempt to prevent collusion and corruption and to improve efficiency by increasing competition for the market. The *Sapin*-act works in three stages: first the bidders are qualified on their financial and professional guarantees, the local authority evaluates who are eligible to provide the service. Next a more detailed description is issued after which the selected candidates can place their bid. At the last stage one or several candidates are selected to negotiate on their proposals in order to find the most suitable candidate. The procedure is therefore a bit of a hybrid and seems to take best of both worlds at first sight. Nevertheless, data from France show quite opposite effects as compared to the cities examined in the studies previously quoted.

[6] Cities investigated included: United Kingdom: London and rest of Great Britain; Norway: Major cities and Lillehammer; Sweden: nation-wide networks, Stockholm and Helsingborg; Finland: Helsinki; Denmark: Copenhagen; The Netherlands: Amersfoort, Utrecht and the county Zuid-Holland; Italy: Rome; USA: 8 different cities; Australia: Adelaide and Perth; New-Zealand: Auckland, Wellington and Christchurch.

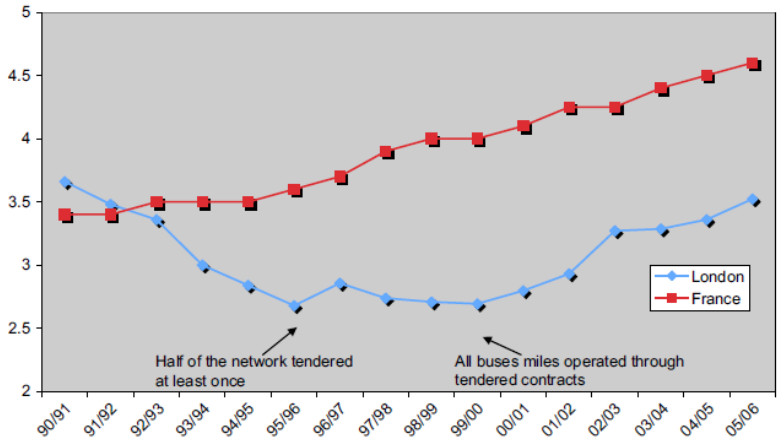
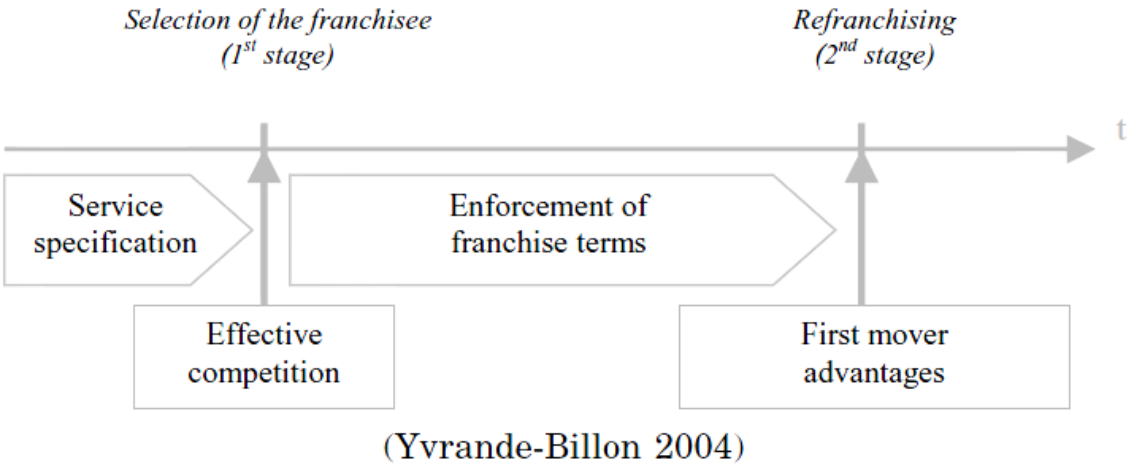



**Fig. 3.** Bus operating cost per vehicle-kilometre (euro at 2005 prices). The operating costs do not include operators' profit margins. Sources: France: CERTU-GART-UTP yearly reports; London: Department for Transport (2002, 2006).

Whereas cost reductions and perceived quality improvements were observed in most countries, the table depicted above shows none of these results aimed for were apparent in France. Costs kept increasing on a steady base, while no significant quality improvements emerged. The failure in reaching objectives has been examined by multiple studies, presenting some regular problems to overcome in achieving an effective and efficient tendering system (Yvrande-Billon 2006, Amaral et al 2009). The next chapter will assess some of the problems encountered when introducing competitive tendering to the market. The main focus will lay on problems observed in France, since they provide some of the striking examples why tendering may not always result in the most desirable outcomes.

4. Problems encountered in competitive tendering

The figure below illustrates four of the problems observed in the French tender market for urban public transport. The problems depicted will form the guidance for this chapter, describing the problems encountered and the likelihood of similar situations to occur in the Netherlands.




(Yvrande-Billon 2004)

**Figure 5 – Franchise bidding: problems to overcome**

Problems mainly arise from the existence of transaction costs; contracts can never be complete. In a market where costs are the only concern, bidding will usually be the suitable way to find the most desirable operator. For urban public transport price is not the only concern though. Local authorities can specify required frequency level and induce price ceilings, however, quality measures will always remain subjective. Moreover, a vibrant market such as the urban transit one is too complex to fully cover in contracts and it is subject to continuous changes. Changing behavior is likely to occur, as after the winning bid comes into practice, market competition is more or less eliminated (at least for the term the allowance has been awarded to the respective operator). Within the specified contracts both players will pursue their own strategic goals which make the incomplete contracts plausible for providing different outcomes than initially intended. Obviously this contractual deficiency may also occur in case of fully negotiated contracts or in-market competitive contracts. To make strategic goals of both players correspond, one might argue in favor of a publicly owned monopoly for providence of transit services. As shown throughout this paper this certainly does not imply publicly owned monopolies to be most desirable here, however, provided services have to be described sufficiently clear and as complete as possible. Adequate specification will be necessary to compare

bids and to set a proper benchmark for evaluating performance afterwards. Lack of adequacy may result in the most attractive bids being placed by opportunistic players, who are most aware of opportunities to exploit unspecified details: a case of adverse selection (Bajari et al, 2003). Contrarily, incomplete contract specification may also lead to over optimistic bidders who experience difficulties to deliver negotiated services once in business, resulting in the adverse effects of the winner's curse. Clearly, neither abuse of contractual incompleteness by operators, nor over optimism with related problems in execution are desirable. Expertise on the market and its requirements on governmental side are of key importance in this process. As for the relevant G3 cities in the Dutch case, this should not be a burdensome though, as the local authorities are currently closely involved with public transport provision. Both RET (Rotterdam) and GVB (Amsterdam) are fully owned by the municipal authority, whereas HTM (The Hague) is owned for 67 per cent. Contrarily in some cities tendered in France, there was no employee dedicated to the regulation of the sector (Yvrande-Billon, 2006). Moreover, French legislation allowed authorities to redefine terms of negotiated contracts, which creates high uncertainty on the operator's side; especially in a changing political environment. Due to the resulting uncertainty and combined with the negotiation phase at the third stage in the tendering process (which is insurmountable subject to subjectivity), operators may reconsider to compete in an often costly bidding process. Therefore, aside of expertise, local authorities' reputation and transparency should be high in order to invoke sound bids. Likewise the Dutch system seems to have favorable conditions on this matter as compared to France[7].

The problems mentioned above closely relates to the 'auction vs. beauty contests' theory. In which beauty contests relate to the negotiated contracts and auctions to the tender sessions in this paper. It has to be noted that difficulties encountered by the French authorities when competitive tendering was implemented, is generally associated with 'beauty contests' or negotiated contracts on an even larger scale. According to Klemperer (2000) is his paper 'the biggest auction ever':

'*Rather than rely on government bureaucrats to assess the merits of competing firms' business plans, an auction forces businessmen to put their 'money where their mouths are' when they make their bids. An auction can therefore extract and use information otherwise unavailable to the government. Secondly, the difficulty in specifying and evaluating criteria for a beauty contest makes this a time-consuming and opaque process that leads to political and legal controversy, and the perception, if not the reality, of favoritism and corruption'.*

[7] France is ranked 25th on the world transparency index, The United Kingdom 20th and the Netherlands 7th. (Global corruption report 2010 by Transparency international)

A related competition policy problem concerns collusion behaviors. When the market is collusive the competitive tendering market will not give rise to lower prices since the market remains monopolistic in effect. This may occur through agreements not to bid on others networks as well as by coordination of placed bids amongst competitors in order to mimic competition. Although the French system in which the subjectivity during the negotiation process and low transparency requirements on final decision making should theoretically lower opportunities to collude, history has shown collusion has also contributed to the observed failure of lowering prices. France authorities do not need to publicly justify their final decision for confidentiality reasons. Moreover, since part of the decision is based on the subjective negotiation process after bids being placed, a cartel should face difficulties to sustain. In theory a cartel should be able to detect firms who deviate from the agreement to collude and be able to impose punishments. Apart from problems with monitoring competitor's behavior, the ability to punish is also arguably low on the market as after the winning bid has been awarded, competition on the respective market is fairly eliminated, at least during the determined contract period. Contrarily, major transit service companies may be involved in a large number of networks facing a rather consolidated market, which could make the profitability from deviating once low since it might invoke fierce competition in all subsequent networks to be tendered. Therefore there seems to be a trade-off: a fully opaque procedure would make it harder for a cartel to sustain, but, on the other hand, could raise opportunities for corruption. Full transparency, on the other hand, enables monitoring of competitors behavior. But it also diminishes uncertainty for potential bidders, which theoretically makes competing in the tendering process more attractive. Attracting more potential operators implies more players in the market, which makes coordination and sustainability of the cartel hard to evolve. Besides, the French case shows lack of transparency and subjectivity in the decision making process does certainly not suffice as anti-collusion device. In 2005 the three key players (*Keolis, Transdev* and *Connex*) were found guilty on formation of a cartel by the French Competition Commission. A fine of 5 per cent of annual turnover was imposed on each company. Arguably the reported low competition levels and lack of efficiency improvements in France were at least for some part attributable to the cartel. A more recent preliminary though incomplete paper by *Frot et al* (2011) indeed indicates raised competition levels through higher participation in auctions. Within The Netherlands an implicit division of the three cities to be tendered seems likely as well among the operators now active on the respective networks. Although competition between RET, HTM and GVB would not be expected looking at the history in their specific markets, this does not really influence the likelihood of collusion for the G3 networks. The incumbents have their historical strings to a specific city, making GVB operating in Rotterdam quite implausible. Nevertheless operators like *Veolia, Arriva, Connexxion* and *Qbuzz* are all experienced foreign transit operators possessing the necessary expertise and

capacity to run complex networks. None of those operators has any benefit in forming a cartel with any of the Dutch operators, since the Dutch are no competitors outside their city and thus there is nothing to devise. Making an agreement with GVB to place a phony bid on the Amsterdam market will not yield any revenue since GVB is not likely to compete in one of the other tenders anyway. In other regions throughout the country and in medium-sized cities the international transit operators already stepped in. Cost recovery ratios within the G3 cities are much higher than in the rest of the country, which possibly increases the overall attractiveness to compete for the specific network even further.

Moreover, collusion can never be prevented by the market settings itself, only the likelihood and opportunities to collude may be diminished. At long last, discretionary power of antitrust-authorities will always remain of vital importance in detection and prevention of collusion.

Another problem encountered on the French market is that of monitoring actual performance and connecting proper incentives and punishments to it. Previously it was stated already that local authorities miss the necessary expertise and ability to fully specify all requirements on services to be provided, and, bounded rationality and subjective interpretation of qualitative measures may result in operators striving for other strategic goals initially aimed for. Because the environment operated in is subject to change and unanticipated events may always occur, the market combined with incomplete contracts has to allow for some sort of flexibility and renegotiation of contractual terms. In France renegotiation of promises made in the winning bid has often been observed. Although both local authorities and operators could initiate such renegotiation, the information asymmetry between both players and the fact the local authority has awarded the contract to their most preferred bid, makes renegotiation in favor of the operator most plausible. Some revising of contractual terms could indeed be attributed to events not accounted for and the vibrant market, but the extent in which this happens in France makes these factors unlikely to be the mere reason, especially considering contracts are only issued for a six year time span (Yvrande-Billon, 2006)

As monitoring is hard and decisions on whether punishment or revision of contractual terms would be most appropriate are subsequently complex decisions, proper reward schemes make up another tough policy problem. Full specification of all possible risk and reward possibilities goes beyond the scope of this paper, as it aims to identify under what conditions what form of competition in urban public transport is most likely to be successful. Risk allocation and reward schemes are applicable in either negotiated contracts or competitive tendering and competition for the market or competition in the market: the matter rather relates to contractual design instead of market design. Below a selection on the wide variety of options is depicted.

**Table 1**
Risk allocation: examples of contract types

| | | Revenue risk borne by | | |
|---|---|---|---|---|
| | | Authority | (Shared) | Operator |
| Production cost risk borne by | Authority | Management contract:<br>• The operator is paid a management fee for running the system<br>• All production costs and passenger revenues accrue to the authority | (Other combinations of incentives) | |
| | (Shared) | Gross-cost contract with shared production cost risk:<br>• Example 1: Indexation clauses transfer the/some risk on input price increases to the authority. The operator remains responsible from productive efficiency<br>• Example 2: The operator bears the production cost risk up to a specific level, after which the risk is shared between authority and operator | (Other combinations of incentives) | (Other combinations of incentives) |
| | Operator | Gross-cost contract:<br>• The operator is responsible for all costs of running the system<br>• The authority remains responsible for all revenues<br>• Various clauses can incentivise the operator to deliver improved operational quality by bonus/malus and other incentives related to operational performances | Gross-cost contract with ridership incentive:<br>• Example 1: The operator is incentivised to attract more passengers by a variable payment related to ridership increases<br><br>Net-cost contract with shared revenue risk:<br>• Example 2: The operator carries the revenue risk up to a specific level of divergence with the forecasted ridership. After this threshold, the revenue risk is s hared between authority and operator | • The operator is responsible for all costs of running the system and for all passenger revenues generated<br><br>Net-cost contract<br>• The operator receives a lump-sum payment to cover the expected deficit of operations (or pays a franchise fee to the authority for the right to operate a profitable franchise)<br><br>Super-incentive contract:<br>• The operator receives no lump-sum payment but only a variable payment, fully dependent upon specific performances (such as ridership, etc.) |

Empirical research on the effects of different reward schemes available for the transit market is limited and hard to generalize. Variant schemes are applied in different countries, all having their own diverse business- and institutional environment. Nevertheless, it is justifiable to name some global insights available on this topic, since contractual design may influence the market settings to a certain extent, e.g. the number of bidders is not only influenced by the market forces but also by opportunities offered by contractual design.

Broadly spoken, for contracted services we can make a distinction between gross costs- and net cost contracts. For a gross cost contract an authority pays an agreed sum to provide a specified service. The contract will indicate the minimum frequency levels, the routes to be provided, required quality levels and the fare to be collected. The passenger revenues obtained will be transferred to the local authority, who basically bares all risk in operation. Within the model a government could still encourage competition between operators by examining who provides specified services with high quality levels. For a given amount of subsidy, operators may expect to be capable of arranging different combinations of frequencies, extended routes, qualified bus drivers, patronage, cleaning schedules and innovation. Summarized, there is competition amongst operators on delivering the

highest possible social welfare for a fixed subsidy payment.

With net cost contracts, more uncertainty is accepted by the operator who takes risk for both costs and revenues of operation. Local authorities may still specify requirements of services to be provided and set maximum fare levels and quality standards, however, income resulting from operation is retained by the transit company. Usually there will still be a contribution made by government agencies since the passenger income is often not enough to make transit service provision commercially viable. In this setting more incentives are created for the operator to make transit services profitable. However, as mentioned before, increasing profitability could also be achieved by opportunistic behavior after the winning bid has been determined; accuracy and expertise in order to create contracts closest possible to complete are of vital importance here. Another possibility is private operators finding more efficient ways to provide services and ways to enhance quality. Results then may be higher patronage levels, increased fare-box recovery levels and thus profits flowing from the goals originally aimed for by local authorities. In the Netherlands some of the bus contracts are net cost contracts. As the three large cities are served by transit companies owned by the local authority, while the same local authority also specifies the services to be provided and requests subsidies for services from the governmental agencies, the situation tends more to a cost-reimbursement contract. Several empirical studies have shown higher cost efficiency is achieved when incentive-based contracts are used instead of cost-plus or cost-reimbursement contracts (Amaral et al, 2009). In London public authorities used to tender net cost contracts, resulting in large cost efficiency gains. Since 2001, however, quality incentive contracts were introduced and became increasingly popular over the years. Those contracts usually involve a gross cost component, with additional payments or penalties based upon pre-specified performance targets. These payments relate to quality, services, patronage and do impose some budget uncertainty upon the government. But here again, the extensively mentioned necessity of proper contract specifications is determining the extent of the problem. For example, in Adelaide Australia a contractual design insured additional payments for increased patronage approximate to the additional income received by ticket income, therefore laying minor extra uncertainty on authorities' budget (Hensher and Wallis, 2005).

Another source of inefficiency in the transit service tender market is identified at the time of re-contracting. Information asymmetries do not only exist between the specific authority and the operator, the incumbent will also have significantly more information on the actual requirements to serve the market than outer bidders. Most valuable information is obviously obtained in performing the job. Aside of costs related to the organization of competitive tendering by the municipality and the costs of investigating and preparing a bid, costs may result from difficulties in transfer of physical assets and staff. In France this issue is eliminated by compulsory automatic transfer of staff on the

same terms of employment to the winning bidder. Moreover, local authorities are responsible for all investments in physical assets and duration of contracts is relatively short. Creating this legislative setting, the incumbents' advantage is reduced to a minimum when retendering sessions emerge. Nevertheless the incumbent will always have more information on the actual demand for the market, costs and revenue, bureaucratic requirements and evaluation of the assets. Combined with the lack of expertise and inability to adequately and fully specify contracts observed at French local authorities, it is safe to assume incumbents have relevant advantages over potential entrants and outer competitors in subsequent tendering.

A very similar situation is observed within the market for the 3G cities, where execution of transit services has been awarded for decades to respectively RET, HTM and GVB. Being the main candidates in their particular city, one may question whether the problems observed will not be apparent from the very start of competitive tendering on the market. Local authorities in the specific cities arguably have the expertise on the market to properly define contractual service requirements as they own the current operating firms, and therefore may be assumed to have necessary market insights. As most municipal authorities have expressed to be in favor of awarding concessions to their own transit enterprises, possibly competitive tendering could be organized in such a way advantages for incumbents are still existent. So far competitive tendering has been organized for the bus transport market in Rotterdam and The Hague: in both cases the winning bid was issued by the incumbent.[8]

Indeed, Hensher and Wallis (2005) indicate levels of cost efficiency gains highly depend on the initial market conditions when the market opens for competitive tendering. Positive results described above, arise from a shift following an initial non-competitive monopoly serving the market. Subsequent tendering rounds do not result in cost savings comparable to the ones observed at first tendering rounds. Continuous double digit cost reductions are obviously impossible to achieve, costs of operation cannot be diminished infinitely. However, price increases significantly higher than inflation levels have been observed as compared to the initial round outcomes. This may have to do with more challenging demands for operators over time, but also the asymmetry in information between incumbent and competitors is relevant here. Incumbents are less likely to fall for winner's curse problems and because of the market insights obtained, they may face less competition for reasons stated above. Increases in costs and fare levels could possibly also reflect qualitative improvements, increased levels in valuation of travelling, resulting from better understanding of the customers preferences and innovations made by the incumbent (Wang and Yang, 2005).

[8] RET in Rotterdam, and a joint venture of Qbuzz and HTM in The Hague.

Authorities will recognize reductions in costs and subsidies should not be at expense of the social task urban public transport furnishes, certain efficiency gains may therefore be undesirable. Since the major part of efficiency gains will be made at the first tender session, it is argued that alternative contract regimes are more likely to result in more desirable results. Once cost efficiency has been recognized, long term quality focused contracts may be more likely to provide the right incentives to reach socially optimal goals. Quality improvements may require firm-specific investments and operations focused on conditions of socially optimal provision instead of solely on profit maximization by the firm. High risk and uncertainty on continuity of operations faced by transit companies may be problematic in reaching the goals aimed for (Hensher and Wallis, 2005).

It seems clear the Netherlands do have the characteristics necessary for successful introduction of competitive tendering in the three largest cities. Expertise on the transit marker, transparency, low corruption levels, adequate and effective governmental institutions and (foreign) competitors to serve the market are all available. Previous tendering local networks has shown to be effective and tender sessions in cities comparable to those of the G3 have proved to result in cost efficiency and higher quality levels. Problems encountered in the French situation can presumably be resolved with institutions and characteristics available on the Dutch market as explained. When considering the high costs related to the organization of competitive tendering sessions, possibly competitive tendering should be seen as the most preferred market design to start with after the state-owned monopoly situation, in order to find cost efficiencies. In case competitive tendering has worked as it intended to, incumbents will be efficient operators with low cost-efficiency gains to be expected from subsequent tendering. Then, contract renewal based upon negotiation and mutual trust may be most preferred, in order to ensure provisions, innovations and investments can be made to serve the market socially optimal. A similar regime has been introduced in London where quality incentive contracts determine the level of additional payments or fines upon the gross payment. In case an operator performs well on qualitative indicators and appears to work efficient, extension of contract duration is given for an additional 5 till 7 year period (Amaral 2009). Such a system obviously does require high levels of transparency and low levels of corruption, and, in case an operator does not suffice or other operators are likely to improve performance competitive tender sessions will be organized. Potential retendering will also impose competitive pressure on incumbents even if contract renewal is eventually chosen.  A major difference with the current situation in The Netherlands is that current incumbents in three large cities have never faced any competition. As the enterprises are fully owned by local authorities, chances are rather small the municipality refrains from repeatedly awarding the provision of transit services to them.

## 5. Competitive tendering for rail

All potential difficulties and necessary conditions for a tender market to function indicated above apply both for bus services and tram and metro. However, where for bus networks positive results have been monitored after introduction of competitive tendering, such results have often been absent for transit services performed on rail; respectively tram and metro in case of urban public transport services. Contractual defects and transaction costs seem to be more detrimental in the case of rail transport than for bus services. The system is believed to be more complex and the division of property rights is problematic. Both in the United Kingdom and Australia the winners' curse problems were observed after tendering sessions had been held. Opportunistic bidding and miscalculation arose from large complexity of evaluating the market, rolling stock value, assets and investment requirements. Large budget deficits on the operators' side resulted, governmental funding was inevitable and promised efficiency gains and quality improvements could not be delivered (Kain, 1998). This chapter will examine some of the experienced difficulties in some depth.

It is comprehensible the system functions quite differently, since all operators are reliant upon the same rail infrastructure. Especially competition in the market seems hard. When rolling stock of one enterprise breaks down, all other operators will bear the consequences of delays and lost customers too. Moreover, often different lines run same tracks inside the city centre with joint stations up until bifurcation leading to different terminuses. In this case competitors may find it profitable to interfere one another by purposely delay rides on the joint track. As most customers within a city center do not plan their ride but walk to a station and wait for the first appropriate ride to arrive, the most profitable strategy for an operator may be to delay. No competitor will be able to pass by, being on the same track, and due to longer waiting times more customers will arrive at the tram/metro stop. As a result patronage levels and subsequently fare income can be increased.

Property of rail, stations, rolling stocks and other infrastructure may be tendered as part of the contract. However, including those assets will require substantially higher investments by bidders than in the bus service market. This will be problematic in case the periodic length of the contract is low, since potential revenues over the contracted period may not outweigh uncertainty associated with stock devaluation. Short-term periods may also make incumbents reluctant on making investments desirable in long-term perspective, because extension of the contract is uncertain. *Short franchises cannot readily finance new rolling stock that has a life well beyond the life of the franchise* (Thompson, 2007). Long run concerns may become unprofitable to take into account for an incumbent resulting in dynamic inefficiency in the market. Although this is arguably the case in bus markets as well, required investments are typically lower and second-hand market is more readily

available since busses will drive anywhere whereas rolling stock needs to be compatible with existent infrastructure and network characteristics. This can create the problem of 'stranded assets' since the incumbent is not certain whether his contract will be renewed in subsequent tender sessions. The risk and uncertainty potentially gives rise to few operators willing to compete for the market or requests for higher gross cost payments to compensate. Therefore: competitive tendering is likely to be incapable to achieve cost efficiency and function optimally in a way observed in other markets.

A related issue is the responsibility of maintenance of the track infrastructure. In case ownership and responsibility is shared among companies, difficulties in contribution levels and coordination of service provision may be tough. When infrastructure is owned by one of the operators or by a separate firm, interests may not coincide. As a solution ownership of track infrastructure and ownership of rolling stock were dedicated to separate firms in London. *Railtrack* became responsible for the track infrastructure, but soon appeared to be unprofitable and went bankrupt, after which assets were transferred to a non-profit government-owned enterprise. Rolling stock was transferred to three new private firms who lease their assets to operators in the market. The divisions of property rights showed to be inefficient as operators fully rely on third parties in providing their services. Within the Netherlands a similar situation is apparent on national level with *Prorail* being owner of rail infrastructure, whereas *NS* (Nederlandse Spoorwegen, Dutch Rail) provides actual transit services. Ongoing problems in coordination and communication have led a recent committee to conclude separation of property rights should be considered to be undesirable[9]. Looking at previous results and theoretical predictions, it seems safe to state fragmentation of the rail network and division of property rights is unlikely to result in socially desirable outcomes.

By separating ownership of rolling stock and track infrastructure, one risks every company will pursue its own strategic goals, whereas the only objective should be to deliver the necessary conditions for provision of public transport. When all components are united within one company or holding at least, one assures all necessary elements cooperate in provision of transit services. However, in that case the problem previously encountered comes into place again: '*Short franchises cannot readily finance new rolling stock that has a life well beyond the life of the franchise'.* Another reasonable solution is thus to lengthen contractual periods in order to decrease uncertainty on the operators side. Lifespan of rolling stock is 30 years on average. Obviously such a long term period imposes uncertainty on operators and authorities again, since market conditions may change significantly and unforeseeable events are likely to arise. Changing policy climates under different

[9] *Commissie Kuiken* was created by Dutch parliament to evaluate causes of ongoing problems in the provision of Dutch railway services. E.g. information provision to commuters, maintenance coordination, yearly breakdowns during autumn and winter.

parliaments will result in different objectives and, moreover, over such a time span the initial idea of competitive pressure on incumbents sort of vanishes. Considering problems related to incomplete contracts and renegotiation, transaction costs and expenditures related to organization of highly complex tender sessions, possibly provision of rail transport is more likely to approximate socially optimal levels under renegotiation and mutual trust.

Possibly, EU wide rolling stock leasing companies may be another solution, whereas infrastructure maintenance should be organized by the operator itself while innovated and owned by local authorities. As long as proper institutions and enterprises are no existent, history has shown liberalization of rail transport services to be difficult and should be approached with caution. At the moment stations, tracks, rolling stock and other infrastructure are all owned by RET in Rotterdam, in Amsterdam and The Hague the infrastructure is owned by the municipality but operators are responsible for its maintenance.

6. How should the urban public transport be organized?

Above analysis should convey that substantial improvements may be expected from competitive tendering for transit bus services, whereas transit services performed on rail are less likely to benefit from competitive pressure imposed by tendering sessions. Urban transit companies and politicians have objected to different competition policy approaches for the different means of transport arguing urban public transport is a complementary integrated system, making different operators for different means of transport undesirable.

Indeed multiple studies indicate integration in urban public transport can result in positive enhancement of the quality of services delivered to customers by the individual travelling components. As *European Commission DG Tren(2003)* defines integration: *the organizational process through which elements of the transport system (network and infrastructure, tariffs and ticketing, information and marketing etc) are, across modes and operators brought into closer and more efficient interaction.* For a network to function optimally, compatibility between services clearly is of vital importance. However, problems associated with different companies operating on the urban public transport market seem to be a bit outdated nowadays. As for tariffs and ticketing full integration is assured on the Dutch market by introduction of the *OV-chipcard.* Buying different tickets for train, tram, bus or metro is no longer necessary. Although implementation of the payment system has led to lots of criticism, one payment device for all means of public transport throughout the country should result in a convenient way of travelling and makes the operator travelled with less relevant. When considering information provision toward customers, recent developments such as common usage of Smart phones and related accessibility to the internet also eliminates most potential difficulties. Trip advisory websites covering all means of transport and operators are already existent[10]. They allow travelers to oversee all schedules and to compare departures, travelling time and fares. Different operators on different means of transport will not change anything, integration of different operators schedules already occurs when travelling through different regions. At last network integration seems to be important, and to be ensured some governmental regulation may be necessary.

Farsi et al (2006) provide evidence in their paper: economies of scale and scope exist for multi-mode transport companies, resulting from usage of similar equipment, expertise, maintenance and skills, combined research and development and advertising costs and coordination of services. Unbundling a multi-mode transit company and tendering all networks separately may thus lead to operational inefficiency. Nevertheless, they also note there is a trade-off between the level of competition for

[10] E.g. www.9292ov.nl

the market and the level of economies of scale and scope to be exploited. Both tend to increase cost efficiency, however, they can hardly be used at the same time. As is seen for the Rotterdam bus network, competitive tendering led to a reduction in subsidies of 17 million annually, while according to the market's operator RET no differences will be apparent to customers. Questionable is thus, whether the economies of scale and scope achievable by a multi-mode monopolist will outweigh efficiency gains from competitive pressures. Network coordination certainly exists within a multimode operator. When serving all networks, logically on every mode of transport profit margins are made. In Rotterdam some busses do not drive all the way up to the central station since tram or metro stations can also provide a convenient and fast lay-over for the fulfillment of one's trip. As for the *Randstadrail* (providing a direct metro connection between G3 cities The Hague and Rotterdam), RET indicated certain bus lines could be shortened since a superior substitute is now being provided by them as well. However, in case bus lines and e.g. metro services are operated by separate companies, both would aim for the profit margin obtainable on the full journey. Costs could thus be unnecessarily be duplicated as both busses and metros may run more or less the same route. The bottom line remains ambiguous here, as both efficiency enhancement forces work from opposite directions. This trade-off is underlined by results found by Cambini and Filippini (2003) in their study on Italian regional bus networks: unbundling of networks makes the tender less complex and potentially attracts more bidders, whereas unbundled networks may fail to benefit from scale and scope economies. The perfect composition and magnitude of networks to be tendered will arguably differ from case to case, and moreover, can never be determined objectively since due to contradictory forces real effects and outcomes will remain ambiguous.

According to Pedro Peters, CEO of Rotterdam's transit company RET, means of transport should not be competitive since they are complementary. '*Trams and metros are capable of travelling large distances in a short time span, while busses are capable of serving areas difficult to access by other means of public transport'*. However, following his arguing, bus and rail networks are non-competitive as they partly serve different areas and objectives. Of course, the coordination of bus and tram/metro as described in the previous paragraph result in more efficient operating cost. However, it is not certain whether passengers would not actually perceive bus routes running all up to the central station much more convenient because of avoidance of necessary lay-over to other modes of transport. The expressed concern of operators on different modes trying to attract and retain as many passengers as possible the full journey, therefore appears to premise the companies' profit margins rather than customers' surplus. Or at least, enhancing efficiency by introduction of market competition through competitive tender sessions cannot be rejected as being desirable. Moreover, when necessary, integration of networks have shown to be possible within the United

Kingdom, though this may require some extra attention during the contracting phase. To quote the final report on integration and regulatory structures in public transport conducted by *NEA transport research and training, OGM* and *Oxford University:*

*'In the contract, if incentives are included at all, they tend to address the individual performance of the operator in terms of passengers, quality etc. In particular, in concession areas where more operators are active the efforts made to be compatible with other service providers should be included in the contract. But also in areas where only one operator is active, this operator should be contractually encouraged to pick up 'wider integration' as one of its ambitions'.*

Integration of networks will be inevitable in case of competition in the market when following the London model. Possibly, network integration may also be indispensible in case bus services will be competitively tendered while rail transport can still be awarded by local authorities.

As previously explained, competitive tendering of rail transit services do not portray the same likelihood to result in goals aimed for. Exception on observed problems is the German private operator *Deutsche Bahn*. However, this is a nationwide operator responsible both for inter-city and urban rides. It has been claimed competition has increased efficiency here. Some lines reported 30 per cent cost reductions combined with 20 per cent increased quality and service levels. But it should be noted that innovations were paid for by governments, and competitive tendering has never been mandatory: when preferred, contracts can be awarded (Thompson, 2007). A very similar situation holds in the Netherlands: despite retreatment of the law '*Wet persoonsvervoer2000'* contracts may still be competitively tendered. However, this is arguably unlikely since municipal authorities own the specific operators. Why would they impose competition on their own company when not mandatory? Some contracts were successfully tendered within the German market, possibly invoked by diminished uncertainty on operators' side. In Germany a guaranteed residual value is provided in case rolling stock lifetime is longer than the contractual length: eliminating the risk of stranded assets otherwise endured by operators.

When figuring rail services still impose some policy challenges, the initial plan not to competitively tender such services at least up until 2017 seemed reasonable. By that time the market situation could have been reevaluated. Competition in the transit rail market has showed to be possible, however, necessary institutions first have to emerge in the Dutch market before implementation is prudent. A matured secondhand asset market, guarantees on residual value of rolling stock, sufficient number of operators with required expertise and operational power to perform the services readily available on the market, sufficiently long preoperational time to allow for minimization of transaction costs and contractual incompleteness, effective allocation of track

property and maintenance responsibility and several EU wide rolling stock lease companies are possibly some areas in which improvement would result into more favorable conditions.

Whereas competitive tendering of rail services is not yet to be considered wise, the overwhelming results achieved in transit bus services makes the recent pull back in plans for the G3 cities by Dutch parliament unintelligible. When considering market conditions, mostly eliminate potential integration problems, while network compatibility can still be achieved when services are competitively tendered, rejecting the high likeliness of increased cost efficiency seems unfair. Empirical results in cities operated with more complex systems, higher density and conglomeration have all yielded positive outcomes (as shown in the case studies presented by Hensher and Wallis, 2005), as well as the bus services tendered in regional Dutch areas. Furthermore, Dutch cities are, unlike their foreign counterparts, barely capable of raising tax revenue. All Dutch inhabitants have to finance the inefficient organization of the G3 transit services whereas all other networks have been competitively tendered: current practices therefore do not seem justifiable. Dutch politicians argued municipal authorities are wise enough to decide upon the most optimal way of organizing their public transport market. This statement is somewhat naïve when considering all serving transit companies are owned by the local authorities themselves. As indicated before, competitive tendering may not be ideal continuously: negotiated performance based contracts are most likely desirable when subsequent contract renewal emerges. However, the G3 transit firms have not faced any competition in their own specific network ever since the Second World War, for which large efficiency improvements are likely to be reachable.

Since time is not ripe for competitive tendering in transit rail services yet, we will assume current situation is closest to optimal, lacking any relevant alternatives. Or: as long as alternatives have not provided to enhance efficiency and quality, there is no proper reason to change yet. The remainder of this paper will therefore focus on how competitive tendering for urban bus services should be organized, that is to say, is competition in the market or competition for the market to be preferred?

As competition for the market may result in different operators serving different modes of urban public transport, one may question whether competition is not already ensured. Incumbents theoretically face competitive forces in every subsequent tendering round (albeit to a lower extent as explained in previous chapters). Different modes of transport often also run same routes, providing customers with substitutes and making operators competitors within a city rather than complements. Moreover, substitutes to urban public transport also include motorcycles, cars, and bicycles. The Dutch situation is unique for the bicycle usage, possibly also imposing higher

competitive pressures on the serving operator, e.g. 40 per cent of commuting within Amsterdam is done through bicycling and nationwide 25 per cent of all trips to work are made by bike.

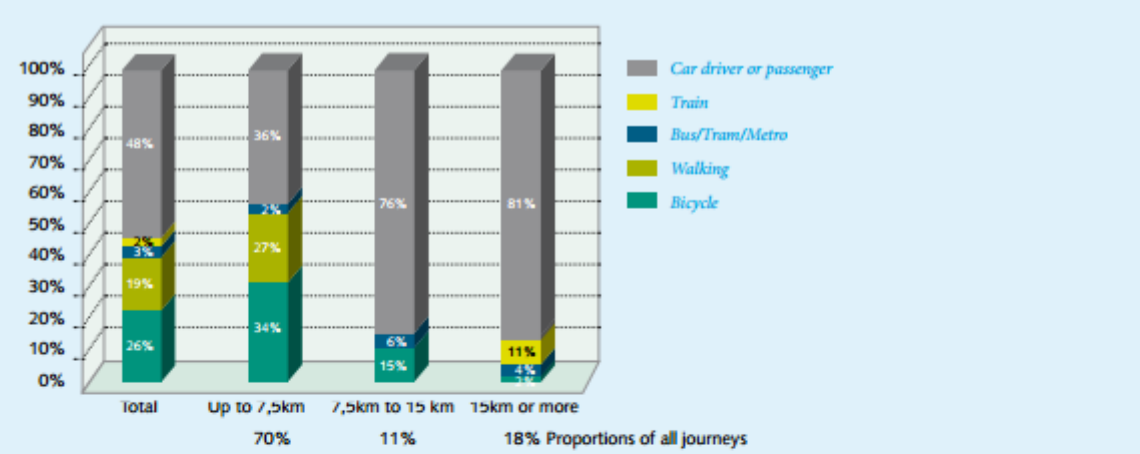



*Figure 1: Journeys according to main transportation means and distance category in 2007 (Source: Mobiliteitsonderzoek [Mobility Study] Nederland 2007, AVV*

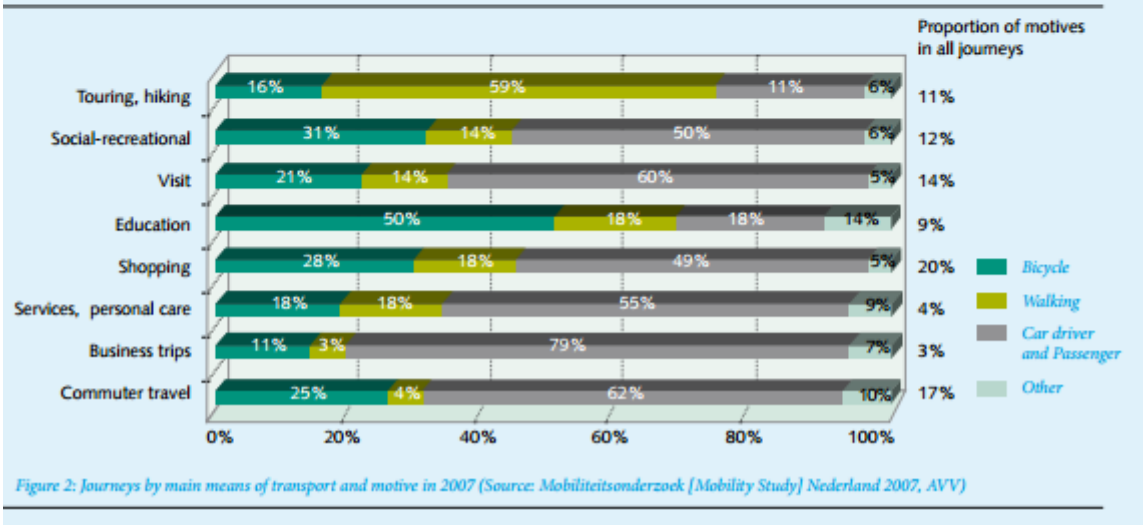



*Figure 2: Journeys by main means of transport and motive in 2007 (Source: Mobiliteitsonderzoek [Mobility Study] Nederland 2007, AVV)*

Obviously a minority of the population will not be capable of driving bikes due to age, however, one might expect urban public transport is ensured of a solid competitor in the Netherlands more than anywhere else. Question is therefore whether one would expect competition in the market to be beneficial. When looking at fare elasticity we see demand is relatively inelastic. On short and medium term increasing revenues are to be expected from a fare rise, although this effect will be lowered in the long run. (Paulley et al,2006) For the analysis of the benefits resulting from in market competition these results are interesting. As lowering fares will most likely not result in higher revenues is seems unlikely any competitor would cut prices below the price-cap imposed by governmental agencies. The inelasticity of demand with respect to fare levels may be explained by the relatively high waiting and searching costs characterizing the urban public transport market. Fare levels are typically not very high, a reduction in fare levels for intra city travelling will therefore not

result in major reductions in expenditures of most consumers, if noticeable anyway. A ride from the Rotterdam school of economics to Rotterdam Central station by tram or metro will typically involve a 20 minute ride at a cost of respectively 1,40 or 1,48 Euros. If hypothetically other operators would also cover this particular route as part of another line (as is the case for metro), and frequency levels observed are at most six times per hour, it is highly questionable whether a consumer would wait an additional 10 or 15 minutes at the station to save a rather small amount of money. When looking at the effects of quality on demand, evidence is poor. This may result from a lack of proper frameworks and the incapability of reliably measuring qualitative indicators though. Further research is desirable on this topic. Although it seems somewhat unlikely that e.g. bus characteristics, waiting environment and quality of information provision would have major impacts on demand while fare levels do not. Urban public transport is typically characterized by relatively low distance travels and high frequency levels, for which customers usually simply walk up to the station and wait for the first bus, tram or metro to arrive. Quality and fare levels between operators need to differ quite a lot to make it worthwhile to wait or search for alternatives instead. An indicator for which some evidence of elasticity is found is In-Vehicle-Time (IVT). The relevance to the topic of urban bus services in the Netherlands is limited as well though, since possibilities to decrease in vehicle time largely depend upon external factors such as congestion. To conclude, looking at the characteristics of the urban bus market there do not seem to be incentives for operators to act more efficiently or improve quality in case of competition in the market on different lines as compared to competition for the market. Some last results from the paper of *Paulley et al* (2006) seem to confirm this, at least for the London market. Although more or less inelastic demand responses to fare and quality levels were found, a relatively high sensitivity of underground use to bus fares was observed, (cross elastic 0.13). This was explained by the fact an overlap of both networks provides travelers with a choice of transport mode. Smaller sensitivity was found for bus use to metro fares, possibly because some areas are only served by busses. This suggests some competition between operators serving different modes of transport within a full transit system may be apparent.

The previously mentioned trade-off between attracting more competition and exploiting economies of scale and scope are obviously of relevance in this situation as well. When full networks are tendered the complexity increases, making bidding and specifying the contract more difficult. Clearly, advantages arise for the incumbent the larger the magnitude of the network to be tendered is. Amsterdam expressed to prefer full network tendering including all modes of transport at once. Because the law of mandatory tendering has been withdrawn, such a situation is not likely to occur anymore. However, if it did, significant advantages due to information asymmetry should be expected for the incumbent operator GVB. The higher the level of fragmentation on the market, the

lower entry barriers will be. The routes to be served will be easier to evaluate and required investments a priori will be lower. An example of lower entry barriers is found in the region *Waterland* north of Amsterdam, at which the Israeli company EBS managed to win the contract and enter the Dutch market, being the first firm managing to do so without merging or acquiring a Dutch operator. On the other hand, although tendering complete networks may involve higher levels of complexity it has to be noted all potential competitors of the incumbents (e.g. *Veolia/Connexxion, Arriva* and *EBS)* are multinationals operating on large scale and are usually experienced in multi-mode transport. Competing on full networks will therefore create the usual incumbent information asymmetry problems but should probably not be seen as an insurmountable barrier. Meantime, one could also argue lower entry barriers could give rise to small enterprises serving some routes. They may not be existent right now but market conditions will shape the likelihood of emergence of such companies, low entry barriers facilitate such possibilities. On the other hand it is questionable whether small starting enterprises could compete in a market characterized by large scale multinationals. This will generally depend upon the economies of scale and scope existing in the market. As mentioned, various studies indicate economies of scale and scope do exist (Farsi et al, 2006; Mohring, 1972). The ever returning issue is the trade-off between increasing market competition through lowering entry barriers or to exploit potential economies of scale and scope. According to RET, part of the 17 million annual reductions in subsidies resulted from combining and integrating certain routes (e.g. attaching the network of *Ridderkerk* to the urban transit networks) after the tendered allowances were won. Whether the largest share of costs reductions was achieved due to opening up the market to competitive forces or due to combining networks cannot be determined without inside information. The overall results of introducing competition in the market or competition for the market seem to point in the direction of full network tendering, but no inferences can be made with certainty. Particularly, because the Transport of London model shows economies of scale and benefits of integration may still be achieved while the network is fragmented. The necessary condition is expertise and adequacy within the coordinating authority.[11]

A final consideration on desirability of fragmentation or full network tendering concerns factors facilitating collusion. Following Motta (2004) a number of indicators can be compared for both market designs.

[11] Meanwhile one could argue economies of scale and scope can still be exploited in a fragmented network in London whereas this is impossible in the Netherlands, simply because networks served in G3 cities are much smaller. Serving a particular area in London may well be profitable and exist of quite a network. Fragmentation of the Rotterdam network could lead to several operators serving just a few lines, making efficiency losses due to lost scale economies more striking.

Concentration of companies facilitates collusion for the obvious reason coordination of a cartel is easier for a low amount of companies. The more companies serving the market, the harder it will be to form a strategy in line with all participants' strategic goals within the cartel. Low entry barriers are therefore disastrous to colluding firms. Especially in a winner-takes-it-all situation such as competitive tendering: serving a certain network without facing any competition for a period of time. Low entry barriers resulting from a fragmented market make collusion very risky, which could argue in favor of competition in the market. However, as mentioned before the competitors currently active in the Dutch urban transit market are not restricted by the size of the network to be tendered. Moreover they will have no incentive to collude as the G3 operators will try to retain their own cities, while generally not being interested in competing for other contracts. There is no use in colluding since there are no contracts to be divided.

Another potentially facilitating factor is found in the regularity and frequency of offers. Very large orders at once provide incentives to deviate since a lot can be won, particularly in the situation of tendered networks in which the whole market is won for a period of time. The frequency of the orders is also important, since frequent interactions allow the cartel to timely recognize and punish deviators. By grouping orders and demanding those on a less frequent basis, a buyer can stimulate the likelihood of the cartel to break since it provides players with the incentives to do so. As for the public transport market, indicators advocate competition for the market instead of in the market. Moreover, one could argue in favor of tendering all networks at the same date instead of subsequent tendering of modes and cities. Contrarily, in this approach the buyer has all power ex ante and is more likely to break collusion, but all ex post power is in hands of the operator who will in the most extreme case be in charge of all modes of transport and the entire city network. While collusion problems may be eliminated, a hold-up problem potentially emerges. When operating the full city, it is obvious an operator has a lot of bargaining power during the running contract. Replacement of the incumbent will be very complex and an impossible task in short-term, while the public transport system needs to stay in business for a city to be economically and socially viable.

Theoretically also the inelasticity of demand will enhance competition as well, however, due to the price caps this is not really applicable to the urban transit situation. Low elasticity could make operators ask higher prices and thus increase the profitability of the cartel. For the transport operators higher income through cartel formation is more likely to flow from higher subsidy levels instead of higher dares. Therefore the inelasticity of the demand observed for the urban transport market seems not that relevant to the likelihood of collusion.

For the factors facilitating collusion we thus, again, see forces working in opposite directions. Fragmentation of the market provides lower entry barriers making coordination of a cartel harder, while large orders on an infrequent basis make the cartel hard to sustain due to incentives to deviate. Contrarily very large systems operated solely by one operator risks to invoke hold-up problems. The correct policy for the market when aiming for prevention of collusion is therefore ambiguous

## 7. Conclusion:

Policy concerning the urban public transit market is, and will be, a controversial topic. The variability of the political views on this matter became instantly apparent while writing this paper. With the introduction of competitive tendering and its termination occurring in very short time span, the regulatory cycle described by Gwilliam(2008) never came into practice. The instability of the business environment and policies imposed on operators on the other hand is prevalent. A regularly observed consequence is uncertainty on the suppliers' side which is detrimental to investments and the overall attractiveness to compete in- or for the market. When authorities aim for a vital and competitive market one of the key factors is a stable regulatory system, clearly, when considering the past, this is a factor on which improvements could be made.

When evaluating the effects of competitive tendering so far, both The Netherlands and foreign cities generally report positive outcomes for bus services, as is indicated by, amongst other, Hensher and Wallis (2005), Veeneman et al (2006), Groenedijk et al (2005), Van de Velde (2008) and Gómez-Ibanez and Meyer (1993). Supplemented by others authors, results from these papers have showed a rather uniform message: there seems to be a general tendency of service quality improvements and a rise in costs efficiency subsequent to introduction of competitive tendering. Improvements observed were highest in cities where the market setting prior to introduction of competitive tendering was similar to current situation in the Dutch G3 cities: a state-owned monopolist serving the entire city network.

However, the French experiences with introduction of competitive tendering showed a whole different picture. Papers written by Yvrande-Billon (2006) and Amaral et al (2009) provided some insight in the problems encountered by French authorities. Hindrances to successful implementation of tendering included: incomplete contracting, difficulties in service specification, asymmetric information, adverse selection, winner's curse, effective competition or collusion, enforcement of the franchise terms and retendering invoking first mover advantages. Although these factors can be fatal to efficient results flowing from tenders, they are generally just as likely to occur and harm in case of negotiated contracting or yardstick competition, as argued by auction vs. beauty contest theory. Key determinants for success are expertise on the authority's side on the market and its requirements, and high transparency or related low corruption associated with those particular authorities. Furthermore, Hensher and Wallis (2005) show, amongst others, retendering generally does not yield the same high efficiency gains as observed in first tender rounds. In this paper it is argued once cost efficiency has been recognized, long term quality contracts may serve public interest better. Performance based quality contracts could allow for contract renewal of a

subsequent term in case specified goals are achieved by the operator. Nevertheless, it should be clear opening the market to competitors and holding competitive tendering as a credible threat for incumbents has to precede potential contract renewal. The Dutch G3 transit operators have not faced any serious competition for decades and opening up the market to competitive forces is likely to evoke efficiency improvements. An example is the major cost reduction achieved by *RET* and the municipal authority of Rotterdam in the bus service segment, after introduction of competition through competitive tendering.

The apparent success in bus services was not observed for transit rail operators, as indicated by Kain (1998) and Thompson (2007). The German system is one of the few exceptions on general competitive failure concerning rail services. Possibly urban transit rail services could be tendered in the future, but not under the same conditions and circumstances as bus services. Contract length should be substantially higher and certain institutions first need to come into place. E.g. A matured secondhand asset market, guarantees on residual value of rolling stock, sufficient number of operators with required expertise and operational power to perform the services readily available on the market, sufficiently long preoperational time to allow for minimization of transaction costs and contractual incompleteness, effective allocation of track property and maintenance responsibility and several EU wide rolling stock lease companies are possibly some areas in which improvement would result into more favorable conditions for competitive tenders.

As rail services should be postponed for the time being, the next question addressed in this paper was how to organize the market for urban bus services. Pervious chapters in the paper elaborated on the desirability of competitive tendering. Subsequently the difference between in-the-market and for-the-market competition was evaluated on characteristics as likelihood of collusion, potential economies of scale and scope, competition between modes of transport and separate lines, and the elasticity of demand for urban transit services. An overall conclusion was hard draw since effects of all pillars showed to be ambiguous. Moreover, there seems to be a continuous trade-off between attracting more competitive forces in the market and the benefits associated with large scale networks: unbundling of networks makes the tender less complex and potentially attracts more bidders and competition, whereas unbundled networks may fail to benefit from scale and scope economies. With current technological devices and possibilities of contractual obligations, integration of different transport modes operated by different enterprises seems to be possible. The fact lines are tendered separately in London does not provide any guarantee of efficient implementation of such a model in the G3 cities though, since the network tendered in London is multiple times larger.

To summarize: the initial law obliging local authorities to competitively tender their transit services does not seem to be a bad idea after all. Although rail services may not be ready at this particular moment, competitive tendering of such services was scheduled no earlier than 2017 anyway. Bus services on the other hand show proper evidence to improve with respect to both costs and quality as a result of introduction of competitive tendering. To say local authorities will make their own fair considerations on how transit services are best provided seem to be a bit naïve when considering the specific transit firms operating are all owned by the local authorities themselves: why would they invoke competition on their own businesses? As the urban transport services are highly subsidized by national tax revenues gathered by the local government, is seems to be rather unfair to fully discard the G3 cities of competitive tendering while it has shown efficiency improvements probably could be made.

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