Urban transport in post-communist transition. The case of Tashkent, Uzbekistan.[1]

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Abstract

The post-communist transition of municipal passenger transport in Eastern Europe and Central Asia is examined in this paper through the unique case of transport development in Tashkent, Uzbekistan. The history of urban transport development in the pre-Soviet and Soviet eras is reviewed, both more generally and in the specific city, and this is followed by a critical investigation of the reforms from the time of independence to date. These reforms include the legislative changes and changes in governance, and the evolution of the major modes of transport in terms of ownership, scale and reliability. The socio-economic and environmental impact of these changes is also considered. Policy recommendations are then offered to address some of the existing problems that have been identified in this paper, which presents a detailed analysis of post-independence urban transport development in Tashkent.

Keywords: Urban transport, municipal transport, Tashkent, post-communist countries, transition, Uzbekistan

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1. Introduction

The late 1980s and early 1990s brought about a historical transformation to the people of Eastern Europe and Central Asia, both politically and economically. The fall of the Eastern Bloc meant a greater scope for market relationships in economic management of these countries. The pace and degree of liberalisation varied from country to country, from relatively high levels in Eastern Europe to lower levels in the southern republics of post-Soviet Central Asia. This economic and political transformation resulted in great changes for the transport of goods and people. All countries have experienced growth in private car ownership with less reliance on public transport and changes in ownership of transport companies, and the growth in international trade has meant that significant changes have taken place in the direction and quantity of goods transport (Pucher and Buehler 2005).

This post-communist transition has only had a limited impact from the transport literature, and there has been virtually no focus on the countries and cities of Central Asia. (e.g. Hall 2010; Taylor and Ciechanski 2008) This paper intends to contribute towards closing the existing gap in the literature by examining policies of urban transport development in the capital of Uzbekistan – Tashkent. Tashkent is the largest city in post-Soviet Central Asia with a population of 2.3 million people living in an area of 334.6 square kilometres[2]. The city contributes approximately 14% to Uzbekistan's GDP and has well-developed transport infrastructure (Tashkent City Council 2010). Figure 1 presents map of Uzbekistan with Tashkent located in the north-eastern corner of the Republic.

Insert Figure 1 here

The paper has four main sections. Section 2 traces the emergence of organised public transport and its development before independence in 1991. Section 3 examines post-independence development, and it reviews policies that authorities have undertaken in an effort to reform the urban transport system. The developments of each major mode of transport are looked at in detail. A discussion of the outcome of the policy reforms

[2] Tashkent's density is about 6900 persons per km^2 as compared with about 4700 persons per km^2 in London

provides the central part of the paper, where the general trends of development and their socio-economic and environmental impacts are identified. The paper concludes with some policy recommendations.

2. Municipal public transport in Tashkent before independence in 1991

2.1. Early developments of passenger transport in Tashkent

Horse and donkey-drawn vehicles have traditionally provided the main forms of transport in Tashkent and other parts of Central Asia. Things started to change shortly after the occupation of the region by the forces of the Russian Empire. In 1874, the Russians decided to build a railway from Orenburg to Tashkent. Shortly afterwards, the plans changed and priority was given to building a rail connection between Tashkent and the eastern coast of the Caspian Sea. Construction of the *Trans-Caspian* military railway commenced in 1880 and was completed by 1899 (Figure 2). In the following year, construction of the Orenburg-Tashkent railway started to the north and this line was completed by 1906.

Insert Figure 2 here

With the growth of the city of Tashkent, its city council decided to introduce a tramway system as a new means of public transport. In 1896, the council signed a contract with *Société Générale de Belgique* to build a tram railway network and to establish Tashkent Tram Society to operate the network. By 1901 the construction of 11 kilometres of tramway was completed and two routes with horse-drawn trams started operation. In the first year of operation, horse-drawn railway transported over one million passengers. However, limited potential for expansion of the horse-drawn tram system and its low profitability pushed the company to look at other options. Thinking was influenced by the successful operation of electric trams in some other Russian cities (Mogilev, Vitebsk, Orel and Kazan), and this contributed to the choice made for Tashkent. In 1907 agreement was reached between *Société Générale de Belgique* to replace horse-drawn trams with electric trams and to expand the existing tram network. The construction of 26.5 kilometres of tramway network was

completed, on 30th December 1912, and the operation of the electric trams commenced. At the time, the Tashkent Tram Society had 50 lead and 20 trailer coaches at its disposal with a capacity of 40 persons each (Merzlov 2009; Sharahmedov and Gulyamov 2006; Viknyanskaya et al. 2001).

At the time of the Soviet revolution, the development of the tram transport system stalled and in 1918 the transport of passengers stopped. In 1919, new municipal managers decided to revive the tram transport in the city, and in 1921 trams recommenced their operations. The tram network and operations rapidly developed over the years preceding Great Patriotic War, and by 1941 the network length had reached 112.5 kilometres. In this same year, 220 million passengers and 243 million tonnes of goods were transported on this system. After the war, development of the tram system continued, and by 1968 the length of the network was 182 kilometres, and by 2000 it had reached 288 kilometres (Sharahmedov and Gulyamov 2006; Viknyanskaya et al. 2001).

Buses appeared in Tashkent for the first time in 1909. They were privately owned and were used for contractual transport. A year later, the first 8-seater bus started regular service in the city. Operations on a larger scale took off much later, with the establishment of the first truck, bus and car depot. Since the Soviet Union began production of its own vehicles, the fleet and the operations expanded further. Trolleybuses began operation in Tashkent in 1947, with the commencement of the regular route between railway terminals “North” and “Old Market”. By 1963, the network had reached 82 kilometres and 10 trolleybus routes were in operation in Tashkent (GorElectroTrans 2010; Viknyanskaya et al. 2001).

The development of organised taxi transport began in 1930s. A number of Soviet and foreign produced cars were part of the fleet of *Tashkent AvtoBaza #1* (Tashkent Automotive Depot #1). However, taxi operations really took off with the arrival of the first mass produced Soviet taxi cabs (GAZ M-1) in 1937. Taxi transport was withdrawn during the 1941-1945 war, but resumed shortly after its end (Sharahmedov and Gulyamov, 2006). It is unclear exactly which year shuttle taxis (*marshrutnoe taxi* or *marshrutka*) started operation in Tashkent. Initially, these operations were conducted by the normal taxi fleet. Instead of the trip fare being based on the distance

travelled, these taxis charged a fare based on per person per zone principle. Moreover, the taxis were normally shared by a number of passengers. The operations, similar to their current form, started in the early 1960s with the mass production of 10-seater Soviet minibuses (RAF 677). Bus company #1 was initially responsible for the operation of shuttle taxis, but this responsibility was later transferred to the *EPAP* taxi operator and then to Bus Company #2519.

Shuttle taxis in the Soviet Union were a hybrid mode of transport that shared some commonalities with ordinary taxi and bus operations. Each shuttle taxi had a fixed route on which they had to drive, which was set between two terminal points where they had records entered into their log books by dispatchers, and they had to follow a set frequency of service. However, unlike buses and like ordinary taxis, shuttle taxis were allowed to stop and pick up or discharge passengers at any point along the route where ordinary taxis would be allowed to stop. Shuttle taxis were not allowed to deviate from their set route, even at a passenger's request.

The development of the Tashkent underground system started much later in 1971. The decision to build the Tashkent underground was carried by the Soviet government in response to rapid expansion of the city, both in terms of population and territory (Figure 3 shows the population growth). At that time the population of Tashkent was well over one million people.

Insert Figure 3 here

The first part of the underground line (named *Chilonzor*) consisted of nine stations and was put into operation on 6th November 1977. Another three stations on this line were completed in 1980. The building of the second line (*Uzbekistan*) started shortly afterwards. The first part of the second line has been in operation since 1984, and the construction of the line was completed in 1991 (Fayzullaev 2001; Sharahmedov and Gulyamov 2006).

2.2. State of municipal public transport at independence

At the time of dissolution of the Soviet Union in 1991, Tashkent had a fairly well developed public transport network. It consisted of:

- Two lines of the underground with 23 stations and a total length of 31 kilometres. There were 156 passenger coaches located in two underground depots.
- Two tram, two trolleybus and one joint tram-trolleybus depots with a total number of 531 trams and 418 trolleybuses. There were 20 tram and 25 trolleybus routes extended over 288 kilometres and 300 kilometres, respectively.
- Twelve bus companies with a total of 2,243 buses working on 128 city and 5 suburban routes[3], as well as 314 minibuses serving 25 shuttle taxi routes. The total length of the bus and shuttle taxi routes extended over 2,240 kilometres.
- Five taxi companies with total fleet of 3,355 taxis.
- Suburban trains travelling in three major directions (Sharahmedov and Gulyamov 2006; Viknyanskaya et al. 2001).

The network has been managed by three entities: (i) automotive transport (i.e. buses, shuttle buses and taxis) was managed by the Directorate *GlavTashPassAvtoTrans*, an entity under the Ministry of Automotive Transport; (ii) trams and trolleybuses were managed by the Tashkent Tram and Trolleybus Directorate under the Ministry of Communal Services; (iii) the underground was managed by the Tashkent Underground Directorate under the Ministry of Rail Transport. There was also the Central Traffic Control Office and a number of other support organisations.

The management of public transport in Tashkent was very much in line with the administrative command style of management in the whole of the Soviet economy. The investment in transport infrastructure and new vehicles was in line with five-year plans. For example, new buses were initially transferred to the ownership of *GlavTashPassAvtoTrans*, which then distributed them among bus companies according to the previously set plan. The request for new routes, vehicles, maintenance equipment and staff were considered by the State Planning Committee (*GosPlan*), and decisions were made on their merits and other relevant factors.

[3] Suburban bus routes served by regional operators are not included in this number.

Since all municipal transport operations except taxis and shuttle taxis were loss-making, a system of cross subsidies existed. The surplus accumulated by taxi companies would be directed to balance the deficit of bus companies. In the event of an overall loss for *GlavTashPassAvtoTrans*, the system of debt write-off existed where the debt of bus companies to petrol suppliers was written off. A similar system existed with electric transport operators where the outstanding debt of tram, trolleybus and underground operators to electricity suppliers used to be written off to ensure the overall balance.

Naturally, there was no competition between transport companies in the market economy sense, where bus operators had to fight for their survival. However, it was common to compete for the better qualitative indicators such as reliability, efficiency, customer service and others. For example, Tashkent Taxi Company #2 was recognised among the top two taxi operators in the former Soviet Union on a number of occasions where they challenged the position of Taxi Company #1 in Moscow, as the leading taxi operator in the Soviet Union. Each transport operator reported their operational results on a monthly basis (and even on a daily basis for some indicators). A system of rewards, both financial and especially non-financial in nature, was in place to incentivise high-performing operators.

In 1990, the fare on municipal public transport was 5 kopeykas per trip (0.05 rouble) on buses and the underground, 4 kopeyakas per trip on trolleybuses and 3 kopeykas per trip on trams, 20 kopeykas per trip in a shuttle taxi, and 20 kopeyka per kilometre (plus 20 kopeyka upfront 'sit down' fee) for the taxis[4]. There were monthly passes available for sale. Various groups, such as school-aged children and students in tertiary education, and pensioners had discounts for full-fare monthly passes. In contrast, there were no discounts for single trip fares. There were also selected social welfare groups, such as a number of categories for disabled people, police, soldiers, etc, for whom public transport was free of charge.

3. Developments since independence

[4] The official exchange rate was 1 US dollar approximately equal to 0.6 Soviet roubles. Average monthly wage in the Soviet Union in 1988 was 195.6 roubles (Library of Congress Country Studies, 1989)

3.1. Structural reforms since 1992 and legislative support

The development of municipal transport in Tashkent has been very much in line with the general direction of economic developments towards a market economy. However, as was specifically emphasised by Uzbek authorities on numerous occasions, development was to take a gradual path to avoid economic and social shock (Karimov 1993, 1995). A similar approach was taken to reform in the public transport sector in Tashkent. Three stages can be identified in the reforming process: the first stage took place from 1992 to 1996 and started with the introduction of a single institution to manage public transport. Little to no attempt was made in this period to engage private operators in delivery of transport services. The second stage commenced in 1996 with attempts to license municipal passenger transport, the introduction of a tendering process and the gradual involvement of the private sector. This stage lasted until 2006. In the final stage, there are two potentially competing structures that were established, with the task of managing and regulating passenger transport in Tashkent.

The starting point of reforms to the municipal transport system in post-Soviet Tashkent is the President's Decree # UP-425, dated 4th June 1992 and titled "On the Improvement of Passenger Transport Management in the City of Tashkent". Under this decree, the State Association of Passenger Transport Enterprises (*TashGorPassTrans*) was established. It combined in one entity the former Tashkent Tram and Trolleybus Directorate, the Tashkent Underground (Metro), and the Directorate *GlavTashPassAvtoTrans*. The main task of the state association was "to manage and coordinate activities of the municipal passenger transport in the city of Tashkent with an aim of ensuring reliable and coherent work of all types of passenger transport with the consistent improvement of quality and culture of passenger service..." (TashGorPassTrans 1992). The association has been granted very high status in the power hierarchy, with the chairman of the board of the association ranked equal in rights with a minister of the cabinet.

It should be mentioned that the first stage in the process of deregulation and privatisation in Uzbekistan commenced in the early 1990s, and this had an impact on the organisational structure of some companies under the supervision of the association, but not on the association itself. In fact, the process of privatisation of

municipal public transport commenced as a result of the adoption of the 1991 Act "On Denationalisation and Privatisation". Plans were drawn up to gradually sell off the state's stake in taxi and then bus companies to non-government firms and individuals. Most of the taxi enterprises were quickly converted into joint-stock companies and shares were issued. However, at the initial stage of privatisation, the state retained control over the enterprises maintaining the majority stake in them. Other shares were either sold to companies' employees or offered for open sale. However, due to lack of interest from potential investors to purchase shares without acquiring control over the companies, the state's threshold for taxi companies (as well as for some service and maintenance companies) was reduced to 26%. To ensure participation of employees in the privatisation process, companies paid part of the bonuses in the form of shares rather than in cash, so that they could achieve the government set target of 49%. As is evident from Table 1, the state was able to reduce its stake to 26% in four out five taxi companies.

Insert Table 1 here

However, attempts to privatise the bus companies were less successful (Table 2), since (i) all the companies were loss-making and no well-defined structure existed to compensate for the losses incurred by the companies; (ii) the government offered only a minority stake for sale (49%) and was actively intervening in the affairs of the companies. The government was pushing company managers to use the tactic of paying bonuses in the form of shares, but with little success, since no dividends were expected on those shares. Moreover, the government continued purchasing vehicles for the bus companies, thereby raising its stake in the equity of the companies, and this had a dilution effect on employees' holdings. No plans existed to sell the electric transport operators and the underground railway system.

Insert Table 2 here

The association functioned with no significant change in its duties until 1996, when its status was somewhat downgraded by a Resolution of the Cabinet of Ministers #291 "On Measures for Significant Improvement of Passenger Transport Services for Residents of the City of Tashkent". The association was placed under the direct

supervision of the Tashkent City Council, and the association's chairman given the status of First Deputy Mayor of the city. At the same time, the resolution allowed an expansion of staff numbers from 40 to 102. In the same resolution, the dissatisfaction with the state of affairs in Tashkent's urban transport was noted, including the lack of success in the privatisation of bus companies, the reduction in overall fleet numbers, and the decrease in service reliability. It is clear that the state continued to get involved in activities of all registered transport providers under the umbrella of the association (whether state or privately owned) by administering performance reviews of senior and middle-level managers of those enterprises.

In response to the critique, in 1996-1997, the plan for improvement of passenger transport was adopted, where sale of minority stakes (49%) was envisaged by the end of 1997. There is no surprise that this change was again unsuccessful, since the operating environment had not altered. Another significant piece of legislation adopted in 1996 was the Resolution of the Cabinet of Ministers #175 "On Approval of Regulations for Licensing of Activity on Transport and Communication Sector". A committee under the Cabinet of Ministers was established to issue licenses for automotive transport providers. Initially, only legal entities were subject to licensing requirements. This marks the beginning of the second stage of urban public transport in the city of Tashkent. Before that, the increasing number of private transport providers (particularly individual transport carriers) was a part of the informal market for transport services. Since these private providers carried much smaller regulatory burden, they were suitable competitors to public companies. A notable feature is that private operators were only active in the private taxi and shuttle taxi transport markets.

In 1997 and 1998, two further pieces of legislation were adopted, namely the 1997 Act "On Municipal Passenger Transport" and the 1998 Act "On Automotive Transport". Although these Acts did not bring significant changes in how public transport operated, they brought clarification on a number of important issues, such as a clearer definition of what constitutes urban, suburban and intercity transport, the arrangements for funding public transport, the impacts of public transport on health and safety, and the environment. For example, the 1997 Act envisaged that urban transport would source funding primarily from its own activities. State funding was

reserved only for research and development, and the construction of the underground. Maintenance of public transport infrastructure as well as compensation of potential losses by the operators whose fares are regulated was to be done by local authorities (city council). The same act set general requirements for certification of vehicles and workplaces in the areas of occupational health and safety, traffic and fire safety, as well as the impact on the environment.

In 1998, a legislative basis for competitive tendering was adopted by the Cabinet of Ministers in its Resolution #350. Moreover, the power to grant licenses for passenger transport was transferred to the newly established Uzbek Agency for Automotive and River Transport. The maximum term for each tendered route was set at five years (with a minimum of three years) with a possibility of a one year extension upon fulfilment of the terms of the tendering contract. Between 1998 and 2000, 163 routes were tendered, in which 14 state-owned companies, 2 private companies and 47 groups of individual transporters participated (Sharahmedov and Gulyamov 2006). Bus routes were almost exclusively granted to state-owned companies, and private companies and groups of individual transport companies won the majority of shuttle taxi routes. In reality there was practically no competition for the bus routes as state-owned enterprises bid exclusively for their 'own' routes.

In 1999, the Cabinet of Ministers in its Resolution #513, adopted the Strategy of Development of Municipal Passenger Transport for 2000-2005. Among other measures, it envisaged the establishment of a new management structure to look after tram and trolleybus depots, to complete the sales of yet unsold shares of transport companies (including bus companies), to sell bus stops to private investors, and to establish a fund for the support of municipal public transport. Moreover, attempts were made to regulate taxi transport with a compulsory registration requirement, the equipping all cabs with taxi meters, and the provision of special recognisable number plates. The plans were set to improve the ticketing system across all sorts of public transport with the introduction of smart cards on the underground and pre-sale of tickets for buses/trams/trolleybuses. The initial stages of the construction of the third (*Yunousabad*) underground line were set for completion in 2001 and 2003, and the construction of the fourth line (*Sergheli*) was set to commence in 2005. With the forecast of rising demand for public transport, the state's support in purchasing a new

fleet was documented in the strategy. Moreover, in the effort of cutting administration costs, *TashGorPassTrans* was asked to provide proposals for merging some bus companies and tram and trolleybus depots.

In the following years, no new significant documents relating to municipal public transport were issued, but rather progress towards the implementation of the existing plans was considered the main priority. Smart cards were introduced on the Tashkent underground, but some technical problems and higher maintenance costs of the system forced the underground to give up on this idea. The first stage of construction of a new line of the underground was completed by the end of October 2001. There were six new stations were on the 7.61 kilometre stretch of the *Yunousabad* underground line when it started operation. Further construction of the line was frozen due to lack of funding from the government.

In line with the strategy, the Ministry of Finance in 2000 adopted a directive on financing municipal transport providers in the city of Tashkent. Effectively, bottom line losses incurred by the companies from urban transport were set to be covered in the national budget based on the earlier forecasted values. There was little or no success with the sales of outstanding shares of the bus companies due to a lack of interest in these loss-making enterprises. Moreover, the state continued to purchase bus replacements for those companies. Bus companies had to record these purchases in their books as 'in-kind' contributions to shareholders' equity and the existing shareholder's equity stakes were therefore diluted. In 2004, the organisational structure of *TashGorPassTrans* has changed from a state association to a limited liability company with 100% of state ownership. However, no significant impact on the activities of the organisation was noted.

The most recent stage of reforms in urban passenger transport in Tashkent commenced in 2006 with the adoption of new regulations. A Presidential Decree on "On Further Improvement of Organisational System of Passenger Transport in Tashkent" was issued, which was later backed up by the resolutions of the President and the Cabinet of Ministers. The role of *TashGorPassTran*s, which was renamed *ToshShaharTransXizmat,* was significantly diminished. It was set to deal predominately with state owned and state controlled organisations, whereas an

additional structure was established within the Tashkent City Council to coordinate all types of transport providers in Tashkent. This additional entity was titled the Department of Licensing and Coordination of All Types of Transport in the City of Tashkent (DLC). In addition, the structure of *TashGorPassTrans* has changed, and new intermediate management levels have been established: *ToshAvtobusTrans* - to look after bus companies, *ToshElectroTrans* - to supervise electric transport, and *ToshRemServis* - to coordinate all related service stations and centres.

All management units related to public transport were effectively put in the same building. Although, the DLC is supposed to supervise *ToshShaharTransXizmat*, in practice this is not necessarily the case. The Chairman of *ToshShaharTransXizmat* remains a deputy mayor and maintains a strong organisational structure and management capabilities, whereas the head of DLC is also a deputy mayor, but this department is relatively new and its structural capacity has yet to be built. Moreover, there is some overlap in the function of the two organisations, and this does not assist in effective and efficient management of urban transport in Tashkent.

3.2. Developments of passenger transport by modes of transport.

Over the passage of the 18 years since independence, the way in which different modes of transport in Tashkent operate has changed, although the scale of such change has varied dramatically. The way in which the underground, trams and buses work in 2010 is very similar to the way they worked before independence, although there have been some changes in terms of network, quantity and quality of vehicles. However, the evolution of taxi and shuttle taxi operations has been rather spectacular.

The network of routes and the fleet have had some changes over the past 20 years, although it is impossible to trace changes in the network in detail, as there is no data available for 1990. However, it is possible to look at the composition of the urban passenger transport fleet. Table 3 provides information on the fleets of companies under the supervision of *ToshShaharTransXizmat* (predominately state owned service providers).

Insert Table 3 here

The fleet numbers of almost all modes of transport have declined during the past 19 years (Table 3). The exception is the underground, where fleet size has increased since the introduction of the new line. Particularly badly affected were state-owned taxi/shuttle taxi operators, whose numbers have declined dramatically. They have been replaced by private operators, and these numbers are difficult to estimate as there are no publicly available information sources. Estimates for the private shuttle taxi fleet provide a figure of approximately 2,000 vehicles, whereas the regular taxi fleet is thought to consist of well over 20,000 vehicles (Krymzalov, 2008). Together with a quantitative shift in the fleet, there was a considerable change in makes and origins of the vehicles (Table 4).

Insert Table 4 here

Ticketing on trams, trolleybuses and buses has not changed since Soviet times. Fares are collected either by the driver upon exit of passengers through the front door or by a fare collector operating on the vehicle. Fares are collected either during the passenger's journey or during stops. Passengers are provided with a paper ticket. Monthly passes can also be purchased in advance (strictly on per calendar month basis), and some of these passes combine all trips on trams and trolleybuses or alternatively trams, trolleybuses and buses. For three categories of passengers, namely school students, university students or pensioners, these passes are sold at a discount. Neither operators, nor the association receives direct compensation for selling these passes at a reduced price. However, since the national government compensates *ToshShaharTransXizmat* for their overall loss, this can be seen as a case of indirect subsidy. Finally, as regulated by the 1996 Act "On Approval of Free of Charge Users of Urban Public Transport", there are some categories of passengers (e.g. Great Patriotic War veterans or disabled people) who cannot, on presentation of appropriate documents, be charged a fare on any state run public transport. A fare per trip (entry) is the same for all modes of transport and this fare is approved by the Anti-Monopoly Committee upon the request of *ToshShaharTransXizmat*.

3.2.1 The Underground

The underground is perhaps the best example of the mode of public transport which has evolved the least over the period. The governance structure changed somewhat in 1992, when supervisory duties over the Tashkent Metro were transferred from the Ministry for Rail Transport to *TashGorPassTrans.* Another significant change was the construction of a third line of the underground, with the six stations that was opened in 2001. The work did not continue due to lack of funding from the national budget, even though that money was committed under the 1997 Act "On Urban Passenger". The primary goal of linking the busy *Yunousabad* district of Tashkent with the city centre was only partially achieved, and three stations have not yet been built so that the northern part of the line can be completed. Moreover, work on the planned *Sergeli* line has never commenced, although one may question the decision to build a metro in this area, as a preferable option may be to consider better coordination with the existing suburban railway line. Other options such as a light rapid tram system may also be considered.

All underground stations have been built with great architectural vigour and are beautifully decorated, showcasing the excellent artistic and designing abilities of Uzbek architects. However, the construction of such stations is a costly exercise, which negatively impacts on the ability of the government to complete existing projects and expand the underground network in the future.

Ticketing on the underground has not changed substantially from before 1990, except for the fact that five-kopeyka coins have been replaced by purpose-built plastic coins to ensure longer life in an inflationary environment. An attempt to introduce monthly passes and smart cards was withdrawn on financial grounds. The number of passengers transported has been falling in recent years due to the removal of the monthly passes and competition from other modes of transport. Fares are set by the government and are sold at the entrance to underground, solely on a per trip basis.

3.2.2 Trams

The tram services have evolved gradually since 1990. There have been changes in fleet size and route network but the management of operations has changed little. The management structure was altered by the 1992 Resolution, which shifted tram

operators (depots) to the responsibility of *TashGorPassTrans*. Over time, and in particular with the construction of the third metro line, there was a considerable change in the role played by the trams and consequently their route network. City planners decided to move trams away from most of the city centre as well as from where the tram lines overlapped with underground lines. The new role of the trams was to bring passengers from the outskirts of the city, where there is no underground, to nearby metro stations or towards boundaries of the city centre. In 2001, to reduce the costs of managing a smaller fleet, Tram Depot #1 was closed and the remaining vehicles and staff transferred to two other depots.

According to a *ToshShaharTransXizmat* official (personal communication), tram services will continue to operate in Tashkent, with rapid tram services to *Sergheli* district being a possibility (Krymzalov 2008). Moreover, according to a recent 2009 Resolution of the Cabinet of Ministers "On Renewal of Electric Passenger Transport", there are major maintenance works scheduled on some existing routes, and the purchase of a new fleet is expected.

3.2.3 Trolleybuses

The role of trolleybus services in Tashkent has been diminishing over the last 18 years. The number of routes in operation, as well as their length and fleet, has been gradually reduced. Although in the 1990s newer, better quality trolleybuses were purchased which worked well for the passengers, the high maintenance costs of relevant infrastructure caused a decline in the number of services in operation. Being less reliable and slower than buses, and indeed shuttle buses, they have been losing the competition for passengers in recent years. The level of subsidy for trolleybuses operators has exceeded 50% every year since 2003 and climbed to over 70% in 2008-2009. This compares poorly to the less than 30% subsidy level for trams and buses. The fate of trolleybuses in Tashkent was sealed by the 2009 Resolution of the Cabinet of Ministers "On Renewal of Electric Passenger Transport", where the decision was made to gradually phase out trolleybus operations in Tashkent by the end of 2010, and to replace them with locally produced midi buses to operate the same routes.

3.2.4 Buses

The bus services in Tashkent over the last 18 years have remained the most important element of state-owned passenger transport. Despite a decline in fleet size and the number of passengers transported during the period, the number of routes has not declined. Moreover, the share of buses in the overall number of passengers transported by state owned operators has increased from 62% to 77% (2000-2009). The reason for the overall decline in the number of passengers transported seems likely to lie in two main areas. Firstly, buses face fierce competition from more flexible private shuttle-taxi operators, and secondly, there has been a consistent rise in number of privately owned cars in the city of Tashkent.

The government frequently voiced its desire to sell all but one bus company with the aim of reducing subsidies to public transport. This was expected to come from the improved operating efficiency of private providers. However, these attempts failed due to a lack of interest from potential investors to take on the burden of loss-making enterprises. As the national government continued interfering in the bus companies' affairs, investment would yield no dividend and there would be a capital loss for any investor.

Moreover, no new private bus operators sustained competition with public operators, as the tendering process was very limited and as the high level of subsidies to public operators continued. The national or local authorities purchase fleets for the companies, provide substantial tax preferences and recover any bottom line losses at the end of the financial year.

3.2.5 Shuttle taxis

In contrast to all the conventional modes of transport covered so far, the shuttle taxis have seen a dramatic turnaround in the way their services operate. In particular, there were significant changes in terms of ownership, number of routes and services, vehicle brands and taxation. Since the passage of legislation in the early 1990s on privatisation and deregulation, the government owned operator (RAF – see Table 4) started to lease out and eventually sold off all their older vehicles. As new vehicle arrivals were rather limited, the size of RAF's fleet and consequently the number of services operated by government owned vehicles has declined dramatically. In the meantime, new owners of minibuses, chiefly individual drivers, began to group

together to undertake shuttle taxi services. Since no legislation existed on the licensing of such operations, they formed a so called 'shadow' market of transport services. Often, shuttle taxi drivers were confronted by bus drivers whose clientele was undermined by shuttle taxis.

Slowly the government brought in some regulations to control shuttle taxi services by requiring approval by *TashGorPassTrans* for the routes on which they could operate. Shuttle taxis formed the Association of Private Transporters to assist them with this process. In the early to mid 1990s, public transport worked at full capacity and therefore it was relatively easy to get routes and services approved. That is because *TashGorPassTrans* considered shuttle taxis as complementary rather than competing services to existing government transport system. The difference in fares on buses and shuttle taxis was sizeable, and each mode served a specific niche in the market.

Over time, however, the situation has continued to evolve in the direction of re-regulation of shuttle taxi services. More legislation was brought in on licensing and taxation, and as well, stronger supervision from *TashGorPassTrans* and later the DLC (Department of Licensing and Coordination) can be observed. At the same time, the number of vehicles operating shuttle taxi services has grown steadily to the current level of around 2,000 vehicles.

Today, approximately 150 shuttle taxi routes are operated predominately by 'one route' companies. Most of those companies do not own any vehicles, as individual drivers lease their vehicles to such companies for free (or for a notional amount) and in return they are employed by the company for the minimum allowable wage[5] to operate their own vehicle. Vehicle owners/drivers are responsible for maintenance and petrol costs, and they should deliver set but modest cash revenue to the company on a daily basis. The fares the drivers collect in excess of their costs form their own profit, and this excess cash revenue is unreported and therefore untaxed.

With the adoption of new regulations, shuttle taxis have lost some control over the fares they charge. All fares now require approval from the State Anti-Monopoly

[5] Minimum allowable wage as of 1/01/2010 is 37,680 soums per month (approx. 25 US dollars)

Committee and the Ministry of Finance, which seem to have a policy of restricting profiteering among shuttle taxi operators by restraining their fares growth. As a consequence, the fares shuttle taxis charge became very competitive against other modes of transport. This has led to an increase in the number of cash-paying passengers[6] using shuttle taxis, often at the expense of government operators (buses, underground and trams).

3.2.6 Taxis

The ordinary taxi market has also changed dramatically since 1990. Government operators leased and sold most of their vehicles by the mid 1990s. Many of these, as well as other privately owned cars, became taxi operators. Some of these operators drive their cars as taxis full-time, whereas others drive them part-time or on a casual basis to supplement their income. Former taxi companies were initially privatised but later virtually ceased to exist as taxi operators, instead using their infrastructure (land and equipment) for other services such as vehicle service and repair shops.

Two types of taxi drivers have emerged. The first group is professional taxi drivers who use their own or rented cars to deliver taxi services. For them, driving a taxi is a major (if not the sole) source of income, and to generate a decent income these drivers have to work at least 40 hours a week. There is also a large group of so called 'hobby taxi drivers', who use their own cars on weekends or after normal working hours to supplement their income. In contrast to professional drivers, hobby drivers are normally more flexible in the fares they charge, but they prefer to stick to the areas and routes close to homes or to pick up passengers along the normal work-home routes. It is difficult to accurately estimate the number of taxi operators but figures up to 50 thousand are quoted when hobby drivers are taken into account. This represents around one sixth of around 300,000 cars registered in Tashkent in 2009.

Anecdotal evidence suggests that in many cases, just raising your hand would cause a few cars stop and offer taxi services. The fares that drivers charge are unregulated and based solely on individual agreement between a driver and a passenger, and they are normally very competitive. Frequently it is cheaper for two or three individuals to

[6] The term 'cash paying passengers' is used to contrast those passengers on monthly passes.

take a taxi instead of using public transport. In recent times, some of the taxi operators have started to use taxi call centres' services to assist them with their clientele. In addition, a number of small private companies have now entered the market.

With respect to the licensing of taxis, some new regulations have been introduced by the Uzbek government since the end of the 1990s, but these regulations are not enforced. As of early 2010, any car meeting regular technical inspection requirements could be used as a taxi. To meet regulatory requirements, an owner/driver must obtain a license to use their vehicle as a taxi, and this license costs the equivalent of 75 US dollars (for cars with passenger seats of 4 and less) or 125 US dollars (for cars with passenger seats over 4) per annum. Moreover, the owner/driver has to register with the Taxation Inspectorate as an 'individual entrepreneur without establishing legal entity' and pay a monthly tax equivalent to 5 minimal wages or 188,400 Uzbek soums (around 125 US dollars based on the official exchange rate) per month. From informal discussions with drivers, daily revenue is in the range of 50,000 to 100,000 soums. Therefore, it takes 2-4 days to cover the annual costs of registration and monthly taxes for a taxi operator. Despite these relatively mild regulations, only a very small number of cars that work as taxis register officially. According to *TashGorPassTrans* estimations, in 2005 less than 2% of all taxi operators (both professional and hobby) acquired a license to undertake taxi driving services, with less than 1% registered with tax authorities. It is unlikely that this situation has changed significantly since then. This is despite the fact that penalties for operating without a license have risen substantially since 2006. They now stand at 20-100 times minimum wage (500 to 2,500 USD). The reasons behind this may lie in the difficulty of catching unlicensed drivers and poor coordination between tax inspection/road inspection and other law-enforcement agencies. The low probability of being caught and penalised explains why many drivers opt not to register officially. Moreover, restricting taxi drivers might be a politically sensitive issue, as the social welfare of many families depends upon the income of the professional and hobby taxi drivers.

3.3. State-owned versus privately-owned providers in current taxation operational environment.

Over the last twenty years since the process of deregulation commenced, the ownership structure of the urban transport system has evolved and has become an

interesting case (Table 5). On one hand there is a rigid but relatively well-managed system of state-owned transport that controls electric transport (underground, trams and trolleybuses) as well as buses. On the other hand, there is the almost entirely privately owned taxi and shuttle taxi transport. The ownership structure has evolved as a direct response to actions/inactions of the policy makers.

Insert Table 5 here

The complete public ownership of electric transport is not surprising. It was clear from the outset that this sector would not be privatised. No conditions were established to allow the emergence of newly established private transporters. Similarly, it is not surprising that shuttle taxis and taxis became privately owned. The state showed its intention in selling profit-making taxi transport companies to the private sector, and it generally encouraged the process since the first deregulation and privatisation policies in the early 1990s. Shuttle taxi transport was not specifically targeted for privatisation and deregulation as its share in public transport was very small in pre-independence years. It 'slipped under the radar' and enjoyed the same fate as ordinary taxis, when the existing fleet was sold out to individuals and a new fleet was not bought until 2004, albeit on a much smaller scale. A vacuum in supply of transport services by these modes of transport, considerable demand, little enforceable regulations (and therefore insignificant barriers for entry) in this area allowed private (mostly individual) transport companies to fill this gap relatively quickly.

In the case of buses, the government voice its intention to privatise the services in a number of legislative documents. However, despite some attempts to implement these intentions, this has never been realised, and there is a number of reasons behind this outcome. Firstly, the experience of the privatisation of taxi companies was less than successful. This precluded authorities from implementing privatisation in a similar way for other forms of transport. Secondly, the cost of any error in reorganising the system is very high and the perceived benefits are low. Public transport is an area of high social importance, and serious disruptions to public transport in Tashkent might undermine the political stability of the city and even the country. This may explain the hesitancy of policy makers to undertake any significant reforms. Thirdly, some people

with vested interest may resist privatisation, for example some of the current managers of public companies, or other government institutions and individuals that use the public bus companies free of charge. Some examples of this would be the transport of city residents and students to farms during the cotton-picking season or the police using on-duty buses to assist with law-enforcement during major city events (such as Independence Day celebrations, etc.). These free services are normally authorised by relevant resolutions of the government. Moreover, there might be some influence from a local joint venture that produces medium size buses, namely Isuzu Uzbekistan. Currently, the government uses its power over bus companies to purchase these buses on a regular basis, which keeps the joint venture afloat. However, the viability of this joint venture would become questionable, should market forces prevail. Fourthly, the current leadership cares about the image of the city in the eyes of foreigners. Having modern buses built by famous producers (such as Mercedes Benz) is perceived to be a positive thing for the image of the city. Taking into account the high cost of these buses, policy-makers expect (and rightly so) that private providers' use of older buses from less reputable firms would negatively impact on the city's image.

As a result, the government has never tabled a comprehensive plan to implement privatisation which would deal with all relevant issues, such as goals and rationale of doing so in the first instance, managing structures (if any), taxation, licensing, impact on environment, safety, congestion, quality of transport, social consequences, ownership matters of roads and bus stops, prevention of predatory competition and others. Most of the new regulations were carried out in an *ad-hoc* manner and in response to perceived short term problems. As a result, the current ownership structure has just evolved rather than having been planned.

3.4. Large vs Small

One of the important factors that shaped the industry has been the tax legislation. In the effort to promote small business and entrepreneurship, substantial tax concessions were introduced for small firms and individual entrepreneurs. This can explain the fact that the vast majority of shuttle taxis and taxis are owned/managed by either small firms or individuals. According to Uzbek legislation, firms with less than 25 employees are classified as small. Most of the shuttle taxi routes are served by 8-15

vehicles, and this means that most shuttle taxi companies can only serve one or two routes to qualify for tax advantages. Taxis, as mentioned earlier, are mostly served by individual entrepreneurs.

The current tax structure applicable to public transport providers is presented in Table 6. It is clear that an option to pay the so called 'unified tax' that replaces payment of a range of other taxes is an attractive option. Indeed, there are substantial incentives/scope for underreporting the cash revenues by drivers in exchange for cash bribes to the managers of small firms. In the current legislative environment, this makes 'staying small' an even more attractive option.

Insert Table 6 here

It is worth mentioning that the government made an obligation to reimburse all losses incurred by urban passenger transport providers (excluding taxis and shuttle taxis), which compensates public transport operators for a less favourable operating environment. For the majority of private operators though, mere reimbursement of a loss is clearly insufficient to attract interest in investing/creation of larger urban transport firms. The ownership and size matrix of urban transport companies is reported in Table 7.

Insert Table 7 here

3.5. Overall trend of development and its impact on passengers, safety of transport, environment and traffic conditions.

The urban passenger transport in Tashkent has evolved in a number different ways since independence. After nearly twenty years of reforms some trends can be identified. The first trend is the rising share of small/individual transport operators at the expense of larger state-owned enterprises. The share of electric transport across all three modes – underground, tram and trolleybuses - has been in decline, with the extreme case that the trolleybuses are to be evicted from the streets of Tashkent by the end of 2010. Secondly, there is a trend to gradually substitute larger vehicles (underground trains, large buses, trolleybuses) with the smaller vehicles, such as mini (up to 15 passenger seats) and midi buses (up to 30 passenger seats). Thirdly, there is

growing pressure on the public transport system from individual car owners. The number of private cars has been growing rapidly, particularly since the opening of the UzDaewoo (now GM Uzbekistan) car manufacturing facility in the Andijan region in 1996. This tendency offsets the ability of public transport to gain from the growing Tashkent population. The fourth trend is the initial loosening (up to 1996) and later tightening of regulations on passenger transport. This shows that the authorities have not had a clear, long-term strategy for the public transport development, and their ability to enforce some of the regulations is questioned. Fifth, the number of people using motorbikes and bicycles in Tashkent remains negligible. Motorbikes are unofficially prohibited from the streets of Tashkent, possibly due to perceived security threats to movement of the officials in the city. Cycling is not common because of a lack of appropriate infrastructure and the danger of accidents caused by motorists' negligent attitudes to cyclists. The consequences of these changes in public transport have implications for a number of socioeconomic and environmental areas.

3.5.1 Effectiveness and reliability

With the growing number of routes and vehicles engaged in shuttle-taxi transport, many passengers have acquired more options in getting around the city. The large number of shuttle taxi routes has proved convenient to passengers willing to travel to areas where they previously had to change vehicles once or twice before reaching their final destination. In these cases, passengers received speed and cost advantages in addition to the 'one entry' convenience. However, these benefits were not distributed evenly around the city areas. Major beneficiaries were those passengers residing near the terminal points of shuttle taxis. Those who have had to use intermediate stops gained little. This is primarily due to the fact that shuttle taxi drivers prefer to fill their vehicles to full capacity at the terminal points. As result, especially at rush hours, passengers at the intermediate stops rarely have a chance to catch a shuttle taxi unless a passenger exits at the stop. These passengers have to rely on the existing bus network or take taxis on an individual or ad-hoc taxi sharing basis. Moreover, shuttle taxis can be rather unreliable in off-peak hours. Their schedules are nether published nor even fixed, and can vary dramatically depending on the day or time of the day. The transport provided by the companies under *TashShaharTransXizmat* tends to be more reliable, although passengers lack any information about the frequency and timing on each route, apart from any previous experience.

3.5.2 Traffic conditions and road safety

The growing number of vehicles in the city of Tashkent poses a significant potential problem of congestion and road safety. Although no information on traffic accidents is available, it would be fair to assume that the number of accidents grows with the number of vehicles on the road. The increasing number of vehicles engaged as urban shuttle taxis and taxis contributes to the problem. Competing taxis pose particular dangers when they perform illegal manoeuvres to stop at the roadside for potential customers who normally signal by raising a hand. Traffic congestion is now increasing despite the significant effort of the authorities to build new roads and other transport infrastructure. If the rise in car ownership is left unmanaged and the quality of public transport deteriorates, scenarios of widespread traffic jams such as those that occur regularly in Almaty or Moscow cannot be ruled out. This problem is common in the post-Communist and developing world and has to be managed appropriately (Argenbright 2008; Baigabulova 2010; Estache and Gomez-Lobo 2005; Pucher and Buehler 2005; Pucher et al. 2007).

3.5.3 Environmental impact

There is no information about the impact of urban city transport on the air quality in Tashkent. It is doubtful whether any studies have been carried out, or whether data is available on estimations of the contribution of vehicles to hazardous emissions in the atmosphere. There is no systematic approach to environmental management, but it would be wrong to argue that nothing is done in that area. Firstly, petrol quality requirements have been raised to Euro 2 standards (Baigabulova 2010). There is now a requirement that any new buses purchased by *TashShaharTransXizmat* must comply with Euro 3 standards. Taking into account that their share of emissions in the total quantity of gases emitted by vehicles in Tashkent is very small, the measure makes little contribution to an overall solution of the problem. Measures such as promoting the use of public transport or encouraging people to cycle to work and reducing the number of car trips are currently not on the agenda.

3.5.4 Socio-economic impact

Deregulation of shuttle taxis (and taxis in particular) has resulted in a large growth in the number of people who generate or supplement their income by driving taxis. Our

estimates suggest that at least every tenth family in Tashkent relies on such income. Tightening the regulations may cause an increased growth in unemployment and may cause potential tensions with authorities, making it difficult for politicians to take decisive action. Moreover, the majority of cars including those which are popular among taxi drivers (Daewoo Matiz) are produced locally. The government is keen to ensure that the plant, with a potential capacity of 200,000 vehicles per annum, has a consistent demand base in the richest and most populous city in Uzbekistan. Therefore, attempts to restrict car usage in Tashkent may face the resistance of a powerful political lobby from the *UzAvtoSanoat* – a government corporation with a majority stakeholding in the joint venture.

4. Conclusion

Tashkent's inherited rather than developed an urban transport system from the era of the Soviet Union that consisted of buses, trams, trolleybuses, shuttle taxis, taxis and the only underground system in post-Soviet Central Asia. The system was fairly well-managed and coordinated among various modes, with the exception of a lack of strong links between suburban rail and other city transport modes. As part of the deregulation process, the ownership structure has changed from being solely public to being mixed. The publicly owned transport consists of the underground, buses and trams, whereas the private sector covers the shuttle taxi/taxi niche. However, due to the peculiarities of local tax legislation and poor licensing enforcement, shuttle taxis and taxis are very capable competitors to public transport operators. The taxi modes take a fair share of full fare-paying passengers from the public providers and continue to undermine their profitability.

If government intentions towards the privatisation of bus companies are serious, an appropriate environment has to be established to attract private interest and investment. Taking into account the fact that the current Uzbek leadership prefers stronger government involvement in management of strategic infrastructure, it would be naïve to expect any real steps towards complete deregulation, such as that which has occurred for example in the UK. The competitive regulation system adopted in London seems to be a more politically viable alternative (Gwilliam 2008).

In general, the case of London, which has proved to be rather successful with the strong managerial presence of the city council, seems a good model for managers of urban transport in Tashkent to look at. Tashkent shares some features of London in terms of diversity of urban transport modes, relatively high population density and a growing population. The current dual management structure in Tashkent does not appear to be very efficient, as it has an inherent conflict of interest due to its partially overlapping responsibilities.

There is no doubt that modernisation of the urban transport system in Tashkent has to be a priority for policy-makers as growing private car ownership leads to higher levels of congestion and pollution in the city. Otherwise this growth will impact on the economic activity of the city and will have a negative environmental and welfare impact on its citizens. A comprehensive and decisive strategy for the urban transport system should be established to provide a clear direction for reform. This strategy should include clear governance structure, ownership aspects of transport providers and modal distribution. The potential socio-economic and environmental impact has to be carefully measured for any successful policy-making to ensue.

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Table 1. Ownership of taxi companies in Tashkent in 1996

Taxi company	State's share	Value (in 000 soum*)	Employee's share	Value (in 000 soum)	Domestic investors	Value (in 000 soum)	Foreign investors	Value (in 000 soum)
#1	26	9258.3	49	17448,4	25	8902.3		
#2	26	58629.0	47	105983.4			27	60884.0
EPAP (#3)	26	11642.5	36	15673.0	39	17464.0		
Amir Temur (#4)	51	10071.7	49	9676.8				
#5	26	765.5	49	1442.6	25	736.1		

Source: Cabinet of Ministers of Uzbekistan (1996: Appendix 3)
Note: Exchange rate as of 1.08.1996 was 1US dollar = 38 Uzbek soums

Table 2. Ownership of bus companies in Tashkent in 1996

Bus company	State's share	Value (in 000 soum)	Employee's share	Value (in 000 soum)	Domestic investors	Value (in 000 soum)
#1						
#2	90	358976	5	19832	5	19832
#3	95	67719	5	3564		
#4	97.4	242041	2.6	6357		
#5	90	1940327				
#7	-					
#8	-					
#12	-					
#18	90	164710	5	9151	5	9151
#2519	100	Not to be privatised				

Source: Cabinet of Ministers of Uzbekistan (1996: Appendix 3)

Table 3. Aggregated fleet of companies of the Association *ToshShaharTransXizmat*

	1990	1995	2000	2005	2009
Buses	2243	1654	1497	1462	1601
Trams	531	425	288	133	119
Trolleybuses	418	354	276	122	51
Metro	156	192	192	212	212
Taxi*	3355	1486	532	108	89
Shuttle taxi*	314	208	5	36	62

Source: *ToshShaharTransXizmat*

*Note that privately-owned shuttle taxis/taxis are not accounted for in this table.

Table 4. Makes of Tashkent Urban Transport Fleet

	1990	2000	2009
Buses	LAZ, Soviet Union Ikarus, Hungary LIAZ, Soviet Union PAZ, Soviet Union KAVZ, Soviet Union	LAZ, Ukraine Mercedes-Benz, Germany Daewoo, Korea PAZ, Russia LIAZ, Russia	Mercedes-Benz, Germany Isuzu, Uzbekistan Otoyol, Uzbekistan
Trams	KTM, Soviet Union RVZ, Soviet Union Tatra, Czechoslovakia	KTM, Russia Tatra, Czech Republic RVZ, Latvia	Tatra, Czech Republic KTM, Russia
Trolleybuses	ZIU, Soviet Union	ZIU, Russia Skoda, Czech Republic	Skoda, Czech Republic ZIU, Russia
Taxis	GAZ, Soviet Union	Daewoo, Uzbekistan Dogan, Turkey	GM Daewoo, Uzbekistan
Shuttle taxis	RAF, Soviet Union	RAF, Soviet Union	GAZ, Russia Other varieties*

Source: *ToshShaharTransXizmat* and authors' observations

* Note Private transport companies use a great variety of vehicles of different makes, but in particular they use Fords and Toyotas.

Table 5. Public Versus Private Ownership of Municipal Transport Companies

Mode of Transport	Public	Private
Underground	Yes, currently it is not subject to privatisation	No
Trolleybus	Yes, to seize operations any operations by 2011	No
Tram	Yes, currently it is not subject to privatisation	No
Bus	Yes, with some rare exceptions but under the umbrella of *ToshShaharTransXizmat*	No
Shuttle taxi	No with some rare exceptions	Yes, with some rare exceptions
Taxi	No with some rare exceptions	Yes, with some rare exceptions

Source: *TashShaharTransXizmat*

Table 6. Tax Burden on Small and Large Public Transport Providers

Tax type	Small companies (<25 employees)	Large companies (25+employees)
Company profit tax	No	9% of profit
Unified tax	7% of gross revenues	No
VAT	No	20% of value added
Assets tax	No	3.5% of assets value
Tax for social infrastructure	No	8% of profits
Land tax	No	Varies, depending on area and location
Tax to Republic's road fund	No	8% of Revenues exclusive VAT payments
Petrol tax	145 soum (less than 0.1 US dollar) per litre	No
Social contributions	25% of gross wages	25% of gross wages

Source: Various legislative documents

Table 7. Ownership/Size Matrix

Ownership/Size	Small	Large
Private	Taxis and shuttle taxis	Insignificant
Public	No	Buses, Trams, Trolleybuses, Underground

List of Figures

Figure 1. Map and location of Tashkent

Figure 2. Construction of first two railway lines in Central Asia

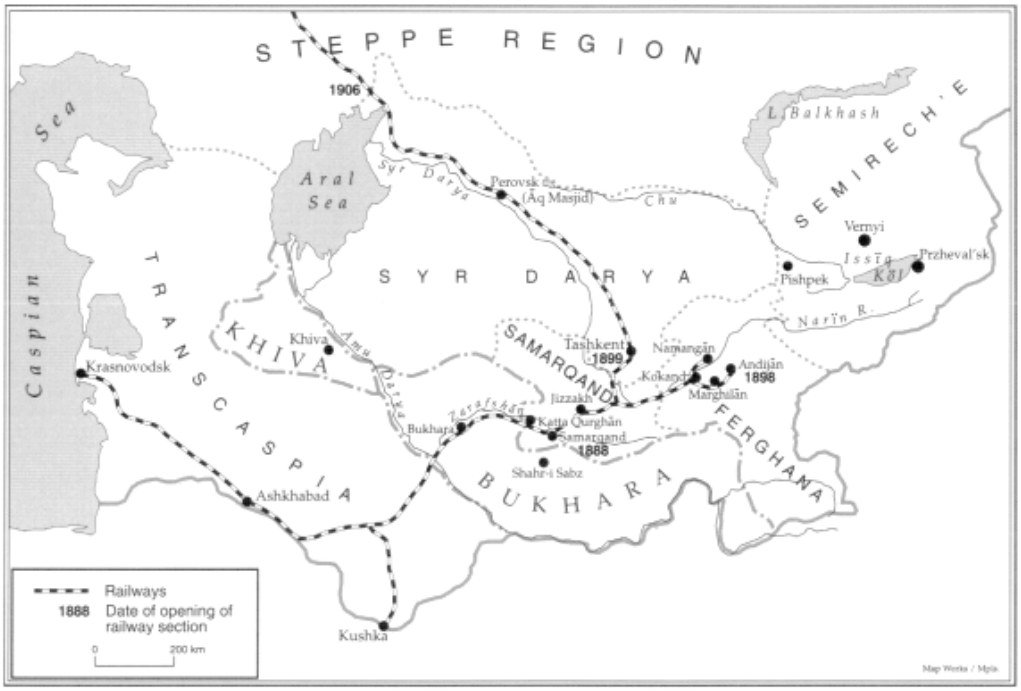

Figure 1. Construction of first two railway lines in Central Asia
Source:http://publishing.cdlib.org/ucpressebooks/data/13030/rv/ft8g5008rv/figures/ft8g5008rv_00005.gif

Figure 3. Tashkent population dynamics

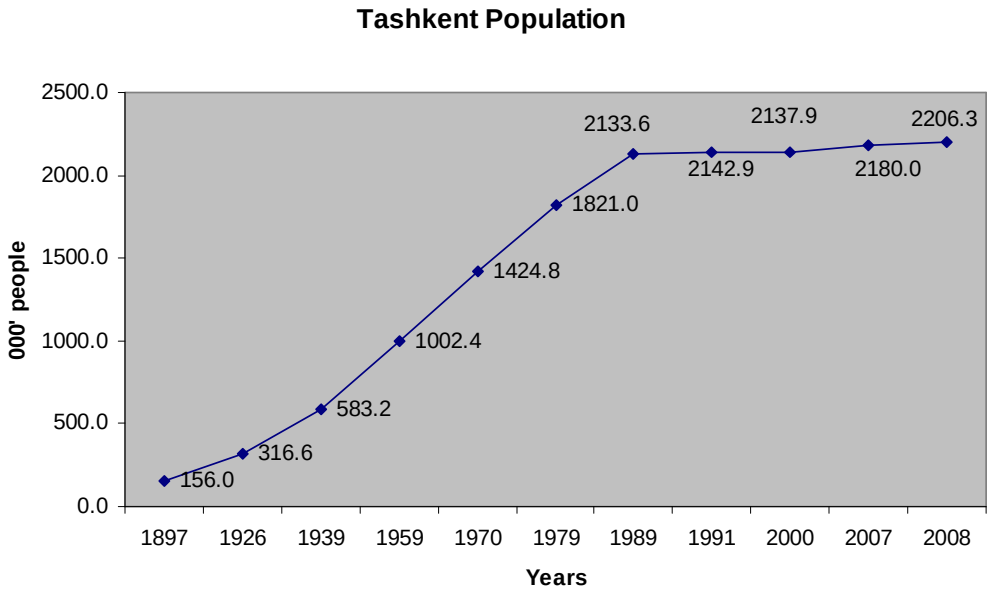

Figure 3. Tashkent population dynamics

Source: http://qmmp.ru/content/21/read653.html