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The Swedish government as owner of transport infrastructure. Policy formation from the 1930s to the 2010s

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Abstract

Governments have a choice whether to intervene in the transport infrastructure sector to manage, finance and own the assets of the sector, or to rely on markets and private sector actors for the provision of these systems. In this article the development of rail and road infrastructure in Sweden and the choice between government and market provision of these systems are analyzed from a co-evolutionary perspective. Technology, economics, and politics have influenced the government's policy formation and decisions on organizational models over time, such as the nationalization of roads and railroads in the 1930s-40s. The aim for improved economic efficiency and reduction of cost differences between different parts of the country rather than political ideology explain why roads and railroads were nationalized. Through adjusting its ownership role and policy content the government has, over time, accommodated to the different influences from technology, economics and politics. The government's ownership of transport infrastructure has not been challenged since the nationalization. This could be seen as a sign of a successful gradual policy adjustment from the government's side, thereby avoiding private sector solutions.

Keywords: Government, transport infrastructure, co-evolution, railroads, roads

Statens ägarroll inom transportinfrastrukturen. Policy-formulering från 1930-tal till 2010-tal

Staten har möjligheten att välja om den ska ingripa i transportinfrastrukturen genom att styra, finansiera och ta på sig en ägarroll för tillgångarna i sektorn, eller förlita sig på att aktörer i privat sektor kommer att tillhandahålla dessa system. I denna artikel analyseras utvecklingen av järnvägs- och väginfrastrukturen i Sverige. Valet mellan att tillhandahålla dessa system antingen i offentlig eller privat regi analyseras utifrån ett ko-evolutionärt (samevolutionärt) perspektiv. Teknikutvecklingen, ekonomiska och politiska förhållanden har påverkat statens utformning av politiken på området, men också beslut över tiden kring den organisatoriska utformningen, som t.ex. när det gäller förstatligandet av vägar och järnvägar under 1930-40 talen. Målet att förbättra den ekonomiska effektiviteten och att reducera kostnadsskillnaderna mellan olika delar av landet snarare än politisk ideologi förklarar varför vägar och järnvägar förstatligades. Genom att över tiden förändra innehållet i sin ägarroll och policy på området har staten anpassat sig till olika influenser från teknologisk utveckling, ekonomi och politik. Statens ägarroll har inte utmanats sedan förstatligandet. Det kan ses som ett tecken på en framgångsrik gradvis policy-anpassning från statens sida, varigenom lösningar i privat sektor har undvikits.

Nyckelord: Staten, transportinfrastruktur, ko-evolution, järnvägar, vägar

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1. Introduction

Transport infrastructure (here roads and railroads) is at the core of any society's functioning and, generally, a sector where the government and other public sector agents are engaged. Transport infrastructure systems have, over time, been organized either in the private sector or in the public sector. In Sweden the government has owned and managed national transport infrastructure since the late 1930s and early 1940s, following nationalization[1] during these years.

Transport infrastructure in Sweden is still managed and run largely as a non-market system. The political system and the planning bureaucracy aim for maximizing welfare surplus, allocative efficiency and functioning by directing resources to different activities and purposes. Over time, since the beginning of a more modern era for transport infrastructure by the mid-1800s, government's role has changed from a rather low-key regulator to that of a broadly involved owner and manager.

From the outset of this more modern era rail and road systems in Sweden were provided mainly by the private sector and/or local authorities. Railroads were introduced in the 1850s. The national government provided some of the main national lines while private sector actors (often together with local governments as substantial owners) supplied around 70 per cent of the total system up to the late 1930s. Public rural roads were mainly provided by local land owners, from the late 19th century organized in local road districts.

It is interesting to analyze the back-ground to the decisions in the 1930s and 40s to nationalize the large parts of the Swedish rail and road system that were privately and locally owned and managed. These decisions have shaped an important path for the following policy formation in the sector. The article analyzes the arguments that motivated the government to change its previous policies, from a more liberal and non-interventionist stance, to a more active policy and the following formation of ownership policies.

The purpose of the article is to reflect on the government's policy formation in relation to the nationalization and the following policy formation and development of the ownership role. The policy formation is reflected towards a co-evolutionary perspective. In this technology, economic and political factors influence development over time. The government's view on the balance between private sector and/or public sector provision of transport infrastructure is one of the studied aspects of the development.

2. Methods

The article is based on the analysis and discussion leading to the government's decisions to nationalize railroads and roads and the following policy formation as it is reflected in the official documents such as government committee reports, government bills and Parliamentary reports and statements from the 1930s up to the 2010s[2].

The method generates a rather formal basis for the analysis of the discussions and arguments used in the decision processes. The personal intentions and/or informal processes sometimes motivating different actors' views and actions are not necessarily captured through this data-set and methodological approach. Neither is the debate going on in public media such as newspapers etc. other than as it was reflected in the official reports and documents. When the government states, e.g. in a proposal to the Parliament that it has a view in some of the questions related to the process studied in the article, this is taken as a sign that the government actually had this view, if nothing contradictory can be found in other sources.

Some additional sources are used to provide a broader perspective on e.g. the development of the road-administration (Pettersson, 1988) and the nationalization of the railroads (Andersson-Skogh, 1996; Ottosson, 1997), the discussion within the road-engineering profession around the development of the road system, (Blomkvist, 2001), the economic and historical development in Sweden at large, (Schön, 2010) and the discussion in media during the 1960s about transport policy (Sannerstedt, 1979). The development of infrastructure systems in general as discussed e.g. by Hughes (1987) and Kaijser (1994, 2004) is another basis of the analysis.

The primary sources from the government and the Parliament have been studied in detail with a focus on extracting what has been judged, based on the co-evolutionary model, to be the most important or decisive discussions or situations. Here the factors technology, economics and politics/socio-culture have been utilized to structure the information in the texts. The ultimate focus in the article on the government's view on the public/private divide has been a basic sorting-basis that has been applied to the data-set.

The focus on the government's policy formation over the studied time-period motivates the choice to include both roads and railroads in the study. The two policy areas are closely intertwined when it comes to the development of the government's ownership role (with nationalization as an example) and policy formation. The two systems, even if they are different in many respects, it is argued, thus largely have been developed in relation to each other, thereby also exemplifying the co-evolutionary view. As railroads expanded road-policy was affected, and as road-traffic and the road system increased the railroad sector was hampered and held back and railroad-policy affected.

The co-evolutionary perspective is presented more in detail in section three. A parallel perspective to use when analyzing development of a societal system over time could have been path dependency. Path dependency can be seen as influenced or explained by economic factors such as large scale investments in technological systems (as railroads). Technology and economic circumstances are often closely linked, as for railroads. It could be argued that railroad technology, apart from being a heavy investment, also was a technological achievement that introduced new transport system logics and a new way of organizing transport which has had long time effects.

In relation to these path dependent examples co-evolution more explicitly strives for including different factors as co-existing and acting to influence the development dynamically over time. It can therefore be argued that co-evolution brings with it a higher (potential) degree of explanatory power when studying dynamic development over time.

3. Government's role for transport infrastructure and a co-evolutionary perspective

3.1. Traditional arguments for government involvement

Transport infrastructure assets have traditionally been seen as difficult to provide on markets. They have often been treated and discussed as natural monopolies. Mosca (2008) presents a historical background to the concept and the use of natural monopoly theories. J S Mill used the term already in 1848, Walras applied it explicitly to railroad-networks in the 1870s and the late 19th century economist R.T. Ely named an article by using the phrase "Natural monopolies…" Marshall discussed the same concepts but proposed that they be discussed as indivisible industries rather than natural monopolies. During the early 20th century the economy and society at large was analyzed as divided into a public and a private sphere, the basis for e.g. Keynesianism.

A more recent application of this divide was discussed by Samuelson in the 1950s. Samuelsson in his 1954-article on the pure theory of public expenditure split the economy between goods provided on markets and goods provided by the public sector. This theory was later developed as part of public choice theory, e.g. by Buchanan (1968).

The existence of goods, such as transport infrastructure, that will likely be provided by the public sector is generally explained by the existence of efficiencies of scale and scope in the systems (implying diminishing marginal costs and positive network effects), the existence of external effects which are difficult to price on markets, and the general deficiencies of payment systems, that has hampered the introduction of fee-funded roads and railroads and made it difficult to exclude users (also discussed as free-riders). All these factors have made the use of markets for the provision of transport infrastructure less viable.

Other reasons for the government to take on a more active role in the transport infrastructure sector have been a political interest in influencing regional development, distributional effects in general and the government's interest to control land-use and rights of way in connection to transport infrastructure planning and construction. In addition to this governments have generally had an interest in controlling the territory (physically) via the transport systems, as a necessary means for the core functions of the government (as police, defense, tax collection, education) to be carried out. These broad policy reasons for government intervention have often been included in the natural monopoly-arguments without clear distinctions between them.

3.2. A co-evolutionary perspective

The basic concept – evolution of societal systems over time

The market-failure-inspired arguments such as natural monopoly that have motivated government intervention at a number of times can be seen as an outflow of neo-classical theorizing in economics. A criticism towards neo-classical economic theory is that it focuses too much on equilibrium and does not capture development or evolution in economic or societal systems. A number of theories have been put forward to capture evolution of societal systems as transport infrastructure where factors such as technology, economics and institutions like political systems (or socio culture) interact to shape the development. A central point in this view is that such co-evolution has to do with the interaction between different kinds of systems/institutions. Co-evolutionary theory also has a parallel in ecology (e.g. Berg and Stagl, 2003). Here any such parallels are used mainly as metaphors and not as a direct theoretical basis for the analysis.

Co-evolution can be understood as the interaction between different societal factors as technology, economic factors and political or cultural aspects in society. These, over time, have a varying degree of impact on the development and sometimes interact in shaping the development.

Co-evolutionary theories can also be focused at e.g. explaining the interrelated development over time between different models of organizing sectors of the economy or, more narrowly perhaps the organization of an industry. The co-evolutionary model in this article entails, as its output the choice at different times between public sector and private sector provision of transport infrastructure.

The three factors influencing the development of transport infrastructure systems represent a number of organizational and physical aspects having an impact on transport infrastructure systems. The factors are not necessarily to be seen as separate. It is probably more accurate to see them as blurred and interdependent rather than distinct. Some general descriptions and examples of phenomena covered by the factors are given below.

Technology covers the physical networks of roads and railroads but also the rolling stock (trains) and vehicles, the technological evolution of which has often changed competitive relations between transport modes. Another important example in this category is traffic management systems; either manual or IT-based. Lately ITS-technology (Intelligent Transport Systems), by which IT is used in order to improve traffic management e.g. in congested cities, has been developing as an area drawing a lot of attention, which could be seen as part of the technology factor.

Economics covers the organizational settings as such but also economic phenomena and theoretical aspects on economic problems such as scale effects, competition, transaction costs and the different views on pricing policies based on marginal cost vs. full cost coverage.

Politics and socio-culture cover questions such as the balance between markets vs. government intervention, the influence of other policy areas such as

regional policy in the transport infrastructure area and questions such as the view over time on economic equality and power distribution between local, regional, national and international organizational levels.

Examples of co-evolutionary theories

A model for institutional change where "organizations and their entrepreneurs engage in purposive activity" to shape institutional change has been presented by North (1990). North thereby focuses on the entrepreneur as an important agent in the development and change. Institutions such as the economic and political system set the frames for the functioning and change of organizations and change of institutions. Important factors in this respect are the incentive systems and the transaction costs that are connected to different relations in organizations. Relative prices (and changes of relative prices) on markets are seen as driving forces for change. Change is seen to be continuous and incremental rather than "revolutionary".

Transaction costs in different settings are discussed by North as an important factor to understand and explain institutional change. Transaction cost theory, as developed e.g. by Williamson (1981, 1999), is a tool to underpin an analysis of how sectors, such as transport infrastructure, can be expected to be organized. Depending on the frequency of transactions, the uncertainty of the transactions and the degree of standardization of the assets that are transacted it is possible to discuss whether different functions could be expected to be organized through markets or in hierarchies. The model has been criticized from a number of angles, e.g. by Leflavie (1996), to be too static, and not to take learning, agency or power-structures into account.

Here Langlois (1992) offers a line of thinking which aims for adapting transaction cost theories with dynamism and evolution. Langlois argues that transaction cost economics generally has taken a short-run perspective on transactions.

What interests Langlois is the process by which short-run transaction costs turn into long run variable costs and what factors that explain this process. Langlois puts emphasis on learning since; "as learning takes place within a stable environment, transaction costs diminish". Learning occurs through the repeated transactions and through the evolution of norms of reciprocity and cooperation. The way the short-run and long-run perspectives are connected is through the "capabilities" of the firm, which in turn is made up by skills, organization and technology. Here Langlois quotes Nelson and Winter (1982). On the one hand firms are seen as pools of resources, and on the other hand the importance of routines is focused.

In the long run, as transaction costs diminish, Langlois also argues that governance costs diminish, when relations turn more and more routine-based. This would speak in favor of market-solutions rather than hierarchies in the long run, since capabilities which are originally unique to one firm could eventually be expected to diffuse into the market to become common knowledge.

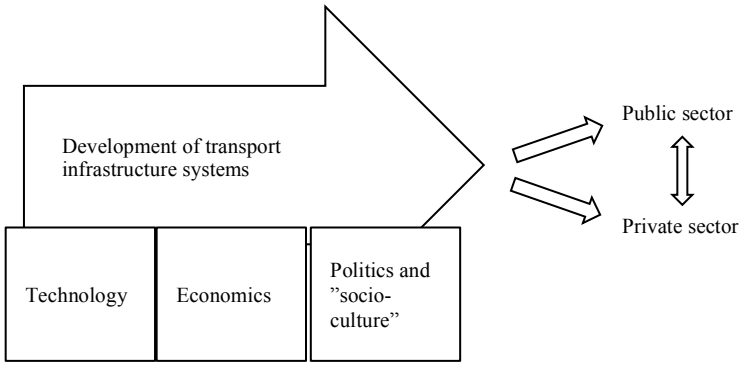
The development of large corporations and industrial segments over time has been described and analyzed by Chandler (1992), who argues that evolutionary theory with its interest for organizational learning and the development of capabilities explain, better than e.g. transaction cost theory, how successful corporations and structures evolve. Chandler (1992: 82) thereby emphasizes the importance of good management in terms of "knowledge, skill, experience and teamwork".

Chandler also (1992) argues that good management is at the core of the possibilities to reap efficiencies of scale and scope such as in large infrastructure systems, and explains why an evolutionary perspective is central. While neoclassical economics takes organization and management more or less for granted and transaction cost theory focuses perhaps too much on transactions, an evolutionary perspective, according to Chandler, puts organization, management capability and learning in focus.

A co-evolutionary stance is also reflected by Kaijser (2004) pointing at interesting aspects of the development of infrasystems, specifying them as sociotechnical where "the institutional frameworks and the system culture are as important as the technical components."

Figure 1 describes a model which includes the different factors influencing the development of transport infrastructure systems, an evolution-process and the government's choice between private sector provision and public sector involvement (as a parallel to the balance between markets and hierarchies in Williamson's terminology).

Figure 1. Development of transport infrastructure systems – a co-evolutionary perspective



The development perspective presented in Figure 1 implies that the government has a choice whether to intervene or not into transport infrastructure, how the sector should be organized, and generally about what role the government should take in the system. The government's choices on these issues are made in an environment where technology, economic factors such as the prevailing transac-

tion costs and the organizational structure of transport infrastructure sector and, finally, political factors play important roles.

If the government decides to organize the system as part of the government sector it has - in line with Chandler's argumentation - a role to set the organization in a way that gives the best possible prerequisites for efficiency ("good management") ; both in terms of economic efficiency and in terms of output or customer value. If private sector provision is favored the institutional setting for promoting efficiency as provided by market actors comes more into the forefront.

It can of course be discussed whether transport infrastructure systems have been developed in a linear successive process, as suggested by Figure 1. A stepwise approach, with equilibriums that are punctuated and a subsequent move to a new phase seems to be a more accurate description of the development. The introduction of new technology as railroad and cars represent two such development steps. The straight (development) arrow in the figure might though represent a continuous drive for evolution of the transport infrastructure system over time, and is therefore used for illustrative purposes here. Over time government has met a number of different management challenges varying according to the development phase.

There has, over time, been an interplay between the private sector actors, e.g. construction companies and technology providers such as Ericsson and Asea (Swedish forerunner of ABB), and the government agencies. This is represented by the interconnecting arrow between private and public sector-alternatives in Figure 1. Kaijser (1994) discusses this interplay as a sign of a "Swedish model" for the provision of infrastructure systems in Sweden. This includes that the government sets up an agency which is responsible for the national infrastructure assets while responsibility for regional and local networks are given to local governments and private sector actors. An informal cooperation between the actors and the lack of government supervisory agencies overseeing the different sub-sectors are additional aspects of this view on infrastructure systems.

4. The government as owner of transport infrastructure

In this section a broad overview is given over the formation of the government's policies and ownership-role from the 1930s-2010s.

4.1. Nationalization – why?

According to the official documents that were presented in relation to the decisions to nationalize the rail and road systems in 1939 and 1942, there were both differences and similarities between the two decision-processes. The nationalization of rail can be seen as an example of a classical restructuring of an industry-sector having met economic difficulties, due to high costs, a too fragmented structure and growing competition from the road-sector.

Through the nationalization the railroad-industry in Sweden was taken a further step towards organizing for reaping scale-economies. With the fragmented

organization of railroads at the time, scale economies had not been fully utilized. Government initiatives to intervene in the railroad business with grants, concessions and loans to private railroad companies which operated independently from the government had been part of the government's policy towards the rail industry in Sweden since the 1850s. A number of railroads had been taken over by the government over the years in an ongoing centralization trend as competition from road transport grew stronger. In this respect the nationalization of railroads can be seen as logic step towards consolidation.

There was, at the same time strong opposition towards the nationalization from representatives of the regional and local level voiced in the decision process. Nationalization was believed to lead to a loss of local influence and flexibility.

Compared to railroads roads had been part of the transportation system since long. Roads had been built and managed by landowners (and later also by local businesses) since the medieval time to enable transport in the local environment and to allow for some transport flows in wider geographical areas. Organized as an activity that local interests were responsible for, and mainly based on already present older roads, the drive in the development was less coordinated than for railroads. As such roads show many signs of a bottom-up system, rather different from railroads.

Coordinating measures for the road system had been taken by the government from the 1840s. But it was only during the 1920s that a more profound challenge to the local administration came. As for railroads, technology was clearly a strong driving force in the change process from the mid-19th century. Cars, buses and trucks grew fast in number and transport changed from mainly local flows to higher proportions of regional and national flows. In 1923 national vehicle and fuel taxes were introduced, which drastically increased the government's financial resources, (Liljegren, 1999). By the mid-1930s financing had become dominated by the government and national coordinative measures had grown in importance over the first decades of the 20thcentury.

The government was however hesitating to get further more involved both in roads and railroads. Even if there, according to a number of government committees analyzing these issues from the late 1800s up to the 1930s, were strong reasons from economic, organizational and technology based arguments to take coordinative measures the government refrained at length.

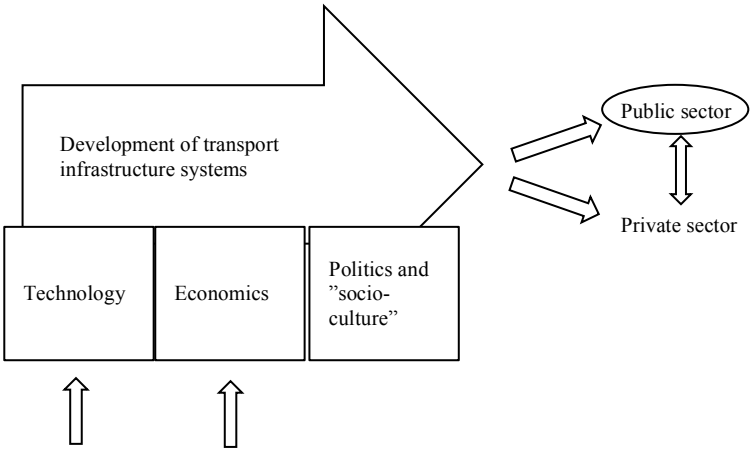
The government's reluctance had partly to do with the political resistance against changing the basic distribution of power between the central and the regional/local levels in the public sector. There were strong opponents, mainly on the regional and local level, towards any change in the power distribution. A parallel situation can be seen in the present situation in transport infrastructure in Sweden, as the actors are searching for new roles, but where it is difficult to redistribute power in the public sector. Local governments have traditionally had a strong position in their different areas of responsibility and the view that local responsibility should be preserved (if possible) has been widely accepted. It has generally been easier in Sweden to transfer duties to local and regional levels

than to reduce their mandates; even if there have been valid arguments for centralization in different sectors over time.

The most important reason for the decision to nationalize the rural public roads seems to have been the perceived need to improve the economic performance of the road-management and to equalize costs between different parts of the country, more than a clear political whish for centralizing authority and power. Finally, most clearly when it comes to roads, the perceived needs in times of world-crisis and war gradually came to influence the decisions, beside the economic reasons. The processes in relation to the nationalization of the railways have been studied by Andersson-Skog (1996) and Ottosson (1997), making similar observations. Ottosson stresses similarities and differences between nationalization processes in various countries. The historical context according to Ottosson is important for understanding different national patterns.

There might also have been some interdependence between the two decisions; when the resistance to nationalization of railroads was overcome in 1939 it might have been easier to go ahead also with road nationalization in 1942. Still, the general impression is that the government waited for long to take the final decisions and, when it did, it was based more on pragmatism and economic rationality than on ideology or politics. The political or socio-cultural system, anyhow on local and regional level, seems to have been working for preservation of the existing system more than for reform. The decision to organize transport infrastructure as government agencies seems to have been consistent with the government's intention to foster coordination and economizing policies both for railroads and roads. Other organizational models could of course have been discussed, but did not appear in the discussion.

Figure 2. Push from technology and economic factors explain the nationalization more than politics and socio-culture. Public sector organization was chosen.



4.2. Business orientation and competition

As WWII was coming to an end the centrally planned war-economy had to be dismantled, which concerned e.g. regulations regarding transportation. There was also a need for the government to define the contents of its new ownership-role; the policy aims and strategies. There were a number of challenges to be considered. At least three different policies had to be developed:

- a coherent transport policy,
- a financing policy,
- a strategic plan for development of the physical networks (mainly for roads)

A number of government committees were set up to work on these different issues during the 1940s and 1950s and proposals were successively presented for the Parliament by the government. The ownership role and transport policy was developed stepwise through this process. Thus, it was not until 1963 that the government finally settled for a coherent transport policy proposal to Parliament, based on the 1953 Transport Policy Committee's work (SOU 1961:23). One of the major areas, from a financial point of view, in the government's budget and balance sheet thus was managed without a clear policy as regards strategic development and other important aspects of the ownership for nearly 20 years.

The government had perhaps hoped for the first post-war Committee, the 1944 Transport Committee (SOU 1947:85), to solve the complex issues facing the government as owner of the national transport infrastructure systems following the war. The motivation behind the nationalization having been based more on organizational and financial reasons than on ideological reasons, as discussed e.g. by Pettersson (1988), obviously opened for a free discussion on how to manage the systems as the war ended.

The 1944 Committee was, according to Sannerstedt (1979), also dominated by representatives for the business-life rather than by politicians or Members of Parliament. The latter had been a more frequent model for recruitment to government committees. When the Committee's report was presented in 1947 it was also market friendly, e.g. when it came to the view on the value of free enterprise, entrepreneurship and dynamism. The Committee spoke the language of Hayek and Schumpeter rather than Keynes and Myrdal. Negative aspects of further government intervention – or dirigisme - were clearly exemplified.

Market economy-models were applied as yardsticks when the Committee described the good future functioning of the transport market and the view on the future regulation of the different transport modes' operations. The government's ownership of transport infrastructure was however not questioned by the Committee. There seems to have been a consensus about the principle that the government should own and finance transport infrastructure. The Committee's view was that the important thing for the government was to set a good organization for the management of the systems and for the strategic planning issues to be carried out efficiently. In this way the committee reflected views expressed by Chandler (1992) around the importance of getting the organizational setting

right. Therefore the Committee proposed the establishment of a new planning agency and the (slight) reorganization of the Railroad Administration to strengthen the strategic and financial planning capabilities.

The Committee's main contribution to the transport policy-area in the coming decades was perhaps its strong focus on efficiency as the overriding goal for the sector, the principle that each transport mode should cover its own costs and a proposal for a strengthened separate account structure for road tax-revenues in the government's budget. This cost responsibility principle and the proposals for a closed budget principle for road financing were to remain important basic aspects of the transport policy throughout the coming decades. The Committee's proposals were at the same time more or less met with silence from the government, as Sannerstedt (1979) notes. This might be interpreted in the light of the ongoing discussion at the time in the general political debate.

There had been a focus on an interventionist policy stance as a social democratic government was formed in 1945. In the post-war program, and the Planning Commission chaired by Professor Gunnar Myrdal, the focus on regulation and control over the economy was more clearly expressed than earlier. The market economy was seen to be lacking the ability to handle the strategic restructuring of the economy considered necessary, and a more active role for the government in most policy areas was outlined. This has been described, e.g. by Appelqvist (2000) and Schön (2010).

Following the 1948 general elections, when the social democratic party lost seats in the Parliament, there seems to have been a softening in the party's interventionist stance. Other issues had become more important.

One major question in transport infrastructure policies from the late 1940s was the financing of the investments necessary for the development of the railroads and roads within the constraints set by the aim of preserved macroeconomic balance, rather than measures to strengthen the organizational capabilities as discussed by the 1944 Transport Policy Committee. In the government's Long Term Economic Committees' reports cautions against a too strong growth in transport related investments were clearly voiced. There was a focus on balancing the needs of different sectors in the economy under preserved stability. As the investment in industrial capacity and housing construction were seen as vital areas for the long term development, the room for transport infrastructure was rather limited. Investment control and management of investment activities within the economic framework were more prioritized than to accommodate the perceived resource needs in the transport sector.

The need for a strategic road construction plan and a financing model was however pointed out both by the 1950 Long Term Economic Committee and by the Parliament. The Government's answer to the perceived need for policy development to set up two new committees; one looking into the financing of road investments, the other one dealing with transport policy in general.

The 1951 Road Tax Committee's report (SOU 1953:34) and the following government proposal opened for new resources to be transferred to the sector. The frame for the expansion was however tightly set by the cost responsibility

principle which was mentioned as a starting point by a number of government committees during the 1950s.

Only resources generated by the road-tax system (with fuel and vehicle taxes) and possibly additional general funding for railroad-purposes could be used for transport infrastructure. This policy was believed to be too tight by some politicians and interest groups promoting more investment in the road system. Following parliamentary initiatives from the opposition parties the question of opening for toll-financing of roads was analyzed by a separate Committee (SOU 1962:23). Proposals for a toll-system were presented, and were met with some positive reactions, but the Committee's proposals did not lead to any proposals from the government to Parliament.

The 1963 Transport Policy decision, based on the 1953 Transport Policy Committee's reports, has been seen as the hall-mark of the post-war transport policy in Sweden, e.g. by Sannerstedt (1979), setting the stage for the development in the 1960s and 1970s when it comes to the development of the railroads and roads. This picture is partly changed when seen in a long-term perspective. The basic (economic) principles for transport policy and for the development of railroads and roads were more or less outlined already during the 1940s (or earlier looking further back in time). The 1963 decision did mainly confirm the policies that had been pursued since nearly 20 years.

The new elements in the 1953 Committee's work were instead a program for the dismantling of remaining war-time and prewar regulations for road and railroad transport. This was motivated by the need for opening for competition and a level playing field between the transport modes. Another novelty had been introduced by the government in the terms of reference for the Committee; that a minimum transport standard in all parts of the country should be safeguarded by the transport system. This marked the more developed goal-description compared to earlier, with focus more on the interrelation between the transport system and other policy areas. In the government's 1963 proposal to Parliament additional goals were added; regarding both transport safety and the fostering of technology development.

The focus on welfare-economic based calculation was also stronger than before both in the 1953 Committee report and in the 1963 government proposal. The theoretical soundness of marginal cost based pricing for the use of the existing networks was discussed by the 1953 Committee, while full cost coverage should be the principle for new-construction. The latter was in line with the cost responsibility principle from the 1940s.

Welfare-economic based calculation (cost-benefit analysis) was proposed to be used as a basis for the prioritization between different investment-projects, which should be carried out in a cross transport mode-perspective and in close coordination with regional and local authorities.

The last of the three policies that had to be developed was a plan for the development of the road system. This was dealt with by the "Delegation for General Road Planning", a government committee which reported in 1958 (SOU 1958:1).

The Committee had developed a plan for the ten years between 1958 and 1967. An elaborated planning method was developed and implemented in the analysis carried out. All parts of the country should be provided with a road system of reasonable quality and standard, while paying special attention to areas with intensive traffic, mainly in the three major cities; Stockholm, Gothenburg and Malmo.

The starting point for the planned road system, with a basic standard throughout the country, but varying according to traffic volumes, was the existing road system at the time. It was made clear early on in the analysis that it would only be possible to make additions and quality improvements to that system, within the economic frames that were at hand. A few major new roads were presented and planned, mainly for motorways connecting the three big cities. But also for these connections only the most heavily used sections would have the highest quality standards.

The decision to go for the planning principle where the cities were connected by new roads, rather than to propose the construction of completely new roads was also an effect of the same reasoning. Completely new road-sections outside the cities would have been too expensive. They would probably also have brought political difficulties on regional and local levels when implementing the system. At the time municipalities and larger cities did not like the idea to have a new national road to by-pass the city-center.

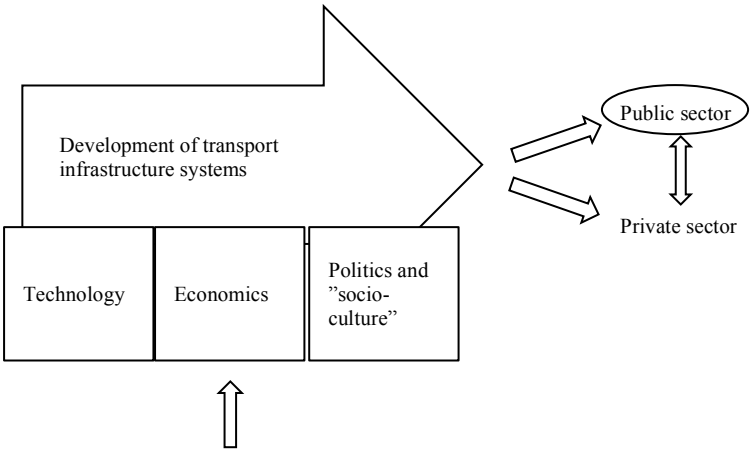
The plan was developed based on the basic view that there was (still in the late 1950s) a major lag in the investments originating in the low investment levels in the 1940s and 1950s. Combined with the strong growth in traffic, that had already been recorded and was projected for the future, major investments, and growing maintenance costs were foreseeable.

In relation to the rather elaborated strategic physical planning presented by the Committee, the economic plans and projections were less developed. Based on the projected tax revenues in the ten-year planning-period, which was in turn a result of the traffic forecast, an available amount of 14.3 bill. SEK was presented as a frame for the economic planning. This was to be enough both for national roads, local government's roads and for government grants to private roads. Maintenance costs were also to be covered by these revenues. The available amount for national roads was set to ca. 8 bill SEK, which was seen as sufficient but rather limited.

The road plan was never formally established by decisions by the government. Both the government and the Parliament were apparently interested in preserving the freedom to take discretionary decisions in this area, through yearly decisions in relation to the government's budget. At the same time the plan formed a basis for future decisions to start from, and in this way it had an important impact. With the strategic road plan developed the three strategic policy areas which had to be developed already in the mid-1940s were in place. The process to develop them had lasted for nearly 20 years as the demands of transport policy had shifted in focus.

The government's post-war transport infrastructure polices took off from a rational/economic starting point where the need for organizing in order to reap scale effects were important arguments. During the next phase transport infrastructure policies to a large extent were focused at meeting the demand for new road capacity within the macro-economic framework aiming for stability. Supply and demand factors in the transport infrastructure market, i.e. primarily to meet the demand for better roads, were important in this development. These issues seem to have been more important, at least for the policy formation, than technology and politics during this period.

Figure 3. Post-war transport infrastructure policies were developed mainly based on discussion around the available economic resources and the demand for new road capacity. Government ownership was not put into question.



As for the discussion concerning market or government supply of transport infrastructure the documents from this period are almost entirely silent. Suggestions for alternative funding with road tolls for a small number of large projects were put forward but never led to any decisions. It could be seen as the era of government managed economy in Swedish transport infrastructure policy. A more developed goal structure for transport policy was part of the 1963 decision. Transport infrastructure issues were however, still mainly an area for experts like technicians and economists rather than politicians.

4.3. Politics and the social cost/benefit-view

With a general transport policy decision in place, part of which was a financing model, and a road plan presented the necessary strategies were in place for the development of transport infrastructure in the 1960s. The road system, on the one hand, grew fast with rising numbers of cars, buses and trucks motivating investments. Railroads on the other hand were closed as a result of the Railroad

Administration's need to reduce costs to accommodate the contraction of rail transport.

Through the 1960s there was both a solid support for the 1963 transport policy and growing criticism towards the effects of the policy. One influential and critical stand-point was reflected in a debate-book ("Ska vi asfaltera Sverige"[3]) by a group of social democrats and scholars critically discussing the effects of the expansion of the road system (Anell, Hedborg, Lönnroth, Ingelstam, 1971) and arguing for a revised transport policy. The criticism was partly directed towards the strong tendency for expert based planning that had been a sign of the transport policy and the government's role since the nationalization.

During the 1970s there was, partly as a response to the criticism, a shift to a more process- and discussion-based planning process where different organizational levels in the society were engaged in the processes and where citizens were invited to participate more than earlier.

One way of adapting to the new planning paradigm was to open for more of social cost benefit calculation as a basis for decisions on transport infrastructure investments. Following the 1963 transport policy decision cost benefit analysis had been used more widely by the Road Administration in road planning during the 1960s and 1970s, e.g. in a report on a road plan for the 1970s and 80s (SOU 1969:69).

In relation to the next major decision on transport policy in 1979, the main focus had shifted to welfare-economic principles, which marked an important turning point in transport policy. The principle of business economic cost responsibility was to be replaced by a horizontal planning including all the transport modes for the delivery of transport services and with a basis in welfare-economics. By setting prices for the use of transport infrastructure at short term social marginal costs, both for existing and new-constructed roads and railroads, a correct and efficient use of the infrastructure assets should be safe-guarded.

As a next major step, in the late 1980s, the former vertically integrated Railroad Administration was split in two new agencies. One was responsible for train operations and the other for rail infrastructure. The new Railroad Administration was to be managed by welfare-economic principles, while the remaining Railroad Agency (SJ) focused on operations, still under business-economic principles. Another step was taken ten years later when the Railroad Agency was transformed into a state-owned corporation and even more focused on the business economically motivated provision of (passenger) train services.

During the 1980s and 90s there was also an opening for alternative financing as road-pricing was allowed from the late 1980s and some roads and railroads were constructed financed by specific borrowing by the government and private sector actors. The basic financing for transport infrastructure was though still provided by the government through appropriations.

The decision on the reorganization of the former Railroad Administration was, interestingly, taken at the same time as a shift back to the earlier financing principles in transport policy from 1963 was decided. The 1988 transport policy decision was concerned with the difficulties in implementing the welfare-

economic principles in the transport area. The government also had found it difficult to develop strict principles for the financing of the deficit that was an effect of marginal cost pricing (mainly for railroads).

The return to the former cost-responsibility principle would once again bring clear frames for the investments and other spending in the sector. In 1998 there was once again a shift in the policies, but this time back to a focus on welfare-economics as the basic principle for the management of the transport infrastructure sector. The focus on external effects of the transport system was strengthened and sustainability was introduced as one of the important goals of transport policy.

The focus on welfare-economic cost benefit calculation and pricing policies has since the late 1990s been emphasized by the government a number of times. This principle was e.g. clearly stated in the 2008 Infrastructure Bill (2008/09:162).

Other trends during the latest decades have been the growing importance of the international level for transport infrastructure planning, with stronger integration in the EUs transport policies. The developed coordination between the central government agencies and the regional level in Sweden, where local governments and regions are prepared to take on more responsibility for transport infrastructure planning and financing, is another example.

During the first decade of the 2000s a parallel development with challenges of the government's role as owner has however become more obvious. Challenges from new technology that opens for new payment technology and markets, from the regions and from the international level claiming more power and focus are important aspects.

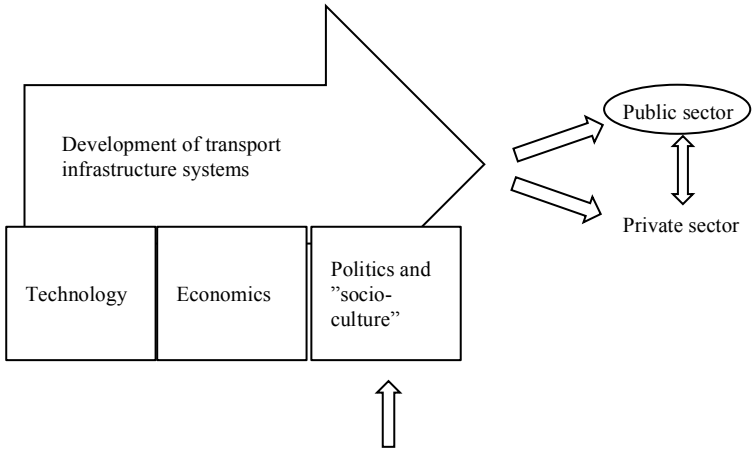
Weak public finances in many EU-Member States have opened for renewed interest for non-government financing and a growing involvement of the private sector in the provision of transport infrastructure. Efficiencies of scale and scope seem also be possible to capture more and more in a cross-border perspective than on a national level.

The third period in this overview has thus been marked by a move towards stronger political influence with a more elaborated political goal structure opening for the use of cost-benefit analysis, based on welfare economics. Sustainability-oriented policies have worked in favor of more attention being focused on railroads since the 1990s and led to the stronger political demand for alternative fuels to be developed for road transport. IT-technology has opened for more advanced management and control of road and railroad transport, which also opens for more advanced capacity utilization and new pricing models. It seems reasonable that technology will, once again, play a more important role for transport infrastructure decisions in the future.

While deregulation was part of the 1963 transport policy decision and privatization has been part of the policies since the 1980s, this has only to a minor extent affected the government's role as owner of the national road and railroad systems. However, some projects financed with alternative funding such as user fees have been allowed during the latest 20 years. These include the Öresund-

bridge, connecting Malmö and Copenhagen, and the Arlanda Express connecting Stockholm City with the major airport, Arlanda.

Figure 4. Transport infrastructure policies have become more influenced by welfare-economics and politics since the 1970s. Government ownership has prevailed with the exception for some openings for alternative financing and private initiatives.



5. Conclusions

Over time the influence of technological, economic and political factors on the government's formation of transport infrastructure policies and its ownership role have varied. The co-evolutionary perspective has been shown to be useful in order to structure the discussion on the different factors and their importance.

It is naturally not possible, neither from a methodological nor from a factual standpoint, to make causally clear how the different factors have influenced the development. The influential strength of the factors is indicated in Table 1 below by the use of the term *strong influence* in those cases where a more important impact of one factor can be traced, based on the literature study.

For transport policy and transport infrastructure development the period from the late 1930s until 1963 is in many ways a history of the growing road-transport system and the contracting railroad-system. A main focus of the policy area, and for the government's ownership-role, was how to frame the development of the road-transport system in terms of road-planning and financing principles. For the railroad-system the main focus has been to finance the growing deficits which have been an effect of strong competition from road transport and the political view since the early 1970s that railroads should be preserved.

The railroad system from around 1920 to the late 1990s in this respect resembles the role of a "reverse salient" (Hughes, 1987) in the transport system, representing the part of the system that was lagging behind from a technological

point of view and which demanded financial support and focus from politicians. At the same time the road system had positive momentum with a strong growth and a number of stakeholders such as consumers and producers of vehicles and supporting services and the road-lobby organizations. Only lately has there been a resurge in railroads' attractiveness.

In terms of the co-evolutionary perspective the development during this period seems to have been influenced mainly by technology in terms of the strengthening of the motor-transport technology. Economic factors were also important in that there was strive for setting a framework for the financing of the road-network and in general to foster efficiency, with the application of the cost responsibility principle. This principle was also important to limit the growth of the investments in the sector.

Transaction costs have affected the development over time. By forming large state-owned organizational units for roads and railroads it was the intention to reduce operating and information costs in relation to the earlier more fragmented structure. The perceived high transaction costs related to separating the rail infrastructure from the operations side of the business probably delayed this decision, which was proposed already in the mid-1960s by a government committee.

Table 1. Transport infrastructure chronology 1939-2010, a co-evolutionary perspective.

Role of	1939-1963	1963-1988	1989-2010
Technology (roads and railroads, rolling stock, vehicles, traffic management systems)	*Strong influence*	Widened use of existing technology	Growing importance, e.g. ITS and new technology for low emission vehicles
Economics (organizational setting, scale effects, competition, transaction costs, pricing policies, marginal cost vs. full cost coverage)	*Strong influence* cost responsibility and competition	*Strong influence* growth of welfare-economics	*Strong influence* welfare-economics
Politics (markets vs. government intervention, influence of other policy areas, view on distribution, local, regional, national or international)	No ideological push behind nationalization	Growing importance and broader political agenda	*Strong influence* Sustainability and deliberative processes
Public sector vs. Private sector	The government managed market economy	Competition between transport modes	Preserved government ownership with some opening for alternative financing and privatization

The period from 1963-1980 with a growing role for welfare-economics was marked by a prolongation of the post-war policies based on competition and markets with a per transport-mode perspective. As a balance to this decentralized policy a centralized expert orientation was seen as the modern way of handling societal planning, e.g. road planning (see Hultén, 2012). From the 1980s there has been a stronger political influence over transport policy combined with market openings and deregulation. Deliberative influences have been strengthened both in physical and economic planning as well as in the operations of the Road and Railroad Administrations, combined with the basis in cost-benefit analysis and a process orientation. At the same time this has been the period when some alternatives to government ownership and financing have been realized.

On the one hand parts of the former government agencies have been separated and divested to private owners. On the other hand government borrowing for financing of investments and user charges has been introduced. Deregulation of rail-transport has also been implemented, at first for freight transport and recently for rail passenger transport. The political system has thus been working for strengthened political goal orientation while at the same time opening for alternatives to government's ownership of railroads and roads.

Sweden's entry into the EU in 1995 brought a higher degree of internationalization but also supported the reorganization of the transport markets and transport infrastructure agencies in Sweden initiated by the 1980s.

Private sector initiatives have been given large room in the development on the EU-level, partly as a result of weak public finances following the financial crisis in 2008-2010. Johnson and Turner (2007) after a wide-ranging analysis of EU's consolidated strategies on Trans-European Networks (TENs) e.g. in transport, however note that the market-friendly liberal strategy of the 1980s-90s to some extent has been altered to lean more on the traditional incumbents e.g. when it comes to the spread of new technology or interoperability in different sub-sectors, e.g. transport. In Sweden as in many other countries more criticism towards privatization has been voiced lately, partly as a response to the effects of the financial crisis.

Technology has also regained influence during the last decade. Intelligent Transport Systems (ITS) with IT-based solutions have grown in importance for traffic management and control. Sustainability aspects on transport have also strengthened the focus on technological development. Finally new payment systems have become possible alternatives to tax funding, with congestion taxes and charges for capacity-utilization for train-operators.

The historical overview also shows that there have been only few a few examples where the organization and management of transport infrastructure as part of the government sector have been put into question. There seems to have been a consensus in the political system, and also among many of the organizations in society commenting on the proposals from the committees presented over time, that the nationalized system was more or less well functioning. One of the main questions has instead been how to provide the system with additional financing.

Through gradually adjusting its ownership role and policy content over time the government seems successfully to have accommodated to the different influences from technology, economics and politics/socio-culture without opening for a discussion concerning its ownership of transport infrastructure. Neither has the introduction of private sector alternatives of any significant size been the case.

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Notes

[1] In this article nationalization stands for a central government take-over of assets held either by private sector or local government actors.
[2] References covering the relevant government committees, government’s proposals to Parliament, Parliamentary statements and reports are enclosed in the bibliography.
[3] ”Should Sweden become asphalted?”