# Chapter 11
# Institutions and the Thirst for 'Prestige' Transport Infrastructure


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Decision-makers, people in the construction industry, and most of the rest of the population love transport infrastructure. Roads, railways, ports, and airports are generally popular, highly visible, and tangible, can frequently be built within the span of an electoral cycle, can produce additional votes, and may even generate medium- and long-term economic growth. A ruler's legacy is also often associated with specific infrastructure developments. Infrastructure in general, and transport infrastructure in particular, is thus usually the first option when devising development strategies (Flyvbjerg, 2009). Often, the glitzier the type of transport infrastructure, the better. Motorways (superhighways) tend to be preferred to secondary roads, high-speed rail to freight trains, and international airports to heliports. If transport infrastructure is to appeal to the population and achieve its goals, it needs to shock and awe.

Governments have consequently flocked to make infrastructure the key axis of their development strategies. The European Union (EU), for example, has made the building of transport infrastructure one of the cornerstones of its regional development policy. So intense has been the improvement of transport in the less developed areas of the continent that countries and regions whose endowment of transport infrastructure clearly used to lag have become leaders after more than 25 years of investment. Spain, for instance, now has the largest motorway network among the EU's first 15 members. The country also tops the ranking in kilometers (km) of motorways per capita, with Portugal ahead in km per GDP (Table 11.1). The United Kingdom comes last in the latter two classifications. Spain also has the largest network of high-speed rail lines. New airports have also been built—and, to a lesser extent than in the high years of the economic boom of the 2000s, are still being built—all over the European periphery (Albalate & Bel, 2012).

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**Table 11.1** Infrastructure endowment in the EU 15, in 2011

| Member states | Km motorways | Km motor-ways per 1,000 km$^2$ | Km motorways per 10,000 inhabitants | Km motorways per €1 billion of GDP |
|---|---|---|---|---|
| EU 15 | 61,504 | 18.98 | 1.53 | 5.6 |
| Portugal | 2,623 (7)[a] | 28.49 (5) | 2.49 (3) | 15.6 (1) |
| Spain | 13,515 (1) | 26.77 (6) | 2.93 (1) | 12.8 (2) |
| Sweden | 1,855 (8) | 4.12 (14) | 1.96 (6) | 6.3 (3) |
| Austria | 1,696 (10) | 20.22 (9) | 2.01 (5) | 6.2 (4) |
| France | 11,042 (3) | 20.08 (10) | 1.69 (7) | 5.8 (5) |
| Germany | 12,645 (2) | 35.43 (4) | 1.55 (10) | 5.3 (6) |
| Belgium | 1,763 (9) | 57.75 (2) | 1.59 (8) | 5.2 (7) |
| Denmark | 1,128 (11) | 26.18 (7) | 2.02 (4) | 5.1 (8) |
| Greece | 1,103 (12) | 8.36 (12) | 0.98 (13) | 4.7 (9) |
| Netherlands | 2,637 (6) | 63.50 (1) | 1.58 (9) | 4.6 (10) |
| Italy | 6,629 (4) | 22.00 (8) | 1.09 (12) | 4.4 (11) |
| Finland | 739 (13) | 2.19 (15) | 1.37 (11) | 4.3 (12) |
| Luxembourg | 147 (15) | 56.84 (3) | 2.80 (2) | 3.9 (13) |
| Ireland | 423 (14) | 6.04 (12) | 0.92 (14) | 2.6 (14) |
| United Kingdom | 3,559 (5) | 14.54 (11) | 0.57 (15) | 2.3 (15) |

[a]Rank is noted in parentheses. Countries ranked by Kms of motorways a relative to GDP.
Source: Adapted from Eurostat data

However, frequent tales of underused motorways, closed high-speed railway lines, and empty airports suggest that the hopes associated with the construction of new transport infrastructure in Europe have not always been met and that new infrastructure investment has sometimes been a complete waste of public resources that could have been used more effectively for other purposes. There are at least two potential explanations as to why new transport infrastructure does not always deliver. One is the famous two-way road argument: Because firms and workers in lagging areas find agglomeration economies attractive, changes in accessibility due to new roads, train links, and airports may benefit the core economic areas at the expense of less advanced ones (Puga, 2002; Puga & Venables, 1997). The net growth effect of reductions in transport costs may therefore be zero or even negative. An alternative explanation is that the returns on investment in infrastructure are mediated by the quality of regional government institutions that share responsibility for ensuring the selection and realization of specific projects. The local institutional environment in which investments are made will affect the relevance and type of new infrastructure investments and, hence, their economic returns. Ineffective institutions abet opportunities for private gain at the expense of a sound provision of public goods (Acemoğlu & Dell, 2010). Hence, in weak government quality conditions, new investment in transport infrastructure may be subject largely to political and individual interests rather than to economic and collective ones (Crain & Oakley, 1995; Henisz, 2002). Institutional failure can therefore be at the heart of a growing propensity to finance glitzy, "flagship," and large-scale transport projects

(i.e., motorways, high-speed rail lines), which politicians tend to embrace when seeking reelection (Cantarelli, Flyvbjerg, Molin, & van Wee, 2010; Rodríguez-Pose, 2000), at the expense of less flashy, "ordinary" transport investments (i.e., secondary roads, freight railways). It may also aggrandize the role of political and business pressure groups, bringing about problems such as collusion at the tender stage and misrepresentation of costs, benefits, and the time needed for implementation (Flyvbjerg, 2009; Kenny, 2007; World Bank, 2011). A convergence of partisan politics, business interests, weak accountability, and corruption may thus prevent new infrastructure from generating the expected positive multiplier effect on the local economy and sustained economic development.

In this chapter we reflect on these issues for the case of Europe, looking at how institutional weaknesses—proxied by poor government quality—often result in decisions determining which type of infrastructure to build and whether individual rather than collective interests prevail. Such decisions would be reflected in the construction of "prestige" transport infrastructure (motorways rather than secondary roads), which fosters the interests of decision-makers and large infrastructure firms and may even be popular but which entails highly questionable economic and social returns.

## Does Investment in Infrastructure Always Lead to Growth?

Transport infrastructure is essential for the development of economic activity (Button, Leitham, McQuaid, & Nelson, 1995). Enhanced local accessibility is at the root of improvements in the quality of services, reductions in labor costs, and rises in productivity (Biehl, 1986; Moreno, Artís, López-Bazo, & Suriñach, 1997; Vickerman, 2007). Adequate transport infrastructure also provides incentives for the sorting of economic activity and facilitates economic growth (Lewis, 1998). However, once a necessary basic threshold of infrastructure provision has been reached, the impact of additional public investment becomes uncertain. One claim, for example, is that OECD countries have reached a level of transport infrastructure provision at which additional expansions are likely to have only limited effects on economic performance (OECD, 2009).

Hence, the key questions emerging from past research on transport infrastructure and economic performance relate to the potential existence of an optimal level of infrastructure development and to the effects on economic growth of additional investments in transport infrastructure beyond that level. Initial research on this matter did not consider the existence of such a threshold. According to Aschauer (1989) and Munnell (1990), there was a linear positive effect of transport infrastructure investment on aggregate productivity. This thesis, however, has drawn heavy criticism in subsequent economic research (Button, 1998), which for both the United States (Holtz-Eakin & Schwartz, 1995; Kelejian & Robinson, 1997) and Europe (Cappelen, Castellacci, Fagerberg, & Verspagen, 2003; Crescenzi & Rodríguez-Pose, 2012) has cast doubt on the effectiveness of infrastructure investment. In the

case of Europe, this skepticism has been highlighted by both single-country (e.g., Bronzini & Piselli, 2009; Cadot, Röller, & Stephan, 1999; Stephan, 2000) and cross-national research (e.g., Cappelen et al., 2003; Crescenzi & Rodríguez-Pose, 2012), which increasingly reports much lower elasticities than those found by Aschauer (1989) or even insignificant coefficients. Similarly, spatial analyses searching for spillovers from different types of infrastructure find that economic growth effects are limited at best to certain categories of public capital (e.g., del Bo & Florio, 2012; del Bo, Florio, & Manzi, 2010; Moreno & López-Bazo, 2007).

The explanations as to why the results of additional investments in infrastructure have not lived up to expectations vary, but they generally point to the diverse conditions across different types of regions. New Economic Geography (NEG) analyses have tended to find an explanation in the asymmetric impact that variations in transport costs have on areas with different geographical and economic characteristics (Fujita, Krugman, & Venables, 1999; Fujita & Thisse, 2002). In particular, the role of different types of roads has attracted considerable scrutiny. Puga and Venables (1997), Puga (2002), and Ottaviano (2008) have distinguished between the economic effect of long-distance roads, which alter overall accessibility and cause further economic concentration, and short-distance or local infrastructure, which generally facilitates the diffusion of public services and the formation of human capital within regions. In their opinion short-distance or local infrastructure has the more positive effect on the development of lagging areas. Studies outside the NEG framework have further emphasized how differences in overall endowments between the core and the periphery have affected the returns on investment in transport infrastructure (Cappelen et al., 2003; Rodríguez-Pose & Fratesi, 2004; Vickerman, 1995).

## How Do Institutions Shape Infrastructure Decisions and Economic Growth?

In considerations of the returns on transport infrastructure, one crucial factor that has so far attracted limited attention is the institutional conditions in each territory. The system of incentives and constraints linked to the existing set of institutions and the efficiency of the local political administration may determine the extent to which investment in transport infrastructure can deliver on its economic promises (Acemoğlu & Dell, 2010; Crain & Oakley, 1995; Henisz, 2002; Mauro, 1997). Political and institutional factors can influence both infrastructure spending and its economic returns at every phase of the investment (Esfahani & Ramírez, 2003; Levy & Spiller, 1996). Yet few researchers have empirically explored how local institutional conditions shape the economic impact of transport infrastructure. Except for Crescenzi, Di Cataldo, and Rodríguez-Pose (2016), we know of no analyses of the triple link between government institutions, infrastructure investments, and economic growth for European regions.

However, institutions and government quality matter. From the planning and selection of a transport project to its execution, the characteristics of local institutions, particularly the quality of local government, play an important part in determining that project's future efficiency. The link between transport infrastructure investment and the planning system, the need for large budgets, the high number of actors involved, and the difficulty in applying effective control mechanisms make the transport sector especially vulnerable to political interference (Cantarelli et al., 2010; Flyvbjerg, 2009; Wachs, 1989), corruption (Kenny, 2006; Paterson & Chaudhuri, 2007; Tanzi & Davoodi, 1997, 1998), and collusion (World Bank, 2011). The quality of local government shapes the risk of moral hazard, affecting the capacity of decisions on infrastructure investment to deliver from an economic perspective (Buchanan, 1989).

There are three potential mechanisms mediating the influence that the quality of government has on decisions about the type of infrastructure to build. Poor institutional systems may lead to (a) political economy factors inflating investment in transport, (b) a widespread system of corruption and collusion, and (c) significant cost overruns and delays. In this section we expand on these mechanisms and illustrate how the economic returns on investment in transport infrastructure are deeply affected by the presence of deficient institutions.

## *On How Transport Investment Projects Spiral out of Control*

The planning and financing of transport infrastructure is fundamentally a political topic. In theory, decision-makers should base their decisions on the anticipated long-term economic returns on any individual project. However, medium- to long-term economic returns are not necessarily the immediate goal of the people taking decisions on infrastructure. Electoral returns and, in certain cases, private interests often condition what sort of investment receives priority and what type of infrastructure prevails. Decision-making on new transport investment in European countries is thus "generally politicised, rarely fully transparent, and there is little ex-post analysis on whether projects and policies meet expectations" (Short & Knopp, 2005, p. 363). Even when the investment is preceded by ex-ante impact studies, the secrecy that frequently surrounds forecasting methods does not necessarily preclude deliberate cost-benefit misrepresentations (Cantarelli et al., 2010; Short & Knopp, 2005; Wachs, 1989). Incumbent decision-makers may "purposely spin scenarios of success and gloss over the potential for failure" (Flyvbjerg, 2009, p. 350) of transport projects in order to strengthen their own political positions.

In these contexts, transport infrastructure tends to be the knee-jerk reaction. Infrastructure investment is tangible, highly visible, and generally well received by the population. This very visibility makes transport infrastructure appealing to decision-makers, who may regard new investment as an excellent opportunity for ribbon-cutting before elections, without the disadvantage of a large public backlash. The popularity of infrastructure expenditure is frequently more an outcome of polit-

ical decisions than of any solid economic valuation (Cadot, Röller, & Stephan, 2006). It often gives rise to an inflation of expenditures on "tangible" infrastructure projects as opposed to less tangible and visible investments in, say, education, training, or innovation (Rodríguez-Pose, 2000). Given the visibility and electoral returns on infrastructure investment, local administrations in weak institutional contexts tend to resort to promoting large new infrastructure projects instead of investing in the maintenance of existing transport networks or the construction of alternative, less glitzy and less visible projects (Kenny, 2007; Tanzi & Davoodi, 1997). However, long planning horizons and elevated risk of cost miscalculations cast uncertainty over many megainfrastructure projects (Flyvbjerg, 2009), especially in territories characterized by feeble levels of governance.

When vested political and economic interests shape the activity of local administrations in poor institutional environments, suboptimal projects may become common. In those contexts Cadot et al. (1999) and Kemmerling and Stephan (2008) demonstrated that special interests and pork-barrel politics can drive infrastructure investment decisions more than concerns for overall social welfare and economic efficiency do. In weak institutional contexts, transport infrastructure projects may then often fall prey to collusion and clientelism (Cadot et al., 2006).

Examples of political interests and/or weak local institutions leading to suboptimal infrastructure are plentiful. Many of them can be found in Spain, a country that went from a significant underendowment of roads relative to its European partners to the largest motorway network in Europe. Substantial investments in motorways in the 1990s enabled Spain to catch up on its transport infrastructure. Investment in that field rose even further in the 2000s, when the road deficit relative to the European core was no longer evident. In the 10 years from 1999 to the outbreak of economic crisis in 2009, more than 5,000 km of motorways were built—thanks in part to cofunding from the European regional development effort (Minder, 2011). In 2009 Spain boasted a motorway network 22.4% larger than France's, despite having a territory 9.3% smaller and a population approximately 73% that of its northern neighbor (Fig. 11.1).

The last wave of investment in motorways came through the adoption of new forms of toll-road concessions that set favorable conditions for private groups (Acerete, Shaoul, & Stafford, 2009). Under these circumstances the Spanish entrepreneurial sector threw its considerable economic weight behind efforts to inflate investments in new roads. These expenditures were seldom, if ever, preceded by accurate cost-benefit analyses and the formulation of financial and long-term economic plans. They paved the way for inefficient projects or "white elephants" of questionable economic and public utility (Robinson & Torvik, 2005).

One of the most glaring examples is the toll motorway connecting Madrid and Toledo (AP-41), inaugurated in 2006. The project was based on the participation of concessionaires—a number of private firms who were forecasting traffic intensities in excess of 25,000 vehicles per day. The actual figures have been nowhere close to the original and loosely justified predictions. According to official data by Spain's Ministerio de Fomento (2017), the number of daily vehicles peaked at 2,800 in 2008. The number of users declined to a paltry 881 in 2016. The new motorway has

**Fig. 11.1** Infrastructural white elephants in Spain: extensive motorway network. Source: By Gestion.Inf.And. – Own work. Used under Creative Commons Attribution 3.0 Unported. Retrieved from https://commons.wikimedia.org/w/index.php?curid=6026287

not been able to draw enough travelers away from its competitor, the A-42, a preexisting toll-free motorway that runs almost parallel to the AP-41. By early 2017, the Spanish government was about to take, or had already taken, control not just of the company responsible for the AP-41 but of nine toll motorways that had been constructed since the mid-1990s at an estimated cost of more than €5 billion. The traffic volume that had been so optimistically predicted for all toll roads never materialized. In 2016 toll-road traffic was 23.4% lower than in 2006, despite the expansion of the toll network. All the companies in charge of their management had gone bankrupt, leaving the Spanish state little option in the absence of private suitors.

Other examples of infrastructural white elephants have become common in Spain. Because Spain has the largest high-speed rail network in Europe, that system represents a particular source of pride for Spanish decision-makers and the population in general (Fig. 11.2). But in terms of operating costs alone, the network is far from breaking even. Occupancy levels remain well below those of France and, especially, Japan (Albalate & Bel, 2012). One particularly embarrassing example occurred when the high-speed link between Toledo, Cuenca, and Albacete had to shut down barely one year after it had opened. The cover of the Spanish satirical magazine *El Jueves* famously commented on this closure on July 2, 2011, pointing out that the daily maintenance costs ranged around €18,000 for an average daily traffic volume of just nine passengers.

**Fig. 11.2** Infrastructural white elephants in Spain: high-speed rail network. Source: By Jose Hilla Julia—originally posted to Flickr as Los viaductos. Used under Creative Commons Attribution 2.0 Generic. Retrieved from https://commons.wikimedia.org/w/index.php?curid=15010824

Airports in Spain also account for plenty of cathedrals in the desert. Of the 46 publicly managed airports—many of them built with great fanfare during the boom years of the late 1990s and early 2000s—only 8 made a profit in 2013 (Palet, 2014; Rodríguez-Pose & Fratesi, 2004). Airports in Albacete, Son Bonet, Sabadell, Burgos, and Córdoba had fewer than 10,000 passengers in 2016, and seven others did not reach 50,000 (Departamento de Estadisticas, 2016). The grand total for that year in Huesca-Pirineos was 95 passengers. One particular source of public embarrassment is the case of the "ghost" airport of Ciudad Real. This privately funded, but publicly backed, airport caught the attention of the world when, as reported by *The Financial Times* (Buck, 2015), the highest offer it attracted at auction was €10,000 from a Chinese bidder, despite having cost close to €1 billion (Fig. 11.3).

Spain has no monopoly on the proliferation of white elephants, however. Portugal also has a large number of them. One highly controversial project was the Vasco da Gama Bridge in Lisbon, which opened to traffic in 1998 and is the longest bridge in Europe (Fig. 11.4). It is the second bridge in the city over the river Tagus, built in theory to alleviate congestion on the 25 de Abril Bridge. The project was realized by a "joint venture" of private companies and financed with government grants, private resources, and loans from the European Investment Bank and the Cohesion Fund, with the EU being the primary contributor. The project was intensely promoted by the Ministry of Public Works of Portugal, supported by 17 municipal governments


FT
FINANCIAL TIMES
Spain

Spanish ghost airport costing €1bn attracts offer of just €10,000

Ciudad Real airport was built during construction boom

JULY 17, 2015 by: Tobias Buck in Madrid

**Fig. 11.3** Auction for Ciudad Real airport. Financial-Times-heading. Source: Retrieved from https://www.ft.com/content/368d6998-2c81-11e5-acfb-cbd2e1c81cca

**Fig. 11.4** The Vasco da Gama Bridge in Lisbon. Source: By Paulo Valdivieso, originally from Flickr. Used under Attribution – Share Alike 2.0 Generic. Retrieved from https://commons.wikimedia.org/wiki/File:Lisboa_(3962906626).jpg

of the Lisbon metropolitan area, and quickly approved by the European Commission despite the existence of at least two alternative locations for the installation (Bukowski, 2004; Painvin, 2009). The bridge was built in just three years and opened at the same time as the 1998 Lisbon Expo.

But the Vasco da Gama Bridge failed to alleviate congestion on the 25 de Abril Bridge (de Melo, 2000). The location of the new structure, which connects Lisbon's northern ring to Montijo, a less densely populated area to the southeast of the Lisbon agglomeration, has never attracted the expected volume of 132,000 vehicles a day. Daily traffic across the bridge averaged only some 55,650 vehicles in 2015, and traffic has been declining since it peaked at about 67,500 vehicles in 2004 (for both statistics see INE, 2017). In nearly twenty years of the new bridge's operation, traffic on the 25 de Abril has not seen any major reduction; indeed, it has remained well

above intended capacity (Painvin, 2009). In 2015 traffic crossing the 25 de Abril Bridge was 2.5 times that of the Vasco da Gama Bridge (the ratio was 2.2 in 2003) (INE, 2017). Overall, the political desire to have the longest bridge in Europe prevailed over the need to reduce congestion in the city, meaning that a choice of a long bridge that would be internationally noticed took precedence over more sensible alternatives connecting densely populated areas. A choice for political and international visibility resulted in the construction of a bridge connecting Lisbon to a relatively lightly populated area, neglecting alternatives running parallel to the existing 25 de Abril Bridge or between the city and the busy suburb of Barreiro in the south. The consequences are clear: no alleviation of congestion in Lisbon, limited new development, and a white elephant struggling to cover costs.

## *On Corruption and Collusion in Transport Infrastructure Investment Decisions*

Superfluous or wrongly planned infrastructure investment may also be the upshot of inadequate policy-making and scarce economic resources. When the responsibility for investment planning is decentralized, regional and local authorities may lack sufficient financial muscle to implement investments with higher returns. If political decentralization is not accompanied by an adequate devolution of economic powers, financial instability and coordination problems may arise. In Italy, for example, the 2001 constitutional reform transferred a large share of responsibility for programming, planning, and managing road development to regions. However, Italian regional governments have never had enough financial resources to take over this task properly (Casadio & Paccagnella, 2011). The regions have thus been forced either to further decentralize powers to the provinces or to create new ad hoc organizations for the management and realization of road investments (Marangoni & Marinelli, 2011).

Next to a lack of funding capacity, local corruption is also a main factor behind the inefficient planning of public capital spending. In competitive auctions economic efficiency is best ensured when infrastructure projects are contracted to the companies presenting the best bid. This process requires a great degree of transparency. However, the outcome of the auctions is often perverted by corruption and collusion. In weak institutional environments bribery can entice government officials to select suboptimal bids or, when contractors are few, collusion may often set in.

Several studies have documented the existence of cartels controlling construction bids in European countries. A 2002 enquiry unveiled fraud, unjustified subsidies, and bribery on a vast scale from a state–corporate network monopolizing the construction sector in The Netherlands (Van den Heuvel, 2005). In Italy the

responsibility for managing auctions[1] on highway and road concessions belongs to the regions, with construction companies often lamenting a supposed lack of neutrality when awarding contracts. In the south of the country, at least one third of projects are contracted to firms with close links to the awarding administration (Bentivogli, Casadio, & Cullino, 2011). Corruption and collusion in the transport sector are severe in many Eastern European countries as well (Kenny, 2006). According to a 2003 investigation, a cartel of firms in Romania regularly raised the price of road construction tenders by up to 30% over their market equilibrium level (Oxford Business Group, 2004). Numerous cases of predefined tender prices have also emerged in Slovakia (OECD, 2006) and Poland (Cienski, 2013).

Sometimes, collusion alone suffices to make sure that medium- and long-term socioeconomic interests are overlooked in favor of the short-term interest of large construction firms. This mechanism has been prevalent, for example, in Spain. In 1989 that country had 5 of the top 50 construction companies in the world, a number commensurate with the economic size of the country at the time. In 2009, after 20 years of heavy investment in transport infrastructure, mainly fueled by European Structural Funds and coinciding with the end of the construction boom in the country, Spain boasted five of the top 15 construction companies in the world. In just two decades Spain had become, together with France, the main global hub of large construction companies. These companies became so powerful that they could shape national, regional, and local infrastructure policies to reflect their own short-term interests. Two mechanisms dominated. Construction companies could directly lobby government, but also they frequently employed or coopted former top government officials (including former ministers) as board members, making sure that corporate influence on government decisions strengthened. Unsurprisingly, Spanish governments hence came to favor large prestige projects that could help boost the balance sheet of construction companies to the detriment of other, frequently smaller projects.

## *On Cost Overruns and Delays*

Cost overruns and delays tend to be the norm in the implementation of transport infrastructure. According to Flyvbjerg, Holm, and Buhl (2005), nine out of ten large-scale infrastructure projects are underestimated in terms of total costs, with overruns averaging 20% for road projects. Political and economic factors are generally regarded as the main explanation for cost overruns (Cantarelli et al., 2010). Especially in areas with weak institutions and governance systems, political and economic interest groups often voluntarily misrepresent the costs and benefits of a project in order to facilitate its approval. Higher transparency and efficient public control are necessary as antidotes to such practices (Flyvbjerg, 2009).

[1] The national level is responsible for a few projects of national relevance (e.g., *Grandi opere*), whereas the regional level manages all other auctions.

Increases in the total costs of infrastructure projects may be also related to distortions while the work is taking place. Overlapping government responsibilities, underfunding, and/or lack of coordinating experience tend to be at the root of delays in implementation. Legal disputes—often a consequence of clashes between local authorities and the companies constructing the new infrastructure—can cause severe delays and generate extra costs. Additional time and cost overruns can also stem from the incapacity of legal institutions (either national or local) to enforce the project's procurement contracts and from the lack of appropriate bureaucratic structures for monitoring the execution of work.

Such conditions are more prevalent in areas where rent-seeking, the presence of organized crime, or both abound. These endemic situations may help make white elephants out of what initially appear to be feasible projects. The renovation of the Italian A2 motorway between Salerno and Reggio Calabria illustrates the point. Work on it began in 1962 and was not completed until December 22, 2016, with the opening of the Laria Tunnel. Meddling by organized crime, attested to by the National Anti-Mafia Commission, together with protracted court disputes, made costs skyrocket, with the Italian state paying over 300 million Euros in compensation to the private contractors for *costi aggiuntivi* (added costs) (Turano, 2011, para. 1, 4). A motorway whose construction was expected to last for three years took almost fifty-five years to finish.

In other cases money simply disappears. Greece has received an amount of European funding similar to that allocated to Portugal, but despite the same demonstrated preferences for building new infrastructure, Greece's current endowment of infrastructure, particularly its road network, is a fraction of Portugal's.

## What are the Economic Implications for Areas with Weak Institutions?

Political meddling, delays, and unexpected cost overruns tend to be much more serious in areas with weak institutions and poor quality of government. Many lagging European regions regularly exhibit the problems described above. Achieving the full growth potential of lagging regions almost certainly requires modern transport networks that improve interregional communications. But excessive pursuit of prestige transport infrastructure projects in many of Europe's less advanced regions has undermined the desired overall effect of local and regional development strategies and of EU development funding. Poor quality of government in most regions of the EU's periphery has meant that a fair share of them have had only limited experience in the planning, monitoring, and evaluation of projects. Beset by corruption, lack of transparency and accountability, inefficient rule of law, and low government effectiveness, many lagging regions have acquired a distinct taste for large, visible prestige infrastructure projects driven fundamentally by criteria other than economic ones.

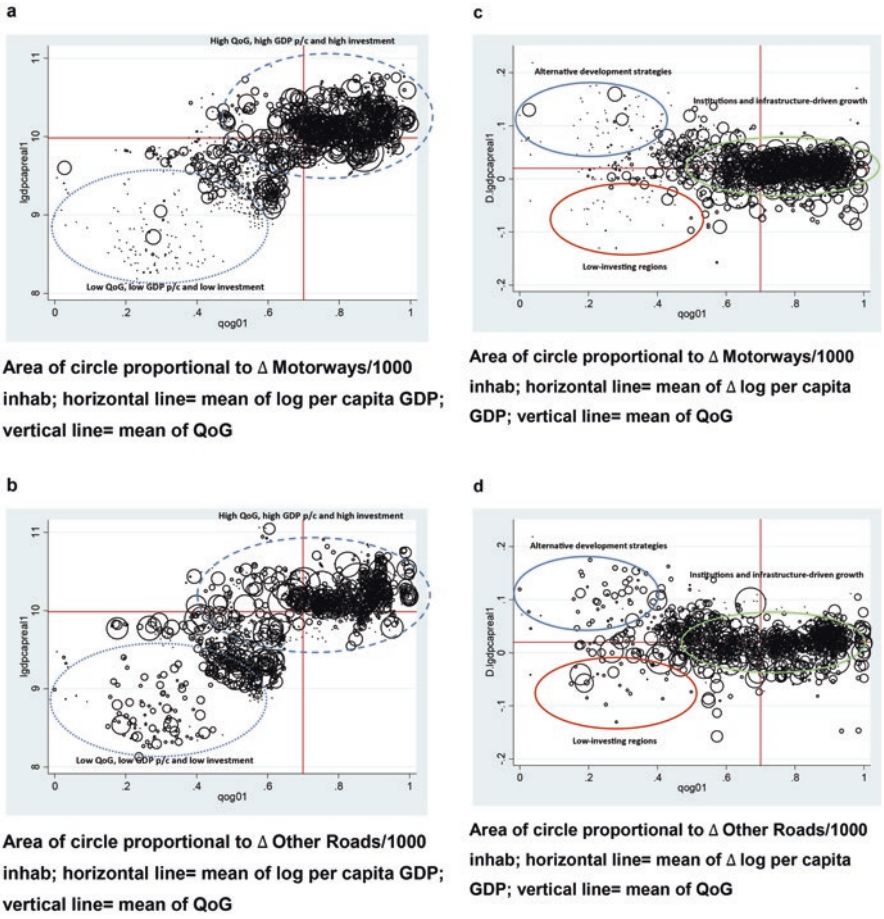


**Fig. 11.5** Regional per capita gross domestic product (GDP) and quality of local government in less advanced regions of the European Union, 1995–2009. The area of each circle corresponds to the annual regional variation in the length of roads (in km) from 1995 to 2009. The horizontal axis indicates the mean of the log per capita GDP. The vertical axis indicates the mean of the quality of government

This situation has had important consequences for the returns on transport infrastructure projects across southern Europe. As highlighted by Crescenzi et al. (2016), institutional conditions and the quality of government in the regions of the EU have in recent years heavily influenced decisions on which type of transport infrastructure to build. Choices of transport infrastructure, in turn, have affected the returns on new investment in infrastructure. This relationship is graphically depicted in the four parts of Fig. 11.5. Parts 11.5a and 11.5b correspond to a static relation between income and institutions, showing that a given level of per capita GDP tends to be associated with gains in institutional quality as measured by the Quality of Government Index elaborated by the Quality of Government Institute at the

University of Gothenburg (Charron, Lapuente, & Rothstein, 2010). Parts 11.5c and 11.5d illustrate a dynamic representation of this relation. The annual rise in per capita GDP is plotted against the corresponding level of regional government quality. Observations pertaining to parts 11.5a and 11.5c are weighted according to the regional investment in motorways (as a proxy of rather prestigious and glitzy infrastructure investments). In parts 11.5b and 11.5d they are weighted according to improvements in other roads (proxying rather run-of-the-mill infrastructure investments). Parts 11.5a and 11.5b suggest that the quality of government has risen with the amount of transport investment in the regions of the EU, as indicated by the areas of the corresponding circles. The circles are bigger for observations on the right than for those in the lower-left quadrant. Two macroclusters are identifiable. The first one includes regions with a lower-than-average quality of government institutions and income and with fewer overall investments in infrastructure (dotted oval). The second macrocluster comprises regions with a relatively high score on quality of government, higher GDP, and more investment in transport infrastructure (dashed oval) than other regions.

Overall, the study of the relation between GDP and quality of government depicted in Figs. 11.5, parts c and d yields some interesting insights on the growth strategies adopted by European regions since the mid-1990s. We identify three subgroups of observations based on the peculiarities of their development path. The first group, marked by a blue oval, includes all regions that have experienced rapid growth despite having lower-than-average institutional quality and a low rate of transport investments. These regions have probably benefitted from a convergence effect and have allocated their resources to axes of development other than infrastructure, such as innovation, education, or enterprise development. The second group, marked by a red oval, is composed of slowly growing regions (lower-left quadrant). These territories, characterized by weak institutional structures, have undergone a low rate of infrastructural growth. The third group consists of regions in the green oval: those that have maintained a positive growth rate from 1995 to 2009, characterized by an acceptable or high quality of institutions and capable of successfully expanding their network of motorways and other roads. Overall, Fig. 11.5 suggests a variety of possible combinations between institutions and investments in road infrastructure and of outcomes in terms of regional economic performance. One of these outcomes is the fact that greater investment in the prestigious motorways than in humble secondary roads has brought about virtually no direct economic growth, whereas investment in secondary roads in regions with comparatively high quality of government has intensified economic dynamism (Crescenzi et al., 2016). The implication is that any potential positive rates of returns from infrastructure investment are strongly mediated by the presence of adequate institutions of governance, which influence decisions about what type of infrastructure to build and about the returns of infrastructure investment. In short, basing transport infrastructure strategies primarily on motorway construction has not been very efficient, whereas promoting secondary roads—a choice often preferred by regions with superior government quality—has strengthened economic outcomes.

The reason may be that secondary roads, whose comparatively modest scale and glamor make them less appealing to decision-makers and construction companies than prestige motorways but whose burden on public finances is also less, allow for greater investment in skills and innovation and often enhance intraregional rather than interregional connectivity. The latter distinction is relevant especially for peripheral areas located far from the main urban centers and endowed with fewer economic resources than other regions. In the absence of complementary interventions to improve the regional transport network, it may be that large-scale projects have little chance of stimulating the economic potential of a region. Even worse, they would in all probability generate important opportunity costs by subtracting vital resources from other key infrastructure interventions or axes of development.

## What are the Implications for Public Policy?

The quality of institutions in any given territory shapes decisions about different types of investment and, within infrastructure investments, decisions about which type of infrastructure to build. The previous pages have shown that poor institutions, and particularly a low quality of government, have important implications for choices about different types of infrastructure, and that this infrastructure, in turn, affects economic performance. As Esfahani and Ramírez (2003) put it, "achieving better [economic] outcomes requires institutional and organizational reforms that are more fundamental than simply designing infrastructure projects and spending money on them" (p. 471). However, achieving institutional reform is easier said than done. The reshaping of institutional structures is a challenging task for policymakers, because reforms will have to be designed specifically for the environment in which they are to be applied. However, institution-building needs to be a top priority of development planners, given the large flow of resources that government bodies receive but cannot or will not manage appropriately.

It is becoming ever clearer that, without adequate institutions, more investment on prestigious types of transport infrastructure such as fancy airports, high-speed rail lines, or multilane motorways is not a panacea for economic development. Major investment in such projects in peripheral areas of Europe have made those places more accessible than they once were but not necessarily wealthier. Economically backward territories will likely end up better off by embarking on less ambitious transportation projects and striving instead to advance along other key axes of development, such as education, training, innovation, and local institutional conditions. Initiatives of that kind are the ones that will increase returns on efforts to improve transport infrastructure and promote local accessibility. Focusing on integrated, place-sensitive strategies is the way forward. Sharpening the emphasis on prestige infrastructure projects, by contrast, will probably result only in white elephants and cathedrals in the desert.

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