

Commitment, Competition, and the Supply of Property Rights: The Chartering of Road and River Improvement Authorities in England, 1600-1750

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Abstract

Britain developed an extensive transport network in the eighteenth century by giving companies or trusts monopoly rights to levy tolls and undertake improvements. This paper examines how political changes between 1600 and 1750 influenced the supply of these rights. It finds evidence for structural breaks in the number of proposals to improve roads and rivers in the early 1690s, following the Glorious Revolution, and again in the early 1720s following the emergence of Robert Walpole. It also shows that Parliament and the King routinely repudiated the rights of road and river authorities before the 1690s, but not afterwards. The evidence suggests that commitment increased largely because there were no major changes in power. Lastly it documents that the King and political parties in the Commons tried to monopolize procedures for supplying of rights until the 1720s when a diverse set of MPs began to design and authorize rights.

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I. Introduction

Before the start of its industrialization in the late eighteenth century, England already had an extensive network of roads and navigable rivers. The development of the inland transport network was unique in that several hundred companies or trusts received monopoly rights to levy tolls and undertake improvements. The rights were usually initiated through petitions submitted to the House of Commons, which reviewed the proposals and in many cases passed acts of Parliament giving organizations the sole right to undertake a project, collect fees, and purchase property. This institutional framework for improving transport infrastructure was certainly open to inefficiencies—the most obvious being the allocation of monopoly rights—but it worked reasonably well in practice. ‘Turnpike trusts’ make significant investments in road widening and resurfacing and river navigation companies diverted rivers, made them deeper, and cleared obstructions. The users of roads and rivers also seem to have benefited through lower transportation costs and increased land rents (Willan 1964, Albert 1972, Pawson 1977, Bogart 2005).

The history of road and river improvement authorities is fairly well documented, but there are still unresolved questions about whether political changes in England from 1600 to 1750 influenced the supply of rights to improve roads and rivers. The literature suggests a number of potential linkages between political changes and the chartering of road and river improvement authorities. The work of North and Weingast (1989) would predict that property rights vested in turnpike trusts and river navigation companies should have become more secure after the Glorious Revolution of 1688 and that greater security should have prompted more proposals for rights and ultimately more investment.

Others narratives would emphasize the evolution of relations between the King, the House of Lords, and the House of Commons following the English Civil War or the Restoration of the Monarchy in 1661 (e.g. Smith 1997, Holmes 1993). Still others would point to the significance of party politics in the early 1700s, the emergence of Robert Walpole as the first Prime Minister in 1721, and the viability of the Jacobite threat to restore the Stuarts to the throne (Stasavage 2003; Wells and Wills, 2000). A final view is that none of these political changes mattered because the establishment of road and river improvement authorities followed fundamental demand factors—fluctuations in population, trade, and interest rates (e.g. Clark 1996).

This paper uses new data to investigate whether the chartering of road and river improvement authorities from 1600 to 1750 fits into these broader theories of political change and economic development in England. It uses archival sources to construct an annual time series for the number of bills to improve roads and rivers initiated in the Commons and Lords, and secondary sources to construct an annual time series on patents authorized by the King. It also uses information from *the Journals of the House of Commons* and the History of Parliament series *The House of Commons* to identify the party affiliation of Members of Parliament (MPs) who presented or reported on road and river bills in the Commons. Lastly, it uses the text of all road and river acts to identify whether the rights of road and river improvement authorities were ever voided or diminished by laws.

The first part of the paper uses unknown structural break tests to identify years with a significant change in the number of road or river proposals, or a significant change in the relationship between the number of proposals and variables like population and real

interest rates. The data identify structural breaks in the early 1690s, following the Glorious Revolution and again in the early 1720s following the emergence of Robert Walpole as Prime Minister.

The second part of the paper examines the evolution of road and river charters across different periods. It focuses on the commitment to enforce rights and competition between the King, the Lords, and the Commons over the supply of rights. The evidence shows that Parliament and the King routinely voided or diminished the rights of river and road authorities following large shifts in power like the Civil War, the Restoration, and the Glorious Revolution. It also indicates that the commitment to enforce existing rights increased after the mid-1690s, largely because there were no major shifts in power between the King and Parliament. The evidence also indicates that the King, the Lords, and the Commons all tried to supply road and river charters before 1689, but they rarely competed at the same time. From 1690 to 1720 there is evidence that Whig and Tory parties tried to control road and river bills in the Commons, limiting the potential for competition. The patterns change quite dramatically after 1720 as a more diverse set of MPs worked on bills, broadening the potential for competition. These findings suggest that the supply of rights changed once again during Robert Walpole's era as Prime Minister.

The paper is organized as follows: Section II provides a theoretical framework for analyzing how competition and commitment affect the demand for formal rights to improve infrastructure. Section III introduces the data sources. Section IV reports the structural break tests. Section V analyzes the evolution of commitment and competition. Section VI concludes.

II. Theoretical Framework

In 17th and 18th century England, the state did not build and finance infrastructure. Instead, the King or Parliament granted business organizations—trusts, corporations, and partnerships with assignable shares—monopoly rights to undertake a particular infrastructure project and charge user-fees subject to a maximum schedule. They also established procedures for purchasing land and resolving disputes with landowners: a body of commissioners determined the purchase price and if necessary juries were impaneled to advise the commission. This section develops a framework for analyzing the decision to obtain formal investment rights. Drawing on the regulatory commitment literature developed by Levy and Spiller (1996), it emphasizes two key factors: (1) competition over the supply formal rights and (2) the commitment to protect formal rights.

It is useful to begin with a baseline case where it is costless for promoters to obtain formal rights and there is no uncertainty about the future benefits and/or costs. Promoters want to maximize their income, which might include toll income or rents on assets whose value appreciates when infrastructure is improved and tolls are low. These broader considerations are especially relevant in this case, because all road trusts and some river undertakers were legally forbidden from earning profits. Without loss of generality, assume that infrastructure project i will yield an annual net benefit of b_i for T periods when promoters have monopoly rights to levy tolls for all T periods. Assuming a

discount rate of β , the present value of project i is $\sum_{j=0}^T \beta^j b_i$.

In this setting, it is straightforward to describe which projects will be implemented in any year t . Suppose that the present value evolves according to the function

$$\sum_{j=0}^T \beta^j b_i(t) = B_i(t) \text{ and that investment costs of the project evolve according to } I_i(t).$$

Suppose also that the difference between $B_i(t)$ and $I_i(t)$ is ordered from 1 to n —the total number of projects in the economy. In the initial year, all projects from i^* to n will be undertaken, where i^* is the project for which promoters are indifferent between investing or not. If the present value has increased relative to the costs in the second year then projects between i^{**} and i^* will be undertaken, where i^{**} is the project for which promoters are indifferent under conditions in year 2. The number of projects which get implemented in year each depends on factors influencing the benefits and costs – population, income, and interest rates—as well as the number of projects that have already been completed.

The baseline model assumed that formal rights were free, but in reality promoters had to pay bribes to political actors to obtain patents or acts of Parliament. Suppose that all promoters have to pay a lump-sum fee P in order to obtain formal rights. Their net present value is $B_i(t) - I_i(t) - P$. Alternatively, the promoter could try to undertake the project without obtaining formal rights; however, their expected benefits will be lower because the authority to levy tolls and undertake improvements could be challenged on legal grounds. Let $\Pi_i(t)$ equal the expected net present value of the project without formal rights. Promoters will be willing to purchase formal rights as long as P is less than $B_i(t) - I_i(t) - \Pi_i(t)$. Therefore, all else equal, promoters will initiate more proposals for formal rights in any year t if the bribe P is lower.

The baseline model also assumes that formal rights are perfectly enforced, but in reality this need not be the case either because political actors have the power to void or diminish the value of rights. Consider a very simple case where in each year there is a probability $1 - q$ that promoters will have their rights taken away and will earn zero benefits for the remaining lifespan of the project. The expected present value of the project in this case is given by $\sum_{j=0}^T q^j \beta^j b_i(t) = B_i(t)$, which is lower because of the risk of expropriation creates an additional “discount-term” q . From this example, it is clear that promoters will initiate fewer proposals for formal rights in any year t if there is a significant probability that their rights will be voided.

The key considerations in this paper are whether changing political conditions between 1600 and 1750 affected competition over the supply of formal rights and commitment to enforce these rights. Competition is important because it influenced the bribe and thus the demand for formal rights. The number of political groups who tried to supply formal rights is one indicator of the potential for competition. Below I investigate whether the majority of proposals were initiated through or authorized by the King, the Lords, or the Commons in a given time period. I also investigate whether MPs working on river bills disproportionately belonged to the majority party—either the Whigs or Tories. If most MPs came from the ruling party, then this suggests that parties were trying to control bills and therefore the potential for competition was lessened.

The identity of political actors is another factor that might influence competition. The King, for example, might have had a greater incentive to monopolize the supply of rights because he was constantly pressed for tax revenues. The Whig and Tory Party leaders in the early 1700s might also have a strong incentive to monopolize the supply of

rights because they could extract greater campaign contributions and they could make their opponents look ineffective. The Whig Oligarchs, like Robert Walpole, who controlled the Commons after 1721 might have had less incentive to monopolize because they wanted to prevent defections by dispersing rents among a large number of MPs.

The commitment to enforcement is also of importance because it determines the likelihood that rights will be voided or diminished. The likelihood of a major transition in power is one factor that can determine the degree of commitment. When a new ruling group comes into power, it may want to void the rights sold by the previous ruling group and sell them to a new promoter. The new ruling group might also have an incentive to punish supporters of their opponents by repudiating their rights. These two arguments suggest that there is a greater likelihood that rights will be voided or diminished in the years immediately following the Civil War, the Restoration, and the Glorious Revolution. As a corollary, we would also expect there to be fewer proposals for formal rights when it appeared as though there was a significant chance for a transition in power. In such situations, there would have been an option value to waiting because once the bribes have been paid and the project is initiated it cannot be reversed when new political groups take control.

The strength of checks and balances is another factor that can determine commitment. The Glorious Revolution is often viewed as a constitutional change that placed strong limits on the power of the King, but if it also placed limits on the power of the Commons or the Lords then it might have further increased the commitment to protect formal rights. For instance, the Glorious Revolution might have strengthened the Lords ability to veto

legislation initiated by the Commons, which if used could deter the Commons from diminished the rights of road and river authorities.

III. Data

In this section, I provide a brief overview of the data sources on river and road authorities. The Parliamentary Archives maintains a website, *Portcullis*, which contains the title of every act of Parliament starting in 1500.² I use the *Portcullis* database to identify all acts that dealt with individual roads and rivers between 1600 and 1749. The texts of some river and road acts are available in *the Statutes of the Realm* (Great Britain, 1963). For other acts, it was necessary to consult private collections, such as the Public Acts series at the William Clark Library in Los Angeles, or the Parliamentary Archives in London. I use the full text of the acts to code regulatory provisions for all river and road authorities created between 1600 and 1749. For example, I identify the individuals with the right to improve roads and rivers, the length of their term, and the maximum tolls that could be charged. I can also identify acts that altered the rights vested in earlier acts. Of particular importance are acts that voided the rights granted to individuals or groups and acts that diminished rights, such as the maximum tolls that could be charged.

I also use the index of the *Journals of the House of Commons* and the *Journals of the House of Lords* to identify all bills introduced in Parliament dealing with specific roads and rivers. The bills were assigned to a committee of Members, who issued a report and wrote the first draft. Next the bill moved through various stages before the final vote, amendments with the other House, and royal assent. I entered the details of every road or river bill introduced in Parliament between 1600 and 1749 into a spreadsheet, including

² See <http://www.portcullis.parliament.uk/DserveA/> for more details.

petitions, orders, committee reports, votes, and amendments. The petitions are particularly useful because they identify the aims of the bill. Some bills attempted to obtain rights to improve the navigation of a river or to better maintain and improve a road. Others proposed to amend the rights of an existing authority. Based on their description, I separate all bills that proposed to improve a road or river from bills that amended existing rights.

In the statistical analysis, I use the number of parliamentary bills to improve roads and rivers as a measure of the number of proposals for formal rights initiated in Parliament. Bills are also separated into proposals initiated in the Commons versus the Lords. It is important to recognize that not all of these proposals resulted in acts. Some bills failed to become acts because they were dropped at some stage in the legislative process, but they were often reintroduced in subsequent sessions and in many cases became acts.³

The *Journals of the House of Commons* also identify the names of MPs who presented bills, sat on committees, issued reports, and carried passed bills to the Lords. For each bill, I examined only the MPs who brought-in a bill, who presented a bill, who reported from a committee, or who carried the bill to the Lords. I selected these members because road and river bills often consisted of over 50 MPs, many of which played little role in its passage. By contrast, the MPs who presented, reported, or carried bills clearly worked on the bill and therefore had greater influence.

I matched the MPs from each bill with biographical information in *the House of Commons series* (see Sedgwick 1970; Henning 1983; Cruickshanks, Handley, and Hayton 2002). The biographical information usually indicates whether a Member

³ See Hoppit (1997) for more details on the failure of legislation, and the process of passing acts.

belonged to a political party or faction, such as the Court group, the Whigs, the Tories, the Court Whigs, and the Opposition Whigs. Some MPs were also identified as independents, which meant they did not consistently vote with any party or faction.

Lastly, I use secondary sources for information on river patents. Willan (1964) and Dorothy Summers (1973) identify eight patents granted to river promoters. Their discussion indicates that river patents provided a similar set of rights as river acts. They granted individuals indefinite or long-term rights to collect tolls and improve rivers.⁴ In the statistical analysis, I use the number of patents as a measure of the number of proposals authorized by the Crown. Unfortunately, there is no information on the number of proposals for patents that were rejected. My sense is that there were relatively few of failed patent proposals, which would imply that the number of patents approximates the number of proposals initiated through the King.

IV. Unknown Structural Break Tests

How did political changes affect proposals to improve roads and rivers? The data in Figure 1 addresses this question by combining the number of river improvement proposals initiated in Parliament with the number of patents.⁵ There appears to be some connection between the number of proposals for river improvement and major political events. There was a significant drop-off in river proposals in the 1640s during the Civil War. Proposals increased in the 1660s following the Restoration of 1661, but the momentum did not last as proposals declined in the late 1670s and 1680s. Proposals to

⁴ The main difference is that patents could be revised by the King or his agents in the Privy Council.

⁵ There were a total of seven patents all in the 1620s and 1630s, so the graph would be identical after 1640 if they are dropped.

improve rivers increased once again after the Glorious Revolution of 1688, and were particularly numerous in the late 1690s.

Figure 2 shows the number of proposals to improve roads. Once again there appears to be a relationship between the number of proposals and major political changes. In the years following the Glorious Revolution, there was a significant increase in road proposals. The average number of road improvement bills per year was 1.58 between 1689 and 1719, compared with an average of 0.21 between 1661 and 1688.⁶ Road proposals also show a significant surge after the emergence of Robert Walpole as Prime Minister in 1721. There was an average of 3.67 road bills between 1721 and 1749.

Hypothesis tests for unknown multiple structural breaks provide another way of gauging the effects of political changes. A structural break occurs in a given year if there was a significant change in the number of proposals initiated, or a significant change in the relationship between the number of proposals initiated and variables that affect the economic value of infrastructure projects. If a political change influenced the proposals to improve roads and rivers, then there should be a structural break in the same year or shortly afterwards.

It is not necessary to specify the break years in advance and instead the data can identify any years that qualify as a structural break (see Andrews 1993, Bai 1997). It is necessary, however, to specify an equation explaining proposals. The number of road proposals in year t is assumed to equal road proposals in $t-1$, population in $t-1$, and an the

⁶ The data on river and road improvements acts show a similar connection with major political changes. The average number of river improvement acts was 0.74 between 1689 and 1719, compared with an average of 0.36 between 1661 and 1668. One road improvement act was passed between 1661 and 1689, compared with 34 acts between 1689 and 1719.

real interest rate in $t-1$, and an error term.⁷ The model is clearly simplistic due to data limitations, but including population and real interest rates captures two of the main economic factors which influenced the value of infrastructure projects.

The multiple structural break dates for the intercept are identified using the procedure outlined in Bai (1997). I begin by constructing a dummy variable that takes the value 1 for all years greater than or equal to each year t . In the first step, I estimate the model with the added dummy variable for all years after t and compute the F-statistic for this coefficient in each year. The 15% or the last 15% of the sample are not tested. Next the F-statistics are compared with the critical values tabulated in Andrews (1993) assuming a trimming parameter of 0.15. If the null hypothesis of no structural breaks is rejected then the break date is assumed to be the year with the largest F-statistic. In the second step, the sample is split into the two groups: (1) years before the break date and (2) years after the break date. The F-statistic is then computed for the regression with the added dummy variable in every year within the two sub-samples. If the null hypothesis of no structural breaks is not rejected in both sub-samples the procedure ends. If it is rejected, then the second (or third) break date is assumed to be the year with the largest F-statistic in its sub-sample. The procedure then continues with sub-samples defined around the first, second, and third break dates. A similar set of tests are used to evaluate multiple structural breaks in the intercept, the population coefficient, and the real interest rate coefficients.

Table 1 reports the results. For river proposals, the estimates identified 1692 as a year where there was a statistically significant structural break for the intercept term.

⁷ The population figures come from Wrigley and Schofield's (1981). The real interest rate is approximated by the real rate of return on charity assets minus the inflation rate following the work of Clark (1996).

There was no statistically significant structural break for the intercept, population, and real interest rate coefficients, although 1695 was very close. Both estimates, therefore, suggest that the number of river proposals increased in the early 1690s, shortly after the Glorious Revolution of 1688. Interestingly, the estimates do not identify any structural breaks in the early 1660s following the Restoration.

For road proposals, the results show there were multiple structural breaks. The estimates identified 1696 and 1705 as years with statistically significant structural breaks for the intercept term. They imply that road bills were significantly higher after 1696 and after 1705.

The estimates also identified 1705 and 1723 as years with statistically significant structural breaks for the intercept, population, and real interest rate coefficients. The coefficient estimates imply that proposals increased more when population increased after 1723, and they decreased less when interest rates rose after 1723. The latter date is significant because it follows the emergence of Robert Walpole as the first Prime Minister.

Overall the structural break tests point to the 1690s, 1700s, and 1720s as periods where there were key changes in either the supply or the demand for formal rights to improve rivers and roads. The following section examines the evolution of road and river charters across different periods and investigates whether there were any significant changes in the degree of competition or commitment during the 1690s, 1700s, and 1720s.

V. The Evolution of Commitment and Competition 1603-1749

From the King James I to the Civil War

Between 1600 and 1640 many political actors tried to supply rights to improve roads and rivers, but not necessarily at the same time. Table 2 provides a summary of patents issued by the King, bills initiated in the House of Lords, bills initiated in the Commons, and the percentage of bills that became acts in each House. The table shows that parliamentary bills in the Commons and Lords were more common in the 1600s and 1620s. Patents were more common in the 1610s and 1630s. In terms of rights authorized, the King was the most successful because it issued 8 patents. The Lords had some success in that 2 of the bills introduced there became acts. None of the bills introduced in the Commons became acts. The following paragraphs provide more details on the supply of rights during this formative period.

The pre-existing legal framework made parishes responsible for maintaining roads within their jurisdiction. Parishes had the authority to claim labor and materials from citizens, but they could not levy property taxes or tolls. Most rivers in 1600 were under the authority of a Commission of Sewers. Commissioners had rights to compel landowners to cleanse the river, and if necessary, to levy a property tax to pay for maintenance expenses, but they had no authority to tax inhabitants other than those who were adjacent to the river, and they could not purchase land or divert the path of the river (Willan, 1964).

The limitations placed on parishes and commissions made them ineffective for road and river improvement. Their powers to tax, issue debt, and purchase land needed to be extended or new organizations need to be created. The Commons appears to be the first political actor to consider the extension of rights to improve rivers. A bill to improve the river Lea was introduced in 1604 and another bill was introduced for the river Avon

1605. Neither bill became an act. The Lords followed in 1606 by introduced a bill to improve the river Thames. This bill passed the Commons in the same year and was agreed to be the King.

The 1606 Thames River act vested substantial authority in the Lord Chancellor, who was the speaker for the House of Lords, a close advisor to the King, and the head of the Chancery Court. The Lord Chancellor was to appoint 18 commissioners to oversee the improvement of the river between Oxford and London. One commissioner was to come from Oxford University, one from the city of Oxford, and four from each of the counties of Oxfordshire, Berkshire, Wiltshire, and Gloucestershire. The commissioners had the right to improve the river, including the authority to force property-owners to sell their land and assess taxes in their respective districts.

In the late 1600s, the Commons began considering proposals to improve roads. In 1606 a bill was introduced to improve roads in two parishes in Cheshire (Nonsuch and Talworth), but it failed to become an act. In 1607 there was a bill to improve the roads in the counties of Sussex, Surrey, and Kent, and another in 1609 to improve roads in Biggleswade, but both failed. The Biggleswade bill proposed to the given Lord Chancellor powers to appoint commissioners to collect tolls (Emission, 1934). Thus it was similar to the River Thames Act of 1606.

Parliamentary involvement in roads and rivers halted in the 1610s because King James I did not call Parliament into session. The Crown stepped into the void by authorizing a patent in 1617 to improve the Great Ouse from St. Neots to St. Ives and another patent in 1619 to improve the Avon from Bath to Bristol. The patent for the Avon was awarded to the Mayor and Alderman of the city of Bath, who were given a

monopoly right to provide carriage on the river between Bath and Bristol (Willan 1964, p. 25).

When the Lords and Commons were called into session in the 1620s, they once again considered bills to improve rivers. Three bills were introduced in the Commons in 1621 and one more in 1625. Three river bills were introduced in the Lords in 1621, 1623, and 1628. The only bill to pass repealed some of the provisions in the 1606 River Thames act. It vested authority only in the commissioners from Oxford, and thus voided the authority of commissioners in Berkshire, Wiltshire, and Gloucestershire. The reasons for this change are not clear, but it does illustrate that Parliament was willing to void rights that it granted to local officials in previous acts.

Parliamentary involvement came to a second halt in the late 1620s and 1630s. This marked the beginning of the period of ‘personal rule,’ in which King Charles I refused to call Parliament into session and tried to expand the Crown’s authority (Smith 1997). In Parliament’s absence, Charles issued several patents to improve rivers. Arnold Spencer was awarded a patent in 1627, in which he could collect tolls for 80 years on all rivers that he was able to improve by 1638 (Willan, 1964 p. 26). In return, Spencer had to pay the King a fee of 5 pounds per annum for every river he improved. In the 1630s, it appears that Charles began to exploit his monopoly position by demanding higher fees. The 1634 patent awarded to Thomas Skipworth required that he pay a tenth of the profits from improving the River Soar to the King (Willan, 1964 p. 26). At least three of the other river patents in the late 1630s also required annual payments to the crown.

The Privy Council was charged with enforcing patents in the 1630s. In several cases, it appears that the Council ruled against patent holders in suits over their authority. The

patent awarded to John Jackson gave him the authority to levy at most 3 pence per ton for carriage on the Great Ouse between St. Neots and St. Ives. Inhabitants in St. Neots, Huntingdon, Godmanchester, and St. Ives complained to the Privy Council that the rates were too high. The President of the Privy Council, the Earl of Manchester, then ordered that the maximum toll be reduced to 2.5 pence per ton.⁸ Another patent gave Henry Lambe the monopoly right to improve the Lark between Bury St. Edmond and the Great Ouse. Lambe faced resistance from local mill-owners who claimed they were being adversely affected by the project. Charles appointed a body of commissioners in 1636 to investigate the problem. The commission recommended that that no tolls be levied on the river between the town of Mildenhall and the river Ouse, which represented over half of the entire route originally granted to Lambe. In 1638, the King agreed with the commissioners and decreed that the river be toll free in this area.⁹

In 1640 Charles I called Parliament into session for the first time in 11 years. It is revealing that in this highly charged session the Lords introduced a bill to improve the river Arundel and the Commons introduced a bill to improve the river Wye. Thus shortly before the outbreak of the Civil War it was not clear whether the King or Parliament was in charge of issuing rights.

The Civil War to the Restoration

During the 1640s no road or river bills were introduced in Parliament and the King did not issue any patents. The attention of the King and Parliament were clearly directed elsewhere, but even if they had time to consider road and river improvements it

⁸ See Summers (1973) pp. 48-49 for a discussion of this particular case.

⁹ See Willan (1964) pp.27-28 for a discussion of this particular case.

is unlikely that any group would have desired to obtain rights in the midst of Civil War. Parliament's victory and the execution of the King in 1648 meant that the rights of patent holders had become ambiguous. The Commons did not pass an act voiding the rights of patent holders, but it is revealing that several patent holders did not retain their rights. Arnold Spencer, for example, lost his patent for the Great Ouse and in the 1650s the river was controlled by the city of Bedford and his creditors (Summers, 1970). In another case, William Sandys' river Avon patent passed to his creditors in the 1650s.

The main effect of the Civil War was to give the Commons unprecedented control over the political system. In this environment, The Commons passed its first river improvement act in 1651. It gave the Mayor of Guildford, along with James Pitson, John Howe, John Waltham, and Richard Scotcher rights to make the river Wey navigable. The undertakers had a monopoly on carriage and could charge no more than 4 pence for a load of goods, and no more than 12 pence per passenger.¹⁰ The river Wey act was quite successful as the undertakers invested 15,000 pounds. One of the undertakers later claimed that the profits were "quietly and peaceably enjoyed by the makers."¹¹

Despite the success of the river Wey act, it was not duplicated during the rest of the 1650s. In 1651, there was one bill to improve a highway around London, but it did not become an act. In 1656, another act was passed to improve the river Ouse near York, but it is not clear that it was implemented. In 1658 and 1659, there were 2 bills for improving the river Nene and the river Thames, but both failed to become acts.

The relatively small number of road and river bills and the failure of the Commons to pass a higher percentage is something of a puzzle. One possibility is that as a monopolist

¹⁰ A text of the act is available in *Acts and Ordinances of the Interregnum, 1642-1660* (1911), pp. 514-17.

¹¹ Details are in a petition in the Parliamentary Archives, HO/PO/JO/10/1/307.

the Commons charged high fees. Another possibility is that the increasing tension between Oliver Cromwell and the Commons created uncertainty. In 1653, Cromwell dissolved the Parliament that had sat since 1649 on the grounds they “would never answer those ends which God, his people, and the Whole nation expected from them.” Cromwell then wrote a new constitution stating that government was by “a single person and a Parliament.”¹² There is also evidence that some individuals sought to obtain a patent from Cromwell for improving the river Salwerpe in 1655.¹³ Thus by the late 1650s it was not obvious that acts passed by the Commons would be enforced in the near future. As it turns out, these fears were well-placed.

The Restoration to the Glorious Revolution

The Restoration of 1661 restored the traditional powers of the King and the Lords. The settlement also nullified all acts passed by the Commons since 1648—including the 1651 act to improve the river Wey and the 1656 act to improve the Ouse. The rationale was that all legislation passed since the execution of Charles I was not legitimate. Two of the undertakers for the river Wey, Windsor Sandys and James Pitson, tried to get an act reinstating their rights in 1663. Their bill failed in Parliament.¹⁴ In 1664, King Charles II named a new conservator for the river Wey, John Radycliffe, who was to have rights for 30 years. Evidence from a petition suggests that King Charles II was upset that the original undertakers used materials from his father’s confiscated estate.¹⁵ In 1664,

¹² Cromwell’s views are quoted in Seel and Smith (2001), pp. 62-67.

¹³ Jim Shead (2007) states that Andrew Yarranton and Captian offered to seek letters patent from the Lord Protector to make the river navigable. [Yarranton] made an agreement with Droitwich corporation which allotted land to him for 21 years as payment for this. No further action was taken on this proposal.

¹⁴ Details on the petition are available in the Parliamentary Archives, HL/PO/JO/10/1/317.

¹⁵ Details on the petition are available in the Parliamentary archives, HL/PO/JO/10/1/319.

Radcliffe attempted to get an act of Parliament to strengthen his new claim, but it also failed. The authority to improve the River Wey was not resolved until a 1670 act named Sir Adam Browne, Sir Edward Ehurland, Sir Joseph Sholdon, Knight Henry Hilliard, Arthur Ouslowe, and George Woodruff as the undertakers with sole rights to the profits. No compensation was offered to the original undertakers, Sandys and Pitson.

William Say is another river undertaker who lost his rights after the Restoration. Say was a creditor who obtained the patent for the river Avon in the 1650s. After 1661, Say's property was confiscated and his rights in the river Avon passed to James Duke of York, the brother of King Charles II. James later sold his rights and profited handsomely.¹⁶

By 1661 a significant fraction of the rights to improve rivers had either been voided or significantly diminished. Table 3 lists all the documented cases. The bottom line shows that at least 55% of the undertakers established before 1661 had their rights voided or diminished. It is significant that several of these cases followed major political transitions, like the Restoration, where the new ruling groups had little incentive to maintain rights granted by previous ruling groups.

There were a number of decisive events in 1661 and 1662 which helped shape a new framework for supplying improvement rights. In June of 1661, the Lords passed a bill to improve the Rivers Stower and Salwerpe in Worcester and Stafford. The bill made it through two readings in the Commons before stalling. In February of 1662, the Lords passed a bill that allowed any municipal corporation, hundred, or county to improve a river in its area without authorization from Parliament.¹⁷ If these groups did not improve the river, then any private person could proclaim the right to improve the river subject to

¹⁶ This case is described in the Wikipedia (2007) entry for Andrew Yarranton, which is based on the Biographical Dictionary of Civil Engineers.

¹⁷ A draft of the bill is in the Parliamentary Archives, HL/PO/JO/10/1/311.

the approval of the Lord Chancellor. These individuals would then have a monopoly over the carriage of goods along sections of the river they improved.

At the same time the Lords were passing the preceding bill, the Commons introduced two bills for improving rivers. The first proposed to make the rivers from London to Bristol, Salisbury to Christ Church, Yarmouth to York navigable. It failed after the second reading. The second proposed to improve the river Wye in Hertfordshire. In April of 1662 the Commons received the bill from the Lords calling for a reorganization of the procedure for obtaining rights. The Commons quickly rejected it. If it did pass, the bill would have had broad ramifications because it allowed any community or individual to improve a river without authorization from the House of Lords or Commons. The only central government official with some regulatory authority in the bill was the Lord Chancellor, who could appoint commissioners to help resolve disputes between landowners and undertakers.

Shortly after dismissing this bill, the Commons passed a bill for the improvement of the Stower and Salwerpe rivers, which was initiated in the House of Lords. In the same month, the Lords passed a bill for the improvement of the river Wye, which was initiated in the Commons. These two acts exemplified a continuing pattern, in which the Lords and Commons both initiated new rights. Table 4 shows the number of river and road improvement bills introduced in each House and the percentage of bills that became acts from 1660 to 1668. More river bills were introduced in the Commons and all road improvement bills were introduced in the Commons. The Commons had a lower success rate and so nearly as many river bills initiated in the Lords became acts.

These figures suggest that the Lords and Commons competed over the supply of rights to improve rivers. Their competition can also be seen in a 1661 bill passed by the Lords which authorized the levying of property taxes to pay for street improvements in Westminster (Porrit 1963, p. 548). The Commons rejected the Lords bill and then proceeded to pass a similar bill which they sent to the Lords. It contained a provision stating that it was an inherent privilege of the House to initiate bills relating to local taxation. The Lords objected to this assertion and rejected the bill. The question of which House had the authority to initiate improvement bills remained unresolved for several years because the Lords initiated and successfully passed several bills in the mid-1660s which authorized the levying tolls to improve rivers.

The 1660s saw a significant increase in proposals to improve both road and rivers. One of the most significant developments was the passage of the first act authorizing the use of tolls to improve highways in Hertfordshire. However, the number of bills and acts diminished significantly in the 1670s and 1680s. Between 1671 and 1688 there were 6 bills to improve roads and rivers, compared with 31 between 1661 and 1670. One reason for this decline was the increasing tension between the King and Parliament. Charles II stopped calling Parliament into session, making it impossible to pass road and river acts. Charles II also raised doubts about the Crown's commitment to property rights when he defaulted on his creditors in the infamous 'Stop of the Exchequer' in 1672. On top of this, Charles II also revived the system of river patents in 1683 by reinstating the rights of John Mallet's heirs in the river Tone.¹⁸ Thus once again in the early 1680s, it was unclear whether the Commons or the Lords would continue to supply rights and whether

¹⁸ Information on the original patent comes from Willan (1964) p. 26. Its reinstatement is also confirmed in the preamble to 'An Act for makeing and keeping the River Tone navigable from Bridgwater to Taunton in the County of Somerset, Statutes of the Realm: volume 7: 1695-1701.

existing acts would be maintained. As one illustration, the tolls which were levied to improve the highways in Hertfordshire since 1663 were stopped in 1680 (Albert 1972, p. 20). In such an uncertain environment, it is not surprising that road and river promoters waited until the struggle between the King and Parliament was resolved.

The Aftermath of the Glorious Revolution

Following the Glorious Revolution, the leadership in the Commons sought to restrict King William's ability to void laws and to bolster Parliament's ability to pass laws (see Holmes 1993). Both of these objectives had spillover effects on the supply of rights to improve roads and rivers. For example, Article 2 of the English Bill of Rights established that the Crown could not dispense with laws or the execution of laws. This implied that the King could not repudiate rights granted in river and road acts. Article 4 states that Parliament had to consent to all taxation. This implied that the Crown should not issue patents authorizing the use of tolls to improve roads or rivers. Article 13 states that Parliament should meet frequently. This implied that Parliament's ability to pass road and river acts could not be limited by the King refusing to call them into session or by proroguing sessions. These objectives were largely fulfilled. No road or river laws were voided by the King after 1689, no new river patents were issued, and Parliament was free to pass any road or river bills in its annual sessions.

Aside from cementing Parliament's control, the Glorious Revolution also appears to have cemented the Commons right to initiate road and river acts. In 1690 there was one river improvement bill initiated in the Lords, which proposed to give the Lord Chancellor

the right to appoint undertakers to improve the river Nene.¹⁹ It did not pass and it marked the last attempt by the Lords to initiate a river improvement bill. The competition between the Commons and the Lords over the supply of rights effectively ended.

By the early 1690s the Commons has become quite powerful and therefore it was possible they might try to void the rights granted by the previous King and offer them to new promoters. However, the Commons would have to gain the consent of the Lords who had the right to veto any bill passed by the Commons. These theoretical considerations became a reality in the early 1690s when the Commons approved two bills voiding undertaker's rights. In one the Lords vetoed the bill and in the other they consented. The following paragraphs provide details on these two important cases.

The first involved an act in 1662, which gave the Earl of Bristol and two others the right to improve the river Salwerpe. The Earl of Bristol's rights were sold to Sir Thomas Baldwyn who proceeded to invest more than 6000 pounds in the river Salwerpe. In 1693, a new bill was introduced in the Commons that would give the Earl of Shrewsbury and Lord Coventry sole rights to improve the river. The MP who presented the bill in the Commons was Sir John Packington, a high ranking Tory who was known for his attempt to purge Whigs from the Army.²⁰ Sir Thomas Baldwyn's son submitted a petition to the Commons opposing the bill on the grounds that his father and the Earl of Plymouth had invested in the river and that the proposed bill "tends to make void the said Act, and to take away all the works and materials done in pursuance thereof."²¹ Despite Baldwyn's petition, the Commons passed the bill on March 9, 1693.

¹⁹ A draft of the act is available in the Parliamentary archives, HL/PO/JO/10/1/452/646.

²⁰ Information on Packington comes from Cruickshanks, Handley, and Hayton (2002).

²¹ Ibid., 10.2.1693.

In mid-March, the Lords began deliberations on the river Salwerpe bill. Sir Thomas Baldwyn submitted a petition to the Lords asking that they “not make void the former act or meddle with his rights.” To bolster his argument, Baldwyn also suggested there were broader implications from voiding his rights by stating that “it is of dangerous consequence to take away any persons right, purchased under an act of Parliament, without their consent.”²² The Lords ultimately dropped the Salwerpe bill and the rights of the Baldwyn family were protected.

In the second case, the Lords went along with the Commons and voided the rights of undertakers. In 1662, the Sandys family received the right to collect tolls and improve the Wye and Lugg rivers. William Sandys, also known as ‘Waterworks Sandys’ was a prominent Royalist during the Civil War and also raised funds for the Restoration of Charles II.²³ In 1690 a bill for ‘better making the Rivers of Wye and Lugg, navigable’ was introduced in the Commons. It made no mention of Sandys’ rights in the river. The bill failed and it is not known who supported it. In 1692, another bill was introduced for making the Rivers of Wye and Lugg, navigable. This bill was voted down 118 to 107 after the second reading. The tellers for the ‘yeahs’ were Lord Coningsby and Sir Rowland Gwynne. Coningsby was a Court Whig and was close to King William. Gwynne was a Whig that leaned to the Court. The tellers for the ‘neahs’ were Sir John Guise and John Arnold. Both Guise and Arnold were Whigs who known to quarreled with some of Court’s supporters.²⁴

²² Details on the petition are available in the Parliamentary archives, HL/PO/JO/10/1/455/733.

²³ See the entry for William Sandys in Wikipedia
http://en.wikipedia.org/wiki/William_Sandys_%27Waterworks_Sandys%27

²⁴ Information on these MPs comes from Cruickshanks, Handley, and Hayton (2002).

In 1695 another bill for the betterment of the Wye and Lugg rivers was introduced. The bill was presented by Coningsby and Paul Foley, who was also a Whig. This time the bill passed through the Commons and the Lords. The act officially voided the rights of the Sandys family and granted authority to the Bishop of Hereford and several other dignitaries from the area. The opening passage of the act states that “Sir William Sandys, Windsor Sandys, and Henry Sandys never did any thing towards the making of the said River of Lugg navigable. And what they did towards the said Work upon the said River of Wye was performed so slightly that most of the Locks and Passages by them made did in a very few years fall utterly to decay and ruin.” The act then declares that the river should be toll-free in order that the “benefits and advantages intended to the inhabitants of the County of Hereford by the said act may not be totally frustrated by *the neglect or failure of the said former Undertakers* (italics added).”

The passage of the river Wye bill shows once again that major transitions in power increased the repudiation of rights granted by the previous regime. Just as in the case of the Restoration, the number of repudiations following the Glorious Revolution diminished with time. After 1695, no more bills were introduced in the Commons to void the rights of undertakers who received their authority from acts of Parliament between 1661 and 1688.²⁵ Thus the Commons of the late 1690s and beyond showed an increasing commitment to enforce the rights granted by past Parliaments. Such behavior makes sense if the Commons wanted to establish a reputation as the authority where promoters could obtain new rights. It also suggests that political stability in England was crucial to greater commitment after the 1690s. If the Stuarts were able to regain the

²⁵ There was one case in 1699 where the Commons and Lords voided the rights vested in the river Lark patent issued by King Charles I in 1638.

monarchy, then they may have tried to repudiate the rights vested in acts of Parliament after 1690. The fact that the Stuarts were never unsuccessful meant that the degree of commitment remained high.

The Era of Party Strife

The other significant political development in the 1690s and 1700s was the emergence of party strife. The Whig and Tory parties were engaged in a fervent struggle for leadership of the Commons and influence over King William and Mary and later Queen Anne. The Tories represented a significant portion of the landowning interest and favored a strong protection of the Church of England. The Whigs represented a combination of landowners, financial and mercantile interests, and generally favored more religious toleration. The Whigs and Tories traded places as the majority party several times. The Tories had the majority from 1690 to 1694, followed by the Whigs from 1695 to 1700, the Tories in 1700, the Whigs in 1701, the Tories from 1702 to 1707, the Whigs from 1708 to 1710, and the Tories from 1711 to 1714.

For many of these years there was an overlap between the party affiliation of MPs who worked on road and river bills and the party in power in the Commons. Figure 3 shows the proportion of MPs in the Commons from the party with a majority or plurality and the proportion of MPs that presented or reported on river bills that were from the majority or plurality party. From 1690 to 1694 when the Tories had a 47% plurality, 60% of the river MPs were Tories. From 1695 to 1700 when the Whigs had a 50% plurality, between 55 and 71% of the river MPs were Whigs. The Tories were under-represented on river bills in the early 1700s, but in 1708 and 1709 Tory MPs headed all river bills.

From 1710 through 1714 the same pattern holds: most of the river MPs were Whigs when they were in the majority and most were Tories when they were in the majority.

Figure 4 shows the same calculations for MPs that presented and reported on road bills. The overlap between the party affiliation of the road MPs and the party in power in the Commons is even stronger. Over the whole period, 70% of the MPs working on road bills were from the majority party while an average of 54% MPs in the Commons were from the majority party. This was true irrespective of whether the Whigs or Tories were in power.

This evidence suggests that during the era of party strife, the party in power tried to control the supply of rights. Greater control over road and river bills certainly yielded political benefits to the party in power because it helped their Members get re-elected. It also potentially fostered collusion among Members of the party in power, which would allow them to charge a higher bribe to promoters. Unfortunately it is difficult to verify this argument because there is no data on the bribes. However, it is worth noting that there were relatively few river bills during the years when most river MPs were from the ruling party (1695-97, 1708-14). There is a similar pattern with respect to the number of road bills and the proportion of road MPs from the ruling party.

The Walpole Era

The emergence of Robert Walpole as Britain's first Prime Minister in 1721 is often viewed as another key moment in the history of Parliament. After Walpole, the political system became more stable and party strife diminished. The leaders of the Whig party, also known as the Oligarchs, benefited greatly because they remained in power for nearly

50 years (Holmes and Szechi, 1993). Regardless of whether Walpole himself was responsible for these changes, it is clear that Parliament functioned differently after he came to power. The data from figures 3 and 4 show that after Walpole came to power it was no longer the case that MPs working on road and river bills were disproportionately from the Whig party who held the majority after 1714. In fact, there is some evidence that road and river MPs were disproportionately from the Tory or Whig Opposition party. The Whig Oligarchs may have still controlled access to road and river bills, but even so it appears that more MPs were part of the coalition.²⁶ This is significant because it suggests there was a greater potential that MPs competed with one another to supply improvement rights.

It is also significant that during the Walpolean era there were relatively few cases where the Commons and Lords violated the rights of existing road and river undertakers, even though there were pressures to do so. Table 5 shows all the acts of Parliament that voided or diminished the rights of river undertakers who received their authority from acts after 1690. There were four documented cases, affecting three different undertakers. Two of these cases occurred during Walpole's leadership from 1721 to 1742. The Wye and Lugg act of 1726 named a new set of trustees and replaced the Bishop of Hereford and several local dignitaries who were named as trustees in the 1695 discussed earlier. According to the report of the MP who headed the committee for the bill, little work was done on the river and there was no longer a sufficient number of the surviving trustees to

²⁶ This interpretation is also consistent with much of the literature which argues that Walpole maintained power by dispensing emoluments to a large coalition of MPs.

put the act into execution.²⁷ Therefore the naming of new trustees appears to have been necessary in this case and might not be viewed as a violation of rights.

In the case of the river Dee act of 1743, it appears the undertakers volunteered to have their rights diminished. The act was initiated by merchants and traders in Chester who petitioned to reduce the maximum tolls that could be charged by the Company of Proprietors for the River Dee. In a petition to Parliament the Company stated that “the [inhabitants] of the city of Chester, being of opinion, that the tonnage rates, granted to the said Undertakers by the first-mentioned Act, are too high, and a discouragement to the trade of the said city. The [company], at their request, have consented that the same may, by authority of Parliament, be repealed; and that, in lieu thereof, other and less tonnage or keelage rates may be granted to the [company].”²⁸ The fact that the company indicated its approval suggests that Parliament would not have reduced the tolls without its consent.

Overall it appears that Parliament did not arbitrarily diminish the rights of undertakers in the Walpolean era. The bottom row of table 5 shows that 8% of the authorities created after 1689 had their rights voided or diminished, and most of these cases involved some form of negligence or voluntary relinquishment of rights. Thus the commitment to enforce the rights of undertakers was quite different after 1721, especially when compared to the early 1660s and 1690s.

VI. Conclusion

This paper examined whether the chartering of road and river improvement authorities from 1600 to 1750 fits broader theories of political change and economic

²⁷ For the details see the Journals of the House of Commons, 3.3.1726.

²⁸ Ibid, 31.1.1743.

development in England. The results from the structural breaks tests identified the early 1690s, early 1700s and early 1720s as years where there was a change in either the demand or the supply for river and road proposals. The detailed evidence on the evolution of road and river charters confirms that there were key changes in the degree of commitment and competition during these years. The evidence shows that Parliament and the King voided or diminished the rights of river and road authorities following major shifts in power like the Civil War, the Restoration, and the Glorious Revolution. It also indicates that the commitment to enforce existing rights increased after the mid-1690s, largely because there were no major shifts in power between the King and Parliament. The evidence also indicates that the King, the Lords, and political parties in the Commons all tried to control the supply of road and river charters before 1720. The patterns change quite dramatically after 1721 as a more diverse set of MPs worked on bills, broadening the potential for competition. These findings suggest that the supply of rights changed once again during the era of Robert Walpole.

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Table 1: Estimates of Multiple Unknown Structural Breaks in a Model explaining Road and River Proposals in year t

Rivers		
Estimated Structural Breaks for intercept	1692	
F-stat	14.28***	
Estimated Structural Breaks for intercept, population, and interest rate coefficient	none	
F-stat		
Roads		
Estimated Structural Breaks for intercept	1696	1705
F-stat	19.96***	26.11***
Estimated Structural Breaks for intercept, population, and interest rate coefficient	1705	1723
F-stat	33.37***	15.51**

Notes: The model regresses road proposals in year t (or river proposals in t) on road proposals in t-1 (or river proposals in t-1, population in t-1, and the real interest rates in t-1 which is proxied by the real rate of return on charity assets. The multiple structural breaks were estimated one at time following the procedures in Bai(1997).

Table 2: River and Road Improvements initiated through the King, the Commons, and the Lords, 1600-1640

Period	(1) Patents authorized by king	(2) Bills introduced in House of Commons	(3) Bills introduced in House of Lords	(4) Success Rate Bills introduced in Commons	(5) Success Rate Bills introduced in Lords
			Rivers		
1600-09	0	2	1	0	100
1610-19	2	0	0		
1620-29	1	4	3	0	33
1630-39	5	0	0		
1640	0	1	1	0	0
Total	8	7	5	0	20
			Roads		
1600-09	0	3	0	0	
1610-19	0	0	0		
1620-29	0	1	0	0	
1630-39	0	0	0		
1640	0	0	0		
Total	0	4	0	0	

Sources: see text.

Table 3: Cases where the Rights of River Undertakers established before 1662 were voided or diminished

River/ Description	Year Rights are known to be voided or Changed
Thames Some Undertakers voided by new act	1623
Great Ouse (St. Neots to St. Ives) Maximum tolls reduced by decree from Privy Council	1626
Lark Route cut in half by decree from King	1638
Avon (Warwickshire) Undertakers rights voided because of Treason	1661
Ouse (Yorkshire) Undertakers rights voided by Restoration Settlement	1661
Wey Undertakers rights voided by Restoration Settlement	1661
# of Authorities created before 1662	11
% of Authorities created before 1662 whose rights were voided or diminished	55%

sources: see text.

Table 4: River and Road Improvements initiated in the Commons and the Lords, 1661-1688

Period	(1) Bills introduced in House of Commons	(2) Bills introduced in House of Lords	(3) Success Rate Bills introduced in Commons	(4) Success Rate Bills introduced in Lords
			Rivers	
1660-64	11	2	18	50
1665-69	3	4	33	75
1670-74	5	1	40	0
1675-79	4	0	25	
1680-85	1	0	0	
Total	24	7	24	57
			Roads	
1660-64	6	0	17	
1665-69	1	0	100	
1670-74				
1675-79				
1680-85				
Total	7	0	29	

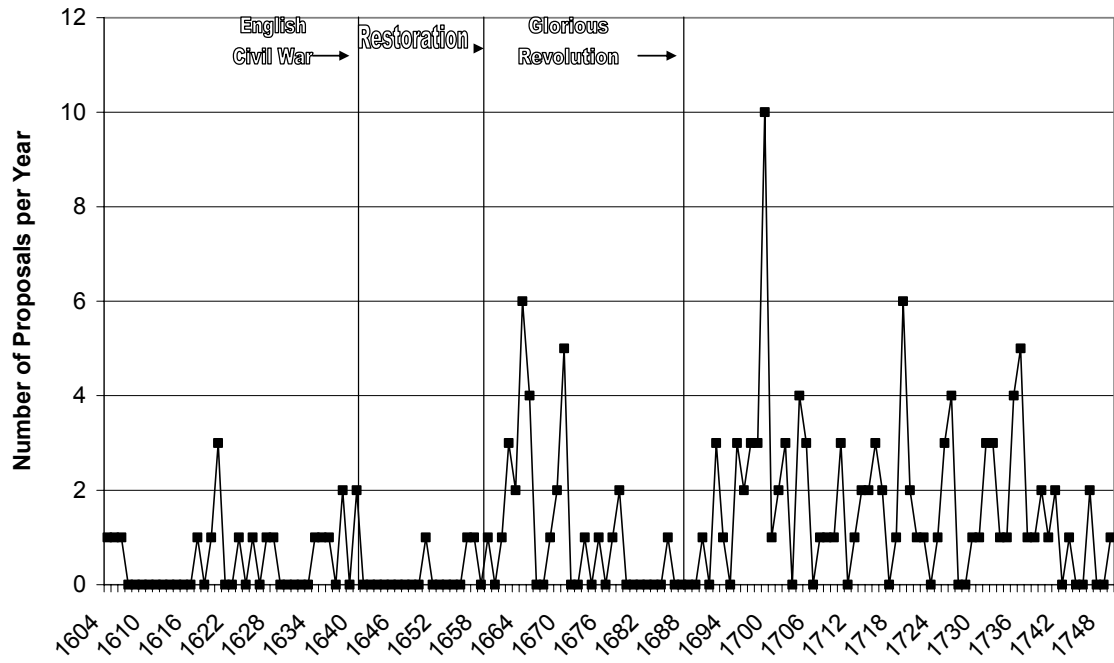
Sources: see text.

Table 5: Acts that Voided or Diminished Rights of River Undertakers established by acts between 1689-1749

River Acts	Year Rights are known to be voided or Changed
Channel, Colchester to Wivenhoe Maximum Tolls reduced by new act	1718
Wye and Lugg Some Undertakers voided by new act	1726
Channel, Colchester to Wivenhoe Maximum Tolls reduced by act	1739
Dee Maximum Tolls reduced by act	1743
# of Authorities established between 1689 and 1749	37
% of Authorities established between 1689 and 1749 whose rights were voided or diminished by act	8%

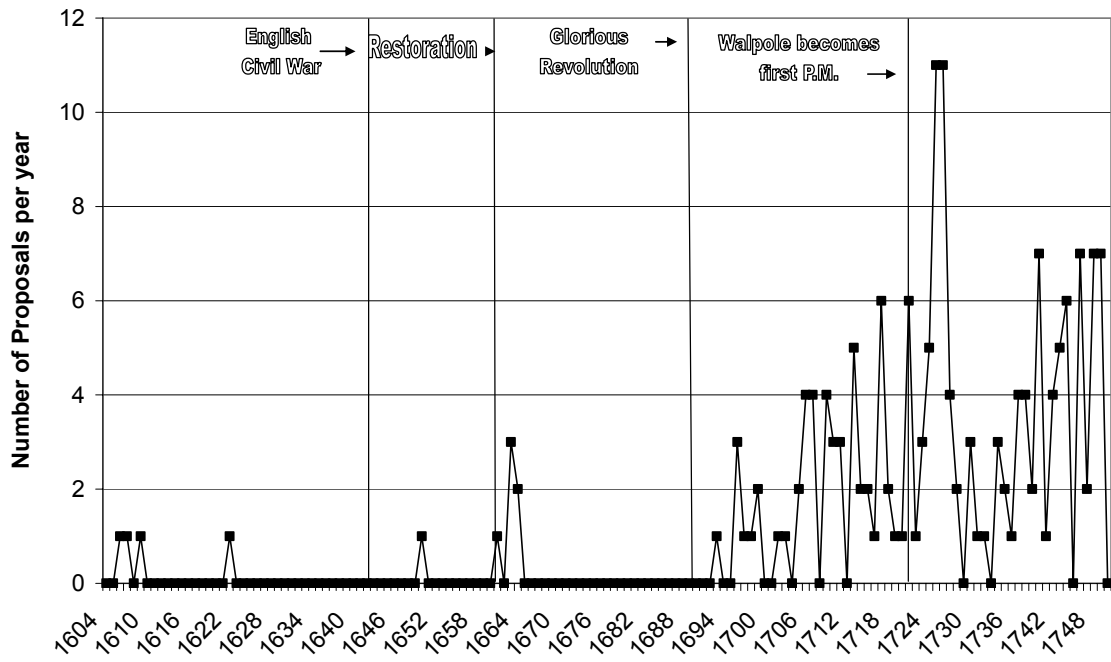
sources: see text.

Figure 1: Number of Proposals to Improve Rivers, 1604-1749



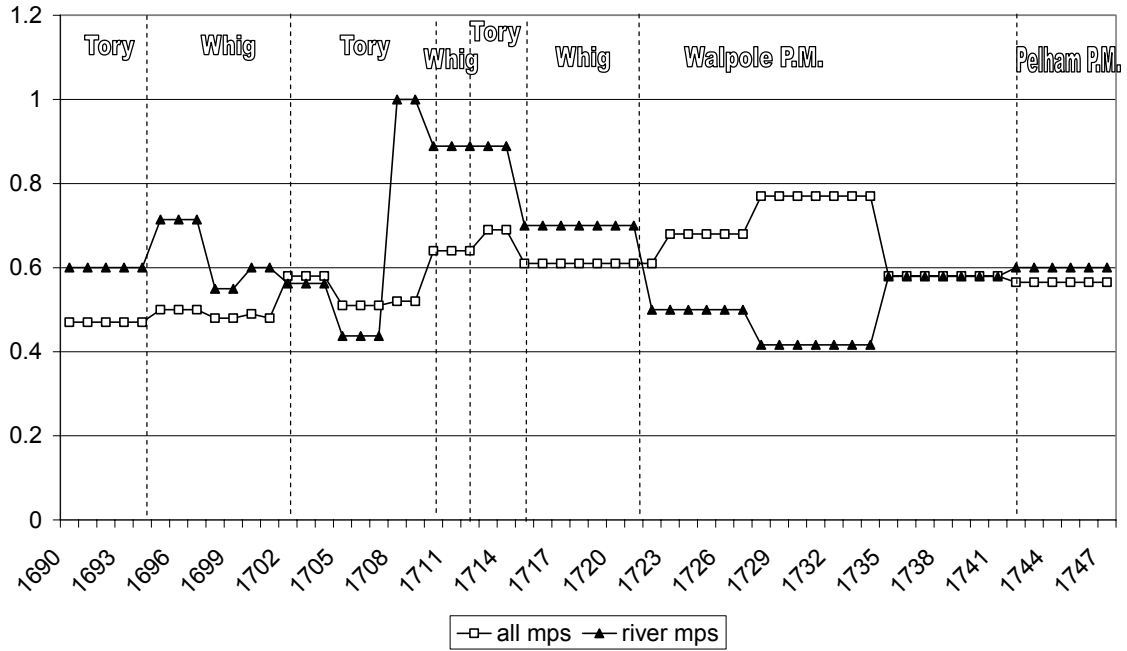
Sources: see text.

Figure 2: Number of Proposals to Improve Roads, 1604-1749



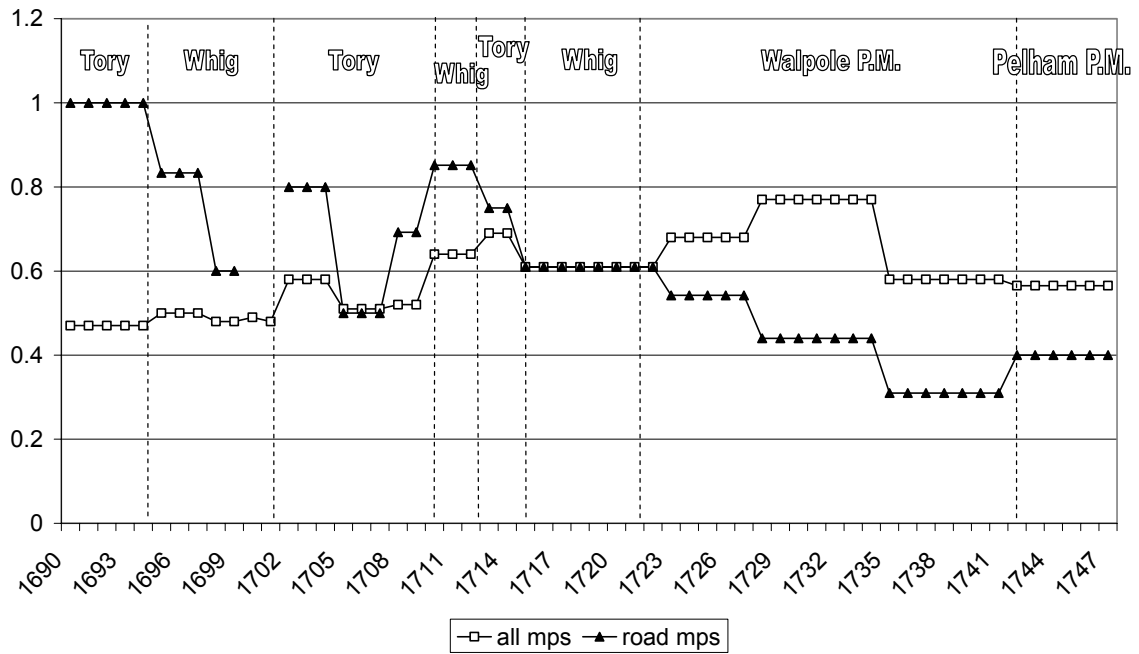
Sources: see text.

Figure 3: Proportion of MPs in Majority party and Proportion of River MPs in majority party



Sources: see text.

Figure 4: Proportion of MPs in Majority party and Proportion of Road MPs in majority party



Sources: see text.