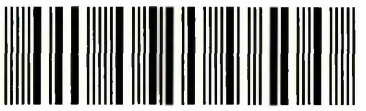

The Public Works Loan Board 1817-76 and the Financing of Public Infrastructure

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Abstract

The Public Works Loan Board 1817-1876 and the financing of public infrastructure.

The Public Works Loan Board was formed in 1817, mainly to lend money to finance public infrastructure. Nearly 200 years later, the PWLB is the major source of loans to finance local government infrastructure. Yet no history has been written of the PWLB, and there is very little mention of the PWLB in academic literature. This thesis therefore relies on the unused PWLB archive to explore five case studies of lending to mine owners, turnpike trusts, poor law unions, local boards of health and local school boards.

The first two case studies cover the PWLB's first ten years, and show that its lending to mine owners and turnpike trusts was too limited to have much impact. It is also clear that the PWLB was acting like a cautious commercial provider of loans at the prevailing market interest rates. Even so, it made losses because of parliamentary and Treasury actions. In the last three case studies, the PWLB's role changed materially, as it became a provider of low interest rate loans to public bodies. In this role the PWLB became an agent of a central government that was compelling local government to invest heavily in workhouses, water supply and sewer facilities, and elementary schools. The result was that PWLB lending soared and was profitable, and public infrastructure investment rose sharply. The case studies highlight the characteristics that determined the success or failure of the PWLB. They also chart the major movement of power from local authorities to central government.

The PWLB provided more than half of the finance for the building of workhouses, schools, and water and sewer facilities during three critical periods. The PWLB was therefore essential to the success of the 1834 Poor Law Amendment Act, the 1870 Elementary Education Act and the 1872 Public Health Act. By 1876, the PWLB had become an important provider of finance for public infrastructure provision.

Acknowledgements

There are three groups to thank. The first is Sheffield Hallam University for giving me the opportunity to undertake this study, and to Nicola Verdon and Merv Lewis in particular. They saw something in the original proposal I put to them, and went on to become my supervisors. They encouraged me to develop the proposal into a thesis that would be worthwhile and interesting to others.

The second group I need to thank are the many people I worked with in over 30 years in local government finance. Many of the skills I learned from them have been enormously valuable in the writing of this thesis. The 1870s world of local government and the PWLB was not that different to the local government I joined 100 years later. I sat in an office full of ledgers listing small sums borrowed from the PWLB to install street lighting. It was my job to enter the annual repayments into these ledgers. Thirty years later, as a finance director for another council, I set out to reduce the council's £100m debt to the PWLB, and its cost to the local ratepayers. Both these experiences would have been recognisable to the nineteenth century treasurer.

Special thanks must go to Pat Cleaver, my partner, for giving me the time and space to devote to this study. Over the last three years, Pat and all of our friends have had to suffer almost endless stories about the PWLB. They also had PWLB financed buildings pointed out to them when they were on holiday. This was much more than they ever wanted to know. But they listened politely, and I thank them all for that.

Without any of these three groups, there would have been no thesis.

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All photographs are by the author.

Abbreviations, definitions, and monetary values

Abbreviations

BL	British Library
BoE	Bank of England
BoT	Board of Trade
BPP	British Parliamentary Papers
CERC	Church of England Record Centre
CoE	Church of England
DNB	Dictionary of National Biography
ED	Education Department. In the 1870s the Committee of (the Privy) Council on Education was increasingly known as the Education Department
GBH	General Board of Health, predecessor to LGAO
HLG	Housing and Local Government, the code given to the PLC files in the National Archives at Kew
LGAO	Local Government Act Office. Successor to GBH, and predecessor to LGB.
LGB	Local Government Board
LBH	Local Board of Health, later also known as Local Board
LMA	London Metropolitan Archives
LSB	London School Board. Also known and Schools Board for London
MBW	Metropolitan Board of Works
NA	National Archives at Kew
NS	National Society
PLC	Poor Law Commission
PWLB	Public Works Loan Board. Until 1842, they were known as the Exchequer Bill Loan Commissioners
PWLC	Public Works Loan Commissioners. An alternative name for PWLB
RSA	Rural Sanitary Authority
RV	Rateable value

Selected definitions

Capital spending

Capital spending is incurred for assets that are expected to last for many years. The cost is therefore spread over a similar number of years. Land, buildings and equipment are all generally seen as capital spending. Public bodies and those interested in budgets and their financing will talk in terms of capital spending. Annual returns were invariably of capital spending. In contrast, current or revenue spending

is on items consumed within a single year, and is generally recurring.

Public works

Infrastructure was not a word used in the nineteenth century. 'Public works' was used instead. Adam Smith used 'public works' to cover roads, bridges, canals and harbours. Smith recognised that 'public works' implied that the works 'facilitate(d) the commerce of any country'.[1] 'Internal improvements' had a similar meaning, and a similar implication.

Social overhead capital

W. W. Rostow's 'social overhead capital' had the same meaning as 'public works' but was updated to include modern utilities.[2] By social overhead capital, Rostow 'meant capital invested in roads, utility systems, communications, education, health and other government facilities as the foundation of economic development'.[3]

Infrastructure

Infrastructure only became a common term in the 1980s. It is a very broad term that can include 'almost every support system in modern industrial society'.[4] Infrastructure might therefore include physical assets such as roads, the political/administrative processes that plan and finance them, and even the road workers that maintain them. The term 'infrastructure' by itself has become almost too broad, and is more often preceded by a qualifying term such as 'energy', 'administrative', or 'public'.

Public infrastructure

The successor term to Rostow's social overhead capital, 'public infrastructure' narrows the definition of infrastructure to exclude those that do not count as capital spending. 'Public infrastructure' does not imply public ownership, or free use. Hirofumi Uzawa adds hospitals, schools, judicial systems and public administrative services in order to give a definition of social common capital.[5] But his use of the term 'systems' implies the inclusion of non-capital and non-structural elements. For the purpose of this thesis, the focus is on buildings and

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[1] Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* ed. Kathryn Sunderland (Oxford, Oxford University Press, 1993), p. 414.
[2] W. W. Rostow, *Stages of Economic Growth* (Cambridge, Cambridge University Press, 1960).
[3] David C. Perry, Ed. *Building the Public City: The Politics, Governance, and Finance of Public Infrastructure* (London, Sage, 1995), p. 6.
[4] Bruce Seeley, 'The Saga of American Infrastructure'. *Wilson Quarterly*, Winter 1993 pp. 18-39.
[5] Hirofumi Uzawa, *Economic Analysis of Social Common Capital* (Cambridge, Cambridge University Press, 2005), pp. vii, 4.

other constructed assets, and not on the provision of education, welfare or judicial services. Public infrastructure is therefore defined as roads, bridges and other transport structures; public utility assets; educational, health, welfare and judicial buildings; and other public buildings.

Capital formation

Capital formation is an economist's definition of net additions to the capital stock. The term therefore excludes capital replacements. C. H. Feinstein and Sidney Pollard concentrate on making estimates of capital formation.[6]

Monetary values

Nineteenth century monetary values were very different to those of 2014. Quantifying the difference is not clear cut. The Bank of England historic inflation site says that between 1847 and 2012, prices rose nearly 90 fold.[7] Yet a large primary school cost £5,000 to build in the 1870s, and £6.9m in 2014. This is an increase of 1370 fold. (See footnote 33 in chapter 6) Adjusting for the more generous modern space standards, the cost inflation is close to 300 fold. Between 1855 and 2012, per capita GDP rose by nearly 1,100 fold.[8] A middle ground is provided by the 500 fold increase in the average annual pay between £55 a year in 1867 and £27,000 in 2013.[9] This 500 fold increase is the multiplier preferred in this thesis.

On this basis, a £2,000 turnpike road scheme would cost £1m now; a £5,000 workhouse would cost £2.5m; a £100 loan to a turnpike trust or a £100 contribution towards the building of a voluntary school would be worth £50,000. At the other end of the scale, the £13.9m invested in school building between 1870 and 1876 would be the equivalent of £7 billion in 2014, and the £42m loaned by the PWLB over the 60 years covered by this thesis would be equivalent to £21billion in 2014 money. The purpose of these figures is simply to give a better sense of scale to the sums mentioned throughout the thesis.

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[6] C. H. Feinstein and Sidney Pollard, *Studies in Capital Formation in the United Kingdom 1750-1920* (Oxford, Clarendon Press, 1988)

[7] http://www.bankofengland.co.uk/education/pages/inflation/calculator/flash/default.aspx accessed 26 March 2014

[8] B. R. Mitchell and Phyllis Deane, *Abstract of British Historical Statistics,* (Cambridge, Cambridge University Press, 1971), p. 367; World Bank, http://data.worldbank.org/indicator/NY.GDP.PCAP.CD accessed 26 March 2014

[9] A. L. Bowley, *Wages in the United Kingdom in the Nineteenth Century,* (Cambridge, Cambridge University Press, 1900), p. 70, and http://www.ons.gov.uk/ons/rel/ashe/annual-survey-of-hours-and-earnings/2013-provisional-results/info-ashe-2013.html accessed 26 March 2014

Chapter 1, Introduction: the origins of the Public Works Loan Board, 1793-1817.

Figure 1.1. Most public infrastructure before 1817 was financed privately by a mixture of share issues and mortgages, after the passing of a local Act of Parliament. Chesterfield canal was typical, and was mostly financed locally. Completed in 1777, it ran between Chesterfield and the River Trent. It is currently being restored as a leisure facility with the aid of public money.

Figure 1.2. The 1790s local Act approving the building of the West India Dock complex also allowed the building of the Isle of Dogs Canal. The dock complex was commercially financed, and successful. In the absence of commercial support for the canal, the government agreed to lend the promoters the £327,000 needed. The canal was not a success, and the government forced its sale in1829 to the dock company for £120,000. The canal still exists, but is part of Canary Wharf.

The Public Works Loan Board was created in 1817. Its aims were to lend money to finance public works, support mines and fisheries, and increase employment in a period of acute economic and social distress.[1] Between 1817 and 1876, the PWLB made 8,000 loans worth £42m, with nearly all being to finance public infrastructure.[2] More than half of these loans were for the building of workhouses, provision of water supply and sewer infrastructure and the building of elementary schools. Much of the infrastructure built with PWLB loans in this period is still in use today. The PWLB still exists in 2014 and provides 75 per cent of the loans local government needs to finance its capital investment.[3]

There are four sections to this chapter. The first covers the scope, aims, sources and methodology of the thesis. The second reviews the changing context in which the PWLB operated. The third examines the PWLB's predecessor bodies in the years 1793 to 1811. These earlier commissions established many of the hallmarks of the PWLB's later success. The final section considers the pressures on the government that led to the creation of a permanent PWLB in 1817, and the background of the commissioners appointed to the PWLB. This section also considers why the objectives of the 1817 Act were so confused.

1.1 Scope, aims, sources and methodology

The thesis deals with the first 60 years of the PWLB's life, from 1817 to 1876, and concentrates on five case studies of the PWLB's lending, with a chapter for each. The five case studies are lending to: mine owners and turnpike trusts in 1817-26; poor law unions in 1835-44 to build workhouses; local boards of health in 1848-76 to provide water and sewer facilities; and school boards in 1870-76 to build elementary schools. These five were chosen because they illustrate the nature of the PWLB's lending at the beginning, middle and end of the 60 year period. They also account for well over half of all the PWLB's lending, and show how the PWLB developed over the 60 years. The first two areas show how the PWLB interpreted its objectives as set out in the 1817 Act, and how the PWLB developed its

[1] Since 1842, the body has called itself the 'Public Works Loan Board', and the initials 'PWLB' are used throughout this thesis. From 1817 to 1842 it was called the 'Exchequer Bill Loan Office'.
[2] National Archives, PWLB 6/1-6, PWLB application ledgers. See appendix 1.A.
[3] Local government has outstanding loans of £84bn. Of this, £63bn is repayable to the PWLB. https://www.gov.uk/government/statistical-data-sets/live-tables-on-local-government-finance accessed 21 August 2014.

approach to lending. In contrast, in the last three areas the PWLB was lending as the result of major pieces of public legislation, which involved large scale changes in the role of the government and the PWLB.[4]

In 1817 the term 'public infrastructure' was unknown, and the terms 'public works' or 'internal improvements' were used instead. Adam Smith used 'public works' to cover roads, bridges, canals and harbours that 'facilitate the commerce of any country'.[5] Updating this definition, public utilities such as water, electricity and gas would now be included. Hirofumi Uzawa adds hospitals, schools, judicial systems and public administrative services in order to give a definition of social common capital.[6] For the purpose of this thesis, the focus is on the capital costs of buildings and other constructed assets, and not on the current costs of the provision of education, welfare or judicial services. Public infrastructure is therefore defined as roads, bridges and other transport structures; public utility assets; educational, health, welfare and judicial buildings; and other public buildings. According to this definition, only PWLB loans for mines and fisheries fail to count as financing public infrastructure. This chapter shows that there was no obvious reason for including mines and fisheries in the 1817 Act. Even so, chapter 2 shows that an examination of this group of loans explains a lot about the PWLB commissioners' views of their role, and is therefore worthy of inclusion.

There are a number of reasons for seeing 1876 as the end of the period covered by the thesis. First, before 1876 there was very little collected information about the capital spending of local bodies. After 1876, much more information was available because the PWLB, the Local Government Board and the Education Department were all providing annual reports to Parliament. In the 1870s, local government was beginning to provide annual local taxation returns to Parliament, and by the 1880s these became very useful. The PWLB also changed in 1876, with the introduction of a new legal framework under the 1875 Public Works Loans Act. In addition, the PWLB had a new chairman, after the retirement of John

[4] See appendix 1.A for a summary of all PWLB lending over the period 1817 to 1876.
[5] Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* ed. Kathryn Sunderland (Oxford, Oxford University Press, 1993), p. 414.
[6] Hirofumi Uzawa, *Economic Analysis of Social Common Capital* (Cambridge, Cambridge University Press, 2005), pp. vii, 4.

Gellibrand Hubbard, who had been chairman for 20 years. These reasons make 1876 a natural break point.

One of the two reasons for undertaking this study was that the PWLB is an important financial institution, and its history ought to be told. This is particularly true because the financing of public infrastructure is still controversial today. The other reason was a conviction that the history of the PWLB's lending would shed new light on the changing nature of government in the nineteenth century. These reasons are reflected in the five aims of the thesis. The first is to determine the objectives the government and Parliament set for the PWLB, and how these objectives changed over time. The second aim is to evaluate the importance of PWLB lending to the financing of capital investment in each of the five case studies. The third aim is to analyse the PWLB's lending activity in each of the five areas. The fourth aim is to determine which factors dictated whether the PWLB's lending in each area was successful. The final aim is to use the PWLB case studies to demonstrate how central and local government relationships changed over time.

This thesis rests heavily on the unused archive of 60 volumes of PWLB minutes and the six ledgers listing loan applications to the PWLB for the years 1817 to 1876.[7] The ledgers listing the 10,000 applications provide an enormous amount of quantitative information about the value and number of applications; the purpose of applications; the outcome of each application; and applicants' names and geographic locations. The 60 minute books include much of the correspondence with applicants, giving a good indication of how the PWLB made its decisions. They also include a good deal of the PWLB's written exchanges with the government and bodies like the Local Government Board. Careful analysis of the qualitative information in the minute books can yield a good deal of quantitative information about the outcome of applications. These primary sources provide a robust empirical base for the study of the PWLB and its activities.

Extensive use is also made of the annual returns to Parliament from turnpike trusts, and the annual reports of the Poor Law Commission, the Local

[7] National Archives. PWLB 2/1-60 PWLB minute books 1817 to 1876. PWLB 6/1-6 PWLB application ledgers.

Government Board and the Education Department. Many of these have a wealth of statistical material about the borrowing of individual bodies – material that appears to have been little used. The National Archives files were also consulted to examine the correspondence between the PWLB, the Treasury and the Local Government Board. National Archives also hold files for each poor law union and school board. A sample of these and the corresponding Derbyshire local record office files were also consulted to verify the PWLB records. The record office files also provide a local perspective of how turnpike trusts, poor law unions, local boards of health and school boards went about their tasks. The challenge of dealing with this large volume of primary source material is covered in the next paragraphs on the methodology used in the thesis.

There are four stages to the methodology adopted. The first was to convert the PWLB applications ledgers into an electronic format that could be analysed. The decision was made to record the whole of the data, and to enter it at the most detailed level possible. Not relying on a sample of entries reduced the risk of a misleading picture emerging, and avoided the need for an interim statistical step of demonstrating that any sample was large enough to ensure a high degree of confidence. Recording and analysing all of the data also meant that data outside the case studies could be used in a supporting role. Classifying the applications across 35 groups, rather than over the ten or so major Acts authorising loans, was also important. It meant that later analysis could be undertaken at the lower level of, say, water supply loans, rather than at the higher level of loans under the public health Acts. The outcome of this first stage was a clear view of the scale of PWLB lending in each of the major and minor areas, and this informed the choice of case studies.[8]

The second stage was to review, and, if necessary, revise existing estimates of fixed capital formation for the five case study areas, or, where they did not exist, construct them. This made it possible to compare the total level of investment in a particular area: such as, school building, and the level of PWLB lending to school boards. It was then possible to reach a conclusion about the relative importance of PWLB lending in financing investment in schools. Repeating the process for each

[8] See appendix 1.A.

case study area satisfies the second thesis aim of determining the importance of PWLB loans in each of the five areas.

The third stage was a more detailed analysis of the PWLB loan data in the five case study areas. This stage was exploratory, looking for patterns in the data. The applications data were therefore tested against all the variables that might affect the level of applications to the PWLB: time; geography; economic conditions; changes in interest rates; size of the body applying; size of application; and changes of government. In a second series of searches for patterns, the outcome of applications was examined against the variables that might affect the PWLB's decision making. This stage forms the core of chapters 2 to 6, and meets the needs of the third aim of the thesis, of analysing PWLB activity in each case study area.

Stage four was a concurrent review of the PWLB minute books for information about the PWLB's decisions, or significant correspondence on them. The outcome of this review guided, supported or challenged the quantitative analysis of stage three. Together with the Acts of Parliament themselves, the PWLB minutes charted the changing relationship between central and local government, and changes in the government's objectives for the PWLB. This meets the requirements of the first thesis aim. Once this analysis was completed, it was clear which of the case studies involved successful PWLB lending, and which had not been successful. It then simply remained to identify which factors determined success or failure, in order to satisfy thesis aim four.

This thesis is the first academic analysis of the PWLB's first 60 years. It also makes the first use of the PWLB archive of minutes and ledgers. In some of the case studies, the thesis provides the first quantification of the scale of investment in public infrastructure before 1876. In all five cases, it gives an original picture of the sources of the financing of public infrastructure. Above all, the attempt to set out the essential conditions for the successful public financing of infrastructure for this period is original. Much has, of course, been written about the development of the government's role as a service provider, and about the changing relationship

between central and local government.[9] This thesis highlights the financial aspects of these changes after 1817.

The structure of the thesis is broadly chronological, with the rest of this chapter investigating the period up to the creation of the PWLB in 1817. Chapters 2 and 3 examine the PWLB's first ten years. Chapter 2 covers PWLB loans to mines, showing them to be an atypical example of PWLB lending. It also shows the PWLB's developing approach to lending. Chapter 3 concentrates on loans to turnpike trusts, a typical example of the PWLB's early lending to support transport related public works. The chapter highlights some of the parliamentary challenges to the PWLB's independence of decision making. Chapter 4 considers loans for building workhouses in the ten years from the 1834 Poor Law Amendment Act. This period saw a major change in the PWLB's objectives, and a fundamental change in central and local government relationships. Chapter 5 charts the changes in the approach to the financing of water supply and sewer infrastructure in the 29 years after the passing of the 1848 Public Health Act. The initial failure of PWLB lending before 1872 is contrasted with the major role played by the PWLB after 1872. Chapter 6 focuses on the financing of school building after the 1870 Elementary Education Act, when the PWLB's lending grew to levels that caused problems for the Treasury. Chapter 7 is devoted to assessing the factors that made some of the PWLB's lending successful, and some a relative failure.

1.2 The changing context in which the PWLB operated

The Public Works Loan Board was formed and developed in an environment that changed substantially between 1817 and 1876. This section examines that changing environment. The key changes were in the social and economic environment, and these led to a clear need for increased public infrastructure investment. The improvements were intended to raise the living conditions in cities and large towns, and to improve the transport infrastructure. To finance this spending, it was necessary for the money market to develop new capacity, and where the market was still unable to meet the need, the PWLB was needed. It

[9] Christine Bellamy, *Administering Central-Local Relations 1871-1919: The Local Government Board in its Fiscal and Cultural Context* (Manchester, Manchester University Press, 1988), pp. 79-87. Oliver MacDonagh, *Early Victorian Government 1830-70* (London, Weidenfield & Nicholson, London, 1977), pp. 96-120, 133-161.

was also necessary for other government agencies to be created, and for the role of local government to change. In turn, central government had to develop new ways to hold these agencies and bodies accountable. In particular, the PWLB also had to develop an approach to decision making and defining its role. This section looks at how the PWLB fitted into this changing environment.

The population of England more than doubled between 1817 and 1876. Phyllis Deane and W. A. Cole wrote that industrialisation changed the distribution of the population, with a movement from agricultural to industrial areas.[10] In the 1811 census, 55 per cent of the population lived in counties that were predominantly agricultural and mixed. In contrast, the 1881 census showed that 59 per cent of the population lived in counties that were predominantly industrial and commercial.[11] B. R. Mitchell and Phyllis Deane's statistics indicate that this population change was matched by a change in patterns of employment. In 1821, 33 per cent were employed in agriculture, but by 1881, this had virtually halved to 17 per cent.[12] Jeffrey Williamson argues that the rapid growth in cities demonstrated a major backlog in public infrastructure investment.[13] It was this backlog that created much of the demand for the investment in public health improvements and schools.

These population changes were mirrored by economic changes. Mitchell and Deane's figures show that the agricultural sector shrank from being 36 per cent of the national economy in 1811, to just 10 per cent in 1881. Over the same period, manufacturing grew from 21 per cent of the economy to 38 per cent.[14] The change was even more pronounced when comparing the value of the capital stock by sector. In 1812, land accounted for more than half the national stock of capital, yet by 1885, it had fallen to under a fifth of capital values.[15] The reverse had happened to the value of industrial, financial and commercial assets, growing from

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[10] Phyllis Deane and W. A. Cole, *British Economic Growth 1688-1959,* (London, Cambridge University Press, 1962), p. 99-102.
[11] Using Deane and Cole's classifications of counties, and 1811 and 1881 census figures from B. R. Mitchell and Phyllis Deane, *British Historical Statistics,* (London, Cambridge University Press, 1962) pp. 20, 22.
[12] B. R. Mitchell and Phyllis Deane, *Abstract of British Historical Statistics*, (Cambridge, Cambridge University Press, 1971) p. 60.
[13] Jeffrey Williamson, *Coping with City Growth During the British Industrial Revolution,* (Cambridge, Cambridge University Press, 1990) pp. 269, 273.
[14] Deane and Cole, *British Economic Growth,* p. 166.
[15] Deane and Cole, *British Economic Growth,* p. 271.

a fifth to half of the national total. Boyd Hilton argues that the impact of these changes meant that the 'business cycle came to displace the harvest as the most portentous variable in the eyes of nineteenth century policy-makers'.[16] With industry as the largest part of the economy, and drawing people into fast growing cities, solutions were needed to improving the public infrastructure.

These social and economic changes caused the outlook of governments to change between 1817 and 1876. Before 1817, the outlook of the government can be seen in its financial arrangements, with an income tax on the better off only tolerated in wartime. Otherwise, the majority of income came from indirect taxes, mostly paid by the much larger poorer section of the population. In this environment, government spending other than debt service and military costs was miniscule. Equally, government investment was very modest unless it was for military purposes.[17] This outlook was not sustainable in the changing social and economic environment.

There was a decisive shift in the outlook of governments in the 1820s, 1830s and 1840s. Philip Harling in particular argues that in these years governments increasingly adopted a 'disinterested' or 'neutral' view.[18] By this he means that successive governments sought to promote social fairness between the different sections of the population, rather than governing in the sole interests of a narrow minority. Whatever governments' motivations, K. Theodore Hoppen recognises that much of governments' legislative activity 'marked a symbolic acceptance of change' in the role of a government.[19] This change included a growing willingness to intervene legislatively to 'strengthen individual liberties ... and remove abuses ... to allow the free market to work miracles of growth'.[20] Harling went further, seeing governments promoting social fairness by 'acting negatively' to reduce indirect taxes and duties.[21] He also sees governments 'acting positively' to

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[16] Boyd Hilton, *A Mad, Bad, & Dangerous People?: England 1783-1846,* (Oxford, Clarendon Press, 2006) p23

[17] W. M. Stern, 'United Kingdom Expenditure by Votes of Supply, 1793-1817', Economica, n.s.XVII 1950, pp. 196-210.

[18] Philip Harling, *The Modern British State: An Historical Introduction.* (Cambridge, Polity, 2001) pp. 72, 78.

[19] K Theodore Hoppen *The Mid Victorian Generation 1846-1886,* (Oxford, Clarendon Press, 1998) p. 97.

[20] Hoppen, *Mid Victorian Generation,* p. 94.

[21] Harling, *Modern British State,* p. 78.

legislate to increase social fairness. In doing so, this period saw the passage of the 1834 Poor Law Amendment Act, the 1848 Public Health Act, and the 1830s interventions in the provision of education.

Even so, these changes did not lead to a growth is the share of national income taken by government spending. Hoppen notes that 'as a direct operator the state was doing little more in 1865 than in 1790, and still confined itself largely to the Post Office, the Ordnance and naval shipbuilding.'[22] Indeed, as a share of national income, government spending actually shrank between 1817 and 1876. In 1817, it was 24 per cent of national income, and just 7 per cent in 1876.[23] The explanation is not that government spending shrank, rather that it grew more slowly than national income until the 1860s. Even if local spending is included, what might now be called public spending still fell from 29 per cent to 10 per cent of national income.[24]

The fast growing urban areas, and the growing share of the economy taken by industry, led to changes in the size and make up of fixed capital formation. C. H. Feinstein and Sidney Pollard show that annual fixed capital formation rose from around £25m in 1820s to around £130m in the 1870s.[25] In order to judge the relative importance of the PWLB, it will be necessary to form estimates of the total investment in each of the case study areas. Of the sectorial studies in Feinstein and Pollard, only those on coal and iron, and turnpike trusts are suitable as starting points for this thesis. Even then, the turnpike trust estimate of capital formation proves to be fatally flawed. Feinstein's estimate of investments in workhouses was much improved on by Felix Driver, in *Power and Pauperism*, using Poor Law Commission records, and Driver's figures need no further amendment.[26] Feinstein's estimates of investment in water and sewers and schools are too 'top down' to be a good starting point for chapters 5 and 6. Instead a different, 'bottom up' approach will be used. This will lead to more narrowly defined estimates that are better supported and more detailed.

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[22] Hoppen, *Mid Victorian Generation,* p 108.
[23] Mitchell and Deane, *British Historical Statistics,* pp. 366, 396.
[24] Mitchell and Deane, *British Historical Statistics,* pp. 366, 396, 410-2.
[25] C. H. Feinstein and Sidney Pollard, Eds, *Studies in Capital Formation in the United Kingdom 1750-1920* (Oxford, Clarendon Press, 1988) p. 429.
[26] Felix Driver, *Power and Pauperism: The Workhouse System 1834-1884* (Cambridge, Cambridge University Press, 1993) p. 77-79.

The five-fold increase in the scale of fixed capital formation between 1817 and 1876 meant that there was a need for a much higher level of savings to finance the increase. Financial markets therefore needed to change and develop. By 1876, the savings of the population as measured by the value of bank deposits and the assets of trustee savings banks had grown substantially.[27] In addition, there was a growth in both the number of insurance companies, and the investable funds that they held. Even so, these new and enlarged institutions were not always willing to offer loans to new untested public sector bodies. Even if they were willing to offer loans, their interest rates were often at a level that the local bodies felt unable to accept. The PWLB therefore developed as a last resort financer of public infrastructure to fill in the gaps left by the private sector.

Historians have taken three approaches to investigations of how fixed capital formation was financed. The most common approach is to ignore the financing of capital in the studies of individual businesses. Michael Collins and Mae Baker report that of 137 surveys by business historians, over 80 per cent did not comment on how the businesses satisfied their financing needs.[28] The second approach is based on the study of either individual firms or industries, and generally led to a common conclusion. This was that 'long term financing was essentially privately generated' and that financing provided by banks was essentially for short term working capital.[29]

The third approach is to study the loan records of individual banks in order to test the purpose of banks' lending. In a study of four banks, Peter Cottrell reached a very similar conclusion, based on the late 1870s balance sheets of two banks. More generally, Cottrell concludes that: 'English joint stock banks ... were not accustomed to lend long on a regular basis to industrial clients, but they did provide overdrafts' on an extended basis. Collins and Baker undertook a wider study of over 3,000 loans between 1880 and 1914. They produce some very good statistics on the purposes for which banks made loans; the reasons they might reject applications; and the types of security they sought against a failure to repay

[27] Mitchell and Deane p. 453.
[28] Michael Collins and Mae Baker, *(Commercial Banks and Industrial Finance in England and Wales)* Oxford, Oxford University Press, 2003) p. 20.
[29] Collins and Baker, *Commercial Banks,* p. 21.

loans.[30] This evidence allows the PWLB's decision making on loans in chapters 2 and 3 to be compared with that of banks. In a similar way, the role of insurance companies in lending to poor law unions in chapter 4 allows comparisons to be made with the PWLB working practices.

However, Jonathan Baskin and Paul Miranti offer a more nuanced view of the financing of capital spending. They recognise that the picture changes over time, and as the scale of the firm and its capital needs grow.[31] Baskin and Miranti argue that there is a three stage process:

> businesses initially seek to finance their operations by retaining earnings; when this source proves insufficient, managements turn to debt financing; the sale of additional equity will occur only under the most pressing of circumstances

This approach implies that raising new equity will also be reserved for the larger examples of capital raising. Chapters 2 to 6 of this thesis will show that this view also fits the experience of public sector bodies. The exception is that public bodies will not be able to seek new equity, but will instead borrow on the security markets when their needs are very large. If banks were not long term financers of capital spending, and insurance companies had yet to grow sufficiently, then only individuals could be relied on to finance infrastructure development. Chapter 3 shows that individuals financed turnpike trusts, and that many of these individuals lost substantial sums in the process. This evidence begins to show why a body such as the PWLB was needed in 1817 to finance infrastructure.

If there is little information on how private sector capital investment was financed, there is even less on how public infrastructure was financed. In none of the many books and articles on turnpike trusts, workhouses, water and sewerage, or school building, are there any estimates of how total investment in these areas was financed. The references which do exist mostly refer to the loans of individual trusts, unions, or local boards, and the individual examples are too few to draw well founded general conclusions from. Chapters 2 to 6 of this thesis take the

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[30] Collins and Baker, *Commercial Banks,* p. 186.
[31] Jonathan Barron Baskin and Paul J. Miranti, *A History of Corporate Finance* (Cambridge, Cambridge University Press) p. 158.

capital investment totals for each of the case study areas, and show how the total sum was financed. This allows judgements to be made about the relative importance of loans from the PWLB. There is also a trend over time and scale very similar to that noted by Baskin and Miranti. In chapters 2 and 3, most mining investment is financed from profits, and most turnpike trusts were financed by small loans from individuals. In the middle period, there are larger loans from insurance companies. In the 1870s and 1880s, there are much larger (and tradable) loans raised on the security markets.

The government need to ensure that adequate finance was available to fund public works led it to establish the PWLB. Once it was clear that the PWLB had a long term role, it needed to be part of general improvements in the accountability to Parliament and governance of public agencies. Better accountability demanded changes to the models governments had used to hold its three oldest agencies – the Ordnance, the naval dockyards and the Post Office to account. The origins of the Ordnance, naval dockyards and the Post Office were in medieval times, and their accountabilities had changed little by the early nineteenth century. Financially, Parliament approved an annual vote for each, and all three were subject to review by parliamentary select committees.[32] However, none of the three produced an annual report to Parliament, and none produced timely annual audited accounts, in spite of the fact that each spent in excess of £1m a year. Their accountability was therefore very weak. Chapters 2 to 6 will chart the changes in the accountability of government agencies. By 1876, it had become normal for these agencies to produce annual reports to Parliament. In the 1880s this reporting also included independently audited accounts.[33]

The governance of all three agencies was also weak. They had strong central organisations, but many distant local operations, and effective central control over these was troublesome.[34] All three operated largely outside Treasury financial control, and there were delays of years in the production of accounts. This meant

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[32] William Ashworth, 'Economic Aspects of Late Victorian Naval Administration', *Economic History Review* Vol 22 1969, pp. 491-505.

[33] The Comptroller and Auditor General was established in 1888 to provide an independent audit of the government's accounts.

[34] BPP 1817 (275) Report of the Select Committee on Finance in the Ordnance, and J. M. Haas, *A Management Odyssey: The Royal Dockyards, 1714-1914* (New York, University Press of America, 1994, p. 4.

that governance and management decision making was poor, and relied on incomplete financial information.[35] The PWLB did not suffer from any of these governance shortcomings. It had few staff, all based in the same office, had a Board which took all the decisions, and had a clear view of the role of the PWLB.

The government's need to tackle the backlog of public infrastructure investment led to changes in the relationship between central and local government between 1817 and 1876. In turn, this led to changes in the accountability of local government to central government. At the start of the period, parish councils had substantial freedoms of action, and had very little accountability to Parliament.[36] They were also individually so small that the quality of their governance must have been questionable. The same pattern of local discretion and weak accountability was also seen in the 300 or so improvement commissions. Their role was to improve the public infrastructure by promoting: street 'lighting, the supply of water, street cleaning and paving ... and many other matters'.[37] In addition, the governance of the municipal corporations was widely regarded as inefficient and often corrupt before 1835.[38] The Webbs felt that the 1,000 turnpike trusts were also poorly governed, and they certainly shared the weak accountability to Parliament.[39]

Chapter 3 will show that this pattern of local discretion, poor governance and weak accountability changed dramatically as a result of the 1834 Poor Law Amendment Act. Poor law unions were directly accountable to the Poor Law Commission and the local electorate. Their governance was directed by the 1834 Act and by instructions from the PLC. In practice, local unions had little discretion, while the central PLC was very strong. Importantly the Poor Law Commission produced an annual report to Parliament, and this set new standards for accountability. Chapter 6 will show that this model of a strong central government and weak local bodies became the long term trend in local and central relationships. By 1876, the practice of government agencies producing annual reports to Parliament had become the norm.

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[35] Ashworth, 'Naval Administration', p. 497.
[36] See table 4.1 in chapter 4
[37] MacDonagh, *Victorian Government*, p. 124.
[38] MacDonagh, *Victorian Government,* p. 122-3.
[39] S. and B. Webb, *English Local Government, Volume 5: The King's Highway,* (London, Longmans Green, 1913), p. 119-21, 135-6.

This section has covered the environment in which the PWLB was formed and developed, and it now needs to turn to the PWLB itself. Tthe academic literature on the PWLB is limited to a single article written in 1961 by M. W. Flinn.[40] While Flinn writes mainly about the PWLB's early years, and does not cover any of the case studies in this thesis, his main conclusions are two-fold. First, he argues that the establishment of the PWLB showed that there was 'a significant change in the development of economic policy'.[41] The later part of this chapter will challenge that view. David Green, in *Pauper Capital*, argued that the Act creating the PWLB 'provided public money from the exchequer for the employment of the poor on public works'.[42] Richard Brown in *Church and the State in Modern Britain: 1700-1850* repeated this view, saying that the Act 'offered government loans for public works to alleviate unemployment'.[43] Chapter 2 will show that both these views were to confuse theoretical intention with practical outcome.

Flinn's second conclusion was that the PWLB 'deserved a more prominent place in history than it has so far been accorded'.[44] Thirty years later, John Prest took the same view, writing that the PWLB 'was a body whose history needs to be written'.[45] Since 1961, no one has accepted Flinn's challenge to raise the profile of the PWLB. So little regarded is the PWLB that its history has not even been told by those who served as its commissioners. Of the 21 original commissioners in 1817, at least six had had biographies written about their lives, have left journals, or have featured heavily in books about their families of workplaces, but none mentions the PWLB once. The PWLB does gain a few entries in the indexes of the literature on public health and schools, but these are invariably very short. Martin Daunton devotes four pages of *Trusting Leviathan* to the PWLB, but misleadingly says that 'in 1875 the Treasury succeeded in restoring a fixed rate of 5 per cent' for loans.[46] Chapters 5 and 6 will show that on the contrary, 85 per

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[40] M. W. Flinn, 'The Poor Employment Act of 1817', *Economic History Review,* Vol 14, no. 1, 1961, pp. 82-92.
[41] Flinn, 'Poor Employment Act' p. 92.
[42] David R. Green, *Pauper Capital: London and the Poor Law 1790-1870* (Farnham, Ashgate, 2010) p. 9.
[43] Richard Brown, *Church and State in Modern Britain 1700-1850* (London, Routledge, 1991) p. 192
[44] Flinn, 'Poor Employment Act', p. 92
[45] John Prest, *Liberty and Locality: Parliament, Permissive Legislation and Ratepayers' Democracies in the Nineteenth Century* (Oxford, Clarendon Press, 1990) p. 184.
[46] Martin Daunton, *Trusting Leviathan: The Politics of Taxation in Britain 1799-1914* (Cambridge, Cambridge University Press), pp. 277-280.

cent of PWLB lending was made at 3.5 per cent between 1872 and 1876.[47] (Daunton also erroneously writes that Hubbard served as PWLB chairman until 1889.[48] Hubbard actually retired in 1876.[49])The PWLB has been poorly served by historians, and this thesis aims to fill this gap.

The conclusion from this review of the context in which the PWLB was formed and developed, is that there are many gaps in the existing literature. They range from the obvious lack of academic work on the PWLB; to the need to refine many of the estimates of fixed capital formation in the case study areas; to the complete absence of any literature on how public infrastructure was financed. The thesis will also add to the debate about the role of banks in financing improvements, and charts the development of higher standards of accountability and governance. There were a great many changes between 1817 and 1876, and the history of the PWLB illustrates many of these. Above all, the PWLB made a major contribution to reducing the backlog of public infrastructure, particularly in the 1870s, when it provided half of the finance for improvements in sanitation and education.

1.3 Developing the 'PWLB mechanism'

This section assesses how the main features of a permanent PWLB were established between 1793 and 1811. Before 1793, 87 per cent of the government's annual expenditure went on military spending and servicing the national debt.[50] The rest met the cost of running government and the civil list, meaning that the government spent virtually nothing on service provision. The only infrastructure the government provided was for military purposes. Canals, docks and harbours were privately financed, while local ratepayers financed parish roads and some bridges. The government did not see that it had any role to play in economic management, either. As a result, it did not intervene to reduce the impact of downturns in the trade cycle, or financial market crises.

The credit crisis of 1793 saw the beginnings of intervention by the government to respond to the financial crisis. J. H. Clapham observed that 'between February and July the country had come through the worst financial and commercial crisis it

[47] See figure 6.5.
[48] Daunton, *Trusting Leviathan,* p. 93 footnote.
[49] National Archives, PWLB minute book 2/61, April 1876
[50] Mitchell and Deane, *British Historical Statistics*, p. 390.

had known'.[51] L. S. Pressnell states that the crisis 'was marked by a widespread flight to liquidity' as bank depositors withdrew their money because they were afraid the banks would fail.[52] The withdrawals dramatically reduced the credit available to merchants, and led over 100 country banks to fail.[53] In response, Scottish MP Sir John Sinclair brought together a group of merchants and bankers, who met Prime Minister William Pitt in April. They argued that this was a crisis of confidence, and that the government should lend sufficient money to merchants and bankers to make up for the lack of credit.[54] In effect, the group was asking the government to act as lender of last resort by lending to banks and others in order to prevent further bank collapses and merchant bankruptcies.[55] Pitt accepted their analysis, and their proposed solution, and within two weeks an Act had been passed to issue exchequer bills worth £5m.[56]

The Act created a group of commissioners to receive applications for loans, decide on the terms, security and scale of individual loans and ensure repayment of the loans. Sir John Sinclair was appointed as chairman of the commission. Although a sum of £5m was set aside, only 238 loans, worth £2.2m in total, were made during 1793, at an average of under £10,000 each.[57] All of their loans were repaid within 12 months, even though two firms had become bankrupt and these loans had to be recovered from the sureties. Writing 12 years later, historian David Macpherson reported that the solution 'worked like a charm'.[58] The operation actually made a profit, because the government borrowed at 3.8 per cent but lent to the merchants at 5 per cent. The surplus generated by this difference was more than enough to cover the office costs of £8,000. This approach had so many of the features that became central to the operation of the

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[51] J. H. Clapham, *The Bank of England: A History, Vol 1* (2 Vols, Cambridge, Cambridge University Press, 1944), p. 259.
[52] L. S. Pressnell, *County Banking and the Industrial Revolution* (Oxford, Oxford University Press,1956), p. 23.
[53] David Macpherson. *Annals of Commerce* (New York, Johnson Reprint Corp, 1972; original 1805), p. 266.
[54] Sir John Sinclair, Dictionary of National Biography entry, at http://www.oxforddnb.com.lcproxy.shu.ac.uk/view/article/25627?docPos=1 accessed 12 November 2012; Rosalind Mitchison, *Agricultural Sir John, the Life of Sir John Sinclair of Ulster 1754-1835* (London, Bles,1962), p.137.
[55] C. P. Kindleberger and R. Z. Aliber, *Manias, Panics, and Crashes: A History of Financial Crises* (Basingstoke, Palgrave Macmillan, 2011. 6th edition), p. 213.
[56] Clapham, *Bank of England, Vol I*, pp. 262-4.
[57] BPP 1810-11 (51) Report of 1793 Commission.
[58] Macpherson, *Annals of Commerce*, p. 269.

Public Works Loan Board in 1817 that this chapter can define it as the 'PWLB mechanism'.

There were three further uses of the 'PWLB mechanism' between 1795 and 1811. The first was in 1795, when £1.4m was lent to merchants and plantation owners in Grenada and St Vincents after an insurrection.[59] Then, in 1799, a series of loans worth £260,000 were made to Liverpool and Lancaster merchants who had unsalable quantities of coffee and sugar.[60] Both these episodes used all the elements of the 1793 'PWLB mechanism'. The 1795 commission also shared seven of the 1793 commissioners, including Sir John Sinclair and Charles Grant. The 1799 commission, though, was run from Liverpool, with local commissioners. The final use of the 'PWLB mechanism' occurred in 1811. Many merchants had been building up inventories of goods to take advantage of an expected major growth of trade with South America.[61] The growth did not come, and merchants could not sell their goods. The merchants found themselves unable to repay their loans to bankers, and together they persuaded the government to step in with short term loans of up to £6m, using the 'PWLB mechanism'. However, this time there were deeper underlying economic problems that went far beyond this group of merchants.[62] Even so, the government went ahead with the loans. The 'PWLB mechanism' worked well: all the loans were quickly recovered, and a profit made, even after meeting office costs. But the underlying economic problems were left unaddressed, and Clapham argued that the 1811 operation was 'ill judged'.[63]

At the same time that the 'PWLB mechanism' had been developed, the government was coming under pressure to support occasional infrastructure projects. Two examples show the consequences of Parliament responding to these pressures in the pre-PWLB era. In 1799, the promoters of the Isle of Dogs canal in the West India dock complex in London asked the government for a loan to complete the canal, and eventually borrowed £327,000.[64] The completed canal was a commercial failure, and the government disposed of it for just £120,000 in

[59] BPP 1801-02 (43) Report of Grenada and St Vincents Commission.
[60] Liverpool Record Office, file 380/WES/1/1 Liverpool and Lancaster Merchants.
[61] J. H. Clapham, *Bank of England: Vol II*, p. 33.
[62] Clapham, *Bank of England, Vol II*, p. 34.
[63] Clapham, *Bank of England, Vol II*, p. 33.
[64] W. M. Stern, 'The Isle of Dogs Canal: A Study in Early Public Investment', *Economic History Review*, Vol 4, 1952, pp. 359-71.

1829. In a second example, in 1802 the government was persuaded to support the building of the Caledonian canal with loans that eventually rose to £1.3m.[65] Bruce Lenman argues that it 'was virtually a complete waste of public money'.[66] Neither scheme displayed the essential characteristics of the 'PWLB mechanism': there was no independent decision making, security against loss was poor, and these were large, long term loans. Both were commercial failures, with the government failing to recover its investment and incurring large losses.

The 1790s examples of the 'PWLB mechanism' showed that the government was able to act successfully as a lender of last resort. However, the 'PWLB mechanism' would not solve deeper economic problems. Even so, the government had shown that it accepted some responsibility for mitigating the impact of bad economic conditions.[67] The Caledonian canal and the Isle of Dogs canal loans indicated that leaving lending decisions to Parliament involved a much higher degree of risk than having decisions made by independent commissioners. More positively, these two loans demonstrated that the government accepted a role in encouraging transport and trade related infrastructure investment. The two threads came together in 1817.

1.4 The aims of the 1817 Act

In 1815, the costs of over 20 years of war had resulted in government spending rising to £113m a year, while its income was only £78m a year.[68] To make matters worse, Lord Liverpool's government had little choice but to end income tax in 1816, sacrificing £14m of income. In the aftermath of the Napoleonic Wars, the desire to bring the budget back to the broad balance of pre-war years was powerful.[69] This desire forced the government to demobilise 300,000 men from the military in order to reduce spending. The mass demobilisation and the ending

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[65] James Taylor, 'Transport, Laissez Faire, and Government Policy in Britain in the First Half of the Nineteenth Century' (MA thesis, University of Kent, 1999) p. 21.
[66] Bruce Lenman, *An Economic History of Modern Scotland 1660-1976* (London, Batsford, 1977), p. 149.
[67] Flinn, 'The Poor Employment Act 1817', p. 82.
[68] Mitchell and Deane, *British Historical Statistics*, pp. 392-3, 396.
[69] A. W. Ackworth, *Financial Reconstruction in England 1815-22* (London, P. S. King, 1925), pp. 23, 27.

of military supply contracts led to a 40 per cent increase in poor relief spending as unemployment rose.[70]

The government came under pressure to act to reduce distress and increase the level of economic activity. The first pressure for more spending came in 1816, from Charles Western MP, the leading spokesman for agricultural interests in the House of Commons. Western wanted the government to pay bounties to encourage agricultural exports, expecting that these would raise both demand for and prices of agricultural products.[71] At the same time, the Chancellor of the Exchequer, Nicholas Vansittart, was considering an 'Exchequer Loan Plan' to lend money to landowners against mortgages on their estates.[72] The second source of pressure came in early 1817, in the form of a petition to the House of Commons signed by 11,000 Birmingham labourers. They were pleading for help to replace the jobs lost when £3m of military ordinance contracts ended in 1815.[73] Henry Beeke, who was Vansittart's 'economic mentor', wrote four letters to the Chancellor between December 1816 and March 1817. The first spoke warmly of the Exchequer Loan Plan as 'making the obtaining of capital easy for the purpose of commercial and agricultural speculation'.[74] The second letter cooled towards the idea, claiming that 'assistance is certainly not wanted by that part of the trade to which it can be safely given'. Beeke concluded by writing, 'the more I think of the question the more I incline to doubt its extensive success'. In the third and fourth letters, Beeke withdrew support for any loan plan, writing, 'I am more than ever convinced that the worst is past'. However, Vansittart did not entirely drop the Exchequer Loan Plan.

Instead of providing current subsidies to agriculture or loans to landowners, Vansittart's thoughts turned to providing loans to support capital investment in public works. This new focus reflected the result of pressure from two sets of

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[70] Sir George Nicholls, *A History of the English Poor Law* (London, P. S. King, 1904), p. 438, appendix II.
[71] J. E. Cookson, *Lord Liverpool's Administration 1815-1822* (Edinburgh, Scottish Academic Press, 1975), p. 96.
[72] Boyd Hilton, *Corn, Cash, Commerce: The Economic Policies of the Tory Governments 1815-30* (Oxford, Oxford University Press, 1977), p. 83 note.
[73] William Smart, *Economic Annals of the Nineteenth Century 1801-20* (London, Macmillan, 1910), p. 541.
[74] British Library, Additional Manuscripts MSS31232, Vansittart Papers, Beeke to Vansittart, 30 December 1816, 19 January 1817, 28 February 1817 and 13 March 1817. Boyd Hilton, *Corn, Cash, Commerce,* p.157 note 118 for the description of Beeke.

canal promoters: of the partially completed Regent's canal and the proposed Ardrossan canal in Scotland.[75] Both promoters said that they were unable to raise more finance from individuals, and asked for government loans for their projects. John Christian Curwen MP, a Cumberland landowner and future PWLB commissioner, urged a different kind of response. He suggested that the government should borrow £5-6m, and take shares in 'every canal or similar work, and advance money .... for the building of bridges, making of new roads etc'. Curwen argued that this would generate 'little short of 100,000 jobs' in six months.[76] Vansittart therefore refocused his Exchequer Loan Plan away from agriculture and onto public works, and this became his first draft of the Bill to create the PWLB. Vansittart introduced it in the House of Commons on 28 April 1817. It would provide up to £500,000 of loans for the 'completion of public works now in progress, or about to be commenced; to encourage fisheries; to employ the poor in different parishes'. At the same time, the Bill would provide £250,000 to Ireland for similar purposes.[77]

The response in the first House of Commons debate on 28 April 1817 was mixed, with 18 members speaking; of these, six supported the Bill and three opposed it.[78] Four members – Henry Brougham, William Littleton, Lord Milton and William Lamb – considered that they did not see the problem facing the country as a 'want of capital'. Rather, they saw the problem as a 'want of a market for goods'. Lord Cochrane thought the Bill was misconceived, saying that a 'radical remedy should be applied (and that) great general retrenchments and reductions' were needed. George Philips took a similar view, saying that 'there should be reductions to public establishments and rigid economy in every branch of public expenditure'. Support for Vansittart's Bill seemed lukewarm; nearly half the speakers were either opposed, or intent on arguing that the Bill was not the solution to the economic problems of the day.

The Bill returned to the Commons on 14 May, when the sum available had increased to £1.5m to reflect the earlier debate, plus an unchanged £250,000 for

[75] Flinn, 'Poor Employment Act', p. 87 quotes both.
[76] Curwen, in Blackwood's Magazine, June 1816, quoted in Smart, *Economic Annals*, p. 545.
[77] House of Commons debates, 28 April 1817, Vol 36, cc27-48.
[78] HC debates, 28 April 1817, Vol 36, cc27-48. This is the source for the whole paragraph.

Ireland.[79] Support for mines had been added to the Bill, although there had been no mention of mines in the earlier debates. One possible explanation is given in a letter to the PWLB in August 1817.[80] Challenging the PWLB's rejection of his application for a loan for a coalmine, an unidentified John Scott claimed that he had: 'been personally the means for introducing the clause for the relief of collieries in the Bill ... through an amendment moved by Mr Wilberforce'. There is no Hansard record of such an amendment. However, John Scott was the name of the long standing Lord Chancellor, and his family were still coal merchants in the North East.[81] He, or more likely a member of his family, may well have sought a PWLB loan. The relative may also have encouraged the Lord Chancellor to persuade his cabinet colleague Vansittart to add support for mines to the draft Bill. But the evidence is no more than circumstantial. What is more relevant is that there was no debate in the Commons about the inclusion of mining, and, of the eleven members who spoke in the 14 and 21 May debates, supporters of the Bill were in a clear minority.[82]

The three House of Commons debates failed to give a rationale for the Bill to create the PWLB. Lord Liverpool was much clearer when he introduced the third reading of the amended Bill in the House of Lords on 10 June 1817. Liverpool said that the 'two objects of the Bill were to advance money for ... public works, and also to parishes to ... relieve the pressure of the poor rates'.[83] Liverpool followed Vansittart's line, and did not mention support for mines or fisheries in his speech. Liverpool dismissed any help for agriculture, saying that land values were rising; he also dismissed support for manufacturing because 'manufacturing had been guilty of over trading and speculation on rising export volumes'. Liverpool began his speech by reporting that he was 'generally against measures of this sort', and thought that public works should be financed by 'commercial speculation with a view to profit'. However, Liverpool accepted that special circumstances prevailed, as they had in 1793 and 1811. Liverpool concluded that 'time was the only

[79] HC debates, 14 May 1817, Vol 36 cc569-74.
[80] National Archives, PWLB 2/1, PWLB minute book 1, 4 September 1817, p.106.
[81] E. A. Smith, 'Scott, John, First Earl of Eldon (1751-1838)', *Oxford Dictionary of National Biography*, Oxford University Press, 2004; online edn, Jan 2008 at http://www.oxforddnb.com/view/article/24897, accessed 30 July 2014.
[82] HC debates, 14 May 1817, Vol 36 cc569-74, and 21 May 1817 cc818-99.
[83] HL debates, 10 June 1817, Vol 36 cc928-932.

effectual remedy' to current problems, and the measure was a 'temporary relief' only. After just one other speech, the Bill was passed.

Liverpool had doubts about whether the Act would produce any real benefit. He 'did not anticipate that there would be many calls for money' from parishes. This turned out to be right: only three loans were made to parishes, and they totalled less than £3,000.[84] In part this was because, in order to qualify for a loan, a parish had to have experienced a 50 per cent increase in its poor rate in the previous three years.[85] If good public works schemes were able to attract credit, then the PWLB would be left with applications from those who could not get private credit because they had inadequate security. The risk was that the PWLB would make the same judgement, and would also refuse them credit. This same reservation applied to loans to mines and fisheries. Liverpool's hope that loans for public works would 'give employment to a number of persons', was reasonable, but the potential scale of employment creation was modest. If the £1.5m were spent in one year, it would raise national output by 0.5 per cent and provide maybe 15,000 jobs.[86] At best, this might find jobs for 5 per cent of the 300,000 demobilised from the military. Even at this stage, the Act looked to be of limited economic benefit.

It is much more convincing to see the 1817 Act as a mainly political response to pressure from influential lobbyists in a crisis. This was the conclusion of Sir William Burroughs MP when he observed that the government 'would never have adopted this measure had they not been driven to it'.[87] The government had been under pressure from landowners, manufacturers and labourers, and from MPs who wanted the distress in their constituencies to be relieved. All of these groups expected the government to 'do something', even if the exact nature of the 'something' was unclear. Vansittart was not an innovative chancellor; he 'failed to associate his name with one single measure of importance'.[88] The best Vansittart could manage was to argue that the problem was a shortage of credit, and to promote a Bill based on the tried and tested 'PWLB mechanism' for lending

[84] BPP 1851 (512) PWLB report to Parliament.
[85] J. Marshall, *Digest of All the Accounts* (London, J. Maddon, 1834), p. 36. The largest county level rises were around 50 per cent. Figures for individual towns and cities may have exceeded this figure.
[86] Calculation assumes that 50 per cent of the £1.5m was spent on pay, at an average wage of £50 a year.
[87] House of Commons debates, 21 May 1817, Vol 36 cc818-819.
[88] Ackworth, *Financial Reconstruction*, p. 130.

money. To this he added a very limited proposal for support to parishes to provide work for the labouring poor. Neither he nor Liverpool had any great hopes for major economic benefits. However, they had responded to the representations made to them, and they had 'done something', and relieved the immediate pressure on the government.

If Vansittart lacked originality in drafting the 1817 Act, he was on firmer ground when choosing PWLB commissioners. Vansittart recognised that commissioners needed to represent two different interests. First, commissioners needed sufficient financial knowledge to be able to make lending decisions. Second, they needed to retain the confidence of Parliament if the PWLB was to act as an independent body. Table 1.1 demonstrates that just under 30 per cent of the 1817 appointees had experience in the city of London and were MPs.[89] A further 60 per cent had either city experience or were MPs; and just 10 per cent were neither. No more than four of the 21 commissioners appear to have been from large scale landowning families. The appointments therefore marked a clear shift: from a predominance of landowning MPs as decision makers to a predominance of city gentlemen. John Singleton reports that the Bank of England was 'culturally ... one of the pillars of gentlemanly capitalism'.[90] The same might apply equally to the PWLB, and over the years, many commissioners had indeed been Bank directors or governors.

Table 1.1	Background of PWLB commissioners					
	Total number	City and MP	City only	MP only	Non city non MP	Evangelical
Pre 1817 bodies	46	19	15	9	3	15
1817 PWLB	21	6	4	9	2	7
1821-66 appointments	47	12	15	10	10	7
All appointments No.	114	37	34	28	15	29
%age		32%	30%	25%	13%	25%

Source: See appendix 1.B.

At first glance it is a surprise to see that a third of the appointments in 1817 were either evangelical Christians or members of evangelical families. Indeed, the 1817

[89] The sources of biographical detail for each commissioner are shown in appendix 1.B.
[90] John Singleton, *Central Banking in the Twentieth Century* (Cambridge, Cambridge University Press, 2011) p. 39. P. J. Cain and A. G. Hopkins, 'Gentlemanly Capitalism and British Expansion Overseas I. The Old Colonial System, 1688-1850', *Economic History Review*, ns Vol 39, no.4, 1986, pp. 501-525.

chairman, Charles Grant, and the next but one chairman, Benjamin Harrison, were both members of the evangelical Clapham Sect. The sect was formed around William Wilberforce, and sought to 'change society, and the world, for the better'.[91] The reason for this pattern is that Vansittart himself was an evangelical. Nearly half of the 1811 commission were also evangelicals and had been appointed by Spencer Perceval, who was also a noted evangelical.[92] In fact, four, or 29 per cent, of Liverpool's 1822 cabinet of 14 either were evangelicals or were strongly religious by nature.[93] In this environment, the presence of so many evangelicals as PWLB commissioners is not so surprising.

Vansittart was wise to opt for continuity, with nine of the 21 1817 appointments having been commissioners of one of the PWLB's predecessor bodies. Charles Grant was an almost automatic choice to become PWLB chairman in 1817. Grant had been deputy chairman of the 1811 commissions, and was the only surviving member of the 1793 and 1795 commissions. He had all of the relevant qualities: he was an MP, and had been a minister; he had been a three time chairman of the East India Company; and, as member of the Clapham Sect, he shared the religious outlook of Vansittart. In addition, Grant's son was at this time a Treasury commissioner, so he also had a family link to Vansittart.[94] In effect, then, the government had appointed a group of experienced city men to bring financial experience and a group of MPs to reassure Parliament, and had appointed from a group of people they knew, and whose professional and personal views they shared.

Conclusions

The government faced a number of problems in 1817. Cutting government spending by more than 35 per cent eliminated the 1815 budget deficit. But this action caused poor relief spending to rise by 40 per cent between 1815 and

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[91] Stephen Tomkins, *The Clapham Sect: How Wilberforce's Circle Transformed Britain* (Oxford, Lion Hudson, 2010), p. 2 and back cover.
[92] D. Gray, *Spencer Perceval: The Evangelical Prime Minister 1762-1812* (Manchester, Manchester University Press, 1963).
[93] Norman Gash, *Lord Liverpool: The Life and Political Career of Robert Banks Jenkinson, Second Earl of Liverpool 1770-1828* (London, Weidenfeld & Nicholson, 1984), pp. 134, 195.
[94] Roger Knight, *Britain Against Napoleon: The Organization of Victory 1793-1815* (London, Allen Lane, 2013), p. 477.

1818.[95] Second, even if Vansittart had accepted the judgement of MPs that the problem was a shortage of demand, not a shortage of credit, he had no available solutions. Vansittart recognised the need to be seen to do something, so he adapted the proven 'PWLB mechanism' – offering longer term loans, and targeting the loans at mine owners and providers of 'public works'. He also added the provision for loans to parishes to help the unemployed labouring poor. However, the government lacked conviction in the 1817 Act; it believed that the best solution was to wait for the trade cycle to turn. Even if its analysis of the problem had been correct, and PWLB loans had been the ideal solution, then the PWLB's £1.5m injection of credit was unlikely to give the economy much of a boost.

For all these shortcomings, the passing of the 1817 Act demonstrated three major gains. First, the Act succeeded in creating a breathing space for the government. By the time the £1.5m financing was running out in the early 1820s, the economy was improving.[96] Second, the Act showed that the government recognised the difference between current and capital expenditure. The government wanted to reduce current spending, and so avoided the temptation to offer subsidies to, say, agriculture. Instead, it focused the extra £1.5m on the longer term benefits from capital spending. Third, the Act turned the 'PWLB mechanism' into a means of financing public infrastructure. The PWLB has fulfilled this role for the last 200 years. The next five chapters examine five case studies of PWLB lending over the first 60 years of the PWLB's life.

[95] Mitchell and Deane, *British Historical Statistics*, p. 392, 396, and Nicholls, *History of the Poor Law Vol II*, p. 438.
[96] Annual poor relief costs fell consistently between the 1818 peak and 1824 trough.

Chapter 2, A PWLB philosophy of lending: mining loans, 1817-26

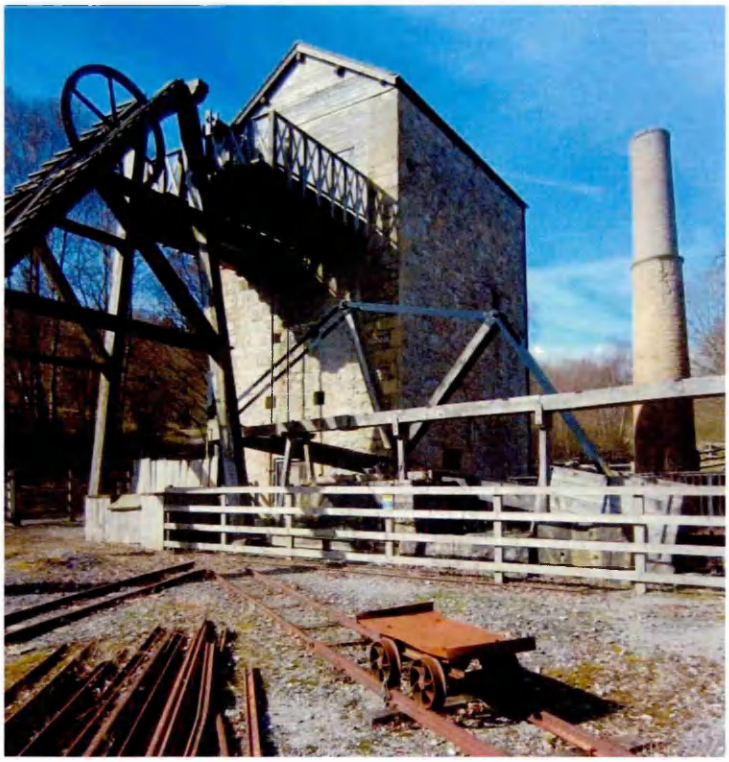

Figure 2.1 Minera lead mine, near Wrexham. The PWLB lent the mine owners £7,000 to buy an engine and build the engine house (left), to pump water out of the mine and allow it to resume work. The partners were unable to repay the loan, so the PWLB and the landowner jointly seized and then sold the assets. The mine continued profitably under new owners until 1914.

Figure 2.2 Bersham ironworks, 2 miles south of Minera mine is all that is left of the huge iron and coal business of John Wilkinson. His legacy was ruined by his executor John Adams, who borrowed £40,000 from the PWLB. The PWLB was left with a loss on the loan. This building dates from the 1750s, when it was a foundry specialising in casting cannon for the military.

Dealing with loan applications from mine owners provided more challenges to the PWLB commissioners than any other group of applications. In resolving these challenges, the PWLB developed its own philosophy of lending, and this governed all of their lending decisions until 1835. In particular, the chapter illustrates the clear limits to the Board's willingness to lend to private firms, its restricted view of its legal powers, and its view that the PWLB should not lend on anything other than a strictly commercial basis. The case study shows that the PWLB came to act like a cautious bank manager wanting to avoid incurring bad debts. It also makes clear that the PWLB did not see itself as having a primary responsibility for creating employment or the expansion of economic activity.

A study of loans to mine owners also makes clear why two of the 1817 Act objectives of supporting mines and fisheries, and supporting 'employment of the poor in parishes' quickly fell by the wayside.[1] By 1826, PWLB lending was effectively entirely directed towards financing public works. Loans to mine owners were therefore atypical of PWLB's long term activity. Together, chapters 2 and 3 chart PWLB's first ten years, and show how the Board arrived in 1826 with just a single objective: lending to support public works, and a clear philosophy of lending.

There are five sections to the chapter. The first examines the level of capital formation in the mining sector, and then shows what proportion of this was financed by PWLB loans. The second section indicates how the PWLB began to develop its working methods, and determines what dictated the number, timing, and purpose of mining applications to the PWLB. The third section describes how the PWLB made decisions about which applications to grant, and shows how its approach to lending developed. The fourth section explores the challenges the PWLB faced in recovering its loans. The final section assesses the influences that led the PWLB to cease lending to mine owners after 1826, and become a different kind of lender.

[1] Public Works Loan Act 1817 (the Act creating the PWLB), 57 George III c34 s1

2.1 Financing capital formation in mines

There are two main elements to determining the importance of the PWLB's lending to mine owners. The first is to make an estimate of fixed capital formation in the mining sector between 1817 and 1826. This includes coal, iron, lead, tin and copper mines, and the quarrying industries. The second is to determine how the capital spending was financed, showing the scale and impact of the PWLB's lending to mine owners.

C. H. Feinstein and Sidney Pollard estimate that capital formation in all sectors of the economy was around £25m a year in 1811-20, and nearly £28m a year in 1821-30.[2] For the latter period, just 1 per cent of this total was invested in mining. (30 per cent of the total was in providing dwellings; 26 per cent in distribution and transport; 20 per cent in manufacturing; 16 per cent in agriculture; and 7 per cent in public and social services, including utilities). In the first half of the book, Pollard provides a chapter on capital formation in the coal industry.[3] Published in 1988, Pollard's estimate of capital formation of £1.3m a year between 1821 and 1830 is at least five times larger than the separate estimates of Feinstein, B. R. Mitchell and M. W. Flinn made between 1978 and 1984.[4] All four estimates are shown in table 2.1, together with their much more similar estimates of coal output. Pollard's estimate of £1.3m is so much larger because he estimated capital investment of £65,000 for every million tons of coal produced. In contrast, the earlier estimates were that capital investment was only £6,900-10,400 for every million tons of coal produced. However, Pollard's estimate is based on more research into the higher costs of opening new, large pits, and on the costs of major pit extensions. Pollard also discounts development costs of smaller pits by a third, to avoid counting repairs and maintenance costs as capital. The greater sophistication of Pollard's estimate of fixed capital formation between 1821 and 1830 makes it more

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[2] C. H. Feinstein and Sidney Pollard, *Studies in Capital Formation in the United Kingdom 1750-1920* (Oxford, Clarendon Press, 1988), Appendix, table II, p. 429.

[3] Sidney Pollard, 'Coal Mining 1750-1850', in Feinstein and Pollard, *Capital Formation*, table 2.14, p. 63.

[4] Pollard, 'Coal Mining', table 2.13, p 62, and table 2.2 p 39; B. R. Mitchell, *Economic Development of the British Coal Industry 1800-1914* (Cambridge, Cambridge University Press, 1984), table 3.2, p. 48; M. W. Flinn, *The History of the British Coal Industry, Volume 2 1700-1830: The Industrial Revolution* (Oxford, Clarendon Press, 1984) p. 36; C. H. Feinstein, 'Capital Formation in Great Britain', in P. Mathias and M. M. Postan, *Cambridge Economic History of Europe, Part 2, Vol 7*, (Cambridge, Cambridge University Press, 1978) table 7, p. 41.

convincing than the earlier, lower estimates. Combining this with his estimate of £980,000 for the period 1811 to 1820, Pollard's estimate of the capital formation in the coal industry becomes an average of £1.2m a year for the period 1817 to 1826.

Table 2.1 Estimates of capital formation and output for coal

	Feinstein	Mitchell	Flinn	Pollard
Year published	1978	1984	1984	1988
Coal output				
		1816	1815	1816-25
million tons p.a.		17.4	22.3	19.9
Capital formation				
	1820s	1817-25	1821-5	1821-30
£/million tons p.a.		6,900	10,400	65,300
£000	**256**	**120**	**232**	**1,300**

Sources: Feinstein, *Cambridge Economic History*, p. 41,
Mitchell, *Economic Development of Coal*, p. 48,
Flinn, *History of the British Coal Industry* p. 36,
Pollard, *Coal Mining*, p. 62 and table 2.2, p. 39.

Thirty five per cent of the PWLB's mining loans went to coal mine owners who were also ironmasters, mining coal to feed their iron works, as well as for sale. An estimate of capital formation in the iron industry therefore needs to be added to Pollard's estimate of coal capital formation. In Feinstein and Pollard's volume, R. S. W. Davies and Pollard provide a chapter on capital formation in the iron industry.[5] As with the coal industry, their estimate is based on a calculation of capital investment for each ton of output, less repair and maintenance costs. They estimate that fixed capital formation was £250,000 a year for the ten years to 1820, and £580,000 a year for the ten years to 1830. Combining these figures creates an estimate of £448,000 a year for fixed capital formation in the period 1817-26.

A further 5 per cent of the PWLB's mining loans went to the operators of lead, tin and copper mines. In 1962, B. R. Mitchell and Phyllis Deane published a run of output volumes and values for tin and copper mines.[6] Combining data from

[5] R. S. W. Davies and Sidney Pollard, 'The Iron Industry 1750-1850', in Feinstein and Pollard, *Capital Formation*, pp. 73-104. Their chapter concentrates on iron production rather than iron ore mining.
[6] B. R. Mitchell & Phyllis Deane, *Abstract of British Historical Statistics* (Cambridge, Cambridge University Press, 1971). Copper output figures p. 158; tin production figures p. 154.

Pollard with that from Mitchell and Deane, it is possible to discern that the capital costs of coal production were roughly an eighth of the output value of coal in 1850.[7] Using this one eighth relationship as a proxy, it can be estimated that the annual average capital investment in the tin and copper industries was around £100,000 a year for 1817-26. Mitchell and Deane also provide a run of lead mining output volume and value figures, starting in 1845.[8] Deflating these output numbers back to 1817-26, and using the one eighth relationship again, this would indicate a capital investment level of £75,000 a year for lead mining. Together, fixed capital formation for lead, tin, and copper mining in 1817-26 is therefore estimated to have been £175,000 a year. There is no readily available estimate of fixed capital formation in the quarrying industry. For the current purposes it is assumed to have been minimal.[9]

Table 2.2 Annual mining sector capital formation 1817-26

	Best estimate	High estimate	Low estimate
	£000	£000	£000
Coal	938	1,172	938
Iron	448	448	358
Lead, tin and copper	210	210	175
Total fixed capital formation	**1,596**	**1,830**	**1,471**

Source. Estimates based on: Coal: Pollard; Iron: Davies and Pollard; Lead, tin and copper: Mitchell and Deane.

There are three significant reservations about these estimates. As Feinstein acknowledges, his own estimates are subject to a degree of error of plus or minus 20 per cent for the 1810-30 period.[10] The second is that Pollard's coal estimate is so much larger than earlier estimates. The third is that the lead, tin and copper estimates are much less well founded than the coal and iron estimates. Given these reservations, it makes sense to consider a series of high and low estimates for capital formation in each of the mining sub sectors. On the assumption that Pollard's coal estimate is potentially too high, and the lead, tin and copper estimates too low, these can be considered to vary by Feinstein's maximum error

[7] Pollard, 'Coal Mining', in Feinstein and Pollard, *Capital Formation*, p. 63; Mitchell and Dean, *British Historical Statistics*, p. 115.
[8] Mitchell and Deane, *British Historical Statistics*, p. 160.
[9] Feinstein and Pollard, *Capital Formation in the UK*, p. 282 simply inflates the capital investment total for the coal industry by 30 per cent to cover lead, tin, copper, and quarrying.
[10] Feinstein and & Pollard, *Capital Formation in the UK*, p. 265.

of 20 per cent. Table 2.2 shows that this gives a range of £1.5-1.8m a year for capital formation in the mining industry, with a best estimate of £1.6m a year.

It is now necessary to determine how this £1.6m of mining investment was financed. There is agreement that the largest share of capital investment in coal mining in the early nineteenth century was financed from retained profits, with smaller shares provided from commercial and personal borrowing and from ironmasters.[11] However, there is no research that quantifies the scale of each source of finance. Yet there are well documented examples of large landowners borrowing to finance coal mining activities. There are also examples of loans/equity investments by owners and/or partners. Although these examples are patchy, they can be used to form a broad picture of the scale of financing available from these sources. After adding the PWLB loan financing and contributions from ironmasters, it is then assumed that the remainder of mining fixed capital formation was financed from retained coal mining profits. This picture of the sources of mining capital finance allows the PWLB's lending to be put into context.

There are six examples of large scale borrowing to finance mining investments between 1817 and 1826. Flinn reports that John Lambton borrowed £54,000 in 1826 from his London bankers to finance a major expansion of his coalfields.[12] In addition, John Christian Curwen is said to have borrowed £120,000 to invest in his Cumberland mines after 1819.[13] The next example is when Lord Londonderry borrowed £118,000 in the early 1820s, to extend his coalfields. Of this, £67,000 was lent by his bankers, with £51,000 coming from individuals.[14] There is only one other documented large scale example of a bank lending money to mine owners. This was a series of loans from Reed's Bank of Newcastle between 1817 and 1819, to a small number of north eastern collieries.[15] These mines then got into

[11] Flinn, *History of the British Coal Industry*, pp. 206, 210, 211; Mitchell, *Economic Development of the British Coal Industry*, p. 61.
[12] Flinn, *History*, p. 207.
[13] J. V. Beckett, 'Curwen, John Christian (1756–1828)' *Oxford Dictionary of National Biography*, Oxford University Press, 2004. Online edition (revised) at http://www.oxforddnb.com/view/article/37334, accessed 27 May 2012.
[14] Durham Record Office files, D/Lo/E/79, 95, 104, 97. Londonderry estate papers.
[15] National Archives, PWLB 6/1, PWLB applications ledger, and Maberly Phillips, *History of Banks, Bankers and Banking in Northumberland, Durham and North Yorkshire* (London, Wilson, 1894) pp. 163-173.

trouble, and in 1819 the bank asked the PWLB for a loan of £80,000. The story of these Reed's Bank loans is continued later in this chapter. Finally, between 1824 and 1826, the Hetton Coal Company raised £145,000 from a small number of partners. This new form of capital raising came after Hetton had made two unsuccessful applications to the PWLB, for a total of £117,000. An examination of 60 sets of mining accounts in five record offices found no other examples of significant levels of capital injection between 1817 and 1826.[16] Banks and other commercial lenders therefore financed investments of £320,000, and partners/individuals lent nearly £200,000 from profits of other ventures in this ten year period.

Table 2.3 Financing of mining capital formation 1817-26

	Annual averages	Ten year totals	share
	£000	£m	
Fixed capital formation	1,596	16.0	100%
Sources of finance			
Borrowing from banks/insurance co's	32	0.3	2%
partners/individuals	20	0.2	1%
Ironmasters financing	303	3.0	19%
PWLB lending	27	0.3	2%
Retained mining profits	1,214	12.2	76%
Total sources of capital finance	**1,596**	**16.0**	**100%**

Sources: Fixed capital formation annual averages, see table 2.2
Sources of finance: See text and footnotes 14 to 17.
Note: Retained mining profits is a balancing figure.

A third source of capital was from ironmasters. Mitchell shows that 18-20 per cent of coal production went into iron works.[17] Table 2.3 uses the mid-point of 19 per cent to estimate that £303,000 of total capital formation of £1.6m came from ironmasters, and most likely from retained profits in the iron industry. Beside these sums, the loans provided by the PWLB of £272,000 over ten years, or just £27,000 a year on average, financed no more than 2 per cent of mining capital formation.[18] Even if Pollard's coal estimate is too high by a factor of two, the PWLB's share of capital formation would not rise above 2.5 per cent.[19] The

[16] Durham, Newcastle, Staffordshire, Leeds and Matlock record offices. Even assessed over a longer period, 1790-1840, there are very few example of external funding, totalling no more than £50,000.
[17] Mitchell, *Economic Development of the British Coal Industry*, p. 16.
[18] National Archives, PWLB 6/1, PWLB applications ledger.
[19] 1596-(938/2)=1126. 27/1126=2.4%.

evidence can therefore be summarised as showing that three quarters of mining capital formation was financed from retained profits; 2 per cent from commercial lending; 20 per cent from profits from related businesses (partners, individuals and ironmasters); and just 2 per cent from the PWLB. The contribution of the PWLB loans was therefore on a minimal scale, and had negligible impact on the output of the mining sector between 1817 and 1826.

The impact of the PWLB loans on employment in the mining sector was similarly modest. There is evidence to suggest that around 121,000 were employed in mining in the 1820s, with average wages of £60 a year, and that about half of mining costs were pay related.[20] Based on these assumptions, the PWLB's loans of £272,000 would have created fewer than 2,300 jobs, less than 2 per cent of the industry's total. Measured against the 300,000 demobbed servicemen in the 1815-7 period, 2,300 jobs in mining was an insignificant number. The next section examines why there was so little demand for the PWLB loans. Section 2.3 then explores why so few applications to the PWLB were successful.

2.2 PWLB working methods and mining applications

The PWLB commissioners established a pattern of work within their first few weeks. Although there were 21 commissioners, only a third of them attended the almost weekly board meetings during the first six months. Charles Grant, Charles Bosanquet, Sir James Shaw, Thomas Reid, Henry Swann, John Thornton, and Benjamin Harrison attended more than half of these 22 meetings, and can be described as the 'first team'. A group of four commissioners, (who can be called the 'substitutes') attended more than a quarter but less than half, of the meetings: John Julius Angerstein, Joseph Berens, Robert Casberd and John Smith. Four other commissioners attended less than a quarter of the meetings. Therefore, six commissioners attended no board meetings at all. This approach, involving a small board of leading commissioners, must be assumed to have been deliberate, and was a constant in the PWLB's first 60 years. The Board would look at all

[20] Mitchell and Deane, p. 60, give 225,000 mining and quarrying jobs in 1841. Factoring this down for lower output in the 1820s, this gives 121,000. Flinn, *History*, table 11.1, p. 388 gives average pay of £60 a year. Roy Church, *History of the British Coal Industry, Vol 3 1830-1913, Victorian Pre-eminence*, (Oxford, Oxford University Press, 1986) p. 175 gives details on the breakdown of mining costs.

applications, and would make all decisions on loans. Effectively, then, decisions were made by no more than seven commissioners sitting together.

Four of the 'first team' commissioners had substantial financial experience. Grant, Reid and Bosanquet all had City of London backgrounds.[21] The first two had served multiple terms as chairmen of the East India Company, while Reid and Bosanquet had also been West Indies merchants. Harrison's financial experience was rather different; he had taken over from his father as treasurer of Guy's Hospital, and continued in that role for 40 years. These four provided the Board with their chairmen and deputy chairmen between 1817 and 1855. Of the 'first team' and the 'substitutes', only Casberd appears to have had no financial experience – he was an MP and a lawyer.[22] Critically, three of the four commissioners with acknowledged experience of coal mining were in the group of six commissioners who did not attend a single PWLB board meeting in the initial six month period; and the fourth only attended one of the 22 meetings.[23] The almost exclusively financial or trading background of the most important PWLB commissioners does a lot to explain the philosophy the Board adopted.

A small group of commissioners met the day after the 1817 Act received royal assent. They immediately placed notices in national and local newspapers inviting applications for loans. The first 100 applications were received within six weeks, suggesting that there was a surge of applications for this new source of finance. During the PWLB's first ten years, 777 applications, worth nearly £9m, were received by the commissioners. Table 2.4 shows the breakdown of the 777 applications, demonstrating that, overall, 40 per cent of these applications were granted. In contrast, only 23 per cent of the 79 mining applications were granted by the Board.

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[21] Andrew J. O'Shaughnessy, 'Bosanquet, Charles (1769-1850)'. *Oxford Dictionary of National Biography*, Oxford University Press, 2004. Online edition at http://www.oxforddnb.com/view/article/2927 accessed 15 May 2012. C. H. and D. Philips, 'Alphabetical List of Directors of the East India Company from 1758 to 1858', *Journal of the Royal Asiatic Society*, October 1941. Amalie M. Kass, 'Harrison, Benjamin (1771-1856)'. *Oxford Dictionary of National Biography*, Oxford University Press, 2004. Online edition http://www.oxforddnb.com/view/article/12431 accessed 15 May 2012.

[22] www.historyofparliamentonline.org/volume/1790-1820/member accessed 15 May 2012.

[23] Thomas Estcourt MP, Thomas Gooch MP, Edward Littleton MP, and John Curwen MP all had substantial incomes from coal mining on their land holdings. Source, entries for each at www.historyofparliamentonline.org/volume/1790-1820/member accessed 15 May 2012.

Table 2.4	PWLB applications 1817-26				
	Applications			Granted	Success
	Numbers	£m	Size £000	£m	rate
Mining	79	1.2	13.2	0.27	23%
Other businesses	94	0.7	7.2	0.03	26%
Roads	263	1.0	3.9	0.43	43%
Canals/rail	61	2.4	39.3	0.80	39%
Drainage/land/water	33	0.4	12.1	0.31	27%
Harbours/bridges	77	1.4	18.2	0.45	42%
All others	170	1.6	9.4	0.89	52%
Totals	**777**	**8.7**	**11.2**	**3.2**	**40%**

Source: Analysis of PWLB loan application ledger PWLB 6/1

Note: Success rate reflects the number of successful applications, not the value of successful applications.
See appendix 1A for more detail.

Table 2.5	All mining applications 1817-26				
	Applications		Applications granted		
	Number	Value £000	£000	Number	%age
Coal	42	750	131	10	23%
Coal & iron	17	236	98	4	24%
Lead, tin & copper	15	152	13	3	20%
Quarries	4	40	30	1	25%
All mining apps	**79**	**1,178**	**272**	**18**	**23%**

Source: Analysis of PWLB 6/1 applications ledger. Detail in appendix 2.A.

Table 2.5 shows that the 79 applications from mine owners were worth a total of £1.2m over the 10 years 1817 to 1826. Just over half of the applications were from owners of coal mines, with the balance from coal and iron operators, lead, tin and copper mine owners, and from quarry owners. The size of the applications, and the success rates, were very similar for the different types of mine or quarry. The remainder of this chapter therefore treats them as a single group. To provide further detail, analyses of mining applications by year of application and reason given for the application illustrates why mine owners made applications to the PWLB for loans. An examination of the financing of capital formation also points to reasons why the majority of mine owners did not need PWLB loans.

Fixed capital formation in the mining sector was £16m between 1817 and 1826, and was rising over time. Mine output was also rising consistently in the early part

of the nineteenth century.[24] It is therefore likely that mining sector profits were rising steadily on the back of increasing demand. In this environment, mine owners would be investing in order to increase output to meet this demand, and would be able to finance the majority of their investment spending from rising retained profits. Mine owners would therefore have little need to borrow from banks or the PWLB. Support for this hypothesis is provided by table 2.3, showing that only 4 per cent of capital formation was financed by borrowing from banks and the PWLB. Table 2.7 also supports this hypothesis by showing that 63 per cent of mining applications to the PWLB were made in order to develop applicants' mines. A key reason for the low level of mining applications to the Board is therefore that mine owners were able to use the increasing volume of retained profits to finance mine development, and did not need PWLB loans.

Table 2.6	**Peak years for mining applications**			
Period	Months in period	Number of mining apps	Applications a year	%age of apps each
1817	6.5	24	44	30%
1826	9	13	17	17%
1822/3	12	19	19	24%
All others	87	23	3	29%
1817-26	114.5	79	8	100%

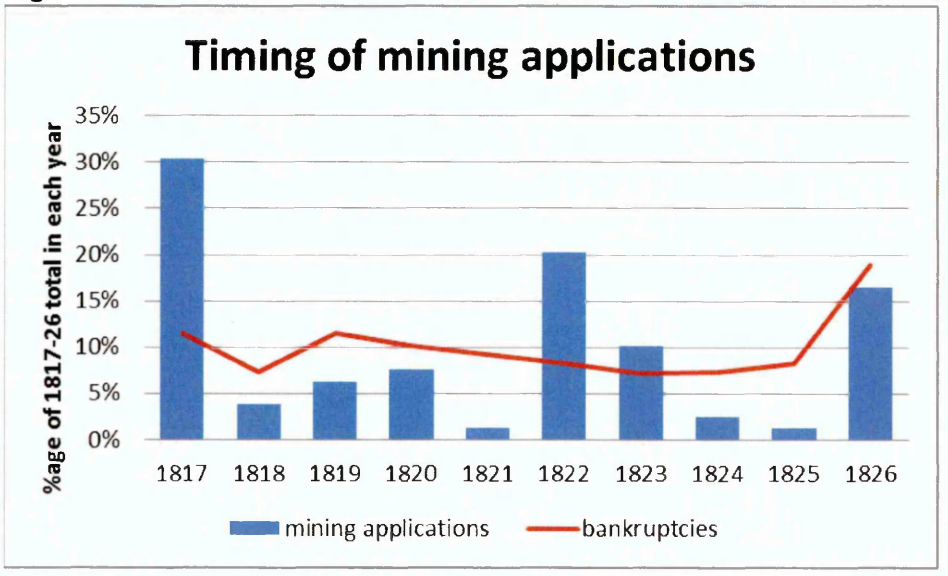
Source: Analysis of PWLB 6/1 PWLB applications ledger.
'1822/3' refers to a 12 month period from mid 1822.

One of Lord Liverpool's three stated reasons for the passage of the 1817 Act was to ease a credit shortage.[25] At the time, a number of MPs doubted that there was a credit shortage. Table 2.6 and figure 2.3 help in making an assessment of whether there was a credit shortage or not. Table 2.6 shows that over 70 per cent of the mining applications were received in just three peak periods lasting about a year each – 1817, 1826, and mid-1822 to mid-1823. The remaining seven years saw an average of only three mining applications a year. It is assumed here that a rise in bankruptcy numbers was linked to a shortage of credit. Figure 2.3 shows that only the 1826 peak in mining applications was associated with rising

[24] Pollard, 'Coal Mining', table 2.1, p. 36, shows coal output rising in each five year period between 1750 and 1850.
[25] House of Lords debates, 10 June 1817, Vol 36, cc. 928-32.

bankruptcy levels, and thus with a credit shortage.[26] In contrast, figure 2.3 shows that the peaks in 1817 and 1822/3 were periods when bankruptcy numbers were falling. It therefore appears that there was no credit shortage to generate the peaks in mining applications in 1817 and 1822/3. Even the 1826 credit shortage only produced 13 loan applications to the PWLB. On balance then, there was no long-lasting credit shortage to produce high volumes of applications to the Board.

Figure 2.3



Sources: Applications, Analysis of PWLB 6/1 applications ledger.
Bankruptcies from *London Gazette* summaries.

This conclusion about a general absence of a credit shortage can be supported by examining the reasons applicants gave for their applications. Table 2.7 shows that only 20 per cent of applications were made because applicants were short of working capital. The largest number of these applications were in 1826, confirming that the short term shortage of credit did affect mine owners. Table 2.7 also shows that a much larger proportion – 63 per cent – of all applications were made because applicants wished to develop their mines. The majority of these applications were in the peak years of 1817 and 1822/3: years when bankruptcy numbers were falling, and so when the economy was growing. The reason for the remaining 17 per cent of applications is unknown. It is clear from this that only a minority of applications were made because of a shortage of cash. A much more

[26] C. P. Kindleberger and R. Z. Aliber, *Manias, Panics and Crashes: A History of Financial Crises*. 6th ed. (Basingstoke, Palgrave Macmillan, 2011) pp. 304-5 shows 1826 as a world scale financial crisis, with a rapid credit expansion preceding a credit shortage.

important reason for applications was that mine owners wished to expand their businesses during times of rising demand.

Table 2.7	Reasons given for mining applications					
	Peak periods			Other	1817-26	
	1817	1822/3	1826	years		
	Number of applications				Share	
Shortage of cash	4	1	6	5	16	20%
Mine development	16	14	7	13	50	63%
Unknown reasons	4	4	0	5	13	17%
All applications	24	19	13	23	79	100%

Source: Analysis of PWLB 6/1 applications ledger and PWLB 2/1-7 minute books. See appendix 2.A for all applications data.

The last cause of the low number of mining applications is that only 23 per cent of mining applications were successful, compared to a 40 per cent success rate for all applications to the PWLB. Such a low success rate was bound to discourage mine owners from applying. Figure 2.3 does indeed show that, after the initial surge in applications in 1817, applications fell sharply over the next four years, and fell again in the three years after the 1822 surge. Although the Board did not publish statistics about loans made, it is highly likely that the lack of success was well known within the networks of mine owners.

There are therefore three main causes of the low number of mining applications to the PWLB. First, there was no obvious demand amongst mine owners for a new source of capital finance. Profits from mining and associated businesses appear to have been more than adequate to meet rising capital formation spending. Second, with the exception of 1826, there was no general credit shortage in the economy between 1817 and 1826. This is confirmed because only 20 per cent of applicants to the Board gave cash shortages as the reason for their application. Finally, the lack of success of mining applications will have discouraged potential new applicants towards the end of the ten year period. The next section looks at the reasons for this lack of success.

2.3 How the PWLB made lending decisions

The PWLB developed a philosophy of lending that led it to reject the majority of mining applications. The first element of its philosophy was a narrow, legalistic

interpretation of the 1817 Act. The Board felt that it had no legal powers to lend to profitable mines that wished to increase their output, nor to mine owners who wished to repay long term debts. The PWLB's philosophy placed the highest priority on the recovery of loans. The Board consistently declined to lend to those applicants who represented any material risk that a loan would not be repaid. These two principles accounted for 90 per cent of the unsuccessful mining applications. Once the principles were established, they were applied to all future mining and non-mining applications. The evidence for the Board's emerging philosophy of lending is contained in the discussions of individual applications in the minute books, and in analyses of the results of the Board's decision making. These form the focus of this section.

Table 2.8	**Outcome of mining applications 1817-26**					
	Applications		Outcomes			
Reasons for application	Numbers	Share of total	Granted	Success rates	Rejected	Withdrawn
Shortage of cash						
To provide working capital	5	20%	3	50%	0	2
To repay longer term debts	11		5		4	2
To increase mine output						0
Combat flooding etc	7		5		2	0
Develop new capacity	33	63%	0	10%	21	12
Open new mine etc	10		0		10	0
Employment	0	17%	0	38%	0	0
Unclear reason	13		5		2	6
All mining applications	**79**	**100%**	**18**	**23%**	**39**	**22**

Source: Analysis of PWLB 6/1 applications ledger and PWLB 2/1-7 minute books.

The first question to arise was whether the PWLB would offer loans to allow applicants to repay longer term debts. Table 2.8 shows that 20 per cent of mining applications were made because applicants needed a cash injection. However, these 16 applications fall into two sub-groups. Five of the sixteen applications sought loans to provide working capital, to allow applicants to pay staff and suppliers. Three of these were granted, and two were withdrawn by applicants who were unable to offer sufficient security for the loan.[27] These loans for working capital were of course consistent with Vansittart's view that the PWLB was

[27] See appendix 2.A for a list of all mining applications, and column headed 'reason for app'

created to combat a credit shortage. The other 11 applicants sought loans to repay long-term debt, and these presented the Board with a difficulty.

The best example of this difficulty was an application made on 5 August 1817. Benjamin Fayle asked for a £30,000 loan to support his clay mine in Dorset, saying that without the loan he would have to dismiss all his employees.[28] Under questioning it emerged that £25,000 of the loan would be used to repay debt. Thomas Reid, who had questioned Fayle, suggested that the loan could be made, and the board agreed. John Phelps then took the very unusual step of registering his dissent, and Henry Swann supported Phelps's view when the minutes were read at the start of the next meeting, on 8 August.[29] Phelps and Swann took the view that the 1817 Act only gave power to grant loans that supported mines. To Phelps and Swann, the Act gave no power to lend in order to repay debt, meaning that only £5,000 could be lent in total. The majority of the commissioners attending took the view that the 1817 Act's power to provide employment to the labouring poor was a wide-reaching one. They argued that because the loan would allow the quarry to continue to provide employment for the workers, it could be made. The application was therefore granted, and £30,000 was lent to Fayle; later, four similar applications to repay debt were also granted. However, this willingness to lend to repay debts did not remain a settled view.

In January 1823, the PWLB's solicitor wrote to the Board indicating that he now believed that the Board had no legal power to make loans to allow applicants to repay debt, since the 1817 Act made no mention of debt.[30] The Board's solicitor was instructed to write to the Attorney General to get a ruling on the PWLB's powers in relation to debt. The Attorney General replied that, in his view, the Act granted no power to lend in order to repay debt.[31] He went on to say that lending to allow the repayment of debt would be to 'replace private debt with public debt'. But he also took the pragmatic view that, where only a small proportion of a loan

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[28] Fayle was a London merchant who had bought the quarry in 1795 and invested in railways to transport the clay in 1806. After his death in 1837, his daughter ran the firm for many years. The Purbeck ball clay they quarried was supplied to Staffordshire potteries. *Dorset Life* article, February 2012, at www.dorsetlife.co.uk/2012/2/fateofclay/ accessed 3 May 2012.

[29] National Archives, PWLB 2/1 minute book June 1817-April 1818, 1, 5 and 7 August 1817 pp. 37 and 64/5.

[30] National Archives, PWLB 2/4, minute book March 1822-December 1823, 16 January 1823 p. 135

[31] National Archives, PWLB 2/4, minute book, 30 January 1823, p. 143.

was to be used to repay debt, then the whole of the requested loan could be made. The 1817 view of Phelps and Swann that the Board would not make loans to repay debt became the accepted view, and remained so for the remainder of the period covered by this thesis.

The PWLB adopted a similarly narrow legal view when considering six applications from iron works. The Board was prepared to consider applications from combined coal mines and iron masters, but only where coal mining was the larger part of the combined operation. In contrast, where the iron works was the larger part of the business, the PWLB saw the application as coming from a manufacturing business. This also applied where the application was an iron works, with no coal element. The Board took the view that, because manufacturing was not mentioned in the 1817 Act, it had no legal power to lend to manufacturers.[32] Thereafter, all applications from manufacturers were routinely refused as being outside the powers of the commissioners.

The PWLB commissioners followed a similar legalistic view when considering the 50 applications that can broadly be seen as aiming to finance mine development. Table 2.8 further divides these into three sub-groups. The largest sub-group comprised 33 applicants who wished to develop their mines. Most of these appear to have related to the development of an existing seam, or the opening of a new seam in an existing mine. The second sub-group comprised ten applications to either open a new mine, or reopen a mine that had previously been closed. Not one of these 43 applications was granted; the Board rejected 33 and applicants withdrew the other 10, presumably because they recognised that the applications would be rejected. The PWLB's thought processes can be seen in two applications from North Wales collieries.

On 26 August 1817, the board considered two applications, one for £70,000 and the other for £80,000. Both applicants wanted to extend their already profitable mines, expecting annual profits to increase by 50-100 per cent as a result. The board resolved unanimously that 'it was not the intention of the Act ... to advance money for the purposes of extending collieries already ... producing profit'.[33] On

[32] National Archives, PWLB 2/1, minute book, 7 August 1817, p. 61.
[33] National Archives, PWLB 2/1, minute book, 17 August 1817, p. 83.

31 May 1818, a very similar view led the Board to reject an application from Rees Jones, who sought a loan of £1,400 to open a new pit in North Wales. No debate was recorded, just a resolution that, because the application was 'to aid the *commencement*, and not to *support* the undertaking', it was not within their legal powers to grant the application.[34] 'Support' was the word used in section 1 of the 1817 Act to describe the PWLB's power in relation to mining loans, and was treated as implying support for the continuing operation of a mine. The Board did not consider whether 'support' could be interpreted as say, support for the opening of a new seam or mine. The PWLB applied the limited interpretation of 'support' to all of the 43 applications to develop or open mines, and none of the applications were granted. The PWLB's broader argument was that the spirit of the Act was to offer short-term help to distressed mining firms faced with a shortage of credit. Making loans to help otherwise successful firms to expand would therefore be inconsistent with the spirit of the Act. The commissioners' narrow interpretation of the 1817 Act, and the very limited circumstances in which the PWLB was willing to lend to private firms were essential to the Board's approach to lending. Both limitations made the failure of these 43 applications an inevitability.

The remaining seven applications, summarised under the broad heading of 'to increase mine output' in table 2.8, were mostly from mine owners seeking loans to overcome a physical problem, such as flooding in their mines. Five of these applications were granted. A good example of these is the application from Henry Hunt. In July 1817, the PWLB received an application to buy a pumping engine to clear a flooded mine. The application was from Henry Hunt, who was a partner in a North Wales lead mine. The commissioners must have felt unable to judge whether the case was a good one, so asked Thomas Telford to recommend a surveyor with experience of lead mines.[35] A suitable man was found; he was asked to report on whether the mine could be cleared, and assess the costs of renovation and the ability of the mine to produce enough income to repay the loan. The surveyor reported positively (although no detail is recorded in the

[34] National Archives, PWLB 2/2, minute book, June 1818-April 1820, 21 May 1818, p. 24. Author's italics.
[35] Telford acted as a consulting engineer to the PWLB from 1817 until his death in 1834. L. T. C. Rolt, *Thomas Telford* (Harmondsworth, Penguin, 1958) pp. 156, 196.

minutes), and a £7,000 loan, repayable in 1820, was made to Hunt. The PWLB obviously felt that keeping an existing mine open fell within its interpretation of 'support'. This loan was one of the Board's rare errors of judgement, and, as will be shown in section 2.4, part of it proved impossible to recover.

The PWLB's judgement was much better in another application for another loan to buy a pumping engine. The owners of Chacewater copper mine in Cornwall made two applications, in October and November 1820 respectively, for £30,000, claiming that they needed to buy two large pumping engines to pump water out of a mine. Unusually, the Board wanted to study the partnership's accounts for the previous few years. Its investigations revealed that the mine had accumulated losses of £100,000.[36] The commissioners rejected both applications, believing that the partners were likely to use any loan to repay their own investments, rather than restarting the mine. The PWLB's ability to read the accounts had told the commissioners that the underlying problem was debt, not flooding. Later events showed that this judgement was correct, and the mine eventually restarted under new ownership, and produced large quantities of copper until 1867.[37] This example also demonstrates two aspects of the PWLB's hard, commercial approach to lending. First, the Board preferred to see earlier investors lose their money, rather than risk public money in an attempt to rescue these investors. Second, the PWLB commissioners were capable of seeing past what was said to them, and were able to read a set of accounts.

There were no applications made with a prime purpose of creating employment (see table 2.8). Even so, 20 of the 79 mining applications did mention the creation or safeguarding of specific numbers of jobs. In total, these 20 applications mentioned 32,000 jobs, and were for loans totalling £450,000, which would have priced each job at £14 – less than four months' pay.[38] Many applicants appear to have expected that this would be enough to secure a loan. This view is shared by Flinn, who argues that the 1817 Act empowered commissioners to make loans to

[36] National Archives, PWLB 2/3, minute book, April 1820-March 1822, 5 October 1820, p. 166.
[37] Cornwall County Council report on Chacewater, December 2002, at http://www.historic-cornwall.org.uk/cisi/chacewater/chacewater.htm accessed on 31 May 2012,
[38] See appendix 2.A for details of these 20 loans.

anyone 'who could show that the loan would be used to create employment'.[39] But this was not the view the PWLB commissioners took. While section one of the Act says that it gave powers to support the 'employment of the poor in the parishes', the body of the Act imposed significant restrictions on this power. Sections 29 to 31 say that such support would only be given to parishes, not to employers; that 80 per cent of ratepayers had to support the parish application; that any loan could be for no more than half a year's rate income; and that no loan could be made unless poor rate spending in the parish had increased by more than 50 per cent in the previous year.[40] Given these restrictions, it is not surprising that the PWLB only received three applications from parishes for loans, and that these totalled less than £3,000. However, the Act did ask the commissioners to 'have regard ... (to) the benefit which may arise in affording employment for the labouring classes' when considering applications.[41] The PWLB's decisions on mining applications suggest that it fulfilled this requirement. Forty per cent of the applications which mentioned specific job numbers were successful, compared to only 17 per cent of those that made no mention of specific job numbers. However, this requirement to 'have regard to' was fundamentally different from making loans whose prime purpose was to create employment.

The reason behind 13 of the applications is unclear, with most merely being recorded as 'to support his mine' in the PWLB's minute books. The most likely problem was general loss making. Six of these applications were withdrawn or abandoned by applicants, suggesting that applicants realised that they would not be successful, or would be unable to provide the necessary security.

Once the Board had decided that it was willing to grant a loan, it then considered whether there was adequate security in place in case the applicant could not repay the loan from future income. It is here that the Board displayed a straightforward commercial approach to its lending. In mining cases, the PWLB wanted four levels of security.[42] The first was the personal security of the applicant, so that if the business could not make the repayments, then the

[39] M. W. Flinn, 'The Poor Employment Act of 1817', *Economic History Review*, Vol 14, no. 1, 1961, pp. 82-92.
[40] Public Works Loan Act 1817, 57 George III c34, sections 29-31.
[41] 1817 Act, s13.
[42] This paragraph reflects the discussions recorded in the PWLB minute books on each of the 18 successful mining applications.

applicant would. This was a given, since the applicants were invariably owners or part owners, with individual and unlimited financial responsibility. Second, a mortgage against saleable property was required, but only rarely was this property the mine. The problem with accepting the mine (or mine lease) as security was that if the venture failed to produce enough income to repay the loan, then the value of the mine or lease fell dramatically. More often, it was the estate or home of the applicant that was mortgaged. In these cases, the Board would want to take possession of the deeds of the property, to ensure the PWLB had ultimate control of the asset. The third level of security was to seek sureties from a group of individuals prepared to guarantee the applicant's loan. These individuals would be called upon to repay the loan if the applicant was unable to do so after selling the mortgaged property. The PWLB would expect sureties to be for twice the value of the loan. The fourth level of security was that the Board insisted that, in the event of the borrower becoming insolvent, PWLB loans would be repaid before all of the applicant's other debts. The Board also insisted that 80 per cent of an applicant's creditors should agree to this condition.

An example of how these arrangements worked in practice is clear from the case of Reed's Bank of Newcastle. The bank had lent more than £80,000 to a number of collieries in 1818/9 in Northumberland, Durham and Cumberland to help them in a difficult period. The PWLB board quickly agreed to lend the bank £80,000. The PWLB asked for, and was given, four levels of security. Colonel John Reed and the executors of his late partner gave personal securities, agreed mortgages of their estates, lodged the deeds with the PWLB and provided a number of sureties worth £160,000. The PWLB was also given priority over other creditors. Yet there is nothing in the minutes to suggest that the PWLB investigated the security that Reed's Bank had for the £80,000 of loans to mine owners, or that it studied the balance sheet and loan book of Reed's Bank.[43] A later section describes what happened when the bank failed in 1821 before repaying the loan.

[43] National Archives, PWLB 2/2 minute book, 24 June 1819, p. 169. No records have been located that identify the mine owners who had borrowed the £80,000.

Eleven mining applicants were unsuccessful because they were unable, or unwilling, to offer the same level of security as Reed's Bank.[44] One such application was from Lord Londonderry in 1823. He applied for a loan of £40,000 to build a railway linking his coalfields to Seaham harbour. After long negotiations between John Buddle (Londonderry's viewer) and the PWLB on security, Londonderry declined to allow the PWLB to take a charge on his estates. He then withdrew his application for a loan, rather than have the PWLB reject it. Five other applicants took a similar view, deciding to abandon their applications because they were unable or unwilling to provide the security the Board needed. The remaining five of the 11 saw the PWLB reject their applications on the grounds of inadequate security. In 1832, Londonderry made a similar application to the PWLB for a £35,000 loan in 1832, and this time he accepted exactly the same security provisions, and the loan was made.[45] It is notable that the 11 mining applications rejected on the grounds of inadequate security were more than double the five applications made to provide working capital to mine owners. This leads to a conclusion that the lack of security was a bigger problem for mine owners than a shortage of working capital. The Londonderry case shows that the Board regarded the security of its loans as the most important factor. All other requirements could have been met, but if one of the four levels of security were not available, then no loan would be agreed.

The decisions the Board made on these mining applications were critical, and together they form a coherent lending philosophy. This philosophy had a lasting legacy, and was applied to all applications up to 1835, and to many loans after then. There were three key elements to the philosophy. First, the PWLB would only lend to private businesses in very limited circumstances, and these circumstances became even more limited over time.[46] Second, the PWLB would only lend on commercial terms; it would not therefore lend where it felt the security for the loan did not virtually guarantee repayment. This approach ruled out lending with the primary purpose of creating employment. Third, the Board took a

[44] See appendix 2.A. A '2' in the 'why rejected' column indicates that the reason for rejection was inadequate security.
[45] National Archives, PWLB 2/4, minute book, March 1822-December 1823, 17 July 1823, p. 239. Durham Record Office papers for the Londonderry Estate. D/Lo/E/104. These files contain both sides of the correspondence on the applications.
[46] This topic is covered in section 2.5.

restricted view of its powers to lend, and chose not to seek any extension to these powers. Each of these elements stemmed from the PWLB's belief that its interventions should be minimal, and that it would be judged by its ability to recover all of its loans.

By 1826, this philosophy of lending might be characterised as a 'bank manager's view'. Like a bank manager, the Board saw its ability to recover its loans, and to cover all of its costs as being paramount. This view is also seen in a Michael Collins and Mae Baker study of the reasons why banks refused to grant just over 500 loans to businesses in the period 1855 to 1914.[47] Banks' main reason for refusal was that in 47% of cases, the bank felt that there was too large a risk that the client would be unable to repay the loan. In a further 38% of cases, the bank felt that the client was unable to offer sufficient security for the loan, and again the bank risked not being able to recover its loan. The banks' reasons for rejecting loans are very similar to those of the PWLB in rejecting loans to mine owners and turnpike trusts.

Collins and Baker also identify the extent to which banks sought security for their loans.[48] In 47 per cent of cases, banks sought no security, however, their loans had an average size of £2,700 and a duration of 16 months. PWLB loans to mine owners were granted for an initial eight years, and were for an average of over £13,000, so the risks were much greater, and the PWLB's greater demands for security were understandable. In the 53 per cent of cases where security was sought by banks, it was either in the form of personal security or the loan was secured against property or a similar realisable assets. The PWLB was therefore acting just like a bank manager in being highly risk-averse, and placing prime importance on the recovery of its loans. Against this study, the PWLB decisions look unexceptional. Equally, like a bank manager, the PWLB did not make lending decisions based on wider social concerns about the need for employment creation. This 'bank manager's' philosophy of lending would dominate the PWLB's decision making until 1835.

[47] Michael Collins & Mae Baker, *Commercial Banks and Industrial Finance in England and Wales* (Oxford, Oxford University Press, 2003) p. 205.
[48] Collins and Baker, *Commercial Banks and Industrial Finance*, pp. 181, 184, 195.

2.4 Recovery of PWLB loans

A significant element of any judgement about the PWLB's success must be based on its ability to secure the repayment of its loans. All loans carry the risk of non-recovery, and unrecovered loans mean that the lender makes losses. Section 2.3 showed that a significant part of the Board's philosophy of lending was a desire to have sufficient security so as to virtually guarantee the repayment of its loans. Yet mining in particular was a precarious business, and 20 per cent of the 79 applicants for PWLB loans became bankrupt within ten years of making their applications.[49] In the light of this statistic, and the PWLB's decision not to lend to profitable firms, the Board's insistence on high quality security was essential. This section examines the extent to which the PWLB recovered its mining loans, and avoided loss-making.

Only five of the 18 mining loans were repaid on time. The PWLB's reminders of repayment dates brought requests for extensions of time, which the Board granted (see table 2.9). These requests led the government to pass amending legislation in 1822 to extend the repayment period from three to eight years for all borrowers.[50] Six of the remaining 13 borrowers then made full repayments within the amended period. Of the seven other loans, three borrowers missed instalment payments before full recovery was made; in two cases, recovery action had to be started before full recovery was made. In two cases, full recovery was not achieved, and part of the loans had to be written off.

[49] Appendix 2.A shows which applicants became bankrupt, and the dates of the bankruptcy notices in the London Gazette.
[50] BPP 1822 (549), A Bill to amend the 1817 Public Works Act.

Table 2.9 Repayment of mining loans 1817-26		
When repaid	No. of loans	Share
On time	5	28%
After extension	6	33%
Payments missed	3	17%
After legal action	2	11%
Not paid, written off	2	11%
Total loans	18	100%

Source: Analysis of PWLB minute books PWLB 2/1-7. See appendix 2.A for loans in each category.

It took less than a year for the PWLB's security and recovery arrangements to be tested. Thomas Pinkerton, for example, was lent £2,000 in 1817 to support his colliery in Nuneaton, but he became bankrupt in 1818. His sureties were therefore asked to repay the loan, and did so. Reed's Bank gave the Board's recovery processes a sterner test, when the bank suspended payments in 1821. Maberly Phillips suggests that the failure was caused by a loss of confidence in Archibald Reed, who had called out the military to deal with a public disturbance in November 1820 when he was Mayor of Newcastle.[51] This seems unlikely. More likely is that the mine owners to whom the bank had lent £80,000 were themselves unable to repay their loans. The bank's two partners, Colonel John Reed and the executors of Sir Francis Blake, accepted that they would have to sell part of their estates in order to repay total debts of £400,000. Because of the Board's insistence on being repaid before all other creditors, the PWLB was the first creditor to be repaid, and in November 1822 received the full £80,000 plus interest.

In two cases, though, small sums had to be written off as uncollectable. Henry Hunt had borrowed £7,000 to clear his North Wales lead mine of water. Hunt was quickly in financial difficulties. While not actually bankrupt, Hunt had no saleable assets; nor, it turned out, did three of his four sureties; and the fourth, who did have saleable assets, was unreachable in Portugal.[52] The PWLB seized the mine and associated assets, which turned out to be worth just £10,000. The Board

[51] Maberly Phillips, *History of Banks*, pp. 163-73.
[52] This was John Hatt Noble, who was British Consul in Oporto. He eventually returned to England and became deputy lieutenant of Buckinghamshire. Dictionary of Canadian Biography, online edition. http://www.biographi.ca/en/bio/pinson_andrew_5E.html . Accessed 26 November 2013.

entered discussions with the landowner (who was owed rather more than the Board) to sell the mine lease and split the proceeds. By 1832, the PWLB had done all it could, but was still owed £1,500, which it wrote off.[53] In this case, the Board's security arrangements failed, probably because commissioners trusted the word of Hunt and his sureties. The mine reopened in 1845 and produced lead profitably for many years.[54] Meanwhile, Hunt applied for another loan from the PWLB in 1826, for a South Wales coal and iron works. His application was rejected.

The case of James Adams was the most difficult mining application the Board dealt with.[55] In 1808, John Wilkinson, an ironmaster, died in his 80s, leaving an estate worth over £400,000.[56] Most of the estate was in the form of coal mines and iron works at Brymbo, near Wrexham, and was left in trust to benefit his mistress, Anne Lewis and their three young children. Adams became the controlling trustee when the other trustees died. In June 1817, Adams sought a PWLB loan of £40,000, claiming that it was needed because of severe pressure on both the coal and iron trades in 1816 and 1817, and because an ironmaster customer had become bankrupt, owing Adams £40,000. The Board quickly agreed to the loan, but getting adequate security for the loan took much longer, and perhaps should have been a warning sign of trouble ahead. Adams missed the first two instalment payments, and his sureties stepped in with repayments to avoid a default. After Adams died in 1823, it was clear that the only route for the PWLB to recover its loan was to reach an agreement with the Wilkinson estate to sell property to repay the loan. Eventually, the agreement of Anne Lewis, other creditors and the Chancery Court was secured. Years of bad management by Adams had run down the value of the estate, as had many years of lawyers' bills, and the remains of the estate only fetched £3,000. The PWLB had to accept this in full and final settlement, and to write off the remaining debt of £3,832, together with £4,000 of outstanding interest. The Brymbo estate continued producing steel

[53] The PWLB did not record this write off in later accounts, even though minute book PWLB 2/3, 21 June 1832, p. 7 makes clear that there would be a write off.
[54] http://www.wrexham.gov.uk/english/heritage/minera_leadmines.htm accessed 31 May 2012.
[55] National Archives, PWLB 2/10, minute book November 1831-June 1832, 3 May 1832, p. 290.
[56] Frank Dawson, *John Wilkinson, King of the Ironmasters* (Stroud, The History Press, 2012).

until the 1990s, demonstrating that Wilkinson's coal and iron business could have survived if properly managed.[57]

The Adams and Hunt loans were therefore exceptions, and PWLB recovered all but £5,000 of its £272,000 mining loans made in the ten years to 1826. In addition, the PWLB had to forgo £4,000 of interest payments, making their mining losses £9,000, or 3 per cent of the total lent. Governments were always concerned to demonstrate that the PWLB's lending had led to surpluses, rather than losses to the taxpayer.[58] This meant that the interest rate of 5 per cent charged to borrowers had to exceed the interest costs to the government, the Board's staffing and office costs, and the costs of any non-recovered loans or interest. Table 2.10 shows that the PWLB's mining loans just failed to achieve this target, with a small loss of £1,000. However, all loans were initially made at 5 per cent, but in the mid-1820s some borrowers asked the Treasury for a reduction to 4 per cent, based on lower market rates. The Treasury granted these requests, and sacrificed around £2,000 of interest receipts by doing so. Without this loss, mining loans would have made a £1,000 surplus. Given the high level of bankruptcy in the mining industry, the near breakeven outcome must be seen as an impressive financial performance by the PWLB.

Table 2.10 Loss on mining loans 1817-26

			£000	£000
Costs	interest paid to gov't on £272,000 loans	3.93%	42	
	8.5% share of PWLB office costs		2	44
Income	interest charged to borrowers at	5.00%	54	
	less loans not recovered		-5	
	less interest forgone		-4	
	less impact of Treasury rate reductions		-2	43
Loss on mining loans made in 1817-26				**-1**

Sources: Costs. Interest rate on loans paid to government is an average for 1817-26 of long term gilt rates; from Homer, *History of Interest Rates* (New Brunswick NJ, Rutgers University Press, 1963)
PWLB office costs are taken from its report to Parliament BPP 1831 (154) and shared pro rata to loans made.

Notes: Assumes loans repaid over average of 8 years.

[57] At www.brymbosteelworks.com accessed 17 May 2014.

[58] BPP 1831 (154), Exchequer Bills (England) Commissioners, This is the first PWLB report to Parliament, but this involved no such demonstration of surplus or deficit. Their second report, BPP 1843 (47), Exchequer Bills (Public Works) contained the first attempt.

2.5 Why the PWLB's objectives had changed by 1826

The PWLB was created with the objective of making loans in three areas: to the private businesses of mines and fisheries; to promote public works; and to parishes for the benefit of the labouring poor. By the end of the PWLB's first ten years, lending to mines, fisheries and parishes had effectively ended. For the ten years after 1826, virtually all of the Board's lending would be to public works projects. This section explores the reasons for this shift of emphasis.

Table 2.11 Changing nature of applications to PWLB

	1817-21	1822-26	1827-31
Business applications	28%	16%	2%
Public works - transport	53%	54%	54%
Public works - other	19%	30%	44%
Totals	**100%**	**100%**	**100%**

Source: Analysis of PWLB 6/1 applications ledger.

Section 2.2 showed that the low success rates for the applications had sent clear discouraging messages to future applicants. Table 2.11 makes clear that these messages – however anecdotally and imperfectly they were spread – had an impact on potential applicants. In the PWLB's first five years, 28 per cent of loan applications were from private businesses, but this fell to 16 per cent in the second five year period. After 1826, it fell again to 2 per cent of all applications to the PWLB. Between 1827 and 1831, 98 per cent of all applications were for public works, and the majority of those were for transport related projects. In effect, the PWLB's objective of lending to mine owners had simply withered on the vine because of a lack of demand and a lack of success. For the same reasons, the Board's objectives of lending to fisheries and parishes had also withered on the vine.

The second reason for the end of loans to private businesses was that the views of the PWLB had hardened against loans to private businesses. In February 1821 the PWLB had nearly exhausted the £1.75m sum made available to it for lending. Charles Grant, as chairman, wrote to Vansittart, the Chancellor of the Exchequer, setting out the case for a new sum to be made available to the Board for lending. Grant's major reason for the new funding was to support 'various useful schemes

upon which money cannot be borrowed in the usual way'.[59] Grant also made clear that the PWLB saw its role as being very different to the pre-1817 commissions. Their role was not 'to relieve the temporary pressures of commercial distress', or to support 'individual trades'. Grant continued that 'objections have been made to such measures as encouraging private speculation at the public expense'. Grant made it clear that the PWLB's future priority was public works ('various useful schemes') and not supporting mine owners ('individual trades'). His comments also imply that the PWLB's role was no longer as lender of last resort ('to relieve the temporary pressures of commercial distress'). Instead the PWLB's role was redefined as lending to individual applicants who were unable to borrow ('in the usual way') from commercial sources. Since the PWLB was lending at the prevailing market rate of 5 per cent, we can define this role as that of a 'market rate lender'.[60]

Vansittart's response to Grant's letter shows that the government's view had also changed since 1817. Vansittart replied that 'circumstances are so materially changed since ... 1817', and that 'public aid ... is always liable to much objection'.[61] He therefore proposed to wind up the PWLB. The government clearly moved from this view, since in 1822 Vansittart successfully promoted a Bill to advance a further £2m to the PWLB. There is no record of the further debate that took place between government and the Board that led to this change of heart. However, reading the letters of Grant and Vansittart, it seems highly likely that it was the PWLB's movement in favour of lending money to promote public works, and against lending money to private businesses, which carried the day.

In January 1823, Thomas Reid (who was shortly to become the PWLB deputy chairman) turned decisively against all lending to private businesses. Reid recommended rejecting a mining application, saying that the 'expediency of lending money to increase private concerns is problematical, and has been acted

[59] National Archives, PWLB 2/3, minute book, 15 February 1821, p. 178. Grant's letter and an accompanying paper are quoted in full.
[60] P. G. M. Dickson, *The Sun Insurance Office 1710-60* (London, Oxford University Press, 1960), p. 257, and Barry Supple, *Royal Exchange Assurance: A History of British Insurance 1720-192* (Cambridge, Cambridge University Press, 1970), p. 320. Both indicate that the two insurance companies were charging 5 per cent on mortgage loans in the period 1810-1850.
[61] National Archives, PWLB 2/3, minute book, 22 February 1821, p. 186. Vansittart's letter is quoted in full.

upon as inexpedient in former applications'.[62] This view questioned any lending to private concerns. The only exceptions to this were loans to private businesses for the provision of public works. The PWLB did not adopt Reid's view, and continued to make loans to mine owners. Even so, the message to future applicants must have been discouraging. Grant's 1821 letter and Reid's 1823 view both indicate that the Board saw loans to mine owners as the exception, or a temporary expedient – suitable for circumstances in 1817 - but not suitable for the 1820s.

The hardening of the government's view on supporting loans to private businesses can be seen in its reaction to separate crises in 1822 and 1826. In 1822 there was a financial crisis in agriculture, with many calling for 'cheaper money'.[63] Charles Bragge Bathurst suggested an issue of Exchequer bills that would allow landlords to redeem some of their mortgages. Vansittart rejected this idea, on the basis that the problem was a scarcity of security, not credit.[64] A similar outcome resulted from the 1826 financial crisis. Merchants reacted to this crisis as they had in 1811, by calling for the issuing of exchequer bills to distressed firms. Lord Liverpool, supported by Huskisson and Peel, refused this approach.[65] Instead, all three argued that this was a problem for the Bank of England to address. Both events show that after 1822, support for private businesses was seen as a task for banks, not the government. From 1826, the role of lender of last resort had passed from the government to the Bank of England.[66]

A final reason for the shift away from loans to businesses was that business loans were higher risk than loans for public works. The problem was that mining loans were repaid from inherently risky trading income, and the businesses rarely owned sufficient assets that could be sold in the case of a debt default. Loans to transport-related public works projects were also secured against risky trading income. In contrast, loans for church building and the building of county gaols and courts carried much lower risks, since the loan was secured against local rate income. As a legally enforceable tax, this source offered much greater security

[62] National Archives, PWLB 2/4, minute book, 8 January 1823, p. 139.
[63] Hilton, *Corn, Cash, Commerce*, p. 98.
[64] Hilton, *Corn, Cash, Commerce*, pp. 156-7.
[65] Hilton, *Corn, Cash, Commerce*, pp. 224-6.
[66] J. H. Clapham *The Bank of England: A History, vol 2,* (Cambridge, Cambridge University Press, 1944) p. 108, and Kindleberger and Aliber, *Manias Panics and Crises,* p. 305.

than either physical assets, like bridges or harbours, or a variable trading income stream from mines or toll roads. It was therefore riskier for the PWLB to lend to mine owners than to finance the building of a county gaol. As a commercially minded lender it was natural for the Board to gravitate towards lower risk lending.

The government shared the PWLB's views on the prime importance of avoiding making loans with a high risk of default. After each of the pre-1817 incarnations of the PWLB, governments had been keen to convince Parliament that all advances had been recovered, and small profits had been made.[67] There is a sense in each of the reports that if any of the loans had not been recovered, this would have been embarrassing for the government. This sense is repeated in the PWLB's report to Parliament in 1843, which emphasised that the PWLB had made a 'profit' of £600,000 in the 25 years after 1817.[68] The government clearly shared the Board's desire to avoid risky lending that could result in losses having to be reported to Parliament.

Even if neither the PWLB nor the government thought they should intervene in private businesses, both can be seen as willing to intervene to generate public works investment. The PWLB's views are shown both by their increasing shift in lending toward public works, as in table 2.10, and in their letter to the Chancellor in 1821 as part of the renewal debate. The government's willingness to intervene to create public works investment can be seen in a comparison of PWLB lending and civil government spending. The Board's lending between 1817 and 1826 was £3.2m. Over the same period, civil government spending was £55m. The PWLB lending was therefore equivalent to a 6 per cent increase in civil government spending.[69] For a government trying hard to reduce spending and debt, this was a major additional financial commitment. This large scale intervention in the economic life of the nation has passed largely unremarked upon, because historians have not taken up Flinn's implied challenge to study the PWLB.[70]

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[67] BPP 1826 (23), BPP 1826 (26), BPP 1813 (53) for the reports of the pre-1817 commissions.
[68] BPP 1843 (47), Exchequer Bills (Public Works), p. 23.
[69] Mitchell and Deane, *British Historical Statistics*, p. 396. PWLB lending did not actually count as spending in the national accounts. See BPP 1868-69 (366), Public Income and Expenditure 1688-1869, part II, p. 49 for an 1822 example. Instead, PWLB lending was accounted for as a capital item, and financed from unfunded debt. House of Commons debates, 11 March 1842, Vol 61 cc. 496-500.
[70] Flinn, 'The Poor Employment Act of 1817', p. 92.

In practice (if not formally), the PWLB's objectives had changed by 1826, and were focused entirely on making loans to support public works. The 1817 objectives of supporting mines, fisheries and parishes had been informally dropped. By 1826, neither the PWLB nor the government thought that loans should be provided to 'individual trades' or sectors of the economy. Nor did the government any longer see the PWLB as a lender of last resort, injecting liquidity into the economy. At a more practical level, the demand for loans from mine and fishery owners and from parishes had always been low, and had virtually ended by 1826. Instead, the PWLB's letter to the Chancellor in 1821 made clear that the Board saw its future in terms of supporting public works schemes. The same letter redefined the PWLB role as lending to those unable to borrow from commercial lenders. The PWLB was to act as a commercially minded lender, charging market rates for its loans.

Conclusions

This chapter set out to describe the PWLB's lending to mine owners. It also set out to show how the Board established its working methods and developed its own philosophy of lending. The PWLB's emerging philosophy saw it acting as a commercial lender, demanding very high levels of security from its borrowers, and determined to avoid losses through bad debts. The Board did not see its primary purpose as creating employment for the labouring poor. The PWLB also took a narrow, rather legalistic view of its brief in the 1817 Act, and became ever more reluctant to lend to private firms. It therefore declined to lend to manufacturers, applicants who wished to repay debt or profitable mine owners who wished to expand their businesses. This philosophy was applied to all of the PWLB's lending decisions for the first 20 years of its existence.

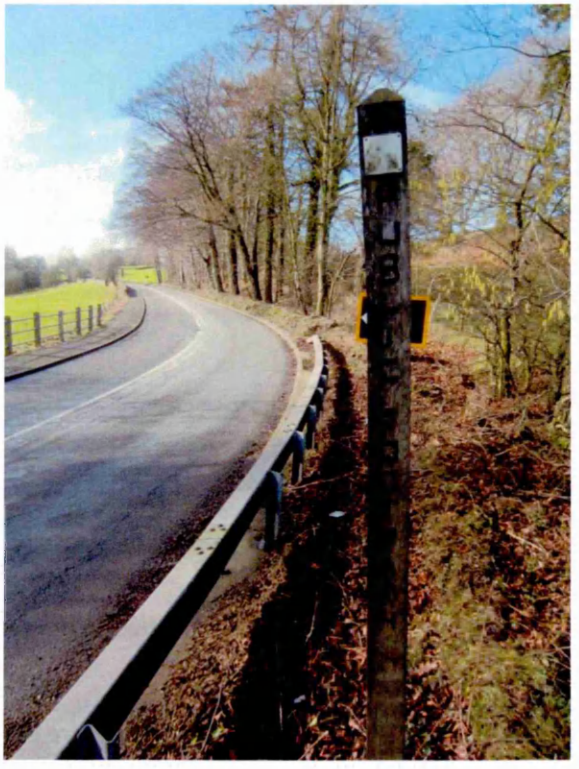
The PWLB lent just £272,000 to mine owners over the ten years 1817 to 1826. This was 2 per cent of the mining fixed capital formation, and was far too small to have any material impact on ether mining output, or on employment levels in the industry. The result of this was that PWLB lending to mine owners had no discernible impact on the living standards of the population as a whole. The PWLB's negligible impact was because mine owners were able to finance the vast majority of their growing investment needs from retained profits. While the 1817

Act had been based on a belief that there was a lack of credit, the evidence of this chapter indicates that the lack of security was a bigger problem. The potential impact of PWLB lending was also hampered by the Board's restrictive lending philosophy and the very low success rate for applications. Indeed, there were only two further mining applications after 1826.

By 1826, the PWLB's objectives had changed in two ways. First, in practical terms it now had a single objective: lending to finance public works. Lending to mines was a short term phenomenon, and atypical of the PWLB's longer term lending. The second change in the PWLB's objectives was that by 1826, it was no longer a lender of last resort, responding to shortages of liquidity. This role had passed to the Bank of England. Instead, the PWLB had become a lender to those who could not borrow from commercial sources. The focus had become lending to public works projects at the prevailing market rate of 5 per cent.

Figure 3.1 The 'before' picture (left) shows the 1762 line of the Ashbourne Leek road as it went over the summit of Lowe Hill. It is now reduced to a farm track and a public footpath. Telford surveyed the whole road and suggested improvements costing £25,000. The trust realised that it could not afford the repayments on a loan of this size and so borrowed just £5,000 from the PWLB, and completed this single improvement.

Figure 3.2 The 'after' picture (right) shows the 1828 line of the road, which has become the A432. It now takes a longer and flatter route around Lowe Hill. Ten years after the improvement, the trust saw its toll income fall by a third when railways arrived in the area. All the trust's creditors were eventually repaid.



The Public Works Loan Board lending to turnpike trusts was typical of the PWLB's lending to finance public works in its first 20 years. Adam Smith argued that 'good roads, bridges, navigable canals, harbours etc' were 'public works which facilitate the commerce of any country'.[1] The PWLB made loans in all four cases to supplement the predominantly private finance used to provide most turnpike roads, bridges, canals and harbours. The challenges of PWLB lending to turnpike trusts were typical of all of the PWLB's lending to public works. As well as exploring the PWLB's lending to turnpike trusts, this chapter examines the extent to which the PWLB was properly independent from the government. In particular, did Parliament and the government overrule any of the PWLB's lending decisions? In addition, local savers to turnpike trusts eventually lost £5m on their loans to trusts. Could the PWLB have used its position as lender to improve the financial performance of trusts, and limit the scale of these losses?

By 1826, over 1,000 turnpike trusts were responsible for more than 21,000 miles of main roads in England and Wales.[2] The other 100,000 miles of minor roads were the responsibility of over 15,000 parishes.[3] The purpose of establishing a turnpike trust was to improve the condition of the main roads in an area. The key benefit was that trusts had the right to borrow to fund road improvements, and could repay the loans from future income collected from road users. The vast majority of the borrowing and investment was undertaken in the 100 years from 1727 to 1826. The investment resulted in an improved national road network, support for the growth in regional movement of goods and people, and the promotion of economic growth.[4] The number of turnpikes and their annual income reached a peak between 1826 and 1836. Thereafter, traffic volumes fell, and after 1850 there was a steady fall in the number of turnpike trusts as they wound

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[1] Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations,* ed by Kathryn Sutherland (Oxford, Oxford University Press,1993) p. 414.
[2] BPP 1833 (703) Second Report of the Select Committee of the House of Lords to Examine Turnpike Returns, p. 175.
[3] J.E. Ginarlis and Sidney Pollard, 'Roads and Waterways 1750-1850', in C. H. Feinstein and Sidney Pollard, eds, *Studies in Capital Formation in the United Kingdom 1750-1920* (Oxford, Clarendon Press, 1988), p. 202; S. and B. Webb, *English Local Government. Volume 5: The Kings Highway* (London, Longmans Green, 1913), p. 204.
[4] E. Pawson, *Transport and Economy: The Turnpike Roads of Eighteenth Century Britain* (London, Academic Press,1977), pp. 301-339; William Albert, *The Turnpike Road System in England 1663-1840* (London, Cambridge University Press, 1972), pp. 168-199.

themselves up. This led to the ending of toll charges and the transfer of the responsibility for road maintenance back to parishes and other local government bodies.

This chapter has four main sections. The first examines the scale of turnpike trust capital spending and the relative importance of PWLB lending to trusts. The second section explores turnpike trust applications to the PWLB, how the Board made its decisions, and the results of those decisions. It also examines how the PWLB dealt with the widespread insolvency of turnpike trusts. The third section covers the PWLB's actions to recover its loans, and the larger scale problems that non-PWLB lenders had in recovering their loans to trusts. The last section looks at the broader issues of the extent of the PWLB's independence from government, its achievements by 1826, and the Board's reluctance to accept a wider role than that of a commercial lender.

3.1 The PWLB's role in financing turnpike trusts

There is an extensive literature on turnpike trusts. Much of the early writing concentrated on the parliamentary processes necessary to establish a trust, and the many parliamentary attempts to regulate traffic on turnpike roads.[5] In the 1970s, William Albert and Eric Pawson separately wrote about a much broader range of turnpike issues. They analysed the geographic development of trusts over time, arguing that there was a broad logic to network development, with arterial roads near London being improved first, and roads further away from London coming later.[6] Both Albert and Rawson also argued that turnpike trusts had led to the reduction in transport costs and the growth in traffic volumes.[7] Since 2005, Dan Bogart has written three articles on the impact of turnpike trusts on investment levels and property values, and on the development of the network of turnpikes.[8] However, only Albert touched on the overall finances of trusts, and

[5] W. T. Jackman, *The Development of Transportation in Modern Britain.* 3rd edn. (London, Frank Cass, 1966) pp. 217-230; S. and B. Webb, *The Kings Highway* pp. 120-2.
[6] Albert, *The Turnpike Road System*, pp. 30-56; Pawson, *Transport and Economy*, pp. 134-168.
[7] Albert, *The Turnpike Road System*, pp. 168-187; Pawson, *Transport and Economy*, pp. 293-8.
[8] D. Bogart, 'Did Turnpike Trusts Increase Transport Investment in Eighteenth Century England?' *Journal of Economic History*, 65, no. 2, 2005, pp. 438-468; 'Turnpike Trusts and Property Income: New Evidence of the Effects of Transport Improvements and Legislation in Eighteenth Century England', *Economic History Review*, Vol 62, no. 1, 2009, pp. 128-152; 'Neighbors, Networks, and the Development of Transport Systems: Explaining the Diffusion of Turnpike Trusts in Eighteenth Century England', *Journal of Urban Economics*, Vol 61, 2007, pp. 238-262.

no one has addressed the national picture of how trusts financed their capital spending. Mentions of the PWLB in the turnpike trust literature are occasional only.

Before 1970, there was no estimate of turnpike trust capital formation. Instead, it was common to treat the number of Turnpike Acts passed by Parliament as a proxy for the level of capital spending by trusts.[9] This led to a common view that the peak period of turnpike investments was the 20 years after 1750.[10] A major advance came in 1970, when John Ginarlis made an estimate of trust capital formation over the one hundred years after 1750. Ginarlis argues that turnpike trust capital formation was £10.3m in the ten years after 1817. However, the Ginarlis estimate of capital formation includes all routine maintenance spending and management costs.[11] This failure to distinguish between capital and revenue spending means the Ginarlis estimate is far too high. Sidney Pollard dealt with a similar problem with his own capital formation estimates for the coal industry by reducing them by a third, to remove the assumed repairs element.[12] The problem of making an estimate of capital formation in turnpikes therefore remains unresolved.

Using the post-1834 turnpike trust annual returns to Parliament allows a different approach to estimating trust capital investment. For the first time, these returns included an estimate of 'improvements', or capital spending. Table 3.1 uses information from the 1834 return to show that Ginarlis's estimate can be improved upon. Column 1 shows that total trust spending for 1834, including capital and revenue spending, was £1.7m. Column 2 shows the Ginarlis definition of capital formation. This gives an estimate of £1.3m for 1834, but includes all repairs and management costs. Columns 3 and 4 apply modern accounting definitions to the 1834 data. Column 3 shows the normal annual revenue costs of £1.5m, including repair and maintenance. Column 4 shows only spending of a capital nature, and

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[9] P. Deane and W. A. Cole, *British Economic Growth 1688-1959*. 2nd edn (Cambridge, Cambridge University Press, 1969), p. 237; W. Albert, 'The Turnpike Trusts', in D. Aldcroft and M. J. Freeman, Eds, *Transport in the Industrial Revolution* (Manchester, Manchester University Press, 1983), p. 38.
[10] Albert, *Turnpike Roads*, p. 51.
[11] J.E. Ginarlis, 'Road and Waterway Investment in Britain 1750-1850' (PhD thesis, Sheffield University, 1970) and J. E. Ginarlis and S. Pollard, 'Roads and Waterways 1750-1850', in Feinstein and Pollard, *Studies in Capital Formation*, pp. 182-224.
[12] S. Pollard, 'Coal Mining 1750-1850' in Feinstein and Pollard, *Studies in Capital Formation*, p. 63.

totals £247,000. This is a fifth of the Ginarlis figure, but can be regarded as much more realistic, because it follows the Pollard principle of excluding routine maintenance costs.

Table 3.1	Estimates of investment in turnpike trusts in 1834			
	1834 Trust spending	Ginarlis quasi-net investment	Modern accounting definitions	
			Revenue	Capital
	Column 1	2	3	4
	£000	£000	£000	£000
Repairs	935	935	935	
Management	122	122	122	
Improvements	217	217		217
Land costs	30			30
Debt interest	289		289	
Debt repayments	107		107	
Totals	**1,700**	**1,274**	**1,453**	**247**

Sources: BPP 1836 (2), p. 3 for col 1. See text for columns 2, 3, 4 and 5.

Note: Ginarlis's figure for 1834 is £45,000 less than the £1,274,000 shown here, as he excluded the value of statutory duty provided by parishes, presumably on the grounds that it was a non-cash transaction appearing as both income and spending in the Parliamentary returns.[13]

Using the data from the parliamentary returns of 1834 to 1838, the principles of a new capital formation estimate for turnpike trusts are easily determined. The starting point is the Ginarlis estimates of turnpike trust spending. These need to be increased to include land, debt and non-cash costs, which Ginarlis excluded. The result gives combined revenue and capital spending figures for each year between 1817 and 1826. Capital spending had two components: first, based on new trust applications to the PWLB, an average of £8,000 for each new Act passed in the year. Second, based on the 1834 to 1838 returns to Parliament, 14.5 per cent of annual trust spending is assumed to be for all other capital spending.[14] It is then assumed that 90 per cent of capital spending was financed

[13] Ginarlis and Pollard, 'Roads and Waterways, 1750-1850', table 8.3, p. 199. Their figure for Britain, less Scotland, for 1833/34 is £1,229,000, plus £45,000 of non-cash transactions (see p. 197), which Ginarlis excluded. Ginarlis, *Road and Waterway Investment*, table XVII, p. 132, shows the composition of the Ginarlis figure, and BPP 1836 (2), Turnpike Trust Returns 1834, p. 3 shows the national totals.

[14] There were 37 applications to the PWLB from newly formed trusts. The 1834 to 1838 returns to Parliament show that residual capital costs were 13 per cent of total spending. From 1817 to 1826 they are assumed to have been marginally higher.

from borrowing, and the remainder from toll income.[15] The resulting estimates can be verified by comparing them with the known total spending and debt figures in the returns to Parliament. With a few adjustments, the approach can also be verified against the annual returns for 1834 to 1838. Appendix 3.A gives more detail on the approach and the verification of the results. Table 3.2 shows that using this method gives a capital spending estimate of £2.8m for 1817 to 1826, and shows capital spending rising throughout the period to a peak of £423,000 in 1825. The boom in capital spending also led to a boom in trust borrowing, with debt increasing from £5.3m in 1820 to £8.5m in 1834.[16] In turn, this debt increase explains the 'great alarm' of the House of Lords Select Committee in 1833 at the 'increasing debt of turnpike trusts'.[17]

Table 3.2 Turnpike trust capital spending estimate 1817-26

	Ginarlis estimate	Land, debt etc costs	Total spending	New Act capital	Residual capital	All capital
	£000	£000	£000	£000	£000	£000
1817	880	308	1,188	56	172	228
1818	877	307	1,184	80	172	252
1819	937	328	1,265	40	183	223
1820	921	322	1,243	24	180	204
1821	928	325	1,253	8	182	190
1822	1,042	365	1,407	24	204	228
1823	1,115	390	1,505	56	218	274
1824	1,174	411	1,585	152	230	382
1825	1,219	427	1,646	184	239	423
1826	1,163	407	1,570	136	228	364
1817-26	**10,256**	**3,591**	**13,847**	**760**	**2,008**	**2,768**

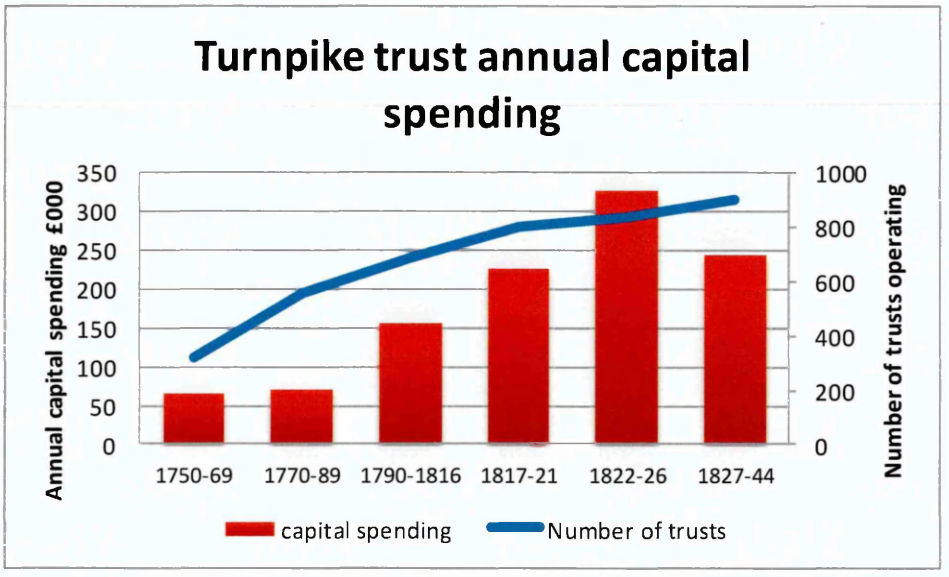
Source: Appendix 3.A

The above approach to estimating capital spending in the 1820s can be used to make estimates of trust capital spending back to 1750. Figure 3.3 indicates that turnpike trust capital spending in the twenty years from 1750 averaged £75,000 a year. This period is normally considered the peak time for the creation of trusts. However, Albert's list of trust formations shows that there were only around 300 trusts operating by 1770. In contrast, three times as many trusts were operating by 1826, and they invested an average of £335,000 a year between 1822 and

[15] The 1834 to 1838 returns show around 60 per cent of capital spend financed by borrowing. In the borrowing boom of the 1820s a much higher proportion will have been financed by borrowing.
[16] See appendix 3.A.
[17] BPP 1833 (703) House of Lords report, p. iv.

1826.[18] Figure 3.3 confirms that the five year period 1822-6 was clearly the peak for turnpike trust capital spending. It also indicates that the main determinant of turnpike trust capital spending was the number of trusts operating at the time, not the number of new trust Acts passed in the year.

Figure 3.3



Sources: Number of trusts: Albert, *Turnpike Roads,* appendix B.
Capital spending: see appendix 3.A

How was this capital spending of £2.8m financed? Parliamentary returns show that after 1834, trusts financed 40 per cent of investment spending direct from toll income.[19] This high figure was a reflection of the pressure on trusts to reduce their borrowing. In the years 1817 to 1826, rising income made it relatively easy to justify new debt, and trust debt boomed. Table 3.2 therefore assumes that trusts borrowed in order to finance 90 per cent of their capital spending between 1817 and 1826. This is equivalent to nearly £2.5m of the £2.8m capital investment. The PWLB ledger of loan applications shows that PWLB lending to trusts in these ten years totalled £430,000, or 16 per cent of trust capital spending.[20] The question therefore arises: where did the remaining £1.5m of turnpike capital finance come from?

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[18] Albert *Turnpike Roads*, appendix B, pp. 201-223 lists over 900 trusts in 1826, although the returns of the period show more than a thousand. Some trusts functioned in two or more divisions, however, and submitted a return for each.
[19] The critical early returns were: BPP 1821 (747), BPP 1824 (470), BPP 1833 (733), and BPP 1836 (2). After 1834, trust returns to Parliament were annual.
[20] National Archives, PWLB 6/1, Applications ledger 1817-41.

Table 3.3 Sources of turnpike trust capital 1817-26		
	Ten year totals	
	£000	Share
Fixed capital		
Toll income	277	10%
Borrowing		
PWLB	430	16%
Individuals	1,999	72%
Societies	55	2%
Banks etc	7	0%
Total capital finance	**2,768**	**100%**

Sources: Toll income from appendix 3.A, PWLB lending
lending from PWLB 6/1 applications ledger.
other finance from sample of trust mortgage

An examination of the mortgage registers of 41 trusts shows that the trusts raised over £200,000 across the period 1758 to 1845, through nearly 850 loans. The overwhelming proportion of this non-PWLB lending is shown as coming from individuals. There are no examples of loans from banks or insurance companies.[21] However, Albert gives two examples of loans from banks, one for £1,500 and one for £300.[22] There is also just a single example of a loan from an insurance company, and that was for a maximum of £5,000.[23] This suggests that lending from banks and insurance companies was much less than 1 per cent of the total. The registers also show that 14 loans, or 2 per cent of loans, came from local groups such as schools, religious bodies and local corporations or parishes.[24] In nearly a third of the 41 trusts examined, a local landowner or a clergyman acted as an anchor lender with an early loan of £1,000 or more, but the vast majority of the loans were for around £100 each.[25] The role of the anchor lender was to encourage other smaller lenders by reassuring them that the loan would be safe. It is also clear from the mortgage registers that there were no more

[21] Appendix 3.B gives the record office and file reference for each trust mortgage register examined.
[22] Albert, *Turnpike Roads*, pp. 76, 108. Yorkshire Joint Stock Bank loan to Wibsey Low Moor Trust in 1823, and subscription from Bradford Bank to the same trust in the same year.
[23] Robin Pearson, 'Collective Diversification: Manchester Cotton Merchants and the Insurance Business in the Early Nineteenth Century', *Business History Review* Vol 65 Summer 1991, pp. 379-414, 409, 412.
[24] Appendix 3.B shows five contributions from corporations or parishes, and nine from schools, benevolent societies and religious orders.
[25] The Duke of Devonshire was (with the Duke of Norfolk and the Earl of Surrey) locally the anchor lender for the Sheffield to Glossop Trust, and was sole lender for the Ashford and Buxton Trust. Sheffield Archives, Arundel MSS D67 CPG 8(6), and A.F. Roberts, *Turnpike Roads Around Buxton* (Buxton, A. F. Roberts Publications, 1992), pp. 89-104.

than ten examples of lenders that were not local to the area served by the turnpike trust. Therefore, the 72 per cent of turnpike trust capital finance that came from individuals was overwhelmingly from local individuals.

Table 3.4	Professions of those lending money to turnpike trusts and canals		
	Landowners	Commercial interests	Savers
Turnpike trust lenders, 1755-1845	42%	31%	27%
Canal shareholders, 1750-1850	22%	66%	12%
Canal mortgagees, 1750-1850	24%	46%	30%

Source: See appendix 3.B, and J. R. Ward, *The Finance of Canal Building in Eighteenth Century England*, London, OUP, 1974)
Note: Percentages represent numbers of people in each group.

Because the scale of lending from individuals was so large, it is useful to try to understand who was lending to trusts, and why. Turnpike trust mortgage registers often give the social class of the lender, and it is possible to reduce the many social groupings used in mortgage registers to just three. Table 3.4 treats those described as 'lords', 'baronets' and 'gentlemen' as landowners. Those described as 'women', 'churchmen', 'professionals' and estates that are controlled by executors are grouped together as 'savers'. The remaining groups, described as 'merchants', 'manufacturers, 'bankers', 'farmers', 'yeomen' and 'tradesmen' are grouped together as 'commercial interests'. The landowners and commercial interests can be expected to have lent money to the turnpike trust in order to increase the value of their land or business. In contrast, the savers can be expected to have lent money to the trust simply to earn interest on the sum.

Table 3.4 shows similar groupings for canal shareholders and canal mortgagees.[26] The differences and similarities are striking, and point to two conclusions from the analysis. First, that lending to turnpike trusts and canals was more attractive to savers, confirming the view that savers were looking for interest on their savings. Savers did not want to take the risk of buying canal shares, even though the rewards may have been high. Similarly, commercial interests were much more willing to invest in canal shares, where they might both earn a return and see better transport links improve the profitability of their businesses. Second,

[26] J. R. Ward, *The Finance of Canal Building in Eighteenth Century England* (London, Oxford University Press, 1974). Summary of Ward's figures for individual canals.

table 3.4 suggests that the greater attractiveness of turnpike loans to landowners was because they expected to see a return from their investment in terms of increased land values or increased rental income. To a lesser extent this also appears to have been true of commercial interests and their lending to turnpike trusts. This conclusion is consistent with Bogart's findings that land values and rental yields rose by 20 per cent after the road improvements delivered by turnpike trusts.[27] The importance of local savers as turnpike lenders will become critical in section 3.4.

Section 3.1 has shown that the 1820s were the peak period for turnpike trust capital formation. It has also shown that Ginarlis's estimates of trust capital formation are too high by a factor of four. A much more realistic estimate is that £2.8m was invested in turnpike improvements between 1817 and 1826. The peak years for the boom in investment and borrowing were between 1824 and 1826, when an average of £390,000 a year was being invested. Ten per cent of this £2.8m was financed directly from toll income, and 16 per cent came from PWLB lending. The balance of 74 per cent was borrowed from local lenders, predominantly in loans of around £100. The PWLB's lending of £430,000 was modest, both as a monetary total, and as a share of the £2.8m. The following sections show that there was a danger that PWLB lending had financed unsound projects, and had fuelled the boom in trust borrowing.

3.2 Turnpike trust applications to the PWLB

This section examines the PWLB's thought processes as it dealt with loan applications from turnpike trusts. It also explores the consequences of the Board's decisions on the boom in road improvements, and on non-PWLB lenders to trusts. The focus is on the national picture, but this is illustrated by considering the applications of individual trusts.

[27] D. Bogart, 'Turnpike Trusts and Property Income: New Evidence on the Effects of Transport Improvement and Legislation in Eighteenth Century England'. *Economic History Review, Vol* 62, no. 1 2009, pp. 128-152.

Table 3.5 Turnpike trust applications to PWLB 1817-26			
	Number	Total value £000	Ave size £000
Over £5,000	65	658	10.1
£2000-£5000	96	281	2.9
Under £2000	102	96	0.9
All	**263**	**1,035**	**3.9**

Source: National Archives, PWLB 6/1 applications ledger.

Between 1817 and 1826, there were 263 applications for loans to the PWLB from turnpike trusts, with a total value of just over £1m. The average size of each application was just under £4,000 (see table 3.5). Applications from turnpike trusts were therefore small when compared to those for canals, railways, harbours and other transport related public works.[28] This low value was a reflection of the relatively short lengths of road that each of the 1,000 trusts were responsible for. Table 3.6 shows the applications by year. Nearly a quarter of the 263 applications were made in 1826, and a sixth were made in 1817. So, altogether, these two years account for 40 per cent of the applications.

Table 3.6	Applications and Acts by year		
	Applications		Turnpike Acts
	Number	Share	No.
1817	44	17%	7
1818	14	5%	10
1819	17	6%	5
1820	25	10%	3
1821	22	8%	1
1822	21	8%	3
1823	29	11%	7
1824	11	4%	19
1825	20	8%	23
1826	60	23%	17
total	**263**	**100%**	**95**

Source: National Archives, PWLB 6/1 applications ledger. Act numbers, Albert, *Turnpike Roads,* appendix B.

The explanation for the 44 applications in 1817 was that a new source of finance initially attracted a large number of applications. This initial surge of applications

[28] See table 2.4, chapter 2.

was seen in the PWLB applications across all sectors of the economy. After 1817, the annual number of turnpike applications halved, and averaged 20 a year until 1826. The number of applications then trebled to 60 in 1826. Four factors might have contributed to the 1826 increase in applications for PWLB loans. The first is that the increase in the number of new turnpike Acts in 1824-6 could have led to an accompanying rise in applications to the PWLB in 1826. This was partially correct, since 17 of the 60 applications to the PWLB in 1826 came from newly formed trusts.[29] However, more than two thirds of the 1826 applications came from well-established trusts. Therefore, the increasing number of new Acts does not fully explain the rise in applications to the PWLB. The second possible explanation is that the economic downturn in 1826 caused a reduction in trust income, reducing trusts' ability to finance improvements from toll income. In these circumstances, trusts would seek to borrow more. Yet this is unconvincing: capital spending fell by about the same amount as the fall in income.[30] The third possible explanation is that the better road construction techniques of John Macadam and Thomas Telford led to pressure for increased capital spending.[31] However, this happened throughout the 1820s, and does not therefore explain the 1826 rise in application numbers.

A much more convincing explanation is that the constant increases in trust capital spending had simply exhausted the capacity of local savers to fund them. In particular, the increase in average investment from £230,000 a year before 1823, to an average of £400,000 in 1824 and 1825, with local savers financing 90 per cent of it, will have reduced the available pool of local savings. On top of this, the 1826 crisis will have reduced the ability of the middle class to save in that year. With local savings squeezed by these two pressures, turnpike trusts had to look elsewhere for finance. Since table 3.3 shows that banks provided no loans to turnpike trusts, and that trust income had dipped slightly, the only alternative to a more dramatic fall in capital investment was an increase in applications to the PWLB. This explanation is confirmed by noting that in 1826 the PWLB granted loans equal to 27 per cent of trust capital spending in the year. In contrast, in the

[29] Derived by cross checking Albert's list of new Acts with the PWLB's list of applications.
[30] See table 3.2. It is reasonable to assume that the spending fall in the table was matched by an income fall.
[31] Albert, *Turnpike Roads*, pp. 142-148.

nine years before 1826 the PWLB had granted loans equal to just 14 per cent of trust capital spending. The increase in applications to the PWLB in 1826 was a forced change in trust financing strategy, not a change in trust spending levels.

Borrowing from the PWLB was more expensive than borrowing locally. Trusts borrowing from the PWLB had to repay at least 5 per cent of the loan each year, and pay 5 per cent interest, so each loan cost 10 per cent of its value each year.[32] On the other hand, borrowing from local lenders would cost an average of around 5 per cent a year, since most trusts made no repayments of debt, and some did not pay all the interest due.[33] Turnpike trusts would not, therefore, have borrowed from the PWLB as a matter of choice; they would only have done so when there was no alternative way to finance their improvement plans. The PWLB was therefore acting as a 5 per cent lender when trusts were unable to borrow from local lenders.

Table 3.7 Outcome of turnpike trust applications 1817-26

	Number	Granted	Rejected	Withdrawn abandoned
Over £5,000	65	46%	25%	29%
£2-5,000	96	38%	20%	43%
Under £2,000	102	50%	18%	32%
All		43%	21%	36%
All numbers	263	114	55	94

Source: Analysis of PWLB 6/1 applications ledger.

Forty three per cent of turnpike applications to the PWLB were successful. This was little different to the average for all applications to the Board between 1817 and 1826, but substantially higher than for the mining applications detailed in chapter 2. The 43 per cent success rate did not vary materially in the 'surge' years of 1817 or 1826. Neither did the size of an application make a material difference to its outcome, as table 3.7 makes clear. Table 3.7 also shows that just 21 per cent of turnpike trust applications were rejected. The remaining 35 per cent were withdrawn or abandoned by applicants who chose not to proceed with the application. The explanation for the high withdrawal/abandoned rate lies in the questions that the PWLB asked applicants. These were much more financially

[32] The PWLB minute books give details of the terms of most loans, and the 1843 PWLB return to Parliament show the interest rate for each loan, and the loan repayments for each loan. BPP 1843 (47), Exchequer Loans (Public Works).
[33] This is clear from the trust annual returns to Parliament.

based than was the case with mining applications, and the PWLB would probe the trust's business case for the loan. Doubts about the financial merits of an application was the most common reason the Board gave for rejecting turnpike applications, accounting for 31 out of 55 rejections.[34] Very often applicants could not provide satisfactory answers to the financial questions, and did not pursue their applications. These applications were then treated as withdrawn or abandoned. Only if the financial questions were satisfactorily answered would questions be asked about the security that the applicant could offer. The inability of applicants to provide sufficient security led to the rejection of 11 applications.

An examination of the four turnpike applications set out in table 3.8 gives a deeper understanding of the PWLB's thinking on turnpike applications. In the first case, that of Leeds Dewsbury, the trust provided no financial information at all to support its 1817 application. Despite this, the Board granted a £5,000 loan, but made the loan subject to a number of personal sureties being given by trustees. As with the mining applications, the PWLB wanted to ensure that it would be repaid even if the turnpike trust itself was unable to repay the loan. Initially, the trustees refused to accept this condition because they were unwilling to accept personal responsibility for the loan. Without sureties from the trustees, the Board would reject the application. The trustees then wrote to the Prime Minister, asking him to intervene and get the PWLB to make the loan without the trustees' personal security. Lord Liverpool declined, and the PWLB maintained its view that no loan would be made without adequate security. Eventually, the Leeds and Dewsbury trust conceded, and a number of trustees provided personal sureties. The Board made two further loans to the Leeds Dewsbury trust, in 1818 and 1822. Worryingly, the 1822/3 return to Parliament showed that the trust was making no loan repayments on its £19,000 loans from non-PWLB lenders, and only had toll income of £1,900 a year.[35] In spite of this, the PWLB loans were repaid on time and the trustees were not called upon to honour their guarantee.[36] The Leeds Dewsbury trust case illustrates the absolute priority the PWLB gave to securing sufficient security for all loans. It also shows that the Board was willing to make loan advances even when the applicant was making inadequate provision to

[34] Analysis of the PWLB minute book discussions on individual applications.
[35] BPP 1824 (470), Turnpike Trust Returns 1822/3, p. 862.
[36] National Archives, PWLB 2/2 minute book, 16 March 1820, p. 329.

repay non-PWLB lenders. The trust's fortunes later improved, and all the non-PWLB lenders eventually received repayment of their loans.

Table 3.8	Details supporting four applications to the PWLB							
	Leeds Dewsbury		Stratford Dunchurch		Leeds Whitehall		Gomersal Dewsbury	
Date	24 July 1817		28 August 1820		5 July 1826		20 Sept 1826	
Application £	£5,000		£8,000		£10,000		£3,500	
Cost of work	Unclear		£8,000		£22,000		£3,500	
	Past	Future	Past	Future	Past	Future	Past	Future
Debt	no		5500		8000	18000	0	3500
Income	details		570	1450		4800		750
Costs	provided		636	1436		4100		250
Surplus/deficit			-66	14		700		500
Outcome	Granted with personal security		Granted		Granted with personal security		Refused	

Sources: PWLB 2/1-7 minute books.

Note: 'Past' = recent actual income, debt, costs etc. 'Future' = trusts' estimated costs etc once the improvements were complete.

The Stratford Dunchurch turnpike trust application was for an £8,000 loan to finance an improvement on its part of the London to Holyhead road. The improvement was part of seven schemes proposed after Telford's survey of the whole road for the government.[37] The trust's expectation was that toll income would more than double after the improvement. However, because the trust expected that costs would also double, little more than a bare breakeven would be achieved. In practice, the Board had no choice but to approve this application, since Parliament had legislated to approve both the London to Holyhead road improvements and the loan to finance them.[38] The PWLB was therefore directed to make the loan. This was a rare case of parliamentary intervention in the PWLB's decision making process. On this occasion, the loan was easily repaid.[39]

[37] BPP 1824 (305) First report of the London Holyhead Road Commission.

[38] Ginarlis and Pollard, 'Roads and Waterways 1750-1850', p. 200, suggest that the government was keen to improve its ability to transport soldiers to Holyhead and on to Ireland.

[39] London-Holyhead Road Acts 1823 and 1827, 1&2 George IV c30 and 2&3 George IV c91 s39 approved seven schemes for the improvement of the London-Holyhead road, at a cost of £36,000 and £54,000 respectively.

A subsequent directed loan for Holyhead road improvements was not repaid, however, and eventually had to be written off.[40]

The next two examples show the importance of personal security and local contributions in the PWLB's decision making. They also highlight the impact of trust insolvency on non-PWLB lenders. The Leeds Whitehall trust wanted a loan of £10,000 towards a £22,000 scheme.[41] The rest of the costs were met by loans totalling £12,000 from local people. The financial projection was of a reasonable surplus, after meeting loan costs, and after personal security was offered by the trustees, the loan was granted. By 1834, the Leeds Whitehall trust had built up a debt of £69,000, but only had an income of £2,243 for the year.[42] The trust was technically insolvent, because it was unable to service its debts.[43] In spite of its insolvency, the PWLB loan was repaid in full, because the trust had accepted the Board's standard condition of PWLB loans being repaid before all other debts.[44] By the time the trust was dissolved in 1859, its non-PWLB lenders had been paid only 84 pence in the pound for their loans. In addition, they only received 31 pence in the pound of the interest due to them. Collectively, the non-PWLB lenders lost £77,000.

The financial case for the Gomersal trust was just as strong as that for Leeds Whitehall. The difference was that this trust had not been able to raise any loans from local people, so the whole cost had to be financed by a £3,500 PWLB loan. Crucially, the Gomersal trustees refused to provide personal security, so the Board rejected the application. Gomersal eventually borrowed from local people, and the scheme went ahead. By 1834, the trust had accumulated a debt of nearly £13,000, but had annual income of only £295, so could not even afford to pay interest on its debts unless income rose sharply.[45] Like Leeds Whitehall, the Gomersal trust was technically insolvent. However, over the next 40 years it did

[40] See appendix 7.B for a list of all 'directed loans'.
[41] National Archives, PWLB 2/7, minute book, September 1826 to January 1828, 5 July 1827, p. 224.
[42] BPP 1836 (2) Returns from Turnpike Trusts 1834.
[43] The 1986 Insolvency Act says that an entity is insolvent if it is unable to pay its debts when they fall due. See www.legislation.gov.uk/ukpgs/1986/c45. S122(1)f accessed 17 September 2012.
[44] BPP 1851 (512) PWLB report to Parliament, which lists loans with outstanding debts.
[45] BPP 1836 (2), Turnpike Trust Returns 1834.

manage to repay all of its loans, and 86 pence in the pound of its interest due.[46] Local lenders lost 'only' £6,500.

These four examples illustrate three factors that have a broader importance. First, three of the sample turnpike trusts were technically insolvent by 1834. One of the three failed to repay a post-1826 PWLB loan, and the two others failed to make full repayment to their non-PWLB lenders. How widespread was this problem? Second, the PWLB was willing to lend to individual trusts that had no means of repaying existing non-PWLB loans.[47] The PWLB's simple response to this problem was to ensure that PWLB loans were repaid first. With the desire to ensure that it was able to recover its own loans, the PWLB appeared indifferent to the fate of non-PWLB lenders. Third, the PWLB appeared to be more willing to lend in two circumstances. Each of these three factors will be examined separately.

Table 3.9 The parlous state of turnpike trust finances in 1834

	All Trusts 1834
Most trusts were not meeting their debt service obligations	
Proportion not repaying loans	74%
Proportion not fully meeting interest payments	50%
Making proper debt service provision would make many trusts insolvent	
Proportion of trusts where proper debt service costs exceeded trust annual income	28%

Sources: Analysis of data from BPP 1836 (2), trusts' returns to Parliament.

An examination of the 1834 turnpike trust returns to Parliament reveals that 28 per cent of trusts were technically insolvent.[48] This means that their income was insufficient to allow them to repay their loans over 20 years, and to pay their lenders 5 per cent interest a year.[49] Therefore, a trust should have provided for debt service costs of a combined 10 per cent of the loan's value. On this basis, if a trust had debt more than ten times its annual income, it was insolvent because it

[46] See appendix 3.C for BPP numbers of annual reports of turnpike spending between 1852 and 1884.
[47] BPP 1836 (2) shows that the PWLB lent to 45 trusts that were technically insolvent in 1834.
[48] BPP 1836 (2). This was not a new problem. The same test applied to the 1822/3 returns in BPP 1824 (470) reveals that 23 per cent of trusts were insolvent.
[49] BPP 1836 (2) shows that most turnpike debts carried interest at 5 per cent. The Acts creating trusts gave the right to levy tolls for a 21 year period. Assuming an initial year for construction, this meant that all debt needed to be discharged within 20 years.

would be unable to meet its debt service costs even if it devoted all of its income to the task. However, this test understates the problem, because the 1834 returns to Parliament showed that 74 per cent of trusts were not repaying their loans (or making provision to do so), and 50 per cent were not fully meeting their interest payments to non-PWLB lenders (see table 3.9). The problem of trusts' indebtedness was therefore widespread, and meant that very large numbers of non-PWLB lenders would lose money on their loans to turnpike trusts.

The second factor revealed by the four examples is that the PWLB appeared more concerned to secure repayment of their own loans, and less concerned about the fate of non-PWLB lenders. This was a natural consequence of the PWLB's philosophy of putting the recovery of its loans above all else. While this philosophy may be understandable in a bank manager, it looks odd in a government agency. It raises questions of whether the PWLB could or should have behaved differently and exercised a role in the regulation of trust debt to minimise the risks of non-payment to non-PWLB lenders. This issue is addressed in section 3.4.

Table 3.10	Impact of time and size of application				
	No. of apps	Share <£2K	Granted	Rejected	With-drawn etc
1817-8 applications	58	59%	59%	2%	40%
1825-6 applications	80	25%	39%	29%	33%

Source: National Archives, PWLB 6/1 applications ledgers analysis.

The third issue raised by the four examples is that the PWLB were much more willing to grant turnpike trust loans in 1817 than they were in 1826. Table 3.10 shows that the Board granted 59 per cent of all 1817 applications for loans under £2,000, rejecting just 2 per cent of the applications. These outcomes were materially different to the 29 per cent rejection rate for small applications in 1826. This pattern is partly explained by Grant's 1821 letter to the Chancellor of the Exchequer, revealing a preference for small loans for 'useful schemes'.[50] By 1826 the Board would have been more conscious that the debt of turnpike trusts was climbing unsustainably, and that turnpike trust loans were looking riskier.

[50] National Archives, PWLB 2/3 minute book, 15 February 1821, p. 178.

Table 3.11 Impact of local contributions on outcomes 1817-26				
All applications	No. of applic's	Granted	Rejected	With drawn etc
With contribution	66	65%	24%	11%
No contribution	197	38%	19%	44%

Source: National Archives, PWLB 6/1 applications ledger.

Notes: 'With contribution' indicates those loans where non-PWLB lenders were providing some of the finance. 'No contribution' indicates loans where a PWLB loan was the sole source of finance.

Finally, the Gomersal example shows that the PWLB was more inclined to accept an application where some of the costs of an improvement scheme were financed by loans from local lenders. Table 3.11 shows that 65 per cent of applications to the PWLB were accepted where there was a contribution from toll income of non-PWLB lenders. In contrast, only 38 per cent of those where the PWLB was the only source of finance were granted. The reason for the difference is probably that the business cases for schemes with a local contribution had already been tested and found supportable. They were therefore more likely to gain support from the PWLB.

This section has shown that nearly a quarter of PWLB lending to turnpike trusts occurred in 1826, at the peak of the boom in trust capital investment. So, trust investment was not affected by the economic downturn of 1825/6. Instead, it suggests that the savings of local, non-PWLB lenders to turnpike trusts were insufficient to finance this increase in investment. Trusts therefore increased their borrowing from the PWLB. Borrowing from the PWLB was more expensive than normal trust borrowing (if only because most trusts did not pay interest in full, or make provision for loan repayments). The PWLB was therefore acting as a market rate lender when other sources were unavailable. However, the 1834 returns show that £1m was owed to local lenders for unpaid interest, and 74 per cent of trusts were making inadequate provision for the repayment of their borrowings.[51] Consequently, trusts should have been using their increased toll income to pay the interest they owed, and to repay loans. Trusts ought not to have been increasing their loans in 1826. PWLB lending thus exacerbated the boom in trust debt, and contributed to the eventual losses suffered by non-PWLB lenders after

[51] BPP 1836 (2), Turnpike Trust Returns 1834.

1850. This reinforces the view set out in chapter 2 that the PWLB was making its lending decisions as a bank manager would: extremely concerned for the security of its own loans, and not concerned at all with the impact on non-PWLB lenders.

3.3 Recovery of loans

A good test of PWLB decision making is whether trusts that were granted PWLB loans were more, or less, prone to insolvency. If the Board had been good at weeding out the applicants with potential financial problems, then fewer than 28 per cent of trusts with PWLB loans would have been insolvent in 1834. Equally, if the years 1817 to 1826 represented a period of unwise borrowing, then a higher proportion of newly created trusts would have been insolvent in 1834. This section tests these propositions. It also examines the PWLB's ability to recover its loans, and compares the financial performance of turnpike trust loans with those of all PWLB lending in the period 1817 to 1826. Finally, this section highlights the consequences of turnpike trust insolvencies on the large number of non-PWLB lenders to trusts.

Table 3.12	**Relative insolvency rates**		
	Number in sample	Insolvent Number	Share
All Trusts	1,025	283	28%
Pre 1817 Trusts	960	237	25%
Post 1817 Trusts	65	46	71%
Trusts with PWLB loans	72	16	22%
Pre 1817 Trusts with PWLB loans	66	11	17%
Post 1817 Trusts with PWLB loans	6	5	83%

Source: BPP 1836 (2). Trusts with PWLB loans, PWLB 6/1. Post 1817 trusts (those created after 1817) from Albert, *Turnpike Roads*, appendix B.

Notes: Of the 118 trusts with PWLB loans it was only possible to identify 72 in BPP 1836 (2). It was also only possible to identify 66 of the 95 post-1817 trusts in BPP 1836 (2).

Table 3.12 shows the relative rates of insolvency for different groupings of trusts. As shown in section 3.2, 28 per cent of all trusts were insolvent in 1834. However, table 3.12 shows that 71 per cent of trusts created after 1817 were insolvent in 1834. This is consistent with a boom period in trust borrowing, and with new trusts being able to borrow on less viable business plans. The same trend is shown in the new trusts benefitting from PWLB loans, with 83 per cent of this group being

insolvent in 1834, compared to just 17 per cent of pre-1817 trusts with PWLB loans. The PWLB was therefore more willing to invest in new trusts than was really justified by their business cases. Instead of acting as a restraining hand, the Board participated in the boom just as enthusiastically as trusts and non-PWLB lenders. The PWLB exacerbated the boom in turnpike borrowing in the period 1817 to 1826.

If PWLB and non-PWLB lending to new trusts was equally optimistic, then the consequences were very different for the two groups. The PWLB recovered the vast majority of its loans, but non-PWLB lenders were much less fortunate. Of the 118 loans the Board made, 21 loans, or 18 per cent, had some form of difficulty with repayment. These difficulties were dealt with by granting extensions in four cases, and even payment holidays in a few cases, as instalment payments were missed in seven cases. In six cases where these actions did not resolve the non-repayment, legal action was taken, and led to full recoveries in two cases. Table 3.13 lists the four remaining cases where there were outstanding balances in 1851, amounting to around £63,000, or 15 per cent of the total lent.[52] In the 1888 PWLB annual report, three of these debts were reported as having been written off, and one had been recovered.[53] The following paragraphs recount the story of four of the debts.

Table 3.13 Turnpike Trust bad debts in 1851

	Original loan	Oustanding in 1851	Outcome
	£	£	
Gatton & Povey Cross	5,500	5,500	£5,500 written off in 1850
Bradford & Thornton	6,000	6,000	Fully repaid by 1859
Bradford & Eccleshall	3,000	3,000	£3,000 written off in 1850
Highland Roads & Bridges	51,450	49,029	£36,000 written off in 1876
	65,950	63,529	
Total written off as %age of loans		**15%**	

Sources: PWLB Report to Parliament, BPP 1851 (512)
and BPP 1888 (200) PWLB annual report 1887.

The first irrecoverable debt was that of the Gatton and Povey Cross trust in Surrey. The trust applied for a loan of £3,500 in July 1817, and this was agreed

[52] BPP 1851 (512), PWLB Report to Parliament, pp. 3-34.
[53] BPP 1888 (200) 13th PWLB Annual Report, pp. 134-9.

almost without challenge or debate.[54] In 1818, the trust applied for a second loan of £2,000 when the work went over budget. Only at this point did the PWLB recognise that the business case was weak, and so asked for personal security from two trustees. These two wisely proposed adding the surveyor as a third, so that he had an interest in completing the work satisfactorily. The eventual cost of the work was £13,000, but annual income was just £122. In 1821 the PWLB took possession of the tollgates and so collected the income direct. However, income remained too low to pay off any of the debt, and little of the interest. Two of the sureties accepted their responsibilities and paid the interest until they ran out of money themselves. The third surety was the surveyor, and he disappeared to Ireland, never to be heard of again. By 1851, none of the principal of the loans had been repaid, and around £5,000 of interest charges remained unpaid.[55] The trust was wound up in 1850 with outright losses to all its creditors, and the PWLB wrote off its loans. This was a simple error of judgement by the Board in 1817 and 1818, making two small loans on poor or non-existent business cases.

The two Bradford loans represent a different kind of error of judgement by the PWLB. The PWLB applications ledger records that the reason for the applications were 'alleviating (the) starving population of Bradford' and 'to provide works for the distressed poor' respectively.[56] The extent to which these explanations influenced the Board only emerged in a PWLB minute in December 1837.[57] The minute reveals that in August 1826 the PWLB vice chairman, Benjamin Harrison, saw the Home Secretary to discuss four applications from the West Riding of Yorkshire. In 1837, when he had become the PWLB chairman, Harrison recalled that the Home Secretary saw the West Riding as being in 'an extreme state of distress' because of a 'temporary want of employment in manufacturing'. The outcome of the discussions was that the Home Secretary had 'encouraged' the PWLB chairman to grant loans. Without this encouragement the PWLB would have rejected the applications because the cases for the loans were commercially very weak. The Board's error of judgement was to be persuaded to make loans that it judged commercially unjustified.

[54] The details come from the very large number of minuted PWLB discussions of this debt.
[55] BPP 1851 (512) PWLB Report to Parliament, pp. 3-34.
[56] National Archives, PWLB applications ledger PWLB 6/1 numbers 736 and 743, August 1826.
[57] National Archives, PWLB minute book 2/16, 21 December 1837, pp. 203-5.

The Bradford Eccleshill loan was never likely to be repaid, because the business case looked hopeless. In addition to the £3,000 PWLB loan, the trust managed to borrow another £2,600 locally to finish the road. However, toll income never rose above £100 a year, so there was no prospect of paying interest or repaying the loan. The PWLB chased it for payment in 1831, but conceded that it was a lost cause.[58] The trustees did not even meet between 1831 and 1839, and the trust was wound up in 1850, with neither the PWLB nor the local lenders recovering any of their money.

The Bradford Thornton loan was more complex. In addition to the £6,000 PWLB loan, the trust raised local loans of £3,000 to complete the road in 1829. Included in the £3,000 was £1,000 from E. C. Lister, who was a Bradford MP from 1832 to 1841. Income ranged between £500-800 a year; and the trust chose to use this income to repay the £3,000 raised locally, rather than maintain the road or repay the PWLB. This was of course contrary to the PWLB's position as preferential creditor, and the Board protested, but without effect. The trust minute books reveal that the decision to repay Lister's loan was taken at a meeting when Lister was in the chair![59] Eventually, in 1841 the PWLB took possession of the tollgates. Although the 1851 report shows no principal having been repaid, in the period 1851 to 1859 the PWLB managed to recover the loan and the interest due.[60] In both Bradford cases the PWLB had allowed its independence to be compromised by a politician's influence. These two loans highlight the dangers of political decision making on loans, and the benefits of disinterested PWLB decision making.

The final case of non-recovery was the result of parliamentary decision making, with the PWLB playing no role. The Commission for Highland Roads and Bridges promoted a local Bill to approve the building of a series of east-west and north-south roads in Lanarkshire and Dumbartonshire.[61] The Act 'authorised and required' the PWLB to advance a loan for up to £51,450.[62] Once the roads were completed, the Commission was to operate them as a turnpike trust, and to repay

[58] Bradford Record Office, 5D76/1/1, minute book of Bradford Eccleshill trust.
[59] Bradford Record Office 5D76/2/2, Bradford Thornton minute book and 5D76/2/1 mortgage book.
[60] BPP 1851 (512), PWLB Report to Parliament, p. 8.
[61] Roads in Lanark and Dumbarton Roads and Bridges Act 1820, 1 George IV c84. (The modern spelling is 'Dunbartonshire' but in 1820 it was 'Dumbartonshire'.)
[62] Lanark and Dumbarton Roads Act 1820, section XXI.

the loans from toll income.[63] Ginarlis and Pollard argue that the rationale for the roads was not commercial, but political: 'the activities in Scotland were concerned with the continued pacification of a potential ally of the French'.[64] The roads failed to generate sufficient toll income; thirty years later, in 1851, £49,000 was still outstanding.[65] By 1888, the debt had been reduced to £36,421 and was written off, together with £120,000 of unpaid interest.[66] Chapter 7 shows that this outcome was typical of the cases where parliamentary action directed the PWLB to make loans, often against the PWLB's judgement.

Of these four write offs, only the Gatton and Povey loans were entirely the result of flawed PWLB decision making. The two Bradford loans were cases of the PWLB making loans against its better judgement, after the intervention of the Home Secretary. By bowing to the Home Secretary's wishes, the PWLB failed to meet its own high standards of independent decision making. In the Scottish loan case, Parliament legislated to bypass the PWLB's independent decision making. Three of these loans would not have been made by the PWLB acting alone, and the losses would thus have been avoided. These three cases demonstrate the benefits of the PWLB as a disinterested and independent decision maker. However, they also demonstrate the danger of not creating the PWLB as an entirely independent body.

The four turnpike trust bad debts meant that in 1851, 15 per cent of the value of all turnpike loans was still outstanding. Table 3.14 shows that this was a much worse performance than the 5 per cent of all the PWLB's 1817-26 loans that were outstanding in 1851.[67] For a higher risk lender, the overall 5 per cent bad debt rate was a commendable performance. The reason that the performance of the road loans was so much worse was entirely due to the losses on the Scottish loan made at Parliament's instigation. Without this loss, the PWLB write offs on the Gatton and Bradford loans would have been just 3 per cent. By the end of 1826, table 3.15 shows that the PWLB had lost £7,000 on its turnpike trust loans. This

[63] Lanark and Dumbarton Roads Act 1820, section XVI.
[64] Ginarlis & Pollard, 'Roads and Waterways, 1750-1850', p. 200.
[65] BPP 1851 (512) PWLB report to Parliament, pp. 3-34.
[66] BPP 1888 (200) 13th PWLB Annual Report.
[67] BPP 1851 (512) PWLB Report to Parliament.

was a poor performance, and one that would get much worse as the unpaid interest on the Highland roads loan grew.

Table 3.14	PWLB bad debts for 1817-26			
	Sum lent	Bad debts at 1851		Share of
	£000	Number	Value £000	sums lent
Bridges	195	1	39	20%
Turnpikes	435	4	64	15%
Rail	154	1	16	10%
Colleges	88	1	9	10%
Canals	651	1	13	2%
Mines	267	2	6	2%
Fisheries	34	1	1	3%
Improvements	550	2	3	1%
Harbours	278	1	1	0%
Drainage	282	0	0	0%
Gaols	212	0	0	0%
All others	86	0	0	0%
All loans	**3232**	**14**	**147**	**5%**

Source: BPP 1851 (512) PWLB Report to Parliament.

Table 3.15	Losses on PWLB turnpike trust loans by 1826		
		£000	£000
Costs	£430,000 borrowed for 19 years, 3.68 per cent	150	
	Expenses 0.4 per cent of £430,000	2	
	Sums eventually written off	45	197
Income	£430,000 lent at 5 per cent for 19 years	204	
	Less interest not paid on Highland Roads and Gatton & Povey loans by 1828	- 15	189
Losses			**7**

Sources: Interest on borrowed money; Homer, *History of Interest Rates*
Expenses, see appendix 7.A. Write-offs BPP 1888 (200) p. 136.

Note: The loss of interest not paid grew to £120,000 by the time the loan was written off.

In 1826, the PWLB had no formal accountability to Parliament, and did not produce annual reports or accounts. Nor did the Board report the profit or loss on its loans (as in table 3.15). Instead, it had informal meetings with the Chancellor of the Exchequer, and acted on the basis that it was to avoid losses. This lack of accountability was common to the three long standing agencies of the Ordnance, the Post Office and naval dockyards. Even the recently created Commissioner of

Woods and Forests, did not produce annual reports to Parliament until 1830.[68] Instead, it was established on the old model of its head being a cabinet minister. The PWLB's failure to account for its actions through an annual report to Parliament missed an opportunity to highlight the impact of ministerial and parliamentary interference in its decision making. Better accountability may have produced better decision making, and better outcomes. However, the PWLB's governance was good because it had the advantages of a small organisation, a stable Board that took all the decisions, and a clear philosophy of lending. None of this was true of the giant and sprawling Ordnance, Post Office or naval dockyards; their governance was as weak as their accountability.[69]

In part at least, the PWLB only managed to recover some of its loans because of its condition that it should be repaid before all other creditors. The PWLB was therefore largely able to avoid the consequences of lending in a boom period, on the back of poor business cases. Non-PWLB lenders were not so fortunate. They had no effective security for their loans, since the only assets a failed trust would own were the tollhouses, and their right to levy tolls.[70] Worse still, most mortgage agreements did not specify the term of the mortgage, assuming instead that mortgages would be repaid when authority to levy tolls ended. Nor did Acts specify a maximum sum that could be borrowed, or that a sinking fund should be established to repay lenders.[71] These shortcomings left local lenders very exposed. In 1833, a House of Lords Select Committee had proposed that individual trusts should not be able to borrow more than three years' income.[72] However, by 1834, trusts owed a collective £8.5m, or five times their collective income. Even so, government declined to intervene, and took no action until 1849.

Between 1849 and 1851, the government accepted the need to intervene, and produced three measures in as many years to address the problem of turnpike trust debt. Legislation made it compulsory for trusts to repay at least 5 per cent of their debt each year; trusts could write off all long term unpaid interest; they could negotiate with lenders to repay debt at less than 100 pence in the pound; they

[68] BPP 1830 (508) First Annual Report of the Commissioner of Woods and Forests.
[69] See footnote 33 in chapter 1.
[70] Francis Phillips, *Analysis of the Defective State of Turnpike Roads as Securities* (Manchester, Longman, 1834).
[71] Pawson, *Transport and Economy*, p. 211.
[72] BPP 1833 (703) House of Lords Report, p. iv.

could negotiate lower interest rates.[73] At the same time, it was made clear that most trusts would be wound down, tolls would end, and trusts would all eventually close. Over the following 30 years, these proposals led to 30-40,000 local lenders collectively losing £5.4m, or 39 per cent of what they were entitled to receive (see table 3.16).[74] There were three elements to this loss: £1.6m of unpaid interest being written off; a further £1.8m of interest being forgone by lenders; and loans worth £2m being written off.[75] The PWLB's 1851 bad debts of 15 per cent look modest beside these losses.

Table 3.16 Losses incurred by trust lenders, 1850-83

	At start of decade		During the decade			**Total**
	Trust numbers	Mortgage debt o/s £m	Unpaid interest £m	loans not repaid £m	Interest given up £m	**Loses to lenders £m**
1850s	1,154	6.5	0.8	0.4	0.7	**1.9**
1860s	1,101	4.8	0.5	0.4	0.7	**1.6**
1870s	936	2.7	0.3	1.2	0.4	**1.9**
up to 1883	113	0.3				
Totals			**1.6**	**2.0**	**1.8**	**5.4**
Loss			**100%**	**31%**	**47%**	**39%**

Source: Annual turnpike trust returns to Parliament, 1852 to 1884.
See appendix 3.C for the detail behind this table.

There are four conclusions to this section. First, it is clear that both the PWLB and non-PWLB lenders were far too willing to lend to newly created turnpike trusts in the 1820s, when capital spending and borrowing increased rapidly. Second, by 1851, the PWLB had bad debts of £63,000, or 15 per cent of all their turnpike trust lending of £430,000. Nearly £50,000 of this bad debt was a loan that the Board was forced to make by Parliament. Without this single large loss, the PWLB's losses would have been below the 5 per cent losses on all of the PWLB's 1817 to 1826 loans. The third conclusion is that the PWLB recovered its loans at the expense of non-PWLB lenders, who had agreed to PWLB loans having priority for repayment. The final conclusion is that the cost to non-PWLB lenders of their lack of security was very high, and saw them lose a collective £5.4m in loans and interest that they had expected to see repaid.

[73] Turnpike Trust Continuance Act 1849, 12 & 13 Victoria c87; Turnpike Trust Continuance (No.2) Act 1850, 13 & 14 Victoria c79; Relief of Turnpike Trust Debts Act 1851, 14 & 15 Victoria c38.
[74] A debt of £8.5m at an average of around £200 per lender gives a maximum of around 40,000 lenders, some of whom will have suffered no loss.
[75] See appendix 3.C for details of calculations.

3.4 The independence and achievements of the PWLB

The economic benefits of the PWLB's first ten years were questionable. On the one hand, by 1826, PWLB loans injected £3.2m into the economy, equivalent to a 6 per cent rise in civil government spending.[76] This £3.2m went entirely on capital investment, and provided a recognisable improvement in the country's transport infrastructure. Without the PWLB, these roads, bridges and harbours would either not have been built, or would have taken longer to secure financing. On the other hand, the spending of £3.2m was small-scale compared to the £3 billion national income over the ten years.[77] The impact on employment was equally small, and the £3.2m would have provided only 5-10,000 extra jobs a year.[78] The economic benefits of PWLB lending were therefore mixed.

Even so, the establishment of the Board did show that the government was willing to intervene in the economy. By 1826, the PWLB had ceased to be a temporary, short term lender, responding to exceptional circumstances. Instead, the PWLB was a permanent addition to the machinery of government, lending government money over 20 years to finance public infrastructure works. The Board also provided a good mechanism to remove the government, and Parliament, from having to intervene at the level of making decisions on individual projects. The examples of the Isle of Dogs, the Caledonian canal, and the Highlands Roads and Bridges Commission showed that parliamentary lending decisions could be politically driven and commercially inept, and could lead to large losses. In contrast, PWLB decisions were commercially based, disinterested and individually small; they therefore carried a much lower risk of failure. The PWLB concept was also very successful as a capital market mechanism for raising large sums of money relatively cheaply, using the government's improved credit rating.[79] The PWLB and the government were then able to manage the risk of lending the money to small local bodies. The link to capital markets provided a strong element of market discipline to the PWLB's lending decisions. These benefits combined so

[76] Mitchell and Deane, *British Historical Statistics*, p. 396.
[77] Mitchell and Deane, *British Historical Statistics*, p. 370.
[78] The calculation assumes an average wage of £50 a year and annual spending of £320,000.
[79] Sidney Homer, *A History of Interest Rates* (New Brunswick NJ, Rutgers University Press, 1963), p. 195.

that the Board's decision making was a significant improvement over a Parliament based alternative.

What the PWLB commissioners saw as their ability to make independent lending decisions was actually a very narrow independence.[80] The Scottish roads example shows that Parliament was capable of overriding the PWLB's judgement and giving directions to the Board. More importantly, the PWLB was only independent within the limits set by the government, Parliament and the Treasury. Parliament determined the powers of the PWLB, voted on its renewal and provided its funding. The government appointed the PWLB commissioners, and the Treasury set PWLB interest rates and the periods for which it was able to lend. Parliament, the government or the Treasury could therefore severely limit the PWLB's ability to make loans. Effectively, the PWLB was an institution that was controlled by Parliament; the PWLB was not therefore an independent body.

Nor did the PWLB exercise an independent voice. In part this was because institutionally the PWLB was not an independent body. It was also a consequence of the PWLB commissioners having come from a narrow pool of City of London bankers, merchants and MPs.[81] These groups inevitably shared much of the government's political and economic outlook. With greater institutional independence, and if members had been drawn from a wider circle, it is likely that the PWLB would have challenged government and parliamentary views. Obvious challenges would have been to the potential benefits of lending in order to allow profitable mines to expand, or on the merits of placing limits on turnpike trust borrowing. In challenging on these issues, a more independent PWLB would have given greater weight to broader social or economic gains. Instead, PWLB commissioners took a narrow view of their role, did not exercise an independent voice, and invariably acted with a bank manager's prime concern for the security of their loans.

The case study of lending to turnpike trusts indicates that PWLB commissioners could relatively easily have adopted a broader view of their role, and done so with considerable benefit. The 1821 Select Committee asked all turnpike trusts to

[80] National Archives, PWLB 2/3 minute book, 15 February 1821, Charles Grant's 'renewal letter' of February 1821.
[81] See table 1.1 in chapter 1.

provide a return of their spending, income and debt.[82] Adding up these returns shows that, collectively, trusts were heavily loss making, had debts five times their annual income, and were failing to pay all of the interest due on half of their debt; only a quarter of trusts were repaying any of their loans. In addition, the Select Committee made clear that it saw a need for trusts to combine into fewer but larger trusts in order to improve efficiency and reduce wasteful competition. At the same time, the PWLB was sufficiently financially experienced to see the same things in the applications from trusts, and to recognise this as evidence that trusts were in a parlous financial position. However, the PWLB's response was not to look for ways to minimise the risks to trusts and their creditors. Instead, the Board sought to minimise the impact on the PWLB by ensuring that it was treated as a preferential creditor.

Between 1810 and 1840, eight select committees recognised the unsustainable nature of turnpike trust debt, and explored many options for addressing the problem.[83] Select committees had a long history of successfully encouraging the regulation of traffic on turnpikes, and government had adopted their proposals in a 'dozen or so successive statutes relating to roads' between 1800 and 1835.[84] On turnpike trust financial issues, the government steadfastly declined to intervene to regulate. This was a regulatory role that the PWLB could have adopted by taking four steps to change its own lending practices. The first step would have been to decline to lend to trusts that were not meeting their interest obligations to existing lenders. The second, and similar, step would have been to decline to lend to trusts that were making insufficient provision to repay loans over the 21 years for which they had the power to levy toll charges. These two steps would have acted to encourage trusts to honour their existing obligations to lenders. The third step would have been to stop demanding that trusts treat PWLB debt preferentially.

The fourth step would then have been to decline to lend where a trust's debt would be more than (say) three times its income, as later recommended by a

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[82] BPP 1821 (747), Turnpike Trust Returns, 1819-21, and BPP 1833 (703), which revised some of the totals.
[83] A summary of the recommendation of each appears in BPP 1840 (256) and (280) House of Lords Select Committee for Inquiring into the State of the Roads, pp. 606-613.
[84] Sidney and Beatrice Webb, *The King's Highway*, p. 201.

House of Lords report.[85] This would have prevented further rises in the debt of troubled trusts. The PWLB could also have used its strong position as the largest single lender to turnpike trusts to publicise its views on trust indebtedness. The result of these steps may well have led to non-PWLB lenders declining to lend to trusts with high debt and poor records of paying interest and repaying loans. The benefit from these four steps would have been to limit the growth in trust debts, and to limit the losses that non-PWLB lenders suffered after 1850, when the government eventually intervened. These four steps would also have meant that the PWLB was not treated as a preferential creditor at the expense of all other creditors.

The case of trust consolidation was very similar. The view of a number of select committees was that there were too many trusts, and that they were too small.[86] This was held to lead to inefficiencies, high costs, and, in some cases, wasteful competition. Only in two cases did the government intervene. In 1826, the government agreed to promote an Act to consolidate most of the North London trusts into a single trust. The consolidation was seen as a success, and the debt of the Metropolis trust fell from £105,000 in 1834 to £45,000 in 1843.[87] The second case was in 1844, when an Act was passed to consolidate the South Wales trusts into a single body.[88] Apart from these two examples, the government declined to intervene in the management of trusts until 1849. Again, the PWLB could have acted as a regulator by making loans conditional upon the amalgamation of small trusts. The Board's aim, as a lender, would have been to increase the income available to repay the loan. The Board could also have adopted a value for money role by declining to lend to demonstrably high cost trusts. In both cases, the PWLB's aim would have been to reduce the risk of non-repayment of trust loans.

However, in the cases of trust debt and trust consolidations, the PWLB followed the government's lead, and declined to intervene. PWLB commissioners almost certainly chose not to act because they recognised themselves as being a government controlled institution, without an independent voice. An equally

[85] BPP 1833 (703), p. iv, House of Lords Report.
[86] BPP 1821 (747) Turnpike Trust Returns 1819-21, p. 1.
[87] BPP 1836 (2) Turnpike Trust Returns 1834 and BPP 1845 (648) Turnpike Trust Returns 1843.
[88] South Wales Turnpike Trusts Act 1844, 7 & 8 Victoria c91.

convincing reason is that the Board was committed to its philosophy of acting like a bank manager, concerned only with the security of the loan. Had it chosen to act to discourage excessive lending to trusts, or to have promoted trust amalgamations, this would have been to act as if the Board had a wider social responsibility. Such a responsibility was not explicitly given to the Board by the 1817 Act. As was argued in chapter 2, the Board consistently took a narrow view of their legal powers. It therefore declined the opportunity of adopting a regulatory role in the cases of trust debt and trust consolidations.

By 1826, the PWLB had produced some significant benefits. The independent lending decisions of commissioners were a vast improvement on the larger and much riskier parliamentary decisions to support individual schemes. The PWLB mechanism of borrowing cheaply and lending small sums at higher interest rates worked well, and spread risks and benefits. However, the PWLB was not as independent as it could have been; effectively, it was controlled by Parliament, and could be overruled by Parliament. The result of this lack of independence was that the PWLB lacked an independent voice. Commissioners were not therefore willing to act beyond their bank manager role, even though doing so could have reduced the huge risks faced by non-PWLB lenders to turnpike trusts. This was a missed opportunity to provide a wider social and economic benefit.

Conclusions

PWLB lending to turnpike trusts was typical of the Board's core lending in its first 20 years. Yet over ten years, the PWLB only lent £430,000 to turnpike trusts, financing 16 per cent of all trust capital spending. Once again, PWLB lending was really too small to make any significant impact on either the road network, or on employment levels.[89] It is not difficult to argue that the PWLB had an adverse impact on both the road network and on private lenders to turnpike trusts. This is because the PWLB was lending in a boom period for trust borrowing. It therefore financed too many non-viable schemes, and only managed to recover its loans by increasing the losses of other, private, lenders to turnpike trusts.

[89] At an average of £43,000 a year, PWLB lending would pay for the employment of less than 1,000 labourers for a year.

The key benefit of the PWLB was that it distanced Parliament from financial decisions on supporting individual projects, at least in the vast majority of cases. Yet the PWLB was not a truly independent body. The Highlands Roads and Bridges case showed that the PWLB could see its lending decisions overruled by Parliament. In this case there was a very heavy cost, with an eventual loss of £156,000. This was not an isolated example, and appendix 7.B lists 16 cases of this sort. Compared to the 8,000 loans the PWLB made, the 16 where the PWLB's independence was compromised sound trivial. Yet the losses on those 16 loans were £2.3m. This was the price of the PWLB's lack of real independence, and of Parliament's ability to overrule its decisions.

This lack of real independence was also visible in the PWLB's reluctance to act outside its bank manager role of only being concerned with making commercially sound loans. The Board therefore passed up the opportunity to exercise a wider role of regulator to minimise the risk of local lenders losing their money. Section 3.4 showed that the PWLB could easily have fulfilled this role by changing its lending practices. The PWLB could also have chosen to encourage the consolidation of trusts, again by doing little more than a good lender or equity investor would do in order to protect their investment. These missed opportunities were a result of the PWLB's lack of independence. In spite of these shortcomings, the PWLB had developed a successful and profitable means of making lending decisions, and had carved out a role for itself as a permanent financial institution making market rate loans to those unable to raise funds from private or commercial sources.

Chapter 4, A major change for the PWLB: building workhouses, 1835-44

Figure 4.1 Bakewell workhouse was built in 1839 with a PWLB loan of £6,500. Two years later it borrowed £1,400 from an insurance company to extend the workhouse. It now operates as Newholme Hospital.

Figure 4.2 Ecclesall Bierlow workhouse was in the suburbs of Sheffield. It was built in 1842/3 with £8,000 borrowed from an insurance company and £1,800 from the PWLB. It became Nether Edge hospital in 1929. In 2003 the majority of its buildings were converted for residential use.

The 1834 Poor Law Amendment Act brought a major change to the activity of the PWLB, and to the approach of government to social problems. The Act created a need for large scale investment in new and larger workhouses, and gave the PWLB power to lend to finance the building of the new workhouses. After a year, the PWLB for the first time started to make loans at below market rates of interest to build workhouses. Lending to poor law unions also saw the PWLB cease to be an independent decision maker. For the government, the change was just as radical, as the Act set out a social policy that was to be implemented nationally. The Act also gave the central Poor Law Commission powers to intervene in local affairs, effectively to compel local action.[1] The 1834 Act therefore fundamentally changed the government's relationship with parishes, creating a large scale shift of power from parishes to central government and its agent, the PLC.

Before 1834, relief for the poor was delivered by over 15,000 parishes, and governments had no power to control the annual relief spending or capital investment of parishes. In 1803 poor relief cost £4.1m, rising to £7.9m in 1818. In the early 1830s poor relief was costing an average of £6.8m a year.[2] These costs were met entirely by local ratepayers, who pressed for changes in the poor law in order to reduce the burden.[3] This pressure led the government to appoint a Royal Commission that in 1834 made radical proposals for change. Edwin Chadwick was the workhorse of the commission, producing many of the mechanisms to implement the proposals and the outline of the draft Bill.[4] Chadwick believed that reform of the poor law should aim to reduce costs by reducing the entitlement to relief. In essence, this meant the eventual ending of outdoor relief for able-bodied men, and the delivery of relief only within a new and larger workhouse. There would be a new workhouse in each of the 616 locally managed unions that were created by grouping together an average of around 25 existing parishes.[5] To

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[1] K. Theodore Hoppen, *The Mid-Victorian Generation 1846-1886* (Oxford, Oxford University Press, 1998), p. 123.
[2] Sir G Nicholls, *History of the English Poor Law Vol II 1714-1853* (London, P.S. King, 1904), p. 438.
[3] Eric Evans, *The Forging of the Modern State: Early Industrial Britain 1783-1870* (Harlow, Pearson Education, 2001), p. 275.
[4] S.G.and E.O.A. Checkland, eds, *The Poor Law Report of 1834* (Harmondsworth, Penguin, 1973), p. 29.
[5] In 1860, 616 unions were listed in the *Shaw's Union Officers' and Local Board of Heath Manual,* (London, Shaw's, 1860).

achieve these changes, Chadwick argued that a central body – later called the Poor Law Commission -- was needed to inspect and supervise the local unions.

This chapter has four main sections. The first examines how the role of the Poor Law Commission ended PWLB independent decision making on which applications to grant or reject. It also explores how central and local government relationships changed as a result of the 1834 Act. The second shows that unions were very quick to invest in new workhouses, and that the PWLB financed the majority of lending to unions between 1835 and 1844. The section demonstrates how the PWLB's new objective as a low cost lender led it to lend four times as much to unions as it had lent to turnpike trusts. The third section explores the impact of the PLC's role and the high volume of applications on the PWLB's approach to dealing with loan applications. The increased scale of the PWLB's lending also created funding problems for the government. The fourth section concentrates on the results of the large scale capital investment in workhouses and the changes to the PWLB's role and objectives. These last two sections illustrate the events in these ten years by describing the actions of the Derbyshire poor law unions, in order to give a local perspective to the changes.[6]

4.1 The innovations of the 1834 Act

Before the 1834 Poor Law Amendment Act, the PWLB's role was as independent decision maker, and Parliament very rarely intervened in the PWLB-borrower relationship. The 1834 Act inserted the Poor Law Commission between the PWLB and borrowers. Under the 1834 Act, a union wishing to borrow had to get a PLC sanction before applying to the PWLB for a loan. The relationship between parishes and the government also changed in 1834. In order to describe the changing nature of central and local government relationships, it is necessary to develop two models of the relationship, based on how powers were distributed between the two levels of government. Before the 1834 Act, there had been very little central government intervention in the affairs of local parishes, and no coordination or regulation of their activities. This first model is described as a relationship of a very weak centre, and strong localities. In contrast, the 1834 Act

[6] Derbyshire unions were chosen because they are local to the author, their records are readily available, and the unions are typical in most respects.

established a very strong PLC and left local unions with little discretion. This second model is described as a relationship of a strong centre, and weak localities. Table 4.1 shows the differences between the two models in terms of how policy was made, the financing of provision, and the balance of power.

The aim of the 1834 Act was to reduce poor relief costs. The Act was intended to achieve this by introducing a nationally uniform service delivered by compulsorily established unions that would cover the whole country. The new social policy was created centrally, and policy would be revised nationally when necessary. There was little scope for local variation, and localities had no long term ability to opt out of implementing the Act. The only exception was a short term one, as the parishes governed by local Acts and Gilbert unions would remain outside the scope of the 1834 Act until their incorporation could be negotiated locally. Elsewhere, the 1834 Act led to an unprecedented level of national intervention in local affairs.

Table 4.1		**Models of central-local relationships**	
		Pre-1834 model, very weak centre and strong localities	**Post-1834 model, strong centre and weak localities**
Poor Relief Policy Making and Delivery			
	Policy formation and revision	Local Acts over 200 years, then at parish level	Royal Commission, then by the PLC
	Service delivery and standards	15,000 parishes, variety of standards	616 unions, but to uniform PLC standards
	Inspection	None	By PLC staff
Financing			
	Control of borrowing	None	The PLC had to approve all borrowing, subject to legal cap
	Capital	Provided largely by local individuals	Initially by the PWLB, then increasingly by insurance companies
	Accounts	Practices very varied. No requirement to publish	Uniform system of accounting. Accounts published annually
Central – local government balance of power			
		Negligible role for central govt. Much freedom for parishes	Local unions only had freedom within centrally set framework

Source: Analysis of *Poor Law Report*, ed. S. G. and E. O. A. Checkland.

Intervention in local affairs was undertaken by the newly created Poor Law Commission, which was independent from Parliament. The PLC was run by three commissioners and a secretary, all appointed by the cabinet. Chadwick was the Commission's secretary, and the first three commissioners were George Nicholls, Thomas Franklin Lewis and J. G. Shaw Lefevre. Anthony Brundage wrote of their appointments that 'aristocratic jobbery had triumphed over considerations of merit'.[7] The poor law commissioners enjoyed a substantial measure of operational freedom, in many ways like the PWLB commissioners. However, unlike the PWLB, the PLC would issue a flurry of instructions and guidance from London to all local unions. The PLC would also exercise considerable powers to veto or approve a variety of local actions, and, again unlike the PWLB, displayed a keen desire to act as a regulator. The PLC also had a local presence, as assistant commissioners visited all parts of the country to group together the 15,000 parishes into 616 unions. Once unions were established, the assistant commissioners would encourage virtually all unions to build large new workhouses. Thereafter, the assistant commissioners would act as inspectors of local unions. The 15,000 parishes lost their past freedoms of action, and the local unions were clearly subsidiary to the central PLC, and could only operate within the limits set by the PLC.

The final major innovation of the 1834 Act concerned the financing of the initiative. The expectation was that between 400 and 600 new workhouses would need to be built. Each was seen as needing to have between 500 and 1,000 places, and to be built at a cost of around £10 per place, implying a total cost of up to £3m.[8] The Poor Law Report argued that new workhouses, 'though apparently expensive, would ultimately be found economical'.[9] This was the first time that a national social policy had involved capital investment on this scale. The 1834 Act therefore specifically gave the PWLB the power to lend to unions.[10] The government would have had two reasons for extending the PWLB's powers. The first was that there could be no certainty that other lenders would be ready to supply loans to these new and untested local unions. The second was that government was under

[7] Anthony Brundage, *England's "Prussian Minister": Edwin Chadwick and the Politics of Government Growth, 1832-1854* (London, Pennsylvania State University Press, 1988), p. 40.
[8] Checkland, *Poor Law Report*, p. 438.
[9] Checkland, *Poor Law Report*, p. 438.
[10] Poor Law Amendment Act 1834, 4 & 5 William 4 c72, s63.

pressure to reduce local poor rates, and any inability to access capital finance would inevitably delay the achievement of savings in poor relief costs. Lending by the PWLB would therefore be essential to the success of the 1834 Act. The central approach to financing also resulted in the introduction of a uniform system of accounting and reporting and independent annual audits.[11] The combined effect of all these changes was that the centre (in the form of the PLC) held most of the power, and unions had limited opportunities to depart from the centre's wishes. This also made the PWLB an agent of the PLC.

The existence of the PLC fundamentally changed the usual relationship between the PWLB and its borrowers. A local union could only apply to the PWLB, or any other lender, for a loan once it had a 'sanction' from the PLC.[12] This intervention by the PLC ended the PWLB's ability to make independent decisions on who to lend to, and how much to lend. In addition, the 1834 Act specified that no union would be allowed to borrow more than the product of half a year's rate income.[13] The Act therefore ended the turnpike trust problem of unconstrained borrowing by local bodies. The Act also specified that all loans would be secured against future rate income, and that no further security should be required by any lender.[14] The result of these provisions was that the PWLB also lost its ability to exercise judgement about the adequacy of a union's security for a loan. For workhouse lending, the PWLB ceased to operate in the manner of a security conscious bank manager that it had done for the first 20 years of its life.

The 1834 Act combined the three major changes of a uniform national policy, large scale capital spending and major central intervention in local affairs. These three changes had appeared separately, but the 1834 Act saw them together in the same Act. It could be argued that the 1818 '£1m Churches' Act provided a precedent for the provision of large scale capital investment finance.[15] However, the church initiative was a permissive one, not a compulsory one. Peel's 1829 Act creating the Metropolitan Police had involved a universal and uniform social policy

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[11] Verna Care, 'The Significance of a "Correct and Uniform System of Accounts" to the Administration of the Poor Law Amendment Act, 1834'. *Accounting History Review,* Vol. 21, no. 2, July 2011, pp.121-142.
[12] The Poor Law Amendment Act 1834, section 63.
[13] 1834 Act s62.
[14] 1834 Act s63.
[15] M. H. Port, *Six Hundred New Churches* (London, SPCK, 1961), pp. 21-24.

in place of previous local discretions. However, the 1829 Act only had a regional impact, and did not apply to the whole country.[16] A case could be made that the 1833 Factory Act involved a large scale intervention in local affairs by central government, but this Act involved no major capital investment by government.[17] The last innovation changed the balance of central and local power, while the need for capital spending changed the PWLB's role.

4.2 Investment in building workhouses

A great deal has been written about the Poor Law Commission and its work with local unions, often using the material in the PLC annual reports to Parliament.[18] In 1981, Karel Williams used these annual reports to quantify the investment in new and refurbished workhouses.[19] As well as these annual reports, the PLC's role in approving capital spending meant that the Commission maintained records of every application to spend by local unions.[20] The first published use of the more detailed PLC ledgers of applications from poor law unions was by Felix Driver in 1993.[21] Driver covered the 1834-84 period, and was mainly concerned to show the purposes of the borrowing. He found that in the first 16 years, 80 per cent of borrowing was to provide 'basic' workhouses. In the second 16 years, the rate of investment slowed, but a higher proportion of borrowing was devoted to specialist provision for children, lunatics and vagrants. In the period up to 1884, specialist facilities such as hospitals accounted for more than 50 per cent of borrowing. Because Williams and Driver were concentrating on a 50 year horizon, their work did not emphasise the speed with which new workhouses were agreed, approved and built in the early years.

Within five years of the 1834 Act, 81 per cent of the eventual 616 unions had already been formed, and had been given PLC approval to borrow to build a new

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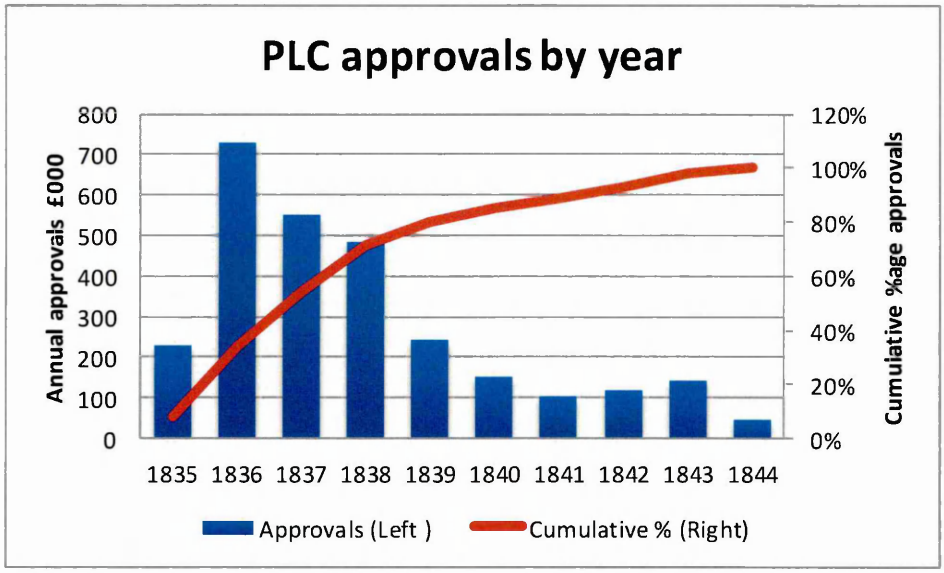
[16] Douglas Hurd, *Robert Peel: A Biography* (London, Phoenix, 2007), pp. 103-4.
[17] Oliver MacDonagh, *Early Victorian Government 1830-1870* (London, Weidenfield and Nicholson, 1977), pp. 42-54.
[18] The 1834 to 1844 PLC annual reports are all in British Parliamentary Papers, as follows: 1835 (500), 1836 (595), 1837 (546), 1837-8 (147), 1839 (239), 1840 (245), 1841 Session 1 (327), 1842 (389), 1843 (468), 1844 (560), 1845 (660).
[19] Karel Williams, *From Pauperism to Poverty* (London, Routledge Kegan & Paul, 1981), p. 218, table 4.32.
[20] National Archives, MH34 1-3, Poor Law Commission Papers, Ledgers of applications from unions to incur capital spending.
[21] Felix Driver, *Power and Pauperism: The Workhouse System 1834-84* (Cambridge, Cambridge University Press, 1993), p. 78, table 5.2.

workhouse or adapt an existing workhouse. By the end of 1844, approvals had risen to 85 per cent. These PLC approvals totalled £2.8m, close to the 1834 Report's implied £3m spending estimate. By 1844, only 92 unions had not received spending approval from the PLC. This may have been because they were adequately served by an existing workhouse, or because their poor relief costs were so low that a workhouse was not needed.[22] It took around a year after a loan had been approved for a union to build and open a workhouse. So, by the end of 1839, 75 per cent of unions were operating an adequate workhouse, and 81 per cent were doing so by the end of 1844.[23] Given the need to establish an entirely new institutional structure, and the scale of the building programme, the speed with which new workhouses were opened seems remarkable. It is also at odds with the often quoted view that there was substantial resistance to the provisions of the 1834 Act.[24]

Figure 4.3

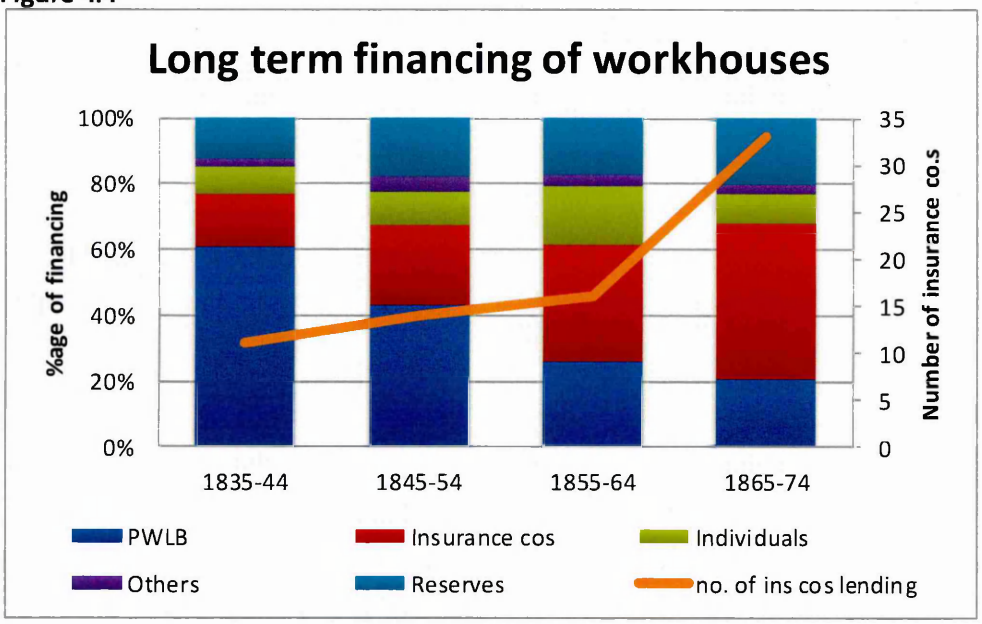


Source: Analysis of MH34 1-3 Poor Law Commission sanctions ledger.

[22] National Archives, MH34 1-3 Poor Law Commission ledgers of applications for sanctions from poor law unions.
[23] Kathryn Morrison, *The Workhouse: A Study of Poor Law Buildings in England* (Swindon, English Heritage, 1999), pp. 201-220. Appendix 2 lists all workhouses functioning long term after 1834, showing opening dates of each.
[24] Nicholas Edsell, *The Anti Poor Law Movement 1834-44* (Manchester, Manchester University Press, 1971). Appendix 2 lists the 25 unions in the textile districts of Lancashire and West Riding, showing that only four workhouses were built by 1844. However, PLC MH34 1-3 records show that nine of the 25 gained approval for capital spending on workhouses before 1844.

Figure 4.3 shows the annual totals of the approvals given by the PLC. The trend is very clear: an initial rush in 1836 and then a gradual slow down, rather than a slow build up that gradually gathered pace. The slow start in 1835 was caused by the need to form unions, have elections, and then prepare workhouse designs. These processes normally took a minimum of a year to complete. It was, therefore, 1836 before the rush of requests for approval went to the PLC. Submissions then reduced in 1837 and 1838, before roughly halving by 1839. The years 1840 to 1844 then saw a much lower level of submissions to the PLC. This slowdown was because relatively few workhouses were still needed, and many of the post-1840 applications were for the extension or improvement of workhouses, not the provision of new workhouses.[25] Overall, the picture is one of achievement, not resistance.

Figure 4.4



Source: Analysis of MH34 1-3 Poor Law Commission sanctions ledger.

As well as recording spending approvals, the PLC ledgers also record how each union financed its building work, together with the names of those who made loans to each union. This data appears never to have been analysed or reported before, and figure 4.4 covers the 40 years after 1835. Over the first ten years, PWLB loans financed 61 per cent of workhouse building; insurance companies 16 per cent; and individuals 8 per cent. The residual 15 per cent came from other

[25] National Archives, MH34 1-3 ledgers.

sources, or was small enough to be financed directly from the poor rate rather than from borrowing. For the first time, the PWLB had become the majority lender, rather than a minority lender as described in chapters 2 and 3. Figure 4.4 shows that the PWLB's share of lending to unions fell consistently in later decades, reaching just 20 per cent in the ten years up to 1874. This was consistent with the PWLB's pre-1834 role as lender only when loans were not available from private or commercial sources.

Table 4.2	**Sources of finance for workhouse building**											
All £000	1835	1836	1837	1838	1839	1840	1841	1842	1843	1844	**Total**	Share
PWLB	205	449	294	356	65	81	46	74	113	35	**1,718**	61%
Insurance cos	0	157	123	38	67	25	29	16	4	1	**461**	16%
Individuals	17	62	47	39	48	6	3	6	7	2	**238**	8%
Others	0	6	21	11	26	3	1	2	0	1	**72**	3%
Poor rate	8	55	69	43	39	39	26	23	17	8	**328**	12%
Total	**230**	**730**	**554**	**488**	**245**	**154**	**105**	**122**	**142**	**46**	**2,816**	100%
PWLB share	89%	62%	53%	73%	27%	53%	44%	61%	80%	76%	61%	

Source: Analysis of MH34 1-3 Poor Law Commission sanction ledger.

Even though the long term downward trend in the PWLB's share of borrowing was clear, the short term pattern between 1835 and 1844 was more complex (see table 4.2). The next paragraphs will show that over these ten years, three factors interacted. First was the entry of insurance companies into the market of lending to unions. Second was the Treasury decision in 1836 to reduce the rate of interest the PWLB charged on workhouse loans from 5 per cent to 4 per cent. Third, as a consequence of the rate reduction, the PWLB found itself running short of funds on six separate occasions between 1835 and 1844. These three factors interacted to explain the volatility in the PWLB's share of lending between 1835 and 1844.

In 1835, the insurance companies had yet to enter the market for loans to unions. The PWLB therefore provided 89 per cent of the finance, even though it was lending at 5 per cent. In 1836, there were two changes, first the insurance companies started lending, and lent £318,000 in the three years 1836-38. Their delay for a year would be consistent with them coming to a view that lending to

unions would be plentiful and low risk, and so profitable. The second change was that the PWLB interest rate was reduced from 5 per cent to 4 per cent.[26]

Insurance companies reacted to this rate reduction by keeping their rates at 5 per cent, so PWLB loans were much more attractive. So much so, that in 1837 it ran out of money for the first time, and its lending fell to a low 53 per cent share for the year. Between 1839 and 1842, the PWLB ran out of money on a further five occasions, and in 1839, 1840 and 1841, had to reduce their lending substantially, or even stop for a period. In the other two periods short term solutions were found to avoid lending being reduced. (The impact of the interest rate reduction will be examined further in section 4.4.) These periods when PWLB ran short of funds are the four years when the PWLB share of lending to unions was at its smallest.

In the final two years, 1843 and 1844, the PWLB returned to dominate the market, with more than three quarters of the union lending market. In contrast, the insurance companies lent just £5,000 in these two years. Two factors probably contributed to this. First, because of the low PWLB interest rate, the PWLB had become the preferred lender, and unions would mainly use insurance companies when the PWLB had run out of funds. By 1842, there was no shortage of PWLB funds, and the PWLB now received £360,000 a year. At the same time, the first phase of workhouse building was tailing off, and the need for finance was markedly lower than in the earlier years.

Why did insurance companies start lending to unions? In the ten years after 1834, two insurance companies accounted for three quarters of the total insurance company lending to unions. The larger company, the Royal Exchange Assurance, was experiencing rising income from its life assurance business, so it had a growing volume of cash for investment. The company wanted to move away from investing most of its cash in government stock, where the yields were falling, and direct the money to more profitable areas.[27] Loans to unions would have been attractive because the ratepayer guaranteed them; they would earn 5 per cent,

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[26] The change in PWLB interest rates can be seen in BPP 1851 (512), The PWLB report to Parliament.

[27] Barry Supple, *Royal Exchange Assurance: A History of British Insurance 1720-1920* (Cambridge, Cambridge University Press, 1970), p. 312.

and most of the 616 unions would have needed loans.[28] The REA was well positioned to spot that lending to unions represented good business. The PWLB chairman, Charles Bosanquet, was a substantial REA stockholder, and three members of his family had been REA directors. Two other PWLB commissioners either were, or had been, REA directors.[29] The second insurance company, the West of England, had Thomas Dyke Acland as a director, and he had been a PWLB commissioner since 1817.[30] These dual directorships allowed the two insurance companies to take early advantage of the opportunities offered by lending to poor law unions.

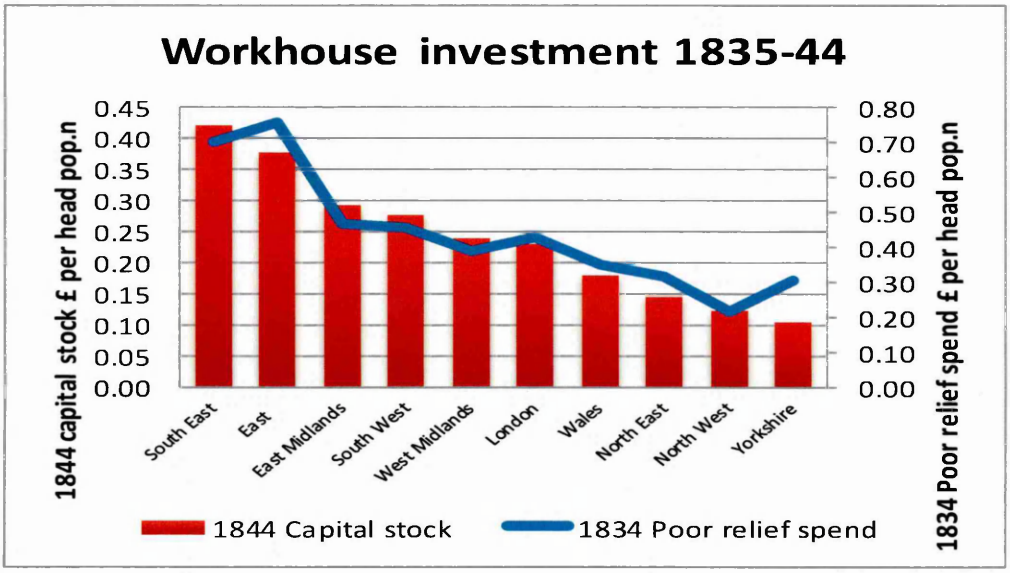
The growing role of insurance companies tended to reduce the role of lending by individuals. In the 10 years to 1844, individuals financed 8 per cent of workhouse building. Compared to their large scale lending to turnpike trusts, 5 per cent from unions would have been a much lower risk. Even compared to buying government stock, loans to unions would have been relatively low risk. Even so, individuals were less likely to lend to a single union. The much safer option for the individual was to save with an insurance company who would spread the sum across a range of investments to reduce risk. There is therefore a link between the low level of individual lending to unions and the rise of insurance company lending.

As well as showing who financed workhouse lending, the PLC approvals data can also be used to show why unions invested in workhouse building. A comparison of the PLC data with 1834 poor relief spending shows that counties with the highest per capita level of poor relief spending invested the most in new workhouses. The reverse is also true: counties with the lowest level of poor relief spending invested the least in new workhouses. Figure 4.5 shows this relationship by grouping counties into modern government regions. It was necessary to adjust the county investment levels to reflect both the existence of adequate workhouses built before 1834 and the presence of Gilbert unions.[31] It was also necessary to ensure that all counties included nine years' workhouse investment. The statistical correlation between 1834 poor relief spending and adjusted workhouse

[28] Supple, *Royal Exchange Assurance*, p. 315.
[29] A. G. Robarts was appointed a PWLB commissioner in 1831 and an REA director in 1834. Sir John Henry Pelly had been an REA director 1816-24, and was made a PWLB commissioner in 1831. Pelly was the father in law of Benjamin Harrison, the PWLB deputy chairman. Supple, *REA*, pp. 77-79.
[30] West of England prospectus for 1830s in Aviva Assurance Archive, Norwich.
[31] The adjustments are shown in appendix 4.A.

investment was very high at both regional and county levels.[32] Expressed in per capita terms, for every 45p per head of 1834 poor relief spending, unions invested an average of 25p per head in workhouses. The closeness of the relationship demonstrates two things. First, that unions shared the view of the 1834 Poor Law Report that investment in workhouses would be economical in the long term. Based on this belief, unions made sound business-like investment decisions, recognising the scope for savings in their annual poor relief costs. Second, the patterns of investment imply that unions were motivated by the opportunity to reduce their annual poor relief costs. They were not simply responding to the pressure from the Poor Law Commission.

Figure 4.5



Source: See appendix 4.A for sources and derivations

Figure 4.5 shows that the ten regions fall into three clear groups. East and South East regions were the highest spenders on poor relief, with poor relief spending more than 50 per cent above the 45p national average per head. These two regions were also the biggest investors in new or improved workhouses, investing 50 per cent more per head than the national average of 25p. Because their poor

[32] Statistically, for the regional correlation, r=0.95, r squared = 0.90. For n=10, on a two-tailed test, r must be greater than 0.83 for there to be a less than 1 per cent probability that the correlation is due to chance alone. For the county level correlation, r=0.80, r squared=0.65. For n=42, on a two-tailed test, r must be greater than 0.3 for there to be a less than 1 per cent probability that the correlation is due to chance alone. Both region and county correlations easily pass this 1 per cent chance test. Even if the correlation is between unadjusted PLC approval totals and 1834 poor relief spending, then the coefficient is 0.88 for a regional comparison.

relief spending was the highest, these two regions had the greatest scope to reduce their poor relief costs by investing in new, larger workhouses. At the other end of the scale, Wales, the North East, Yorkshire and the North West were the lowest per head spenders on poor relief. These four were also the four smallest investors in new or improved workhouses because they recognised that they had much less scope to reduce their poor relief costs. The four remaining regions were close to the national average in both 1834 spending and 1835-44 capital investment. Calculating regional poor relief spending in per capita terms confirms Mark Blaug's view that the cost problems of the old poor law regime were confined to the agricultural areas of the East and South East regions.[33] It also confirms the link between workhouse investment and poor relief spending.

The very close link between poor relief spending and workhouse investment is inconsistent with the common view of resistance to the 1834 Act.[34] Driver in particular concludes that 'the geography of authorised workhouse construction after 1834 was distinctly uneven'.[35] He goes on to refer to 'the resistance of some newly formed Boards of Guardians, particularly in Lancashire, Yorkshire, Wales, and the South West'.[36] Driver concludes that levels of investment in workhouses were often dependent on a union's support for or resistance to the 1834 Act. In contrast, figure 4.5 shows that workhouse investment levels were determined by the level of poor relief spending in 1834. It is much more convincing to argue that unions were making business-like investment decisions, unaffected by their attitudes to the 1834 Act.

The 1834 Poor Law Amendment Act therefore marked a clear change in both the scale of public infrastructure investment and its financing. Because the 1834 Act was national and compulsory, it led to a much higher level of investment than earlier years. Between 1835 and 1844, the PWLB provided 61 per cent of the finance needed to build new workhouses: a much larger role than was seen in the case of mines or turnpikes. The main reason for the increased role for the PWLB

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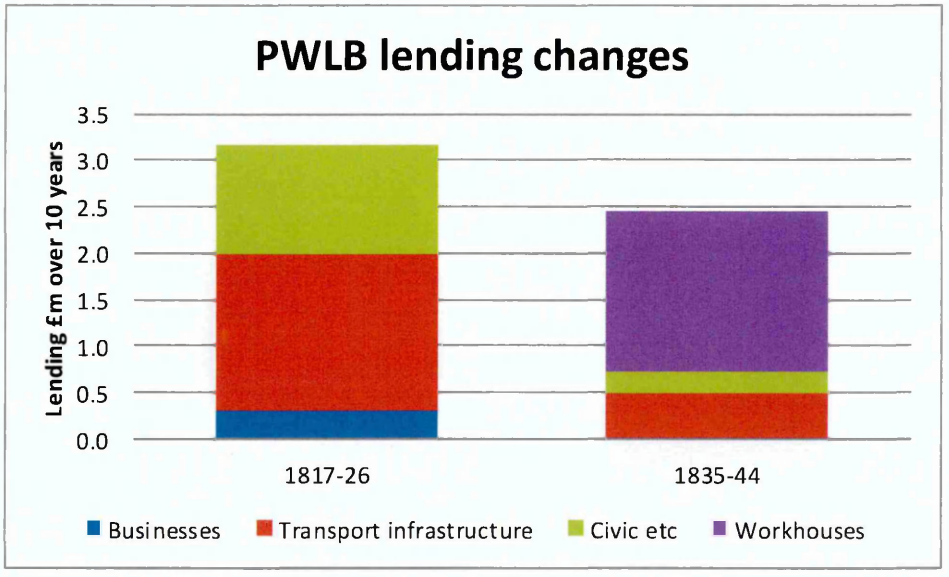
[33] Appendix 4.A contains the 1834 spend per head figures at county level. M. Blaug, 'The Myth of the Old Poor Law and the Making of the New', *Journal of Economic History, V*ol 23, 1963, pp. 151-184.
[34] M.A. Crowther, *The Workhouse System 1834-1929: The History of an English Social Institution* (London, Methuen, 1983), p. 45; David Ashforth, 'The Urban Poor Law', in Derek Fraser, ed., *The New Poor Law in the Nineteenth Century* (London, Macmillan, 1976), pp. 128-148.
[35] Driver, *Power and Pauperism*, p. 81.
[36] Driver, *Power and Pauperism*, p. 81.

was that after 1836, it was offering loans at below market rates of interest. The greater role for PWLB ensured that poor relief savings were achieved quickly. Lower interest rates turned PWLB into a low cost preferred lender, rather than a lender at market rates. In the longer term, the PWLB's rates rose back to 5 per cent and insurance company rates fell to under 5 per cent, so insurance companies became the largest lenders in the long term.

4.3 Applications to the PWLB

The 1834 Poor Law Amendment Act brought three major changes to the pattern of the PWLB's work. First, it shifted the balance of PWLB lending from being mostly for transport related infrastructure before 1834, to being mostly to poor law unions in the ten years after 1834 (see figure 4.6). Second, the role of the Poor Law Commission in sanctioning union borrowing radically changed the way the PWLB dealt with union applications. The third change was that, from 1836, the PWLB was a low cost lender, making the PWLB the preferred lender, rather than the lender only when cheaper funds were not available. The result was that the volume of workhouse applications overwhelmed the funds available to the PWLB. This section explores how the PWLB coped with these changes.

Figure 4.6



Source: PWLB 6/1 and 2 applications ledgers.

Effectively, the PWLB lost its power of independent decision making in the case of workhouse applications. Yet this does not appear to have been a planned change.

There is no evidence of any discussion between the government and the PWLB, nor between the PWLB and the 1832 Royal Commission, in any of the available archives.[37] The first signs of discussion about how the PLC and the PWLB should work together appeared at the end of March 1835, when the PLC had passed the first applications for loans to the PWLB.[38] Over the next two months there was an exchange of correspondence between the solicitors for both bodies. The outcome was that the PWLB would approve a loan recommendation from the PLC if the application was accompanied by six separate pieces of evidence.[39]

The PWLB minute books make clear that the PWLB was processing applications, not making independent decisions.[40] Each application was to be supported by: 1) A certificate from the PLC sanctioning the expenditure. 2) An assurance from the PLC that the local union had properly issued the notice of the meeting agreeing to apply for the loan. 3) The signatures of at least half the guardians agreeing to the loan. 4) A certificate from the clerk to the union agreeing that half the guardians had properly signed the application. 5) A certificate from the PLC that all the provisions of the 1834 Act had been met. This included an assurance that the loan was no more than half a year's rate income. 6) The union's application to the PWLB for a loan, setting out the amount of the loan, the union's acceptance of the period and interest rate of the loan, and the repayment terms. With these six pieces of supporting evidence, the Board would approve a loan application without further scrutiny.

The evidence from the Derbyshire Unions shows that the insurance companies' processes for dealing with application from unions were just as bureaucratic as those of the PWLB.[41] Insurance companies asked similar questions, sought similar assurances, and used some of the same paperwork. The insurance companies also charged the same interest rate, and used the same term of years for its loans as the PWLB did. In essence, they took their lead from the PWLB.

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[37] These include: National Archives, MH19/190, the Poor Law Commission file of correspondence with the PWLB; the Chadwick Papers for 1828-1835 at University College London; and the PWLB minutes 1828-35. Nor is there any reference in any secondary sources.
[38] National Archives, MH19/190 correspondence between the PLC and the PWLB, 24 March 1835 to 23 May 1835, no page numbers.
[39] National Archives, MH19/190, PWLB letter to Chadwick, 15 May 1835, no page numbers.
[40] National Archives, PWLB 2/13 minute book, July 1834 to June 1835, 7 May 1835, p. 274.
[41] See footnotes 62, 63 and 64 later in thesis chapter for Derbyshire Record Office file references.

On 21 May 1835, the PWLB formally agreed the first loans to build workhouses in Clifton, Abingdon and Newhaven. The Board also agreed to an internal process for future PLC-approved workhouse applications. In these cases, PWLB officers would go ahead and 'prepare securities and execute them without waiting for a Board decision', and simply report that they had done so to a future PWLB Board meeting.[42] PWLB commissioners did not therefore discuss individual union applications; instead they just rubber stamped the officers' actions.[43] Table 4.3 makes clear the outcome of this change of practice, with 97 per cent of applications granted because they met the requirements, and just five rejected. The Board rejected these five because they felt that the agreed processes had not been followed, and that the PLC was recommending loans when no loan should be made. The very high level of acceptances, and the lack of discussion of individual applications, makes it clear that the PWLB commissioners had lost their power of independent decision making. Their role was to ensure that agreed processes had been followed.

Table 4.3 Workhouse applications to PWLB 1835-44

	Number	Value £000	Share
Granted	596	1,719	97%
Rejected	5	30	1%
Withdrawn	10	26	2%
All applications	611	1,774	100%

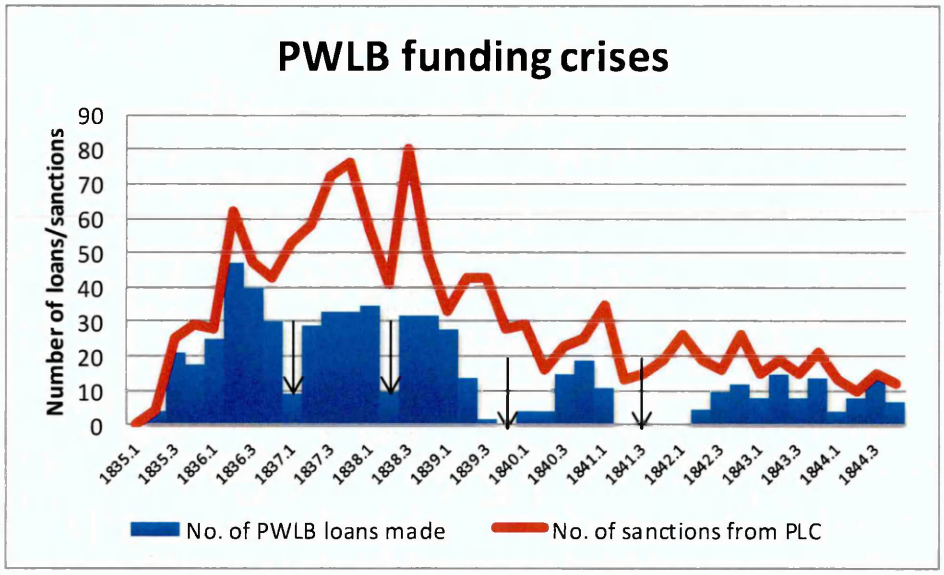
Source: Analysis of PWLB application ledgers

The PWLB's working practices also changed because it had been used to granting all of the applications that met its criteria for a loan. The sheer volume of workhouse applications made this impossible. As demonstrated in section 4.2, between 1835 and 1844 the Board had to deal with six funding crises. On two occasions, 1839 and 1841, the PWLB was unable to make any workhouse loans for prolonged periods. In two other cases, 1837 and 1838, the Board had to reduce by two thirds or more the number of workhouse loans it was able to make. It did this by delaying the processing of applications. These four periods are highlighted by arrows in figure 4.7. In two further cases, the Board managed to find short term solutions to the crises, without slowing down the granting of

[42] National Archives, PWLB 2/13 minute book, 11 June 1835, p. 337.
[43] National Archives, PWLB 2/13 minute book, 21 May 1835, p. 311.

workhouse loans. These six periods are shown in table 4.4, and are examined in the following paragraphs.

Figure 4.7



Source: PWLB applications PWLB6/1 and 2, applications to PLC, MLH34 1-3.
Note: Applications to PLC are delayed by a quarter to reflect time taken to be submitted to PWLB. 1835.1 = quarter 1 of 1835.

The first crisis came in August 1836, when the Board wrote to the PLC to say that it had only £9,000 of uncommitted funds remaining.[44] The PLC responded that it had around £200,000 worth of applications in the system, which would come to the PWLB shortly.[45] This response shows that even after the entry of insurance companies into the union loan market, the PLC continued to regard the PWLB as the preferred lender. Benjamin Harrison, now the third PWLB chairman, went to see Thomas Spring Rice, the Chancellor of the Exchequer in 1836. The Chancellor was willing to put a new Bill before Parliament to provide more funds, but this could not happen until May 1837. In the short term, the PWLB wrote to four applicants who had been offered (non-workhouse) loans totalling £40,000, and effectively withdrew the offers.[46] The PWLB also secured agreement from the Chancellor that £176,000 of the £250,000 the Board were committed to lend to the Thames Tunnel company could be diverted to workhouse loans.[47] (Work on

[44] Advances for Public Works Act 1834, 4 & 5 William 4 c72, of Sept 1834 provided the PWLB with £1m. National Archives, PWLB 2/13 minute book, 14 April 1836, p. 278.
[45] National Archives, PWLB 2/15 minute book, 22 September 1836, PLC letter 2 September 1836.
[46] National Archives, PWLB 2/15 minute book, May 1836 to April 1837, 25 August 1836.
[47] National Archives, PWLB 2/15 minute book, 1 September 1836, p. 115.

digging the tunnel had stopped after it had been inundated by water five times).[48] The £216,000 released by these two steps was sufficient to meet normal demand until January 1837. The second crisis occurred between February and April 1837, the Board then had to reduce the number of workhouse loans they made by two thirds, by delaying them until after the passing of the new Act in May 1837.

Table 4.4		PWLB and funding crises 1836-42		
	Date	Uncommitted funds remaining	Nature of crisis	Solution
1	April 1836	£200,000 left in April, down to £9,000 by August 1836	Delay to large non-workhouse applications	Released previously committed £216,000
2	February 1837	'None left'	Wrote to applicants about delay	New Act in May 1837 provided £500,000
3	June 1838	Not specified, but probably none left	Delay in processing 70 applications	New Act in Aug 1838 provided £250,000
4	April 1839	£22,000 uncommitted	No loans made for 3 months at end of 1839	Release £250,000 earmarked for Ireland
5	Septemb er 1839	No funds remaining	Four loans made in first quarter. Others delayed	New Act provided £400,000 extra in April
6	July 1841	No funds remaining	No loans made for 10 months until May 1842	New 5-year Act provided £300,000 a year

Source: PWLB Minute books for the period, PWLB 2/13-20 and BPP 1851 (512) PWLB report to Parliament

The third crisis came in June 1838, when the PWLB minutes report that the Board had applications worth £70,000 that it did not have the funds to honour.[49] Again the Board responded by reducing the number of workhouse loans it made by two thirds. In August 1838 another new Act was passed, providing a further £500,000, with half reserved for the building of workhouses in Ireland.[50] This earmarking of funding created the fourth funding problem for the Board, when in April 1839 it told

[48] Eventually, £250,000 was advanced to the Thames Tunnel, but no repayments were ever received, and in the 1860s the PWLB sold the tunnel to a railway company for £100,000, thereby writing off £150,000 as unrecoverable. The tunnel is still used as a rail tunnel.
[49] National Archives, PWLB 2/17 minute book, April 1838 to June 1839, 7 June 1838, p. 28.
[50] Advances for Public Works Act 1838, 1 and 2 Victoria c88.

the PLC that it had only £22,000 in uncommitted funds. The PWLB proposed a short term solution that the £250,000 which had yet to be committed in Ireland should be used to make English and Welsh workhouse loans.[51] The fifth crisis occurred in September 1839, when, for the first time, the Board actually ran out of money; and no further workhouse loans were made until January 1840.[52]

In April 1840 yet another Advances for Public Works Act provided a new tranche of funds, but only £400,000 of the £1.2m provided by the new Act was available for England and Wales.[53] In July 1841, the PWLB went into its sixth crisis: the £400,000 had been used, and the Board was unable to make any new workhouse loans until May 1842.[54] The new Advances for Public Works Act of 1842 ended the 12 month drought, and gave the PWLB the certainty of £360,000 a year for five years.[55] As part of the settlement, £60,000 of the funds each year was earmarked for Ireland. By then, the completion of the first major phase of workhouse building had led to a reduction in loan applications.

In earlier years, the PWLB had suffered occasional periods of shortage of funds, when it had to tell applicants that it was unable to process applications. Even so, these six years from 1837 to 1842 were by far the worst in terms of the shortage of funds. The solutions that the PWLB and the Chancellor agreed to deal with these six crises were therefore a mixture of providing more funds to the Board in the medium term, and a series of short term expedients to release funds that would have been committed elsewhere. The reality, though, was that the PWLB had become the preferred lender, with market-beating low interest rates. The alternative to providing the PWLB with more money would have been to increase the interest rate the Board charged poor law unions. This would have made insurance company loans more attractive, and would have returned the Board to being a market rate or even a high cost lender. This difficulty will be returned to in section 4.4. In practice, some applicants waited for the Board to gain access to more funds and grant their applications. Others applied instead to insurance companies or individuals, as the experience of Derbyshire unions will make clear.

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[51] National Archives, PWLB 2/17 minute book, 11 April 1839, p. 270.
[52] BPP 1851 (512), PWLB Report to Parliament, p. 25.
[53] Advances for Public Works Act 1840, 3 Victoria c10.
[54] BPP 1851 (512), p. 26.
[55] Advances for Public Works Act 1842, 5 Victoria Session 2 c9.

So far, this section has dealt with the national position; it is now useful to look at the nine unions in Derbyshire to see how individual unions behaved.[56] The Derbyshire unions have been chosen because they are local, their records are readily available, and they are generally typical of the national picture. The PLC assistant commissioner began his visits to Derbyshire in 1836, and by December 1837 had agreement on the formation of seven unions.[57] Agreement on the Bakewell Union was reached in 1838, but the agreement for Ashbourne was not made until 1844 because of an existing Gilbert Union workhouse in Alstonfield.[58] Even so, nearly 90 per cent of the population eventually covered by the nine unions were served by an established union by the end of 1838.[59] This was marginally better than the national position. Most unions agreed within six months of their formation to virtually double the number of workhouse places in the county from 900 to 1,780, at a cost of £32,000, or £18 a place.[60] (See table 4.5.)

Table 4.5 Derbyshire Workhouse Building

	1831 population	1834 poor relief £	Planned places		Actual places built		
			places	cost £	place	cost £	cost/ place £
Derby	25,484	5,470	350	5,360	300	6,460	22
Bakewell	25,879	6,392	250	6,500	200	7,900	40
Belper	33,388	6,161	250	3,700	300	9,450	32
Chesterfield	34,246	8,874	300	6,240	300	9,500	32
Chapel en le Frith	10,488	2,344	100	2,000	100	3,160	32
Hayfield	9,493	1,500	100	1,750	120	2,700	23
Shardlow	29,812	6,318	230	1,500	230	3,400	15
Ashbourne	20,658	5,567	200	5,000	160	8,000	50
Glossop	9,631	1,075	Workhouse completed in 1834				
Totals	**178,421**	**38,134**	**1,780**	**32,050**	**1,710**	**50,570**	**30**

Source: See appendix 4.B

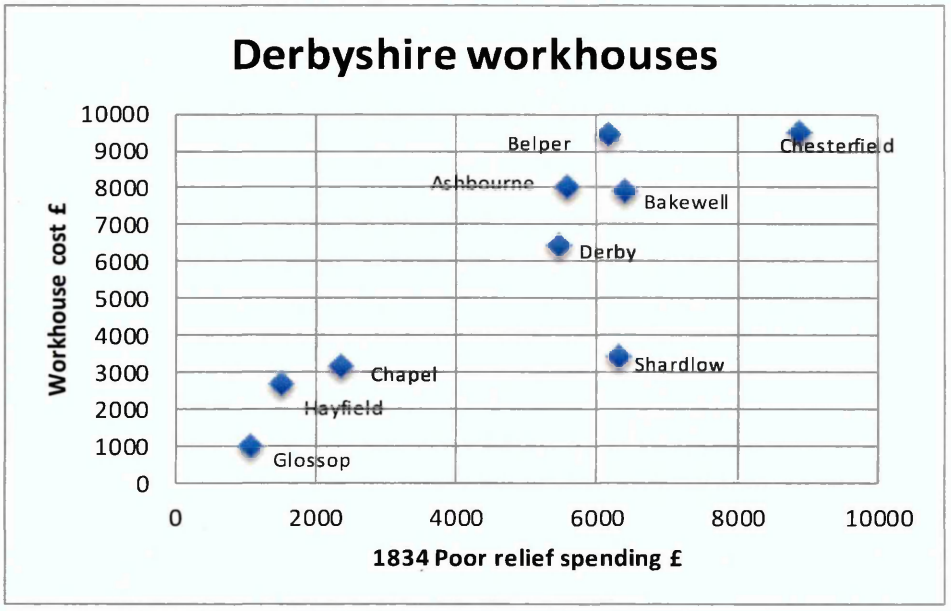
Note: These nine unions only account for 75% of the Derbyshire population
The other 25% lived in union areas centred in neighbouring counties

Table 4.5 also shows that by the time the workhouses were built, their cost had escalated to just over £50,000, and a cost of £30 per place. However, the costs

[56] See appendix 4.B for details on sources for Derbyshire unions.
[57] BPP 1837-8 (147), PLC Annual Report.
[58] National Archives, MH12/1772 and 1799, PLC files for Ashbourne and Bakewell unions.
[59] BPP 1837 (546) and BPP 1837-8 (147), the PLC Annual Reports for 1837 and 1838, show there was also a significant Derbyshire population covered by the Mansfield, Burton, and Ecclesall Bierlow unions. All of these had their larger parts in neighbouring counties.
[60] Data on pre-1834 workhouse places are from www.workhouses.org.uk from the pages on each union, and cross checked where possible with the MH12 files for each of the nine unions.

per place ranged from £22 in Derby to £50 in Ashbourne, even though the PLC had approved the designs for each. This wide range suggests that the PLC saw agreement with individual unions as more important than standardisation or value for money. In spite of these local variations in costs, the Derbyshire unions showed good business sense in their workhouse investments. Those with higher 1834 poor relief costs invested more in workhouses because they saw larger potential savings, (see figure 4.8).[61] Only Shardlow, with high 1834 spending and low investment, lay significantly outside the trend. This is because Shardlow's capital costs were low because it was adapting an existing workhouse, rather than building a new workhouse as other unions were.

Figure 4.8



Source: Table 4.5 and appendix 4.B.

Nationally, 61 per cent of the funding for capital spending on workhouses was borrowed from the PWLB, and in Derbyshire 60 per cent of the £50,000 spent was borrowed from the Board (see table 4.6). Three of the six unions that applied to the PWLB for loans were told that the PWLB had run out of funds.[62] Two of these chose to wait until the PWLB was back in funds, while Chapel went to the REA instead. Of the other two unions, Derby borrowed £4,000 from the local bank - one

[61] The correlation coefficient for Derbyshire was 0.84, compared with the national county level correlation of 0.81.
[62] Derbyshire Record Office files for Bakewell, Chesterfield and Chapel unions, D521/W/1, D522, and D442/C/W2-3.

of only seven bank loans in the 1835 to 1844 period. Shardlow borrowed from two local individuals.[63] Seven of the nine unions needed a second round of borrowing to complete or extend their workhouses, but this time only two secured PWLB loans.[64] Three went instead to insurance companies, and two borrowed from individuals. The experience of the Derbyshire Unions therefore very closely follows the national picture.

Table 4.6	Financing of Derbyshire workhouses 1835-44					
	Work house cost £	Source of finance PWLB	Insur ance	Indivi dual	Bank	Sales etc
Derby	6,460				4,000	2,460
Bakewell	7,900	6,500	1,400			
Belper	9,450	7,450		2,000		
Chesterfield	9,500	6,900	2,600			
Chapel	3,160		3,160			
Hayfield	2,700	700	2,000			
Shardlow	3,400			3,400		
Ashbourne	8,000	8,000				
Total	**50,570**	**29,600**	**9,160**	**5,400**	**4,000**	**2,460**

Source: See appendix 4.B

The review of the experiences of the Derbyshire unions follows the national picture very closely. Even though the PLC vetted all workhouse plans, the Derbyshire plans show no evidence of standardisation of either size or cost per place. Instead, the PLC's approach was more consistent with a desire to get workhouses built. The PLC also appears to have treated the PWLB as the preferred lender, and directed unions towards the Board. This is consistent with the PLC's clear annoyance that the Board was unable to process all of the applications the PLC directed to it. In spite of the PWLB's funding problem, it still provided 60 per cent of the capital for Derbyshire unions, and 61 per cent nationally. Most Derbyshire unions sought a second round of loans to extend or complete their workhouses, but most of the second round finance was provided from non-PWLB sources. Finally, the Derbyshire unions' investment decisions were just as closely linked to their levels of poor relief spending as was the case

[63] Derbyshire Record Office file D523/C/W1/1.
[64] Derbyshire Record Office files for all unions. See appendix 4.B.

nationally. So, Derbyshire guardians displayed good business sense in making their investment decisions.

4.4 The results of investments and role changes

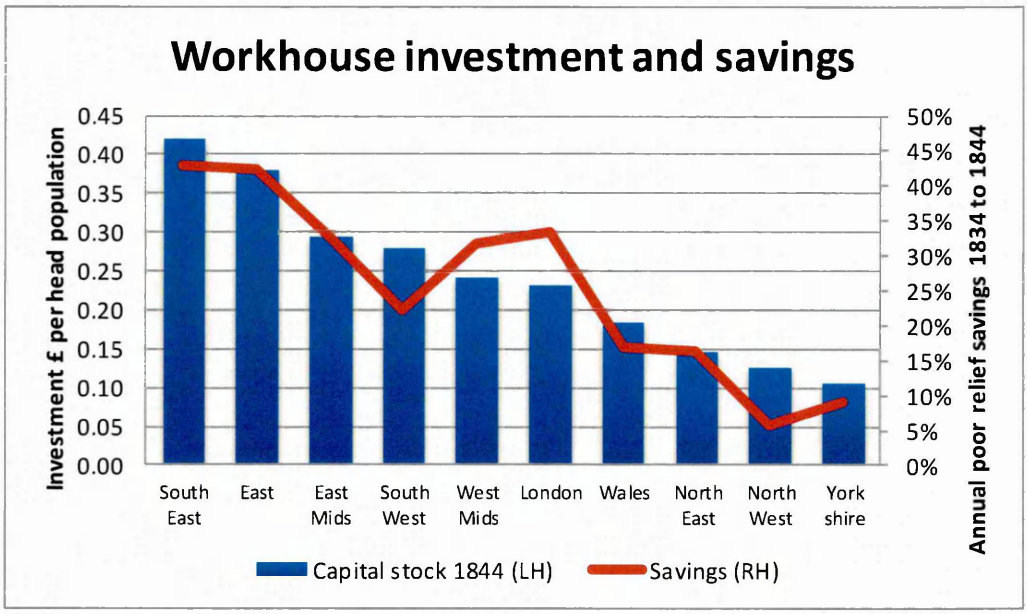
Two major outcomes of the investment in workhouses require further examination. The first is the outcome of the investment in building workhouses. The hope was that annual poor relief costs would fall once the new workhouses were available. The first part of this section shows that this aim was easily achieved, and that the underlying business case for the investment in workhouses was therefore sound. The second outcome was the change to the PWLB's role. Earlier sections have shown that the role of the PLC had removed the PWLB's ability to make independent lending decisions. The second part of this section examines why the PWLB's role in making workhouse loans had changed to that of a preferred low cost lender.

Poor relief spending per head of population was 31 per cent lower in 1844 than in 1834.[65] This is equivalent to a saving of £2.2m a year, and represents a very good return on an investment of £2.8m in workhouses. The choices of start and end year for the before and after comparison could be critical to this saving. Here, the 'before' year was the year to March 1834, when poor relief spending was £6.3m, down 10 per cent from the peak of 1832. The 'after' year ended in March 1844, when poor relief costs were £5m, 5 per cent below the peak in 1843. The comparison is therefore a fair one, of two points just past cyclical peaks. In absolute terms, poor relief spending had fallen by £1.3m. However, between the 1831 and 1841 census dates the population of England and Wales had increased by over 14 per cent.[66] With no reform, relief costs would have been expected to rise by 14 per cent, or around £900,000, and this increase needs to be added to the absolute change of £1.3m to give the £2.2m saving. The £2.2m annual saving should be reduced by the £300,000 per year debt service costs, so the net annual

[65] Nicholls, *English Poor Law*, Vol 2, p. 438. The 1831 county level census data appear in the PLC 2nd Annual Report, BPP 1836 (595), and the 1841 census data at county level are taken from B. R. Mitchell and Phyllis Deane, *Abstract of British Historical Statistics,* (Cambridge, Cambridge University Press, 1971) but London and Surrey totals have been amended to reflect the difference between county and union boundaries.
[66] Mitchell and Deane, *British Historical Statistics*, p. 6.

saving to ratepayers would have been £1.9m a year.[67] This can only be seen as a very successful financial outcome.

Figure 4.9



Source: see appendix 4.A for sources and derivations

Figure 4.9 shows that the more a region invested in workhouses, the higher the percentage saving in annual poor relief costs.[68] The South East and the East regions, which invested most per head, achieved the largest savings, of 43 per cent and 42 per cent respectively. At the other end of the scale, Yorkshire and the North West, which invested the smallest per capita sums in workhouses, achieved the smallest savings, of 9 per cent and 6 per cent respectively. Importantly, though, all regions made savings, while at a county level only Lancashire failed to show any saving in poor relief costs, experiencing a 5 per cent per head increase instead. A second approach to the investigation of savings is to examine how long it took each region to recover its investments in workhouses. Table 4.7 shows that at the national level it took 1.2 years to recover the £2.8m investment from the annual £2.2m savings. All but the North West recovered their investments in new workhouses in three years or less. The North West, though, took more than seven

[67] See table 4.7 and appendix 4.1 for the savings split by region.
[68] The correlation coefficient for workhouse investment and per capita savings is: r= 0.92, r squared =0.85. For N=10, r must be at least 0.83 for there to be a 1 per cent or less chance of the correlation being the result of chance. At county level, r=0.62 and r squared=0.39. Where n=40, r must be at least 0.39 for there to be a 1 per cent or less chance that the correlation is due to chance. At both regional and county level, both r scores just meet this confidence level.

years to recover its investment. There are two contributory explanations for the long recovery period; the first is that the North West invested too much in new workhouses. The second explanation is that Lancashire, accounting for 70 per cent of the North West's population, saw its poor relief costs rise, and this will have significantly reduced the level of regional savings in poor relief costs.

Table 4.7 Payback periods for investments 1835-44

	Investment £000	Savings £000	Payback years
South East	695	602	1.2
East	465	462	1.0
East Midlands	314	179	1.7
South West	484	200	2.4
West Midlands	231	159	1.5
London	124	194	0.6
Wales	160	53	3.0
North East	60	25	2.4
North West	181	24	7.6
Yorkshire	101	38	2.6
Total	**2,816**	**2,255**	**1.2**

Source: See appendix 4.A

The outcome of workhouse investments in Derbyshire was much more mixed, with an average payback period of eight years. Table 4.8 shows the results for each union, with the exception of Ashbourne, whose workhouse was not built until after 1844. Only Derby, Belper and Glossop achieved short payback periods of two to four years, and all three of these unions saw large population increases and large savings in poor relief costs. In contrast, Hayfield and Shardlow both failed to achieve a positive payback at all, with poor relief costs rising in both unions between 1834 and 1844. Bakewell and Chesterfield saw payback periods of ten years, largely because their poor relief costs only fell by 9-10 per cent. This mixed picture points to a conclusion that when the population was growing, then most workhouse investments were likely to prosper. Equally, when the local population was shrinking, then few investments were likely to succeed. Overall, the results of Derbyshire union investments are the one area where the Derbyshire experience was not typical of the national pattern, and the Derbyshire experiences were materially worse than those of most counties.

Table 4.8 Derbyshire workhouses, returns on investment 1835-44						
	Work house	Poor relief costs 1834	1844	1831-41 population	Saving/ cost	Payback
	cost £	£/head	£/head	change	change	years
Derby	6,460	0.21	0.12	37%	45%	2
Bakewell	7,900	0.25	0.22	21%	10%	10
Belper	9,450	0.18	0.13	38%	31%	4
Chesterfield	9,500	0.26	0.23	15%	9%	10
Chapel	3,160	0.22	0.21	8%	5%	24
Hayfield	2,700	0.16	0.23	0%	-46%	no payback
Shardlow	3,400	0.21	0.25	9%	-16%	no payback
Glossop	1,500	0.11	0.09	51%	21%	4
Total	**42,570**	**0.21**	**0.18**	**23%**	**15%**	**8**

Source: Appendix 4.B

Note: Table excludes Ashbourne, as its workhouse was built after 1844. The cost of Glossop workhouse is estimated

The second outcome by 1844 was a clear change to the role of the PWLB. Section 4.1 shows that the PWLB had lost its independent decision making role with the introduction of the PLC. It had moved from the security conscious bank manager role described in chapters 2 and 3 to becoming a simple processor of workhouse applications. It followed from this change that the PWLB lost the ability to exercise any regulatory role; in effect this transferred to the PLC. Since the PWLB had chosen not to develop a regulatory role, this was not a material loss. But the transfer of the independent decision making power to the PLC was a major change, making the PWLB just a loan-arranging agent of the PLC. This role would be repeated in chapters 5 and 6, and in many other similar cases. Once again, the 1834 Act marked a decisive and permanent shift of power, this time from the PWLB to the PLC.

An even bigger change came with a Treasury agreement to reduce the interest rate for PWLB workhouse loans. In 1834 the Treasury set the terms for workhouse lending as 5 per cent interest and a 10 year loan period. Both were consistent with a preference for shorter term loans and interest rates at market rates. In November 1835 a union wrote to the Chancellor of the Exchequer asking for the interest rate on its loan to be reduced to 4 per cent.[69] The PWLB was happy for the rate to be reduced, but was concerned that all unions should be

[69] National Archives, PWLB 2/14 minute book, 5 November 1835, p.129.

treated in the same way, and said that the rates on all union loans should be reduced to 4 per cent. The Treasury declined this suggestion, and instead issued an instruction to reduce the rate on the single loan.[70] In June 1836 the Treasury conceded that rates could fall for all past and future workhouse loans, but only on application from individual unions.[71]

There was a similar pressure to extend the maximum loan period from 10 to 20 years, and in March 1836 four unions were asking for extensions to 20 years.[72] In November 1836 the Treasury accepted extensions to 20 years for the four unions, but again insisted on individual applications for extensions from all other unions.[73] Over the next 10 years, the PWLB's minute books record over 80 per cent of unions with a PWLB workhouse loan asking separately for a 4 per cent interest rate and a 20 year loan term. All these requests were passed on to the Treasury, and eventually granted. However, the official rate for PWLB workhouse loans remained at 5 per cent; it was just understood that a later application to reduce the rate to 4 per cent would almost certainly be successful.[74] From the limited evidence on insurance company lending it is clear that they kept their rates at 5 per cent.[75] The PWLB was therefore offering cheaper loans than any other provider. The PWLB had ceased to be a market rate lender, advancing loans when money was not available from other sources.

After 1835, the PWLB became a low cost lender to poor law unions, lending at below market rates. The action of insurance companies in leaving their rates unchanged at or just below 5 per cent is explained by the data in a return of debts for Urban Sanitary Authorities from 1874.[76] The data show that insurance companies were making loans to Urban Sanitary Authorities in the late 1860s, at around 4.75 per cent. At the same time, gilt yields were around 3.25 per cent, implying that the companies wanted a margin of 1.5 per cent over gilt yields. If the

[70] National Archives, PWLB 2/14 minute book, 12 May 1836, p. 316.
[71] National Archives, PWLB 2/15 minute book, 23 June 1836, p. 32.
[72] National Archives, PWLB 2/14 minute book, 10 March 1836, p. 231.
[73] National Archives, PWLB 2/15 minute book, 10 November 1836, p. 176.
[74] PWLB minute books record the advances being made at 5 per cent, and BPP 1851 (512) shows the interest rate being reduced to 4 per cent, p. 18.
[75] The MH34 series of PLC registers of union requests for capital spending approvals record the interest rates of just five insurance company loans to unions in the period 1835 to 1844. All were made at 5 per cent. The PLC files for Derbyshire unions confirm that non–PWLB loan rates remained unchanged. Only after 1851 were a minority of non-PWLB loans made at rates below 5 per cent.
[76] BPP 1874 (396), Return of Debts for Urban Sanitary Authorities. See also table 5.7 in chapter 5.

1.5 per cent margin also applied in 1836, when gilt yields were 3.4 per cent, then companies would be unlikely to lend at less than 4.9 per cent.[77] This would explain their decision not to reduce their rates to compete with the PWLB. As section 4.2 demonstrated, the reduction in PWLB rates accounts for the extra demand for PWLB loans, and led to the funding crises as the PWLB was swamped with loans. If this cause and effect is right, the next question is: why did the Treasury grant the applications for rate reductions?

The Treasury response to the requests for lower interest rates was at best confused. This view applies equally to the PWLB, which agreed to the reduction, if not to the way it was implemented. The answer to why both the Treasury and the PWLB departed from the well-established principle of the PWLB as a lender at 5 per cent is that they were subject to pressure from borrowers for lower interest rates. Two things lay behind this demand. The first was that lower interest rates would result in lower poor rates. As was the case later with school loans, local ratepayers were being expected to pay for a nationally imposed policy. In the 1870s, the pressure for lower local costs led to local MPs supporting a call for lower PWLB loan rates, and this was likely to have been the case in 1836 as well.[78] The second reason was that unions and MPs could see that the government's borrowing costs had fallen to around 3.4 per cent.[79] Unions and MPs will have realised that by charging 5 per cent, the government was making a significant profit on the loans at the expense of local ratepayers.

This profit would have struck the local unions and MPs as unfair, and increased the pressure for a rate reduction. In effect, any attempt to maintain the rate at 5 per cent was a battle the Treasury was bound to lose. The Treasury therefore bowed to the inevitable, and gracelessly conceded to a 4 per cent interest rate. Philip Harling explains the context to this decision by arguing that the Whigs had a 'general indifference to fiscal matters', 'lack(ed) a commanding majority in the House of Commons', and were more interested in reducing taxes than reducing

[77] Sidney Homer, *A History of Interest Rates* (New Brunswick NJ, Rutgers University Press, 1963), p. 195.
[78] See chapter 6, when MPs demanded a low interest rate for PWLB lending to school boards out of concern that the local cost of a national policy would have been too high.
[79] Homer, *History of Interest Rates*, p. 63.

the national debt.[80] It is also possible that the Treasury wanted the PWLB to continue as the major workhouse loan provider, because at 4 per cent the government made a profit of £125,000 on workhouse loans in the ten years from 1835 to 1844 (see table 4.9). Keeping the rate at 5 per cent and starving the PWLB of funding would have reduced the profit substantially.

Table 4.9 Profits on workhouse loans 1835-44

	£000	£000
Income		
Interest from borrowers		
£1.72m @ 4.2% over 18 years		650
Costs		
Cost of government borrowing		
£1.72m @ 3.35% over 18 years	519	
PWLB's office costs		
0.4% of sums lent	7	525
Loans not recovered		0
Profit		**125**

Sources: Loans, PWLB 6/1 and 2. Interest rate charged to borrowers based on 80% of loans being reduced to 4%; see BPP 1851 (512) for list of loans and rates. Interest rate paid by government from Homer, *Interest Rates,* 1961. PWLB office expenses, see appendix 7.A. No bad debts are listed in BPP 1851 (512) or in later reports for the 1835-44 period.

A further Treasury confusion was that it failed to understand the impact on demand of reducing the interest rate to 4 per cent. The unintended consequence was the increase in demand for PWLB loans, and the reduction in demand for insurance company loans. Had the Treasury (and the PWLB) wished to abide by the principle of the PWLB as a lender only when the market would not lend, then the PWLB interest rate should have been raised to above the 5 per cent market rate. This would have reduced the demand for PWLB loans, and encouraged insurance companies and individuals to lend more to unions. It would also have avoided the need for the Chancellor of the Exchequer to increase PWLB funding to £360,000 a year in 1842. However, this approach would have been unlikely to

[80] Philip Harling, *The Waning of 'Old Corruption', The Politics of Economical Reform in Britain 1779-1846* (Oxford, Clarendon Press, 1996), pp. 216-222.

gain approval in the House of Commons, and this is probably the reason it was not followed.

In practice, the PWLB had become the PLC's preferred provider of low cost loans to deliver the government's poor law policy. For the government this had three advantages. First, it led to a rapid delivery of the national policy; second, it did so at a lower cost to the local ratepayer. The third advantage was that, with the PWLB as the major lender, Treasury control over local unions was maximised. It is understandable that these advantages were attractive to the government. However, in 1857 loans to unions ceased to be reduced automatically to 4 per cent, and were simply recorded as being made at 5 per cent, and remained at that level.[81] There is no discussion in the PWLB minutes of the reasons for the change. It seems highly likely that the new PWLB chairman, John Gellibrand Hubbard, a former Bank of England governor, simply wished to re-establish the PWLB as a lender at 5 per cent, only lending when others would not. The PWLB then either used the Board's powers to decide that interest rates for workhouse loans should cease to be lower than market rates, or persuaded the Treasury to make the change. This change would be consistent with the view Hubbard expressed in 1859 in a discussion with the Treasury.[82]

The outcome of the 1834 Act is therefore important in two ways. First, the PWLB lost its role as an independent lender. Instead, it became simply an agent of the government, lending as much money as was needed, at below market rates, to deliver a social policy as quickly as possible. This was a major new objective for the PWLB; over time, more and more of PWLB's lending was at below market rates in order to deliver government policies. This low cost lending objective is still in place in 2014, as is the PWLB's role as agent of central government. Second, an entirely new relationship was established between central government and local bodies. The PLC in the centre was strong, and wanted to deliver a uniform social policy in all parts of the country. In contrast, the local parishes and unions had little discretion, and were therefore weak. This relationship between a strong centre and weak localities has also lasted until the modern day. The PWLB played a part as a component of the strong centre, providing low cost finance to local

[81] BPP 1872 (417) Public Works Loans, p. 56.
[82] See chapter 5 for a discussion of the 1859 exchange.

bodies. The 1834 Poor Law Amendment Act therefore established an enduring long term model of a highly centralised state with a government agency providing low cost capital finance.

By 1844 the accountability regime of the PWLB had changed, and two reports had been made to Parliament. The first, in 1831, did no more than list the names of commissioners, the office expenses for running the Board, and a single total for the value of loans made and outstanding. As a means of judging the performance of the PWLB, it was without merit. The second report in 1843 was a marked improvement. It listed every loan made by the board and the outstanding balances for each. It was therefore possible to judge the wisdom of the Board's lending. The final page of the report claimed to show the 'profit' made on all loans, but it failed to make any provision for bad debts, and the 'profit 'was therefore illusory. There was no narrative commentary by the Board on its actions. However it was a start, and the same format was used in 1851. Even the Post Office and the Commissioners for Woods and Forests, were by 1844 reporting annually to Parliament on their activities for the preceding year. However, the Crown Agents, established in 1833 did not start providing accounts for Parliament until 1856, and did not produce an annual report until 1909.[83] The Poor Law Commission and the Committee of the Council on Education were required from their inception to produce reports to Parliament each year. Both included a narrative commentary on the previous year, and full details of financial support and borrowing approvals given. This set a standard for accountability that all bodies would eventually follow.

As chapter 3 demonstrated, the PWLB enjoyed good governance in 1826, and it remained good in the period 1835 to 1844. All PWLB staff were in a single location, most were long-serving, giving a stability to its operations. The Board still dominated decision making, and still had a clear view of their role. For many of the same reasons, the newer Committee of Council on Education also enjoyed good governance. It was also small, centrally located and well led. The governance of the Poor Law Commission was more mixed: the differences of view between

[83] David Sunderland, *Managing the British Empire: The Crown Agents 1833-1914* (Woodbridge, Boydell Press, 2004) p.22, and BPP 1909 (5391) Accounts of the Crown Agents office funds for the year.

Chadwick and the three commissioners often resulted in confused messages to the assistant commissioners around the country.[84] Debates with ministers also led to some changes of approach. It is possible to claim that the governance of the three old agencies: the Ordnance, the Post Office and the naval dockyards, had improved as new organisational structures were developed. However, their size meant that their governance problems were of a different order of magnitude to those of the smaller PWLB, PLC or Committee of Council.

Conclusions

There are four main conclusions to this chapter. The first is that the 1834 Act reflected a major shift in the approach of governments to social policy. Second, and largely because of the different approach, the balance of power between governments and local bodies shifted substantially towards the centre. Third, the shift of power to the centre resulted in a very successful outcome, both for the government, and for local unions. Fourth, the 1834 Act fundamentally altered the PWLB's role and objective.

Before 1834 most public infrastructure had been provided by local bodies established by local Acts of Parliament. These Acts generally gave the local body a right to borrow money, which would be repaid from charges to users. As a result, the government had little power once the local Act was passed, while the local bodies had very substantial areas of discretion. The 1834 Act broke this mould, and imposed a uniform service standard throughout the country. The creation of the Poor Law Commission provided a very strong and powerful central body. In contrast, the compulsorily created local unions had little discretion about how they administered the Act. This was a strong centre and weak locality model of service provision, and one that still exists in 2014. It is undeniable that this shift of power to the centre produced results. Within five years, approval had been given for the building or improvement of workhouses in more than 80 per cent of unions. However, the real impact of the Act was that by 1844, poor relief costs had fallen by £2.2m a year, or 31 per cent.

[84] Brundage, *England's 'Prussian Minister'* p.113, and Driver *Power and Pauperism,* p. 128.

The 1834 Act's shift of power also changed the PWLB's role. It ceased to act as a commercially minded lender at market rates, providing loans when others would not, and lost its role as an independent decision maker. Instead it lent at below market rates, and acted as an agent of the PLC. In the ten years covered by this case study, the PWLB lent £1.8m, and provided 61 per cent of the finance to build workhouses in these years. The PWLB loans therefore had a very significant impact, at least on ratepayers who saw an average 31 per reduction in poor law rates. The impact on employment was modest, providing 3,400 jobs a year, because this was still only 1 per cent of the numbers demobilised from the armed services after 1815. The impact of workhouse building on the wider population of the destitute is a topic beyond the scope of this thesis. Even so, the PWLB had become very important in financing public infrastructure, and thereby delivering government social and welfare policies. Chapter 5 and 6 will show that this was the long term future for the PWLB.

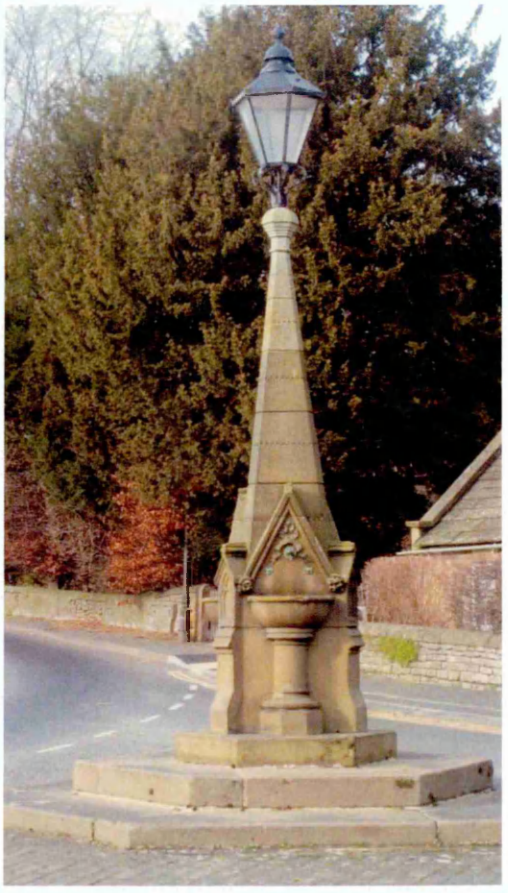
This new approach to financing public infrastructure gave the government four material advantages over the pre-1834 approach. The first was that delivery of the new public infrastructure was quicker and more certain. Second, interest rates were lower, and this reduced local resistance to the imposition of the national policy. Third, the government retained more control because it was the provider of the finance, and because of the strong central body – the PLC in this case. A final advantage was that the new approach to financing public infrastructure carried a negligible risk of bad debts. This was because loan repayments would be financed from local rates, not from charges to users, and limits to local borrowing were set in the legislation. The disadvantages were that the new approach involved much greater central control, and much less local discretion. These disadvantages loomed large when the 1848 Public Health Act was debated in Parliament.

Chapter 5, Failure and then success: water supply and sewers, 1848-76

Figures 5.1 & 5.2. In 1875 Bakewell Local Board borrowed £10,000 from the PWLB to provide a piped water supply to the town. Soft water from a spring fed the reservoir above, was piped two miles and 300 feet down to the town, and then piped into all houses.

So pleased were the population with the water supply that they erected a water fountain (right) to commemorate the event.

Raw sewage continued to pour into the river running through the town, and it was 1937 before piped sewage removal and a filtration plant were provided.



This case study examines the role of the PWLB in one of the most important initiatives in social policy during the nineteenth century. In doing so, the chapter provides a very good illustration of the difference between success and failure in policy implementation. The chapter also highlights the factors that separate an important role for the PWLB from an insignificant role. Between 1848 and 1863, many public health Acts had almost no success in raising the level of water supply and sewer infrastructure investment. And between 1848 and 1872, the role of PWLB lending was insignificant. Yet between 1863 and 1872, the level of water and sewer investment more than doubled, and between 1873 and 1876, the PWLB were financing a third of all investment in water and sewer facilities. The main purpose of this chapter is to explain the factors that separated initial failure from subsequest success.

There were a number of compelling reasons for public health reform. Cholera epidemics, typhoid, typhus, TB and many other diseases killed large numbers in the poorer parts of cities.[1] In the 1840s only 10-20 per cent of city households had piped water, and in those that did it was not a constant or fresh supply.[2] Even in the smarter parts of cities, overflowing cesspools were common.[3] In *The Sanitary Conditions of the Labouring Population of Great Britain*, Edwin Chadwick showed that in 1839/40 the average age at death of a labourer in Liverpool was just 15 years.[4] In contrast, a gentleman living in Rutland would live to an average age of 52 years. The 1848 Public Health Act made three sets of proposals to improve life expectancy in cities. The first two were the removal of 'nuisances' and improvements in medical care; neither of these involved large scale capital investment, and so will not be considered here. The third was major investments in water and sewer infrastructure. Chadwick saw the need for the provision of constant, clean, high-pressure water supplies to all houses. He also argued that at the same time, houses should be connected to sewers flushed with water, to

[1] Rob Baggott, *Public Health Policy & Politics* (Basingstoke, Palgrave Macmillan, 2007), p. 29.
[2] Wohl, *Endangered Lives*, p. 62.
[3] Anthony S. Wohl, *Endangered Lives: Public Health in Victorian Britain* (London, Methuen, 1983), p. 90.
[4] Edwin Chadwick, *The Sanitary Conditions of the Labouring Population of Great Britain*, with an introduction by M. W. Flinn (Edinburgh, Edinburgh University Press,1965), pp. 223-7.

remove human waste products.[5] In a recent review of spending and mortality, Bell and Millward argue that water supply and sewer improvements almost certainly made the greatest long term contribution towards increasing life expectancy.[6]

The chapter comprises four sections, with the first section concentrating on the scale of the change in water and sewer investment over the 29 years, and the change in the share of the investment funded by PWLB loans. The second section covers the years 1848 to 1862, when investment scarcely rose above the pre-1848 level. It shows that the reason for the lack of progress was that the government had returned to a pre-1834 central and local government relationship, with a weak centre and strong localities. In this period, PWLB lending for water and sewer facilities was almost negligible because the PWLB was offering to lend at 5 per cent, not at below market rates as it had for workhouses. The third section examines the changes made after 1863, as the government gradually reverted to the 1834 strong centre and weak localities model, and the PWLB reverted to being a low cost lender. Section 4 then examines the two stage impact of these changes as the level of investment doubled in the mid-1860s. The second stage of the transformation came after 1872, as the PWLB's interest rate was reduced and its share of financing sanitary investment rose sharply.

5.1 Water and sewer investment and PWLB lending

The first task is to determine the scale of all water and sewer infrastructure investment between 1848 and 1876. There were three routes to gaining approval for capital spending. The first was by being granted permission to borrow from the General Board of Health and its successors. The General Board of Health issued borrowing sanctions to local health boards in the same way as the Poor Law Commission issued borrowing approvals to poor law unions. The second route was to gain parliamentary approval for borrowing by promoting a local Act. Water companies and municipal corporations had being using this approach before 1848, and continued to use it after 1848. Finally, two public Acts gave approval for capital spending: one in London, and a second in Lancashire, Cheshire and Derbyshire.

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[5] Chadwick, *Sanitary Conditions*, pp. 35, 43 and 423-4.

[6] Francis Bell and Robert Millward, 'Public Health Expenditures and Mortality in England & Wales 1870-1914', *Continuity and Change*, Vol 13 issue 2, 1998, pp. 221-250.

Table 5.1 shows that the water and sewer investments approved by each route totalled £63m between 1848 and 1876. This total is broadly consistent with C. H. Feinstein's estimate of £47m for water investment alone during the same period.[7] The General Board of Health only gave approvals for £12m of the £63m of investments. This implies a less significant role for the GBH than many authors have given it.[8] Part of the reason for overplaying the importance of the GBH is that the sanction totals quoted in annual reports covered all public health investment.[9] They therefore included approvals for street improvements, public baths and many other minor public health functions. To provide a total for water and sewer sanctions for the whole 29 year period it is necessary to use the more detailed HLG 16 ledgers.[10] Analysis of these ledgers provides the £12m total in table 5.1, and demonstrates that water and sewer sanctions only accounted for 69 per cent of all the borrowing approvals issued under public health Act powers.[11] The reason why the total for GBH water and sewer approvals was so modest will be addressed in section 5.2.

Table 5.1 1848-76 water and sewer investment

	£m	Share
General Board of Health sanctions	11.9	19%
Local Acts, Water companies	25.5	41%
Local government	14.3	23%
Metropolitan Board of Works	10.4	16%
Public Works (Manuf Dist) Act	0.7	1%
Totals	**62.9**	**100%**

Sources: Sanctions: HLG16 GBH ledgers; Local Acts: BL Local & Personal Acts volumes; MBW annual reports; Public Works: Report 1868 (6).

Note: General Board of Health sanctions include those given by the GBH's successor bodies.

[7] C. H. Feinstein and Sidney Pollard, *Studies in Capital Formation in the United Kingdom 1750-1920* (Oxford, Clarendon Press,1988), pp. 305, 429 and 437. It was necessary to convert figures from 1900 prices to current prices, and exclude Scotland and Ireland.

[8] Wohl, *Endangered Lives*, pp. 162-3 is a good example of over-emphasis on public health Act sanctions.

[9] BPP 1857 (328) Local Boards of Health Return. Annual reports under Local Government Act 1858: BPP 1859 S2 (2585), BPP 1860 (2746), BPP 1861 (545), BPP 1862 (505), BPP 1863 (553), BPP 1864 (554), BPP 1865 (479), BPP 1866 (532), BPP 1867 (576), BPP 1867-68 (437), BPP 1871 (287), BPP 1871 (463). Local Government Board annual reports: BPP 1872 (516), BPP 1873 (748), BPP 1874 (1071), BPP 1875 (1328), BPP 1876 (1585).

[10] National Archives, HLG16 General Board of Health ledgers of sanctions granted.

[11] BPP 1876 (1585) LGB annual report, p. xlviii shows a sanctions total of £15.6m to the end of 1875.

Nearly two thirds of all water and sewer investment were made under powers granted by local Acts. Of the £40m authorised by local Acts, over £25m was promoted by private water companies.[12] The remaining £14m was authorised by local Acts promoted by municipal corporations. The source of both figures comes from a search of over 100 volumes of *Local and Personal Acts* for the period 1845 to 1876. Each Act had several clauses authorising a maximum level of fund raising by share issues and/or borrowing. Earlier writers on the development of water supply appear not to have quantified the amounts raised under local Act powers.[13] Instead, they have used the number of water companies in existence and the number of corporation-owned water works as a rough proxy for the balance of investment between the private and public sectors. This new research therefore produces a more detailed estimate of the total invested by private and public sectors.

The third main source of spending approvals was two regional rather than national Acts. The first was the 1858 Act, which authorised the Metropolitan Board of Works to borrow to build J. W. Bazelgette's extensive London intercepting sewer network with its sewage outfalls well to the east of the city.[14] By 1876 the work was virtually complete, and had cost just over £10m. The second Act was the 1863 Public Works (Manufacturing Districts) Act. Passed at the time of the American Civil War, it allowed local bodies in Lancashire, Derbyshire and Cheshire to borrow to create employment. Of the sums borrowed under the 1863 Act, over £700,000 was spent on water supplies and sewer infrastructure.[15]

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[12] Local and Personal Acts volumes for 1848 to 1876. Published by Eyre & Spottiswoode, each for the preceding year. British Library St Pancras reading room.

[13] John Hassan, *A History of Water in Modern England* (Manchester, Manchester University Press, 1998), pp. 10-50, and Robert Millward *Private and Public Enterprise in Europe: Energy, Telecommunications and Transport 1830-1990* (Cambridge, Cambridge University Press, 2005), pp. 41-54.

[14] Annual reports from the Metropolitan Board of Works give annual totals for investment, and are in British Parliamentary Papers as BPP 1857-8 (515), BPP 1859 S2 (178), BPP 1860 (556), BPP 1861 (377), BPP 1862 (11), BPP 1863 (19), BPP 1864 (13) and BPP 1865 (33).

[15] BPP1868 (6) Public Works (Manufacturing Districts) Acts 1863 and 1864.

Table 5.2	Source of water supply and sewer provision 1848-76				
	Public sector		Private sector		Total
	£m	Share	£m	Share	£m
Water	17.5	41%	25.5	59%	43.1
Sewers	19.8	100%	0.0	0%	19.8
Total	37.3	59%	25.5	41%	62.9
Water %	47%		100%		69%

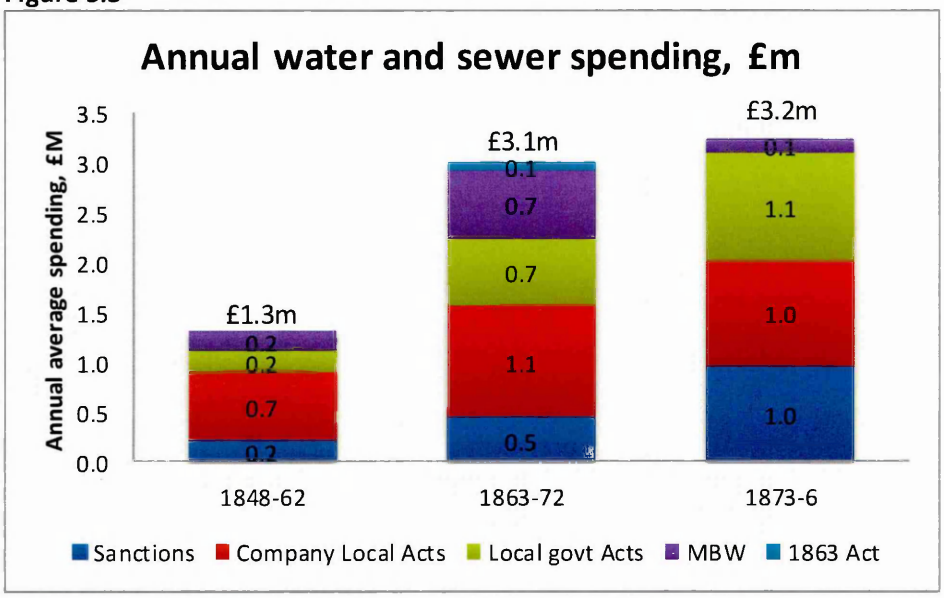
Sources: As table 5.1.

The same sources that were used to build up the total investment in water and sewers can also be used to provide two further analyses. Table 5.2 shows that 69 per cent of the investment in these 29 years was on water supply, and just 31 per cent was on sewer infrastructure. Water supply was therefore the priority, because it was technically easier to achieve, brought more immediate benefits and was easier to charge for.[16] Table 5.2 also shows that before 1876, water investment was primarily a private sector led activity. It is also clear from table 5.2 that there was no private sector investment in sewer infrastructure; sewers were entirely a public sector task. However, because half the sewer investment was in London, in the rest of the country sewer investment lagged far behind water investment. This was no doubt because water was a more obvious need, and sewer investment was much more challenging.

The above analyses are based on the entire 1848 to 1876 period; but breaking down the 1848 to 1876 period into three shorter periods is very revealing. In the three years before the 1848 Act, investment in water supply had averaged £1.2m a year, entirely authorised by local Acts.[17] In the 15 years after 1848 the average investment in water and sewer facilities had barely increased, and averaged just £1.3m a year (see figure 5.3). The obvious conclusion is that for 15 years the 1848 Act made virtually no impact on the level of water and sewer investment. It was only after 1863 that the level of investment in water and sewer infrastructure increased substantially, when it more than doubled to £3.1m a year. After 1873, investment grew slightly to an average of £3.2m a year.

[16] Martin V. Melosi, *The Sanitary City: Environmental Services in Urban America from Colonial Times to the Present* (Pittsburg, University of Pittsburg Press, 2008).
[17] British Library, Local and Personal Acts 1845, 1846 and 1847.

Figure 5.3



Sources: As table 5.1.

Notes: 1) Sanctions are the General Board of Health borrowing approvals and those of its successor bodies

2) 1863 Act is Public Works (Manufacturing Districts) Act.

3) Local Govt Acts are the Local Acts promoted by councils & local boards.

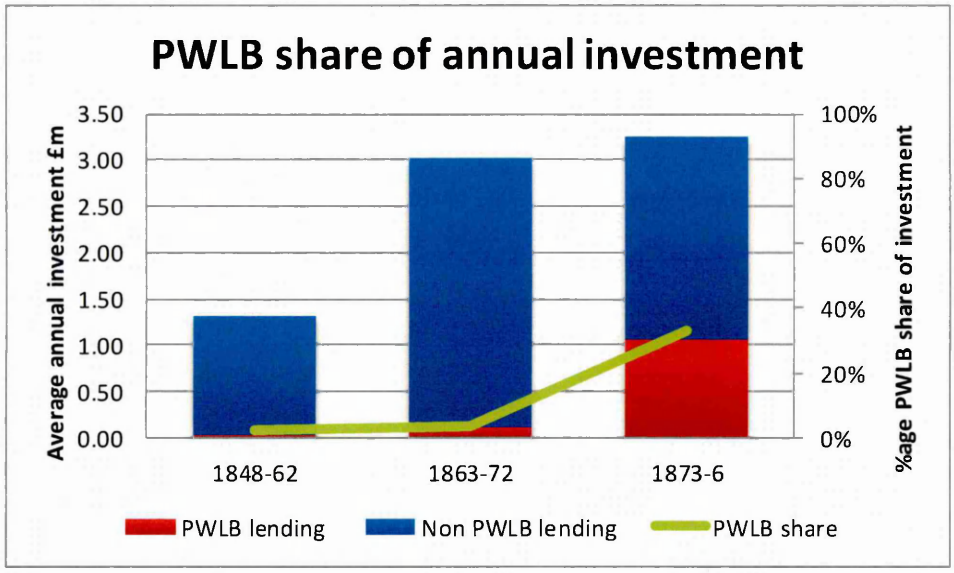
4) MBW is Metropolitan Board of Works.

Figure 5.3 shows that there were several components to the post-1863 rise in investment levels. First, between 1848 and 1863, just over half of the investment in water and sewer facilities was undertaken by the private sector. Between 1873 and 1876, two thirds was undertaken by the public sector. This confirms the shift in the balance of ownership of water supply assets from private to public that Hassan and Millward separately identified. Accordingly, figure 5.3 shows that 85 per cent of the growth in water and sewer investment over these 29 years came from the public sector. Water company investments had reached their peak between 1863 and 1872, and would fall in later years. Second, investment in water and sewer facilities by local boards of health rose five-fold between the pre-1863 period, and the post-1872 period. Yet only half of the LBH investment growth was authorised by General Board of Health sanctions, and half continued to be authorised by local Acts of Parliament. The growth of GBH sanctions under the public health Acts only accounted for 40 per cent of the growth in water and sewer investment between the pre-1863 and the post-1872 periods. The reasons for

these changes in investment levels between the pre- and post-1863 periods lie at the heart of the remaining sections of this chapter.

How was the £63m capital investment shown in table 5.1 financed, and how significant was PWLB lending? PWLB ledgers detail loans of £8.1m for water and sewer purposes up to the end of 1876.[18] However, this includes £800,000 lent to Scottish health boards. It also includes £1.5m of applications made in 1875 and 1876, where the loans themselves were made five or more years later. £2.3m therefore needs to be excluded, since it made no impact on English and Welsh public health in the period 1848 to 1876. Net PWLB lending up to 1876 for England and Wales was therefore £5.8m, or 9 per cent of the total water and sewer infrastructure investment. The PWLB share of financing was therefore smaller than was the case for both turnpike trusts and workhouses.

Figure 5.4



Source: As graph 5.3 and analysis of PWLB 6/1-6 application ledgers.

The picture of PWLB lending becomes more complex, yet much more revealing, when the 29 year period is split into the three shorter periods (see figure 5.4). As with the total infrastructure investment, the pattern in the early part of the 29 years was very different to that in the latter part. Figure 5.4 shows that in the period 1848 to 1862 the PWLB provided just 2 per cent of the financing for water and sewer investments. The PWLB's lending in the middle period, 1863 to 1872, was

[18] National Archives, PWLB 6/1 and 1a, 2-6, PWLB application ledgers.

still less than 4 per cent of the annual total. For the first 25 years after the passing of the 1848 Public Health Act, PWLB lending was insignificant. This changed materially in 1873, when the PWLB financed a third of the £3.2m a year water and sewer investments. If water company investments are excluded, the PWLB was financing nearly half of all public sector water and sewer investment. (The logic for excluding water company investments was that the PWLB could only lend to public sector bodies).

Table 5.1 shows that 41 per cent of the total water and sewer investment was made by private water companies. An analysis of the financing clauses of local Acts for water companies indicates that £20m of this finance came through share issues, and £5.5m came from borrowing. Together, PWLB lending and water company finance accounted for 50 per cent of the financing for water and sewer infrastructure. The remaining half came from a mixture of insurance companies, individuals and banks. An 1874 a Local Government Board report lists all the loans that had been raised since 1848 by urban sanitary authorities (these were the 1872 successors to local boards of health). It shows that these authorities raised 49 per cent of their non-PWLB borrowing from corporate bodies, and 51 per cent from individuals.[19] Although there were seven loans from banks in the corporate body total, these loans totalled just £9,000, so are insignificant. All the other corporate body loans were from insurance companies. The same return shows that the Metropolitan Board of Works relied on individuals to provide 50 per cent of its capital finance needs. The MBW relied on the Bank of England for 49 per cent of its funding, with just 1 per cent coming from insurance companies.[20] Manchester Corporation also borrowed £0.4m from the Bank of England in 1848 to finance its waterworks.[21] There are several records of other authorities taking small loans from local banks, but these totalled no more than £60,000.[22] Manchester Corporation followed the lead of the Metropolitan Board of Works,

[19] BPP 1874 (396). Loans on Dues (Vestries etc). An earlier report, BPP 1873 (381), covers the debts of municipal boroughs, but provides no detail of individual loans.
[20] MBW annual reports.
[21] National Archives, PWLB 2/22 minute book, October 1846 to September 1848, 8 June 1848, p. 269, and J. H. Clapham, *Bank of England: A History, Vol 2* (Cambridge, Cambridge University Press, 1944), p. 218.
[22] B. J. Barber, *Leeds Corporation 1835-1905: A History of its Environmental, Social and Administrative Services* (Leeds, Leeds Archaeological Society/University of Leeds, 1975), p. 389, table 8.5b.

and issued £3m of consolidated stock in 1876. The vast majority of the Manchester stock was taken by individuals, with just £100,000 being taken by a single bank.[23]

Table 5.3 Financing of water and sewer investment 1848-76		
	£m	Share
PWLB	5.8	9%
Insurance companies	10.6	17%
Individuals	15.4	24%
Banks	5.6	9%
Water company investors	25.5	41%
Total	**62.9**	**100%**

Sources: As table 5.2, with BPP 1874 (396) giving split between insurance companies, individuals and banks.

This information can be consolidated to produce table 5.3. As seen earlier, the PWLB provided only 9 per cent of the finance for the water and sewer infrastructure. In contrast, water company shareholders and lenders financed 41 per cent of the total. Of the balance, individuals provided 24 per cent and insurance companies 17 per cent; 9 per cent came from banks. The 9 per cent provided by banks was a much larger share of financing than banks took in other case study areas. However, the vast majority of this was loans from the Bank of England to the Metropolitan Board of Works, and so it might be considered a special case. Over the 29-year period as a whole, PWLB lending was lower than for workhouses or turnpike trusts. Nevertheless, dividing the period into pre- and post-1872 sub-periods, the PWLB provided 4 per cent of the finance before 1872, and 31 per cent after 1872. Excluding water company borrowing, the PWLB became the provider of nearly half the finance for public sector water and sewer investment. The next sections show why the level of investment increased after 1863, and why the PWLB share of financing increased after 1872.

5.2 A very slow start: 1848-62

This section addresses two interrelated questions: first, why was total investment in water and sewer facilities so low in the period 1848 to 1862? Second, why did

[23] Manchester Record Office, M610/4/1 and M610/4/15 Council mortgage registers, and M610/12/1 consolidated stock register.

the PWLB make so few loans for water and sewer purposes in the 15 years after the 1848 Act? The nature of the 1848 Public Health Act was at least in part responsible for the very low level of investment at the time. Chadwick was a believer in centralisation: 'the advantages of uniformity in legislation and in the executive machinery, and of doing the same things in the same ways'.[24] He was also opposed to 'the extensive public loss occasioned by' independent local action.[25] The *Sanitary Report* therefore made a set of proposals that would centralise power and limit local discretion. A General Board of Health would have the power to intervene in local affairs, and would have to sanction all local capital spending proposals. New local boards of health would be formed to cover the whole country, and they would have an obligation to improve water and sewer provision. Chadwick even proposed that the central board should appoint members to local boards, rather than allow them to be locally elected.[26] These proposals were consistent with Chadwick's centralising tendencies, but were not acceptable to parliamentarians of the time. The 1848 Act rejected three of these proposals outright, and watered down the powers to intervene in local affairs. The only proposal to survive was the General Board of Health's powers to sanction all local capital spending proposals. These changes were a political reaction against the strong centre and weak locality model of the Poor Law Amendment Act.[27]

As a result, the 1848 Act was largely permissive, not obligatory. Urban areas were given permission to form local boards of health, but they were not obliged to do so. At the same time, the General Board of Health had little power to intervene in the decisions of a local board of health. It also had little ability to influence or provide technical support to local boards, other than as part of the process of sanctioning borrowing requests. For these reasons, the 1848 Act should be seen as creating a 'weak centre and strong locality' model of central-local relationships. This watering down of Chadwick's proposals was judged necessary in order to get the 1848 Act through Parliament. In effect, Parliament seemed to be more

[24] Chadwick, *Sanitary Report*, p. 425.
[25] Chadwick, *Sanitary Report*, p. 425.
[26] Oliver MacDonagh, *Early Victorian Government 1830-70* (London, Weidenfield & Nicholson, 1977) p. 144.
[27] MacDonagh, *Early Victorian Government*, p. 145.

concerned with avoiding the creation of a powerful and interfering central body, and less concerned with improving water and sewer provision nationally.[28]

The consequences of the permissive nature of the 1848 Act and its resulting lack of impact are perfectly illustrated by the slowness of local areas to form local boards of health. In the ten years after 1848 only 196 local boards were formed, and these covered just 13 per cent of the population of England and Wales.[29] Only 104 of the 196 local boards had sought approval to spend any capital to implement water supply or sewer schemes.[30] The reluctance of local areas to form local boards of health explains the low level of investment under the 1848 Act in the 15 years after 1848. Even by the mid-1860s, only 34 per cent of the English population were covered by local boards.[31] The vast majority of areas therefore simply ignored the 1848 Act and its successors. For example, J. A. Chandler observes that the six largest cities (excluding London) took an average of 12 years to adopt the provisions of the 1848 Act.[32] Large urban areas that wished to improve water and sewer provision were more likely to use local Act powers which Bellamy argues they preferred for three reasons. First, they wanted to be free of General Board of Health scrutiny or control of their proposals; second, they could not rely on the 1848 Act to give them the individual detailed powers they wanted. Third, Bellamy argues that corporations preferred using local Acts because they gave corporations 'direct access to Parliament (and) symbolised the corporations' special status'.[33] The permissive rather than obligatory nature of the 1848 Act was therefore an important reason why the level of water and sewer investment did not rise materially above the levels of the three years before 1848.

The second question concerns why the PWLB's share of lending was so small, at less than 2 per cent of the total. To address this question it is useful to examine the 15 year period from 1848 in three smaller sub-periods, as in table 5.4. In the first five years up to 1852 the PWLB refused to grant any of the 18 applications it

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[28] MacDonagh, *Early Victorian Government*, p. 144.
[29] BPP 1857 (328) Local Boards of Health Return.
[30] National Archives, HLG16 records.
[31] BPP 1867-8 (489) Local Boards, Areas Acting Under Public Health Acts.
[32] J. A. Chandler, *Explaining Local Government: Local Government in Britain Since 1800* (Manchester, Manchester University Press, 2007), p. 72. The cities were Manchester, Sheffield, Leeds, Glasgow, Birmingham and Liverpool.
[33] Christine Bellamy, *Administering Central-Local Relations 1871-1919: The Local Government Board in its Fiscal and Cultural Context* (Manchester, Manchester University Press, 1988), pp. 197-8.

received from local boards of health for loans for water or sewer improvements. In the second period, up to 1857, applications to the PWLB increased three fold, and just over half of them were granted. This contrasts with the final five years, when the number of applications fell back to just 17, but only a single application was rejected and all the rest were granted. What caused this odd pattern?

Table 5.4	Water and sewer applications to PWLB 1848-62, and outcomes				
	Applications		Granted		
	No.	£000	No.	£000	Prop'n
1848-52	18	221	0	-	0%
1853-57	57	764	29	264	51%
1858-62	17	159	16	152	94%
15 years	92	1,144	45	416	49%

Source: Analysis of PWLB 6/1 and 1a applications ledgers.

Table 5.5	Reason for failure of applications to PWLB			
Outcome	Reason for failure	1848-52	1853-57	1858-62
		Number of applications		
Granted		0	29	16
Rejected	No funds	7	3	
	S113	7		
	debt	1	6	
	Other legal	2	3	1
Withdrawn	Interest	1	5	
	unclear		11	
Total applications		18	57	17

Source: Analysis of PWLB 2/22-33 minute books.

Note: 'S113' was the section of the 1848 Act prescribing the method of loan repayment. 'Debt' indicates that the loan was wanted to repay debt.

Table 5.5 shows the reasons why applications failed in each of the five year periods. In the first five years seven applications were rejected, because the PWLB was not confident that any loans would be repaid. Its uncertainty was caused by section 113 of the 1848 Act, which specified that borrowers would only repay loans at maturity, having set aside annual sums in a sinking fund. The PWLB had never been willing to lend on this basis, believing that it involved a higher risk of non-repayment.[34] The 1817 Act that established the PWLB provided

[34] PWLB 2/25 minute book, November 1852 to June 1854, 2 December 1852, p. 1, reporting advice from the Attorney General and Solicitor General.

that annual repayments of principal would be made by borrowers to the PWLB, and this was incompatible with the 1848 Act. The Board would not lend until the conflict was resolved. Neither the PWLB nor the government saw any urgency to resolve the conflict, and it was 1853 before the 1848 Act was amended to allow the PWLB to lend on its normal terms. The lack of action to resolve the conflict can be seen as evidence that public health lending was not seen as a priority by the PWLB or the government.

Further evidence of the PWLB's lack of commitment to public health lending is provided by the seven applications that were rejected because the PWLB said they had no available funds. Yet, at the same time, the PWLB did not give a 'no funds' response to any non-public health applications. Instead, PWLB's actions in directing 58 per cent of its 1848-62 lending to churches and burial boards suggests that these had a higher priority. A further two applications were rejected because the PWLB had no legal power to grant them. Finally, a single application was withdrawn because the applicant found a lower interest rate from another lender. Whatever the merit of the PWLB's explanations, the result was that it rejected all the water and sewer applications in the five years after 1848. This pattern of decision making on loan applications is not consistent with public health lending being a priority for the PWLB.

Despite the early lack of success, in the second five year period applications to the PWLB grew three-fold, and 51 per cent were successful. Three large applications were rejected on the grounds of 'no funds', even though no non-public health applications were treated in this way. A further six were rejected because the applicants were proposing to use the loan to repay debts. The reason for the failure of 11 applications is unclear from the PWLB minute books. More revealingly, five applications were withdrawn, and the applicants went on to borrow from insurance companies.[35] Indeed, a parliamentary return of local board of health debt indicates that the average interest rate for non-PWLB lending was 4.75 per cent during these five years.[36] With the PWLB lending at 5 per cent, it had clearly moved from being a market rate lender to being a high cost lender.

[35] PWLB 2/26, minute book, June 1854 to June 1855, various meetings, five applications were from Lancaster, Worthing, Wigan, Swansea and Tottenham, for a total of £79,000, and BPP 1874 (396), Loans on Dues etc.
[36] BPP 1874 (396).

The large scale entry of insurance companies into lending to public sector bodies meant that there was sufficient credit in the market to meet demand.[37] Given these facts, it is scarcely surprising that PWLB lending in the 1850s was so modest.

In the final five year period, 1858 to 1862, the number of applications fell back to 17, and 16 of these were accepted. The fall in numbers to 17 probably reflects local boards' reluctance to apply for PWLB loans because of the lower insurance company interest rates. Nothing in the PWLB minute books suggests any change in the nature of the applications to the PWLB. Instead, the change – from rejecting all applications, to accepting all but one application – was one in the Board's outlook. Between 1848 and 1858 the Board was uninterested in water and sewer lending. This period saw the appointment of a new PWLB deputy chairman and a new chairman, and in 1859 the PWLB's outlook became much more accommodating.[38] The government's view of the merits of the PWLB can also be seen to change between 1852 and 1859. In the early 1850's government appointed a new chairman and vice chairman, and even tried to abolish the PWLB. While at the end of the 1850s, the Treasury opened a discussion with the PWLB about reducing its interest rate.

In 1852 Disraeli, as Chancellor of the Exchequer, appointed Sir Alexander Young Spearman as deputy chairman of the PWLB. Spearman had been the permanent head of the Treasury until his retirement in 1840 on grounds of ill health.[39] In 1850 he had recovered and was appointed as Comptroller of the National Debt Office. Sir John Winnifrith described Spearman as the 'perfect Treasury all rounder'. In these roles he would surely have had a brief to re-establish Treasury orthodoxy and the PWLB's role as a market rate or high cost lender, as well as exert downward pressure on the National Debt. Spearman's views at the PWLB would have been reinforced by Gladstone's appointment of John Gellibrand Hubbard as

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[37] See table 4.2 and Barry Supple, *Royal Exchange Assurance: A History of British Insurance 1720-1920* (Cambridge, Cambridge University Press, 1970) pp. 315, 320 Supply reports that in 1854, REA had lent over £500,000 to local authorities. He also says that in the 1850s REA's mortgage lending was generally at 4.5 per cent.

[38] National Archives, PWLB 2/24 minute book, November 1850 to November 1852, 24 June 1852, p. 263, and PWLB 2/26, June 1854 to June 1855, minute book 2 August 1854, p. 15.

[39] Sir John Winnifrith, 'The Rt Hon Sir Alexander Young Spearman Bart 1793-1874: Gladstone's Invaluable Public Servant', *Public Administration 1960 Vol 3, pt. 4*, pp. 311-320.

PWLB chairman in 1854. Hubbard had recently finished his term as Governor of the Bank of England. Before the 1850s, the PWLB had chosen its chairman and vice chairman from within existing commissioners. Here, both were being appointed from outside, by chancellors of the exchequer in what must be seen as a clear push for a more Treasury dominated approach to PWLB lending.

In the 1850s Disraeli and Gladstone shared an approach to budgets. Both believed that the priority was to have a budget surplus, and to use the surplus to repay debt, rather than increase spending or reduce taxation.[40] In his 1852 budget, Disraeli was faced with a deficit that he wished to eliminate. Sir Charles Trevelyan, the permanent secretary to the Treasury, suggested the abolition of the PWLB, saving its annual £360,000 funding and eliminating Disraeli's budget deficit.[41] Disraeli accepted the proposal, and announced in his budget that he would wind up the PWLB.[42] In the event, Disraeli's proposal was met by a storm of protest. This was not because MPs necessarily supported the PWLB, but because they saw the move as 'vamp(ing) up a surplus out of borrowed money'.[43] The government refused to amend its budget, lost the vote and resigned.

This episode can be used to understand the Treasury's view of the PWLB in 1852.[44] Disraeli had to defend his abolition proposal in the House of Commons, and Lord Derby, as Prime Minister, had to do the same in the House of Lords.[45] Trevelyan was therefore forced to write to Disraeli setting out why the PWLB ought to be abolished.[46] Trevelyan pointed out that PWLB loans were inevitably risky, and that, since 1824, loans worth £700,000 had been made which were irrecoverable. However, Trevelyan also told Disraeli that these loans had been made at the insistence of Parliament after the PWLB had declined to grant them because there was a high risk the loans would not be repaid. Trevelyan's

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[40] H. C. G. Matthew, 'Disraeli, Gladstone and the Politics of Mid Victorian budgets', *The Historical Journal* Vol 22, no. 3, September 1979, pp. 615-643.
[41] Bodleian Library, ref Dep. Hughenden 32/1 folio 3-6. Letter from Trevelyan to Disraeli 8 December 1852.
[42] Robert Blake, *Disraeli* (London, Methuen & Co, 1966), pp. 340-348.
[43] Gladstone, quoted by Robert Blake, *Disraeli*, p. 340.
[44] Treasury representatives expressed very similar views at an 1875 Select Committee hearing. See chapter 6.
[45] House of Commons debates, 16 December 1852 series 3, Vol 123 cc. 1631-1642, and House of Lords debates, 14 December 1852 series 3, Vol 123, cc. 1432.
[46] Bodleian Library ref Dep. Hughenden 32/1 folio 43-6. Second letter from Trevelyan to Disraeli, 13 December 1852.

argument was that the existence of the PWLB put temptation in the hands of politicians, and removing the PWLB would remove that temptation. Disraeli only used the first point, about the losses, not the second, about Parliament's role.

Trevelyan also argued that the high level of lending by insurance companies and individuals showed that there was no shortage of credit. The PWLB was therefore no longer needed.[47] Gladstone may well have shared this view, but, having defeated the government on its budget, he could hardly then adopt the proposal to abolish the PWLB. Instead, Gladstone appointed a man of his own choice – John Gellibrand Hubbard – as chairman of the PWLB. This was the first time the chairman had been appointed from outside the ranks of current commissioners, and subsequently agreed by the chancellor.[48] Although Gladstone and Hubbard enjoyed a 35-year correspondence, it contains no direct reference to the PWLB.[49] Even so, Gladstone will have known, and must have agreed with Hubbard's broad economic views.

From a PWLB perspective, these developments in the early 1850s did not look encouraging. Yet in 1859 there was a marked change of approach. The Treasury wrote to the PWLB on 17 August 1859 suggesting that PWLB interest rates might be reduced from 5 per cent to 4 per cent.[50] The PWLB minute refers to a letter from a borrower asking for a reduction in their interest rate, implying that the Treasury was again acting in response to external pressure. The Treasury letter closes by saying that rates could be raised later if market rates rose. Hubbard presented the PWLB board with a draft response to the Treasury, including the following principles:

> It does not appear ... expedient that the rate of interest ... should be governed by market rates. ... (After) making provision for bad debts and the annual expense (of the PWLB office) it is considered that 5 per cent ... is an appropriate rate of interest. ... After a loan has been made ... no application for reduction should be entertained. ... Borrowers are at

[47] House of Commons 16 December 1852 cc. 1631-42 and House of Lords 14 December 1852 cc. 1432.
[48] On previous occasions, such as the death of Grant in 1824, and in 1836 when Bosanquet resigned, PWLB minutes record the existing deputy chairman taking over as chairman.
[49] British Library Gladstone papers, Additional Manuscripts, MSS44095 Vol X (i). ff1-301
[50] National Archives, PWLB 2/30, minute book, June 1858 to September 1859, 7 September 1859, p. 274.

> liberty to repay (a loan) at any time (and) borrow the money at a lower rate elsewhere. ... The PWLB should not act as competitors in the money market with banks, insurance companies or (individuals). ... The commissioners submit that their loans ... can be divided into two classes. 1) Loans for works of public utility, but in which there is no public interest, such as railways, canals etc. Promoters of the works are frequently unable to obtain ... a loan elsewhere ... (implying) that the loan ... ought to command a higher rate of interest than the market rate for first class securities. 2) Where there is no private interest as in the cases of loans under the Poor Law and Burial Acts and loans for sanitary purposes. ... There appears no reason for attempting to distinguish between (the two classes) as regards the rate of interest.[51]

The Board instructed the secretary to send the letter to the Treasury without amendment. The Treasury replied on 31 October 1859, agreeing to keep the interest rate at 5 per cent for all loans.[52] It did not comment on the other principles in the letter. Even so, Hubbard achieved his first aim of establishing that the long term PWLB rate of interest was 5 per cent. At a time when insurance companies were willing to lend to public bodies at marginally below 5 per cent, the PWLB had become a high cost lender. This accounts for the negligible share of public health spending financed by the PWLB during the 1850s and 1860s. Hubbard's mention of sanitary loans in the second class of PWLB loan indicates the PWLB's acknowledgement of the importance of sanitary loans. This explains the PWLB's acceptance of all but one sanitary application after 1858.

In hindsight, Hubbard's second class of loans, for workhouses, burial boards and sanitary purposes, appears to have recognised that lower rates of interest could be justified for some classes of loan. Indeed, the Treasury had long before reduced the rate for the first two, to 4 per cent although the rate for workhouse loans had returned to 5 per cent by 1859.[53] In addition, the PWLB had already recognised that loans to rate-supported public bodies were a lower risk than loans

[51] National Archives, PWLB 2/30, minute book, 7 September 1859, p. 274.
[52] National Archives, PWLB 2/31, minute book, September 1859 to June 1861, 17 November 1859, p. 10.
[53] The Public Works Loans Act 1853 allowed rates to be reduced to 3.5 per cent provided that consols were attracting a yield of below 3.5 per cent.

to railways and canals.[54] In effect, Hubbard was hinting that it would be acceptable for the PWLB to fulfil a role of provider of low cost loans in these low risk but important areas. Hubbard also recognised that the PWLB operated in a political arena, and could be obliged by Parliament to lend at lower rates. Within three years there would be a significant extension in low cost lending by the PWLB, leading to a marked increase in PWLB lending.

There are two reasons why spending on water and sewer improvements was so modest in the 15 years after 1848, and why PWLB lending was so insignificant. The first reason is that the 1848 Act retreated from the strong centre and weak localities model of the Poor Law Commission. Parliament did not use the 1848 Act to force increased investment in water and sewer facilities. Instead, Parliament's apparent objective in passing the 1848 Act was to preserve local discretion and avoid central interference. This philosophy created a permissive Act, and allowed the vast majority of local areas to avoid the 1848 Act's provisions. At the same time, the views of the PWLB and the Treasury had turned against the role of provider of low cost loans of the workhouse era. So, the PWLB returned to its original role as a market rate lender when loans were not available in the market. This is the reason the PWLB loan rate was set at 5 per cent, and why Hubbard sought to maintain it at this level in 1859. The appointments of Spearman and Hubbard were essential to this, as was the underlying Treasury view revealed by Trevelyan in his 1852 letters to Disraeli. These two reasons explain the return to a non-interventionist model in the 1848 to 1863 period. As a result, the 1848 Act failed to increase the level of investment in the water and sewer infrastructure in the 15 years up to 1863.

5.3 Changes after 1863

After 1863, three significant changes had an impact on the level of water and sewer infrastructure investment, and on the PWLB share of its financing. The first was a series of legislative changes to the relationship between the General Board of Health (and its successors) and local boards of health. Over time the changes transformed the weak centre and strong localities model into a strong centre and weak localities model. These changes meant that local areas had to establish

[54] BPP 1851 (512) showed no write offs for poor law or burial board loans.

local boards of health, and had obligations to improve water and sewer infrastructure. The second change was in the government's attitude to spending. Before 1866, government spending rose more slowly than national income, after 1866 spending grew faster than national income. The third change was that the government gave way to pressure for lower interest rates on some PWLB lending in the 1860s, and in 1872 allowed the PWLB to lend at 3.5 per cent for water and sewer loans. The result of these changes was that water and sewer infrastructure investment more than doubled, and the PWLB share of financing that infrastructure rose to 31 per cent.

Table 5.6	**The changing nature of public health Acts 1848-76**		
Characteristic	1848 Act	1865-8 Acts	1871-5 Acts
Local body powers/duties	'May' supply water and build sewers	S49 held to make water & sewers obligatory duties	S55 & S15 duty to ensure adequate sewers & water supply
Legislation applies to which areas	S1 & S10 only apply to towns, & their application was voluntary	S3 + Schedule, rural areas may adopt Act	S5 applies to all of England & Wales
Central body power to intervene	Only to impose Act with deaths >23/1000	Intervention power exists, but held to be ineffective	S299 may compel work to be undertaken
Central body strength	S9 GBH to last 5 years only, with limited influence	Limited powers rest with Secretary of State	LGB permanent, well staffed and powerful

Source: Analysis of individual Acts.

Key	
	Weak centre, strong locality relationship
	Transitional relationship
	Strong centre, weak locality relationship

Note: 'S' indicates which section of the Act makes the provision.

Table 5.6 shows that the legislative changes took place over a very long period. The first change was to the coverage of local boards of health. Originally, only urban areas were covered by the 1848 Act. The 1866 Act then allowed rural areas discretion to establish local boards. Only in 1872 did it become compulsory to

have sanitary authorities (as local boards were renamed) covering the whole of England and Wales.[55] The second change was to the powers and duties of the local boards/sanitary authorities. It was 1866 before local boards saw their discretionary powers replaced by compulsory duties. The critical change from powers to duties was implied in the 1866 Sanitary Act, but it was not explicitly stated.[56] Section 49 gave the Local Government Act Office (the 1858 successor to the General Board of Health) power to compel the local body to undertake water and sewer works. However, Oliver MacDonagh judged that the section 49 power 'combined ineffectuality in practice with revolution in principle', and the power to compel was only used three times.[57] It took another nine years until the 1875 Public Health Act placed on local boards a clear duty to ensure the provision of adequate water supplies and sewer facilities.[58] Between 1866 and 1875, local areas had lost their substantial discretionary powers over the application of the Acts, and had become weaker as a result.

Between 1866 and 1871, the weak and temporary General Board of Health of the 1848 Act was transformed into the strong and permanent Local Government Board of the 1871 Act.[59] A measure of the LGB's greater strength was that in 1873 it held over 130 special local public inquiries into public health provision.[60] The Board was also larger than its predecessors, because it combined the functions of the Privy Council and the Poor Law Commission with those of its public health predecessors. The LGB annual reports to Parliament make clear that the LGB had adopted the PLC culture of regular statistical returns from local sanitary authorities and regular inspections.[61] In short, the LGB had begun to act like the PLC. The LGB was headed by a cabinet minister, and this extra influence allowed it to negotiate a doubling of the borrowing limit for all local boards, and a

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[55] Royston Lambert, *Sir John Simon 1816-1904* (London, MacGibbon & Kee, 1963), p. 380
[56] The *Lancet* viewed the 1866 Act as embodying a transition to compulsory powers. Quoted in Lambert, *Sir John Simon*, p. 380. Simon wrote that in the 1866 Act 'the grammar of common sanitary legislation acquired an imperative mood' (p. 386).
[57] MacDonagh, *Early Victorian Government*, p. 157.
[58] Public Health Act 1875, 38 & 39 Victoria c55, sections 15 and 55.
[59] Local Government Board Act 1871, 34 & 35 Victoria c70.
[60] BPP 1874 (1071) Third Annual Report of Local Government Board, p. 692.
[61] See the LGB's Annual Reports to Parliament.

trebling of the maximum period of loans from 20 to 60 years.[62] The centre had been transformed from weak to strong, just as the localities were transformed from strong to weak. Section 5.4 shows that these changes led to a five-fold increase in water and sewer sanctions.

Table 5.7	Government spending and national income			
	Civil govt spending £m	National income £m	Annual growth in Civil Govt spend	National income
1856	8.7	665		
1866	10.3	846	1.7%	2.4%
1876	14.8	1099	3.7%	2.5%

Sources: Mitchell and Deane, pp. 367 & 397.
Note: Civil govt spending excludes debt and military costs.

At the same time as these changes to central and local government relationships occurred, the government became more willing to allow its spending to grow. Between 1856 and 1866, civil government spending (i.e. government spending excluding military spending and debt costs) rose more slowly than national income. This reflected the long held view that discretionary government spending needed to be reduced.[63] Table 5.7 shows that between 1867 and 1876, civil government spending growth more than doubled, while national income growth barely changed. Jonathan Parry explains the increase in government spending growth in terms of changes in the balance of power inside Gladstone's cabinets.[64] Parry maintains that by 1868 the 'retrenchment' views of Gladstone and his Chancellor of the Exchequer, Robert Lowe, held sway. However, by the early 1870s, Parry argues, Lowe was more inclined to support public health and education spending. Parry further suggests that Lowe's views were shared by H. A. Bruce at the Home Office, Thomas De Grey as Lord President and William Forster at Education. Gladstone clearly felt in a minority in his own cabinet when

[62] BPP 1868-9 (4218), Royal Sanitary Commission Report, Questions 2382, 2551, 2896. Representatives from Manchester, Birmingham and Croydon argued for longer repayment periods and lower interest rates for loans.
[63] Philip Harling, *The Waning of 'Old Corruption': The Politics of Economical Reform in Britain 1779-1846* (Oxford, Clarendon Press, 1996), pp. 150, 168-178.
[64] Jonathon Parry, 'Gladstone ,Liberalism and the Government of 1868-74', in *Gladstone Centenary Essays*, eds. David Bebbington and Roger Swift (Liverpool, Liverpool University Press, 2000), pp. 95, 108-9.

he wrote in 1872 that he had 'given in considerably to the rest of the cabinet'.[65] This change in the balance of cabinet sentiment goes a long way to explain the growth in health and education spending in the 1870s.

Governments in the 1860s also had to relax their anti-spending views in the light of pressures in Parliament. In these years, Parliament passed six Acts, which approved extra spending of £7m in total. Compared to annual civil government spending of £10-15m a year, these were substantial new spending commitments. Of these six Acts, the most important two were the 1861 Harbour and Passing Tolls Act, which authorised spending of £3.5m over 10 years, and the 1863 Public Works (Manufacturing Districts) Act, which authorised spending of £1.9m over a two year period.[66] What links all six Acts is the fact that in each case the government was presented with an immediate problem, and was under pressure from backbench MPs and external pressure groups to provide some financial support.

These six Acts were also linked because each would be financed by PWLB loans. In the case of four of the Acts, Parliament determined that PWLB loans would be advanced at interest rates of either 3.25 per cent or 3.5 per cent. However, in none of the parliamentary debates about these four Acts is there any reference to any principle justifying cheap loans, nor any indication that loans were not available at market rates. Furthermore, as Bellamy points out, no case was made that a 'public interest argument' justified the use of cheap loans.[67] Instead, two Acts were responses to the emergencies of the cotton famine and cattle disease, where the cost of loan repayments would ultimately be met by local ratepayers.[68] MPs in the affected areas therefore had an interest in reducing the costs of the loan repayments. In the case of the Harbours and Passing Tolls Act, the government wished to get approval to abolish passing tolls for all ships sailing past four designated harbours of refuge, and ended up offering cheap loans to

[65] British Library, Add MSS44521 f41, 9 November 1872, Gladstone papers, Gladstone to Goschen.
[66] Three of the Acts are detailed in the paragraph and the other three were for the provision of houses for the labouring classes (29 Victoria c28), and two for the support of Irish railways, 27 & 28 Victoria c92 and 29 & 30 Victoria c95.
[67] Bellamy, *Administering Central-Local Relationships*, p. 82.
[68] Public Works (Manufacturing Districts) Act 1863, 26 & 27 Victoria c70, and loans to help Cheshire farmers affected by cattle disease (29 & 30 Victoria c110).

construct or improve harbours.[69] In summary, the case for cheap PWLB loans was not a rational one based on clear principles or public interest. Instead, cheap loans were a response to pressure on the government.

The government faced similar pressure when Parliament debated the 1872 Public Health Act. The Act imposed the significant extra costs of a large-scale extension of water and sewer investment on local ratepayers. Bellamy recounts that 'two hundred Liberals abstained and the government suffered a spectacular defeat' on the Bill.[70] As constituency members, MPs objected to local rates having to pay for nationally determined new services, without any central government financial support. In order to get the Bill passed, the Local Government Board offered a concession to reduce the normal 5 per cent PWLB loan rate to 3.5 per cent for sanitary loans. With this concession, the PWLB ceased to be a high cost lender for sanitary loans, and once again became a provider of low cost loans. Bellamy reports that both Gladstone and Lowe later said that they 'frowned on' the concession, even though they approved it in order to get the Bill through Parliament.[71] This confirms the 1836 workhouse experience, and the Harbour and Passing Tolls 1861 Act, the Public Works (Manufacturing Districts Act 1863, and Cattle Diseases Act of 1866: that low interest rates were generally a response to pressure, not a rationally applied principle.

Once the 1872 Act had been passed, there was a disagreement between the Local Government Board and the PWLB about the application of the 3.5 per cent rate. John Lambert, the LGB secretary, argued that all loans made under the powers of the 1872 Act should be at 3.5 per cent.[72] William Willink, the PWLB secretary (almost certainly replying under the guidance of Hubbard, who was still the PWLB chairman), did not agree and reminded Lambert of the principle established by Hubbard in 1859 that

[69] House of Commons debates, volume 161 15 March 1861, cc. 2117-30, Harbours and Passing Tolls Act.
[70] Bellamy, *Central-Local Relations*, p. 34.
[71] Bellamy, *Central-Local Relations*, p. 82.
[72] National Archives, MH19/209 Treasury-LGB correspondence. Letter dated 11 June 1874 from John Lambert, secretary of the LGB, to the Treasury.

> Advances at exceptional low rates of interest .... (are) only justifiable ... for such works as (water) and sewerage ... where works of great utility might not otherwise be carried out.[73]

For the PWLB, loans for street improvements and markets, and loans for any other purposes under the 1872 Act, would all continue to attract 5 per cent interest rates. R. R. W Lingen, the Treasury permanent secretary, was left to arbitrate between the PWLB and the LGB. In a July 1874 letter, Lingen backed the PWLB view, and thereby stuck to the 1859 Treasury minute.[74] The LGB eventually conceded, and thereafter only asked the PWLB to apply the 3.5 per cent rate to water and sewer loans. The disagreement between the LGB and the PWLB resurfaced at an 1875 Select Committee hearing on two PWLB Bills. Hubbard was probed about why the PWLB would make 5 per cent loans for street improvements, but 3.5 per cent loans for water supply. Hubbard argued that lower interest rates were only appropriate for 'great national purposes ... calculated to affect the security of life or property'.[75] For Hubbard, the improvement of the nation's water and sewer infrastructure was a 'great national purpose', and street improvements were not. The distinction was perhaps understandable, but appears to have had no legislative backing at all.

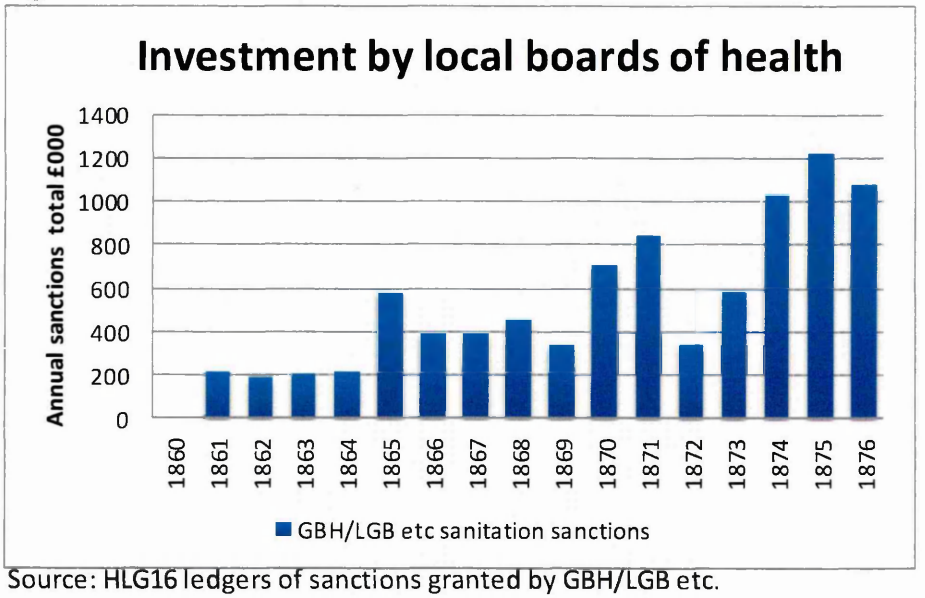
However flawed the distinction was, it was nonetheless clear that the PWLB would fulfil two separate roles. The first was as a lender at 5 per cent for ordinary purposes, and the second was as provider of low cost loans for great national purposes. The legislative changes during the 1850s, 1860s and early 1870s had the effect of hugely expanding the demand for loans to finance the compulsory improvement of water and sewer infrastructure. The government's greater willingness to see spending rise by more than national income was essential to both lower PWLB interest rates and legislation that effectively made sanitary improvements compulsory. Section 5.4 shows the scale of the increases in total investment in water and sewer facilities, and the share of that investment financed by the PWLB.

5.4 Impact of the changes

[73] National Archives, MH19/209. Letter dated 5 June 1874 from William Willink, PWLB secretary.
[74] National Archives, MH19/209. Letter dated 27 July 1874 from R. R. W. Lingen to the LGB.
[75] BPP 1875 (358) Select Committee on Public Works Loan Act Amendment Bill, Q385.

The impact of the legislative changes can be measured by the increase in sanitary investment. In a similar way, the impact of low interest rates can be seen in the increased scale of PWLB lending after 1863. Figure 5.5 shows a clear upward trend in the value of investment approvals by the successors to the General Board of Health. In the early 1860s, approvals were running at around £200,000 a year. Annual approvals doubled after the 1866 Act introduced the principle of compulsion in urban areas. In 1870-3 the value of sanctions increased to £600,000 a year as spending gained momentum. By 1874, local sanitary authorities were reacting to the 1872 Act and its increasing degree of compulsion and low interest rates. These two changes caused Local Government Board approvals to rise to a peak of £1.2m in 1875. The removal of local discretions had increased significantly the number of local areas making water and sewer investments. The fivefold increase in investment approvals was the clear result.

Figure 5.5

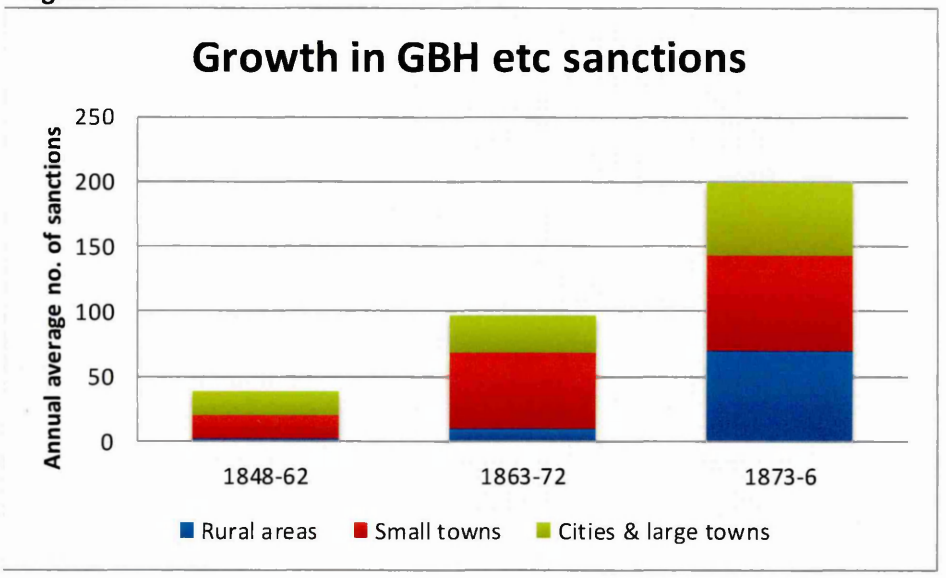


Source: HLG16 ledgers of sanctions granted by GBH/LGB etc.

Analysis of the LGB sanctions in figure 5.6 gives more evidence of the impact of legislative changes. Before the 1866 Act, there were no approvals for investment in rural areas, since the 1848 Act did not give rural areas the power to invest in water supply and sewers. Even after the 1866 Act gave rural areas that power, there was an average of only 10 approvals a year. After the 1872 Act established sanitary authorities in all rural areas, investment approvals rose to 70 a year in

rural areas. A similar step change in the level of approvals for small towns is also clear in figure 5.6. Before 1863, only an average of 17 small towns were gaining investment approvals each year. After the 1866 Act, the number more than tripled to 58 a year as sanitary authorities realised that compulsion was on the way. Many small towns decided to act on their own volition, rather than be compelled to act. There was a further, but smaller increase after the 1872 Act. In summary, by the mid-1870s there had been a seven-fold increase in investment approvals for rural areas. There were also three- and four-fold increases for city and small town investments respectively. These increases were directly linked to the imperative for change implied in the 1866 Act, and the compulsory establishment of rural sanitary areas in 1872.

Figure 5.6



Sources: Sanction numbers from HLG16, rateable value data from BPP 1878 (269) 1876 local tax return

Notes: Cities and large towns have rateable values over £50,000
Small towns have rateable values over £15,000
Rural areas from *Stones Manual of Unions*, as unions formed basis of rural sanitary authorities.

The increase in LGB sanctions for large towns and cities was relatively small because these areas made greater use of local Acts to gain borrowing approvals. Small towns made virtually no use of local Acts, but cities and large towns increased their investment under local Acts five-fold, to £1.1m, after 1872.[76]

[76] See figure 5.3.

These more populous areas had the same duties as all other sanitary districts: to provide adequate water supply and sewer facilities. They just chose to use local Act powers rather than the powers of the 1866 and 1872 Acts to discharge those duties. It was still the requirements of those two Acts that caused the increase in the level of investment in water facilities in cities. Investment by cities also increased because of the growing shift from private water company provision to municipal provision of household water supplies.[77] Cities and large towns also saw their costs rise as average consumption per head rose, and local sources of water were exhausted or polluted.[78] The large investment increases in cities were therefore needed to ensure adequate water supply to growing populations. Overall, 85 per cent of the nearly £2m a year increase in water and sewer investment after 1862 was the result of public sector investment, and therefore a response to the increased demands of the 1866 and 1872 public health Acts. The small balance of increased spending was caused by a small rise in spending by private water companies.

The doubling of water and sewer investment after 1863 was the result of legislative changes. The second major change after 1863 was the reduction in the PWLB interest rate for some classes of lending, and in 1872 for water and sewer loans. Figure 5.7 indicates that insurance companies and individuals were charging an average 4.75 per cent interest to urban sanitary authorities between 1863 and 1874.[79] In these periods, the PWLB was acting as a high cost lender, and would only lend to those unable to get a lower cost loan from a private source. Figure 5.7 shows that when the PWLB charged 5 per cent, its market share of public sector borrowing was 10 per cent or less. Figure 5.7 also highlights that when PWLB interest rates were reduced to 3.5 per cent, the PWLB share of lending rose to around 50 per cent. At these times the PWLB was acting as provider of low cost loans. At different times during this period the PWLB was

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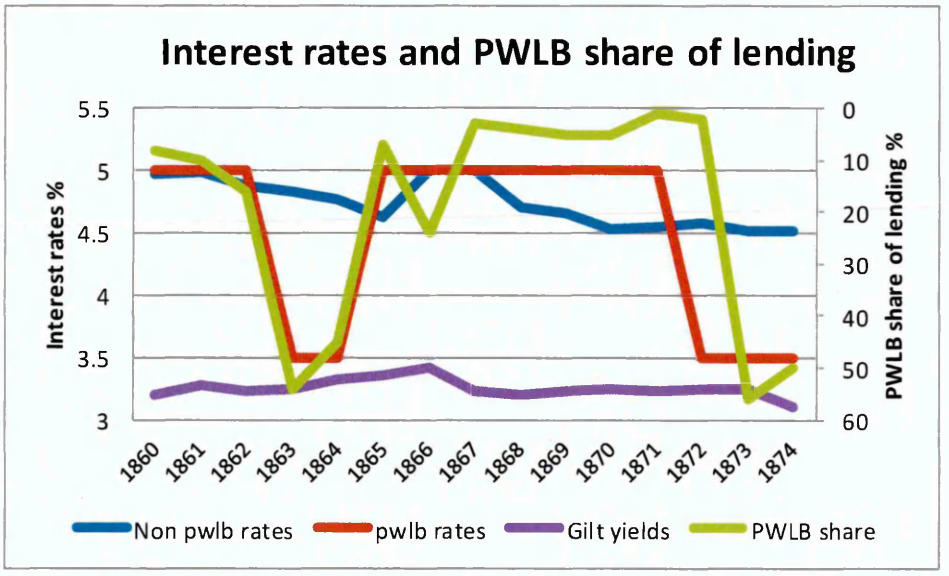
[77] John Hassan, *A History of Water in Modern England* (Manchester University Press, Manchester 1998), pp. 18-19.

[78] Robert Millward, *Private and Public Enterprise in Europe: Energy, Telecommunications and Transport, 1830-1990* (Cambridge, Cambridge University Press, 2005), p. 45. Applying estimated average populations to the debt data gives investment costs per head as follows: cities £5; large towns £2.50; small towns £1.30; very small towns £0.80; rural areas £1.50.

[79] BPP 1874 (396). The graph is based on a 23 per cent sample of the loans.

fulfilling two roles, first as a high cost lender, and second as provider of low cost loans, and its share of lending rose as its interest rate fell.

Figure 5.7



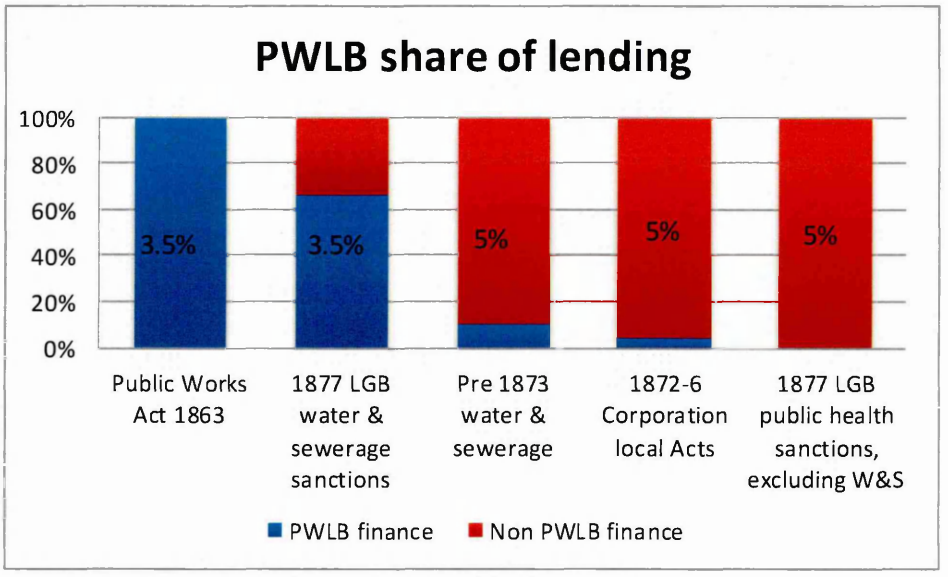
Source: 1874 (396) Return of debts for Urban Sanitary Authorities and Homer, *History of Interest Rates* p. 195 for gilt yields.

Note: Non-PWLB rates are a combination of insurance companies lending at an average of 4.8% and individuals at 4.5% in the early 1870s.

Figure 5.8 shows how the PWLB's share of lending reacted to the interest rate charged on different streams of lending by the PWLB. The first example is PWLB lending to local authorities in Lancashire, Cheshire and Derbyshire in 1863 and 1864. This was the period when these three counties were severely affected by the cotton famine caused by the American Civil War. Local authorities in these areas were able to borrow at 3.5 per cent from the PWLB, or at market rates from any private source. Loans had to be for capital investment purposes, and for activities covered by the various public health Acts. A total of £1.8m was borrowed over the following three years, and all of this came from the PWLB because of the 3.5 per cent interest rate.[80] Of the £1.8m, over £700,000 was spent on water and sewer provision. Here, the PWLB was acting as provider of low cost loans, and the cheap loans made borrowing much more attractive. This example also shows that cheap loans were an incentive to act quickly.

[80] BPP 1868 (6) Report on the Public Works Act shows that approval was given for loans of £1.9m, but £100,000 of those loans were not taken up. PWLB 6/3 and 6/4 show that the PWLB made loans of £1.8m under this Act.

Figure 5.8



Sources: Public Works Act spending. BPP 1868 (6); 1877 LGB sanctions, BPP 1878 (241); Pre 1873 water & sewerage, Appendix 5.A; 1872-6 Corporation local Acts, Personal & Local Act volumes and PWLB 6.

Notes: Figures in bars indicate the PWLB interest rate charged.

The second example is of water and sewer infrastructure investment in the period after 1872, when PWLB was charging 3.5 per cent. The 1878 Local Government Board annual report shows that the LGB issued sanctions for public health spending of £2.8m in 1877.[81] Of this £2.8m, £1.6m was for water and sewers and £1.2m was for street improvement, markets and other investments authorised by the 1872 Act. In the case of water and sewer investments the PWLB was able to lend at 3.5 per cent. In the case of street improvements and other public health improvements the PWLB would only lend at 5 per cent. For water and sewer loans the PWLB lent £1.1m, or two thirds of the total. Here, it was acting as provider of low cost loans. Private sources lending at between 4.5 and 4.8 per cent only provided a third of the finance. The two thirds PWLB share is likely to be an underestimate, since it only includes LGB recommendations to the PWLB made in 1877. It therefore excludes those recommendations where there was a delay before the PWLB was asked to make a loan in early 1878.

[81] BPP 1878 (2130) LGB annual report pp. 504-519 lists loans sanctioned by the LGB for urban and rural sanitary districts, and recommendations made to the PWLB for 1877. Earlier LGB reports simply listed loans actually advanced by the PWLB during the year, making the comparison of sanction and PWLB loans less useful.

In sharp contrast, the PWLB only made loans of just £7,000 towards the £1.2m of non-water and non-sewer LGB approvals. Here, the PWLB was lending at 5 per cent and acting as a high cost lender. Borrowers invariably preferred to go to insurance companies and individuals who were willing to lend at between 4.5 and 4.8 per cent. The outcome was that the PWLB market share was less than 1 per cent of the total. The result was similar for PWLB lending for pre-1873 water and sewer sanctions given by the Local Government Board and its predecessors. Between 1848 and 1872 sanctions totalled £8m and PWLB lending totalled just over £800,000, or 10 per cent of the total. The PWLB share of lending for local Acts promoted by municipal corporations was similar, but a little more complex. Between 1872 and 1876 corporations were authorised to borrow £6.1m to improve water and sewer facilities. Of this, less than £300,000 was borrowed from the PWLB. The conclusion is that where the PWLB lent at 5 per cent as a high cost lender, it typically provided less than 10 per cent of the loans, and where it lent at 3.5 per cent it provided more than half of the loans. The PWLB could therefore fulfil different roles at the same time, for different lending streams.

The change from permissive to compulsory legislation transformed the level of water and sewer investment. Dropping the PWLB interest rates to 3.5 per cent also transformed the PWLB's share of lending. By 1874 the low interest rates were themselves increasing spending. This accounts for the near doubling of LGB sanctions, from £600,000 to an average of £1.1m a year over the next three years. This had also been the case with the 1863 Public Works Act: low interest rates had encouraged authorities to take advantage of them, when they might have invested less, or more slowly, at 5 per cent. It is also likely that the 1874-6 increase was the result of a momentum effect similar to that noticed by Dan Bogart in the case of turnpike trust development.[82] If a local board of health saw those around it investing in new water supplies, then the local board was likely to be encouraged to do the same. This was certainly the case with Chesterfield's

[82] Dan Bogart, 'Neighbors, Networks, and the Development of Transport Systems: Explaining the Diffusion of Turnpike Trusts in Eighteenth Century England', *Journal of Urban Economics,* Vol 61, 2007, pp. 238-262.

rural sanitary authority. In 1875 and 1876 it submitted 29 successful applications for loans to extend water supplies to the small villages surrounding Chesterfield.[83]

Table 5.8	Profit on PWLB water & sewerage lending 1848-76		
		£000	£000
Costs	£5.85m borrowed for 30 years, 3.23%	2,833	
	Expenses 0.4 per cent of £5.85m	24	
	Write-off, two loans	7	2,864
Income	£4.75m lent at 3.5% for 30 years	2,493	
	£1.10m lent at 5% for 30 years	826	3,318
Profit			**454**

Sources: Interest on borrowed money. Homer, *History of Interest Rates*
Expenses, see appendix 7.A. Write-offs BPP 1888 (200), p. 136

Despite the growth in water and sewer investment, and the PWLB's low rates of interest, PWLB lending remained profitable because bad debts were very rare, and because the government's borrowing costs were very low.[84] There were, however, two bad debts worth a combined £6,900, from Bromyard and Epping rural sanitary authorities. Both were loans made following intervention in these two districts using the powers of the 1866 Act. Work was done against the will of the RSAs; only half the costs could be recovered, and the balances were written off. However, these write offs were exceptionally rare, and very small in scale. Because of the falling interest costs of government debt, and the very low write offs, the PWLB made a £454,000 profit on water and sewer lending, as shown in table 5.8.

As was seen earlier, Gladstone opposed the use of low interest rates for PWLB lending. He believed that charging interest at rates below the market level meant subsidising the cost of lending.[85] The opposing view would be that to charge 5 per cent, when the cost of borrowing to the government was around 3.25 per cent, would result in excess profits for the Treasury because the local tax payer would be subsidising the national tax payer. The middle ground is that a subsidy only occurs when the interest rate charged to borrowers fails to cover the costs of

[83] National Archives, PWLB 6/4-6 PWLB applications ledger
[84] Sidney Homer, *A History of Interest Rates* (New Brunswick NJ, Rutgers University Press, 1963), pp. 195-6.
[85] Bellamy, *Central–Local Relations,* p. 34; British Library, Add MSS 44302 4 July 1873, Gladstone, Letters; House of Commons debates 1 August 1872 v 213 cc278.

borrowing, bad debts and expenses. On this basis, loans from the state to finance water and sewer infrastructure did not involve a subsidy.

Conclusions

The 1848 Public Health Act was a reaction against the strong centre and weak locality model of the 1834 Poor Law Amendment Act. Parliament had seemed more concerned to avoid interfering in local affairs, and less committed to raising investment in water supply and sewer infrastructure. The 1848 Act was therefore permissive only, and created a weak central body – the General Board of Health. In contrast, the local areas were strong and had a great deal of discretion. As a result, the Act failed to raise investment materially above the pre-1848 levels. During the 1850s and 1860s insurance companies and individuals were willing to lend to local boards of health at less than the PWLB's normal 5 per cent. This explains why, until 1872, the PWLB was financing less than 4 per cent of sanitary infrastructure spending.

During the 1860s and 1870s, the legislative environment changed. By 1875, local discretion had largely disappeared. Sanitary authorities had been compulsorily established throughout England and Wales, and had duties rather than powers. The weak General Board of Health had been succeeded by the strong Local Government Board. The LGB adopted the strong centre culture of the Poor Law Commission, and made use of its powers to intervene in local affairs. The 1848 weak centre and strong locality model had reverted to the poor law strong centre and weak locality model.

Legislative change also affected the interest rate charged by the PWLB, and from 1872, the PWLB was able to charge 3.5 per cent on loans for water supply and sewage infrastructure. In the four years 1873 to 1876, the PWLB lent an unprecedented £4m for these purposes, and provided nearly half the finance for local authority investment in these areas. The impact of both a degree of compulsion and low interest rates, had led to a more than doubling of the level of investment in water and sewers. For perhaps the first time, PWLB lending had a major impact on the living conditions of the population as local improvements in mortality rates followed wherever there was substantial local investment in water

and sewer facilities.[86] But it would be the end of the century before there were material improvements in national mortality statistics.[87]

The lesson of this chapter (and of chapter 4), is that to encourage local public infrastructure investment, two conditions had to be met. First, there needed to be a clear incentive for the local community to invest. This may be in the form of a legislative imperative, with a risk of central intervention in the case of inadequate investment. Alternatively, there needed to be a local financial or social benefit from the investment. The second condition was that cheap finance should be available to local public bodies. Once the PWLB was able to lend at 3.5 per cent, local communities were more likely to respond to the legislative compulsion. Low cost lending also gave the PWLB an important role in financing public infrastructure. In contrast, as a high cost lender the PWLB played an insignificant role in financing public infrastructure.

[86] BPP 1871 (281) Royal Sanitary Commission second report, Vol 2, p. 250 and p. 276. Evidence from Croydon and Merthyr Tydfil. Both were early adopters of the 1848 Public Health Act, and had invested £200,000 and £140,000 respectively. Croydon saw its mortality rates fall from 26 to 18 per 1000 over 20 years, and Merthyr saw its fall from 30 to 20 per cent over the same period.

[87] Mitchell & Deane, *British Historical Statistics,* pp. 36-7. In the 10 years 1839-48, deaths per 1000 in England and Wales averaged 22.2; in 1872-81 they were 21.0; and in 1896-1905, 16.9.

Chapter 6, The PWLB plays a major part in doubling school provision, 1870-76

Figure 6.1 Above. The Sheffield School Board borrowed £22,000 from the PWLB in 1872 to build four new schools. This is Netherthorpe school, the largest, with 937 places, costing £8,156. The crest in the top centre proudly says 'Sheffield School Board 1873'. It is still operating as a primary school, and is now a grade II listed building.

Figure 6.2 Below. South Wingfield School Board was a typical small, rural school board. In 1875 it borrowed £3,400 from the PWLB to build a 310 place school. It was 40 per cent larger than the village needed, and 80 per cent per place more expensive than it should have been. It still operates as a village primary school and has 107 pupils.

Before the passage of the 1870 Elementary Education Act, there were only school places for half of the children who should have been at school. Within ten years the number of school places had more than doubled, and the national shortage of school places had been eliminated.[1] This transformation was achieved by establishing 1,600 school boards in areas where voluntary effort was judged unable to provide the extra school places needed. In such cases, the local school board was then able to borrow at a low, 3.5 per cent rate from the PWLB in order to build new schools. The loans were repaid by levying a local education rate. The Act left the existing voluntary schools substantially unchanged, and the numbers of voluntary schools continued to increase in the 1870s.

The 1870 Act succeeded in eliminating the national shortage of school places within 10 years. The PWLB became the monopoly lender to school boards, and lent £10m to build schools in England, Scotland and Wales. However, the increased scale of the PWLB's lending caused problems for the Treasury, and had an impact on the PWLB's objectives. This chapter explores both of these wider issues. There are four sections to this chapter, with the first estimating the total investment in providing new school places, and showing the proportion of the investment financed by the PWLB. The second section uses the PWLB loan data to determine the different patterns of investment by large and small school boards. The third section explores the real and imagined problems caused for the Treasury by the scale of PWLB lending in the mid-1870s. The final section looks at the impact of the increased scale of PWLB lending on the PWLB's role, and examines a realistic alternative that would have avoided the problems created by the PWLB's success.

6.1 Financing elementary school building

The 1870 Elementary Education Act set both a quantitative and a qualitative target for the provision of school places. The quantitative target was developed by Horace Mann of the Registrar General's Department. Using the 1851 Census data, Mann showed that there were 4.9 million children between the ages of 3 and 15. Yet average daily attendances at school were fewer than 2 million children.

[1] In 1869 there were 1.8 million school places in England and Wales. By 1879 there were 4.1 million places available. BPP 1870 (165) Committee of Council on Education annual report; BPP 1880 (2562) Annual Report.

This statistic alone created pressure for government action. Mann went on to calculate that school places ought to have been available for 3 million children, or one in six of the 1851 population. The detail of Mann's calculation is shown in table 6.1.[2] Mann's calculation, and the target of school places for one sixth of the population, became the long-lasting quantitative target for school place provision. By 1869, the target had risen to 3.8 million places, and, with 1.8 million places available in church and voluntary schools, the shortfall was 2 million school places.[3]

Table 6.1 Mann's calculation of school places needed

	Million	Million
1851 Census population		18.00
1851 Census population between 3 and 15		4.91
Less those not expected at school		
Incapacitated by sickness	0.10	
Educated at home	0.05	
Occupied at home or for wages	1.00	
Kept at home by parents		
under 5	0.57	
over 12	0.07	-1.89
School places required: 1/6 of population		**3.02**
Average daily attendance		**1.95**

Source: E. G. West, *Education and the Industrial Revolution*, p. 26, except for 1851 census total population, from Mitchell and Deane, and average daily attendance, from BPP 1852-53 (1692), pp. xiv and xxx.

Once the quantitative target had been established, attention turned to defining a standard for the quality of education. Many uninspected schools were seen as having little educational merit, so a qualitative standard was important.[4] The first step had already been taken in 1839, by creating a regular system of school inspection, and this was improved and extended. The second step was taken in 1862, with the 'payment by results' grant system introduced by Robert Lowe and

[2] E. G. West, *Education and the Industrial Revolution*, 2nd edition (Indianapolis, Liberty Fund, 2000), p. 26.
[3] BPP 1870 (165) Committee of Council on Education annual report.
[4] House of Commons debates series 3, Vol 199, c441, 16 February 1870; Forster in the first reading debate on the Elementary Education Bill.

his top official, R. R. W. Lingen.[5] Payment by results sought to create incentives to improve the proportion of certificated teachers, and improve attendance and examination results. Only schools that were inspected and received annual grants would be regarded as being of adequate quality. In contrast, non-inspected and non-grant-earning schools would be deemed as being of insufficient quality, and would not be counted towards the one in six target for school places. The key educational policy target was therefore to provide places in inspected and annual grant earning schools for one sixth of the population. The simplicity of the combined target meant that it was the measure against which the 1870 Act was judged.[6]

Before 1870, elementary schools were provided by churches and other voluntary groups. These groups were encouraged to build new schools by capital grants from the government to meet up to 20 per cent of building costs. The remainder of the costs were met from locally raised voluntary contributions. Despite this, school place numbers remained well short of the one sixth target, and there was pressure on the government to find a means of increasing provision. In 1868 Robert Lowe argued that it would be necessary to supplement existing voluntary and church provision with rate aided schools.[7] W. E. Forster came to share this view, and, as Liberal education spokesman, would later pilot the 1870 Education Bill through the House of Commons.

The 1870 Elementary Education Bill provided for the whole country to be divided into 14,000 school districts. Each district would assess the number of grant aided and inspected school places available in their district. The shortfall between this number and one sixth of the district's population would be the district's need for new school places. School districts could voluntarily form a school board, or they could leave school provision to the churches and voluntary groups. Churches and voluntary groups would have a limited period in which to form plans to provide these places. If voluntary efforts failed to make good the shortage, then a school board would be formed to make up the shortfall, and would be able to borrow from

[5] Lowe went on to be Chancellor of the Exchequer 1868-73, while Lingen went on to be Permanent Secretary of the Treasury 1870-85.
[6] BPP 1888 (5485) The Final Report of the Cross Committee, p. 53.
[7] Marjorie Cruickshank, *Church and State in English Education* (London, Macmillan, 1963), p. 22, quoting a *Times* report on 25 January 1868 of a speech by Lowe in Liverpool.

the PWLB at 3.5 per cent to build schools. The school board would be able to levy an education rate to repay the debt and meet net running costs. Although hard fought inside and outside Parliament, the Bill enjoyed sufficient support that none of these principles were changed in the parliamentary debate. The 1870 Elementary Education Act gave churches and voluntary groups an incentive to establish more schools quickly, in order to avoid the need to create a school board.

The PWLB lent £10.2m to newly established school boards between 1870 and 1876. Of the £10.2m, £2.2m was lent to Scottish school boards, and is excluded from the analysis in the rest of this chapter.[8] Even so, the remaining £8m was the most the PWLB had ever lent in any five year period. It was more than twice the sum lent to local sanitary boards in the same period. In addition, the PWLB had a virtual monopoly of lending to school boards. Only another £110,000 was lent to school boards from non-PWLB sources. Of this, £90,000 was in the form of two 3 7/8 per cent loans from the Metropolitan Board of Works to the London School Board. The loan was specifically to finance the building of a headquarters that the PWLB was prohibited from lending for.[9] There were just four loans between 1870 and 1876 from insurance companies, banks and individuals, with a combined total of £20,000. These were at rates of 4-5 per cent.[10] Not surprisingly, the PWLB interest rate of 3.5 per cent made the PWLB the monopoly provider of low cost loans to school boards.

The PWLB was not able to lend to voluntary bodies, so all of the funding for building new voluntary schools had to come from either government grants or voluntary fundraising. In the parliamentary debate on the 1870 Bill, Gladstone, as Prime Minister, made clear that voluntary groups had just six months to submit applications for the last tranche of the grants.[11] These grants would then cease to be available. In that short window, 5,000 applications were made, and over 3,000 were accepted by the Education Department. Over the next 10 years the

[8] Scotland was excluded because the data for Scottish school places was not so readily available, and because the legislation was different, and only passed in 1872.
[9] London Metropolitan Archives, file SBL/1712, LSB mortgage register. Section 57 of the 1870 Act only allowed the PWLB to lend to build schools.
[10] BPP 1875 (268) Return of School Board Loans (England).
[11] House of Commons debates 16 June 1870, series 3, Vol 202, c281. Initially the 'period of grace' for grants was to be 12 months, but was reduced to six months in the Act.

government paid out £338,000 in grants to aid the provision of 300,000 new school places.[12] Ninety per cent of the grants went to the Church of England's National Society. Financially, these grants were on a very small scale when compared to the total of PWLB lending. However, because these grants only met up to 20 per cent of building costs, they encouraged the three large church groups to raise £1.5m in voluntary contributions.[13] Table 6.2 shows the split between grants and voluntary contributions by denominational group. After the grants ended, church and voluntary groups continued to raise local contributions, and built a further 1.1 million school places without the incentive of government grants.

Table 6.2 Denominational share of gov't grant 1870-81

	Voluntary school funding			Places
	Grant £000	Contribs £000	Cost £000	provided '000
National Society	301	1,294	1,594	266
British & foreign etc	24	100	124	24
Roman Catholic	13	59	72	13
Total	338	1,453	1,790	303

Source: Committee of Council Annual Reports, BPP 1870 (165), p. lxxxi and BPP 1880 (2562), p. 166.

In 1869, the Church of England provided nearly three quarters of all school places. The Church of England also provided one million, or three quarters of all the new voluntary school places in the 1870s.[14] Table 6.3 shows that these one million extra places were provided in three different ways. The first group of 266,000 places were those that were government grant aided, and appear in table 6.2. The second group were 109,000 places, provided after the grant had ended, in schools affiliated to the Church of England's National Society.[15] These extra places were financed by voluntary contributions of £400,000, with at least part of these contribution collected by National Society fundraising activities.[16] The remaining 640,000 extra places were again provided without the help of

[12] BPP 1870 (165) p. lxxxi and 1880 (2562), p. 166, Education annual reports.
[13] BPP 1870 (165) p. lxxxi and 1880 (2562), p. 166.
[14] There was generally a gap of up to three years between the commitment to build a new school and its places appearing in the Committee of Council annual reports. This chapter therefore compares the new school places reported as being available between August 1869 and August 1879 with financial commitments made between 1870 and the end of 1876. Appendix 6.A has a fuller note on the methodology of dealing with school place statistics.
[15] The Church of England set up the National Society in 1811 to build and run schools on its behalf.
[16] Church of England Record Centre, Bermondsey, National Society Annual Reports 1870-77. .

government grant, but also without support from the National Society. They were therefore funded entirely by local fundraising activities and although they were Church of England schools, they were not affiliated to the National Society. It is not possible to provide any direct evidence about the total cost of these places. A reasonable estimate, based on a sample of local record offices files, is that a new church school place cost £4.[17] The Committee of Council annual report for 1884 supports this figure by reporting that 1.2 million voluntary school places were provided at a cost of £5m, or just over £4 per place.[18]

Table 6.3 Funding Church of England new school places 1870-76

	New places in 1870s '000	Funding Grant £m	Contri-butions £m	Cost per place £
Grant aided schools	266	0.3	1.3	6.00
National Society schools	109		0.4	3.70
Other CoE schools	640		2.5	4.00
All CoE schools	1,015		4.2	4.50

Sources: Total grant aided places, and new CoE place from Committee of Council annual reports, BPP 1870 (165) and BPP 1880 (2562). National Society data from National Society annual reports 1870-77.

The Committee of Council described a large group of schools as 'British, Wesleyan and other non-denominational schools'. In practice, this included all schools that were neither Church of England nor Roman Catholic.[19] The British and Wesleyan societies were broadly content with the 1870 Act, and saw no need to expand significantly the number of schools they supported (see table 6.4). Based on a cost of £4 for each of the extra school places they provided, only a modest £200,000 was invested in new school places. The other schools in this category included company schools, parochial, free and ragged schools, and schools without any identifying indicators. In the 1870s these non-church schools nearly doubled their places, from 193,000 to 368,000. Assuming the same £4 per

[17] Derbyshire Record Office, files D6546/4/5/1, D37/M/E385/1, D5215/1/3 and D3644/31/1, Subscription lists for Brassington, Brackenfield, Bakewell and Youlgrave schools, Church of England Record Centre files NS7/1/2917, NS7/1/2917a, NS7/1/3987.for Soresby and the national schools in Chesterfield and St Pauls school Derby. Of these seven lists, the Duke of Devonshire appears in four.
[18] BPP 1884 (4483), p. xi, PWLB annual report.
[19] Detailed analysis of a large sample of schools listed in the Committee of Council annual report was used to estimate the separate sizes of the British, Wesleyan and non-church components of the larger group.

place capital cost, these schools would have raised voluntary contributions of £700,000. All of these funds appear to have been raised by local rather than national fundraising efforts.

Table 6.4 Funding British, Wesleyan and other school places 1870-76

	New places in 1870s '000	Funding Grant £m	Funding Contri-butions £m	Cost per place £
Grant aided B & W schools	24	<0.1	0.1	5.20
British & Wesleyan schools	17		0.1	6.00
Non church schools	-		0.7	4.00
All non-CoE & non-RC schools	41	<0.1	0.9	4.20

Sources: Total grant aided places, and new school places from Committee of Council annual reports, BPP 1870 (165) and BPP 1880 (2562).

In 1870 the Roman Catholic Poor Schools Committee established a National Crisis Fund to raise money to provide an extra 80,000 school places.[20] Its plan was that 55,000 new places would come from building new schools, and 25,000 from turning existing unapproved Catholic schools into grant-earning schools. The National Crisis Fund quickly collected £259,000, and used this to build an extra 57,456 school places (see table 6.5).[21] A further 74,000 places were provided without national fundraising. It is assumed here that half of these 74,000 places were the result of local fund raising. At £4 a place, this would have needed £148,000. It is assumed that the other half of the 74,000 places came from previously unapproved schools, and that no capital was invested to bring these schools up to standard. An extra 144,000 Roman Catholic school places were therefore provided at a cost of £479,000, including grant funded places.

[20] The Catholic Poor Schools Committee was chaired by Lord Ripon, who (as Lord De Grey), had been a member of Gladstone's government until 1873, and had been Forster's boss. Anthony F. Denholm, 'Robinson, George Frederick Samuel, first Marquess of Ripon (1827-1909)', *Oxford Dictionary of National Biography*, Oxford University Press, 2004. Online edn, May 2009 http://www.oxforddnb.com/view/article/35792, accessed 18 Sept 2013. The 80,000 target is derived from the Catholic Poor Schools Committee CEC/1/5, annual report 1870, p. 32. in the archive of St Mary's University College, Twickenham.

[21] Catholic Poor Schools Committee CEC/1/6, Annual Report for 1873, p. 13.

Table 6.5 Funding Roman Catholic Church new school places 1870-76				
	New places in 1870s '000	Funding Grant £m	Contri-butions £m	Cost per place £
Grant aided RC schools	13	<0.1	0.1	5.50
National Crisis Fund	57		0.3	4.50
Voluntary effort	37		0.1	4.00
Non-grant earning schools	37			
All non-CoE & non-RC schools	144	<0.1	0.5	3.30

Sources: Total grant aided places, and new RC school places from Committee of Council annual reports, BPP 1870 (165) and BPP 1880 (2562). Contributions from Catholic Poor Schools Committee annual report 1873.

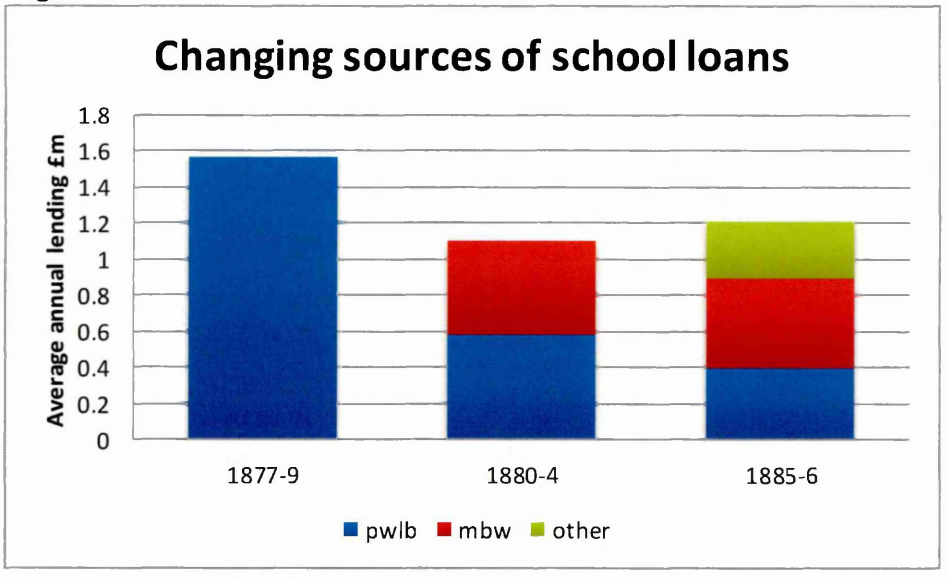
Table 6.6 summarises the estimates in the previous paragraphs, and shows that a total of £14m was invested in schools between 1870 and 1876. The PWLB provided 57 per cent of this finance, with 40 per cent coming from voluntary contributions. The balancing 3 per cent came from government grants, and borrowing through the Metropolitan Board of Works. Because of the 3.5 per cent interest rate, the PWLB was the major provider of finance for infrastructure investment in schools, just as it had been for post-1872 sanitation investment and workhouse investment before 1844. However, on this occasion there were no effective alternative sources of loans for school boards.

Table 6.6 Investment in new school provision 1870-6			
	£m	£m	share
School board investment			
PWLB lending England & Wales		8.0	57%
Metropolitan Board of Works etc		0.1	1%
Church & voluntary school investment			
Government grant		0.3	2%
Voluntary contributions			
Church of England schools	4.2		
British & Wesleyan schools	0.2		
Roman Catholic schools	0.5		
Non-church schools	0.7	5.6	40%
Total		**14.0**	100%

Sources: PWLB, Analysis of PWLB 6/1-6 application ledgers
Other loans:BPP 1875 (268) School Board Loans. And LSB Mortgage Ledger. Church of England National Schools annual reports. Others assumed to be at £4 per place.

The PWLB's monopoly of lending to school boards only lasted another three years, as can be seen in figure 6.3. Investment in new schools by school boards ran at £1.6m a year between 1877 and 1879, and all of this was financed by PWLB loans.[22] In the early 1880s, investment in schools fell to around £1.1m, and the PWLB only financed £600,000 of this. The PWLB lost its monopoly because the government limited lending to individual borrowers to £100,000 a year. The London Schools Board therefore started to borrow from the Metropolitan Board of Works instead.[23] In 1885 and 1886, investment in new schools was stable, at £1.2m a year, but the use of stock issues by large cities was growing, and raised £300,000 a year.[24] The LSB's borrowing from the MBW remained at £500,000 a year, pushing PWLB lending down to £400,000 a year. The PWLB's share of school board borrowing therefore fell from 100 per cent in the years up to 1879, to just 33 per cent in 1886. The decline in PWLB lending was not due to the entry of competitors; instead, it was the result of the development of financial markets.

Figure 6.3



Sources: Committee of Council Annual Reports, and Metropolitan Board of Works Annual Reports.

Note: MBW is Metropolital Board of Works. 'Other' is stock issues.

[22] Committee of Council Annual Reports. BPP 1880 (2562), BPP 1881 (2948), BPP 1882 (3312), BPP 1883 (3706), BPP 1884 (4091), BPP 1885 (4483), and BPP 1886 (4849).
[23] MBW Annual Reports BPP 1880 (212), BPP 1881 (240), BPP 1882 (188), BPP 1883 (169), BPP 1884 (186), BPP 1884-5 (186), and BPP 1887 (157).
[24] Henry Burdett, *Burdett's Official Intelligence for 1884* (London, Effingham Wilson, 1884), p. 963 charts the rise of stock issues by the largest cities.

6.2 PWLB lending to school boards

In 1869, 3.8 million school places were needed, but only 1.8 million, or less than half the target, were available. Table 6.7 indicates that there was a clear difference in the provision of school places between those areas where school boards were formed and those where school boards were not formed. In the former, only a third of the target number of places were available; in the latter, two thirds of the required school places were available in 1869. This distinction demonstrates that the Education Department was able to target the compulsory formation of school boards in the areas of greatest need. The problem was worse in the parish areas where school boards were later formed. Here, 674,000 school places were needed, but only 163,000 places, or 24 per cent of the target, were available. Worst of all, two thirds of these parish areas had no schools at all in 1869.[25] The position in London was nearly as bad, because London had only 34 per cent of the school places it needed. The parish areas that did not have to establish school boards were best off, and they had 66 per cent of the school places they needed. This section examines how the areas with school boards used PWLB loans to provide an extra 1 million school places in the 1870s.

Table 6.7	**The shortfall in school places in 1869**			
School places target 000s		1869 school places Available number 000s	as share of target	Shortfall
	School board areas			
544	London	185	34%	360
986	Boroughs	399	40%	587
674	Parishes	163	24%	511
2,204	**Sub total**	**747**	**34%**	**1,457**
	Non-school board areas			
225	Boroughs	119	53%	105
1,357	Parishes	902	66%	455
1,582	Sub total	1,021	65%	560
3,785	**Totals**	**1,768**	47%	**2,017**

Sources: Analysis of BPP 1870 (165) for school place data
BPP 1878 (242) for population data.

[25] Analysis based on a comparison of parish school board areas listed in the Committee of Council annual reports BPP 1878 (2048) and the list of schools in BPP 1870 (165).

The 1,500 parish school boards were very small, with average populations of just 2,200 (see table 6.8). Nearly half of these 1,500 parish boards were formed by the Education Department using its compulsory powers.[26] With such small populations, most parish school board areas only needed one or two schools. In the 220 boroughs, average populations were nearly 50,000, and between 10 and 15 schools would be required.[27] Because most larger boroughs formed school boards, the 119 boroughs with school boards covered over 80 per cent of the population living in borough areas. Only 20 per cent of these borough boards were set up compulsorily by the Education Department. The 1870 Act established the London School Board, creating a school board sixty times the size of the average borough board. The clear pattern outside London was that the larger an area's population, the more likely it was to voluntarily form a school board. The willingness of the Education Department to form school boards demonstrates that it was acting as a strong central body, in the manner of the Poor Law Commission.

Table 6.8	**Formation of school boards, 1870-76**					
	School districts		School boards			Population
	Number	Average pop.	1871 pop.	No. of boards	Average pop.	in school board areas
London	1	3.3m	3.3m	1	3.3m	100%
Boroughs	220	32,000	5.7m	119	48,000	81%
Parishes	14,000	800	3.3m	1,514	2,200	30%
All	14,221		12.3m	1,634		54%

Source: School board populations BPP 1878 (2342), pp. 1-44.

It normally took around six months to establish a school board – longer if the Education Department had to compel its formation. It would then take another 12 months to be ready to submit a building plan for approval and make a loan application to the PWLB. The first two applications to the PWLB were in August 1871, from the London School Board, for £100,000, and then in November 1871 from the Bradford School Board for £21,450. By 1872, the number of applications accelerated sharply, and the PWLB fell into a routine of processing them. The PWLB relied on the Education Department to have vetted applications from school

[26] The Committee of Council annual reports 1870-80 list 758 compulsorily formed parish school boards.
[27] This is based on an average parish school of 180 places, and an average borough school of 460 places. These averages are derived from the 1882 annual report BPP 1882 (3312).

boards, and to issue a sanction recommending that the PWLB make the loan. The PWLB minute books show that, at each meeting, the PWLB solicitor would report a list of new school board applications, indicating that a set of standard questions would be sent. At the next meeting he would report on the applications for which the paperwork was complete, and where the Board could therefore grant the loan.[28] At a later meeting the solicitor would then report that the school board had signed building contracts, and was incurring costs. The Board would then authorise the solicitor to make the loan advance.

The PWLB's processing approach was inevitable, given the average of 50 school applications a month throughout the period up to 1876. The outcome of the 3,000 applications confirms the Board's lack of a real role in sifting applications. No applications were rejected by the PWLB, and 97 per cent were granted, with 3 per cent being withdrawn by applicants. The PWLB did not have to consider the security for the loan, since this was guaranteed by the ability of the school board to levy a school rate.[29] Nor did they have to consider the terms of the loans; these were standard at 3.5 per cent over 50 years. They were not, therefore, using the discretion of a bank manager to assess the merits of loan applications. Instead, the PWLB was simply processing applications for loans, acting as an agent of the Education Department and as a provider of low cost loans.

In spite of this much reduced role in decision making, the PWLB loan data shows a very clear pattern of spending by large and small school boards. The far right hand column of table 6.9 shows that the larger the board population, the higher the cost per school place. The PWLB was lending £11 for every London School Board place provided, while in parishes the cost was £6 per place. There are two reasons for this relationship. Land in London and the five largest cities had to be bought at residential or industrial prices per acre, whereas in rural parish areas, land would generally be bought at much lower agricultural prices. In addition, the designs of the London School Board architect E. R. Robson provided nearly 10

[28] National Archives, PWLB 2/56 and 57. The minutes for the meeting on 30 June 1875 cover 78 pages, split over two volumes, and list 16 new school board applications, 37 new school loans agreed and 42 boards listed as having completed the paperwork to allow advances to be made.
[29] Also in s57 of the 1870 Act.

square feet per pupil.[30] In contrast the parish board would be more likely to provide 5-8 square feet per place, giving a low £6 per place cost. Borough school boards fell between the two extremes, with median populations and an average £8 a place costs.[31] Even so, there was still a clear relationship between population and cost per place, as larger boroughs were spending £9 a place, and smaller boroughs £7 a place.

Table 6.9	School Board size and the cost of schools 1870-76				
	Avg. board population	PWLB loans	% of new places PWLB funded	PWLB borrowing per head population	PWLB borrowing per school place
	'000	£m		£.p	£
London	3267	2.3	77%	0.69	11
Largest 5 boroughs	338	0.9	68%	0.51	9
Other large boroughs	90	0.9	57%	0.40	8
Small boroughs	18	0.8	65%	0.41	7
Larger parishes	11	1.3	101%	0.63	6
Smaller parishes	1	1.8	111%	0.91	6
All school boards	7	8.0	82%	0.60	8

Sources: See appendicies 6.A and 6.B for sources and detail.

Notes: Largest 5 boroughs are Liverpool, Manchester, Birmingham, Leeds and Sheffield. Large boroughs are those with populations over 50,000. Larger parishes are those with populations over 5,000.

There was also a clear relationship between the size of a school board's population and its reliance on the PWLB. The largest and the smallest school boards relied more on PWLB loans, while medium sized boards relied least on PWLB loans. Table 6.9 shows that parish school boards relied entirely on PWLB loans to provide all of their new school places.[32] At the other extreme of size, London relied on PWLB loans to provide 77 per cent of its new places. In contrast,

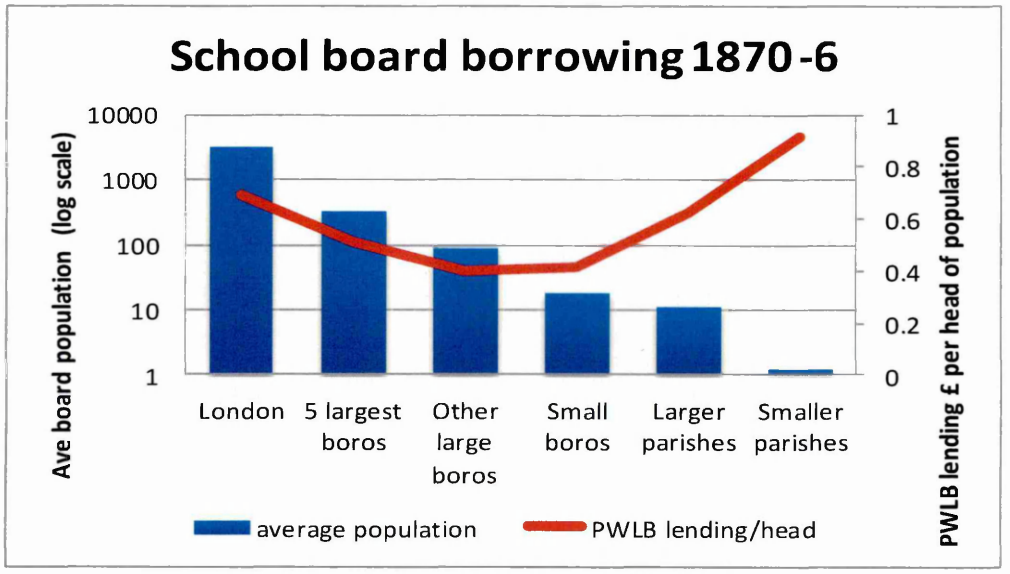
[30] D. E. B. Weiner, *Architecture and Social Reform in Late Victorian London* (Manchester, Manchester University Press, 1994), pp. 58, 104; T. A. Spalding, *The Work of the London School Board* (London, Forgotten Books 2012, first published 1900), pp. 62-70.

[31] In 2013 the expected cost for a large primary school was £11,000 a place, a 1370-fold increase. However, the standard of accommodation was 10 square feet per place in the 1870s, and about 50 square feet per place in 2013. Source: DfE Basic Need Update 22 July 2013, and Building Design Bulletin 99. Both at: www.education.gov.uk/schools/adminandfinance/schoolscapital/b00226896 accessed 3 October 2013.

[32] Table 6.6 shows the smaller parishes providing 111 per cent of their extra places from PWLB funding. This is because some of their voluntary schools closed in the 1870s, and were replaced with PWLB-funded schools or were transferred to school board management.

the larger boroughs used PWLB funding to provide only 57 per cent of their extra school places. The cause of the variation was the absolute lack of voluntary contributions to build new voluntary schools in parish areas, and the relative lack of new voluntary investment in London and the five largest boroughs. In the larger borough areas, voluntary contributions provided over 40 per cent of new places, so reliance on PWLB loans was much lower. The result of this pattern was that small parishes borrowed 91p per head of population from the PWLB, while London borrowed 69p per head. In the middle, all but the five largest borough school boards borrowed 40-41p per head. The resulting 'U shaped' relationship between population and PWLB borrowing per head is shown clearly in figure 6.4.

Figure 6.4



Sources: As table 6.9.

The 'U shaped' relationship of figure 6.4 is explained by the different ways large and small school boards used the PWLB. The six largest boards relied heavily on the PWLB, and made large multiple applications because they needed to build large numbers of schools. They also saw a relatively low level of voluntary school building. As a result, their borrowing per head was high, and their ambitions resulted in high costs per place. At the other extreme, parish school boards had even greater needs, because they had been formed in areas where no voluntary contributions were available, so the PWLB was their only source of funding. Their desire for low cost schools led to the lowest cost per place, but this was not enough to reduce their borrowing per head below the level in London. The

majority of boroughs enjoyed higher levels of voluntary school provision, and so relied less on the PWLB, and their levels of borrowing per head were therefore half those in smaller parishes.

The individual examples of Sheffield, Derby and Chesterfield in table 6.10 confirm these U shaped relationships.[33] In 1869 Sheffield was the fifth largest borough in England, but had only 26 per cent of the school places it needed. The city therefore borrowed £165,000 from the PWLB to build 25 new schools.[34] Yet, even with the building of 19 new voluntary schools, Sheffield still had a 14 per cent shortfall of places in 1879. Derby was a medium sized borough with a population of just under 50,000, and in 1869 had a school place shortfall of just 7 per cent. In spite of this, the Derby School Board borrowed £15,000 from the PWLB for six new schools. Derby also saw six new voluntary schools built, and by the end of 1879 had a 46 per cent surplus of places. Chesterfield was smaller, with a population of 11,000, and started with just under half of the school places it needed. Chesterfield borrowed £8,000 from the PWLB to build four new schools, ending 1879 with a 30 per cent place surplus. Table 6.10 shows that the 'U shaped' relationship appears again, with large Sheffield and small Chesterfield having borrowed twice as much per head of population as medium sized Derby. Sheffield's schools were also twice as expensive to build per place as those in the smaller localities of Derby and Chesterfield.

Table 6.10 Derbyshire and Sheffield Borough school boards

popu lation 000		School places 1869-79				PWLB loans per	
		1869	added by		1879	head	place
		shortfall	sch brd	vol sch	deficit	£	£
240	Sheffield	74%	15,265	8,604	14%	0.69	11
50	Derby	7%	2,822	1,515	-46%	0.30	5
11	Chesterfield	53%	1,333	269	-31%	0.71	6

Sources: As table 6.9.

The data in table 6.10 raise a value for money issue about the behaviour of Derby and Chesterfield school boards. Both borrowed more from the PWLB than they needed to, and built more school places than they needed to, leading both to have substantial surpluses of places by the end of the decade. Derby in particular had

[33] Derby and Chesterfield were the only boroughs in Derbyshire in the 1870s.
[34] All of the data in this paragraph comes from BPP 1880 (2562), pp. 571, 737-8, Education annual report.

no need to build board schools, and could have avoided borrowing altogether. The addition of a single voluntary school would have meant that Derby would have had sufficient school places in 1879. Instead, the voluntary sector built an extra six schools. The most likely explanation of this behaviour is that the school board was taking advantage of low cost loans, and the voluntary sector of readily available gifts, in order to act competitively and seek to dominate school provision. Chesterfield's position was less extreme than Derby's, but it could have halved its borrowing and still met its target number of school places.

Value for money concerns also appear in an examination of the four parish school boards formed within the area of the Belper Poor Law Union (shown in table 6.11). All four started in 1869 with large shortfalls of school places, with two of the four having no school places at all. By 1879, Morley still had no school places, while South Wingfield had borrowed £3,400 from the PWLB and built a school 40 per cent larger than it needed. Heage had borrowed £2,000 from the PWLB to build two schools, when a single school would have met its places target. Belper, the largest of the four boards, had a PWLB loan of £7,275 to build three new schools, but still had a shortfall of places in 1879. Marion Johnson, in *Derbyshire Village Schools*, observes that one Belper board school was poorly attended because it was a mile out of town and up a steep hill. The older voluntary school supported by the Strutt family continued to be more popular, because it was in the centre of town.[35] Of the seven local examples, six can be criticised on value for money grounds: four provided far too many school places; two had high costs per place; and the remaining board did nothing at all.

Table 6.11 Parish school boards in Belper Union, Derbyshire

Popu lation		School places 1869-79				PWLB loans per	
		1869 deficit	added by sch brd	added by vol sch	1879 deficit	head £	place £
8,527	Belper	85%	785	162	19%	0.85	9
2,195	Heage	64%	269	156	-52%	0.91	7
226	Morley	100%	-	-	100%	0.00	0
1,330	S Wingfield	100%	310	-	-40%	2.56	11
12,278	Totals	83%	1,364	318	1%	1.03	9

Sources: BPP 1870 (165) & BPP 1880 (2562).

[35] Marion Johnson, *Derbyshire Village Schools in the Nineteenth Century* (Newton Abbott, David and Charles, 1970), p. 130.

By 1879, the national outcome was that the 53 per cent shortage of school places in 1869 had been turned into a 9 per cent surplus, (see table 6.12).[36] There were, though, significant disparities. The PWLB loans of £8m had provided an extra 1 million school board places, while voluntary contributions had added 228,000 extra places in school board areas. Despite this, there was still a 10 per cent shortage of places in school board areas. In areas without school boards the outcome in 1879 was very different, with a 36 per cent surplus of places. In parishes without school boards just over 1 million school places were added, leading to a 43 per cent surplus of school places. In effect, too much money had been raised in non-school board parish areas, and twice as many school places as were needed had been built. Nationally there were enough school places in 1879, but there were too many school places in rural areas, and not enough in urban areas.

Table 6.12 Provision of extra school places 1869-79

School places needed 000s		1869 %age shortage surplus(-)	Extra school places in 1869-79 provided by school brds 000s	voluntary 000s	1879 shortage surplus(-)
	School board areas				
544	London	66%	210	64	16%
986	Boroughs	60%	318	193	8%
674	Parishes	76%	487	- 29	8%
2,204	**Sub total**	**66%**	**1,016**	**228**	**10%**
	Non-school board areas				
225	Boroughs	47%	-	81	11%
1,357	Parishes	34%	-	1,052	-43%
1,582	Sub total	35%	-	1,133	-36%
3,785	**Totals**	**53%**	**1,016**	**1,361**	**-9%**

Sources: Analysis of BPP 1870(165) for 1869 school data, BPP 1880 (2562) for 1879 school data, BPP 1878 (2342) for school board formations and population data.

Note: Voluntary school numbers in parish areas with school boards fell as schools closed or were transferred to school board management.

This section has provided three important conclusions about the PWLB. First, the PWLB's role in lending to school boards was completely different to its role as a market rate lender to mine owners or turnpike trusts. The PWLB in the 1870s was

[36] Both 1869 and 1879 shortages of places are measured against the 1871 census population. If the 1881 census population is used for 1879, the surplus was 1 per cent.

predominantly a provider of low cost finance, with no discretion about who it lent to, or the terms on which it lent. However, the PWLB was far more important in the 1870s than it was in the 1820s. In the 1870s it was virtually the monopoly provider of finance to school boards, and provided more than half the finance to build new school places. PWLB loans were particularly important to parish school boards, and to the six largest school boards in the country, but were less important to medium and small boroughs.

6.3 Real and imagined problems for the Treasury

Between 1870 and 1876, the PWLB lent £10.2m to local school boards in England, Scotland and Wales. This amounted to a quarter of all PWLB lending over the 60 years after 1817, and was on a much larger scale than even sanitary lending. Its scale caused some real problems for the Treasury in predicting annual changes in the level of the national debt. The Treasury was not able to reduce PWLB lending to schools, (and so reduce the upward pressure on the national debt), because it could not increase the 3.5 per cent interest rate. The Treasury also had a real problem with the rapidly increasing cost of annual grants to schools. The low 3.5 per cent interest rate caused the Treasury some significant imagined problems about potential losses on school board loans. These problems for the Treasury were largely the result of the success of the Education Department in promoting new school building by school boards.

The Treasury's role on the setting of interest rates for PWLB lending changed over time. At the 1875 Select Committee, Reginald Welby, the future permanent head of the Treasury, was asked about the setting of interest rates.[37] He professed no desire for the power to change the PWLB's interest rates or the ability to write off unrecoverable loans.[38] This was a change to the pattern before 1860. Then, both the Treasury and the PWLB believed that decisions on interest rates and write offs were made by the Treasury.[39] After 1860, the reality was that even if the Treasury had wanted to be able to control interest rates, it did not. After 1860, the PWLB interest rates were mostly set by legislation, not by the Treasury.

[37] Welby was being questioned by the Select Committee on the Public Works Loan Act Amendment Bill and the Public Works Loan Act Consolidation Bill. The Select Committee was formed to combine the two technical housekeeping Bills into a single Bill.
[38] BPP 1875 (358) Select Committee report, qq. 830-832.
[39] In chapter 2 the debts of Adams and Hunt involved repeated consultation with the Treasury.

It was true that the 1872 Act gave the Treasury a specific power to increase the 3.5 per cent interest rate for sanitary loans if it was necessary to prevent a loss on sanitary loans.[40] As there was never a loss or a threat of a loss, the power was never used. Welby was right to conclude that major interest rate policy was set by Parliament in the 1870s.[41]

Welby's evidence to the committee then turned to the Treasury's imagined problem with interest rates. Welby argued that a 3.5 per cent rate would end with a loss to the government; as he stated, 'my belief is that ... the State is a loser by it'.[42] The 'Treasury mind' assumed that all PWLB loans were subject to a level of bad debts, and that an interest rate of 3.5 per cent offered too little profit to compensate for inevitable bad debts.[43] Under further questioning, Welby was forced to modify his views on the loss-making potential of 3.5 per cent loans.[44] Eventually, Welby conceded that loans made at 3.5 per cent by the PWLB, acting on its own discretion, 'might come out even', but added 'I do not think there is any gain to the State' in lending at 3.5 per cent.[45]

Welby further modified his view by saying:

> the view of the Treasury has been that ... a uniform rate of 4 per cent ... would in all probability save the State from loss, and be a sufficient boon to the localities to enable them to obtain the objects which the legislature has had in view; but I think that has not been quite the view of the Legislature.[46]

Alexander Whitelaw MP was not convinced by Welby's argument, replying that, 'I do not understand why you wish to increase the rate of interest charged from 3.5 per cent to 4 per cent, in order to cover losses where there had not been losses'.[47] It is clear from these exchanges about interest rates in the case of sanitary and schools loans that the Select Committee did not share the Treasury fear of losses

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[40] Public Health Act 1875 s243. There appears to be no such provision in the 1870 Education Act.
[41] BPP 1875 (358) Select Committee Report, qq. 828-9.
[42] BPP 1875 (358) q. 826.
[43] BPP 1875 (358) q. 855.
[44] BPP 1875 (358) q. 850-856.
[45] BPP 1875 (358) qq. 850, 851 and 853.
[46] BPP 1875 (358) q. 880.
[47] BPP 1875 (358) q. 888. Whitelaw was chairman of the Glasgow School Board, so spoke with some experience.

on these loans. The Select Committee recognised that loans to school boards and local boards of health had not generated bad debts. They also recognised a significant degree of confusion in Welby's arguments about interest rates and losses on PWLB loans.

Table 6.13	Profit on PWLB school lending 1870-76		
		£000	£000
Costs	£10.2m borrowed for 50 years at 3.22%	8,211	
	Expenses at 0.4% of £10.2m	41	8,252
	There were no write-offs on school loans		
Income	£10.2m lent at 3.5% for 50 years		8,925
Profit			**673**

Sources: Interest on borrowed money: Homer, *History of Interest Rates*.
Expenses, see appendix 7.A. Write-offs, BPP 1888 (200), p. 316.
Note: The £10.2m PWLB lending includes loans to Scottish schools.

Table 6.13 demonstrates that the Select Committee was correct in its assumption that there were no bad debts on school loans. The table also shows that Welby's fears of losses on school loans were misplaced. School loans were in fact very profitable. When the government were borrowing at under 3.25 per cent and lending at 3.5 per cent, with no bad debts, and with expenses running at a trivial level, substantial profits were inevitable.[48] PWLB lending which produced such a significant profit, actually involved a subsidy from local ratepayers to national tax payers, not the reverse, as Welby feared. Like Trevelyan in 1852, Welby appears to have taken the view that because the PWLB had suffered from bad debts in the past, it would also suffer in the future. This view ignored the fact that most past bad debts were on loans where Parliament not the PWLB had made the lending decision. Losses on school and sanitary loans were extremely rare because they were backed by rate income, and borrowing limits were in place. Welby's fears of losses on 3.5 per cent rate backed loans were therefore imaginary not real.

Treasury fears were more justified on the Treasury's inability to predict the annual impact of PWLB lending on the national debt.[49] Until 1862, PWLB lending had

[48] Subsequent PWLB annual reports (BPP 1888 (200) appendix D, and BPP 1898 (228) p12) show that there were no bad debts from school loans.
[49] BPP 1875 (358) q. 845.

generally been less than £250,000 a year. In terms of managing the national finances and the £738m national debt, this was an insignificant sum.[50] Even when PWLB lending doubled in the 1860s, this was still manageable. While PWLB loans did not count against annual government spending, they did increase the national debt by the total of the sums lent, less loan repayments from borrowers. Before 1871, the average effect on the national debt of net PWLB lending had been less than £100,000 a year, and had only exceeded £300,000 in six years. PWLB lending did not, therefore, have any material impact on national debt forecasting. After 1872, this predictability ended, and in 1875 and 1876 PWLB advances, net of repayments, led to £6m a year increases in the national debt. These increases had not been forecast, and thus 'expose(d)' the Chancellor of the Exchequer to 'some difficulties'.[51]

It is no surprise, therefore, to see that in 1874, Northcote, the new Tory Chancellor of the Exchequer, wrote four times to Disraeli expressing concern about the level and treatment of PWLB loans.[52] In the last letter, Northcote wrote that cheap PWLB loans would force the government to 'borrow, while our policy ought to be in the direction of reducing debt'. There is no recorded response from Disraeli to Northcote. The Chancellor will have recognised that, without a positive response from the Prime Minister, he had little chance of limiting PWLB lending, or of increasing interest rates. The Treasury attempted to reduce the uncertainty about future levels of PWLB advances by asking all potential borrowers to tell the PWLB how much they wished to borrow from the PWLB in the following year.[53] The result was predictable, with local school boards telling the PWLB that they wished to borrow £3.6m, and then only submitting applications for £2m.[54] These estimates did not provide the chancellor with a good predictor of borrowing in the coming 12 months.

In 1878 Northcote raised his concern again in a Commons debate, declaring that

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[50] See appendix 1.A for totals of PWLB advances. National debt in 1870. Mitchell and Deane, *British Historical Statistics*, p. 403.
[51] BPP 1875 (358) q. 857.
[52] British Library Additional Manuscript MSS50016, Iddesleigh Papers, f189, 215, 251 and 254.(Northcote was made Lord Iddesleigh).
[53] BPP 1875 (33) late draft of Public Works Loans Act, section 4.
[54] BPP 1877 (276), p. 7, PWLB second annual report and BPP 1878 (241), p. 4, PWLB third annual report.

> The Education Department will naturally desire to carry on and promote the work of education, and they have pressed for loans to be made on terms which certainly appear to be unrenumerative to the exchequer.[55]

The result was a Treasury minute dated 16 August 1879, which increased PWLB rates for loans over 40 years to 4 per cent. The same minute also imposed a limit of £100,000 on loans to an individual authority in a single year.[56] The first change was ineffective, since loans for 20 years or less could still be made at 3.5 per cent. The £100,000 limit was also ineffective, since it would only affect the London School Board.[57] In the event, PWLB lending to school boards fell sharply in the 1880s, but this was not because of the Treasury minute.[58] Instead, the fall partly reflected the near completion of the main building programme, and partly the fact that four of the largest borrowers ceased to use the PWLB. The London School Board started to borrow from the Metropolitan Board of Works in 1880.[59] In addition, Sheffield, Leeds and Birmingham ceased to use the PWLB in the 1880s, relying instead on stock issues raised by their local councils.[60]

The Treasury loss of control over PWLB lending was repeated in their loss of control of Education Department spending generally. Table 6.14 shows that education spending increased fivefold, from £600,000 in 1869 to £3.3m in 1879.[61] There were three causes of the increase. First, the volume of PWLB loans, at over £1m a year, to school boards was much higher than the previous level of capital grants. Second, there had been a four-fold increase in annual grants payable to schools, and third, a minor difficulty was that Education Department running costs had doubled. R. R. W. Lingen was now the permanent head of the Treasury,

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[55] House of Commons debates, 11 April 1878, series 3 Vol 239 c1171.
[56] BPP 1880 (208), PWLB Annual Report 1879-80, p. 3.
[57] BPP 1880 (208), p. 3.
[58] PWLB annual reports. For 1877 to 1881, BPP 1877 (276), BPP 1878 (241), BPP 1878-79 (339), BPP 1880 (208), 1881 (261), and BPP 1882 (281).
[59] The LSB began to borrow from the Metropolitan Board of Works, which issued stock at 3.5 per cent and lent at the same rate to the LSB.
[60] The PWLB annual reports show no schools advances to these cities, even though they both continued to build more schools in these years.
[61] BPP 1870 (165), p. lxxvi for grants in 1869. BPP 1880 (2562), p. 164 for grants in 1879. BPP 1880 (208), p. 6 for PWLB cash advances in 1879.

having previously occupied the same position in the Education Department. Yet he failed in many attempts to control education spending in the 1870s.[62]

Table 6.14 Education costs increased five fold in 1870s		
	1869 £000	1879 £000
Capital grants	36	
PWLB capital advances		1,095
Annual grants to schools	503	2,022
Inspection/HQ costs	85	179
Total	**624**	**3,296**

Sources: Committee of Council annual reports for 1869 and 1879, except for PWLB advances from PWLB annual report for 1880.

In 1878, Northcote, as Chancellor increased the pressure on the Education Department, when he told Prime Minister Disraeli that 'I am going to make a push for a reduction of the education grant'.[63] The Treasury made two proposals for grant reductions, first of 6 per cent and then of 3 per cent, but both were rejected by the Education Department.[64] The battle over the scale of annual grant spending culminated in Disraeli calling a meeting of the Committee of Council on Education. At this meeting, Disraeli decisively sided with the Education Department, not with his Chancellor of the Exchequer.[65] The substantive battle over grants was over, and annual grant spending continued to increase throughout the 1880s. The Treasury had failed completely in its attempt to control education grant spending, and its efforts to limit PWLB lending were ineffective.

The volume of PWLB lending for schools caused the Treasury major problems. The Treasury could not raise PWLB interest rates in order to reduce demand for PWLB loans. Nor could the Treasury control Education Department spending on annual grants, as this rose even faster than the number of schools. Nor could the PWLB 'reinterpret' the 1870 Act in order to restrict the availability of low cost loans. Instead, the Education Department controlled the volume of lending by compulsorily forming around 800 school boards and not preventing the significant

[62] Maurice Wright, 'Treasury Control 1854-1914', in Gillian Sutherland ed, *Studies in the Growth of Nineteenth Century Government* (London, Routledge Keagan and Paul, 1972), pp. 213-7.
[63] British Library Add Ms 50018 ff. 129-33, letter from Northcote to Disraeli, 9 January 1879.
[64] Sutherland, *Policy Making*, p. 214.
[65] Sutherland, *Policy Making*, pp. 218-9, quoting from Lord George Hamilton's *Parliamentary Reminiscences and Reflections 1868-85* (1928). Hamilton was the vice president of the council.

over-provision of schools in parish areas. When Northcote pressed for spending reductions, he was comprehensively outvoted by the Prime Minister and his cabinet colleagues. There was more cabinet support for increasing elementary education provision than there was for spending and debt reductions. In this environment it is hardly surprising that the Treasury focussed on the problems caused by the PWLB's success.

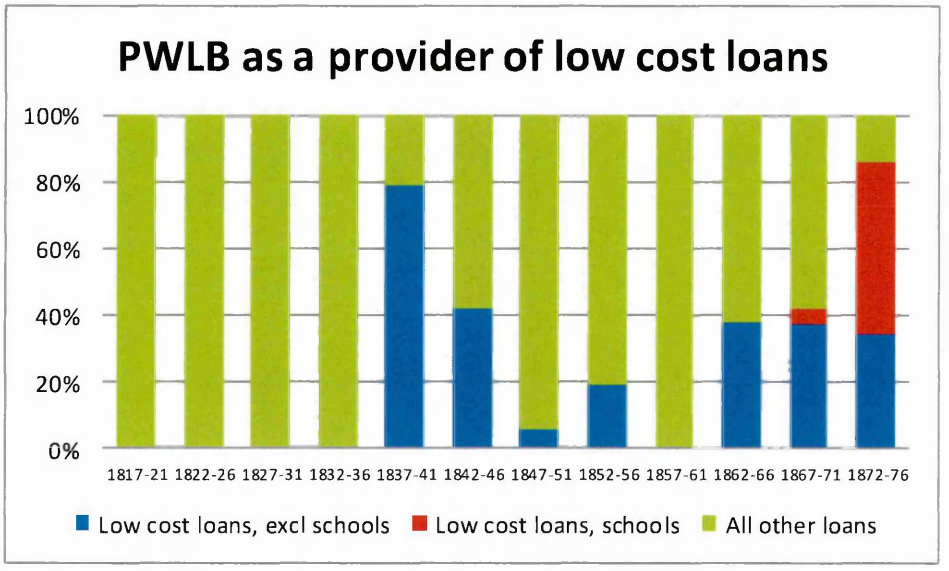
Finally, the Select Committee recommended that the PWLB should produce an annual report to Parliament. The first was produced in 1874-75, and they have been produced annually since. They represent the key way that the Board is accountable to Parliament. By 1876 most of the many agencies that governments had established were producing annual reports for Parliament. Only a few like the Crown Agents and the Ordnance were not meeting this basic standard of accountability. Even with the hugely increased volume of loan applications, the governance of the PWLB remained sound, and it managed to successfully process the applications. Given the Treasury view of the education department's inability or lack of willingness to control its spending, the governance of the education department can be questioned. Its willingness to sanction the massive over provision of schools in rural areas also questions its decision making. However, the sheer size of the Ordnance, the Post Office and the naval dockyards still appear to make their governance a much larger problem.

6.4 A changed role for the PWLB

The PWLB's £10m lending to school boards was so large that it meant that the PWLB's main role in the 1870s was providing low cost loans. Figure 6.5 shows that, in the five years to 1876, just 15 per cent of its lending was made at 5 per cent in the role of high cost lender. A full 85 per cent of its lending was as provider of low cost loans. The change of role had started in 1836, with the reduction to 4 per cent of the interest rate for workhouse loans. However, by 1857, the PWLB rate had reverted to 5 per cent, and the insurance companies came to dominate workhouse lending. A second wave of low cost lending began in the 1860s, and table 6.6 indicates that without lending to school boards, low cost lending would have stabilised at a little under 40 per cent of PWLB lending. However, the scale of lending to school boards was so great that the five year average rose to 85 per

cent after 1872, and to 93 per cent in 1876. School lending had changed the entire focus and role of the PWLB.

Figure 6.5



Source: PWLB application ledgers and appendix 1.A
Notes: All other loans nearly always carried interest at 5 per cent
Low cost loans varied between 3.25 per cent and 4 per cent

Hubbard was questioned at some length by the 1875 Select Committee about the role of the PWLB, providing him with the first opportunity since 1859 to have his view recorded. Hubbard's starting point was that 'the State has no business to be a money lender at all'.[66] Despite this, Hubbard recognised that there was a valuable role for the PWLB as lender at 5 per cent.[67] Hubbard had much more difficultly supporting the provision of high volumes of loans at less than market rates. He accepted that government lending could be 'justified by some great necessity which has to be dealt with immediately ... on terms not available in the money market'.[68] Hubbard also accepted that loans for sanitation and elementary education fell within the definition of 'great necessity'.[69] Even so, Hubbard's view of 'necessity' was limited, and in response to another question, he replied that:

> it is with very great regret that I have seen that the tendency of legislation of late years has been to suggest a vast number of new

[66] BPP 1875 (358) Select Committee Report q. 388.
[67] BPP 1875 (358) q. 336.
[68] BPP 1875 (358) q. 480.
[69] BPP 1875 (358) q. 389.

necessities which are to be satisfied by making the government the medium of supplying capital.[70]

The making of these loans at 3.5 per cent, and the resulting boom in school lending, seemed entirely alien to Hubbard, and not something that he could support at all:

> If the purpose of the PWLB was to enable borrowing authorities to obtain money at lower terms than they would on the open market, I should consider that our existence was a public disaster.[71]

Hubbard rightly saw the provision of low cost loans as removing the PWLB's independence and discretion.[72] The PWLB had always valued its independence of action, and saw a great benefit in removing the government, Parliament and the Treasury from decision making.[73] Equally important to the Board was its discretion to decide on the adequacy of the borrower's security. In theory, the Board had discretion about the interest rate and the terms of the loan, but in practice it chose not to use its discretion.[74] In the cases where the PWLB was acting as a provider of low cost loans, it had no discretion, because the interest rate and the security were laid down in the relevant Act. Nor did it act independently; instead, a government department made a recommendation that the PWLB should advance a loan. All the PWLB board had to do was satisfy itself that the provisions of the relevant Act had been complied with. Hubbard therefore saw loans to schools as requiring that the PWLB be no more than a 'mere channel through which a certain operation is to be performed'.[75]

Members of the Select Committee described the PWLB's new role as being 'agents of the public departments in the advancement of money'.[76] Hubbard was asked if this was the case 'would it not then be better to move the loan making function to the Treasury'. Hubbard at first agreed, on the grounds that the PWLB

[70] BPP 1875 (358) q. 483.
[71] BPP 1875 (358) qq. 389, 388.
[72] BPP 1875 (358) q. 379.
[73] BPP 1875 (358) qq. 357, 365, 398.
[74] BPP 1875 (358) q. 348.
[75] BPP 1875 (358) q. 379.
[76] BPP 1875 (358) qq. 467, 511.

would have no substantive role.[77] Hubbard then considered the practicalities of lending, and argued that the PWLB was best placed to manage any government lending, stating that it had

> all the mechanisms required for the making of loans, for collecting interest, for receiving instalments, and for enforcing payment if payment is not made.[78]

Hubbard's focus, not surprisingly, was on his preferred role as a lender at 5 per cent, a rate that in the 1860s and 1870s was above market rates. This satisfied Hubbard's view of the PWLB as lending when the market would not. Hubbard also spoke repeatedly about his distaste for the new general practice of making most loans at below market rates. In contrast, the Select Committee's view was more positive, and a member distanced himself from Hubbard's view, saying:

> but is not the object of the PWLB to advance the interests not of the State, but of localities where great public works are required by enabling them to obtain loans upon better terms than they could obtain on the open market.[79]

The Select Committee was of course made up of MPs who had passed the 1870 Elementary Education Act and the 1872 Public Health Act, creating the power for localities to borrow at 3.5 per cent. They could therefore be expected to support the role of the PWLB as a provider of low cost loans. The Select Committee's views appeared positive and forward looking, while Hubbard's appeared negative and backward looking. The difference invites the question whether there was a financing option that would have met both views. To do so, it would have had to support the legislative requirement to see a rapid and universal provision of education. But it would have needed to avoid causing the Treasury difficulties over national debt forecasting, and yet allow local bodies access to loans at 3.5 per cent.

The first option would have been for the PWLB to have stuck to the high cost lender principle, and only lent at 5 per cent. This would have satisfied Hubbard's

[77] BPP 1875 (358) q. 365.
[78] BPP 1875 (358) q. 368.
[79] BPP 1875 (358) q. 389.

dislike of lending at below market rates. It would also have attracted insurance companies into the market, and made loans available at around 4.5 per cent. The main disadvantage of this approach is that it would have been unlikely to result in such a rapid increase in investment by school boards. After all, borrowing at 5 per cent for sanitary purposes before 1863 had been very slow. A second disadvantage of 5 per cent loans was that, with no bad debts, loans would have looked too profitable to the government, with a 1.75 per cent margin between government's borrowing and lending costs. As with workhouse loans and public health loans, this would have led to pressure from school boards for a reduction in the 5 per cent rate. In addition, the absence of 3.5 per cent loans would have significantly slowed down the growth of elementary school building and created a campaign for lower rates.

A different approach would have been to encourage larger local school boards to raise investment capital through stock issues. The Metropolitan Board of Works had raised £17m at 3.5 per cent between 1869 and 1880 through stock issues, so it was a tried and tested approach.[80] J. H. Clapham reveals that the MBW stock issues benefited from a government guarantee, effectively removing virtually all risk from the investor.[81] Manchester Corporation had also gained local Act approval for a successful £3m stock issue in 1872 to fund its waterworks investments.[82] Once a local body had gained the power to make a stock issue, it would invite individuals to buy stock in multiples of £20, which could be freely traded on the stock market. The advantage to the government was that the lending contract was between the local authority and the individual, not with the government. This form of borrowing did not, therefore, count against the national debt. The advantage to the local body was that the interest rate was far below the PWLB's default 5 per cent rate, and below the 4.5 per cent that insurance companies would offer.

However, the stock option would not deliver low cost loans to medium and small school boards. Between 1880 and 1883, municipal stock issues by seven large

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[80] Henry Burdett, *Burdett's Official Intelligence for 1884* (London, Effingham Wilson, 1884), p. 963.
[81] J. H. Clapham, *The Bank of England: A History Vol 1* (Cambridge, Cambridge University Press, 1944) p. 302.
[82] Sir Harry Page, *Local Authority Borrowing: Past Present and Future* (London, George Allen & Unwin, 1985), p. 142.

city corporations raised £15m.[83] The stock was invariably issued with interest payable at 3.5 per cent. For the very large authorities this route was no more expensive than PWLB loans at 3.5 per cent, and loans were often for 60 years. However, this route was only used for raising sums of more than £500,000 between 1869 and 1880. For smaller sums, the costs of promoting a local Act and promoting a stock issue would have made the option too expensive. In 1874, W.H. Smith, who was Financial Secretary to the Treasury, suggested to Northcote that local government should be encouraged to make more use of stock issues. Smith argued that this option would remove 'the inconvenience to the exchequer ... of large increases ... in PWLB funding'.[84] He was right for larger authorities, but wrong for smaller ones. Northcote chose not to pursue this initiative, and chose to develop his own, more radical approach.

Northcote wrote to Disraeli in November 1874 to outline a nine point plan.[85] He proposed that the PWLB would issue £5m of stock and lend it on to smaller authorities. There would be several advantages to this approach. First, it had been successfully tried with the MBW in the 1870s. Second, money raised in this way would not count against the national debt, and the Chancellor would not be accountable for its scale or variations. Third, it would solve the problem of stock issues being too expensive for smaller authorities. The 1880s experience of larger authorities suggests that there were sufficient investors to make the scheme work at an interest rate similar to the PWLB's 3.5 per cent. With Parliament continuing to dictate the purposes for which local authorities could borrow, the rates at which they could borrow and setting borrowing limits, most of the necessary safeguards could have been retained.

The disadvantage was that it would have required a very different PWLB. In order for the debt not to count as part of the national debt, the PWLB would have needed to be more independent from government, and more like the MBW. A more independent PWLB would have led to local authorities that were more independent from government, and able to raise their own funds. Northcote went so far as to write outlining the idea to George Sclater-Booth, as President of the

[83] Burdett, *Official Intelligence*, p. 963.
[84] British Library Add MSS 50016, f. 256, Northcote to Disraeli,14 October 1874. Iddesleigh papers Vol IV.
[85] Northcote to Disraeli, 6 November 1874. Iddesleigh papers vol IV f. 263.

Local Government Board, to Welby at the Treasury, and to Hubbard at the PWLB. None of the three appeared enthusiastic, and the idea was dropped.

Why did this idea not take off? The replies of Sclater-Booth, Welby and Hubbard to Northcote do not appear to have survived. Even so, it is possible to speculate about their likely responses, and to understand why the proposal was not pursued. First, Sclater Booth at the LGB was in the middle of promoting the 1875 Public Health Act, and this maintained the existing mortgage based PWLB and insurance company lending pattern. Sir Harry Page argues that the LGB and the Treasury had very different ideas about how to finance local capital spending. In particular, the Treasury's 1875 Local Loans Act was more sympathetic to more complex financing methods. Page notes, however, that the Act was little understood, and little used.[86] For the LGB, the loan sanction regime, with local government bodies dependent on LGB approval for a loan application, made the LGB a powerful body. In contrast, a stock issue based regime would depend on local Acts, and these gave the LGB no role at all, and therefore no power. In a similar way, Welby at the Treasury exercised considerable power over local government borrowing under the PWLB regime. With a properly independent PWLB raising money and lending it on, the Treasury powers and controls would diminish. In short, neither the LGB nor the Treasury would have welcomed a more independent PWLB or more independent local authorities.

Hubbard's objections are more speculative still; by 1875, Hubbard was close to retirement; he had been at the PWLB for 20 years, and had very traditional views about government lending. This could have made him interested in a proposal that would take financing local public infrastructure back to lending from individuals to local bodies via stock issues. On the other hand, it would have been a very large change for the PWLB, and perhaps too much for Hubbard's traditional outlook. It is also likely that all the participants in the debate would have seen the sharp rise in sanitary and education lending as a short term issue. Once the investments were complete, lending would fall to earlier, more manageable levels. There was therefore no real need to develop difficult new solutions. Finally, Northcote had other problems as Chancellor of the Exchequer in the 1870s, as the government's

[86] Page, *Local Authority Borrowing*, p. 146.

finances got worse as spending rose and income ceased to rise as fast. The development of a solution to the PWLB problem may simply have fallen down the agenda, under the pressure of other larger problems.

While there was a clear change in the PWLB's role between 1817 and 1876, there is also a sense in which the PWLB role had always been to compensate for a changing range of market failures. In 1817 (and in 1793 and 1811), the market failure was assumed to be the banks' inability to provide liquidity in a credit crisis. Between 1817 and 1836, the PWLB was a lender at market rates, making up for the market's failure to offer loans to individual public works projects. This role continued after 1836, but as a declining proportion of the PWLB's lending. The PWLB's final role was as a low cost lender, and this role came to dominate by 1876. However, the PWLB can still be seen as lending because of a market failure. In this case the market failure was an inability to lend at interest rates low enough to encourage local authorities to borrow in order to deliver the government's social and welfare policies. The PWLB was therefore essential as a means of financing public infrastructure when the market was unwilling to lend on terms that were attractive to local communities.

Conclusions

Between 1870 and 1876, the PWLB lent £10m to school boards, and was virtually the monopoly provider of loans during these years. Without doubt, the PWLB's role was a major contributor to the more than doubling of the number of elementary education school places over just ten years. This was the largest impact on the lives of the majority of the population of any stream of PWLB lending over the period 1817 to 1876. The three other main causes of this success were: the 1870 Act set a very clear and measurable objective; the Education Department used its powers to compel the formation of school boards in areas of high unmet need; and voluntary fund raising increased substantially, to provide more than half the extra school places. However, the Act had two shortcomings. First, the sheer scale of voluntary fundraising in parish areas meant that far too many school places were provided in rural areas where school boards were not needed. Second, the £10m scale of PWLB lending to school boards and the

continuing annual costs of increased educational provision caused problems for the Treasury. Nationally, the successes far outweighed the shortcomings.

By 1876, the PWLB had completed its transformation from a market rate lender to a provider of low cost loans. In this second role, the PWLB had become recognisably the body that exists in 2014. In the 1870s the PWLB was focussed on low cost, low risk lending to local government to finance public infrastructure investment in sanitation and elementary education.[87] In both areas, the PWLB was the major provider of finance to local government bodies. However, the price of this important role for the PWLB was that, in practice, the PWLB had little independence and little discretion over lending decisions. Decisions over which schemes to support were taken by government departments, and the PWLB was primarily acting as their agent. The PWLB's role in 2014 is also as an agent of central government, with very little decision making discretion. The PWLB is also the major provider of financing for local government infrastructure investments in 2014.

[87] BPP 1876 (396), p. iv, and BPP 1878 (269), p. v; Local Taxation returns for 1874/5 and 1876/7. Comparison of outstanding debt totals.

Chapter 7, Conclusion: was the PWLB a success?

Figure 7.1. Symbols of success…

The PWLB lent £2.3m to the London Schools Board between 1870 and 1876 to build over 200 new schools. Each bore the LSB crest and the date of completion. This one is Wyvil Street School in South Lambeth Road, London. It is still a primary school in 2014. The LSB was an enormously capable school board, although it was criticised for extravagance.

Figure 7.2, Symbols of failure…

The Thames Tunnel was an engineering first. But it was a financial failure for the PWLB. It lost £150,000 of the £250,000 loan that Parliament voted on, overruling the PWLB's rejection of the scheme. Since 1860, the tunnel has been part of the London rail network.

This chapter starts by returning to the five aims of the thesis, as they were set out in the first chapter. The first was to determine the objectives the government and Parliament set for the PWLB, and how these objectives changed over time. The second aim was to evaluate the importance of PWLB lending to the financing of capital investment in each of the five case studies. The third aim was to analyse the PWLB's lending activity in each of the five areas. The fourth aim was to determine which factors dictated whether the PWLB's lending in each area was successful. The final aim was to use the PWLB case studies to demonstrate how central and local government relationships changed over time. The main purpose of this final chapter is to demonstrate how these aims have been met. The structure of the chapter therefore follows the aims of the thesis, with the addition of a final section looking at the implications of the research.

7.1 Changing objectives and activity

Over the 60 years covered by this study, it is possible to discern four distinct sets of objectives for the PWLB. These were the pre-1817 objectives, those set in the 1817 Act, those operating in practice from 1826 and those applying from 1836, when the PWLB started to offer low cost loans. The first objective was that of the PWLB's predecessor commissions of 1793 and 1811 with the objective of being lenders of last resort in response to credit shortages in the economy as a whole. These were short lived commissions, expected to provide a boost to commercial confidence over three or six months, and to have completed their work within a year or two. This objective of lender of last resort was also part of the rationale behind the 1817 Act establishing the PWLB. However, this objective did not last long, and the lender of last resort role passed to the Bank of England in 1826. This followed the government's decision not to advance loans to the agricultural sector in 1822, and then more broadly to industry after the credit crisis of late 1825 and early 1826.[1]

Although the government's rationale for the 1817 Act was that there was a credit shortage, the PWLB never operated as a lender of last resort in the sense that it

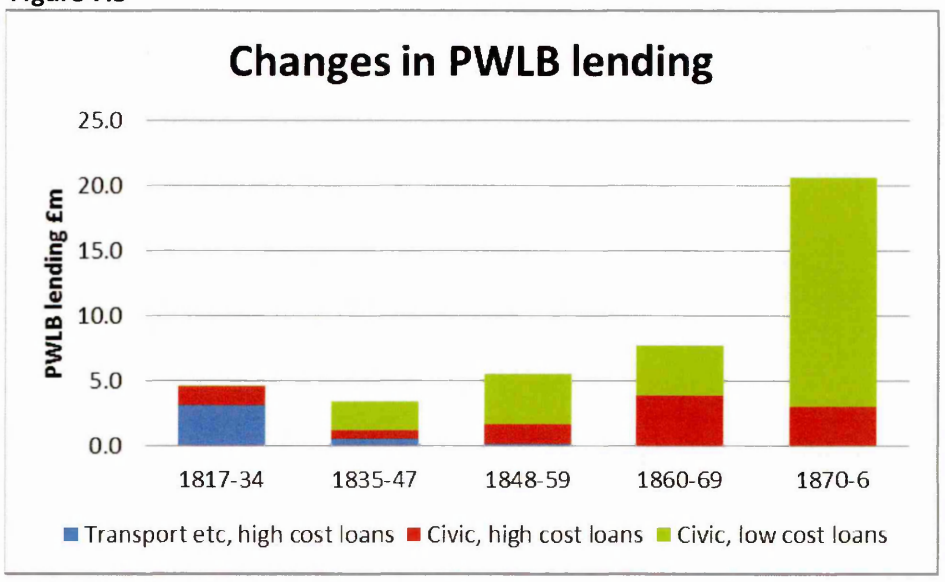
[1] Boyd Hilton, *Corn, Cash, Commerce: The Economic Policies of the Tory Governments 1815-30* (Oxford, Oxford University Press, 1977), pp. 157, 224.

did not provide liquidity to the banking system or to merchants. The second set of objectives was articulated in the 1817 Act to establish the PWLB. These were to lend to assist mines and fisheries, to finance public works and to provide loans for parishes to help the poor unemployed. By 1826, lending to mine owners had effectively ended. No fishery loans were made after 1826, and only three loans were ever made to parishes.[2] The result was that by 1826, the second set of objectives had narrowed into a single objective. Effectively the PWLB had become a lender to public works schemes that were unable to borrow from ordinary market sources. The PWLB lent at 5 per cent, the same as market rates at the time.

The PWLB's third objective was therefore to be a market rate lender at 5 per cent, financing public works, adopting a commercial approach, demanding good security for its loans, and avoiding losses. This was the objective that appeared in Charles Grant's renewal letter to the Chancellor of the Exchequer in 1821. 'Public works' quickly came to include two main activities: the first was to cover transport infrastructure projects, and the second was to cover civic improvements. Between 1817 and 1834, the PWLB saw over 90 per cent of its lending go to finance public works projects; with two thirds going to transport projects such as harbours, railways, roads, canals and bridges (see figure 7.3). In all cases, loans were repayable from charges to users, and so loans bore a degree of risk. As a result, the PWLB acted as a bank manager would, with a main concern being for the security of its loan. This approach naturally limited the PWLB's lending opportunities. If commercial lenders had declined to lend to a project because the security was poor, then the security conscious PWLB board was also likely to reject the application.

[2] See appendix 1.A and BPP 1851 (512) PWLB report to Parliament, p. 15.

Figure 7.3



Source: Analysis of PWLB 6/1-6 applications ledgers.
Notes: Transport etc included mining and fishery loans.
High cost loans made at 5% interest; low cost loans made at 3.25-4%.

Most of the PWLB's non transport lending before 1834 went to finance civic improvement projects. These included the building of gaols, a number of Fens' drainage projects, and street improvement schemes.[3] What was common to them all was that the applications were made by 'not for profit' bodies, such as municipal corporations, county justices and drainage boards, or, in a few cases only, central government. In all but the very few cases of loans to central government, loan repayments were made from rate income, and were therefore lower risk. In both transport and civic improvement projects, the authority to borrow was granted by a local Act of Parliament. The PWLB's market interest rate, its bank manager approach to lending and the need for applicants to have individual legislative borrowing approvals all tended to limit the volume of loans the Board made before 1834. In the period before 1834, the PWLB's activity was focussed mainly on lending to support transport infrastructure and civic improvement projects.

After 1834, PWLB lending to support transport projects declined significantly. Between 1835 and 1847 more than half the PWLB's lending went to finance workhouse building. This lending had two new features. First, the majority of the

[3] See appendix 1.A.

finance was provided at 4 per cent – below normal market rates.[4] Second, the lending was authorised by a single general Act, the 1834 Poor Law Amendment Act, rather than by individual local Acts of Parliament. Lending to build workhouses at 4 per cent created a fourth objective for the PWLB. The new objective was to provide low cost loans to build the infrastructure necessary to deliver government social and welfare policies. After 1836, the PWLB offered two types of loans, the first was at 5 per cent, mainly to finance civic improvements. The second type of loan was low cost loans to deliver government social and welfare policies. It was this second type of loan that was to grow substantially in later years.

In the 1860s, the PWLB's lending was almost equally divided between low cost loans made to finance the delivery of government policies, and 5 per cent loans made to civic bodies. Workhouse loans had ceased to be made at below market rates, and, like public health loans and other civic improvement lending, were made at 5 per cent, slightly above prevailing market rates. With the exception of Irish rail loans, there was virtually no transport related lending after 1860. The number of national social or welfare policies authorising PWLB lending at 3.25 to 3.5 per cent grew in the 1860s.[5] The scale of the PWLB's lending in the 1860s was double the level of its lending in the 1835 to 1847 period, with all the growth being in civic improvement lending. In the period 1870 to 1876, PWLB lending increased threefold over the 1860s level to over £20m. By 1876 the low cost lending objective had come to dominate, with more than 85 per cent of the PWLB's lending being at interest rates below market levels. The vast majority of the PWLB's lending was to bodies that were delivering government policies, with very little lending being to voluntary bodies or businesses. The PWLB therefore saw its objectives change materially over 60 years, as did the purposes for which loans were made.

7.2 Importance of PWLB lending

The second aim of the thesis is to show how important PWLB lending was in each area. Over the sixty years from 1817 to 1876, the PWLB lent £42m to finance

[4] BPP 1851 (512), pp. 18-28.
[5] See chapter 5, section 5.3.

capital investment. During this period, gross fixed capital formation totalled £3.3 billion, so the PWLB financed just 1 per cent of the total.[6] However, this thesis is concerned only with the financing of public infrastructure. It is therefore necessary to divide C. H. Feinstein's list of sectors between public infrastructure and all other capital. The division in table 7.1 is not Feinstein's, but comes from Hirofumi Uzawa.[7] His definition of public infrastructure includes roads, bridges, public transport systems, public utilities, schools and hospitals. Even using this broad definition, PWLB lending was still only 3 per cent of the public infrastructure fixed capital formation, and so still lacked any real impact.

Table 7.1 PWLB's share of capital formation financing

	1817-76 capital formation £m	1817-76 PWLB lending £m	PWLB share
Public infrastructure			
Rail	500	0.5	0%
Other transport	432	3.4	1%
Gas, water & electricity	100	8.5	8%
Public & social services	166	20.9	13%
Ireland	98	7.1	7%
Sub total	1,296	40.5	3%
Other capital formation			
Manufacturing	644	0.0	0%
Dwellings	606	0.8	0%
Agriculture	417	0.6	0%
Distribution	249	0.0	0%
Mining	72	0.3	0%
Sub total	1,988	1.7	0%
Total	3,284	42.1	1%

Source: Capital formation, Feinstein and Pollard, p. 429.
PWLB, see appendix 1.A.

Notes: Ireland is 3% of all categories, and is treated as public because it was all transport or workhouse loans.

Table 7.2 narrows the comparison down to the five case study areas. However, water and sewers have been split into two because the pattern of the PWLB's

[6] C. H. Feinstein & Sidney Pollard, *Studies in Capital Formation in the United Kingdom 1750-1920* (Oxford, Clarendon Press, 1988), p. 429.
[7] Hirofumi Uzawa, *Economic Analysis of Social Common Capital* (Cambridge, Cambridge University Press, 2005), p. vii.

lending was so different before and after 1872. There are two ways of measuring the significance of the PWLB's lending. 'Scale' measures the size of PWLB lending; 'impact' measures its share of total investment in the sector. To be significant, PWLB lending needs to have been of a significant scale - say, more than £150,000 a year. To make a significant impact, PWLB lending needs to have been more than, say, 20 per cent of the total sector investment.[8] PWLB lending to the mining sector was small in scale, at £300,000 over the ten years, 1817 to 1826. The impact of the PWLB's lending to mine owners was also small, at 2 per cent of all mining investment, which was £16m over the ten years. As a result, PWLB lending made no material difference to the level of mining investment in the period, or to the level of employment in the sector.

Table 7.2 Proportion of capital formation financed by the PWLB

	Fixed capital formation £m	PWLB lending £m	PWLB share
Mines	16.0	0.3	2%
Roads	2.8	0.4	16%
Workhouses	2.8	1.7	61%
Water & sewerage pre-1872	49.9	1.6	3%
Water & sewerage post-1872	13.0	4.3	33%
Schools	14.0	8.0	57%
Totals	98.5	16.3	17%

Sources: Mines table 2.3, roads table 3.3, workhouses table 4.2, water & sewerage appendix 5.A, schools table 6.6.

Notes: Mines, roads & workhouses cover 10 year periods, pre-1872 water & sewerage covers 25 years and post 1872 covers 4 years. Schools cover a 7 year period.

Loans to turnpike trusts were on a slightly larger scale, at £430,000 over ten years. Total investment in turnpike trusts from all sources was £2.8m, so the PWLB financed 16 per cent of the total in the ten years 1817 to 1826. The scale of PWLB lending to turnpike trusts was therefore too small to be significant, and its impact was also below the 20 per cent level. In addition, chapter 3 showed that the 1820s was a boom time for turnpike investment, and more trusts investing in

[8] Both limits are a little arbitrary, but £50,000 and 10 per cent feels too low, and £500,000 and 30 per cent feels too high.

these years became insolvent than in other periods.[9] In effect, PWLB loans were fuelling a boom, lending to poor schemes that did not deserve support. There would have been no material loss if the PWLB had made no loans to mine owners or to turnpike trusts. The same conclusion is true of the PWLB's lending to finance canals, railways and bridge building. All three were too small in scale, and the PWLB's lending was too small as a proportion of all investment in each area, for the PWLB to have had much of an impact.

PWLB loans to poor law unions marked a major change in the importance of PWLB lending. In the ten years 1835 to 1844, the PWLB lent £1.7m to unions, and financed 61 per cent of the total £2.8m union investment in that period. PWLB lending therefore easily passed both the scale and impact tests, and made a significant contribution to the financing of workhouses. Chapter 4 argued that without PWLB lending it would have taken much longer to finance the building of the 400 workhouses. In turn, without the PWLB, savings in annual poor relief costs would have been delayed and smaller. PWLB lending delivered a government policy within a timescale that the ordinary money market would not have managed. It would have failed because the market would not have been willing to lend at 4 per cent. In addition, until unions had shown that they were creditworthy bodies, the market would not have been willing to lend on a large scale. Lending to poor law unions was the PWLB's first real success.

Between 1848 and 1872 the PWLB lent only £1.6m to local boards of health, or less than 4 per cent of all water and sewer investment. This was a return to pre-1834 levels of insignificance, and the PWLB made no material difference to the total investment in water and sewer facilities before 1872. In the four years after 1872 the picture changed dramatically, and the PWLB lent £4.3m for water and sewer projects. This was lending on a much larger scale than anything in the PWLB's first 55 years. The £4.3m lent after 1872 provided 33 per cent of all sanitary infrastructure financing and thus had a major impact. PWLB lending to school boards then doubled the scale and impact of PWLB sanitary lending. In just seven years, the PWLB lent £8m to English and Welsh school boards, and financed 57 per cent of all school investment. Without PWLB lending it is highly

[9] See figure 3.3 and table 3.12.

unlikely that the number of elementary school places would have more than doubled by the end of the 1870s.

Table 7.3	PWLB share of local authority investment			
	Period covered	Capital investment £m	PWLB lending £m	Share
Workhouses	1835-9	2.2	1.4	61%
Water & sewerage	1873-6	9.0	4.3	47%
Schools	1870-6	8.1	8.0	99%
Total		**19.3**	**13.6**	**71%**

Source: Table 4.2, appendix 5.A and table 6.6.

Notes: Borrowing by private water companies and voluntary school managers is excluded from the table.

Table 7.2 can be seen as under-representing the importance of PWLB lending to finance workhouses, water and sewers and schools. In all three cases the critical period for the success of the legislation was the first five or so years after the legislation was passed. In this period the legislation would succeed or fail. In addition, the PWLB was unable to lend in order to finance private water company investments or investments in voluntary schools. Table 7.3 concentrates on the PWLB share of investment by poor law unions, local health boards and school boards in these five year periods. The result is that PWLB lending financed 71 per cent of all local authority infrastructure investment in these three areas in the indicated years. The conclusion to this section is that PWLB lending was essential to the financing of public infrastructure of workhouses, sanitary facilities and schools. Without PWLB lending during these critical periods, the three Acts would have failed to deliver the desired changes. In the cases of loans to mine owners, turnpike trusts, and for water and sewer purposes before 1872, PWLB lending failed to be of either sufficient scale or impact to be considered important.

7.3 What made the PWLB successful?

What was it that caused PWLB lending for the building of workhouses, water and sewer facilities and schools to be important in scale and impact? The conclusion here is that the level of PWLB lending was dictated by the interest rate charged by the PWLB and the level of demand for loans. Equally important to the success of the PWLB was its ability to avoid making losses, and there were two drivers

leading to success here. If the PWLB could make all its lending decisions independently of any political pressure, and ensure that good security existed for all its loans, then it would avoid making losses. If all four factors – low interest rates, high demand, independent decision making and good security – were present, then PWLB lending would play a major role. The reverse was also true: if more than one of these four factors were absent, then the role of PWLB lending would be modest.

Before testing the five case study areas against the four criteria, it is necessary to examine the PWLB's losses. On each occasion when an attempt was made to set out the aims for the Board, it was always clear that loans should be profitable, or at least avoid making a loss for the government.[10] Over the 60 years considered in this thesis the PWLB was profitable, making a £1.1m surplus on lending of £42m.[11] This surplus was achieved with bad debts equivalent to 5.8 per cent of all lending. However, the PWLB's loans can be split into three groups, depending on whether the decision to lend was taken by Parliament, the PWLB or a government department. Bad debt rates for the three were startlingly different, as table 7.4 shows.

Table 7.4 Written off loans by decision maker, 1817-76

	Sums lent £m	Written off £000	Losses
Loan recommendations made to the PWLB	29.7	70	0.2%
All other loans made at PWLB's discretion	8.2	101	1.2%
Loans made at Parliament's direction	4.2	2,289	54.5%
All loans	42.1	2,460	5.8%

Sources: Appendices 7.A and 7.B

Notes: Sums written off include forgone interest. 'Loan recommendations made to the PWLB' include workhouse, water and sewerage, schools, harbours and other loan recommendations from the LGB.

Table 7.4 shows that decisions on loans worth £4.2m were not made by the PWLB, but by Parliament. These loans were often made against the advice of the PWLB, and more than half were never recovered, leaving the PWLB with losses

[10] The 1821 renewal letter from the PWLB, Hubbard's 1859 letter to the Treasury and Hubbard's evidence to the 1875 Select Committee all took the view that losses should be avoided.
[11] Appendix 7.A shows the detail of the calculation.

of £2.3m. There were only 16 of these loans, so they were all much larger than the PWLB's normal loans. A full list of the 16 is shown in appendix 7.B, and this highlights that £1.8m was lost on three Irish loans. Table 7.4 reveals that the 16 loans Parliament directed the PWLB to make accounted for 94 per cent of all of the PWLB's losses. Grant, in 1821, and Hubbard, in 1875, saw the PWLB's independence as essential.[12] Table 7.4 shows the very high cost of decision making by Parliament. In these cases, lending decisions were based on political or social grounds, and not on an independently assessed business case.

In contrast, lending decisions made by the PWLB board on loans worth over £8m incurred bad debts of only £101,000, or 1.2 per cent. Many of these loans were secured on the future trading income of borrowers. Such a low write off rate is creditable when the shaky finances of mines and turnpike trusts are recognised. The performance of loans recommended to the PWLB by the Poor Law Commission, the Local Government Board (or its predecessors) or the Education Department was even better. On loans worth nearly £30m, bad debts were just £70,000. There were three major reasons for this very good performance, first that these loans were secured against rate income and not against future trading income. Second, the 1834, 1848 and 1870 Acts set limits for borrowing by local authorities; they could not over borrow as the turnpike trusts had. Lending under these three Acts therefore enjoyed higher levels of security than did lending under the general Acts governing PWLB lending. Finally, PLC, LGB and Education Department sanctioned loans were all free of ministerial or parliamentary interference.

[12] The 1821 renewal letter and the 1875 Select Committee.

Table 7.5	Profits and losses from five case studies			
	Sums lent	Sums written off	Interest forgone	Profit or loss (-)
	£m	£000	£000	£000
Mines	0.3	9		-1
Turnpike trusts	0.4	51	128	-138
Workhouses	1.7	0		125
Water & sewerage	5.9	7		454
Schools	10.2	0		673
Totals	18.5	67	128	1,113

Sources: Mines table 2.10, turnpikes table 3.13, workhouses table 4.9, water etc table 5.8, schools table 6.14.

Notes: Loans made relate only to the period dealt with in the relevant chapter.
Schools includes loans to Scottish boards.

Table 7.5 shows that three of the case study areas -- loans to build workhouses, water and sewer facilities and schools -- were all profitable, despite the low interest charges to borrowers. However, loans to turnpike trusts were heavily loss-making because £156,000 was lost on a single loan that Parliament directed the PWLB to make. Two safeguards needed to be in place to avoided losses on loans. First, decision making on loans needed to be independent of government or Parliament and rest either with the PWLB or with specialist officials such as those of the PLC, the LGB or the Education Department. There are no examples of any of these bodies being directed to recommend individual loans to the PWLB. Indeed, the logic dictates that political influence was more likely to be used to stop these centralising bodies using their powers to compel local action that would result in local borrowing. Second, good security and borrowing limits needed to be in place. Table 7.6 shows the extent to which these two safeguards were in place for loans in the five case study areas. Table 7.6 also includes the two tests of the impact and scale of PWLB lending in each case study area.

Table 7.6	Factors determining the success of PWLB lending			
	Impact and scale of lending		Avoiding losses	
	Interest rate	Demand for loans	Decisions made independently	Security for loans
Mines 1817-26	5%. Market rate was also 5%	Very low	Yes, by PWLB. No directed loans	Poor. Heavy reliance on personal security. 18% of applicants went bankrupt
Turnpike trusts 1817-26	5%. Market rate was also 5%	Low, and fuelled by boom	Yes, but with one directed loan, & some ministerial pressure	Poor. Income in long term decline. 28% of trusts technically insolvent
Workhouses 1835-44	Nearly all loans reduced to 4%. Market rate was 5%.	Medium. Strong centre, increasing demand	Yes, by PLC. No directed loans	Very good. Provided by compulsory rate income. Borrowing limits in place
Water and sewerage 1848-72	5%. Market rate was 4.5-5%.	Low. Permissive legislation covering only part of country	Yes, by LGB & predecessors. No directed loans	Very good. Provided by compulsory rate income. Borrowing limits in place
Water and sewerage 1873-76	3.5%. Market rate was 4.5%	High. Universal & compulsory target imposed	Yes, by LGB & predecessors. No directed loans	Very good. Provided by compulsory rate income. Borrowing limits in place
Schools 1870-76	3.5%. Market rate was 4.5%	Very high. Universal & compulsory target imposed	Yes, by Education Department. No directed loans	Very good. Provided by compulsory rate income. Borrowing limits in place

Sources: Individual chapters.

Notes: Conditions tending to increase success of the PWLB

Conditions tending to reduce success of the PWLB

'Directed loans' are those where Parliament instructed the PWLB to make a loan.

Table 7.6 provides a useful summary of PWLB activity during its first 60 years. It shows that, on all four criteria, turnpike loans were unlikely to be successful. Interest rates were high; demand was low; PWLB independence was compromised in several cases; and the security offered by trusts was poor. In the

case of mines, interest rates were high and demand was low, and security was also poor. The major problems for mining and turnpike loans were that demand was low because the government's analysis of the problem in 1817 was flawed. The problem in 1817 was not a shortage of credit, rather it was a shortage of security to reassure the lender that any loan was a low risk. Twenty per cent of mining applicants became bankrupt within ten years of their application to the PWLB.[13] The solvency of turnpike trusts was even more problematic, with 28 per cent of all trusts in 1834 being technically insolvent.[14] The result was that PWLB lending to mines and turnpike trusts was not successful in terms of its scale and impact, and, in the case of turnpikes, PWLB lending incurred heavy losses.

The turning point for the PWLB came in 1834, with the Poor Law Amendment Act. Table 7.6 shows that even though loans were offered at 5 per cent, the rate was reduced to 4 per cent for nearly all borrowers, and was at below market rates, so encouraging borrowing from the PWLB. Demand for loans was high because the 1834 Act established a clear aim to build new, larger workhouses in 616 unions throughout England and Wales. In addition, there was a strong central body – the Poor Law Commission – set up to ensure that the unions built new workhouses. Unions had an incentive to borrow because they expected that the new, larger workhouses would reduce annual poor relief costs. There was no parliamentary or ministerial interference in the decision-making processes of the PWLB or the PLC. The final reason for lending success was that the security of loans was guaranteed by the ability to levy a poor rate, and by the cap on the borrowing of every union. The result was that the PWLB lent £1.7m in ten years, financed 61 per cent of all workhouse investment and made a profit on the loans. The 1834 Act ensured that by 1844, 91 per cent of unions had plans to build a workhouse, and this led annual poor relief costs to fall by 31 per cent. PWLB lending was critical to this success.

Two crucial elements of this winning formula were dropped in the 1848 Public Health Act. First, PWLB loans were only available at 5 per cent, slightly above market rates, and the demand for PWLB loans was therefore low. Demand for loans was also low because the Act did not compel the formation of local boards

[13] See appendix 2.A.
[14] See table 3.9.

of health, or compel them to invest in better water and sewer facilities. In addition, the Act only applied to urban areas, and not to rural areas. Most parts of the country therefore ignored the water and sewer provisions in the Act. The result was that the Act delivered very little benefit in the 15 years up to 1863, and PWLB lending under the Act was very low. With the 1872 Public Health Act, the two factors discouraging investment were changed. Interest rates were reduced to a below market rate of 3.5 per cent, and all urban and rural parts of the country were given a duty to ensure adequate water supplies and sewer facilities. Demand for PWLB loans increased sharply because of the two changes. The 1872 Public Health Act effectively repeated the winning formula of the 1834 Poor Law Amendment Act.

The winning formula of workhouse lending was also repeated with the 1870 Elementary Education Act. The same four factors were in place. Three and a half per cent interest was charged on loans, encouraging borrowing. The demand for loans was high because school boards could be compulsorily formed, and compelled to increase the provision of school places. Once the Act was passed, there was no government or parliamentary interference in the lending decisions made by either the Education Department or the PWLB. Finally, the security of loans was guaranteed by the local education rate, and by a cap on an individual board's borrowing. As with the 1834 Act and the 1872 Act, the result was that the demand for PWLB loans was high, and losses non-existent. Once again, PWLB loans were essential to the achievement of the 1870 Act's objectives.

The conclusion is that the PWLB was successful when four factors were in place. First, the PWLB had to be lending at an interest rate below market rates, but high enough to cover borrowing costs, bad debts and office expenses. Second, there needed to be a high demand for PWLB loans. This was normally true were national legislation was in place, compelling local authorities to invest in order to deliver government social and welfare policies. Third, decision-making on loans needed to be independent from government or parliamentary influence. Lastly, good security for loans was essential, and it was hard to avoid local rates; and maximum borrowing limits provided excellent security. With these four factors in place, PWLB lending made a major contribution to the financing of public infrastructure investment and delivering government social and welfare policies.

This winning formula was achieved with workhouse lending, water and sewer lending (after 1872) and schools lending. Most other areas of PWLB lending were much less successful.

7.4 Central and local relationships

The final aim of the thesis is to chart the changes in central and local government relationships over the 60 years. This section shows that there are two different models of central and local relationship (see table 7.7). The first model can be seen in the case of turnpike trusts, but also applied in the case of bridge trusts, drainage commissioners, improvement commissioners, harbour boards and others. This model can be characterised as having a weak central power, and strong local bodies. The centre had only two powers. First, Parliament had to approve the local Act establishing the turnpike trust, and this gave Parliament an ability to avoid competition between neighbouring trusts. While the local Act gave a turnpike trust the power to borrow, it placed no limits on borrowing. There was therefore no control of capital investment, nor was there an ability for the centre to compel a local area to form a turnpike trust. The only exceptions to this very weak central role were the five Acts to improve the Holyhead to London road, invest in Highland Roads and Bridges, and create the South Wales and North London trusts.[15] The centre's second power was that of regulator, and was exercised by Select Committees that repeatedly investigated ways of limiting damage to turnpikes by excess traffic. However, this regulatory power was limited because the government did not always legislate to implement Select Committee recommendations. The centre had no other powers over turnpike trusts.

In contrast to the weak centre, local communities were very strong. They had the power to form a turnpike trust, and decide where to invest and how much to invest. They were not accountable either to Parliament or to any other central body – at least until the 1830s, when they had to make annual returns to Parliament. Trusts were only accountable to their local community and to turnpike users. A trust's relationship with its lenders was entirely unregulated, and this

[15] 1 & 2 Geo IV c30 and 6&7 William IV c35 for the Holyhead road, 1 Geo IV c84, 7 & 8 Vic c91 for the South Wales Trust and 7 Geo IV c142 for the creation of a combined North London trust.

caused many lenders to lose significant sums of money in the 1850s and after.[16] With minor variations, this model also applied to water and sewers before 1872.

Table 7.7	Different models of central and local relationships		
	Turnpike trusts	**Water & sewerage pre-1872**	**Workhouses, water & sewerage post 1872 & schools**
Central powers			
Governing legislation	Local Acts of Parliament	Single national Act	Single national Act
Ability to compel local action	None. Select Committees try to regulate, but government does not always act on recommendations	None until 1858, & then very limited	Yes, through PLC, LGB or its predecessors, & Education Department
Control of capital investment, and regulation	None. Select Committees try to regulate, but government does not always act on recommendations	Through either LGB predecessors, or through local Acts of Parliament	Yes, through PLC, LGB or its predecessors, & Education Department. They also controlled access to low cost capital
Local powers			
Extent of local discretion	Considerable, including whether to establish a trust	Considerable, including whether to establish a local board of health	Limited to day to day matters
Local elected body	No, appointed locally	Yes	Yes
Meeting annual cost	Revenue & capital costs met locally	Revenue & capital costs met locally	Revenue & capital costs met locally
Character isation of relationship	Weak centre and strong localities	Weak centre and strong localities	Strong centre and weak localities

Sources: Individual chapters.

Notes: After 1872 the LGB had the right to comment on local Acts of Parliament promoted by local boards of health.

[16] See table 3.15.

In 1834, the turnpike trust model of central and local relationships was turned on its head by the 1834 Poor Law Amendment Act. The Poor Law Commission was a strong, central body with the power to inspect the activities of all local unions and compel them to act if it thought necessary. The Act imposed a single and universal service standard on all unions, and required the PLC to approve every union's capital investments. In 1836 the centre also gained some control over who local unions borrowed from by reducing the PWLB interest rate to below market levels. The power to create, intervene in and approve the capital spending of a body invariably meant that all the essential powers rested in the centre. In contrast, local unions had little discretion, even though they were locally elected and met all of the costs of the poor law. This was a model of a strong centre and weak localities.

The 1848 Public Health Act essentially returned to the turnpike trust model of central and local government relationships. As chapter 5 argued, MPs saw the 1834 model as too centralised and as leaving too little discretion to local unions. The main difference from the turnpike trust model was that the 1848 Act created a weak central body in the form of the General Board of Health. The GBH had no power to inspect or intervene in the affairs of a local board of heath; and, other than in limited circumstances, it had no power to compel the formation of a local board of health. The Act also gave local areas discretion on whether they formed a local board of health. Once established, a local board of health had discretion about whether it invested in better water and sewer facilities. Many areas continued to operate under local Acts, and chose not to use the powers of the 1848 Act. This ability to decide locally whether to form a local body, and to determine the extent of the body's activity, was similar to the powers of a turnpike trust.

In hindsight, the departure from the long term trend was the 1848 model, not the 1834 strong centre and weak locality model. The 1870 Elementary Education Act and the 1872 Public Health Act both created strong central bodies, and left local authorities with little discretion. Chapter 5 argued that the obvious explanation for this about turn was that the 1848 Act simply did not deliver sufficient improvements in sanitation. So, over a period of twenty years, a series of small but progressive steps were taken back towards the 1834 model of a strong centre

and weak localities. As in 1834, the belief (of those in the centre!) was that only a centrist solution would deliver the national aim of universal better sanitation. However, in 1872 MPs rejected the new Public Health Bill because they were unconvinced by its strong central powers.[17] They were only persuaded to vote for the 1872 Public Health Act by the promise of 3.5 per cent loans from the PWLB.

The conclusion is that the 1834 strong centre and weak locality model established the dominant pattern of central and local relationships for the 60 years. Support for the weak centre and strong locality model of pre-1834 years and 1848 was largely ideological, while support for the strong centre and weak locality model was largely pragmatic. A strong centre was simply seen as the best way of delivering national policy objectives. It is noticeable that, for all models, all the revenue and capital costs were met locally. Theodore Hoppen reports that Gladstone and the Treasury were relaxed about extending the power of the state 'so long as the costs remained a local responsibility'.[18] Pragmatism and Gladstone's view do a great deal to account for the shift of power from local areas to the centre between 1817 and 1876.

7.5 Implications of the research

The first achievement of the thesis is to respond to the calls of Flinn and Prest for a history of the PWLB.[19] But the thesis also demonstrates that the history of the PWLB reflects the impact of the many changes in the social, economic, financial and political environment between 1817 and 1876. In the early years, there was a recognition that public infrastructure investment needed to increase beyond the capacity of the market to finance it, and that new means to finance the increase were needed. The PWLB was an essential part of both changes. Without the PWLB, banks, insurance companies and individuals would have been unlikely to have the capacity to finance sanitation and education changes on the necessary scale. The thesis has also charted how the PWLB established itself as a government agency, and made its decisions. Unlike other government agencies,

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[17] Christine Bellamy, *Administering Central-Local Relations 1871-1919: The Local Government Board in its Fiscal and Cultural Context* (Manchester, Manchester University Press, 1988), p. 34.
[18] K. Theodore Hoppen, *The Mid-Victorian Generation 1846-1886* (Oxford, Clarendon Press, 1998), p. 123.
[19] M. W. Flinn, 'The Poor Employment Act of 1817', *Economic History Review 1961*,Vol 14, no. 1, pp. 82-92, and John Prest, *Liberty and Locality: Parliament, Permissive Legislation and Ratepayers' Democracies in the Nineteenth Century* (Oxford, Clarendon Press, 1990), p. 184.

the PWLB was small and well governed, with its Board making all decisions. Chapters 2 and 3 showed that its lending decisions were very similar to those made by banks, and were dominated by concerns for the security of its loans. Successive chapters show that like other agencies of the period, the PWLB had no formal accountability mechanisms in its early years. However, like other agencies, by 1876 the PWLB had established good annual reporting processes to Parliament. The development of the PWLB therefore both responds to the changing environment over 60 years, and illustrates the nature of the changes.

The second achievement of this thesis has been to revise and materially improve the estimates of capital investment in each of the five case studies. This has provided much more detail and robustness to the estimates of C. H. Feinstein and Sidney Pollard in *Studies in Capital Formation in the United Kingdom 1750 to 1920.*[20] It has also provided, for the first time, estimates of how public infrastructure in each case study was financed before the 1880s. This advance would allow new chapters to be written in the works on the financing of investment. Much of the new data on local authority borrowing could also be used to extend the start year of John Wilson's 'The Finance of Municipal Capital Expenditure' back from 1870 to 1835.[21] However, such a task is beyond the scope of this thesis.

The third achievement is that the individual case studies can claim to add something to the literature on each area. Chapter 2 provided quantification of mine financing, supporting Flinn's view that most came from retained profits.[22] Chapter 3 drew attention to the high levels of indebtedness of turnpike trusts because of the absence of any control on their borrowing. The resulting major losses to individual lenders do not appear in the turnpike literature. Chapter 3 therefore significantly develops the views of William Albert in *The Turnpike Road System in England 1663-1840.*[23] The episode showed the government slowly

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[20] C. H. Feinstein and Sidney Pollard, *Studies in Capital Formation in the United Kingdom 1750 to 1920* (Oxford, Clarendon Press, 1988) pp. 192-202, 302-307, 355-368.
[21] John F. Wilson, 'The Finance of Municipal Capital Expenditure in England and Wales, 1870-1914', *Financial History Review,* Vol 4, no. 1, 1997, pp. 31-50.
[22] M. W. Flinn *The History of the British Coal Industry Volume 2 1700-1830: The Industrial Revolution* (Oxford, Clarendon Press, 1984), p. 61.
[23] William Albert, *The Turnpike Road System in England 1663-1840* (London, Cambridge University Press, 1972), pp. 230-245.

accepting the need to regulate the relationship between private lenders and trusts. Chapter 3 provided a financial perspective to the development of turnpikes. It also highlighted the wealth of useful financial data in the parliamentary returns of the 1830s.

Chapters 4, 5 and 6 highlighted the wealth of data in the PLC archive and in annual reports in parliamentary papers about the financing of workhouses, public health and schools. In these chapters the data have largely been used to show the scale and financing of capital investment. Chapter 4 demonstrated that the financial data do not support the received wisdom of northern opposition to the 1834 Act, particularly in Felix Driver's *Power and Pauperism: The Workhouse System 1834-84.*[24] Chapter 5 added the lack of cheap finance to the reasons for the 'halting and fractious process' of sanitary reform.[25] Chapter 5 also provides much more detailed support for John Hassan's view of the changing ownership of water supply undertakings in *A History of Water in Modern England.*[26] The data are surely open to many more uses to aid understanding of these sectors. The PWLB data could also be used for far more purposes than have been shown in this thesis.

The fourth third achievement of the thesis is the insight into the opportunities and risks of government lending. The main opportunity is that government's ability to borrow cheaply could be passed on to borrowers as below market levels of interest rates. As chapters 4, 5 and 6 showed, governments gained a much greater ability to promote their own policies when they offered low cost borrowing. Chapter 3 and table 7.4 make clear that there were also substantial risks in government lending. As in the case of the 1861 Harbours and Passing Tolls Act, lending rates could be set too low to cover costs, resulting in automatic losses. The second risk was larger, and was realised if lending decisions were based on political or social grounds, rather than on the grounds of the security offered by the borrower. The £2.3m losses on the 16 loans Parliament directed the PWLB to make demonstrate the scale of the risks. The risks are as great in 2014 as they

[24] Felix Driver, *Power and Pauperism: The Workhouse System 1834-84* (Cambridge, Cambridge University Press, 1993) p. 81
[25] Philip Harling, *The Modern British State: An Historical Introduction* (Cambridge, Polity, 2001), p. 107.
[26] John Hassan, *A History of Water in Modern England* (Manchester, Manchester University Press, 1998) pp. 10-50.

were in 1817 or 1876. The material here could be used to provide historical evidence to support the views of the World Bank in *Lessons for the Urban Century: Decentralized Infrastructure Finance in the World Bank.*[27]

There is much more work that could be done on the PWLB's first 60 years. It would be fascinating to tell the stories of the larger loans the PWLB made: to finance the Thames Tunnel, various London bridges, Trafalgar Square and Battersea Park. Often these were very high profile loans, supported by Parliament, two of which lost a combined £240,000. Interesting as these individual stories were, they were not central to the Board's history or its importance. A chapter on the PWLB's lending to build churches and provide burial grounds would no doubt yield interesting insights. A chapter on loans to harbours could make interesting use of a wealth of trading volume data submitted to the PWLB by applicants for loans. It would surely shed light on the extent to which public infrastructure investment really promoted trade. Finally, a chapter on the PWLB's lending to Ireland for social and political rather than commercial reasons would hold much interest. All these remain areas for future study.

It is fifty years since Flinn's article, and nearly 25 years after Prest suggested it was time for a history of the PWLB.[28] In writing that history, this thesis has shown how important the PWLB was in financing public infrastructure. This was particularly true in the critical early years of financing new government policy. The history of the PWLB's first 60 years also provides very good examples of the advantages and pitfalls of government lending. It is hoped that this thesis shows that an understanding of the first 60 years of the PWLB is capable of adding significantly to the existing literature on the case study areas. Finally, it is clear that the vast quantity of PWLB loan data and the annual parliamentary returns are capable of being used to meet many more research needs than are dealt with here.

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[27] World Bank, *Lessons for the Urban Century: Decentralized Infrastructure Finance in the World Bank* (New York, World Bank, 2008)

[28] M. W. Flinn, 'Poor Employment Act',pp. 82-92, and John Prest, *Liberty and Locality*, p. 184.

PWLB Loans Made 1817-1876													
	1817 1821 £000	1822 1826 £000	1827 1831 £000	1832 1836 £000	1837 1841 £000	1842 1846 £000	1847 1851 £000	1852 1856 £000	1857 1861 £000	1862 1866 £000	1867 1871 £000	1872 1876 £000	**Totals** **£000**
Fisheries	32	2	-	-	-	0	-	-	-	-	-	-	**34**
Mines	200	72	-	32	-	-	-	-	-	-	-	-	**304**
Canals, rivers etc	423	228	185	35	-	-	-	-	-	-	-	-	**871**
drainage	250	32	90	-	10	150							**532**
Roads	240	185	71	214	21	45	-	-	-				**776**
Rail	36	118	100	179	-	50	-	-	-	-	44	3	**529**
Emigration	-	-	-	13	3	1	3	0	-	-	-	-	**19**
Bridges	92	103	13	4	3	37	60	7	4	-	-	2	**324**
Workhouses	5	-	-	575	878	458	215	311	204	273	596	160	**3,673**
Harbours & hpt	118	141	95	120	159	64	57	1	23	1,687	252	365	**3,080**
Churches	5	54	17	14	22	42	73	42	55	95	34	-	**453**
Gaols	2	200	10	27	16	59	175	34	94	71	48	18	**754**
irish poor law & canals		10	50	146	-	-	1,275	-	-	520	20	-	**2,021**
Water & sewerage	20	7	-	8	-	-	120	120	121	1,230	251	6,445	**8,322**
Others	-	-	5	344	-	-	-	20	2	12	31	118	**531**
Lunatic asylums	6	-	-	-	-	22	99	3	104	160	328	1	**724**
Improvements	5	513	-		-	-	60	71	84	849	40	1,421	**3,043**
Housing	-	88	20	-	-	-	-	-	-	22	110	553	**794**
irish rail						126	1,401	574	254	147	565	30	**3,097**
Recreation	-	-	-	-	-	40	100	-	-	31	1	36	**208**
Burial grounds	2	-	-	-	-	-	-	398	229	156	65	111	**962**
Bath houses	-	-	-	-	-	-	15	28	15	10	13	49	**129**
Gas & lighting	-	-	-	-	-	-	-	-	20	9	-	111	**139**
Markets	-	1	-	-	-	-	-	-	-	37	1	28	**67**
Disease	-	-	-	-	-	-	-	-	-	300	3	-	**303**
Schools	-	-	-	-	-	-	-	-	-	-	122	10,123	**10,246**
Transport	-	-	-	-	-	-	-	-	-	-	-	133	**133**
Totals	**1,435**	**1,752**	**656**	**1,710**	**1,111**	**1,095**	**3,653**	**1,609**	**1,208**	**5,610**	**2,523**	**19,706**	**42,067**

Source: Analysis of PWLB 6/1-1a and PWLB 6/2-6 application ledgers

BIOGRAPHICAL DETAIL OF COMMISSIONERS **Appendix 1.B**

Commissioner in...		Name & dates	birth	death	evangelical	city	politics	relative also comm'snr.	source
	1817	John Delafield Phelps	1764	1842					
1811	1817	John Smith	1767	1853	family	banker	MP	relative	Lewis
	1817	Henry Swann	1760	1824		merchant	MP		Parl on line
	1817	Thomas Grimston Estcourt	1775	1853	extreme		MP		Parl on line
	1817	Robert Matthew Casberd	1772	1841			MP		Parl on line
	1817	Thomas Sherlock Gooch	1767	1851			MP		Parl on line
	1817	Edward John Littleton	1791	1863			MP		Parl on line
	1817	Lord Robert Seymour	1748	1831			MP		Parl on line
	1817	John Julius Angerstein	1774	1858		merchant	MP		Parl on line
	1817	Sir Thomas Dyke Acland	1787	1871	Follower		MP		Lewis
	1817	Sir Charles Edmonstone	1764	1821			MP		Parl on line
	1817	Joseph Berens	1774	1853		Hudsons Bay		relative	Hudsons
	1817	Thomas Reid	1762	1824		East India Co		relative	EIC
1811	1817	Hon William Lamb	1779	1848			minister		Parl on line
1811	1817	Sir John Perring	1765	1831		banker	MP		Parl on line
1811	1817	Sir James Shaw	1764	1843		Director	MP		Parl on line
1811	1817	John Christian Curwen	1756	1828			MP		Parl on line
1811	1817	Benjamin Harrison	1771	1856	Clapham S	Hudsons Bay			Lewis
1811	1817	Charles Bosanquet	1769	1850	family	Merchant		relative	lewis
1811	1817	John Thornton	1783	1861	officer				Lewis
1811		Charles Pole	1757	1830		BoE	MP		BoE
1811		George Ballas Greenough	1778	1855			MP		Parl on line
1811		William Beauchamp Lygon	1782	1823			MP		Parl on line
1811		Thomas Lord Binning	1780	1858	Follower		MP		Hilton
1811		Harvey Christian Combe	1752	1818		Lord Mayor	MP	relative	Parl on line
1811		Thomas Bainbridge		1830	officer	banker			Lewis
1811		Job Matthew Raikes	1767	1833	family	BoE		relative	BoE
1811		John Josiah Holford				BoE		relative	BoE
1811		John Inglis			family	East India Co			EIC
1811		Joshua Jonathan Smith				Lord Mayor			London
1795		Benjamin Savage							
1795		Gabriel Tucker Steward	1768	1836		banker	MP		Parl on line

	1795			William Curtis	1752	1829		Lord Mayor	MP		Parl on line
	1795			Thomas Plummer	1749	1818		merchant	MP		Parl on line
	1795			Henry Hobart	1738	1799			MP		Parl on line
	1795			Charles Townshend	1728	1810			MP		Parl on line
	1795			Joseph Nutt		1805		BoE			BoE
	1795			Robert Hunter	1731	1812		merchant			parl on line
1793	1795	1811	1817	Charles Grant	1746	1823	Clapham S	East India Co	minister	relative	Lewis
1793				Edward Foster							
1793		1811		James Brogden		1840		merchant	MP		Parl on line
1793	1795			Sir Grey Cooper	1726	1801			minister		Parl on line
1793				Robert Smith	1752	1838	follower	banker	MP	relative	Lewis
1793	1795			Richard Muilman Trench Chiswell	1735	1797		banker	MP		Parl on line
1793				Robert Barclay	1755	1839		banker	MP		Parl on line
1793				William Manning	1763	1835	family	BoE	MP		Lewis
1793				John Whitmore	1750	1826		BoE	MP		BoE
1793	1795			Sir William Pulteney	1729	1805		investor	MP		Parl on line
1793	1795			Sir John Sinclair	1754	1835	family		MP		Lewis
1793	1795			Sir Francis Baring	1740	1810	family	banker	MP	relative	Lewis
1793	1795			John William Anderson	1735	1813		Lord Mayor	MP		Parl on line
1793				John Sheffield	1735	1821			MP		Parl on line
1793				Samuel Bosanquet	1768	1843	follower	BoE		relative	lewis
1793				Thomas Boddington				BoE			BoE
1793				Jeremaih Harman	1763	1844		BoE			BoE
1793				Gilbert Innes	1751	1832		banker			clapham V1 p264
1793				Robert (lionel) Darell	1742	1803		Merchant	MP		Parl on line
1793				William Raikes	1738	1800	family	South Sea Co		relative	Lewis

Sources

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Parl on line	www.historyofparliamentonline.org/research/members Accessed January 2013
Hudsons	http://www.hbcheritage.ca/hbcheritage/history/people/governors/ Accessed January 2013
EIC	C H & D Philips, 'Alphabetical list of Directors of the East India Company', Journal of the Royal Asiatic Society, October 1941
London	www.cityoflondon.gov.uk list of lord mayors Accessed January 2013

MINING APPLICATIONS 1817-26, DATA SET

Appendix 2.A

loan number, see note below	Applicant	year	region	decision time weeks	payment issued	reason for app	type of mine	amount applied for £000	granted £000	rejected £000	withdrawn £000	abandoned £000	jobs mentioned	why rejcted	repayment difficulties?	Date of bankruptcy notice in London Gazette
0.002	Warren Maud Lamb	1817	ne	1	0	6	1	6,000	-	6,000	-	-	-	4	0	LG 24-1-1826
0.004	Hon John Lindsay	1817	CI	1	0	6	9	700	-	700	-	-	-	4	0	
0.018	David Mushet	1817	sw	2	0	7	2	5,000	-	5,000	-	-	-	4	0	
0.026	James Adam	1817	w	2	13	2	2	40,000	35,000	-	-	-	1,000	0	5	
0.043	Joshua Rowe	1817	sw	5	0	4	6	30,000	-	-	30,000	-	-	2	0	LG 26-6-1824,
0.059	Thomas Halford	1817	sw	1	13	9	1	2,000	2,000	-	-	-	-	0	3	LG 20-2-1821,
0.061	Henry Hunt & others	1817	w	8	14	3	4	7,000	7,000	-	-	-	300	0	5	
0.064	John Ikin	1817	y	15	40	2	1	17,000	17,000	-	-	-	-	0	1	LG 25-5-1819,
0.068	George Firmstone	1817	wm	6	0	1	1	1,000	-	-	-	1,000	-	5	0	
0.073	John Scott	1817	w	7	13	3	1	3,500	3,500	-	-	-	-	0	3	
0.074	J Firmstone	1817	wm	1	0	4	2	5,000	-	-	-	5,000	-	5	0	
0.080	Abraham Favene & John Heaver	1817	sw	1	5	9	5	5,000	4,000	-	-	-	-	0	2	
0.087	Benjamin Fayle	1817	sw	2	8	2	9	30,000	30,000	-	-	-	-	0	2	
0.113	W James	1817	wm	0	0	9	1	5,000	-	-	-	5,000	-	2	0	
0.115	Messers Roscoe	1817	w	1	0	4	1	70,000	-	70,000	-	-	-	4	0	
0.116	Benjamin Frankland for John Clarke	1817	nw	1	0	4	1	80,000	-	80,000	-	-	-	4	0	
0.118	Charles Perkins	1817	ne	7	11	3	1	15,000	15,000	-	-	-	-	0	2	
0.122	Joseph Griffin	1817	wm	0	0	4	1	2,000	-	-	-	2,000	300	5	0	
0.136	Geo Jackson	1817	wm	1	0	4	2	3,000	-	3,000	-	-	-	4	0	
0.147	Thomas pinkerton	1817	wm	2	8	9	1	1,200	1,200	-	-	-	-	0	4	LG 27-7-1819,
0.151	J D Jones	1817	w	1	0	6	4	1,000	-	1,000	-	-	100	3	0	
0.152	Joseph Partridge	1817	wm	0	0	7	1	2,000	-	2,000	-	-	-	4	0	
0.159	R Gibbon	1817	ne	8	0	4	1	3,500	-	3,500	-	-	-	4	0	LG 25-1-1828,
0.164	Moses teague & chas evans	1817	sw	1	0	4	1	4,000	-	4,000	-	-	-	4	0	
0.207	Rees jones	1818	w	2	0	7	1	1,400	-	1,400	-	-	-	4	0	
0.208	Joshua Rowe	1818	sw	10	0	4	6	30,000	-	-	30,000	-	-	2	0	
0.211	Thomas Tinson	1818	sw	0	0	4	6	2,000	-	-	-	2,000	-	5	0	
0.233	Moses Teague	1819	sw	0	0	3	1	2,000	-	-	-	2,000	-	5	0	LG 10-1-1824,
0.239	John Reed	1819	ne	1	2	2	1	80,000	80,000	-	-	-	10,000	0	2	
0.241	T Gisborne later mp. See dnb	1819	em	1	2	3	1	14,000	5,000	-	-	-	220	0	2	
0.247	Joseph Devey coal exchange	1819	ne	0	0	4	1	12,000	-	-	-	12,000	-	5	0	LG 12-10-1819
0.258	Frederick Gardner	1819	sw	3	0	3	1	2,000	-	2,000	-	-	-	3	0	

continued on next page

loan number	Applicant	year	region	decision time weeks	payment issued	reason for app	type of mine	amount applied for	granted	rejected	withdrawn	abandoned	jobs mentioned	why rejcted	repayment difficulties?	bankrupt
0.269	Frederick Hall	1820	sw	0	0	4	5	5,000	-	-	-	5,000	-	5	0	
0.281	Chasewater tin & copper mine	1820	sw	26	0	2	6	20,000	-	20,000	-	-	-	1	0	
0.301	Thomas Hopper	1820	ne	0	0	9	1	40,000	-	-	40,000	-	-	5	0	newcstle cou
0.308	Chasewater tin & copper mine	1820	sw	1	0	2	6	12,500	-	12,500	-	-	-	1	0	
0.310	Joseph Griffin	1820	wm	0	0	4	1	1,000	-	1,000	-	-	-	4	0	
0.317	Frederick Hall	1820	sw	1	0	4	5	15,000	-	15,000	-	-	-	4	0	
0.340	William James	1821	wm	0	0	9	1	3,000	-	-	-	3,000	-	5	0	LG 30-4-1824,
0.384	Mason, Harper & co	1822	sw	1	0	4	4	1,000	-	1,000	-	-	-	6	0	
0.388	Thomas Tickell	1822	wm	1	0	4	3	25,000	-	15,000	-	-	2,000	2	0	lg 17919 p718
0.389	Wainwright Jones etc	1822	wm	1	0	9	2	10,000	-	10,000	-	-	-	2	0	
0.396	Wainwright, Jones & Fereday etc	1822	wm	0	0	9	2	4,000	-	-	-	4,000	-	2	0	
0.403	Brandling Bros	1822	ne	0	0	9	1	10,000	-	-	-	10,000	-	5	0	
0.410	James White	1822	se	2	0	7	9	1,000	-	1,000	-	-	-	3	0	
0.425	George elwell jackson	1822	wm	4	22	9	2	10,000	8,000	-	-	-	-	0	1	LG 19-7-1831
0.426	Consolidated mines co	1822	sw	0	0	9	5	3,000	-	-	-	3,000	-	5	0	
0.430	Thomas Jones	1822	w	0	0	4	2	15,000	-	-	-	15,000	-	5	0	
0.433	W Hallett	1822	sw	8	10	4	5	3,000	2,000	-	-	-	-	0	1	
0.437	Edward Bagnall	1822	wm	2	0	2	1	4,000	-	4,000	-	-	-	1	0	
0.440	John Taylor	1822	s	6	0	4	1	6,000	-	6,000	-	-	-	2	0	
0.445	Edward Bird, Cardiff Iron foundary	1822	w	4	0	4	3	600	-	600	-	-	-	4	0	LG 6-6-1828, I
0.446	John Jones	1822	w	8	0	3	1	600	-	600	-	-	-	3	0	
0.447	Sir W Cunningham Fairlie MP	1822	s	2	0	4	1	3,000	-	3,000	-	-	-	4	0	LG 13-2-1827,
0.452	William Simons	1822	w	8	0	4	1	500	-	500	-	-	-	2	0	
0.461	John Corrie	1823	wm	0	0	4	1	8,000	-	-	-	8,000	-	5	0	
0.462	Lt gen george warde	1823	w	2	0	4	1	10,000	-	-	-	10,000	-	2	0	
0.464	William Holloway	1823	wm	6	9	9	1	2,000	2,000	-	-	-	-	0	1	
0.467	Thomas Claughton mp	1823	nw	6	0	9	1	20,000	-	20,000	-	-	-	2	0	LG 12-5-1824,
0.478	Broomfield & Stevenson	1823	wm	4	0	7	1	5,000	-	5,000	-	-	60	4	0	
0.479	Thomas Jones	1823	w	4	0	4	2	15,000	-	15,000	-	-	200	4	0	
0.495	Marquis of Londonderry	1823	ne	0	0	4	1	40,000	-	-	-	40,000	-	2	0	
0.523	Sir James Jelf	1823	sw	4	0	4	9	8,000	-	8,000	-	-	60	4	0	
0.530	John Cottingham	1824	nw	7	11	2	1	5,000	5,000	-	-	-	150	0	4	
0.554	Hetton colliery Durham	1824	ne	1	0	4	1	67,000	-	67,000	-	-	-	4	0	
0.629	Sam Walker (Walker & Yates)	1825	wm	1	2	1	2	40,000	40,000	-	-	-	10,000	0	3	
	continued on next page															

loan number	Applicant	year	region	decision time weeks	payment issued	reason for app	type of mine	amount applied for	granted	rejected	withdrawn	abandoned	jobs mentioned	why rejcted	repayment difficulties?	bankrupt
0.633	Harford Bros Bristol	1826	sw	0	0	2	1	120,000	-	120,000	-	-	3,000	1	0	1841
0.642	William Aston B'ham	1826	wm	0	0	1	1	15,000	-	-	15,000	-	1,500	5	0	LG 25-4-1826,
0.645	Jones & Faraday windmill end works	1826	wm	0	0	2	2	8,000	-	-	8,000	-	650	1	0	
0.647	George Bishton colliery	1826	wm	0	0	2	2	30,000	-	-	30,000	-	600	5	0	LG 3-11-1835,
0.651	William Hanbury Sparrow	1826	wm	2	3	1	2	12,500	12,000	-	-	-	1,000	0	1	
0.653	Hetton coal co	1826	ne	1	0	7	1	50,000	-	50,000	-	-	-	4	0	
0.662	Thomas edwards	1826	w	2	0	4	1	5,000	-	5,000	-	-	100	4	0	
0.670	Robinson & Fincraft Newport Mon	1826	w	2	0	7	1	1,500	-	1,500	-	-	-	4	0	
0.671	London United mining co	1826	sw	2	0	4	6	12,000	-	12,000	-	-	400	4	0	
0.672	henry Hunt & other Hunts	1826	w	0	0	4	2	7,000	-	7,000	-	-	-	4	0	
0.695	Richard brinton	1826	wm	2	7	1	2	6,000	3,000	-	-	-	350	0	2	
0.697	Gen George Warde	1826	w	2	0	4	1	10,000	-	10,000	-	-	-	3	0	
0.751	James Elder Fintshire	1826	w	0	0	4	4	5,000	-	5,000	-	-	-	5	0	
	Totals							**1,177,500**	**271,700**	**625,800**	**153,000**	**127,000**	**31,990**			

Note. PWLB numbered applications consequetively as they were received. They got to around 2,000 by 1842, when a new Act was passed. They then started a new sequence, starting again at number 1. To ensure that each application has a unique number, the first series have been rendered here as 1=0.001, 100=0.100, 430 =0.430 etc. -

Key

Regions ne=North East, nw=North West, Y=Yorkshire, wm=West Midlands, em=East Midlands, e=East Anglia, se=South East, L=London, sw=South West, s=South, w=Wales, s=Scotland

Reason for Application. 1=Short term credit need, 2=Repay debt, 3=Overcome physical problem, 4=Development of mine, 5=Employment, 6=Open new mine, 7= Reopen old mine,9=unclea

Type of mine. 1=Coal, 2and 3=Coal and Iron, 4=Lead, 5=Tin, 6=Copper, 9=Quarries

Reason for rejection. 1=Debt, 2=Insufficient security, 3=Weak business case, 4=Speculation, 5=Abandoned, 5=Withdrawn, 6=Manufacturing, 7=Unclear

Repayment difficulties. 1=Repaid on time, 2=Sought extension, 3=Instalment payment n no

Bankruptcy . Date of notice published in London Gazette.

Derivation of 1817-26 fixed capital formation estimates for turnpike trusts

Appendix 3.A

Source data from turnpike trust returns to parliament

Year		1819 &21	1823	1829	1834	1835	1836	1837	1838
		£000	£000	£000	£000	£000	£000	£000	£000
Income									
	Toll & other income	1,089	1,471	1,408	1,600	1,631	1,646	1,599	1,574
	Borrowing	-	206	-	153	165	130	134	97
	Total income	**1,089**	**1,677**	**1,408**	**1,754**	**1,797**	**1,777**	**1,733**	**1,670**
Spending									
	Running costs	1,002	1,235	1,141	1,057	1,094	1,121	1,119	1,058
	Land	-	-	56	30	37	24	28	24
	Improvements	-	-	-	217	212	205	208	155
	Debt interest	182	164	237	289	302	313	303	301
	Dept repayments	69	60	244	108	133	117	122	132
	Total spending	**1,285**	**1,459**	**1,678**	**1,702**	**1,777**	**1,780**	**1,781**	**1,670**
Debt									
	Mortgage debt	**4,517**	**3,675**	**6,579**	**7,068**	**7,117**	**7,188**	**7,263**	**7,261**
	Unpaid interest	559	462	822	1,002	1,019	1,031	1,051	1,124
	Other debt	255	199	385	383	382	358	356	351
	Total debt	**5,330**	**4,336**	**7,785**	**8,453**	**8,518**	**8,577**	**8,670**	**8,735**
	Source: BPP	1821(747)	1824 (470)	1833(733)	1836 (2)	1837 (328)	1837/38 (529)	1839 (447	1840 (289)

Assumptions

	1817-26	1827-34	1835-38
Debt repaid as %age of income	5.1%	5.1%	7.8%
Cost uplift to Ginarlis	25%	37%	34%
Borrowing as %age of capex	90%	80%	59%
Residual capex as % of income	14.5%	13.5%	12.6%
Investment per new Act, £000	8	8	8
No. of new Acts in period	95	28	10

Workings

	1817-26	1827-34	1835-8
All costs	£000	£000	£000
ginarlis	10,256	9,431	5,007
non cash	500	400	200
land	500	344	113
debt P+I	2,591	3,510	1,724
all costs	**13,847**	**13,685**	**7,043**
Capital spend & borrowing			
new acts	760	224	80
residual	2,008	1,848	812
all cap ex	2,768	2,072	892
income fun	277	414	365
borrowing	2,491	1,657	527
Verification against debt levels			
open debt	4,517	5,915	7,068
less '18-19	- 350		
debt repay	- 700	- 698	- 551
borrow	2,491	1,657	527
error	- 43	194	217
close debt	5,915	7,068	7,261
add '27-8 debt	664		
1829 debt	6,579		
1834 debt		7,068	
1838 debt			7,261

Results

	total		Capital spending		
	ginarlis	spend	new Acts	residual	All
	£000	£000	£000	£000	£000
1817	880	1,188	56	172	228
1818	877	1,184	80	172	252
1819	937	1,265	40	183	223
1820	921	1,243	24	180	204
1821	928	1,253	8	182	190
1822	1042	1,407	24	204	228
1823	1115	1,505	56	218	274
1824	1174	1,585	152	230	382
1825	1219	1,646	184	239	423
1826	1163	1,570	136	228	364
1827	1164	1,689	32	228	260
1828	1182	1,715	40	232	272
1829	1160	1,683	24	227	251
1830	1154	1,675	24	226	250
1831	1169	1,696	48	229	277
1832	1179	1,711	32	231	263
1833	1194	1,733	16	234	250
1834	1229	1,783	8	241	249
1835	1264	1,778	24	224	248
1836	1321	1,858	32	234	266
1837	1209	1,701	0	214	214
1838	1213	1,706	0	215	215

Conclusions

The test of the validity of the assumptions made is their ability to generate the known mortgage debt figures for 1829, 1834 and 1838. For 1829, the error is less than 1 per cent, and under 3 per cent for the later years.

Method

1 derive assumptions from BPP source data

2 Turn Ginarlis numbers into estimates of all trust costs, by adding estimates for non cash costs, debt, and land costs

3 calculate FCF on basis of £8,000 @ new Act, and 12.6-14.5% for residual FCF, depending on period

4 verify results by comparing to known debt levels for 1829, 1834 and 1838.

5 revise assumptions and repeat until verification is achieved.

Turnpike Trusts. Archive material on subscribers and mortgagees

Appendix 3.B

Turnpike Trust	Borrowing			Type of borrowing		Borrowing from whom														source place	source ref
	Total raised £	year	PWLB lending £	No of subscribers	no of mortgages	lords/barts	gentl eme n/Esq	merc hants	manu factu rers	bank ers	profe ssion als	farm er/ye oman	trade smen	wom en	estat es	churc hme n	unkn own	Instit ution s	non local		
1 Rotherham & Pleasley	4,141	1812		24		2					1			4	5					Wakefield	WRT 77/4
2 Gomersal & Dewsbury	6,851	1830-8	3,500		18		3	3	6		3									Wakefield	WRT 37/17
3 Leeds & Tong Lane	9,838	1825		13	4	1	10							2						Wakefield	WRT 63
4 Colne & Broughton	1,021	1826	2,500		5	1	2							2						Wakefield	WRT21/11
5 Blaby & Worksop	3,427	1831			12	5	2							1		1		Doncaster Boro		Wakefield	WRT 3/27
6 Shepley Lane Head & Barnsley	900	1845		3			2				1									Wakefield	WRT 8/2
7 Shepley Lane Head & Barnsley	4,500	1823		48		1	7	1	5		2		11	1	1	1		3	0	Wakefield	WRT 8/2
8 Leeds (Quebec) to Holmfield Lane	11,085	1817		48		2	4	8	2				5	8		5				Wakefield	WRT 60
9 Leeds Dewsbury	2,310	1815	9,000	13			4	1	1		1		1					2		Wakefield	WRT 24/1
10 Collingham & York	2,375				11		1								7					Wakefield	WRT 20/73
11 Rotherham Barnby	7,353	1822		22		3	12					1	5	1						Wakefield	WRT 4/1
12 Doncaster Thorne	3,300	1826		20	1	12							3	2				Doncaster Boro		Wakefield	WRT 29/6
13 Oldham Ripponden	2,900	1758		20	4	10		1						5						Wakefield	WRT 70
14 Dewsbury & Horbury Bridge	3,075	1821		23			2	1	6				7					1	0	Wakefield	WRT 23/1
15 Holme Lane End & Heckmondwike	3,520	1826	3,400		14															Wakefield	WRT 46/16
16 Wadsley & Langsett & Sheffield	5,537	1833			8		3									1				Wakefield	WRT 100/3
17 Wadsley & Langsett & Sheffield	3,629	1823	3,500	29			2	2			3		2							Wakefield	WRT 100/3
18 Rotherham & wortley	2,400	1821			13	2	1				1			1		2				Wakefield	WRT 80
19 Ilkely Skipton Kirstall	14,200				26		15	1	5					5						Bradford	5D76/3/1
20 Bradford Thornhill	3,600				5		1		1							1	2			Bradford	5D76/2/2
21 Chapel en le Frith & Enterclough	5,790	1834		28		1	2		2		1		1	6				Benevolent Soc		Sheffield	ACM D58
22 Glossop & Marple Bridge	965	1805		17			1		3				1							Sheffield	
23 Campden & Clifford	1,200	1824			1											1				Warwick	CR446/46
24 Wootton Rd	1,800	1814			8	1	4					2				1				Warwick	CR446/9
25 Arrow & Pot hooks End Rd	2,600				11	1	4									2				Warwick	CR446/11
26 Evesham & Alcester	1,820	1817			4	1	2				1									Warwick	CR446/24
27 Banbury Bailes	3,490	1802		67		1	25			1	2	30	8						5	Warwick	CR/580/b53/8
28 Heywood	4,515	1798			35		13	1	4		2	10	1		3	2			1	Lancs	TTH
29 Bury Haslingden	11,800				30	2	5				1			6				charity sch		Lancs	TTA/6
30 Greenwood & Carnforth	9,550			46		1	19				1		2	7		2				Lancs	TTK/8
31 Clitheroe Blackburn	9,186				17		3	1	4					5		2		1 borough		Lancs	TTB/2
32 mkt harboro' Coventry	7,300	1755-70			17	5	4							6			2			Leicester	T/X/16/1
33 Tamworth Sawley Ferry	3,964			59			20				2	5	23	15			2			Leicester	T/X/19/1
34 Moira Gresley	3,185			43		2	14					2	11	2		4	8		1	Leicester	T/X/9/1
35 Melton Mowbray Leicester	2,200				11		5				1		1	4						Leicester	T/X/3/1
36 Leicester Hinckley	5,100				28	1	11	1					1	5		2	7	1 parish		Leicester	T/X/4/1
37 Chester Frodshaw rd	5,020	1789		31			14	2			1	5	1	8					1	Chester	LTB/2
38 Chester Northrop rd	4,300	1828		11			4						3	4				sheff corp		Chester	LTD/2
39 Duffield Sheffield	16,740				32	2	6			1	1			2	6	3		1	2	Matlock	D7/3
40 Brimington Chesterfield	2,087				6		2							3		1				Matlock	D1A/TA 156-16
41 Chesterfield Worksop	7,300				7		2	1					1	1						Matlock	D3/A/TA1
totals	**205,874**		**21,900**	**565**	**283**	**55**	**231**	**23**	**39**	**1**	**25**	**55**	**87**	**100**	**16**	**27**	**21**	**14**	**10**		

Turnpike Trusts. Debt write off 1850 to 1883. Losses to non PWLB lenders

Appendix 3.c

Source documents BPP ref		outstanding debt £000	mortgage debt £000	of which unpaid interest £000	Principal repaid £000	Interest repaid £000	Reduct'n in mortgage £000	Written off principal £000	interest due @ 5.00% £000	forgone interest £000	p in £ paid on principal	p in £ paid on interest
1852-3(1573)	1850	8,154	6,454	1,574	134	257	246	112	323	66	0.54	0.80
1854(1805)	1851	7,749	6,211	1,415	113	246	243	130	311	65	0.47	0.79
1854(1851)	1852	7,257	6,031	1,127	131	239	180	49	302	63	0.73	0.79
1854-5(2000)	1853	6,921	5,881	943	142	226	150	8	294	68	0.95	0.77
1856(2146)	1854	6,661	5,724	841	136	218	157	21	286	68	0.87	0.76
1857-8(2400)	1855	6,428	5,586	756	117	210	138	21	279	69	0.85	0.75
1859(2509)	1856	6,244	5,399	754	119	186	187	68	270	84	0.64	0.69
1860(2731)	1857	6,124	5,272	767	118	182	127	9	264	82	0.93	0.69
1861(2868)	1858	5,991	5,128	783	131	176	144	13	256	80	0.91	0.69
1862(3044)	1859	5,844	4,973	796	139	172	155	16	249	77	0.90	0.69
1863 (3210)	1860	5,654	4,822	760	143	165	151	8	241	76	0.95	0.68
1864(3413)	1861	5,450	4,660	711	143	154	162	19	233	79	0.88	0.66
1865(3561)	1862	5,205	4,459	672	148	160	201	53	223	63	0.74	0.72
1866(3743)	1863	4,865	4,232	556	147	135	227	80	212	77	0.65	0.64
1866(3743-1)	1864	4,620	4,046	498	161	130	186	25	202	72	0.87	0.64
1867(3935)	1865	4,363	3,852	437	176	121	194	18	193	72	0.91	0.63
1867-8(4002)	1866	4,067	3,624	383	188	112	228	40	181	69	0.82	0.62
1868-9(4219)	1867	3,753	3,371	325	208	103	253	45	169	66	0.82	0.61
1870(53)	1868	3,567	3,184	332	167	90	187	20	159	69	0.89	0.57
1871(454)	1869	3,289	2,944	302	183	87	240	57	147	60	0.76	0.59
1872(623)	1870	3,066	2,723	304	181	78	221	40	136	58	0.82	0.57
1873(835)	1871	2,839	2,497	308	186	73	226	40	125	52	0.82	0.58
1874(1051)	1872	2,580	2,295	256	149	69	202	53	115	46	0.74	0.60
1875(1344)	1873	2,202	2,057	117	150	57	238	88	103	46	0.63	0.55
1876(1619)	1874	1,905	1,792	91	153	44	265	112	90	46	0.58	0.49
1877(1844)	1875	1,631	1,544	64	142	36	248	106	77	41	0.57	0.47
1878-9(2365)	1876	1,355	1,283	52	120	26	261	141	64	38	0.46	0.41
1880(2516)	1877	1,051	1,010	28	117	18	273	156	51	33	0.43	0.36
1880(2647)	1878	751	713	26	117	16	297	180	36	20	0.39	0.45
1881(2966)	1879	581	550	21	68	9	163	95	28	19	0.42	0.33
1882(3214)	1880	449	426	21	55	8	124	69	21	13	0.44	0.38
1883(3750)	1881	370	342	20	36	6	84	48	17	11	0.43	0.35
1884(4168)	1882	250	276	19	36	5	66	30	14	9	0.55	0.36
Lenders expected to be paid			**6,454**	**1,574**					**5,668**			**13,696**
What they were paid					**4,454**	**3,814**						**8,268**
What they lost				**1,574**				**1,970**		**1,854**		**5,398**

Workhouses. Basic data by county and region

Appendix 4.A

county	region	Populations: Pop 1831	Populations: pop 1841	Poor relief spending: spend 1834	Poor relief spending: spend 1844	pwlb loans	Adjustments to PLC sanctions: PLC sanctn	Adjustments to PLC sanctions: Pre 1834 wkhses	Adjustments to PLC sanctions: Gilbert & local unions	Adjustments to PLC sanctions: 1845-6 capital spend	Adjustments to PLC sanctions: Capital stock at end 1844	Per head of population: Capital stock end 1844	Per head of population: Poor relief 1834	Per head of population: Poor relief 1844	Poor relief saving: Poor relief saving	Poor relief saving: payback period, years	county
		col 1 000	col 2 000	col 3 £000	col 4 £000	col5 £000	col 6 £000	col 7 £000	col 8 £000	col 9 £000	col 10 £000	col 11 £.p	col 12 £.p	col 13 £.p	col 14	col 15 £000	col 16	
beds	e	95	108	78	41	35	34	4			38	0.40	0.82	0.38	54%	48	0.7	beds
berks	se	145	162	100	74	35	60	12			72	0.50	0.69	0.46	34%	38	1.6	berks
bucks	se	147	156	124	76	34	57				57	0.39	0.84	0.49	42%	56	1.0	bucks
cambs	e	144	164	96	70	28	58				58	0.40	0.67	0.43	36%	39	1.5	cambs
cheshire	nw	334	396	93	84	43	46	4	2	4	56	0.17	0.28	0.21	24%	26	1.7	cheshire
cornwall	sw	301	342	93	75	28	55				55	0.18	0.31	0.22	29%	31	1.8	cornwall
cumberland	nw	170	178	43	36	14	17	12			29	0.17	0.25	0.20	20%	9	1.9	cumberland
derbys	em	237	272	72	58	22	42	4		7	53	0.22	0.30	0.21	30%	25	1.7	derbys
devon	sw	494	533	211	181	14	92	8	6		106	0.21	0.43	0.34	20%	47	2.0	devon
dorset	sw	159	175	84	79	25	56	4			60	0.37	0.53	0.45	15%	13	4.1	dorset
durham	ne	254	308	79	81	14	28				28	0.11	0.31	0.26	15%	15	1.9	durham
essex	e	318	345	240	160	84	139	4		1	144	0.45	0.75	0.46	39%	100	1.4	essex
gloucs	sw	387	431	161	135	64	89	12	2	18	121	0.31	0.42	0.31	25%	44	2.0	gloucs
hants	se	314	355	203	137	72	86	28	10		124	0.39	0.65	0.39	40%	93	0.9	hants
hereford	wm	111	113	57	43	12	29			2	31	0.28	0.51	0.38	26%	15	2.0	hereford
herts	e	143	157	86	61	27	60	12			72	0.50	0.60	0.39	35%	33	1.8	herts
hunts	e	53	59	36	24	13	13				13	0.25	0.68	0.41	40%	16	0.8	hunts
kent	se	479	540	344	194	142	189	8	2		199	0.42	0.72	0.36	50%	194	1.0	kent
lancs	nw	1337	1667	253	330	88	116	12	2	11	141	0.11	0.19	0.20	-5%	-15	-8.0	lancs
leics	em	197	216	101	79	39	56				56	0.28	0.51	0.37	29%	32	1.8	leics
lincs	em	317	363	161	113	41	90	4		1	95	0.30	0.51	0.31	39%	71	1.3	lincs
middx	l/m	1358	1601	582	457	62	124	176	4	10	314	0.23	0.43	0.29	33%	229	0.5	middx
norfolk	e	390	413	308	189	52	92	28	4		124	0.32	0.79	0.46	42%	137	0.7	norfolk
northants	em	179	199	140	89	54	69	4			73	0.41	0.78	0.45	43%	67	1.0	northants
northumberlan	ne	223	266	72	71	19	32	8		1	41	0.18	0.32	0.27	17%	15	2.1	northumberland
notts	em	225	250	66	69	29	49	12			61	0.27	0.29	0.28	6%	4	11.3	notts
oxon	se	152	163	121	77	45	58	8	2		68	0.44	0.80	0.47	41%	53	1.1	oxon

rutland	em	19	21	9	8	4	7				7	0.38	0.47	0.38	20%	2	3.7	rutland
salop	wm	223	226	82	69	7	30	28	4	1	63	0.28	0.37	0.31	17%	14	2.1	salop
somerset	sw	404	436	176	159	55	121			1	122	0.30	0.44	0.36	16%	31	3.9	somerset
staffs	wm	411	509	121	114	71	83	12	4	1	100	0.24	0.29	0.22	24%	36	2.3	staffs
suffolk	e	296	315	246	136	32	70	28			98	0.33	0.83	0.43	48%	126	0.6	suffolk
surrey	se	486	570	262	199	92	140	16	4	1	161	0.33	0.54	0.35	35%	108	1.3	surrey
sussex	se	272	300	247	142	68	106	44	10		160	0.59	0.91	0.47	48%	130	0.8	sussex
Wales	w	904	1045	316	304	120	160			5	165	0.18	0.35	0.29	17%	61	2.6	Wales
warwicks	wm	337	402	158	102	13	35	20	4		59	0.17	0.47	0.25	46%	86	0.4	warwicks
westmoreland	nw	55	56	22	19	0	2	8			10	0.18	0.40	0.34	15%	3	0.6	westmoreland
wilts	sw	240	256	174	136	41	72	8	2	8	90	0.37	0.73	0.53	27%	50	1.4	wilts
worcs	wm	211	248	82	67	32	53	4		1	58	0.28	0.39	0.27	30%	29	1.8	worcs
yorks e	y	204	194	91	74	11	26		2	3	31	0.15	0.45	0.38	14%	13	2.0	yorks e
yorks n	y	191	203	76	62	5	18	12	2		32	0.17	0.40	0.31	23%	19	0.9	yorks n
yorks w	y	976	1195	252	306	34	58	8	6	12	84	0.09	0.26	0.26	1%	3	22.8	yorks w
totals		**13892**	**15908**	**6318**	**4980**	**1718**	**2816**	**552**	**72**	**88**	**3528**	**0.25**	**0.45**	**0.31**	**31%**	**2255**	**1.2**	**totals**

Region		Pop 1831 000	pop 1841 000	spend 1834 £000	spend 1844 £000	£000	£000	Pre 1834 wkhses £000	Gilbert & local unions £000	1845-6 capital spend £000	Capital stock at end 1844 £000	£.p	Poor relief 1834 £.p	Poor relief 1844 £.p	Poor relief saving 0	Poor relief saving £000	payback period, years	
East	e	1439	1561	1090	681	269	465	76	4	1	546	0.38	0.76	0.44	42%	501	0.9	East
South East	se	1995	2246	1401	899	489	695	116	28	1	840	0.42	0.70	0.40	43%	678	1.0	South East
East Midlands	em	1174	1321	549	416	189	314	24	0	8	346	0.29	0.47	0.31	33%	202	1.6	East Midlands
South West	sw	1985	2173	899	765	228	484	32	10	27	553	0.28	0.45	0.35	22%	219	2.2	South West
London	l/m	1358	1601	582	457	62	124	176	4	10	314	0.23	0.43	0.29	33%	229	0.5	London
West Midlands	wm	1293	1498	500	395	134	231	64	12	5	312	0.24	0.39	0.26	32%	184	1.3	West Midlands
Wales	w	904	1045	316	304	120	160	0	0	5	165	0.18	0.35	0.29	17%	61	2.6	Wales
North East	ne	477	574	151	152	33	60	8	0	1	69	0.15	0.32	0.26	16%	30	2.0	North East
Yorkshire	y	1371	1592	419	442	50	101	20	10	15	146	0.11	0.31	0.28	9%	45	2.3	Yorkshire
North West	nw	1896	2297	411	469	145	181	36	4	15	236	0.12	0.22	0.20	6%	29	6.3	North West
	totals	**13892**	**15908**	**6318**	**4980**	**1718**	**2816**	**552**	**72**	**88**	**3528**	**0.25**	**0.45**	**0.31**	**31%**	**2255**	**1.2**	Totals
Sources		PLC 4th Ann Rpt	Mitchell & Deane			PWLB/PLC records	Morris on		Driver	Sum cols 5-8	col 9 / col 1		col 3 / col 1	col 4 / col 2	col 13/ col 12			

DERBYSHIRE POOR LAW UNIONS' DATA

Appendix 4.B

	pre 1834 places	Union formed	Population 1831	Agreed to build wkhse	expected places	expected cost	Wkhse opens	wkhse places	wkhse cost inc land +fees	Loan applications	Wkhse financing	pre wkhse pa spend	1844 spend	1841 pop	1834 spend/hd pop	1841 spend per head	reduction cost per head	payback period, years	cost per place	Derbyshire Record Office file	Kew archives file
Derby	208	March 1837	25,484	Jan 1837	350	5,360		300	6,460	sent pwlb applctn	£2K sales, bank £4K may '38	5,470	4,164	35,015	0.21	0.12	-45%	1.9	22		MH12/1 984-6
Bakewell	110	July 1838	25,879	Dec 1838	250	6,500	1841	200	7,900	pwlb out of cash, 5/'39, 6/'39 REA offer, ask Arkwright	pwlb £6500 July '40, £1400 REA Jan '42	6,392	6,969	31,319	0.25	0.22	-10%	10.3	40	D521/W 1	MH12/1 799-1800
Belper	120	May 1837	33,388	May 1837	250	3,700	Sept 1840	300	9,450	Derby bank treas, but no loan	PWLB £7550 > aug 1838, £2000 Jan '41, pvte	6,161	5,865	46,235	0.18	0.13	-31%	3.5	32	D19/C/ W1	MH12/1 840-2
Chesterfield	168	Oct 1837	34,246	Oct 1837	300	6,240	Dec 1839	300	9,500	1900 pwlb no cash. Cld later have had pwlb	PWLB £6900, 7/'38, £2600 REA sept '40	8,874	9,253	39,379	0.26	0.23	-9%	10.0	32	D522	MH12/1 921-2
Chapel en le Frith	140	Dec 1837	10,488	April 1839	100	2,000		100	3,160	pwlb no cash	Nov '39 £2160 REA, Oct '41 £1000 REA	2,344	2,404	11,349	0.22	0.21	-5%	23.9	32	D442//C/ W2-3	MH12/1 891-2
Hayfield		Dec 1837	9,493	Dec 1837	100	1,750	mid 1841	120	2,700		£2000 econ life, 2/'39	1,500	2,195	9,516	0.16	0.23	46%	-3.9	23	D441/C/ W1-2	MH12/2 040-1
Shardlow		March 1837	29,812	march 1837	230	1,500	may 1839	230	3,400	ask derby bank for loan terms	robert storer £2800 + hepworth £600	6,318	8,041	32,640	0.21	0.25	16%	-3.0	15	D523/C /W1/1	MH12/2 060-2
Ashbourne	150		20,658		200	5,000	1848	160	8,000	appl REA for £1.5K, audtr REA agent	2/'46 pwlb £6500, £1500 6/'48 pwlb	5,567		20,658	0.27	0.00			50	D520	MH12/1 772
Glossop		Dec 1837	9,631				1834	100	1,500		£1000 Robert Shepley	1,075	1,288	14,575	0.11	0.09	-21%	4.4	15	D2125/ 2	MH12/2 021-2
totals	**896**		**178,421**		**1,780**	**32,050**		**1,810**	**52,070**	**62%**	**29,650**	**38,134**	**40,179**	**220,028**	**0.21**	**0.18**	**-15%**	**7.6**	**29**		

Sources	www.workhouses.org	PLC annual Reports	Union minute books in Derbyshire Record Office and Derby local studies library, plus MH12 files for each Union	PWLB loan ledger & MH34	PLC Ann Rpts	PLC 11th ann rpt 1845 (660) app c	Shaw's Union Officers Manual 1850

Annual water and sewer spending authorisations, and PWLB lending

	GBH/LGB etc sanctions £000	Local Acts Local bodies £000	Local Acts Water companies £000	Metro. Board of Works £000	Manuf districts £000	total, all sources £000	PWLB lending £000	PWLB share
1845		73	516			589	-	0%
1846		65	1,213			1,278	-	0%
1847		1130	603			1,733	-	0%
1848		-	335			335	-	0%
1849		49	205	50		304	-	0%
1850	41	91	415	58		605	-	0%
1851	66	555	86	96		803	-	0%
1852	205	52	1,917	33		2,207	-	0%
1853	487	367	1,109	130		2,093	6	0%
1854	557	344	945	268		2,114	88	4%
1855	369	315	1,136			1,820	48	3%
1856	318	190	591	80		1,179	61	5%
1857	284	13	623	62		982	62	6%
1858	338	620	238	41		1,237	17	1%
1859	157	12	304	212		685	3	0%
1860	209	335	757	374		1,675	32	2%
1861	216	137	687	704		1,744	45	3%
1862	188	155	789	852		1,984	54	3%
1863	213	248	403	917	160	1,941	167	9%
1864	220	537	1,580	1,083	570	3,990	585	15%
1865	588	340	448	1,280	17	2,673	62	2%
1866	396	285	2,245	1,120		4,046	147	4%
1867	397	1,414	1,591	722		4,124	59	1%
1868	464	662	1,539	653		3,318	46	1%
1869	346	560	1,587	352		2,845	35	1%
1870	714	1,005	395	305		2,419	22	1%
1871	851	580	655	179		2,265	20	1%
1872	341	1,138	783	215		2,477	18	1%
1873	586	366	684	274		1,910	524	27%
1874	1,033	422	401	175		2,031	725	36%
1875	1,221	1,734	1,923	149		5,027	1,692	34%
1876	1,079	1,800	1,176	-		4,055	1,331	33%
1848-76 total	**11,886**	**14,326**	**25,547**	**10,384**	**747**	- **62,890**	**5,849**	**9%**

Sources: Sanctions from HLG16, Local Acts from British Library, Local & Personal Act annual vols, except for 1871 &73, from BoT reports. MBW from annual reports. PWLB, PWLB 6/1-6.

Notes: The PWLB granted applications worth £8.1m between 1848 and 1876. But £0.8m of these where from Scotland, and are excluded or the above table which covers England and Wales only. In addition, £1.5m of applications granted in 1875 and 1876 were not paid until five or more years after 1876. They are therefore excluded from the above table.

Number and value of water and sewer applications to the PWLB, and their outcome

	Applications		Loans Granted		Success rate	
	Number	£000	Number	£000		No.
Year						
1848	4	107	0	-	0%	0
1849	3	8	0	-	0%	0
1850	4	52	0	-	0%	0
1851	2	10	0	-	0%	0
1852	5	44	0	-	0%	0
1853	7	269	2	6	29%	2
1854	14	170	7	88	50%	7
1855	19	182	9	48	47%	9
1856	9	66	6	61	67%	6
1857	7	68	5	62	71%	5
1858	3	23	2	17	67%	2
1859	2	4	2	3	100%	2
1860	3	32	3	32	100%	3
1861	4	45	4	45	100%	4
1862	5	54	5	54	100%	5
1863	26	167	26	167	100%	26
1864	71	646	66	585	93%	66
1865	10	62	10	62	100%	10
1866	34	176	27	147	79%	27
1867	35	155	23	59	66%	23
1868	22	154	17	46	77%	17
1869	22	59	17	35	77%	17
1870	15	29	11	22	73%	11
1871	14	21	12	20	86%	12
1872	13	25	10	18	77%	10
1873	84	570	77	524	92%	77
1874	125	738	121	725	97%	121
1875	439	2,665	398	1,692	91%	398
1876	363	1,520	348	1,331	96%	348
Totals	**1,364**	**8,121**	**1,208**	**5,849**	**89%**	1208

Source: Analysis of PWLB applications register, PWLB 6/1a, 6/2-6

Notes: See note in Appendix 5.A

Basic national level school data on places and financing

Appendix 6.A

	BPP number	School places to 31 aug prev year board	vol	All schls	Borrowing pwlb to 31-Mar £	mbw £	other £	pwlb etc plc all places £	£	pwlb share of borrowing	govt grant £	implied vol contribs £M	implied sch brd cost £M	implied total cost £M
1870	165		1,765,944	1,765,944								0.0	0.0	0.0
1871	406		1,878,584	1,878,584								0.5	0.0	0.5
1872	601	8,700	2,003,979	2,012,679								1.0	0.1	1.0
1873	812	70,000	2,225,894	2,295,894								1.8	0.6	2.4
1874	1019	138,300	2,444,249	2,582,549				266,784			252,935	2.7	1.1	4.1
1875	1265	245,508	2,626,318	2,871,826				370,956			266,694	3.4	2.0	5.7
1876	1513	386,400	2,760,024	3,146,424	4,607,605	90,000	20,000	491,854	4,717,605	100%	286,597	4.0	3.1	7.4
1877	1780	556,150	2,870,168	3,426,318	6,422,234	90,000	20,000	621,831	6,532,234	100%	303,397	4.4	4.4	9.2
1878	2048	705,122	2,948,296	3,653,418	8,217,941	90,000	20,000	743,364	8,327,941	100%	303,012	4.7	5.6	10.7
1879	2342	890,164	3,052,173	3,942,337	9,520,428	90,000	20,000	835,699	9,630,428	100%	307,052	5.1	7.1	12.6
1880	2562	1,016,464	3,125,760	4,142,224	10,615,919	590,000	20,000	928,177	11,225,919	66%	310,106	5.5	8.1	13.9
1881	2948	1,082,634	3,158,119	4,240,753	11,055,374	990,000	20,000	1,019,119	12,065,374	49%	311,544	5.6	8.7	14.5
1882	3312	1,194,268	3,195,365	4,389,633	11,836,818	1,390,000	20,000	1,124,524	13,246,818	56%	312,020	5.7	9.6	15.6
1883	3706	1,298,746	3,239,574	4,538,320	12,390,007	1,890,000	20,000	1,211,250	14,300,007	51%	312,200	5.9	10.4	16.6
1884	4091	1,396,604	3,273,839	4,670,443	12,797,650	2,740,000	20,000	1,319,245	15,557,650	42%	312,200	6.0	11.2	17.5
1885	4483	1,490,174	3,336,564	4,826,738	13,181,191	3,340,000	276,698	1,416,409	16,797,889	32%	312,200	6.3	11.9	18.5
1886	4849	1,600,718	3,338,000	4,938,718	13,450,832	3,730,000	605,747	1,489,729	17,786,579	34%	312,200	6.3	12.8	19.4
Sources		BPP as shown in left hand cols.			PWLB Annual Reports	MBW Annual Reports	BPP 1875 (268) Schl Brd loans			Unit costs	BPP as in LH cols 6	See text box 4	below 4	8

Notes PWLB lending data is based on cash advances, not loan commitments. There were no PWLB annual Reports in the years 1870-75.

The estimate of the total investment is based on two principles. First that there was a 2-3 year delay between PWLB granting a loan, and the resulting school places appearing in the annual return. (Or a two year delay between the cash advance appearing in PWLB annual report and the places in the statistics) The second principle is that a school place funded by PWLB cost £8 each, while a place financed by vol contribs cost £4 each.

The rest is simple. By 1876, pwlb had agreed loans of £8M. These only turned into 1M places by 1879. So £8 a place. For vol sector £4 a place is assumed (based on AR £5M & 1.2M places, and local records) - but grant aided sch cost £6 a place.

The cost of the new school places provided in the 1870s is therefore:

1 million school board places @£8 =	£8.1M
1.4 million voluntary places @ £4 =	£5.5M
Government grant	£0.3M
Total cost of extra places in 1870	£13.9M

The table that follows shows the data for the 150 odd borough school boards in England and Wales. The aim is to show the change in school place numbers between 1869 and 1879; the reduction in the shortage of places between those dates; the level of loans granted by the PWLB; and the population for each borough.

The data comes from four separate sources. The list of borough school boards and their populations are from BPP 1878 (2342) pp. 2-54. Most of the data was cross checked with the 1871 census populations in BPP 1872 (676). The 1869 school attendance date is from BPP 1870 (165), pp. 541-690, the Committee of Council on Education annual report for 1870. The PWLB lending comes from the PWLB 6/1-6 applications ledger. Finally, the 1879 school places come from the Committee of Council annual report for 1879, BPP 1880 (2562) pp. 549-757.

This data was used to calculate the shortage of school places in 1869 and 1879, the PWLB borrowing per head of population and per school place, and the extent to which boroughs relied on PWLB lending rather than voluntary contributions to fund new school places. Producing this analysis raised a number of challenges. These are, with the solutions adopted:
1) The 1869 school data only include average school attendance numbers, not place numbers. Nationally, average attendance was 60% of the available place numbers. Therefore place numbers for each borough have been derived by dividing attendance numbers by 0.6.
2) 31 August 1869 was used as the starting point for the comparison - rather than the more obvious 31 August 1870, because the annual reports and associated commentary used 1869. To have used 1870 would have involved a series of qualifications.
3) 1871 census populations are used for both 1869 and 1879 comparisons, even though the population had increased by around 10% over the ten years. This is not ideal, but annual estimated populations after 1871 were only available at national level, not at borough level. An alternative would have been to use a scaled back set of 1881 census populations for each borough. While this may have been acceptable for the boroughs, it would not have made sense for the much smaller parishes.
4) There was a timescale challenge. There was normally a gap of up to two years between the PWLB granting a loan to a school board, and the full loan being advanced. There was then a further gap of a year before the place and attendance data for the new or enlarged school appeared in the annual report statistics. The best combination was therefore felt to be the PWLB loan data up to the end of 1876 with published school data for the year up to 31 August 1879. This also gave a clear 10 year period from 1869 to 1879.
5) There is an inconsistency between the 1,016,000 new school board provided places in the annual report narrative summary, and the 970,000 school board places in the 150 pages listing individual schools. This is a discrepancy of 4.6%. However, the total number of school places in the narrative summary, and the total from the 150 pages are only an acceptable 0.5% different. The most likely explanation of the 4.6% discrepancy is that a number of school board schools have not been identified as such in the 150 pages. The figures that follow record the actual numbers from the 150 pages, but in the tables derived from these numbers, school board numbers have been grossed up by 4.6%, and voluntary school numbers have been reduced by the same number. The result is tables that are consistent with the published totals, while reflecting the detail in the 150 pages.

Similar analyses were undertaken for parish school board areas, and for boroughs and parishes that did not form school boards. In the vast majority of cases results are only shown for eight large groups of areas: school boards in: London; the five largest boroughs; boroughs with populations over 50,000; and all smaller boroughs; and large and small parishes with school boards; and boroughs and parishes without school boards. The large size of these groupings significantly reduces the risks associated with the six challenges referred to above, and avoid the problems of using small data samples drawn from a much larger data set.

Borough School Boards

PWLB lending		1871 census population	1869 returns attendance	1869 returns places	1879 place returns school boards	1879 place returns voluntary schools	1879 place returns all places	share of new places pwlb funded	Shortage of places 1869	Shortage of places 1879	PWLB lending: per head £	PWLB lending: per place £
141,120	liverpool	493,405	20,705	34,508	14,239	51,318	65,557	46%	58%	20%	0.29	10
71,846	manchester	351,189	11,541	19,235	14,383	32,398	46,781	52%	67%	20%	0.20	5
291,859	birmingham	343,787	12,863	21,438	20,572	29,080	49,652	73%	63%	13%	0.85	14
197,282	leeds	259,812	9,282	15,470	25,777	19,996	45,773	85%	64%	-6%	0.76	8
164,921	sheffield	239,946	6,304	10,507	15,265	19,111	34,376	64%	74%	14%	0.69	11
57,302	bristol	182,552	5,871	9,785	4,106	17,131	21,237	36%	68%	30%	0.31	14
156,976	bradford	147,101	4,464	7,440	14,464	15,185	29,649	65%	70%	-21%	1.07	11
54,021	newcastle	128,443	4,299	7,165	3,201	11,742	14,943	41%	67%	30%	0.42	17
18,830	nottingham	127,023	4,724	7,873	5,323	13,926	19,249	47%	63%	9%	0.15	4
1,640	salford	124,801	5,453	9,088	496	16,887	17,383	6%	56%	16%	0.01	3
78,934	hull	121,892	4,074	6,790	9,006	10,166	19,172	73%	67%	6%	0.65	9
76,901	portsmouth	113,569	253	422	8,895		8,895	105%	98%	53%	0.68	9
47,504	sunderland	98,242	1,549	2,582	5,765	3,239	9,004	90%	84%	45%	0.48	8
66,609	leicester	95,220	4,183	6,972	6,996	10,676	17,672	65%	56%	-11%	0.70	10
47,581	brighton	92,481	3,521	5,868	4,339	8,817	13,156	60%	62%	15%	0.51	11
11,952	stoke	89,262	892	1,487	2,468	2,432	4,900	72%	90%	67%	0.13	5
1,890	preston	85,427	7,975	13,292		23,027	23,027	0%	7%	-62%	0.02	

PWLB lending		1871 census population	1869 returns attendance	1869 returns places	1879 place returns school boards	1879 place returns voluntary schools	1879 place returns all places	%age of new places pwlb funded	Shortage of places 1869	Shortage of places 1879	PWLB lending per head	PWLB lending per place
10,851	bolton	82,853	4,309	7,182	1,124	16,158	17,282	11%	48%	-25%	0.13	10
12,500	oldham	82,629	2,060	3,433	2,101	11,659	13,760	20%	75%	0%	0.15	6
22,951	norwich	80,386	3,322	5,537	5,542	3,816	9,358	145%	59%	30%	0.29	4
	blackburn	76,339	5,236	8,727	235	17,443	17,678	3%	31%	-39%	0.00	0
78,141	huddersfield	70,355	2,210	3,683	8,092	4,780	12,872	88%	69%	-10%	1.11	10
27,138	plymouth	68,758	3,947	6,578	3,377	6,913	10,290	91%	43%	10%	0.39	8
19,382	wolverhampto	68,291	3,986	6,643	4,265	8,523	12,788	69%	42%	-12%	0.28	5
33,358	halifax	65,510	3,271	5,452	4,688	7,508	12,196	70%	50%	-12%	0.51	7
5,420	rochdale	63,473	1,988	3,313	2,255	6,325	8,580	43%	69%	19%	0.09	2
61,400	swansea	61,390	2,270	3,783	4,748	3,970	8,718	96%	63%	15%	1.00	13
30,908	croydon	55,652	2,628	4,380	3,441	3,514	6,955	134%	53%	25%	0.56	9
13,665	southampton	53,741	2,024	3,373	3,291	4,741	8,032	71%	62%	10%	0.25	4
	stockport	53,014	1,417	2,362		5,573	5,573	0%	73%	37%	0.00	
2,700	bath	52,557	2,110	3,517	1,056	4,771	5,827	46%	60%	33%	0.05	3
	derby	49,810	4,655	7,758	2,822	9,273	12,095	65%	7%	-46%		
	devonport	49,449	1,268	2,113	2,854	3,334	6,188	70%	74%	25%		
PWLB	gateshead	48,627	2,466	4,110	5,431	3,409	8,840	115%	49%	-9%	Because PWLB	
lending to	walsall	46,447	1,777	2,962	2,776	3,268	6,044	90%	62%	22%	lending has not	
small	south shields	45,336	2,789	4,648	3,683	4,523	8,206	104%	38%	-9%	been separated	
boroughs	dudley	43,782	1,076	1,793	2,390	3,039	5,429	66%	75%	26%	over the 102	
was not	ipswich	42,947	2,435	4,058	2,774	4,013	6,787	102%	43%	5%	smaller	
separated	gt yarmouth	41,810	1,525	2,542	977	3,334	4,311	55%	64%	38%	boroughs,	
over the	northampton	41,168	2,477	4,128	3,455	4,389	7,844	93%	40%	-14%	PWLB loans per	
102 smaller	burnley	40,858	2,434	4,057		7,792	7,792	0%	40%	-14%	place and per	
boroughs.	hanley	39,976	852	1,420	3,258	1,860	5,118	88%	79%	23%	head have only	
Instead it	middlesboro	39,543	1,373	2,288	3,855	4,661	8,516	62%	65%	-29%	been calculated	
was	cardiff	39,536	2,496	4,160	1,679	3,859	5,538	122%	37%	16%	for all the	
treated as	wigan	39,110	2,559	4,265		9,894	9,894	0%	35%	-52%	smaller	
a single	tynemouth	38,941	200	333	2,135	1,491	3,626	65%	95%	44%	boroughs as a	
total of	coventry	37,670	1,416	2,360	1,270	4,965	6,235	33%	62%	1%	block.	
£778,000.	exeter	36,362	1,145	1,908	1,528	3,128	4,656	56%	69%	23%		
	macclesfield	35,450	1,018	1,697		3,791	3,791	0%	71%	36%		
	worcester	33,226	2,049	3,415	810	4,166	4,976	52%	38%	10%		
	oxford	32,477	1,131	1,885		5,015	5,015	0%	65%	7%		
	reading	32,324	1,824	3,040	2,489	4,609	7,098	61%	44%	-32%		
	Ashton	31,984	1,253	2,088		7,608	7,608	0%	61%	-43%		
	carlisle	31,949	2,173	3,622	1,161	3,690	4,851	94%	32%	9%		
	hastings	30,889	655	1,092	1,362	2,175	3,537	56%	79%	31%		
	newport	30,269	724	1,207	858	2,491	3,349	40%	76%	34%		
	rotherham	28,892	859	1,432	1,289	1,230	2,519	119%	70%	48%		
	maidstone	28,196	1,435	2,392		4,373	4,373	0%	49%	7%		
	wakefield	28,069	1,765	2,942	1,126	4,342	5,468	45%	37%	-17%		
	stockton	27,738	868	1,447	1,174	2,812	3,986	46%	69%	14%		
	darlington	27,729	2,299	3,832	2,339	3,570	5,909	113%	17%	-28%		
	burton	25,731	1,022	1,703	4,083	1,573	5,656	103%	60%	-32%		
	dewsbury	24,764	795	1,325	2,861	1,924	4,785	83%	68%	-16%		
	scarboro	24,259	644	1,073	2,243	2,168	4,411	67%	73%	-9%		
	barnsley	23,021	1,707	2,845	1,355	3,032	4,387	88%	26%	-14%		
	gravesend	21,416	824	1,373	600	1,888	2,488	54%	62%	30%		
	staleybridge	21,092	652	1,087		2,122	2,122	0%	69%	40%		
	canterbury	20,962	827	1,378	606	2,353	2,959	38%	61%	15%		
	batley	20,871	728	1,213	1,493	1,619	3,112	79%	65%	11%		
	luton	20,733		-	1,510	2,253	3,763	40%	100%	-9%		
	grimsby	20,244	640	1,067	1,045	1,897	2,942	56%	68%	13%		
	longton	19,748		-	1,630	1,425	3,055	53%	100%	7%		
	kidderminster	19,173	1,126	1,877	1,157	2,738	3,895	57%	41%	-22%		
	rochester	18,352	506	843	822	992	1,814	85%	72%	41%		
	gloucester	18,341	1,959	3,265	150	4,166	4,316	14%	-7%	-41%		

pwlb lending		1871 census population	1869 returns attendance	1869 returns places	1879 place returns school boards	1879 place returns voluntary schools	1879 place returns all places	%age of new places pwlb funded	Shortage of places 1869	Shortage of places 1879	PWLB lending head	PWLB lending place
	barrow	18,245	908	1,513	4,305	2,675	6,980	79%	50%	-130%		
	bootle	16,247	898	1,497		3,291	3,291	0%	45%	-22%		
	newcastle	15,948	1,058	1,763	1,085	1,900	2,985	89%	34%	-12%		
	stafford	14,437	1,036	1,727		2,385	2,385	0%	28%	1%		
	durham	14,406	842	1,403		3,032	3,032	0%	42%	-26%		
	margate	13,903	719	1,198	396	1,401	1,797	66%	48%	22%		
	pembroke	13,794	786	1,310	1,621	573	2,194	183%	43%	5%		
	kendal	13,448	1,249	2,082		3,028	3,028	0%	7%	-35%		
	hartlepool	13,166	941	1,568	588	2,795	3,383	32%	29%	-54%		
	salisbury	12,903	962	1,603		2,010	2,010	0%	25%	7%		
	bridgewater	12,789	614	1,023	727	641	1,368	211%	52%	36%		
	ryde	12,576	489	815	1,092	876	1,968	95%	61%	6%		
	newark	12,195	885	1,475		2,323	2,323	0%	27%	-14%		
	swindon	11,720	906	1,510	510	2,119	2,629	46%	23%	-35%		
	barnstable	11,679	682	1,137		2,004	2,004	0%	42%	-3%		
	chesterfield	11,427	534	890	1,333	1,159	2,492	83%	53%	-31%		
	congleton	11,344	674	1,123		2,285	2,285	0%	41%	-21%		
	carmarthen	10,488	807	1,345	688	1,214	1,902	124%	23%	-9%		
	falmouth	10,471	387	645		1,163	1,163	0%	63%	33%		
	tiverton	10,024	782	1,303	651	1,137	1,788	134%	22%	-7%		
	carnarvon	9,449	660	1,100	537	1,238	1,775	80%	30%	-13%		
	wisbeach	9,362	772	1,287	648	1,464	2,112	79%	18%	-35%		
	wrexham	8,576	513	855		1,605	1,605	0%	40%	-12%		
	yeovil	8,527	545	908	1,206		1,206	405%	36%	15%		
	st albans	8,298	349	582	97	1,038	1,135	18%	58%	18%		
	clitheroe	8,208	761	1,268		2,353	2,353	0%	7%	-72%		
	newport	7,956	210	350	645	1,027	1,672	49%	74%	-26%		
	oswestry	7,306	449	748	414	859	1,273	79%	39%	-5%		
	haverfordwest	7,199	472	787	800	495	1,295	157%	34%	-8%		
	st ives	6,965	370	617		505	505	0%	47%	56%		
	bideford	6,960	427	712	792	207	999	276%	39%	14%		
	aberystwyth	6,898	365	608	601	680	1,281	89%	47%	-11%		
	liskeard	6,644	240	400	323	488	811	79%	64%	27%		
	east retford	6,358	622	1,037		1,316	1,316	0%	2%	-24%		
	denbigh	6,323	355	592	760	336	1,096	151%	44%	-4%		
	brecon	6,145	387	645	117	803	920	43%	37%	10%		
	monmouth	5,879	167	278	203	353	556	73%	72%	43%		
	dartmouth	5,338	75	125	407		407	144%	86%	54%		
	beccles	4,844	270	450	608	388	996	111%	44%	-23%		
	chipping wyco	4,811	184	307	1,920		1,920	119%	62%	-139%		
	bodmin	4,672	274	457		571	571	0%	41%	27%		
	tamworth	4,589	159	265	676	211	887	109%	65%	-16%		
	thetford	4,260	273	455	535		535	669%	36%	25%		
	totnes	4,073		-	326	174	500	65%	100%	26%		
	rye	3,865	292	487	354	68	422	-547%	24%	34%		
	buckingham	3,803	309	515	210	513	723	101%	19%	-14%		
	helston	3,797	337	562		677	677	0%	11%	-7%		
	ruthin	3,685	454	757	280	299	579	-158%	-23%	6%		
	gt torrington	3,529			402	352	754	53%	100%	-28%		
	droitwich	3,504	322	537		610	610	0%	8%	-4%		
	cardigan	3,461	298	497	410	241	651	266%	14%	-13%		
	llandiloes	3,425	248	413	677	257	934	130%	28%	-64%		
	chard	3,296	190	317	350	501	851	66%	42%	-55%		
	sandwich	3,095	104	173	458		458	161%	66%	11%		
	pwllheli	3,009	319	532	364	217	581	738%	-6%	-16%		
	launceston	2,935	179	298	218	309	527	95%	39%	-8%		
	beaumaris	2,291	157	262	312		312	620%	31%	18%		
	hedon	996	-	-	170		170	100%	100%	-2%		
867,028	big 5 cities	1,688,139	60,695	101,158	95,236	151,903	242,139	68%	64%	14%	0.51	9
938,554	>50K populatic	2,340,961	88,036	146,727	115,274	238,922	348,196	57%	62%	11%	0.40	8
778,518	<50K	1,884,812	91,238	152,063	108,266	216,518	318,784	65%	52%	-1%	0.41	7
2,584,100	**totals**	**5,913,912**	**239,969**	**399,948**	**318,776**	**607,343**	**909,119**	**63%**	**59%**	**8%**	**0.44**	**8**

Source: BPP 1878 (2342) , BPP 1872 (676), BPP 1870 (165), BPP 1880 (2562), and PWLB 6/1-6 applications ledger.

Note: The four totals for school board places in 1879 have been grossed up by 4.6 per cent to reflect under recording of school board places in the details recorded for each borough. See appendix 6.B methodology note, section 5.

Appendix 7.A

Calculation of surpluses and losses on PWLB lending.

Lending stream	lent £m	Interest rates paid	charged	Sums written off PWLB £000	'Directed' £000	lost int	Average loan life years	Office expenses 0.004	Surplus loss £000	Annual impact on int rates
Civic improvement	7.7	3.29%	5.00%	10	-	88	20	30.8	1,189	-0.8%
Workhouses	3.7	3.27%	4.10%	4	-		18	14.7	258	-0.4%
Schools	10.2	3.22%	3.50%	0	-		50	41.0	686	-0.1%
Water & sewerage	8.3	3.23%	3.80%	7	-		30	33.3	668	-0.3%
Bridges	0.3	3.63%	5.00%	13	-		20	1.3	30	-0.5%
Mines	0.3	3.93%	5.00%	5	-	4	8	1.2	3	-0.1%
Canals	0.9	3.85%	5.00%	43	-		20	3.5	54	-0.3%
Other loans	1.6	3.52%	5.00%	5	166		20	6.6	66	-0.2%
Harbours	3.1	3.35%	3.25%	49	20	54	40	12.3	- 194	0.2%
Turnpike trusts	0.8	3.68%	5.00%	20	72	128	19	3.1	- 126	0.9%
Ireland	5.1	3.26%	3.75%	0	1,532	237	20	20.5	- 1,541	1.5%
Totals	**42.1**	**3.29%**	**4.05%**	**158**	**1,790**	**511**	**20**	**168**	**1,092**	**-0.1%**
Rate backed loans	29.9	3.25%	4.04%	20	-	88	33.0	119.8	2,800	-0.3%
Income backed loans	7.0	3.52%	4.23%	136	258	186	20.0	28.0	- 167	0.1%
Irish loans	5.1	3.26%	3.75%	0	1,532	237	20.0	6.6	- 1,541	1.5%
Sources:	Appendix 1.A	Homer.	BPP 1851 (512)	BPP 1880 (200)	BPP 1880 (200)	BPP 188 (200)	BPP 185 (512)	BPP 1888 (200)	see below	see below

Notes: 1. Surplus/loss over the life of the loan is calculated as
(sum lent * interest rate margin * loan life)/2 less sums written off and expenses.

2. Annual impact of surplus/loss is the extent to which
PWLB's interest rates needed to rise to recover the losses, or could have fallen to break even.

	Loans the PWLB made after parliamentary direction				
Area	Purpose	Act	Year	Sum lent £000	Sums written off £000
Roads	London-Holyhead Road	1&2 G IV c30	1823	36	
		6&7 W IV c35	1827	54	36
	Highland Roads	1 G IV c84	1820	52	36
	South Wales Trusts	7&8 V c91	1844	215	
Improvement	Charing Cross, London	7 G IV c109	1826	400	
	Battersea Park	9&10 V c38/83	1847	200	
Other	Thames Tunnel	3&4 W IV c121	1831	250	150
Bridges	Chelsea Bridge	9&10 V c39/83	1847	80	
Harbours	Dunbar harbour	20&21 V c63	1857	20	20
	Ceylon harbour and lighthouse	32&33 V c77/105	1869	320	
Rail	Plymouth Dartmoor	1 G IV c54	1820	18	16
Ireland	Workhouses	1&2 V c56	1839	1,422	1,370
	Rail loans	12&13 V c62	1849	500	
	Rail loans	29&30 V c95	1866	159	
	Rail loans	31&32 V c81	1868	320	42
	Ulster canal	10 G IV c109	1831	120	120
Totals				**4,166**	**1,790**

Sources: PWLB Annual reports 1876, and 1888, BPP 1876 (269) and BPP 1888 (200)

Notes: In each case the Act approving the scheme directed the PWLB to make a loan.
'Sums written off' excludes interest not received.
Charing Cross was the area now occupied by Trafalgar Square.

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