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SPECIFIC FACTORS, CAPITAL MARKETS, PORTFOLIO DIVERSIFICATION, AND FREE TRADE

Domestic Determinants of the Repeal of the Corn Laws

By CHERYL SCHONHARDT-BAILEY*

TWO strands of thought relating to Britain's historic move to free trade in 1846 offer contradictory interpretations of the underlying domestic economic and political forces at work. On the one hand, the Ricardo-Viner specific factors model implies that owners of two factors—land and capital—stood diametrically opposed to one another on the issue of free trade. In the end, according to this view, capital gained the upper hand as seen in the 1846 repeal of the Corn Laws. On the other hand, studies in the economic history literature posit that the economic interests of these two groups of factor owners were not mutually exclusive; rather, their interests overlapped as a result of rapid economic changes in the 1830s that intensified landowner diversification into nonagricultural ventures. The implication of the latter approach is that landowners as a group came to be divided between undiversified landowners, whose economic interests remained tied to agriculture, and diversified landowners, whose interests in agriculture had lessened while their interests in nonagricultural sectors had increased. Hence, the undiversified group remained the only true "losers" from free trade in grain; members of the diversified group, by contrast, stood to gain or simply became indifferent to free trade.

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Of course, inherent to both arguments is the assumption that members of Parliament voted according to the economic interests of their constituents. Elsewhere, I have demonstrated the validity of this assumption.[1] The scope and intent of this paper, then, is twofold. First, it discusses the specific factors model and its inadequacies as applied to nineteenth-century Britain, and it introduces two modifications that allow the model to account for the anomalies we observe in the British case. That is, I alter two key assumptions of the specific factors model by introducing the concepts of portfolio diversification and investment capital flows into the framework of factor specificity in the short run. The predicted political consequence of this modified version of the model is that diversification lessened widespread protectionist sentiment among the landed elite. In the context of a broader equilibrium model of trade policy liberalization, it disrupted the initial protectionist equilibrium by decreasing the political benefits that accrued to M.P.'s from voting in favor of protection.[2] Portfolio diversification alone did not give rise to free trade in Great Britain; but rather it was one of several factors that shifted the political cost/benefit ratio of M.P.'s in favor of free trade.

Second, this paper extends the concept of portfolio diversification, as presented in the economic history literature, to the realm of policy-making, using a statistical examination of the correlation between diminishing protectionist sentiment—through diversification—and the free trade policy outcome.

The Specific Factors Model and the Long- and Short-Run Dimensions of Capital Formation

The Ricardo-Viner specific factors model in neoclassical trade theory defines some factor inputs as industry specific and others as intersectorally mobile. Industry-specific factors give rise to industry-specific interests that may either favor or oppose protection, depending upon the form of trade competition facing the industry. Owners of factors specific to the domestic import-competing industry gain from protection (via a relatively higher price obtained from the industry good), while owners of factors specific to the export sector lose (similarly, via the relatively lower price of the industry good). The preference of the mobile factor owner (for example, labor) is ambiguous; that is, although he can move into the

[1] Cheryl Schonhardt-Bailey, "A Model of Trade Policy Liberalization: Looking Inside the British 'Hegemon' of the Nineteenth Century" (Ph.D. diss., University of California, Los Angeles, 1991), chap. 3.

[2] Ibid., chap. 1.

protected sector, his welfare remains contingent upon his unique consumption preferences. It follows that owners of factors specific to a particular industry will tend to seek protection for their industry and oppose protection for any other industry, whereas mobile factor owners will remain largely inactive.

Standard trade theory texts applying the specific factors model to Britain and the repeal of the Corn Laws posit (1) that landowners (that is, owners of factors specific to the import-competing industry) and capitalists (that is, owners of factors specific to the export sector) deriving incomes from undiversified claims to factors opposed each other and (2) that after 1832 industrialists had taken over Parliament, thereby engineering the shift toward free trade.[3] The standard application of the specific factors model to the British case is correct in assuming that factors remained industry specific and that trade policy had the effect of redistributing income, thereby creating unambiguous winners and losers. However, the two points posited are incorrect.

Taking the second point first, while the 1832 Reform had extended suffrage to many middle-class manufacturers,[4] it did not, by 1846, substantially alter the composition of Parliament. The Parliament of 1841–47 remained firmly under the control of landowners. By one estimate, about 80 percent of Parliament consisted of the landowning aristocracy and gentry.[5] Certainly if landowners as a group in Parliament wished to halt the repeal legislation, they had the votes to do so.

It is, however, the first problematic aspect to which this paper is directed. The specific factors model implicitly assumes that (1) undiversified holdings of factors prevail (that is, each person owns only one, or primarily only one, factor of production), and (2) capital as a factor of production refers to the stock of fixed capital available for productive purposes. Extensions to neoclassical trade theory have at times relaxed the first assumption but have generally retained the second. Mayer, for instance, constructs an equilibrium tariff model that allows each person to own more than one factor and that allows factor shares to vary among people.[6] Each factor owner has an optimal tariff rate, the value of which is determined by the individual's factor ownership. The equilibrium tar-

[3] This application appears in Richard E. Caves and Ronald W. Jones, *World Trade and Payments* (Boston: Little, Brown, 1985).

[4] Before 1832 a significant number of manufacturers would have had sufficient property qualifications to vote; they would have done so, however, in constituencies where they constituted a small percentage of the electorate.

[5] W. O. Aydelotte, "The Country Gentlemen and the Repeal of the Corn Laws," *English Historical Review* 82, no. 322 (January 1967), 51.

[6] Wolfgang Mayer, "Endogenous Tariff Formation," *American Economic Review* 74, no. 4 (1984), 970–85.

iff thus hinges upon the underlying factor-ownership distribution, and it is the median factor owner's optimal tariff that determines the actual tariff rate. Mayer applies the idea of diversified holdings both to the long-run Heckscher-Ohlin model and its resulting Stolper-Samuelson Theorem and to the short-run specific factors model. His intent is not to bridge the two models through the mechanism of portfolio diversification; rather, it is to explore the implications of his modified assumptions for the long-run adjustment of tariffs to changes in the distribution of factor ownership, voting costs, and voter eligibility rules and for the short-run attempts of small minorities of factor owners—under majority voting—to obtain tariff protection for their industries.

In contrast to Mayer's application of diversified holdings, this paper alters part of the assumption of undiversified holdings in the specific factors model and considers capital in two forms—as stocks and flows. With regard to diversified holdings, I argue that income accruing from the ownership of a specific factor (for example, capital originating from the productive use of land) could be invested in other, more profitable sectors of the economy.[7] As a consequence, the allocation of capital flows differed markedly from the allocation of capital stocks. Moreover, this flow of investment capital from one sector to another was facilitated by the newly emerging market in long-term capital, as evidenced by the rapid growth in British stock market activity during the second quarter of the nineteenth century.

Theoretically, the beginnings of a capital market can be interpreted as the start of a transition from a state in which capital is fixed to one in which it becomes more mobile between sectors. In Britain capital flows, responding to unequalized returns, shifted into higher yield industrial sectors of the economy, thereby altering the ownership distribution of capital stock. (Hence, a corollary argument may be given for capital market creation; that is, the more the allocation of flows diverges from the allocation of stocks, the greater the need for a capital market.) It should be acknowledged, however, that other forces may have come into play to delay the emergence of a long-run equilibrium for returns to investment across the different sectors. In the short run the new free-trade policy may have added to the existing inequality of returns by rewarding the owners of industrial capital (unless the capital market had previously fully taken into account the returns from a policy change—an unlikely

[7] For an excellent discussion of nineteenth-century British investors' responsiveness to fluctuations in investment opportunities, see R. C. Michie, *Money, Mania and Markets: Investment, Company Formation and the Stock Exchange in Nineteenth-Century Scotland* (Edinburgh: John Donald, 1981).

event in such a nascent market). Thus, in the short run capital flows could, if sufficient, have generated a trade policy shift that created more inequality of returns, not equalization, even though in the very long run returns should have equalized. Nonetheless, the essential point is that the new ownership distribution created economic and political incentives for a policy change that favored owners of industrial stock (for example, a move to remove protection for agriculture). This said, the contribution of this paper is quite modest: it introduces portfolio diversification in nineteenth-century Britain into a medium-run model with a "dynamic" component, that is, capital flows that reflect divergent returns in industry and agriculture.

More to the point, however, portfolio diversification significantly alters the political interpretation originally posited by the specific factors model. Protective tariffs continued to be ardently favored or opposed by the owners of factors tied to specific industries.[8] However, the policy stance of factor owners whose returns could be reallocated elsewhere became ambiguous. This was so especially where these returns (in the form of investment capital) found their most profitable outlet in industries specific to other factor inputs. The interests of these individuals would have derived from each person's unique portfolio—that is, from the extent of diversified holdings or, interpreted strictly, from the discounted expected future income stream from holdings under each policy alternative (the latter clearly more difficult to gauge than the former).[9] Simply put, as landholders diversified more extensively, their interests either began to resemble more closely those of industrialists favoring free trade or became less sharply defined, thus bordering on indifference. Only those individuals who could not diversify out of agriculture (for example, tenant farmers and landowners on the verge of insolvency) would remain staunch advocates of protectionism.[10] Since the specific factors model misses the importance of a growing British capital market, it fails to recognize that the support for protectionism was diffusing

[8] These were individuals who were under some compulsion—perhaps impending insolvency—to reinvest flows in a factor that yielded less than (an) other factor(s).

[9] In an ideal world one would not engage a static model but rather would look to a dynamic one that incorporated future expected returns.

[10] It should be mentioned that undiversified farmers were enticed by the government to acquiesce to repeal, as evidenced most clearly in the "drainage loan" portion of the repeal legislation; see D. C. Moore, "The Corn Laws and High Farming," *Economic History Review*, 2d ser., 18, no. 3 (1965), 544–61. Nevertheless, many "marginal" farmers (i.e., grain farmers unable to increase production through advanced farming methods or unable to switch to other forms of farming) left Britain in the wake of repeal hoping to gain better returns for their capital investments in the U.S.; see William E. Van Vugt, "Running from Ruin?: The Emigration of British Farmers to the U.S.A. in the Wake of the Repeal of the Corn Laws," *Economic History Review*, 2d ser., 41, no. 3 (1988), 411–28.

within the ranks of those who supposedly were its leading advocates. The division between owners of factors and their supposed conflict of interests, then, is much fuzzier than the model implies.

The Evidence

Evidence for the portfolio diversification hypothesis is presented below in two forms—empirical and statistical. The former draws from the economic history literature and offers a compelling account of the progression of diversification, especially its escalation from the late 1820s to the 1840s, a period of rapid growth in the newly emerging stocks and shares market. The latter attempts to establish a link between growing diversification and M.P. voting behavior on the question of free trade in grain.

Diversification in Economic History

Diversification of portfolios by landowners was by no means a new development in the nineteenth century. Beginning in the late sixteenth and early seventeenth centuries, both the older aristocracy and the rising gentry invested extensively in nonagricultural activities, including minerals and mining (coal, lead, steel, salt, alum, and so forth), urban development, shipping, and joint-stock companies. Lawrence Stone explained that even though "industry was not the road to great riches," it provided to both peers and gentry an interesting diversion, and an extension of the taste for gambling. In his analysis of 158 peerage families during the period 1560–1639, Stone found that 25 percent of these profited by mining activities on their estates; 9 percent invested in fen drainage; 15 percent in developing London; 14 percent in shipping; and 63 percent in trading, colonial, and industrial concerns. Moreover, he found the older nobility no less willing to invest in nonagricultural activities than was the newer nobility.[11]

J. H. Plumb extended the notion of diversification to the eighteenth century. According to Plumb, cheap water transport (provided through canal ventures) allowed greater diversification of portfolios among the gentry.[12] The opening of rivers and coastal traffic both enhanced agricultural production by creating new metropolitan markets for agricultural goods and created new outlets for enterprises in timber sales, gravel, and minerals.

[11] Stone, *The Crisis of the Aristocracy 1556–1641* (Oxford: Oxford University Press, 1965), 377–83.

[12] Plumb, *The Growth of Political Stability in England, 1675–1725* (London: Macmillan, 1967), 5.

Consequently, by the early nineteenth century some landowners were at least marginally involved in industrial activities. The obvious question is then, why, given some degree of diversification, did landowners support agricultural protection as long as they did? It may be that (1) landowners diversified but the returns on their nonagricultural income were inconsequential relative to their agricultural income, (2) landowners' investment in nonagricultural sectors was small relative to their agricultural holdings, or (3) numbers of landowners actually diversifying remained few relative to those not diversifying. A fourth and quite different explanation is that the type of industrialization in the eighteenth century differed from that in the nineteenth; whereas the former was led by domestic demand, the latter was led by exports. Thus, landowners diversifying into industry in the eighteenth century would likely have retained their preference for agricultural protection, whereas landowners similarly diversifying in the nineteenth century would not. In any case, two critical economic changes in the second quarter of the nineteenth century—the expansion of exports in mining and heavy industry and the development of the capital market—marked that period as a turning point. There was an increase in (1) returns to diversified holdings, (2) the size of nonagricultural holdings, and (3) the numbers of landowners diversifying. These changes, moreover, transformed the process of investing outside of agriculture—all of which dampened landowner support for agricultural protection. Interestingly, both changes seem to have been triggered by (or to have coincided with) the same event—the beginning of the railway boom in the mid-1830s (peaking in 1836–37 and again in 1844–46).

The first such sudden economic change was the expansion of exports in mining and heavy industry. While export growth and the railway booms should actually be considered a two-way causal relationship,[13] this

[13] The literature explaining the various linkages between railways and the development of heavy industry in Britain is considerable. For instance, Llewellyn Woodward wrote that "the railways were one of the results of progress in the iron industry and of the increased consumption of coal brought about by the use of steam power. They were in turn the cause of a vast expansion in the metal trades and of a much greater demand for coal. Directly or indirectly they influenced the development of most industries in the country. [In addition] the railway itself was an article of export; British contractors built lines in every continent and organized companies to buy them"; see Woodward, *The Age of Reform, 1815–1870* (Oxford: Oxford University Press, 1962), 41. E. J. Hobsbawm found that the "immense [coal] industry, though probably not expanding fast enough for really massive industrialization on the modern scale, was sufficiently large to stimulate the basic invention which was to transform the capital-goods industries: the railway. For the mines not only required steam-engines in large quantities and of great power, but also required efficient means of transporting the great quantities of coal from coal-face to shaft and especially from pit-head to the point of shipment. The 'tramway' or 'railway' along which trucks ran was an obvious answer. . . . Technologically the railway is the child of the mine, and especially the northern English coal

sudden export growth nevertheless was created in the very industries (coal, iron, steel) in which landowners had been longtime investors.[14] Although their portfolios already included such investments, the intensity and economic importance of these investments had increased with the growth of these industries.[15]

The second change was the development of the capital market. Although the beginnings of a formal market in capital may be traced to long-term borrowing by the state in the late seventeenth century, it was not until the early 1800s that the London Stock Exchange drafted a constitution and obtained its own building. The market of the eighteenth century was not a national market; rather, it was concentrated in London and largely confined to the trade of government securities.[16] From the beginning of the nineteenth century to the mid-1820s, very little share trading existed outside London. However, with the repeal in 1825 of the Bubble Act (which had required all companies to obtain a royal charter or an Act of Parliament and made it illegal for any broker to buy or sell

mine"; see Hobsbawm, *The Age of Revolution, 1789–1848* (New York: New American Library, 1962), 63. He added that "in the first two decades of the railways (1830-1850) the output of iron in Britain rose from 680,000 to 2,250,000 [tons]. . . . The output of coal between 1830 and 1850 also trebled from 15 million tons to 49 million tons. That dramatic rise was due primarily to the railway, for on average each mile of the line required 300 tons of iron merely for track" (p. 64).

B. R. Mitchell clearly sketches the correlation between rising demand in the iron and coal industries and the railway booms and, moreover, the subsequent royalties accruing to landowners. For example, Mitchell explains that royalties usually consisted of a fixed rent plus a royalty paid according to the amount of coal extracted. From the early nineteenth century to the 1870s, royalties averaged between 8% and 11% of coal sales, or 6d to 9d per ton, or £50 to £180 per acre; see Mitchell, *Economic Development of the British Coal Industry, 1800–1914* (Cambridge: Cambridge University Press, 1984), 251–58.

It should be noted that while recent British historiography has discounted the Rostowian notion of a sudden industrial "takeoff" period, such revisions have applied not to the heavy industry stage of industrialization beginning in the 1830s but rather to the period from roughly 1780 to 1830; see N. F. R. Crafts, *British Economic Growth during the Industrial Revolution* (Oxford: Oxford University Press, 1985). Other useful sources that address the linkages between railways and the development of heavy industry (not to mention the large literature simply on railway development) include P. L. Cottrell, *Industrial Finance, 1830–1914* (London: Methuen, 1980); F. M. L. Thompson, *English Landed Society in the Nineteenth Century* (London: Routledge and Kegan Paul, 1963); and G. N. von Tunzelmann, *Steam Power and British Industrialization to 1860* (Oxford: Oxford University Press, 1978).

[14] See Thompson (fn. 13) for a discussion of the mineral incomes of several great landowners (e.g., Dukes of Northumberland and Portland, the Earl of Carlisle, Lords Hastings and Rokeby, Sir Matthew White Ridley, and the Earl of Durham) and gentry (e.g., the Claytons, Crofts, Bates, Edens, Riddells, Wrightsons). He noted that "landowners certainly drew large and increasing incomes from coal, but these were predominantly and increasingly in the shape of royalty and wayleave rents" (p. 264). Some gentry received mineral income equal to half their total income.

[15] One might add that landowners would be far more likely to invest in industries (mostly heavy) that had land occupying a larger share of assets—i.e., coal, iron, railways—than such light industries as cotton textiles.

[16] See, e.g., Cottrell (fn. 13); and E. Victor Morgan and W. A. Thomas, *The Stock Exchange: Its History and Functions* (London: Elek Books, 1962).

shares in unchartered companies), share trading boomed as joint-stock companies—most notably insurance and banking companies—could now sell their shares on the stock exchange.[17] Further legislative restrictions on the privileges of incorporation were lifted in 1834, 1837, and 1844, thus contributing to the growth of trading in joint-stock companies.[18]

More importantly, after the successful opening of the Liverpool and Manchester line in 1830, confidence in railway stock surged, as evidenced by the "railway manias" of the mid-1830s and mid-1840s. After 1830 a company needed only to advertise in a railway journal that stocks were available to be flooded with applications. For example, in 1836 the New Gravesend Railway received 80,000 applications for the 30,000 available shares; the Great North of Scotland Railway, more than three times the number of its shares in 1845; the Direct Western Railway, 1,400,000 applications for its 120,000 shares; and the Direct London-Exeter, 400,000 for its 120,000 shares.[19]

Aside from later technological changes (telegraph, telephone), railway shares offered the single most important factor in the integration of Britain's emerging capital market—a common security that could be traded actively on more than one market. Without common securities, "localized imbalances in the supply of, or demand for, stocks and shares would continue to result in dramatic price fluctuations and an inability to meet requirements. With common securities, local price changes would generate an immediate flow from, or to, that centre so that all markets would rise and fall in line."[20]

Such common securities contributed especially to diminishing the previously localized nature of the provincial markets, as active trading between markets outside of London expanded throughout the 1830s and 1840s. Elsewhere I illustrate the rapid growth in provincial stockbroking and find that railway stocks propelled this growth.[21] Indeed, according

[17] Manufacturing and industrial enterprises were not as apt to benefit from the repeal of the Bubble Act since, unlike insurance companies whose ownership was corporate, these firms largely consisted of partnerships; see Michie (fn. 7), 62.

[18] See Morgan and Thomas (fn. 16), 125–31.

[19] Harold Pollins, "The Marketing of Railway Shares in the First Half of the Nineteenth Century," *Economic History Review*, 2d ser., 7, no. 2 (1954), 233.

[20] R. C. Michie, "The London Stock Exchange and the British Securities Market, 1850–1914," *Economic History Review* 2d ser., 38, no. 1 (1985), 68.

[21] Schonhardt-Bailey (fn. 1), chap. 4. Moreover, J. R. Killick and W. A. Thomas provide a listing of companies quoted on the Leeds, Liverpool, Manchester, and Newcastle exchanges that clearly illustrates the growing dominance of railway shares from 1837 to 1847; see Killick and Thomas, "The Provincial Stock Exchanges, 1830–1870, *Economic History Review*, 2d ser., 23, no. 1 (1970), 96–111.

to one estimate, railway construction accounted "almost exclusively" for the establishment of the provincial long-term capital market.[22]

Nor was the emerging capital market limited to the English provinces; as the onslaught of railway and joint-stock promotion swept across the country, it sparked similar share trading in Scotland. During the period 1830–40 the massive expansion in the Scottish coal and iron industry led to an expansion of mining and heavy industry, which in turn required substantial investment capital.[23] Concurrently, the number of investors benefiting directly from the output of the enterprise (a feature of the earlier localized nature of investment) decreased, while the number of investors seeking primarily to maximize the return on tradable investment rose. By the end of the 1830s a national share market had developed in Scotland, with insurance companies and railway shares experiencing the most rapid growth. The early 1840s brought economic prosperity and with it surplus funds seeking investment opportunities. Given the excess funds in circulation, banks lowered their interest rates,[24] and consequently, stocks became "the most eligible and favourite" form of investment. Moreover, during the early 1840s higher rates of return from railway shares markedly altered the structure of the Scottish investment economy by elevating the importance of railway capital at the expense of all other investment sectors.[25]

Just as railway shares provided a common security for the provincial stock exchanges, so too did they link the emerging Scottish exchanges with their English counterparts. In 1846, for instance, English shareholders were the source of 38 percent of the funds provided for Scottish railways by large investors.[26] This cross-investment was not one-sided, however, as Scots similarly sought stock in English railways.[27] Finally, in addition to the provincial and Scottish stock exchanges, the London Stock Exchange itself exhibited the speculative mania associated with the railways. From 1844 to 1846 the annual number of Railway Acts passed

[22] Killick and Thomas (fn. 21), 110. See also W. A. Thomas, *The Provincial Stock Exchanges* (London: Frank Cass, 1973).

[23] Michie (fn. 7) estimates the gross capital formation in Scottish iron manufacture to have increased from 1.8 million *pounds* in 1828 to 6.6 million *pounds* by 1840 (p. 51).

[24] The Bank of England lowered its rate from 6% in late 1839 to 3% in 1846, while in Scotland, the rate fell from 3.5% in 1842 to 2% in 1843; see John Clapham, *The Bank of England*, vol. 2 (Cambridge: Cambridge University Press, 1944); and Michie (fn. 7).

[25] Michie (fn. 7), 92, 117.

[26] Ibid., 117.

[27] For example, "the Liverpool and Manchester Railway had only 10 Scottish shareholders in 1838, but 29 by 1845, while the Grand Junction Railway had 4 in 1835 and 122 in 1845. Scots had invested only £2000 in the Newcastle and Carlisle Railway in 1838, but £9,300 in 1844, while they held £94,000 of the stock of the Great North of England Railway in 1845 compared to a mere £4,700 in 1838"; see Michie (fn. 7), 117–18.

increased from 48 to 270, and capital authorized increased from £17.8 million to £136 million; total railway capital quoted on the London Stock Exchange thereby increased from £72.3 million to £126.1 million.[28]

Stock market activity, however impressive its growth, must necessarily be joined to the interests of landowners to warrant the claims that (1) landowners were indeed diversifying into nonagricultural ventures such as railway shares and that (2) this diversification had potential political ramifications. In a presentation of the occupational breakdown of shareholders in various railway and utility companies, I demonstrate that esquires and gentlemen held a strong interest in such investments.[29] One historian has conservatively estimated the average percentage of gentlemen/landowners among subscribers for all railway companies floated in 1844–45 to be 18 pecent,[30] while others have estimated the figure for the period 1820–44 to be 28 percent.[31] In fact, many railway companies deliberately reserved a certain percentage of shares (say, 20 percent) for landowners. Landowners were considered valuable shareholders not only for their resources, but also because a company with a considerable number of landowners as shareholders could use this as clout to prevent present or future opposition to the railway line from other landowners.[32]

Landowner interest in railways stemmed not only from the ownership of shares but also from the high prices paid to them by the railway companies for their lands. Rather than face the possibility of legal battles over the value of land—costing four times the price of those purchases unopposed—railway promoters "bought off" landowners by paying them, on average, twice the current market value for their land. In fact, in 1844 the Board of Trade estimated that the excess land costs alone made Britain's railways £1,000 more expensive per mile than railways on the Continent.[33]

Evidence from the economic history literature thus clearly traces increasing diversification of the landed elite into mining and heavy industry, as well as railway development. This is not to suggest, however, that such diversification directly translated into their conversion to a free-

[28] Morgan and Thomas (fn. 16), 106.

[29] Schonhardt-Bailey (fn. 1), chap. 4, presents selected data from Killick and Thomas (fn. 21).

[30] S. A. Broadbridge, *Studies in Railway Expansion and the Capital Market in England, 1825–1873* (Guildford and London: Frank Cass, 1970), 144.

[31] G. R. Hawke and J. P. P. Higgins, "Transport and Social Overhead Capital," in Roderick Floud and Donald McCloskey, eds., *The Economic History of Britain since 1700* (Cambridge: Cambridge University Press, 1981).

[32] Pollins (fn. 19), 238.

[33] R. J. Irving, "The Capitalisation of Britain's Railways, 1830–1914," *Journal of Transport History*, 3d ser., 5, no. 1 (1984), 14–15.

trade policy stance. Coal, iron, and steel exports certainly became increasingly more important in the 1830s and 1840s, but so, too, did domestic consumption of these goods (especially for domestic railway construction). Additionally, even landowner interests in railway promotion could in some cases be linked to the transportation of agricultural goods to domestic markets rather than to the development of British export industries. Nevertheless, diversification into potentially (and in some regions of the country, predominantly) nonagricultural ventures allowed landowners to spread their investment risks among various sectors of the economy not directly benefiting from the expansion (or maintenance) of British agricultural production. As stated earlier, the actual interests of these individuals must be derived from each landowner's unique portfolio, that is, the diversification of holdings (as a proxy for the discounted expected future income stream from his holdings). Either, in the extreme, landowner interests began to resemble those of industrialists favoring free trade, or more moderately, their interests simply became less sharply defined, perhaps bordering on indifference.

Diversification and M.P. Voting Patterns on Free Trade

Previous studies that addressed the issue of diversification in the repeal of the Corn Laws generally focused on the individual interests of members of Parliament. A primary source of motivation for voting, according to this view, stemmed from the M.P.'s personal pecuniary interests. (Indeed, one historian commented that the reason attempts by the 1841–47 government to regulate railways were doomed was that M.P.'s—the majority of whom were shareholders in railways and one-seventh of whom were railways directors—vigorously defeated any "dangerously restrictive" proposals.)[34] The argument continues that M.P.'s were beginning to diversify their personal portfolios in the years prior to 1846: as they increasingly invested in the business and industrial sectors of the economy,[35] they personally had less to lose and more to gain from eliminating agrarian protectionism.

My test of this hypothesis revealed that a transformation in the incomes of members of Parliament was indeed occurring, though not at a

[34] Asa Briggs, *The Age of Improvement, 1783–1867* (London: Longman 1959), 340.

[35] For general references to this argument, see Barrington Moore, *Social Origins of Dictatorship and Democracy* (Boston: Beacon Press, 1966); and E. J. Hobsbawm, *Industry and Empire* (London: Weidenfeld and Nicolson, 1968). For the specific application of this argument to the M.P.'s of 1841–47, see W. O. Aydelotte, "The Business Interests of the Gentry in Parliament of 1841–1847," in G. Kitson Clark, *The Making of Victorian England* (London: Methvent, 1962), 290–307; and idem (fn. 5), 47–60. See also J. A. Thomas, "The House of Commons, 1832–1867: A Functional Analysis," *Economica*, no. 13 (1925); and idem, "The Repeal of the Corn Laws, 1846," *Economica*, no. 25 (1929).

rate or level sufficient to confirm the hypothesis.[36] Timothy McKeown tested a similar hypothesis. Although he found a systematic relationship between voting behavior and "personal pecuniary interests" of M.P.'s, he did not cite this as the critical factor in the abolition of the Corn Laws.[37]

One step beyond gauging the economic effect of portfolio diversification on members of Parliament entails examining its political effects, as channeled through diversification by their constituents. It is the argument of this paper that as individuals (and constituencies in the aggregate) invested returns from land into nonagricultural ventures such as industry and railways, political support for protectionism waned, and M.P.'s accordingly shifted their votes toward free trade.

Two approaches, differentiated by data type (individual versus aggregate), are adopted below for testing the relationship between diversification and M.P. voting behavior. Neither approach is ideal, but taken together they provide a reasonable test of the hypothesis. A better test of diversification would rely exclusively on individual-level data in order to capture the "capital as flows" element of the argument. That is, whereas aggregate-level data may capture shifts in the overall distribution of land and capital ownership (and consequently diversification at the aggregate level), the underlying assumption is that all individuals have undertaken exactly the average diversification of their personal portfolios by investing returns from one factor into another factor. Landowners may instead have moved wholly into the industrialists category; alternatively, the number of industrialists may have grown more quickly relative to landowners. As such, individual and aggregate-level data will provide different pictures of diversification. Individual-level diversification suggests that capital operates as flows and that industry-specific interests become less sharply defined in the political arena. Aggregate-level diversification may indeed reflect individual-level diversification, in which case the same argument holds; that is, capital "flows" and interests merge. Alternatively, diversification may occur only at the aggregate level, whereupon interests remain industry specific: landowners remain tied to agri-

[36] In an earlier phase of this project, I tested this hypothesis. In sum, I found that while unmistakable change in the economic interest composition of Parliament was occurring from 1832 onward, the change was quite gradual. The landowning interest was steadily declining while that of business was steadily rising, overtaking the former by the 1870s. I concluded that it seemed likely that it was not the M.P.'s own economic interest that motivated him, but that of his constituents. Transformations in the economic interests of constituents thus took several decades to be reflected in the composition of Parliament.

[37] Timothy J. McKeown, "The Politics of Corn Law Repeal Reconsidered" (Paper presented at the 1987 annual meeting of the American Political Science Association, revised December 1987).

cultural protection, and industrialists, tied to free trade, although the balance of interests becomes more evenly distributed.

There are drawbacks to relying solely on microlevel data: such data are rare for early-nineteenth-century Britain, and the available data are incomplete and inconsistent. Consequently, I test the diversification thesis using both individual and aggregate data. Positive and consistent findings at both levels of analysis would support the hypothesis that diversification was indeed occurring at the individual level and that the more aggregate-level statistics were an accurate reflection of this diversification.

Testing the Hypothesis

Two sources of data were used to test the hypothesis that M.P.'s who represented constituencies with greater diversification were more likely to vote in favor of free trade than were those representing less diversified agricultural constituencies. The first source—death duty registers[38]—provides data at the individual level. The years 1830 and 1850 were chosen to construct a random sample of 1 percent for each year (162 and 184 individuals, respectively).[39] (Elsewhere I describe the sampling technique in full.)[40]

The components derived from the registers include (1) stocks (that is, stocks or shares in railways, utility companies, canals, joint-stock companies, insurance companies; investments in a business or trade; and mining interests—only when listed separately from real estate), (2) gov-

[38] Barbara English, "Probate Valuations and the Death Duty Registers," *Bulletin of the Institute of Historical Research* 58, no. 135 (May 1984), argues that death duty registers offer more complete records of business holdings than do probates. For example, the registers list stocks and shares, industrial machinery, business interests, and residual estate. They offer more details as to the form in which wealth was held at death. Only since 1982 have the registers been opened to study by researchers for the period from 1796 to 1903. I did find, however, that for later years many registers remain closed, some until the year 2007.

Jane Cox describes and explains the contents, format, notations, and abbreviations relevant both to probates and to death duty registers; see Cox, *The Records of the Prerogative Court of Canterbury and the Death Duty Registers: A Provisional Guide* (Canterbury: Public Record Office, Prerogative Court of Canterbury, 1980).

[39] Since 1825 and 1846 constitute roughly the critical years "before" and "after" the emergence of capital markets and diversification, and since we may assume that an individual would most likely be at his financial peak not at his death but rather a few years prior, 1830 and 1850 appeared to be adequate choices for each time period sample.

[40] Schonhardt-Bailey (fn. 1), chap. 4. In brief, however, a mapping of both the 1830 and 1850 samples illustrates a fairly even geographic distribution, with of course the expected concentration around London. A comparison of the regional distribution with actual population figures for England in 1831 and 1851 suggests that the sample distributions appear to match the population figures relatively well. It should be noted, however, that in 1830 the Southeast (including London) and to a lesser extent the Midlands appear overrepresented, while the northern regions are underrepresented. For 1851 the regions fairly accurately correspond to the population figures.

ernment securities (consols, reduced annuities, etc.), (3) charges on real estate (including both absolute and annuity bequests charged on real estate holdings, and real estate sold whose value was then taxed), (4) cash bequests (from bank stock and monies from sources unspecified), and (5) residue (which in many cases included the value of real estate property when instructions were given for its sale—the proceeds of which were then subject to taxation). Unfortunately, real estate was not subject to death duty and subsequently was not valued until the early 1850s. Variable (3) combined with variable (5) provides the best proxy for estimates of real estate, given the clear overlap between the two.

An examination of stockholdings by region and county illustrates the geographic spread of capital market activity: whereas in 1830 stockholders appeared in only four counties (all concentrated in London and the South), in 1850 stockholders appeared in thirteen counties (spreading regionally from the Southeast and Southwest to include East Anglia, the Midlands, the Northeast and Northwest, and Wales). Moreover, the percentage of individuals owning stock increased from 3.7 percent in 1830 to 12.5 percent in 1850, also supporting the notion of an expanding capital market discussed earlier.

The second data source—income tax returns—also provides data on the extent of diversification, but at the constituency level (that is, borough and county) and for the years 1814 and 1856. Although 1814 and 1856 were not "ideal" years (ideal would have been 1825 and 1845), the lack of any income tax structure between 1815 and 1842 meant that 1814 was the latest possible year of the first period (excluding the unrepresentative final wartime tax year, 1815).[41] Further, 1856 was chosen since it was the first year after reinstitution of the income tax that the Parliamentary Papers offer a complete county and borough breakdown for all the tax schedules. The two years are similar in that both were war years and both operated under a virtually identical tax structure.[42]

Income tax returns consisted of four schedules: Schedule A (profits from the ownership of lands, farm buildings, houses, tenements); Schedule B (profits from the occupation of lands, houses, tenements—in short, profits from farming); Schedule D (profits from trade or manufacturing business, profession, employment, or vocation, and miscellaneous items such as foreign securities and possessions); and Schedule E (annuities,

[41] As it was the final year of the wartime income tax, returns in 1815 dropped sharply due to public resistance to the tax and less stringent collection efforts by the Tax Office; see Arthur Hope-Jones, *Income Tax in the Napoleonic Wars* (Cambridge: Cambridge University Press, 1939), 77, 109. Hence, 1815 was not considered an appropriate year to sample.

[42] Ibid., 121.

pensions, and stipends paid to holders of public office). An adjustment of the data[43] enabled me to divide Schedule A into two parts, A1 and A2, with the former comprising income from rural landownership and the latter comprising income from urban landownership.

To determine whether or not M.P.'s from constituencies with greater diversification were more likely to vote in favor of free trade, I constructed indexes of diversification for each sample. Individual scores were averaged to obtain one score for each county in the death duty register sample, whereas separate scores could be obtained for boroughs and counties in the income tax returns sample.[44] Indexes used for both samples are given in Table 1. The first term in the death duty register diversification index (stocks/sum of all Xs) denotes the relative diversifi-

TABLE 1
INDEXES OF DIVERSIFICATION

Death Duty Registers

$$\text{Diversification Index} = \frac{\text{X1}}{\text{Sum x's}} - \frac{(\text{X3} + \text{X4})}{\text{Sum x's}}$$

where
X1 = stocks and shares
X2 = government securities
X3 = charges on real estate
X4 = residue
X5 = cash, bank stock, money from unspecified sources

Income Tax Returns

$$\text{Diversification Index (for counties)} = \frac{\text{D}}{\text{Sum (A1,A2,B,D,E)}} - \frac{\text{A1}}{\text{Sum (A1,A2,B,D,E)}}$$

$$\text{Diversification Index (for boroughs)} = \frac{(\text{D} + \text{A2})}{\text{Sum (A1,A2,B,D,E)}} - \frac{\text{A1}}{\text{Sum (A1,A2,B,D,E)}}$$

where
A1 = income from rural landownership
A2 = income from urban landownership
B = income from farming
D = income from trade, manufacture, etc.
E = income from public office

[43] Schonhardt-Bailey (fn. 1), Appendix 2.

[44] Further on I separate the votes of M.P.'s into those representing boroughs and those representing counties. For the death duty register sample, this means that, statistically speaking, both sets of M.P.'s are responding to the same county-average diversification score.

cation into stocks and shares, whereas the second term (charges on real estate + residue/sum of all Xs)[45] is the proxy for agricultural holdings.[46] The income tax returns diversification index follows the same approach; but it broadens the scope of the first term to include all profits from trade and manufacture, and for boroughs it also includes profits from urban landownership. The second term isolates rural landowners as much as possible. The diversification indexes range from −1 to +1; the higher the score, the greater the diversification into stocks and shares (in the case of the death duty registers), or the greater the diversification into the broader array of nonagricultural ventures (in the case of the income tax returns).

A final clarification regarding the diversification indexes should be mentioned. Since the possible scores range from −1 (complete investment in land) to +1 (complete investment in trade/industry/etc.), one might surmise that the "perfect," or best, score would be zero. This conclusion might be warranted if one's argument were founded upon a nondirectional diversification index, that is, one in which industrialists investing in land created the same incentive for M.P.'s to vote for free trade as did landowners investing in industry. Such an index would presumably require one to obtain the absolute values of each score and hypothesize a negative correlation between diversification and free-trade votes (where free trade = 1 and protectionism = 0). In contrast, the argument here—that landowners were seeking higher returns by investing in industry—necessitates a directional index and hypothesizes a positive correlation between diversification and votes for free trade. The higher the score of a particular district, the greater the probability of its representative M.P. voting for free trade.[47]

[45] The real estate estimate for this sample suffers from various coding difficulties. Real estate, usually listed as "charges thereupon" rather than as actual values, creates distortion due both to inflated values in some cases and to unreported values in others. It is possible that these two distortions may have nullified each other, but without better microlevel data the extent of the distortions is unknown. Moreover, real estate included not only agricultural holdings but also commercial property, and sometimes mining interests as well. Finally, while I include "residue" with real estate, not all the residue value could indeed be verified as real estate. The effect of these cross-cutting distortions in the estimate of real estate is, again, unknown.

[46] Squaring both terms of the equation was considered but dismissed, since the result was an increased sensitivity to changes in income levels. In other words, given equal ratios of real estate to non–real estate holdings, squaring the terms multiplied the effect of one's income level, i.e., a wealthier individual would be predicted to have an exponentially stronger interest in either free trade or protection for any given ratio of real estate to non–real estate holdings. The unsquared version, being less responsive to changes in income levels, has the advantage of isolating to a greater degree the effects of diversification.

[47] Broadly speaking, diversification need not demonstrate direction. Returns from factor inputs need not be channeled from land to capital; the flow could be reversed. The point is

Diversification indexes for both samples are divided into "level" variables and "difference" variables. The former are simply the diversification scores for each sample year (1830 and 1850 for the death duty registers, and 1814 and 1856 for the income tax returns), while the latter subtract the earlier year from the later year in order to obtain the change in each diversification score over time.

Tables 2 and 3 give results for all the diversification variables in a multivariate probit model, using five separate parliamentary divisions on the question of free trade. (The nature of each division is described in the appendix; simply put, divisions 1846a and 1846b are most critical, as the former is the first reading and the latter is the third reading of the repeal legislation.) M.P. party identification, predicted district trade preference (based on economic composition), and the effect of the 1832 Reform are included as control variables. I have explored the relationships between these variables and M.P. voting behavior on free trade in an earlier work;[48] consequently, the discussion here is limited to the diversification variables.

In brief, positive coefficients and significance for the level diversification variables (Tables 2 and 3) lend firm support to the hypothesis that M.P.'s representing constituencies with greater diversification were more likely to vote for free trade (that is, for repeal of the Corn Laws). The more comprehensive sample of income tax returns provides much higher levels of statistical significance than does the death duty sample. Nevertheless, obtaining as high as 95 percent significance (1846a) for such individual-level historical data as death duties is encouraging. Both samples exhibit the same trend: each begins with weak significance for diversification in 1834 and strengthens in significance in 1846, as one would expect if diversification were increasing during the 1830s and early 1840s.

Results for the difference variables (Tables 2 and 3) are far less straightforward than those for the level variables. Interpretation of these results draws upon earlier findings that established a classic urban-rural split between the voting behavior of borough and county M.P.'s, with the former significantly more likely to support free trade than the latter.[49] Results in Tables 2 and 3 are divided into subgroups of counties and boroughs in order to reveal the puzzling divergence between the two samples. That is, in the death duty sample, county M.P.'s do not appear

that factor returns—as capital flows—will shift from low- to high-yield sectors of the economy.

[48] Schonhardt-Bailey (fn. 1), chap. 3.

[49] Ibid.

to have responded to constituency diversification by voting for free trade, whereas their borough counterparts do seem to have responded. The results for the income tax returns reveal just the opposite trend: whereas county M.P.'s appear to have responded to constituency diversification with a vote for free trade, borough M.P.'s do not seem to have responded likewise. Before progressing further, it should be acknowledged that tests of statistical significance are unimpressive for both samples; interpretation must accordingly be speculative (especially for divisions 1842 and 1846c, where only two M.P.'s from county constituencies voted for free trade). Nevertheless, the relative internal consistency of both sets of results and the partial statistical significance lead me to venture a speculative interpretation.

Recalling that the death duty register sample measured solely the income from stocks and shares as sources of diversification, we may interpret the results in Table 2 to mean that the spread of stock market activity seemed to contribute to borough M.P.'s voting for repeal, but that this one aspect of diversification was not sufficient to dissuade county M.P.'s from their protectionist stance. However, if diversification is measured more broadly to include all trade and manufacture, as in the income tax returns sample, then the magnitude of diversification does appear to affect the voting behavior of county M.P.'s. The obvious question is, why did borough M.P.'s in the income tax returns sample not exhibit the same positive correlation? The answer simply put is that in both periods most boroughs were far more diversified into industry than were counties; thus, reduced but nevertheless still high diversification scores correlated negatively with free-trade votes on the part of borough M.P.'s. (Strong positive correlations between diversification and free-trade votes for the level variables lend support to this interpretation.) A similar result did not occur in the death duty register sample since (1) whole county averages were adopted for diversification indexes, rather than splitting county and borough constituencies, and (2) no doubt as a consequence of using whole county averages, initial scores were virtually all very low.

In sum, while borough M.P.'s appeared more responsive than county M.P.'s to diversification by their constituents into stocks and shares, county M.P.'s (and probably also borough M.P.'s) did seem to respond to more general diversification into trade and manufacture. Thus, for the difference variables, the type of diversification (specific, as in stocks, versus general, as in trade and manufacture) and the type of constituency represented (borough versus county) must be considered if the hypothesis of diversification is to be sustained.

TABLE 2

DEATH DUTY REGISTER SAMPLE: PROBIT RESULTS FOR LEVEL AND DIFFERENCE VARIABLES[a]

	All Constituencies					*Counties*			*Boroughs*		
Division	*Level Coefficients*[b]		(*t-ratio*)	*Number of Cases*	*Difference Coefficients*[b]		(*t-ratio*)	*Number of Cases*		(*t-ratio*)	*Number of Cases*
1834	Constant	−4.38	(−7.42)[f]	341	Constant	−10.39	(−1.25)	86	−4.21	(−6.85)[f]	218
	B1 DIVS23CO	0.24	(0.94)		B1 DIVSDIF2	−0.14	(−0.28)		−0.13	(−0.50)	
	B2 DIV2PID	0.81	(6.28)[f]		B2 DIV2PID	1.61	(0.88)		0.77	(5.59)[f]	
	B3 DISTPREF	0.33	(7.68)[f]		B3 DISTPREF	0.66	(3.78)[f]		0.20	(3.72)[f]	
	B4 REFCHNG	0.24	(2.92)[f]		B4 REFCHNG	0.81	(0.85)		0.30	(3.39)[f]	
1842	Constant	−8.66	(−4.16)[f]	326	Constant	−7.85	(−0.04)	95	−8.90	(−3.93)[f]	193
	B1 DIVS25CO	0.56	(1.26)		B1 DIVSDIF2	−0.72	(−0.72)		0.48	(1.26)	
	B2 DIV3PID	1.94	(3.92)[f]		B2 DIV3PID	2.52	(0.40)		1.93	(3.58)[f]	
	B3 DISTPREF	0.30	(3.95)[f]		B3 DISTPREF	0.25	(0.67)		0.25	(2.75)[f]	
	B4 REFCHNG	0.25	(1.87)[d]		B4 REFCHNG	−0.82	(−0.02)		0.29	(1.94)[d]	
1846a	Constant	−2.22	(−4.74)[f]	372	Constant	−2.85	(−0.86)	98	−3.11	(−4.78)[f]	234
	B1 DIVS25CO	0.67	(2.25)[e]		B1 DIVSDIF2	−0.13	(−0.28)		0.39	(1.36)[c]	
	B2 DIV4PID	1.13	(10.52)[f]		B2 DIV4PID	1.19	(5.06)[f]		1.05	(7.58)[f]	
	B3 DISTPREF	0.25	(4.70)[f]		B3 DISTPREF	0.34	(2.11)[e]		0.08	(1.14)	
	B4 REFCHNG	−0.08	(−0.72)		B4 REFCHNG	−0.17	(−0.21)		0.28	(1.63)[c]	
1846b	Constant	−2.21	(−4.66)[f]	367	Constant	−2.58	(−0.69)	95	−3.29	(−4.62)[f]	234
	B1 DIVS25CO	0.56	(1.88)[d]		B1 DIVSDIF2	−0.74	(−1.36)[c]		0.48	(1.65)[d]	
	B2 DIV6PID	1.15	(10.30)[f]		B2 DIV6PID	1.38	(4.82)[f]		1.05	(7.34)[f]	
	B3 DISTPREF	0.26	(4.69)[f]		B3 DISTPREF	0.38	(1.85)[d]		0.06	(0.81)	
	B4 REFCHNG	−0.10	(−0.95)		B4 REFCHNG	−0.40	(−0.42)		0.37	(1.95)[d]	

1846c	Constant	−4.15	(−6.68)[f]	235	Constant	−7.18	(−0.03)	59	−4.03	(−6.65)[f]	154
	B1 DIVS25CO	0.55	(1.28)[c]		B1 DIVSDIF2	0.02	(0.02)		0.17	(0.48)	
	B2 DIV7PID	0.99	(6.84)[f]		B2 DIV7PID	2.68	(0.40)		0.88	(5.71)[f]	
	B3 DISTPREF	0.10	(1.71)[d]		B3 DISTPREF	0.15	(0.43)		0.04	(0.53)	
	B4 REFCHNG	0.10	(0.99)		B4 REFCHNG	−1.07	(−0.02)		0.16	(1.50)[c]	

[a] Probability of free-trade vote = A + B1 (diversification of constituents' income) + B2 (M.P. party ID) + B3 (predicted trade preference of M.P. constituency district) + B4 (effect of 1832 Reform on district).

[b] DIVS23CO gives the diversification scores for the 1830 death duty register sample, averaged for each county; DIVS25CO gives the diversification scores for the 1850 death duty register sample, averaged for each county; DIVSDIF2 is the difference between DIVS23CO and DIVS25CO. Variable descriptions are as follows: DISTPREF is predicted trade preference, based upon constituency district economic composition in 1831–32; REFCHNG is effect of the 1832 Reform Act on electoral constituencies; DIV2PID is party affiliation of M.P.'s, for 1834 division; DIV3PID is party affiliation of M.P.'s, for 1842 division; DIV4PID is party affiliation of M.P.'s, for 1846a division; DIV6PID is party affiliation of M.P.'s, for 1846b division; DIV7PID is party affiliation of M.P.'s, for 1846c division.

[c] Significant at the 80% confidence level, two-tailed test.

[d] Significant at the 90% confidence level, two-tailed test.

[e] Significant at the 95% confidence level, two-tailed test.

[f] Significant at the 99% confidence level, two-tailed test.

TABLE 3

INCOME TAX RETURNS SAMPLE: PROBIT RESULTS FOR LEVEL AND DIFFERENCE VARIABLES[a]

	All Constituencies						*Counties*			Boroughs	
Division	*Level Coefficients*[b]		(*t*-ratio)	*Number of Cases*	*Difference Coefficients*[b]		(*t*-ratio)	*Number of Cases*		*t*-ratio)	*Number of Cases*
1834	Constant	−5.58	(−4.60)[g]	214	Constant	−9.19	(−1.27)	110	−5.25	(−4.51)[g]	104
	B1 TXDIVS14	0.48	(1.81)[e]		B1 TXDVDIFF	2.63	(1.36)[d]		−3.45	(−1.78)[e]	
	B2 DIV2PID	0.81	(4.27)[g]		B2 DIV2PID	1.49	(0.95)		0.71	(3.53)[g]	
	B3 DISTPREF	0.24	(3.97)[g]		B3 DISTPREF	0.50	(3.47)[g]		0.15	(2.01)[f]	
	B4 REFCHNG	0.45	(1.72)[e]		B4 REFCHNG	0.58	(0.66)		0.67	(2.25)[f]	
1842[c]	Constant	−13.55	(−1.00)	227	Constant	−19.64	(−0.20)	126	−24.18	(−1.75)[e]	101
	B1 TXDIVS56	1.15	(2.45)[f]		B1 TXDVDIFF	−3.67	(−0.49)		−14.70	(−2.15)[f]	
	B2 DIV3PID	2.99	(0.88)		B2 DIV3PID	2.30	(0.39)		5.73	(1.67)[e]	
	B3 DISTPREF	0.16	(1.37)[d]		B3 DISTPREF	0.15	(0.40)		0.27	(1.80)[e]	
	B4 REFCHNG	0.24	(0.85)		B4 REFCHNG	2.41	(0.10)		0.47	(1.25)	
1846a	Constant	−5.24	(−3.68)[g]	239	Constant	−5.64	(−2.23)[f]	130	−5.07	(−2.65)[f]	109
	B1 TXDIVS56	1.24	(3.60)[g]		B1 TXDVDIFF	1.78	(1.10)		−4.20	(−1.53)[d]	
	B2 DIV4PID	1.21	(7.49)[g]		B2 DIV4PID	1.16	(5.51)[g]		1.36	(4.10)[g]	
	B3 DISTPREF	0.15	(2.10)[f]		B3 DISTPREF	0.39	(2.94)[g]		0.04	(0.47)	
	B4 REFCHNG	0.48	(1.40)[d]		B4 REFCHNG	0.50	(0.81)		0.76	(1.53)[d]	
1846b	Constant	−4.47	(−3.29)[g]	236	Constant	−5.85	(−2.17)[f]	127	−5.10	(−2.63)[f]	109
	B1 TXDIVS56	1.06	(3.16)[g]		B1 TXDVDIFF	0.51	(0.30)		−1.45	(−0.57)	
	B2 DIV6PID	1.18	(7.54)[g]		B2 DIV6PID	1.23	(5.52)[g]		1.36	(4.16)[g]	
	B3 DISTPREF	0.16	(2.20)[f]		B3 DISTPREF	0.46	(2.98)[g]		0.03	(0.37)	
	B4 REFCHNG	0.28	(0.85)		B4 REFCHNG	0.54	(0.82)		0.77	(1.52)[d]	

1846c	Constant	−7.56	(−4.15)[g]	151	Constant	−3.49	(−0.02)	80	−5.83	(−3.90)[g]	71
	B1 TXDIVS56	1.96	(3.23)[g]		B1 TXDVDIFF	3.00	(0.32)		−1.38	(−0.36)	
	B2 DIV7PID	1.49	(4.74)[g]		B2 DIV7PID	3.27	(0.33)		1.46	(4.47)[g]	
	B3 DISTPREF	−0.30	(−2.18)[f]		B3 DISTPREF	0.01	(0.03)		−0.30	(−2.10)[f]	
	B4 REFCHNG	0.31	(0.88)		B4 REFCHNG	−2.69	(−0.05)		0.38	(1.06)	

[a] Probability of free-trade vote = A + B1 (diversification of constituents' income) + B2 (M.P. party ID) + B3 (predicted trade preference of M.P. constituency district) + B4 (effects of 1832 Reform on district).

[b] TXDIVS14 gives the borough and county aggregate diversification scores for the 1814 income tax returns sample; TXDIVS56 gives the borough and county aggregate diversification scores for the 1856 income tax returns sample; and TXDVDIFF is the difference between TXDIVS14 and TXDIVS56. Variable descriptions are as follows: DISTPREF is predicted trade preference, based upon constituency district economic composition in 1831–32; REFCHNG is effect of the 1832 Reform Act on electoral constituencies; DIV2PID is party affiliation of M.P.'s, for 1834 division; DIV3PID is party affiliation of M.P.'s, for 1842 division; DIV4PID is party affiliation of M.P.'s, for 1846a division; DIV6PID is party affiliation of M.P.'s, for 1846b division; DIV7PID is party affiliation of M.P.'s, for 1846c division

[c] In this division, DIV3PID (M.P. party affiliation) exhibited virtually no variation. In contrast to linear regression, this made obtaining statistical significance difficult in probit analysis.

[d] Significant at the 80% confidence level, two-tailed test.

[e] Significant at the 90% confidence level, two-tailed test.

[f] Significant at the 95% confidence level, two-tailed test.

[g] Significant at the 99% confidence level, two-tailed test.

Concluding Remarks

This paper focuses on the application of the specific factors model to an industrializing country, in this case Britain in the first half of the nineteenth century. I argue that the driving force behind the diversification of the asset portfolios of landowners was the rapidly emerging capital market, evidenced in the 1830s by the spread of stock market activity throughout Britain. I attempt to prove that the apparent difficulty in reconciling conventional applications of the specific factors model with the decision of M.P.'s to repeal the Corn Laws can be overcome by switching from a model based on a measurement of the asset stocks of voters to one that incorporates the corollary of industrialization, namely, the diversification of factor returns from land rents into higher yield industrial capital. This makes a model based on income flows rather than on capital stocks a more meaningful tool.

The results at both the individual and the aggregate level reported in this paper indicate that as landowners diversified into industry, the political benefits accruing to M.P.'s from maintaining protection in agriculture diminished. M.P.'s from districts that were more diversified away from agriculture were more likely to vote in favor of free trade than were those from less diversified districts. In turn, the diversification of districts was a measure of the degree to which individual voters were acquiring a range of specific interests that were focused less on agricultural rents. Thus, there was a lessening of the incentives for M.P.'s to defend the Corn Laws and a decisive policy shift by Britain toward liberalization of trade.

Early industrializers such as Britain and the U.S. mobilized capital in smaller units, since the average scale of each business was smaller than it was for later industrializers. In Britain, the combination of a large role for direct investment (in the form of ownership of industrial production by landowners) and the early development of securities markets enabled profit-maximizing landowners to switch directly into industrial investment. It is the hypothesis of this paper that such direct ownership of industrial capital was an important factor in changing the trade preferences of landowners. Turning to cases of later industrialization (for example, Germany and Japan) in which larger sums of initial capital investment were required, the dominant actors responsible for managing the flow of investment capital were banks. The requirement for larger sums of investment capital created a role for banks as providers and thereby limited the direct involvement of landowners in the diversification of their portfolios (though this does not provide an explanation for why in some countries banks rather than securities markets were the

major source of capital-raising activity). Landowners were able to invest in banks whose role was to mobilize the capital needed for larger units of production and that could pool the risks to an extent that could no longer be done by individuals investing directly. This paper has found a link between direct investment in industrial capital and a change in trade policy preferences; however, where the investment link is indirect, via a bank that pools risk by spreading its assets across economic sectors, it is more likely that the trade preferences of asset holders will be more weakly specified.

Appendix

Parliamentary Divisions

1826. Mr. W. Whitmore's motion for the consideration of free trade in corn (April 18, 1826): ayes = 81; noes = 250. (Division included only the minority M.P.'s and of these, only 65 could be identified by district.)

1834. Mr. Hume's motion for a committee on the Corn Laws (March 6, 1834). This was the first motion on the Corn Laws to be brought forth in the reformed Parliament: ayes = 155; noes = 312. (Two M.P.'s voting no could not be identified by district.)

1842. Mr. Villier's motion to abolish all the duties on corn (February 24, 1842): ayes = 90; noes = 393. (Two M.P.'s voting no could not be identified by district.)

1846(a). Mr. P. Mile's amendment to delay the House going into committee to consider the Corn laws by six months (thus forcing a vote on Peel's motion that the House immediately resolve itself into a committee of the whole, i.e., Peel's first reading of the Corn Law Repeal) (February 27, 1846): ayes = 337; noes = 240. (One M.P. voting aye could not be identified by district.)

1846(b). Mr. Peel's motion to repeal the Corn Laws, third reading (May 15, 1846): ayes = 327; noes = 229. (All M.P.'s identified by district.)

1846(c). Mr. Villier's amendment calling for total and immediate repeal of the Corn Laws (versus the gradualist nature of Peel's motion, with complete abolition of duties in 1849) (March 6, 1846). The House divided on the question that Peel's motion retain the 1849 date: ayes = 265; noes = 78. (Ayes coded as a vote for protection, and noes coded as a vote for free trade. Districts of two M.P.'s were questionable but were coded according to my best guess estimate.)