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# *Parties and Interests in the 'Marriage of Iron and Rye'*

CHERYL SCHONHARDT-BAILEY

This article analyses Imperial Germany's legendary coalition of landed aristocracy and heavy industry around a policy of tariff protection. Using a simple model of voting behaviour, where party affiliation serves as a partial intervening variable between constituency interests and legislative votes on trade policy, I test hypotheses derived from three different interpretations of the 'marriage of iron and rye'. Roll-call votes from four key divisions in the Reichstag are analysed in a number of forms, ranging from cross-tabulations to conditional logistic regression. Ronald Rogowksi's 'factor endowment' model offers an important dynamic perspective that is lacking in the others, but his model must be reconciled with anomalies that arise in the short run. Rather than attempting to disentangle political party ideology from constituents' interests, more insight may be gained from understanding *why* the effects of the two causal factors were not fixed, and *how* they varied over time.

Perhaps one of the most studied coalitions of diverse economic interests is Germany's 'marriage of iron and rye', in which heavy industry and the large agricultural estate owners of east Elbian Prussia (the *Junkers*) coalesced around a tariff policy for both industrial and agricultural imports. Two parallel events – the Great Depression (c.1873–c.1896) and a rapid growth in foreign grain imports in the mid-1870s – created economic insecurity for the coal and steel interests and the grain-producing landed estates, respectively. The shift to protection with the Tariff Law of 1879 cemented an alliance which for some commentators continued through the first decade of the twentieth century. This article examines the 'marriage' with two purposes. First, three interests-based interpretations are presented: (1) a compromise between unequals, in which the *Junkers* asserted their authoritarian influence over the politically backward industrialists; (2) a recurring convergence of interests, driven and punctuated by conflict between classes, religions, industries and regions; and (3) a coalition of owners of scarce factors of production, joined and separated by structural

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changes in Germany's economy.[1] Hypotheses derived from these interpretations are tested, giving particular attention to areas where the three disagree. I assess the strengths and weaknesses of the interpretations by analysing statistically the relationships between constituency interests and the party affiliation of their representatives, and then the combined effects of party affiliation and constituency interests on voting behaviour in the Reichstag. Because advanced statistical analysis of four historic divisions associated with the marriage – the 1879 Tariff Law, the 1893 Romanian Treaty, the 1894 Russian Treaty, and the 1902 Tariff Law – is unprecedented (as far as I know), this study provides a first step towards formally testing some of the contradictory interpretations of this important coalition. The findings suggest that economic interests, shaped by changes in Germany's relative factor endowment, adequately capture the long-run dimension of the marriage, but in the short run, political–ideological factors cannot be ignored.

A second purpose of this article is to contribute a historical perspective to the 'ideology versus interests' debate in the literature on legislative behaviour. It is generally accepted that the 1879 tariff marked a watershed in Imperial German politics: 'It signified the disappearance of parties grounded upon political principle and ushered in a new era, in which parties were to act as the agents of specific economic interests'.[2] Political party ideology, it is argued, gave way to pressure group politics. Statistical analysis of roll-call votes on trade policy in the Reichstag provides a useful, if difficult, test of this proposition. Recent work highlights serious difficulties in attempting to disentangle empirically the relative effects of ideology and economic interests on roll-call votes.[3] As yet no general agreement exists on the 'proper' method for measuring the effects of constituents' ideological predispositions, their economic interests, and the ideological predispositions of representatives (and how this translates into party affiliation). Rather than attempting to disentangle ideology from interests, the strategy adopted here is to examine the overlap between these two causal agents.

[1] Elsewhere I examine a fourth 'statist' interpretation ('Sorting the Wheat from the Chaff: The "Marriage of Iron and Rye" Revisited', unpublished working paper, London School of Economics and Political Science, 1994).

[2] Dan S. White, *The Splintered Party: National Liberalism in Hessen and the Reich 1867–1918* (Cambridge, Mass.: Harvard University Press, 1976), p. 11.

[3] Brian L. Goff and Kevin B. Grier, 'On the (Mis)measurement of Legislator Ideology and Shirking', *Public Choice*, 76 (1993), 5–20; Joseph P. Kalt and Mark A. Zupan, 'The Apparent Ideological Behaviour of Legislators: Testing for Principal–Agent Slack in Political Institutions', *Journal of Law and Economics*, 33 (1990), 103–32; Kalt and Zupan, 'Capture and Ideology in the Economic Theory of Politics', *American Economic Review*, 74 (1984), 279–300; Keith Krehbiel, 'Constituency Characteristics and Legislative Preferences', *Public Choice*, 76 (1993), 21–38; Sam Peltzman, 'Constituent Interest and Congressional Voting', *Journal of Law and Economics*, 27 (1984), 181–210; Sam Peltzman, 'An Economic Interpretation of the History of Congressional Voting in the Twentieth Century', *American Economic Review*, 75 (1985), 656–75; Keith T. Poole, 'Recent Developments in Analytical Models of Voting in the US Congress', *Legislative Studies Quarterly*, 13 (1988), 117–33.

THE 'MARRIAGE'

In the early 1870s rapid advances in transportation coupled with increased competition in world grain markets from more efficient Russian and American farmers meant that German *Junkers*, who were formerly net exporters of grain, became producers who had to compete with imports.[4] At about the same time, the Great Depression squeezed the profitability of industrial firms.[5] Because many of these firms were newly created, or had recently expanded during the previous boom years, the problem of excess capacity in the domestic market was severe – and made worse with the integration into the Zollverein of the Alsace-Lorraine iron, steel and cotton spinning industries. Reductions in iron and steel tariffs (1873) and the complete abolition of the pig iron tariff in 1877 helped to mobilize heavy industry against Germany's free-trade orientation. Grain producers and heavy industrialists, up to then suspicious adversaries, converged upon a common interest in protectionism. The tariff of 1879 enacted this policy shift into legislation.

In the 1880s there were two further increases in agricultural tariffs, while industrial tariffs remained virtually constant.[6] By the early 1890s, real and potential retaliation from Germany's trading partners convinced German industry of the need to take measures to regain (and expand) export markets. Between 1891 and 1894, Chancellor Otto von Bismarck's successor, Leo von Caprivi, negotiated numerous foreign trade agreements that effectively exchanged lower German tariffs on agriculture for reductions in foreign tariffs on German industrial goods. As Caprivi's treaties approached their expiration, Chancellor Bernhard von Bülow introduced the 'general tariff' in 1902, thereby signalling a resumption of high agricultural tariffs.[7]

In brief, the years 1879, 1891–94 and 1902 exhibit policy shifts from free trade to protection, to freer trade, then back to protection. The next section, which tests competing interpretations of the marriage, analyses Reichstag deputies' roll-call votes for four divisions—two motions for *higher* tariffs (the 1879 and 1902 *autonomous* Tariff Laws) and two for *lower tariffs* (the 1893 Romanian and the 1894 Russian trade treaties). Of the Caprivi trade agreements,

[4] Ivo Nikolai Lambi, *Free Trade and Protection in Germany 1868–1879* (Wiesbaden: Franz Steiner Verlag GMBH, 1963).

[5] David Blackbourn, 'The Discreet Charm of the Bourgeoisie: Reappraising German History in the Nineteenth Century', in David Blackbourn and Geoff Eley, eds, *The Peculiarities of German History* (Oxford: Oxford University Press, 1984); Martin Kitchen, *The Political Economy of Germany 1815–1914* (London: Croom Helm, 1978); Timothy James McKeown, 'The Rise and Decline of the Open Trading Regime of the Nineteenth Century' (doctoral dissertation, Stanford University, 1982), chap. 8; Hans Rosenberg, *Grosse Depression und Bismarchzeit* (Berlin, 1967).

[6] Sarah Rebecca Tirrell, *German Agrarian Politics After Bismarck's Fall: The Formation of the Farmers' League* (New York: Columbia University Press, 1951), pp. 74–7.

[7] Percy Ashley, *Modern Tariff History: Germany–United States–France* (London: John Murray, 1920), p. 86.

the Romanian and Russian treaties were of greatest significance. Both the agricultural and industrial lobbies considered the 1893 Romanian Treaty to be the most important of the 'small treaties' negotiated by Caprivi (with Romania, Spain and Serbia).[8] For the iron and textile manufacturers, exports to Romania were estimated at 100 million marks, whereas Spanish exports were 40–50 million and Serbian only several million. In contrast, Romania provided about 10 per cent of Germany's wheat imports and about 7 per cent of rye imports. Since Romania imposed no tariff on Russian grain imports, the agrarians feared that lower tariffs on Romanian grain would lead to a 'flood' of Russian rye into Germany.[9] The 1894 Russian Treaty was also crucial to both lobbies. Ten years of poor trade relations between Russia and Germany had culminated in a trade war in the early 1890s, precipitating fears 'that an actual war might result if a better understanding was not achieved at once'.[10] Heavy industrialists lobbied hard for passage of the treaty, while the agrarians lobbied forcefully against it. The agrarians were particularly sensitive since Russia was by far Germany's leading supplier of grain, providing 31 per cent of wheat imports and 67 per cent of rye imports in the early 1890s.[11]

### *The Marriage as a Compromise*

Studies of democratic theory and the political economy of development have pointed to this coalition of landowners and industrialists as illustrative of the authoritarian path to development particularly evident among late industrializers which have experienced no revolutionary break from the past. Prominent works – which, together, constitute the 'traditional' interpretation – have portrayed the coalition as a partnership of a politically dominant agrarian elite and a politically weak, underdeveloped bourgeoisie *against* a rising proletariat.[12] The bourgeoisie is said to have accepted the political, social and

[8] Tirrell, *German Agrarian Politics After Bismarck's Fall*, pp. 207–47.

[9] Tirrell, *German Agrarian Politics After Bismarck's Fall*, pp. 21, 226–7.

[10] Tirrell, *German Agrarian Politics After Bismarck's Fall*, p. 254. Russian duties were increased seven times between 1881 and 1890, resulting in a large drop in German exports to Russia. In 1891, Russian imports to Germany were subjected to a 50 per cent tariff, while a similar tariff was placed on German imports to Russia (pp. 82–3, 253).

[11] Tirrell, *German Agrarian Politics After Bismarck's Fall*, p. 21.

[12] Alexander Gerschenkron, *Bread and Democracy in Germany* (Berkeley: University of California Press, 1943); and *Economic Backwardness in Historical Perspective* (Cambridge, Mass.: Harvard University Press, 1962); Barrington Moore Jr, *Social Origins of Dictatorship and Democracy: Lord and Peasant in the Making of the Modern World* (Boston, Mass.: Beacon Press, 1966); Eckart Kehr (ed. and trans. by Pauline R. Anderson and Eugene N. Anderson), *Battleship Building and Party Politics in Germany, 1894–1901* (Chicago: Chicago University Press, 1975); Kehr (edited and with an introduction by Gordon A. Craig), *Economic Interest, Militarism, and Foreign Policy* (Berkeley: University of California Press, 1977); James R. Kurth, 'Industrial Change and Political Change: A European Perspective', in David Collier, ed., *The New Authoritarianism in Latin America* (Princeton, NJ: Princeton University Press, 1979); Hans-Jürgen Puhle, 'Lords and Peasants in the Kaiserreich', in Robert G. Moeller, ed., *Peasants and Lords in Modern Germany:*

ideological dominance of the agrarian elite in exchange for state support for industrialization; that is, by compromising with the 'aristocratic' and 'authoritarian' large landowning elite, industrialists assimilated the same authoritarian value system. In short, German industrialists of the nineteenth century 'failed to develop a sufficiently strong liberal constitutionalist backbone' – a handicap that plagued German political development until 1945.[13]

Yet, underpinning this partnership of unequals were raw economic interests – particularly those of the *Junkers*. The traditional interpretation maintains that as the *Junkers* began to fear lower prices from foreign grain imports, they reversed their support for free trade in agriculture[14] and pushed for protection for German agriculture.[15] 'For industry as a whole', Gerschenkron notes, 'agricultural tariffs meant labour pressure for increased wages, retardation in the flow of labour supply from agricultural districts, … and danger of retaliation on the part of countries which supplied wide markets for the products of German industry'.[16] But for heavy industry, reciprocal tariffs on iron and steel manufactures constituted 'more than' sufficient compensation, since these tariffs created 'a monopolistic position in the domestic market'.[17] Ideally, industrialists would have preferred industrial tariffs without agricultural protection, but since the landowners held veto power, they learned that this was not possible.[18]

Agricultural tariffs perpetuated feudalism, allowing the *Junkers* to benefit from protection, whereas smaller farmers and peasants, as producers primarily of livestock (and therefore consumers of grain for feed), suffered. Traditionalists have some difficulty explaining why smaller farmers and peasants generally supported agricultural protection, except to lament that they were duped into believing that the large landowners were spokesmen for the whole of agriculture.[19] More recently, some historians have given more credit to the rationality of peasants, arguing that they gained from restrictions on the import

*(F'note continued)*
*Recent Studies in Agricultural History* (Winchester, Hants: Allen & Unwin, 1986); Dietrich Rueschemeyer, Evelyne Huber Stephens and John D. Stephens, *Capitalist Development and Democracy* (Cambridge: Polity Press, 1992).

[13] Geoff Eley, 'The British Model and the German Road: Rethinking the Course of German History Before 1914', in Blackbourn and Eley, *The Peculiarities of German History*, p. 43; Kitchen, *The Political Economy of Germany 1815–1914*, pp. 167–8.

[14] Gustav Stolper (continued by Karl Häuser and Knut Borchardt, trans. by Toni Stolper), *The German Economy 1870 to the Present* (London: Weidenfeld & Nicolson, 1967), pp. 35–7.

[15] Kitchen, *The Political Economy of Germany 1815–1914*, pp. 143–54; Lambi, *Free Trade and Protection in Germany 1868–1879*, pp. 131–50.

[16] Gerschenkron, *Bread and Democracy in Germany*, p. 45.

[17] Gerschenkron, *Bread and Democracy in Germany*, pp. 45–7.

[18] Tirrell, *German Agrarian Politics After Bismarck's Fall*, p. 71.

[19] Other traditionalists are more nuanced in their assessment of the motivations of the peasants (David Abraham, *The Collapse of the Weimar Republic: Political Economy and Crisis* (Princeton, NJ: Princeton University Press, 1981), p. 65; Puhle, 'Lords and Peasants in the Kaiserreich', p. 99).

of livestock, and from grain tariffs themselves.[20] In contrast, other historians have rejected the notion of agrarian 'unity' entirely.[21]

Traditionalists maintain that the interests of the agrarians were further united through the restructured Conservative party. Whereas 'old' German conservatism was ideological in orientation, new conservatism (organized in 1876 as the Deutsch-Konservative Partei) sought to represent the economic interests of the land-owning aristocracy.[22] By the early 1890s, in response to the threat of the Caprivi trade reforms, militant Prussian landowners created a modern interest group, the Farmers' League (Bund der Landwirte). Rather than competing with the Conservative party, the League strengthened and reformed it by broadening the electoral support base for conservatism, particularly among the smaller proprietors and lower-middle classes. The League appealed to smaller farmers with a new ideology of *völkisch* nationalism,[23] thereby enveloping the protectionist interests of the Prussian landowners into a more national conservative movement.

In sum, the traditional compromise interpretation of the marriage emphasizes: (1) the shift in the late 1870s towards support for protection by the landowning elite and the agrarian population as a whole; and (2) the role of the Conservative party as the 'mouthpiece' of the agrarian interest. These two characteristics highlight the traditional interpretation's predominant concern with agrarian unity, which was defined by the economic interests of the import-competing grain-producers and was carried into the political arena by the Conservative party. As a testable hypothesis,

HYPOTHESIS 1: *Agrarian unity should be reflected in (a) agrarian regions voting predominantly for Conservative party representatives; and (b) deputies from agrarian regions voting for agricultural protection in the Reichstag*.

Moreover,

HYPOTHESIS 2: *Conservative party delegates in the Reichstag should consistently and uniformly support high agricultural tariffs*.

[20] James C. Hunt, 'Peasants, Grain Tariffs, and Meat Quotas: Imperial German Protectionism Reexamined', *Central European History*, 7 (1974), 311–31; Robert G. Moeller, 'Peasants and Tariffs in the *Kaiserreich:* How Backward were the *Bauern?' Agricultural History*, 55 (1981), 370–84; Steven B. Webb, 'Agricultural Protection in Wilhelminian Germany: Forging an Empire with Pork and Rye', *Journal of Economic History*, 42 (1982), 309–26.

[21] John Hobson, 'The Tax-Seeking State: Protectionism, Taxation and State Structures in Germany, Russia, Britain, and America, 1870–1914' (doctoral dissertation, London School of Economics and Political Science, 1991), pp. 57–60; Tirrell, *German Agrarian Politics After Bismarck's Fall*, pp. 17, 271.

[22] Robert M. Berdahl, 'Conservative Politics and Aristocratic Landholders in Bismarckian Germany', *Journal of Modern History*, 44 (1972), 1–20, p. 20; Hans-Jürgen Puhle, 'Conservatism in Modern German History', *Journal of Contemporary History*, 13 (1978), 689–720, p. 698.

[23] Puhle, 'Conservatism in Modern German History', p. 703.

*A Divisive 'Marriage'*

It is perhaps a misnomer to claim that recent criticisms of the traditional view (so-called 'revisionists') provide a single interpretation of the marriage, particularly since some authors adhere to a Marxist perspective while others are liberal in orientation. The common theme, however, is one of conflict and division. Some authors stress the political ramifications of divisions within German industry (heavy versus light, new versus old, cartelized versus non-cartelized, and efficient versus inefficient producers).[24] Others emphasize the cultural separatism of German Catholicism (including, but not limited to the duration of the *Kulturkampf*) or the hysteria of anti-socialism.[25] Economic and social divisions were further complicated by German federalism, which gave rise to conflicts between the local and national governments, as well as between regions.[26]

I focus on one key area of conflict, namely intra-industry conflict between light (usually non-cartelized) industry and heavy (cartelized) industry. Several revisionists, who fault the traditionalists for overstating the cohesiveness of German industry, maintain that on tariffs it split into opposing factions. The less concentrated sectors of the light and consumer-goods industries (leather-working, textiles, woodworking) were forced to pay higher prices for tariff-protected raw materials controlled by the cartelized heavy industries and the agricultural sector.[27] In 1895, these industries launched a counter-movement to the Centralverband deutscher Industriellen (CVDI),[28] the Bund der Industriellen (BdI), thereby creating a conspicuous dichotomy between the

[24] Abraham, *The Collapse of the Weimar Republic*; Blackbourn, 'The Discreet Charm of the Bourgeoisie'; David Calleo, *The German Problem Reconsidered: Germany and the World Order, 1870 to the Present* (Cambridge: Cambridge University Press, 1978); Eley, 'The British Model and the German Road'; Peter Gourevitch, *Politics in Hard Times: Comparative Responses to International Economic Crises* (Ithaca, NY: Cornell University Press, 1986); Lambi, *Free Trade and Protection in Germany*; James J. Sheehan, *German Liberalism in the Nineteenth Century* (Chicago: University of Chicago Press, 1978); Frank B. Tipton, *Regional Variations in the Economic Development of Germany During the Nineteenth Century* (Middletown, Conn.: Wesleyan University Press, 1976); Steven B. Webb, 'Tariffs, Cartels, Technology, and Growth in the German Steel Industry, 1879 to 1914', *Journal of Economic History*, 40 (1980), 309–29.

[25] David Blackbourn, *Class, Religion and Local Politics in Wilhelmine Germany* (New Haven, Conn.: Yale University Press, 1980); Ellen Lovell Evans, *The German Centre Party 1870–1933* (Carbondale and Edwardsville: Southern Illinois University Press, 1981); Dick Geary, 'The German Labour Movement 1848–1919', *European Studies Review*, 6 (1976) 297–330; Susanne Miller and Heinrich Potthoff, *A History of German Social Democracy from 1848 to the Present* (Leamington Spa, Warwicks.: Berg, 1986); Mary Nolan, *Social Democracy and Society: Working Class Radicalism in Düsseldorf, 1890–1920* (Cambridge: Cambridge University Press, 1981).

[26] Tipton, *Regional Variations in the Economic Development of Germany*; James J. Sheehan, 'Liberalism and the City in Nineteenth-Century Germany', *Past and Present*, 51 (1971), 116–37; Sheehan, *German Liberalism in the Nineteenth Century*; White, *The Splintered Party*.

[27] But see Lambi, *Free Trade and Protection in Germany 1868–1879*, pp. 17–19, 121–3.

[28] For the history of the CVDI, see Gordon R. Craig, *Germany 1866–1945* (Oxford: Oxford University Press, 1981); Wolfram M. Haller, 'Regional and National Free-Trade Associations in Germany, 1859–79', *European Studies Review*, 6 (1976), 275–96; Kitchen, *The Political Economy*

organized interests of heavy and light industry. The BdI was the first major organization to represent the liberal, free-trade-in-agriculture interests of German light industry, although other organizations soon followed – the Central Office for the Preparation of Commercial Treaties in 1897, the Association for Commercial Treaties in 1900, and finally the explicitly anti-agrarian Hansabund (Hanse Union) in 1909.

The schism between light and heavy industry became manifest in (1) class conflict, (2) regional conflict and (3) the splintering of political parties. First, light industries were more exposed to labour's demands since they lacked the monopoly power to enact a 'self-help' system of company paternalism.[29] They resorted both to appeals to the state for legislation on managing labour relations, and to *ad hoc* firm-by-firm wage agreements. As a consequence, the Free Trade Unions (whose national membership grew from 222,697 in 1896 to 1,446,529 in 1906)[30] became deeply embedded in the less concentrated industries and made virtually no inroads into the coal, iron, steel, chemicals and heavy machinery industries.[31]

Secondly, conflicts between light and heavy industries reflected a tension between old and new industrial regions, with the former concentrated in Saxony and the latter in the Ruhr. Industry in Saxony, consisting of mostly small manufacturers of finished goods who relied heavily on export markets, pressed for lower agricultural tariffs. In the Ruhr, large mining and metal firms strongly supported high tariffs for both industry and agriculture.[32]

Thirdly, the competing interests of heavy and light industry splintered the National Liberal party and the Left Liberal parties. The former, which was permanently weakened in the late 1870s after losing its position as the 'government party', split on the question of tariffs as a result of the internal divide between light and heavy industries.[33] Its leaders subsequently refused to include tariff policy as a party matter. Many authors have noted that the

*(F'note continued)*
*of Germany 1815–1914*, pp. 144–54; Lambi, *Free Trade and Protection in Germany 1868–1879*, pp. 184–205; Tirrell, *German Agrarian Politics After Bismarck's Fall*, pp. 71–3.

[29] Eley, 'The British Model and the German Road'; Lawrence Schofer, *The Formation of a Modern Labour Force: Upper Silesia, 1865–1914* (Berkeley: University of California Press, 1975), pp. 78–101.

[30] Dieter Fricke, *Handbuch Zur Geschichte Der Deutschen Arbeiter-Bewegung 1869 bis 1917* (Berlin: Dietz Verlag, 1987).

[31] None the less, unionization of heavy industry cannot be entirely overlooked. In the Rhenish-Westphalian region (with approximately 22 per cent of Germany's metal workers), membership of the German Metalworkers' Union (DMV) grew from 1 per cent in 1891, to 12 per cent in 1900, and 20 per cent in 1912. In Brandenburg (including Berlin), with approximately 13 per cent of the nation's metal workers, 3 per cent were DMV members in 1895, 35 per cent in 1907, and 51 per cent in 1912 (Fricke, *Handbuch Zur Geschichte Der Deutschen Arbeiter-Bewegung 1869 bis 1917*).

[32] Tipton, *Regional Variations in the Economic Development of Germany*, p. 140.

[33] Lambi, *Free Trade and Protection in Germany 1868–1879*, pp. 209–11.

National Liberals (and to some extent all liberal parties) lacked both a distinctive social profile and a regional identity.[34] This coincided with the National Liberals' claim to speak for the nation rather than for any particular group, but it also meant that the liberals were unable to consolidate any electoral strongholds (in contrast to, say, the Centre party that controlled the Catholic rural districts[35] and the Conservatives who held the agricultural regions east of the Elbe). Socio-economic and regional diversity thereby weakened the political party 'focus' of liberalism.[36]

The inter-industry conflict thesis suggests that while light industry (which was more constrained by labour demands) was more free-trade oriented, heavy industry sought a political alliance with agriculture that would both deliver high industrial tariffs and squash demands for political reform.

HYPOTHESIS 3: *A measure of the conflicting interests of light and heavy industry should therefore be correlated with the voting patterns in the Reichstag, with representatives of light industry favouring free trade and representatives of heavy industry favouring protection.*

The revisionists also argue that German liberals had multiple and conflicting interests that inhibited their organization and political effectiveness.

HYPOTHESIS 4: *We should thus find that an interests-based model of party affiliation performs comparatively worse for the National Liberal Party and the Left Liberal parties than for the Conservatives, the SPD and the Centre parties.*

A test of conflicting interests should not fail to control for one further factor that divided late nineteenth-century German society – the *Kulturkampf* (the

[34] Dieter Langewiesche, 'German Liberalism in the Second Empire, 1871–1914', in Konrad H. Jarausch and Larry Eugene Jones, eds, *In Search of a Liberal Germany* (Oxford: Berg, 1990); Gerhard A. Ritter, 'The Social Bases of the German Political Parties, 1867–1920', in Karl Rohe, ed., *Elections, Parties and Political Traditions: Social Foundations of German Parties and Party Systems, 1867–1987* (Oxford: Berg, 1990); Sheehan, *German Liberalism in the Nineteenth Century*, pp. 160–241. In a recent work, Jürgen R. Winkler (*Sozialstruktur, Politische Traditionen und Liberalismus: Eine Empirische Längsschnittstudie Zur Wahlentwicklung in Deutschland 1871–1933* (Opladen: Westdeutscher Verlag, 1995)) finds that the correlation between economic structure (which he refers to as urbanization) and votes for liberals is non-existent. This article complements Winkler's study in at least three ways: (1) it offers an issue-specific examination of the role of the liberal parties *vis-à-vis* other parties; (2) the data provide a more highly specified configuration of constituency interests (at the regional level) – particularly the contrast between agricultural and industrial interests, and between light and heavy industry interests; and (3) the analysis links constituency interests to policy making, through the use of roll-call analysis.

[35] The Centre was clearly a denominational party: 'In the elections from 1874 to 1887, the party won, on average, two-thirds of all the votes in constituencies with clear Catholic majorities, whereas it acquired fewer than 2 per cent of the votes in districts with clear Protestant majorities' (Ritter, 'The Social Bases of the German Political Parties', p. 35). Aside from Catholicism, however, the socioeconomic base of the party was heterogenous, including workers, farmers, shop keepers, civil servants, industrialists and aristocrats. Because farmers were over-represented (and industrialists under-represented) in the Catholic population, the party tended to favour the interests of agriculture.

[36] Tipton, *Regional Variations in the Economic Development of Germany*, p. 141.

culture struggle against Catholicism).[37] Bismarck's anti-Catholicism, and in particular his campaign against the Centre (Catholic) party, greatly increased the solidarity of German Catholics against the dominant Protestant population. The link between this religious conflict and the marriage of iron and rye is not explicit,[38] and so, while I introduce it as a control variable, no hypothesis is suggested for it.

### *Marriage from Factor Endowment*

Rogowski develops a theory of political coalitions, or 'cleavages', that highlights the importance of relative factor endowments.[39] Rogowski's theory rests on the standard assumption of the Stolper–Samuelson (SS) theorem,[40] namely that protection increases the real income of owners of the relatively scarce factor(s) at the expense of owners of the relatively abundant factor(s). For Germany, landowners and capitalists, as owners of relatively scarce factors in the late 1870s, stood to gain from protection for agricultural and industrial products,[41] while labour, as the relatively abundant factor, stood to lose. The marriage was consummated because owners of land and capital, and particularly those who used these factors intensively relative to their use of labour,[42] were natural partners in an alliance against labour. However, the marriage began to disintegrate when Germany became an advanced economy around 1890 (Rogowski regards the move to relative capital abundance as synonymous with becoming an advanced economy), at which point capital became a loser from protection under the standard SS analysis. The alliance structure then shifted from one of class conflict (capital and land v. labour) to an urban–rural split where capital and labour advocated free trade and landowners remained protectionist.

A simple test of Rogowski's theory is to consider whether it fits the pattern of trade legislation in Germany. The story seems at first sight to fit the tariff legislation of 1879 and the early 1890s. But, Rogowski emphasizes that after

[37] Evans, *The German Centre Party*.

[38] One possible link might be the struggle between the Centre party and the SPD over the allegiance of Catholic workers (Nolan, *Social Democracy and Society*). Another might be the demonstration effect of an industrial/agrarian alliance within the Centre party.

[39] Ronald Rogowski, *Commerce and Coalitions: How Trade Affects Domestic Alignments* (Princeton, NJ: Princeton University Press, 1989).

[40] Wolfgang F. Stolper and Paul A. Samuelson, 'Protection and Real Wages' (reprinted in American Economic Association, *Readings in the Theory of International Trade* (Philadelphia: Blakiston, [1941] 1949)).

[41] Rogowski argues that falling transportation costs in the 1870s opened East Elbian Germany to foreign competition in grain, thereby making land a scarce factor relative to its abundance in the United States.

[42] The emphasis on the intensity of factor usage is important, and is a standard attribute of the SS theorem. The most intensive users of a scarce factor will be the most protectionist, *ceteris paribus*. Hence, in Germany, iron producers are expected to be more protectionist in the 1870s than, say, textile producers who employed more labour per unit of output.

1895 capital-intensive new industries (chemicals and electrical equipment) split from the protectionist CVDI 'to found the more free-trading Bund der Industriellen; the wider industrial rebellion against high tariffs that underlay the formation of the Hansabund a few years later; and, finally, the victory of the low-tariff forces in the Reichstag elections a few years later.'[43] 'Later' is very much the right word, because Rogowski's chronology skips over the resumption of tariffs in 1902, attributing this to a 'lag'.[44] As long as one is willing to disregard the high tariffs of the first decade of the new century, Rogowski's theory fares well!

We might also test the argument that the intensity of factor endowment in particular industries or agricultural sectors determined alignments on trade policy issues. But, according to Rogowski, in Germany highly capital intensive industries opposed moderately capital intensive industries, while agrarians who used land less intensively (dairy and meat producers) did not oppose the agrarians who used land intensively (grain producers).[45] This begs the question, when does factor intensity become great enough to create fissures among owners and users of a given factor, and is the answer the same for capital and land? This ambiguity complicates, but does not preclude, testing the effect of factor intensity on trade interests. We may accept Rogowski's designation of some industries as highly capital-intensive (chemicals and electrical equipment), some as moderately capital-intensive (metals) and some (textiles) as 'the least capital-intensive of industries'.[46] We may then test whether representatives of these respective industries pressed strongly, moderately or weakly for protection before 1890, and strongly, moderately or weakly for free trade after 1890. In the absence of significant chemicals and electrical equipment industries before 1890, a test of 'pre' and 'post' support must rest on metals and textiles (which I measure more broadly as heavy and light industry), hypothesizing that

HYPOTHESIS 5: *Representatives of heavy industry should be moderately supportive of protection before 1890, and moderately supportive of free trade after 1890.*

Similarly,

HYPOTHESIS 6: *The representatives of light industry should be weakly supportive of protection before 1890, and weakly supportive of free trade after 1890.*

Taking on board Rogowski's fall-back position of the 'lag' effect, we might expect the 'before 1890' portion of Hypotheses 5 and 6 to hold, but anticipate

[43] Rogowski, *Commerce and Coalitions,* p. 40.

[44] In correspondence with the author (27 August 1994), Rogowski argues for the existence of 'a lag of about a generation between a country's attainment of capital-abundance and its capitalists' universal recognition of that abundance. The interim seems to be characterized by a lot of infighting'. It remains unclear, however, how a 'lag' explains a move to free trade under Caprivi, and then a move back to protection under Bülow. Surely the 'lag' argument would predict a delayed move to free trade.

[45] Rogowski (*Commerce and Coalitions*) footnotes that 'some northern German peasants' supported free trade (p. 40).

[46] Rogowski, *Commerce and Coalitions,* p. 163.

no change to have occurred by 1902. A second test of factor intensity has already been given in Hypothesis 1b. While Rogowski accepts the traditionalists' notion of agrarian unity, stronger support for protection by representatives of grain producers (who used land intensively) than by representatives of cattle producers (who used land less intensively) would lend support to his theory.

For easy reference, the six hypotheses from the three interests-based interpretations are as follows:

*Traditional*

HYPOTHESIS 1: *Agrarian unity should be reflected in (a) agrarian regions voting predominantly for Conservative party representatives; and (b) deputies from agrarian regions voting for agricultural protection in the Reichstag.*

HYPOTHESIS 2: *Conservative party delegates in the Reichstag should consistently and uniformly support high agricultural tariffs.*

*Revisionist*

HYPOTHESIS 3: *A measure of the conflicting interests of light and heavy industry should be correlated with the voting patterns in the Reichstag, with representatives of light industry favouring free trade and representatives of heavy industry favouring protection.*

HYPOTHESIS 4: *We should find that an interests-based model of party affiliation performs comparatively worse for the National Liberal party and the Left Liberal parties than for the Conservatives, the SPD, and the Centre parties.*

*Factor Endowment*

HYPOTHESIS 5: *Representatives of heavy industry should be moderately supportive of protection before 1890, and moderately supportive of free trade after 1890.*

HYPOTHESIS 6: *Representatives of light industry should be weakly supportive of protection before 1890, and weakly supportive of free trade after 1890.*

## TESTING THE THEORIES

Hypotheses 1 through 6 are not exhaustive tests of each theory; rather, they test some of the basic premises of the theories. I employ a variety of analytical tools to test these hypotheses, including tabulations of votes by region and by party, and conditional and binomial logistic regression.

My model of voting behaviour is illustrated in Figure 1. Constituents' preferences (as measured by demographic features) influence the votes of their representatives both directly (for example, deputies from urban areas will tend to support workers' interests), and indirectly, through the deputies' party affiliation. Arrow (*c*) reflects the direct effect, while arrows (*a*) and (*b*) reflect the indirect effect. Residual effects are given by *U* and *V*, illustrating that the

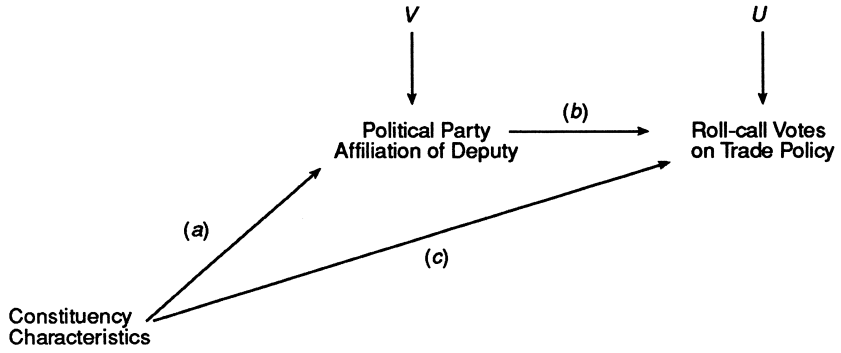


*Fig. 1. A model of voting behaviour*

model is probabilistic, not deterministic. The logic of the model stems from both the sociological and psychological approaches to voting behaviour. Voters use both sociological cues (religion, occupational groupings) and party 'labels' to guide their choices[47] (see Appendix). Deputies, seeking re-election, cast votes in accordance with the interests of their constituents. However, deputies' votes also reflect an ideological component which is partially, but not wholly, indicated by party affiliation. If a deputy 'shirks', he may do so either from party loyalty (in which case the party stance conflicts with the interests of his constituency, and he chooses party over constituency), or from some independent ideological motivation (which may or may not coincide with his party's stance, but clearly conflicts with the interests of his constituency). My model attempts to gauge whether deputies' votes are consistent with the characteristics of their constituencies, and whether the votes demonstrate party loyalty. Using this model, I test the hypotheses against roll-call votes in the Reichstag for four divisions.

The critical reader may argue that because Imperial Germany was ostensibly 'authoritarian', voting behaviour of members of the Reichstag was irrelevant for government policy. Three responses may be offered. First, while deputies may have reacted more than acted, and as a body had no legal control over the Chancellor, Reichstag approval was none the less required for legislation. Most of this legislation was limited to economic policy, which Bismarck encouraged the Reichstag to consider. (Other areas of policy such as expanding parliamentary power or military matters were virtually closed to debate in the Reichstag).[48] Although the Reichstag was circumscribed in its activities, it could exert its authority over trade policy. Secondly, universal male suffrage, secret and direct voting, and voting participation rates of 50 per cent (in 1871) rising to 85 per cent (in 1907) suggest a democratic electoral system on a par with other

[47] Russell J. Dalton and Martin P. Wattenberg, 'The Not So Simple Act of Voting', in Ada Finifter, ed., *Political Science: The State of the Discipline II* (Washington, DC: American Political Science Association, 1993), pp. 193–218.

[48] Craig, *Germany 1866–1945*, pp. 45–6.

TABLE 1 *Deputies' Votes for Increased Protection for Grain (1879, 1902*) and Decreased Protection for Grain (1893 Romanian Treaty, 1894 Russian Treaty), by Region*

| | 1879 | | 1893 | | 1894 | | 1902* | |
|---|---|---|---|---|---|---|---|---|
| Region | Votes | Number voting | Votes | Number voting | Votes | Number voting | Votes | Number voting |
| East Prussia | 20 | (23) | 8 | (20) | 8 | (18) | 12 | (15) |
| West Prussia | 2 | (5) | 2 | (5) | 3 | (5) | 2 | (3) |
| Posen | 5 | (11) | 10 | (13) | 10 | (13) | 6 | (7) |
| Pomerania | 11 | (13) | 2 | (13) | 2 | (12) | 4 | (11) |
| Upper Silesia | 12 | (12) | 6 | (12) | 8 | (12) | 10 | (10) |
| Lower Silesia | 15 | (21) | 13 | (21) | 12 | (21) | 8 | (16) |
| Frankfurt[a] | 9 | (10) | 3 | (9) | 4 | (11) | 5 | (8) |
| Potsdam | 5 | (9) | 3 | (9) | 3 | (9) | 5 | (8) |
| Berlin | 0 | (3) | 6 | (6) | 6 | (6) | 0 | (5) |
| Mecklenburg | 2 | (7) | 1 | (7) | 0 | (5) | 2 | (5) |
| Schleswig-Holstein | 2 | (5) | 7 | (9) | 8 | (11) | 3 | (5) |
| Hanover[b] | 5 | (19) | 14 | (21) | 18 | (21) | 15 | (21) |
| Hanse Cities[c] | 2 | (5) | 3 | (3) | 3 | (3) | 0 | (4) |
| Kingdom of Saxony | 12 | (21) | 11 | (24) | 12 | (23) | 5 | (16) |
| Magdeburg[d] | 2 | (8) | 5 | (8) | 6 | (10) | 4 | (9) |
| Merseburg[e] | 13 | (21) | 14 | (24) | 12 | (21) | 8 | (20) |
| Münster[f] | 8 | (10) | 5 | (12) | 6 | (10) | 6 | (8) |
| Düsseldorf (Ruhr)[g] | 14 | (17) | 15 | (19) | 15 | (16) | 14 | (16) |
| Aachen | 4 | (4) | 4 | (4) | 4 | (5) | 5 | (5) |
| Cologne | 3 | (3) | 4 | (6) | 3 | (5) | 6 | (6) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Trier & Koblenz | 12 | (12) | 10 | (11) | 10 | (11) | 10 | (10) |
| Hessen-Nassau, Oberhessen | 7 | (21) | 7 | (15) | 7 | (16) | 9 | (17) |
| Bavaria | 29 | (34) | 3 | (39) | 5 | (36) | 31 | (34) |
| Württemberg | 14 | (16) | 13 | (16) | 11 | (16) | 8 | (16) |
| Baden | 5 | (12) | 7 | (10) | 9 | (11) | 10 | (13) |
| Hesse | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. |
| Rheinpfalz | 0 | (5) | 6 | (6) | 4 | (6) | 3 | (5) |
| Lorraine | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. |
| Alsace | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. |

[a]District of Frankfurt
[b]Hanover, Oldenburg, Braunschweig, Schaumburg-Lippe
[c]Lubeck, Bremen, Hamburg
[d]Includes Magdeburg, Anhalt
[e]Includes districts of Merseberg and Erfurt, Thuringian States
[f]Includes districts of Munster and Minden, Lippe, Waldeck
[g]Includes districts of Dusseldorf and Arnsberg

*The 1902 vote refers to Division 7.

*Notes:* (i) Abstaining members were not identified in the 1879, 1893 and 1894 divisions. For 1902, abstaining members were identified, and numbered 89 (but are not presented here). (ii) Reichstag deputies could not be identified by region for Hesse (excluding Oberhessen), Lorraine and Alsace. (iii) Some members could not be identified by region. These numbered 7 for 1879 (4 of whom voted for protection), 11 for 1893 (8 of whom voted for the treaty), 12 for 1894 (11 of whom voted for the treaty), and 18 for 1902 (8 of whom voted for protection and 7 of whom abstained).

*Sources:* Choice of regions follows Frank B. Tipton Jr, *Regional Variations in the Economic Development of Germany During the Nineteenth Century* (Middletown, Conn.: Wesleyan University Press, 1976); *Stenographische Berichte über die Verhandlungen des Reichstags*; Max Schwarz, *MdR, Biographisches Handbuch der Reichstage* (Hanover: Verlag für Literatur und Zeitgeschehen GmbH, 1965).

European countries of the time.[49] Thirdly, while the *Junkers* enjoyed considerable political clout in policy decisions,[50] their representatives in the Reichstag did not vote as a monolithic bloc.

*Regional Divisions*

One way to analyse the direct effect of constituents' interests on roll-call votes (Figure 1, (*c*)) entails assessing how closely deputies' votes matched the interests of the regions containing their constituencies. Table 1 displays these votes across the four divisions – two motions for *higher* tariffs (the 1879 and 1902 *autonomous* Tariff Laws)[51] and two for *lower* tariffs (the 1893 and 1894 trade treaties). The table indicates that the western heavy industry regions constituted a more cohesive voting bloc than the eastern agricultural regions. In 1879 and 1902, support for protection was strong in the regions in which metals and/or mining industries were important – Düsseldorf (Ruhr), Aachen, Cologne, Trier and Koblenz, and Upper Silesia.[52] In 1893 and 1894 heavy industry in Ruhr and Aachen supported freer trade along with the trade-reliant Hanse Cities and Berlin (the latter being the only consistent supporter of free trade, whose deputies were of the SPD or Left Liberal parties).

Bavaria was the only highly agricultural region that was a consistently strong supporter of protection. Although support for protection was reasonably strong in the eastern regions (East and West Prussia and Posen) in 1879 and 1902,[53] these regions were far less resistant to freer trade in 1893 and 1894.[54] In the case of the Russian Treaty this was most probably due to fears of war with Russia since the eastern regions were particularly sensitive to their geographic vulnerability. The regional split is less easily explained for the Romanian Treaty.

[49] Ritter, 'The Social Bases of the German Political Parties', p. 32.

[50] Puhle, 'Lords and Peasants in the Kaiserreich'; Tirrell, *German Agrarian Politics After Bismarck's Fall*.

[51] Unlike earlier divisions, the Reichstag voted on twenty-four different aspects of the 1902 Tariff Law. The seventh division, used here, pertained specifically to the minimum tariff levels allowable for grain.

[52] In 1879 and 1902, the Ruhr had the largest percentage of workers in metals (9.3 per cent in 1879 and 14.6 per cent in 1902), and in 1879 it had the largest percentage in mining (13.1 per cent). Other important mining regions were Upper Silesia (which overtook Ruhr in 1902 by employing 16 per cent of its workforce in mining), Trier and Koblenz, and Aachen (both employing more than 5 per cent in mining).

[53] Voting by the Polish members of the Reichstag accounts for a good deal of the lack of support for protection in these regions. In 1879, six Poles from Posen and four from East and West Prussia voted against the tariffs. In 1902, the Poles from Posen were split – six abstained and four voted for higher protection. The split was also evident in East and West Prussia, where three Poles abstained and one from West Prussia voted for protection.

[54] In 1879, East and West Prussia, Bavaria and Posen were the most agricultural regions, with over 60 per cent of regional employment in agriculture. In 1902, only Posen remained above 60 per cent, while East Prussia exceeded 55 per cent and Bavaria, Pomerania and West Prussia exceeded 50 per cent.

The traditionalists' emphasis on agrarian unity (Hypothesis 1(b)) is thus not as well supported as might be expected. The heavy industry voting bloc provides only partial support for the divided interests and the factor endowment approaches (Hypotheses 3 and 5). Representatives of heavy industry did indeed favour protection in 1879 and 1902, but not in the 1890s (as the divided interests approach would have us believe). Moreover, heavy industry's strong support for protection in 1902 does not bode well for the factor endowment model.

### *Parties and Voting Behaviour*

Table 1 provides useful information on the distribution of support for protection, but it ignores a vital political component – the effect of party affiliation on voting behaviour (Figure 1, (*b*)). German party affiliation is not an easy variable to measure: during the period from 1879 to 1902, no less than twenty-six different party affiliations appear for members of the Reichstag, not including the *bei keiner Fraktion* (with no party affiliation, or nonpartisan) members).[55] Following standard groupings in the secondary literature, I reduce these to six major groups of parties: (1) the Conservatives (the Deutsch-Konservative Partei and the Reichspartei, or Freikonservativen); (2) the National Liberals (Nationalliberale Partei); (3) the Centre (Zentrum); (4) the Minorities (for 1879, 1893 and 1894, these included only the Poles, but for 1902 also included five members of the Deutsche-Hannoversche Partei; (5) the Left Liberals (Linksliberale);[56] and (6) the SPD, or Social Democrats (Sozialdemokratische Partei Deutschlands). In all four divisions, these six groups accounted for approximately 90 per cent of the members who voted.

Cross-tabulations of these party groups and the votes (Table 2) reveal strong party allegiances in 1879, but a weakening of these allegiances thereafter – particularly for the Conservatives. In 1879, all the party groupings except the National Liberals voted almost perfectly along party lines. The Conservatives and Centre voted for protection, while the Poles, the Social Democrats, and all but one of the Left Liberals voted against the tariffs. While most of the National Liberals voted against the tariffs, about a quarter voted with the government for protection. In 1893 and 1894, the Conservatives, the Centre and the National Liberals were all internally divided. Most of the Conservatives favoured protection (although more defected to freer trade with the Russian Treaty) and most of the National Liberals supported the trade treaties, while the Centre was almost evenly divided. The Left Liberals, the Poles and the Social Democrats all supported the treaties. In 1902, the Conservatives, the National Liberals and

[55] Max Schwarz, *MdR, Biographisches Handbuch der Reichstage* (Hanover: Verlag für Literatur und Zeitgeschehen GmbH, 1965); *Stenographische Berichte über die Verhandlungen des Reichstags* (Berlin: Verlag der Norddeutschen Buchdruckerei und Verlags-Anstalt, various years.

[56] These included for 1879, the Liberale Vereinigung, the Fortschrittspartei, and the Deutsche Volkspartei; for 1893 and 1894, the Deutsche Freisinnige Volkspartei and the Freisinnige Vereinigung; and for 1902, the Deutsche Freisinnige Volkspartei, the Deutsche Fortschrittliche Volkspartei, the Deutsche Volkspartei, the Fortschrittspartei and the Freisinnige Vereinigung.

TABLE 2 *Reichstag Votes by Party Affiliation*

| | 1879 Tariff | | 1893 Romanian Treaty | | | 1894 Russian Treaty | | | 1902 Tariff (division 7) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Party Grouping | For | Against | For | Against | Abs. | For | Against | Abs. | For | Against | Abs. |
| Social Democrats | 0 | 7 | 37 | 0 | *4* | 39 | 0 | *2* | 1 | 42 | 16 |
| Left Liberals | 1 | 23 | 35 | 0 | *0* | 33 | 0 | *2* | 4 | 22 | 14 |
| Minorities | 0 | 10 | 15 | 0 | *2* | 15 | 0 | *2* | 9 | 0 | 11 |
| Centre | 77 | 0 | 44 | 49 | *4* | 45 | 39 | *13* | 87 | 0 | 14 |
| National Liberals | 20 | 65 | 33 | 13 | *4* | 33 | 16 | *1* | 41 | 9 | 4 |
| Conservatives | 99 | 0 | 9 | 79 | *4* | 14 | 69 | *9* | 48 | 12 | 14 |
| Other | 20 | 12 | 17 | 22 | *8* | 21 | 21 | *5* | 9 | 20 | 16 |
| Total | 217 | 117 | 190 | 163 | *26* | 200 | 145 | *34* | 199 | 105 | 89 |

*Note:* The only division in which the abstaining deputies were listed as such was 1902. The italicized votes for 1893 and 1894 indicates members who voted in 1894 but not in 1893 (and vice versa), and thus approximate the count for abstentions.

the Left Liberals were all internally divided, although most Conservatives and National Liberals favoured higher tariffs and the vast majority of the Left Liberals opposed them. The Minorities (Poles plus the German Hanover party) shifted from their earlier free trade stance to support higher tariffs. All of the Centre voted for protection and all but one of the Social Democrats voted against the higher tariffs.

It is clear that party affiliation mattered more for some parties than for others and that for all parties (except the SPD), party unity varied over time. In sum, party affiliation and regional interests each capture part of the variation in voting behaviour. Any model of Reichstag voting must therefore incorporate both these two factors.

### *The Regression Model*

One way to measure the relationships between (1) the economic composition of members' constituencies, (2) members' party affiliation, and (3) votes on trade policy in the Reichstag, is to estimate a log-linear model. Log-linear analysis would not, however, incorporate interval-level data on the economic composition of each region. Since this information is useful for testing the six hypotheses, I instead employ conditional and binomial logistic regression.

*Measures of constituency characteristics.* For simplicity, and to minimize problems of multicollinearity, I use five measures for constituency characteristics, all measured at the regional level for years near to 1879, 1893/4 and 1902.[57] Agrarian unity is tested with two variables: (1) the number of hectares ('000s) in the region used for growing wheat and rye; and (2) the number of cows (and pigs for 1893, 1894 and 1902) in the region ('000s).[58] Hypothesis 1 predicts that representatives from agricultural regions will support protection, and that this support will not differ substantially between representatives from grain producing and animal husbandry areas. Contrary evidence would weaken the traditional approach and strengthen the factor endowment approach. Employment data are taken as indicators of the interests of light and heavy industry. Light industry measures the percentage of workers in the region employed in the production of textiles, clothing, wood products, leather and printing. Heavy industry measures the percentage of workers in the region employed in

[57] The agriculture and religion variables are from Kaiserliches Statistisches Amt., *Statistisches Jahrbuch für das Deutsche Reich* (Berlin: Puttkammer & Mühlbrecht) for 1878/79, 1892 and 1902. Data for light and heavy industry are from Tipton, *Regional Variations in the Economic Development of Germany*, using the years 1882, 1895 and 1907. Data limitations are discussed in the Appendix.

[58] In preliminary analysis, a simple dummy variable for East Elbian regions was used to differentiate grain producers from producers of other agricultural goods. This variable yielded very similar results (for both the conditional and binomial logistic models) to those for the two variables described in the text. I also tested whether wheat and rye yields (indexed by the national average yield and weighted by the share of acreage given to each crop in the region) affected party affiliation of deputy or support for protection. This variable performed poorly and was dropped.

metalworking, machinery, mining and quarrying.[59] Hypothesis 3 predicts that representatives of light industry interests will support free trade and representatives of heavy industry will support protection. Evidence of a clear split in these interests would be consistent with the divided interests approach. Hypothesis 5 predicts a shift in heavy industry's support from protection to free trade, while Hypothesis 6 predicts a similar, but notably weaker, shift in support from light industry.[60] Evidence to the contrary would weaken the factor endowment approach. Finally, the percentage of the Catholic population in each region is included as a control variable (as discussed earlier).

*Predicting party affiliation.* Arrow (*a*) in Figure 1 indicates that voters' choices are in part a function of socioeconomic features of the constituency. To test this formally, I use the five variables for constituency characteristics to estimate party affiliation. The constituency variables are measured at the interval-level and the dependent variable consists of the six party groups. (For reasons explained in the Appendix, two party-specific variables are also included.) I use a conditional logit model, since common regression models like OLS or logit are inappropriate for models with multiple non-ordered categories for the dependent variable.[61] Unlike binomial logit, where the dependent variable is normally coded 0 or 1, in conditional logit it normally begins with 1 rather than 0 and continues to $K$ levels. The codes for party affiliation are, SPD (1), Left Liberal (2), Minorities (3), Centre (4), National Liberal (5), and Conservative (6) ($K = 6$). The ordering of the categories is irrelevant, except for the baseline category which should, ideally, reflect a 'natural' base category (if one exists) and/or have the largest number of cases. The Conservatives were chosen as the category most approximating these criteria. The baseline category is the reference category for a series of binomial logits (or submodels for each category against the baseline category) that are estimated simultaneously. Estimates are generated for $K - 1$ sub-models (here 5), and thus can be far from simple to interpret. These coefficients and significance tests are reported in Tables 3–5. The tables also report various measures of good fit, including the percentages correctly predicted, the log-likelihood ratio and McFadden's $\rho^2$, a pseudo $R^2$ value.[62]

[59] Clay and mining are grouped with metals as industries that formed the nucleus of the CVDI (Eley, 'The British Model and the German Road', p. 106).

[60] Elsewhere I explore the effects of geographic concentration of industry interests on support for protection in the marriage of iron and rye ('Sorting the Wheat from the Chaff: The "Marriage of Iron and Rye" Revisited' (unpublished working paper, London School of Economics and Political Science, 1994); and also, *Modelling Ideology and Interests: Agricultural Trade in Britain and Germany*, forthcoming).

[61] Alan Agresti, *Categorical Data Analysis* (New York: Wiley, 1990). For further explanation of conditional logit, and how it differs from multinomial logit, see the Appendix.

[62] Pseudo $R^2$s are often criticized, however (John H. Aldrich and Forrest D. Nelson, *Linear Probability, Logit, and Probit Models* (London: Sage, 1984).

The party-specific variables perform poorly in all three regressions.[63] On the whole, the remaining variables provide a reasonable fit for party choice (on average, 39 per cent correctly predicted), but with some clear exceptions. Small numbers of Social Democrats and Minorities create severe multicollinearity problems for those two submodels in 1879 and 1894 (Tables 3 and 4), making interpretation of these coefficients inadvisable. By contrast, economic interests explain quite large percentages of the Centre and Conservatives. Both liberal parties are less well predicted by an interests-based model, lending support to the divided interests approach (Hypothesis 4) which suggests that the liberals lacked a socio-economic profile.

The significance and sign of each predictor varies markedly from party to party, but one theme is conspicuous. The emphasis of the traditionalists on agrarian unity (Hypothesis 1 (a)) is *not* warranted by the evidence. A clear split between grain and animal producers is evident for the Left Liberal, Centre and National Liberal submodels. Grain producing constituencies consistently voted Conservative while animal producing constituencies consistently voted against the Conservatives. A derivative table provides another way to look at the influence of these two variables (Table 6).[64] (I do not present the derivative tables for 1879 and 1894, since the multicollinearity problems mentioned above would distort the averages.) When the grain producing area increased by 1,000 hectares (one unit), the probability of returning a Conservative deputy increased by 0.0008, while the probability of returning a National Liberal decreased by $-0.0005$ (and so on, for each party). Similarly, when the number of cows and pigs increased by 1,000, the probability of returning a Conservative deputy decreased by $-0.0002$. To illustrate, compare East Prussia with Baden. In 1900, East Prussia had about 543,000 hectares of grain-producing area and approximately 1,904,000 cows and pigs. For Baden, the numbers approximated 87,000 and 4,823,000, respectively. Thus, while its large grain area increased the probability of East Prussia returning a Conservative deputy by 0.43, animal husbandry decreased the probability by $-0.38$ (*ceteris paribus*). Baden's relatively small grain area increased the probability of returning a Conservative by only 0.07, while its specialism in animal husbandry decreased the probability of returning a Conservative by $-0.96$ (*ceteris paribus*). Not surprisingly, in

[63] This suggests that the 'problem' of IIA discussed in the Appendix is probably overstated. Indeed, removing the party-specific variables (and thereby reverting to standard multinomial logit) barely affects the remaining coefficients. Thus, estimation based on an assumption of equal choice probabilities ($P_{SDP} = P_{LL} = P_M = P_Z = P_{NL} = P_{DK} = \frac{1}{6}$) is unlikely to be far from the mark.

[64] A derivative table tells how the probabilities of each of the outcomes change in response to a change in the covariate values. For example, when the percentage of Catholics (% Catholics) increases by one, the probability of voting Catholic goes up by 0.68, while the probability of voting Conservative goes down by 0.29 (and so on, with each category of party). The sum of the entries in each row is zero since an increase in the probability of one category is offset by a decrease in another category. The constant provides no useful interpretation and so is not presented in Table 6. The table allows one to observe how the probabilites of the parties change as values of the independent variables change. (For further details, see Dan Steinberg and Phillip Colla, *Logit: A Supplementary Module for SYSTAT* (Evanston, Ill.: Systat Inc., 1991)

TABLE 3 *Estimated Parameters in Conditional Logit Model for Party Choice, Using Conservative Party Grouping as Baseline Category (1879)*

| | | | Social Democrats | | Left Liberals | |
|---|---|---|---|---|---|---|
| | Coef. | *t*-ratio | Coef. | *t*-ratio | Coef. | *t*-ratio |
| Ideology (party characteristic) | 0.5578 | 1.071 | | | | |
| Religion (party characteristic) | − 0.8073 | − 1.129 | | | | |
| Constant | | | − 84.3237[a] | − 50.090 | − 0.4512 | − 0.437 |
| % Catholic | | | − 29.7708[a] | − 9.728 | 0.6158 | 0.467 |
| Grain-producing area ('000 hectares) | | | 0.0964[a] | 27.978 | − 0.0045[a] | − 2.728 |
| Number of cows ('000s) | | | − 0.0544 | — | 0.0011 | 1.433 |
| Heavy industry | | | 215.4095 | — | 7.4236 | 0.740 |
| Light industry | | | 230.9051 | — | 0.8002 | 0.161 |
| % Correctly predicted | | | 25.62 | | 10.74 | |
| % Correctly predicted for Conservatives | 44.59 | | | | | |
| Number of cases | 302 | | | | | |
| Log-likelihood ratio | 219.69 | | | | | |
| Degrees of freedom | 27 | | | | | |
| McFadden's $\rho^2$ | 0.25 | | | | | |
| % Total correctly predicted | 40.53 | | | | | |

TABLE 3 (*continued*)

| | Minorities | | Centre | | National Liberals | |
|---|---|---|---|---|---|---|
| | Coef. | *t*-ratio | Coef. | *t*-ratio | Coef. | *t*-ratio |
| Constant | 80.6494 | 0.001 | 0.0000 | — | 0.0000 | — |
| % Catholic | 11.7400 | 0.39E-04 | 3.8442[a] | 3.770 | 1.1843 | 1.455 |
| Grain-producing area ('000 hectares) | − 0.0589 | − 0.99E-04 | − 0.0048[a] | − 3.381 | − 0.0024[b] | − 2.246 |
| Number of cows ('000s) | 0.0095 | 0.23E-04 | 0.0017[a] | 3.302 | 0.0007 | 1.447 |
| Heavy industry | − 451.0589 | — | 28.0560[a] | 3.824 | 11.8972[c] | 1.712 |
| Light industry | − 760.1167 | — | − 17.9285[a] | − 2.976 | − 2.6255 | − 0.767 |
| % Correctly predicted | 45.74 | | 54.48 | | 32.20 | |

[a] $p <= 0.01$, two-tailed test
[b] $p <= 0.05$, two-tailed test
[c] $p <= 0.10$, two-tailed test

TABLE 4 *Estimated Parameters in Conditional Logit Model for Party Choice, Using Conservative Party Grouping as Baseline Category (1894)*

| | | | Social Democrats | | Left Liberals | |
|---|---|---|---|---|---|---|
| | Coef. | *t*-ratio | Coef. | *t*-ratio | Coef. | *t*-ratio |
| Ideology (party characteristic) | 0.9020 | 1.269 | | | | |
| Religion (party characteristic) | − 0.8001 | − 1.127 | | | | |
| Constant | | | − 1.0460 | − 0.821 | − 0.2115 | − 0.162 |
| % Catholic | | | 0.7105 | 0.701 | 1.4974 | 1.579 |
| Grain-producing area ('000 hectares) | | | − 0.0053[b] | − 2.277 | − 0.0021 | − 0.952 |
| Number of cows and pigs ('000s) | | | 0.0014[b] | 2.547 | 0.0004 | 0.673 |
| Heavy industry | | | 7.9099 | 1.234 | 5.4927 | 0.837 |
| Light industry | | | 8.0372[b] | 2.323 | 4.1491 | 1.089 |
| % Correctly predicted | | | 21.35 | | 14.80 | |
| % Correctly predicted for Conservatives | 42.77 | | | | | |
| Number of cases | 326 | | | | | |
| Log-likelihood ratio | 278.08 | | | | | |
| Degrees of freedom | 27 | | | | | |
| McFadden's $\rho^2$ | 0.26 | | | | | |
| % Total correctly predicted | 39.04 | | | | | |

TABLE 4 (*continued*)

| | Minorities | | Centre | | National Liberals | |
|---|---|---|---|---|---|---|
| | Coef. | *t*-ratio | Coef. | *t*-ratio | Coef. | *t*-ratio |
| Constant | 173.3060 | 0.002 | 0.0000 | — | 0.0000 | — |
| % Catholic | − 52.4495 | − 0.000 | 3.7201[a] | 4.182 | 0.3634 | 0.360 |
| Grain-producing area ('000 hectares) | 0.0619 | 0.000 | − 0.0105[a] | − 5.054 | − 0.0113[a] | − 4.862 |
| Number of cows and pigs ('000s) | − 0.0318 | − 0.000 | 0.0025[a] | 5.171 | 0.0025[a] | 4.523 |
| Heavy industry | 154.7784 | 0.94E-04 | 16.0758[a] | 2.914 | 14.9629[b] | 2.454 |
| Light industry | − 2346.3361 | — | − 6.7710 | − 1.549 | − 5.0962 | − 1.201 |
| % Correctly predicted | 59.49 | | 56.65 | | 22.12 | |

*Note:* For this regression, the maximum value for relative coefficient changes and Euclidean norm of ther relative parameter change vector (i.e., the two tolerant criteria) were both increased to 0.01. Thus the estimates are slightly less precise.

[a] $p < = 0.01$, two-tailed test

[b] $p < = 0.05$, two-tailed test

TABLE 5 *Estimated Parameters in Conditional Logit Model for Party Choice, Using Conservative Party Grouping as Baseline Category (1902)*

| | | | Social Democrats | | Left Liberals | |
|---|---|---|---|---|---|---|
| | Coef. | *t*-ratio | Coef. | *t*-ratio | Coef. | *t*-ratio |
| Ideology (party characteristic) | 0.5879 | 0.704 | | | | |
| Religion (party characteristic) | − 0.4865 | − 0.560 | | | | |
| Constant | | | 0.2402 | 0.172 | 0.2793 | 0.198 |
| % Catholic | | | 0.8751 | 0.837 | 2.3247[b] | 2.250 |
| Grain-producing area ('000 hectares) | | | − 0.0079[a] | − 3.800 | − 0.0068[a] | − 3.182 |
| Number of cows and pigs ('000s) | | | 0.0014[a] | 3.458 | 0.0011[b] | 2.535 |
| Heavy industry | | | 0.7484 | 0.122 | 4.7117 | 0.829 |
| Light industry | | | 6.7498[b] | 2.136 | 0.3675 | 0.098 |
| % Correctly predicted | | | 31.43 | | 14.52 | |
| % Correctly predicted for Conservatives | 41.24 | | | | | |
| Number of cases | 348 | | | | | |
| Log-likelihood ratio | 297.82 | | | | | |
| Degrees of freedom | 27 | | | | | |
| McFadden's $\rho^2$ | 0.25 | | | | | |
| % Total correctly predicted | 38.07 | | | | | |

TABLE 5 (*continued*)

| | Minorities | | Centre | | National Liberals | |
|---|---|---|---|---|---|---|
| | Coef. | *t*-ratio | Coef. | *t*-ratio | Coef. | *t*-ratio |
| Constant | − 4.5028 | − 1.575 | 0.0000 | — | 0.0000 | — |
| % Catholic | 0.9410 | 0.530 | 6.6622[a] | 6.364 | 1.4452 | 1.379 |
| Grain-producing area ('000 hectares) | 0.0112[b] | 1.964 | − 0.0105[a] | − 5.174 | − 0.0100[a] | − 4.710 |
| Number of cows and pigs ('000s) | 0.40E-04 | 0.058 | 0.0018[a] | 4.701 | 0.0020[a] | 4.827 |
| Heavy industry | 27.5627[b] | 2.403 | 9.7588[c] | 1.917 | 10.1491[c] | 1.901 |
| Light industry | − 55.4710[b] | − 2.128 | − 10.1942[c] | − 1.951 | − 6.2599 | − 1.512 |
| % Correctly predicted | 43.02 | | 57.56 | | 20.11 | |

[a] $p <= 0.01$, two-tailed test
[b] $p <= 0.05$, two-tailed test
[c] $p <= 0.10$, two-tailed test

TABLE 6 *Derivatives for Demographic Variables (1902)*

| Variables | Soc. Dem. | Left Lib. | Minorities | Centre | Nat. Lib. | Cons. |
|---|---|---|---|---|---|---|
| % Catholic | − 0.1589 | 0.0036 | − 0.0376 | 0.6760 | − 0.1923 | − 0.2908 |
| Grain-producing area ('000 hectares) | − 0.0003 | − 0.45E-04 | 0.0005 | − 0.0006 | − 0.0005 | 0.0008 |
| Number of cows and pigs ('000s) | 0.43E-04 | − 0.14E-04 | − 0.30E-04 | 0.70E-04 | 0.0001 | − 0.0002 |
| Heavy industry | − 0.6239 | − 0.0873 | 0.7557 | 0.4069 | 0.5763 | − 1.0278 |
| Light industry | 1.3666 | 0.4302 | − 1.7150 | − 0.7343 | − 0.2498 | 0.9022 |

*Note:* Averaged over all observations.

1902, fifteen of East Prussia's twenty-three deputies were Conservatives, while none of Baden's deputies were Conservatives.

In sum, constituency characteristics predict a good portion of deputies' party affiliation, but on average 61 per cent cannot be predicted. That is, nearly two-thirds of party affiliation is 'independent' of what the literature has identified as key constituency characteristics.

*Predicting voting behaviour.* If the constituency interests model perfectly, or almost perfectly, predicts deputies' party affiliation, a reduced form equation should be used for predicting the vote.[65] However, Tables 3–5 suggest that 61 per cent of deputies' party affiliation *cannot* be explained by constituency characteristics, and therefore a two-stage estimation is inappropriate. Instead, I present three models for roll-call voting behaviour – measuring the effects of: (1) constituency characteristics (entitled 'Economic Interests Only'); (2) political party affiliation; and (3) party affiliation and constituency interests combined. The last model attempts to capture both paths indicated in Figure 1, while the first and second represent arrows (*c*) and (*b*) exclusively. Although collinearity between parties and interests lowers the efficiency of the estimators, with the consequences evident in significance tests, the estimates are fairly robust. Tables 7–10 present results using the three models for roll-call votes in 1879, 1893, 1894 and 1902, while Figures 2–5 illustrate the distributions of the predicted probabilities. Only the parties that divided are included as dummy variables (see Table 2). Parties that voted unanimously (excluding abstentions) are excluded from this analysis since party affiliation perfectly predicts their votes. The only party group excluded from *all* of the divisions is Minorities; all other parties divided over at least one vote.

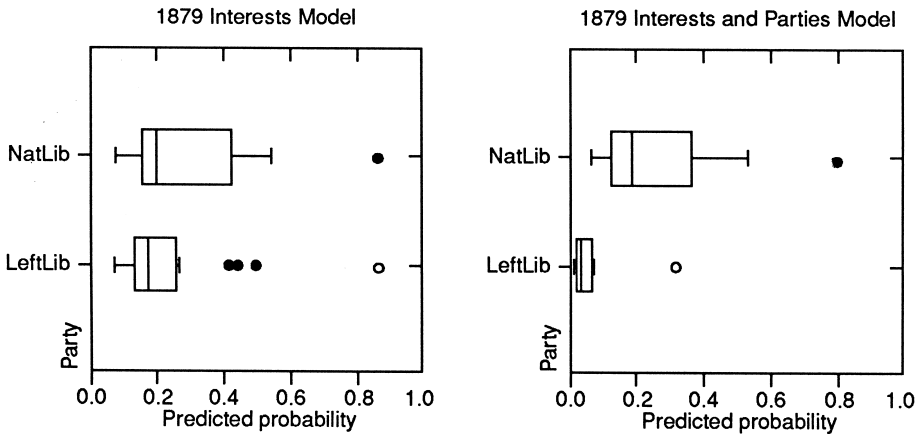


*Fig. 2. Distribution of predicted probabilities (1879)*

[65] A reduced form equation would endogenize party affiliation, so that the exogenous component of party affiliation would not be estimated (Gordon Hilton, *Intermediate Politometrics* (New York: Columbia University Press, 1976); Eric A. Hanushek and John E. Jackson, *Statistical Methods for Social Scientists* (Orlando, Fla.: Academic Press, 1977)).

Figures 2–5 provide an intuitive 'feel' for how the combined model improves upon the interests-only model. (The parties-only model has no distribution to illustrate, since all party members are assigned identical probabilities. That is, for each party, a fixed point – rather than a spread of points – is predicted for all party members, regardless of the economic make-up of their constituencies. In contrast, it is the economic make-up of the constituencies that defines the spread of probabilities for the interests-only model. Thus, I report single-point estimates for the parties-only model.) Box and whiskers plots,[66] grouped by party, show the spread of probabilities of voting for the legislation that each model predicts. A good fit is graphically illustrated by a narrow box (hinge spread), short whiskers (lines extending to the largest and smallest values that are not outliers), and few outliers (solid circles indicating outside values, and open circles far outside values). Moreover, greater certainty in predicting deputies' votes is illustrated by boxes clustered towards the far left (low probability) or the far right (high probability). In 1879, the parties-only model estimates that the probability of voting for the tariff was 0.042 for Left Liberals and 0.235 for National Liberals. The interests plot illustrates the effect of constituency interests on vote prediction, while the combined plot illustrates the joint effect of party affiliation and constituency interests on vote prediction. The combined model improves upon the interests model most dramatically for the Left Liberals, while only a marginal improvement is obtained for the National Liberals. This finding underscores the divisiveness within the National Liberal party (hence the wider spread of the predicted votes) relative to the more united stance of the Left Liberals. In 1893 and 1894, the parties-only model (not shown here) estimates that the probabilities of the Centre (Zentrum), National Liberals and Conservatives supporting the trade treaties were (respectively) 0.473, 0.717, and 0.102, for 1893, and 0.536, 0.673, and 0.169 for 1894 (meaning that party affiliation alone would predict strong support for the treaties from the National Liberals, moderate support from the Centre, and very weak support from the Conservatives).

Turning to Figures 3 and 4, the combined model improves upon the interests model particularly well for the Conservatives, less well for the National Liberals, and only marginally for the Centre. Thus, to rely solely on party affiliation to predict Reichstag votes, one would ignore the variability that arises within parties as members represent different regional interests. The particularly wide box for the Centre party in the interests model reflects its broad socio-economic constituency base, and its continued spread in the combined model illustrates that party cohesion was insufficient to overcome the regional differences. Contrast this with the Conservatives who, based on constituency interests, were moderately spread around the anti-free trade position. Yet, by

[66] David Knoke and George W. Bohrnstedt, *Statistics for Social Data Analysis* (Itasca: F.E. Peacock, 1994).

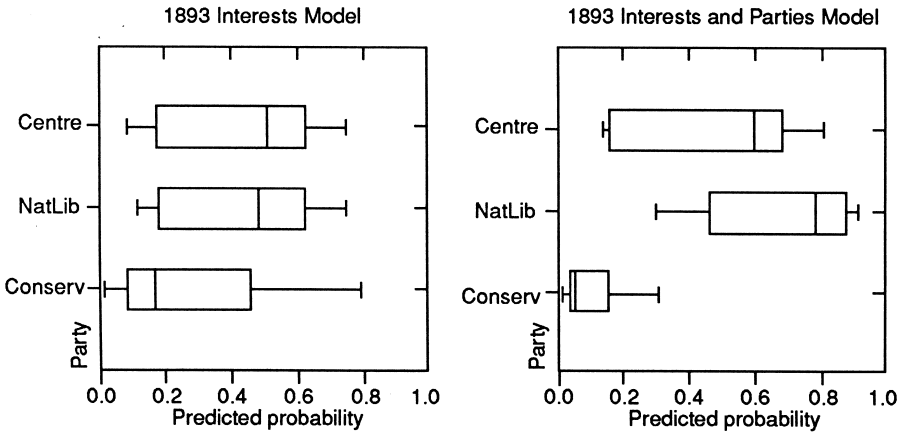


*Fig. 3. Distribution of predicted probabilities (1893)*

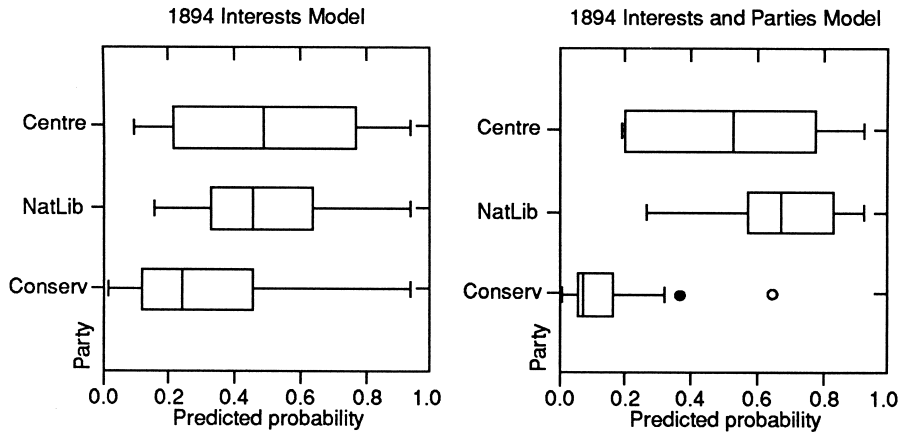


*Fig. 4. Distribution of predicted probabilities (1894)*

adding party affiliation to constituency interests (the combined model), one observes a dramatic consolidation of the predicted vote spread around a lower probability. The vote spread does not, however, disappear – as it would if one relied solely on party affiliation to predict the vote. To reiterate, neither interests nor party affiliation alone provide an adequate predictor of the legislative vote; moreover, a combined approach allows one to observe the different weights of these two variables across parties. In 1902, the parties-only model estimates that the probability of voting for the tariff was 0.023 for the SPD, 0.820 for the National Liberals, 0.154 for the Left Liberals, and 0.8 for the Conservatives (indicating strong support from the National Liberals and Conservatives and extremely weak support from the SPD and Left Liberals). The contrast between the interests-only and the combined models is quite stark. The combined model

demonstrates that party affiliation vastly improves certainty in modelling vote choice. One might be tempted to ignore constituency interests in this vote, given the strong influence of party affiliation in consolidating the predicted probabilities. However, to do so would miss the interests-based variability that remained within both the National Liberal and the Conservative parties. Contrast this with the virtually non-existent vote spread for the SPD and the Left Liberals in the combined model. This model illustrates the stronger ideological commitment to the party stance within these two parties.

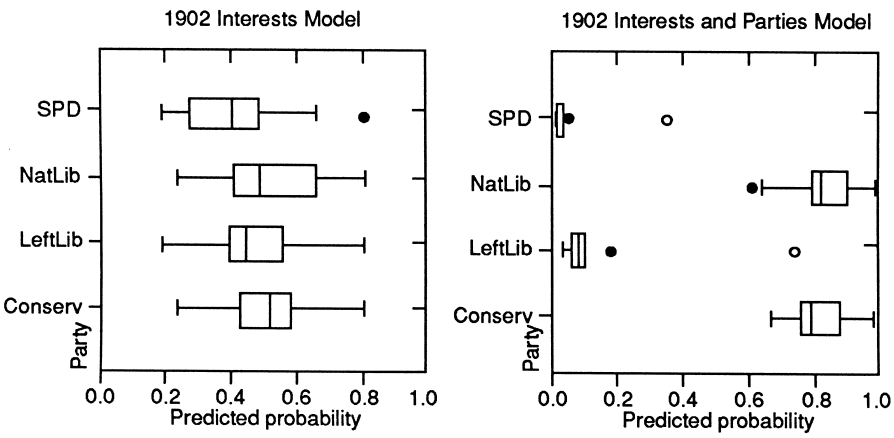


*Fig. 5. Distribution of predicted probabilities (1902).*

Tables 7–10 specify the fit of each model. In each division the combined model increases the percentage of cases correctly predicted. The parties and the interests models predict roughly the same percentages of cases, except in 1902 when party affiliation predicts 73.5 per cent of the votes, interests predict 54.4 per cent, and together they predict 79.6 per cent. The success index allows us to specify how much the estimated model improves upon a purely random model.[67] In 1879 the improvement from each of the three models is considerably greater for the protectionist vote than for the freer trade vote. In the remaining divisions, the improvement from the models is more balanced between the protectionists and the freer traders. All measures of fit indicate that party affiliation and interests (together) predict the 1902 vote quite well, and the Russian treaty (1894) least well. Arguably, the strategic implications of trade with Russia constituted an important omitted variable (given in Figure 1 to $U$).

The regression estimates suggest that each of the theoretical approaches captures part of the story, but none tells all. The cracks in the agrarian alliance seen in Table 1 are also evident in the estimates. In 1879 and 1902, no significant difference is evident between grain and animal producers. In 1893 and 1894, however, representatives of grain producers opposed lower tariffs while the

[67] That is, a model with only a constant.

TABLE 7 *Logit Model of 1879 Reichstag Division*

| | Parties only | | Economic interests only | | Parties and economic interests | |
|---|---|---|---|---|---|---|
| | Est. Coef. | *t*-ratio | Est. Coef. | *t*-ratio | Est. Coef. | *t*-ratio |
| Constant | 0.5108 | 1.399 | − 3.7062[a] | − 4.793 | − 1.7992[c] | − 1.868 |
| Left Liberal dummy | − 3.6463[a] | − 3.361 | | | − 4.1158[a] | − 3.311 |
| Nat Liberal dummy | − 1.6895[a] | − 3.790 | | | − 1.9077[a] | − 3.091 |
| % Catholic | | | 2.1358[b] | 2.013 | 2.9657[b] | 2.490 |
| Grain-producing area ('000 hectares) | | | 0.0018 | 1.106 | − 0.0003 | − 0.146 |
| Number of cows ('000s) | | | − 0.0001 | − 0.216 | 30E-04 | 0.045 |
| Heavy industry | | | 12.4423[c] | 1.795 | 8.5758 | 1.135 |
| Light industry | | | 4.3080 | 1.119 | 7.0776 | 1.579 |
| Number of cases | 141 | | 134 | | 134 | |
| Log-likelihood ratio | 26.60 | | 21.11 | | 40.99 | |
| McFadden's $\rho^2$ | 0.16 | | 0.13 | | 0.26 | |
| % Correctly predicted | 66.31 | | 66.56 | | 71.77 | |
| Success index for protectionist vote | 0.13 | | 0.12 | | 0.21 | |
| Success index for freer trade vote | 0.05 | | 0.05 | | 0.08 | |

[a] $p < = 0.01$, two-tailed test
[b] $p < = 0.05$, two-tailed test
[c] $p < = 0.10$, two-tailed test

TABLE 8 *Logit Model of 1893 Reichstag Division*

| | Parties only | | Economic interests only | | Parties and economic interests | |
|---|---|---|---|---|---|---|
| | Est. Coef. | *t*-ratio | Est. Coef. | *t*-ratio | Est. Coef. | *t*-ratio |
| Constant | − 0.2578 | − 0.798 | − 0.3678 | − 0.699 | 0.3728 | 0.514 |
| Centre dummy | 0.1502 | 0.391 | | | 0.1910 | 0.363 |
| Nat Liberal dummy | 1.1894[a] | 2.586 | | | 1.0647[c] | 1.940 |
| Conservative dummy | − 1.9144[a] | − 4.009 | | | − 2.0551[a] | − 3.409 |
| % Catholic | | | − 0.2140 | − 0.286 | − 1.0291 | − 1.165 |
| Grain-producing area ('000 hectares) | | | − 0.0081[a] | − 4.834 | − 0.0067[a] | − 3.386 |
| Number of cows and pigs ('000s) | | | 0.0012[a] | 3.081 | 0.0008[c] | 1.868 |
| Heavy industry | | | 15.1489[a] | 3.875 | 13.7844[a] | 3.138 |
| Light industry | | | − 5.6809[c] | − 1.749 | − 6.4314[c] | − 1.795 |
| Number of cases | 266 | | 257 | | 257 | |
| Log-likelihood ratio | 60.16 | | 73.26 | | 113.96 | |
| McFadden's $\rho^2$ | 0.17 | | 0.22 | | 0.33 | |
| % Correctly predicted | 62.27 | | 65.46 | | 71.28 | |
| Success index for protectionist vote | 0.08 | | 0.10 | | 0.15 | |
| Success index for freer trade vote | 0.13 | | 0.17 | | 0.24 | |

[a] $p < = 0.01$, two-tailed test
[b] $p < = 0.05$, two-tailed test
[c] $p < = 0.10$, two-tailed test

TABLE 9 *Logit Model of 1894 Reichstag Division*

| | Parties only | | Economic interests only | | Parties and economic interests | |
|---|---|---|---|---|---|---|
| | Est. Coef. | *t*-ratio | Est. Coef. | *t*-ratio | Est. Coef. | *t*-ratio |
| Constant | − 0.000 | − 0.000 | − 0.8061 | − 1.428 | 0.0580 | 0.082 |
| Centre dummy | − 1.595[a] | − 3.748 | | | 0.1290 | 0.263 |
| Nat Liberal dummy | 0.724[c] | 1.669 | | | 0.5346 | 1.096 |
| Conservative dummy | 0.143 | 0.378 | | | − 1.9024[a] | − 3.544 |
| % Catholic | | | − 1.2938[c] | − 1.802 | − 1.9242[b] | − 2.318 |
| Grain-producing area ('000 hectares) | | | − 0.0059[a] | − 3.895 | − 0.0039[b] | − 2.294 |
| Number of cows and pigs ('000s) | | | 0.0011[a] | 3.053 | 0.0006 | 1.502 |
| Heavy industry | | | 24.1175[a] | 4.878 | 21.0599[a] | 4.133 |
| Light industry | | | − 8.2392[a] | − 2.688 | − 8.1805[b] | − 2.448 |
| Number of cases | 258 | | 248 | | 248 | |
| Log-likelihood ratio | 42.21 | | 62.29 | | 92.30 | |
| McFadden's $\rho^2$ | 0.12 | | 0.18 | | 0.27 | |
| % Correctly predicted | 58.30 | | 62.36 | | 67.48 | |
| Success index for protectionist | 0.07 | | 0.10 | | 0.14 | |
| Success index for free vote | 0.09 | | 0.13 | | 0.19 | |

*Note:* For the 'parties only' regression, the maximum value for relative coefficient changes and the Euclidean norm of the relative parameter change vector (i.e. the two tolerance criteria) were both increased to 0.01. Thus the estimates are slightly less precise.

[a] $p <= 0.01$, two-tailed test

[b] $p <= 0.05$, two-tailed test

[c] $p <= 0.10$, two-tailed test

TABLE 10 *Logit Model of 1902 Reichstag Division*

| | Parties only | | Economic interests only | | Parties and economic interests | |
|---|---|---|---|---|---|---|
| | Est. Coef. | *t*-ratio | Est. Coef. | *t*-ratio | Est. Coef. | *t*-ratio |
| Constant | − 0.7985[b] | − 1.989 | − 0.3594 | − 0.645 | − 4.3799[a] | − 3.288 |
| SPD dummy | − 2.9392[a] | − 2.701 | | | − 1.1094 | − 0.724 |
| Left Liberal dummy | − 0.9062 | − 1.341 | | | 0.5472 | 0.426 |
| Nat Liberal dummy | 2.3149[a] | 4.250 | | | 4.3138[a] | 3.863 |
| Conservative dummy | 2.1848[a] | 4.242 | | | 4.8508[a] | 4.181 |
| % Catholic | | | − 0.0392 | − 0.054 | − 0.1643 | − 0.152 |
| Grain-producing area ('000 hectares) | | | 0.0018 | 1.389 | − 0.0015 | − 0.699 |
| Number of cows and pigs ('000s) | | | − 0.35E-04 | − 0.131 | 0.0006 | 1.367 |
| Heavy industry | | | 7.7986[b] | 2.186 | 17.7492[a] | 3.151 |
| Light industry | | | − 7.8923[a] | − 2.945 | − 7.8897[c] | − 1.904 |
| Number of cases | 208 | | 197 | | 197 | |
| Log-likelihood ratio | 113.39 | | 17.77 | | 141.03 | |
| McFadden's $\rho^2$ | 0.39 | | 0.07 | | 0.52 | |
| % Correctly predicted | 73.51 | | 54.37 | | 79.59 | |
| Success index for protectionist value | 0.24 | | 0.04 | | 0.31 | |
| Success index for freer trade vote | 0.23 | | 0.04 | | 0.29 | |

[a] $p < = 0.01$, two-tailed test
[b] $p < = 0.05$, two-tailed test
[c] $p < = 0.10$, two-tailed test

representatives of animal producers favoured freer trade. Hypothesis 1b is thus supported for the years of autonomous tariff legislation, but not for the Caprivi years. This is, perhaps, clear evidence for the traditionalists' claim that the Caprivi's trade reforms were an anomalous period. Historians who fault the traditionalists for overemphasizing agrarian unity might, by contrast, point to the split between grain and animal producers in the Caprivi years as evidence of disunity within the agrarian movement. Both factions within the traditionalist camp would probably agree that agrarian unity was strongest in 1879 (not 1902, despite the activities of the Farmers' League), since only then did the Conservatives vote unanimously for protection. In 1893, 1894 and 1902, the Conservative party dummy (in the combined model) none the less confirms a strong pro-protection stance amongst most of its deputies, thereby supporting Hypothesis 2. In brief, while newer historians might stress agrarian disunity, Conservative party delegates overwhelmingly supported high agricultural tariffs across all four divisions.

The findings for Hypotheses 3, 5 and 6 (which all relate to the interests of heavy and light industry) give greater weight to the factor endowment than the divided interests approach. In 1879 neither the light nor heavy industry coefficient is significant, although both are positively signed. For 1879 only, two additional measures could be calculated for heavy industry by region: (1) value (in current marks) for primary production of all metals (casting and smelting); and (2) value (in current marks) for iron mining output. Substituting these measures for heavy industry produced positive signs for both the new measure and for light industry. For the regression with the 'all metals' variable, both industry variables were significant at 5 per cent, while with the 'iron mining' variable the new measure was significant at 10 per cent, but light industry was not significant. Consistency in these findings suggests that no observable difference existed between the representatives of light and heavy industry in 1879. For the later divisions, both light and heavy industry coefficients are significant. In 1893 and 1894, representatives of heavy industry voted in favour of the freer trade treaties, while in 1902, these representatives reverted to favouring tariff protection. Representatives of light industry opposed freer trade in the 1890s, and also opposed tariff protection in 1902. While the interests certainly appear to be divided, the signs for the 1890s are opposite to the ones predicted by the divided interests approach. Hypothesis 3 is therefore not supported (except for 1902). According to the factor endowment theory, heavy industry should moderately (and light industry weakly) support protection in 1879, and moderately (weakly) support free trade in the 1890s and 1902. The findings for 1879 are as expected. The signs for heavy industry in the 1890s bear out the expectation, but 1902 confounds it. Conversely, the representatives of light industry vote as predicted in 1902, but not in the 1890s. The factor endowment theory rightly captures a shift between the pre- and post-1890 years, but cannot explain the protectionist stance of light industry in the 1890s, nor the resumed enthusiasm for protection by heavy industry in 1902.

In sum, the traditional view correctly emphasizes the Conservatives as the

party of the agrarians; the divided interests view rightly notes that the liberal reform movement lacked a socio-economic base of support; and the factor endowment theory captures the shift in interests that occurred as Germany's economy advanced. Yet, the traditionalists exaggerate German agrarian unity; the divided interests approach overemphasizes the cleavages between light and heavy industry, and (perhaps as a result) fails to capture the fluidity of industry's interests as the German economy developed; and the factor endowment theory ignores heavy industry's renewed support for protection in 1902.

## DISCUSSION

The three interpretations of the marriage demonstrate a progression in theory on German political economy. In the late 1920s, Kehr rebuked contemporary German historiography, which argued that statesmen were 'motivated by a rationally defensible concept of national interest'.[68] Kehr's socio-economic framework suggested that the tariffs of 1879 and 1902 were both integral to anti-socialist strategies. While Bismarck attempted to destroy the socialist threat by legislative fiat, Bülow sought to transfer the attention of the proletariat away from domestic concerns to foreign policy (*Sammlungspolitik*). Gerschenkron built upon Kehr's work by contributing a deeper understanding of the economic interests of the two coalition partners. In contrast, the divided interests approach has questioned the simplicity of the traditional interpretation, arguing that industrialists were neither as monolithic nor as subservient as suggested. Light industry generally supported free trade, and heavy industry supported protectionism. One reason for this divided stance was that socialism affected heavy and light industry differently, with the former industry in a stronger defensive position than the latter. On one point, however, the traditional and divided interests approaches agree – that Caprivi's reforms, which split the marriage, were a historic anomaly.

More recently, Rogowski has provided an explanation which *incorporates* the disintegration of the marriage in the 1890s into a theoretical framework. Rogowski argues that Germany followed a predictable pattern of coalition formation; it was not an historically unique case of political development, as suggested by the traditionalists and revisionists. His rational choice framework allows one to set aside the specific historical context in favour of a generalizable theory of political alignments. Whereas previous interpretations portray a static marriage punctuated by a rift in the early 1890s, Rogowski's theory introduces a dynamism into the interests of the partners, as well as the factions within them. As Germany's economy became advanced (as evidenced by its relative factor endowment), the interests of factor owners changed and the marriage began to disintegrate. However, theoretical elegance has its price: Rogowski is forced to dismiss the anomalous resumption of high tariffs of 1902 as a 'lag', and in so

[68] Craig, in Kehr, *Economic Interest, Militarism, and Foreign Policy*, p. x.

doing he misses the intensity of class conflict which defines German political development in the early twentieth century.

The evidence in this article suggests a middle ground between the socio-economic perspective of the traditionalists and revisionists, and Rogowski's rational choice framework – a middle ground that compromises some of the elegance of factor endowment theory in order to capture important political anomalies of the German case. The two anomalies – the protectionist stance of light industry in the 1890s and the renewed support for protection by heavy industry in 1902 – can be explained easily by reintroducing insights gained from the traditionalists and revisionists. Within Rogowski's long-run time frame, during which capital shifted from protectionism to free trade, is a short-run time frame of about ten years, during which social forces mitigated the impact of this shift in economic interests. Light industry supported protectionism in the early 1890s because the SPD and the free trade unions were not yet firmly embedded in it. After the Anti-Socialist legislation was abandoned and the Subversion Bill of 1896 failed, the SPD and the free trade unions were essentially unhindered in their growth,[69] particularly within light industry. Light industry's support for free trade in 1902 is consistent both with the divided interests and the factor endowment models, a finding one may attribute either to increased exposure to labour's demands or to relative capital abundance. Heavy industry's renewed support for protection in 1902 is persuasive evidence of reactionary anti-socialism, but is overlooked by Rogowski's long-run theory. The cleavage in interests predicted by Rogowski eventually emerges, but an interesting and important short-run dimension is lost before reaching that eventuality. While my findings lend some weight to the factor endowment model, they also caution us against dismissing entirely the socio-economic context of German development. Bluntly stated, factor ownership may yield an accurate long-run explanation, but to account for short-run 'lags', one must consider political-ideological motivations.

In analysing the mix between economic interests and ideological motivations, this study has also explored the effects of *both* constituents' interests and representatives' political party affiliation on roll-call votes. Most authors focus on the direct effect of constituents' interests (arrow (*c*), Figure 1). Here, I shed new light on the indirect effect of constituents interests on roll-call votes (arrows (*a*) and (*b*)). The conditional logistic regression estimates suggest that the link between constituency interests and parties was strongest for the Conservatives and Centre, weaker for the SPD, and weakest for the liberal parties. Conservative and Centre deputies apparently had less scope for shirking (suggesting a stronger indirect effect of constituency interests on Conservative and Centre votes), and the liberal and SPD deputies greater scope (suggesting

[69] Between 1890 and 1903, the SPD's national vote share rose from 19.7 per cent to 31.7 per cent; its share of Reichstag deputies rose from 8.8 per cent to 20.4 per cent (W. L. Guttsman, *The German Social Democratic Party, 1875–1933* (London: George Allen & Unwin, 1981).

a weaker indirect effect on these deputies' votes). Table 2 suggests that the SPD and the Left Liberals exploited the weaker constituency link with party unity in voting. In sum, interests were felt most strongly through the Conservatives and Centre, while political party ideology was felt most strongly through the SPD and the Left Liberals. For the Conservatives, interests mattered more after 1879, while the ideology of the SPD and Left Liberals lasted through the entire period.

## APPENDIX

### *The Model*

Arrow (*a*) in Figure 1 requires some explication of the underlying modelling assumptions. I first assume that constituency $n$ selects a candidate from party $i$, where $i$ is one alternative from set $J_n$.[70] I then assume that constituencies have six party choices – Social Democrats, Left Liberals, Minorities, Centre, National Liberals or Conservatives. The probability that constituency $n$ chooses party $i$ from set $J_n$ (call this $P_{in}$) is a function of the characteristics of alternative $i$ compared with the other alternatives (call this $z_{in}$ relative to all $z_{jn}$ for $j$ in $J_n$, $j \neq i$) and certain characteristics of the region in which the constituency is located ($s_n$). Thus,

$$P_{in} = f\,(z_{in};\ z_{jn} \text{ for all } j \neq i,\ s_n,\ \beta,\ \delta),$$

where $\beta$ and $\delta$ specify vectors of estimated parameters.

In choosing one party over the others, the constituency is assumed to maximize its utility, $U_{in}$, part of which is observable ($W_{in}$) and part of which is given to random variation ($e_{in}$). Thus,

$$U_{in} = W_{in} + e_{in}.$$

Let $W_{in}$ comprise the functional components of $P_{in}$, so that

$$W_{in} = z_{in}\beta + s_n\delta_i.$$

$W_{in}$ is thus assumed to be a function of both the characteristics of the party ($z_{in}$) and the region in which the constituency is situated ($s_n$). Parameter $\beta$ is estimated for the characteristics of the party and parameter $\delta_i$ is estimated for the characteristics of the region/constituency. The subscript $i$ indicates that the effects of regional characteristics vary across the parties.

The *mixed*, or *conditional* logit model follows the general multinomial logit model, but contains *both* characteristics of the constituencies/regions *and* characteristics of the parties. The conditional logit model is designed to overcome overestimation and underestimation of probabilities that might arise from the independence from irrelevant alternatives property (IIA) exhibited by logit probabilities.[71] It follows the form of logit models, thus allowing the

[70] To avoid confusion, I follow the standard notation for the multinomial model, which subscripts $J$ with $n$. The subscript in this case would indicate that different constituencies might face parties with different characteristics. For illustration, let ideology be a characteristic of the alternatives. Some parties were very conservative, some were very liberal and some were neither very conservative nor very liberal. A conservative constituency might then assign utility weights to the ideology characteristic of each of the parties that would differ from the weights assigned by a liberal constituency. However, since it is impossible to know such a weighting scheme for each constituency, I assume a common (and very simple) weighting scheme for the attributes of the parties (see text of Appendix).

[71] The model is McFadden's 'conditional' logit model (also known as the 'Mother Logit' (Kenneth Train, *Qualitative Choice Analysis: Theory, Econometrics, and an Application to Automobile*

*(f'note continued)*

*Demand* (London: MIT Press, 1986)). McFadden (Daniel McFadden, 'Conditional Logit Analysis of Qualitative Choice Behavior', in P. Zarembka, ed., *Frontiers in Econometrics* (New York: Academic Press, 1974); McFadden, 'Econometric Analysis of Qualitative Response Models', in Zvi Griliches and Michael D. Intriligator, eds, *Handbook of Econometrics*, vol. II (Amsterdam: North-Holland, 1984); McFadden, 'Qualitative Response Models', in Werner Hildenbrand, ed., *Advances in Econometrics* (Cambridge: Cambridge University Press, 1982) has shown that the property of Independence from Irrelevant Alternatives (IIA) (which, by assuming that each alternative is independent from alternatives other than the reference alternative, can overestimate the probability of some alternatives and underestimate the probability of others) can be corrected to give the true probabilities, with an appropriate specification of $W_{in}$. Other statisticians (Train, *Qualitative Choice Analysis*, pp. 21–4; and Agresti, *Categorical Data Analysis*, pp. 316–17) have generally agreed with this assessment. (Additionally, Train has noted that the inclusion of alternative-specific constants – which I include in my model – 'can mitigate, and in some cases remove, inaccuracies due to logit's independence of irrelevant alternatives property' (p. 25).)

The problem of IIA and the remedy adopted in this article may be interpreted as follows. The estimation procedure in standard multinomial logit (MNL) calculates a series of binary logits (SPD versus Conservatives (DK), Left Liberals (LL) versus Conservatives, Minorities (M) versus Conservatives, Centre (Z) versus Conservatives, National Liberals (NL) versus Conservatives). In each of these calculations, the ratio of each two probabilities (for example, SPD versus Conservatives) is assumed not to depend on any other alternatives (in this case, the Left Liberals, Minorities, Centre or National Liberals). MNL thus assumes that the choice probabilities are equal and sum to one (that is, $P_{SDP} = P_{LL} = P_M = P_Z = P_{NL} = P_{DK} = \frac{1}{6}$). Consequently, if the true choice probabilities reflected three groupings – say, (1) SPD or LL; (2) M, Z or NL; and (3) DK – with equal probabilities ($P_{SDP} = P_{LL} = \frac{1}{6}$ and $P_M = P_Z = P_{NL} = \frac{1}{9}$ and $P_{DK} = \frac{1}{3}$), the assumed choice probabilities would underestimate some party choices (DK) and overestimate others (M, Z and NL). If, however, $W_{in}$ depends on characteristics of alternatives other than $i$ and $k$ (where $k$ is the reference category, or Conservatives), the model need not exhibit IIA. Two characteristics of the alternatives are likely to be relevant to constituencies choosing a representative – ideology and religion.

An alternative functional form, multinomial probit (MNP), might have been used to estimate party choice. MNP, too, has its disadvantages, notably the computational difficulty in estimating five or more alternatives (McFadden, 'Qualitative Response Models'). McFadden ('Econometric Analysis of Qualitative Response Models') finds that 'the multinomial logit model scores well on simplicity and computation, but poorly on flexibility. The multinomial probit model is simple and flexible, but scores poorly on computation. Variants of these models, the nested multinomial logit model and the factorial multinomial probit model, attempt to achieve both flexibility and computational practicality'. Others are wary of using probit since it requires one to assume a normal distribution for the cumulative density function. In the absence of any strong justification for the normality assumption in one's application, logit is the preferred estimation technique (Edward D. Lawrence and Nasser Arshadi, 'A Multinomial Logit Analysis of Problem Loan Resolution Choices in Banking', *Journal of Money, Credit, and Banking*, 27 (1995), 202–16).

Some political scientists (R. Michael Alvarez and Jonathan Nagler, 'Correlated Disturbances in Discrete Choice Models: A Comparison of Multinomial Probit Models and Logit Models' (California Institute of Technology Social Science Working Paper 914, 1994); Alvarez and Nagler, 'Economics Issues and the Perot Candidacy: Voter Choice in the 1992 Presidential Election', *American Journal of Political Science*, 39 (1995), 714–44) have argued strongly in favour of the use of MNP, in view of the IIA problem in standard MNL. In spite of their praise of MNP, they note that it too has several undesirable features (the estimation difficulties noted by McFadden and unusually large standard errors of the coefficient estimates, to name just two). They conclude that conditional logit may provide reasonable estimates, particularly when the research is not concerned with the effect of adding or removing an alternative from the choice set. (Here, the choice set remains constant at six across all the years. Addition or deletion of party choices is not a concern of this article.)