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Organizational change, budgetary control and success and failure in Formula 1: Rubery Owen and British Racing Motors, 1947-1977

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Abstract

This study examines the life cycle of British Racing Motors Ltd. (BRM), from its early failures, through to the successes of the 1962-1965 period and its subsequent demise, in the light of managerial and organizational change at its parent company, the private family-owned business, Rubery Owen. Using the reports of British consultancy firms, supported by secondary sources, the study examines how factors such as the professionalization of Formula 1, macroeconomic conditions, and changes to tax legislation, impinged on the financial position of Rubery Owen and thus on BRM. Financial crises are found to have generated a move from proprietorial capitalism to a more managerialist approach within Rubery Owen, exemplified by the adoption of budgetary control. This, at the end of 1961, resulted in an ultimatum from Rubery Owen's chairman, Sir Alfred Owen, that BRM should win two grand prix races in 1962 or be wound up. While BRM did more than this, winning both the constructors and drivers' world championships in 1962, similar sustained success failed to materialise following the issue of a similar ultimatum in early 1969. Financial difficulties in the early 1970s led to further structural change within Rubery Owen, leading to BRM's demise in 1977.

Keywords: Proprietorial capitalism; family business; managerialism; budgetary control; British consultants; professionalization

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Organizational change, budgetary control and success and failure in Formula 1: Rubery Owen and British Racing Motors, 1947-1977

This study examines the role played by a large, private family-run business in the attempt to develop a successful all-British Formula 1 (F1) Grand Prix (GP) car in an era when the sport of motor racing was becoming increasingly professionalized. More specifically, in examining the rise and fall of British Racing Motors (BRM), it addresses the extent to which the organizational and managerial changes introduced at its major sponsor, Rubery, Owen & Co. Ltd., impacted on its success and subsequent demise. It will be shown how certain external factors affecting private companies during this period impacted on Rubery Owen and its ability to continue to finance BRM. As Rubery Owen grew both internally and through acquisitions, the continuing need for finance and to develop appropriate organizational structures and managerial systems (e.g. budgetary control) played a significant role in the BRM story. Our analysis throws light not only on the role of a key individual, but also on the development of management style associated with the move from the H-form to M-form organizational structure within a private company and the role played within this move towards managerialism by British accountancy/consultancy firms.

In the next section the sources and methodology used in this study are examined, before going on to consider briefly four key contextual factors which influenced the BRM story: professionalization and the changing economics of F1 GP racing; changing macroeconomic conditions; changes to the tax regime; and the inter-related topics of organizational structure, management style and the growth of managerialism in British business. BRM's attempt to develop a successful British F1 GP car is then examined, before the focus shifts to a consideration of management and organizational change at Rubery Owen/Owen Organisation/Rubery Owen Holdings. This is followed by a discussion of the development of budgetary control at Rubery Owen and the financial problems faced by private engineering companies in Britain in the late 1960s and early 1970s, before the conclusions are presented in the final section.

Sources and methodology

In order to develop a narrative account of relevant events as the basis for exploring organisational change with a large, family-owned private business during the post-Second World War era and how such change impacted on the attempt to produce a successful British F1 GP car, this study utilises a mix of source materials, including archival records, books, academic journals, and articles in daily newspapers, in particular *The Times*, and weekly publications such as *The Economist* and motor sport magazines. Many of the latter sources were consulted online to supplement material contained in the Rubery Owen Holdings Ltd. archive held at the Modern Records Centre of the University of Warwick. This archive is a vast resource comprising over 4000 items covering the period 1888-1986 (see McDonald 1997 or <https://mrc-catalogue.warwick.ac.uk/records/RBO>). The bulk of the archive comprises the personal files of Sir Alfred Owen, 'a man of Napoleonic energy' (McDonald 1997, 3) and, especially for the period from 1950 to 1969, reflect his and Rubery Owen's complex array of interests, not only business but also social and political. Thus, the archive contains material relating to Sir Alfred's Christian and philanthropic activities, industrial relations and his links to, and involvement in local government and education in the Midlands. The business records are somewhat piecemeal, reflecting Rubery Owen's increasingly disparate nature (at one point it produced 12,000 products (McDonald 1997, 5)) but also its complex and changing organisational structure, and Sir Alfred's personal management style. In the absence of regular board meetings and limited minute taking at Rubery Owen prior to the 1960s (see, for example, MSS.338/RO/11/2, para 42), the

archival research in this paper has relied heavily on three sets of reports prepared by different consultancies employed by Rubery Owen during the 1950s and early 1960s, as well as some surviving minute books of its largest subsidiary at the time, namely, the Liverpool Refrigeration and Engineering Co. Ltd. (subsequently Electro-Hydraulics Ltd.).

Background Context

In addition to driver skill, key factors in determining the success of a GP racing car are speed and reliability. In the early years of F1 during the 1950s, reliability often remained problematic, even for well-established constructors, while the pursuit of speed involved the relationship between a car's engine power and its weight: *ceteris paribus*, the higher the power to weight ratio, the faster the speed and the greater the likelihood of success. During the interwar period and up to the mid-to-late 1950s, GP cars were solidly built, heavy, front-engined vehicles, the search for speed being focused on producing ever more powerful engines. The successful cars of the early F1 era, Alfa Romeo, Ferrari, Maserati, Mercedes and Vanwall (see Table 1), were all of this type, as were the less successful competitors including BRM. Developments in technology and design, however, were to revolutionise the size, shape and structure of an F1 car. The rising cost of participation in the sport led independent constructors to search for cheaper ways of competing successfully in F1. Rather than focusing on producing ever more powerful engines, they approached the power to weight problem from the other end, namely, reducing the weight of the car. From 1957, through utilising new alloys, the British 'garagisti' began to design and construct smaller, lighter mid- and rear-engined cars, revolutionising the shape and design of F1 cars. This development, however, occurred against an economic background in which the growing demands of the welfare state, and the tax revenues needed to support it, increasingly impinged on British businesses, impacting on the growth and productivity performance of the economy. The government's need to raise ever increasing amounts of revenue led to tax changes, those in relation to Estate Duty increasingly impinging on the activities of private, family-run businesses like Rubery Owen and impacted on BRM's pursuit of F1 success.

Professionalization and the changing economics of F1 GP racing

During the post-1945 era, F1 developed as a major spectator sport: in Britain, GPs at Silverstone regularly attracted crowds of c.100,000 compared to the 20,000 at Brooklands before the war, while in Europe they could reach 250,000. Unlike football and cricket, however, F1 was not a participant sport unless you were very wealthy and could afford the expense of buying, maintaining and racing your own car. Indeed, in the three decades or so from 1945, GP racing moved from amateurism to commercialism, a process characterized in many sports by a series of phases, including codification, professionalization and commercialization (Beech and Chadwick 2004). Founded in 1947, F1 comprised a codified set of technical regulations to which cars had to conform, albeit ones that were changed every five years or so by the sports ruling body, the Federation Internationale de l'Automobile (FIA). The first 25 years saw F1 develop within an overtly business context, including increasing commercialization with the move from the limited support provided to teams by major fuel, oil and tyre companies, to unrestricted commercial sponsorship sanctioned by the FIA in 1968.

The limited financial assistance provided by sponsors in the early years meant that a distinct feature of F1 at that time, and to some extent since, has been the short-lived nature of participation, whether of works teams, car constructors or engine manufacturers. Frequent accidents, which led to the deaths of drivers and/or spectators, provide one explanation, another being finance. Thus, having dominated F1 in 1950 and 1951, Alfa Romeo then pulled out, failing to obtain financial support from the Italian state for the development of a new car, while Mercedes-Benz, having re-

entered F1 in 1954 and dominating it in both 1954 and 1955, then quit, as did Lancia, also after just two years in the sport. While Italian and German manufacturers dominated F1 throughout much of the 1950s (see Table 1), the period also witnessed the emergence of British-based teams, although British involvement in F1 was characterized at this time as being largely ‘a hobby of industrialists’ (*The Economist*, 20 October 1956, 20). Car constructors like Cooper (founded December 1947) and Lotus (1952) began to enter the sport, obtaining their engines from specialist manufacturers, while in 1955 Connaught engineering, using engines they modified themselves, provided Tony Brooks (1932-) with the first GP win for a British driver in a British car since the early 1920s. Mid-way through the 1957 season, however, after just five years in the sport, Connaught was forced to bow out of motor racing due to financial problems (*The Times*, 30 May 1957, 3).¹ Two other teams which emerged in the 1950s were BRM and Vanwall, the latter winning the first F1 world championship constructor’s cup in 1958. Vanwall was the brainchild of the millionaire industrialist Guy Anthony (‘Tony’) Vandervell (1898-1967) but when failing health led to him deciding to withdraw from the team in 1959, without his drive, ambition, and financial support, it secured no further success despite struggling on in F1 until 1962 (*The Times*, 11 March 1967, 12). BRM, the main focus of this study, was backed by another millionaire industrialist, Alfred George Beech Owen (1908-1975) and his family firm, Rubery, Owen & Co. Ltd. throughout most of its existence from 1947 to 1977.

[INSERT TABLE 1 ABOUT HERE]

The end of the 1950s witnessed a major change in F1, the move to smaller, light, mid- or rear-engined models being led by British ‘garagisti’ such as Cooper which stunned F1 by entering a rear-engined car, driven by Jack Brabham (1926-2014), at the 1957 Monaco GP. Forthcoming changes to the F1 rules for 1961 (see Table 2), together with Brabham’s success in winning the world championship in 1959 and 1960, the latter in a Cooper powered by a 1½-litre Coventry-Climax F2 engine, encouraged other teams down the route of rear-engined cars. Despite the costs involved, new British-based teams continued to emerge, such as the chassis manufacturer Lola (founded in 1958), and the car constructors Brabham (1960) and McLaren (1963). In consequence, British constructors and/or drivers largely dominated F1 from 1959 to 1967, while from 1968 to 1974 the limelight fell on teams powered by the Ford-Cosworth double four-valve (DFV) engine (see Table 1).

The annual costs associated with running a successful GP works team comprising three cars and requiring the employment of 300 skilled people in both 1939 and 1954 was put at c.£250,000 (*The Times*, 23 October 1954, 23). It seems unlikely, however, that British independent teams employed anything like this number or that their costs were this high. Indeed, Tony Vandervell is reputed to have spent £250,000 over seven years in securing Vanwall’s success (*The Times*, 11 March 1967, 12). The move to smaller, lighter, rear engine cars also reduced costs for a while but the economics of the sport increasingly took their toll. In 1962, due to the loss-making nature of the activity, Coventry-Climax indicated that they would withdraw from building F1 engines, although this was delayed until 1965. With the annual cost of their racing activities put at £150,000, Jaguar, which had taken over the company in 1963, considered that the cost of developing a 3-litre engine for the new F1 era commencing in 1966 ‘would be too formidable’ (*The Times*, 17 February 1965, 5). Even Enzo Ferrari (1898-1988) was forced to convert his firm into a joint-stock company, allowing the major Italian car manufacturer FIAT to take a small stake in 1965, increasing to 50 per cent in 1969.

[INSERT TABLE 2 ABOUT HERE]

In 1968, the annual cost of not less than £150,000 to run an F1 team (*The Times*, 19 December 1968, 15), meant that, without sponsorship, continued participation was difficult. In 1968, first BP (who sponsored Cooper and Honda) and Esso (Lotus and Brabham) withdrew their support, while the tyre

manufacturer Firestone decided to charge for its tyres (*The Economist*, 27 January 1968, 57). In consequence, Cooper Cars, despite being part of the Cooper Group, 'Britain's largest privately-owned motor organization' (*The Times*, 23 October 1969, 21), quit F1 early in the 1969 season having failed to secure the necessary sponsorship. The increased exposure being given to F1 through television provided a solution for some F1 teams which turned to tobacco companies which were seeking alternative ways of bringing their products before British television audiences following the ban on advertising tobacco products introduced in August 1965 by the Television Act (*The Times*, 6 January 1967, 1). With the FIA allowing commercial sponsorship in 1968, Lotus were the first to secure a deal, Imperial Tobacco providing sponsorship of £85,000 per annum, and Lotus cars appearing in the livery of a packet of Player's Gold Leaf cigarettes (Reid 2015; *The Economist*, 27 January 1968, 57).

Macroeconomic conditions

The professionalization of F1 occurred against the background of political and economic changes in the aftermath of the Second World War. The mass unemployment and political divisions of Britain in the 1930s were replaced by a general tripartite consensus between the state, capital and labour as to the macroeconomic aims to be pursued, in particular, growth and full employment. As the era of post-war austerity passed, and the last remnants of rationing were removed in 1954, Britain enjoyed an era of relative prosperity in the late 1950s and early 1960s, often referred to as the 'Golden Age'. However, problems were not far away. Full employment led to labour shortages, increasing the bargaining power of trades unions and led, as inflationary pressures increased in the 1960s and early 1970s, to increased strike activity, especially in the engineering sector. In response to inflationary pressures and balance of payments problems, governments of both political persuasions began to manipulate macroeconomic policy leading to 'stop-go' cycles which created increased uncertainty for business (see, for example, Pollard 1983, 408-430; Middleton 2014). The poor relative performance of the British economy, both in terms of macroeconomic and productivity growth led Harold Wilson's Labour government (1964-70) to become more heavily involved in industrial affairs. Support for French-style indicative planning and the attempt to create 'national champions', such as British Leyland (motor industry), GEC (electrical engineering), ICL (computers) and Swann-Hunter (shipbuilding) (Wilson 1995, 201), were important indicators of this change. Such activities, however, were just one factor in the increasing share of GDP taken by public expenditure, which grew from c.33 per cent in 1956 to almost 50 per cent by the mid-1970s (Clark and Dilnot 2004, 371). Increasing government receipts were generated by increases in the rates of existing taxes and the introduction of new ones, some negatively impacting on all businesses, but especially private and family firms. In the immediate post-Second World War fiscal climate, death duties, including Estate Duty, played a significant role in government tax revenues (Fletcher 2021, 10).

Estate Duty and its impact on private companies

Introduced in 1894 to tax and redistribute the wealth of deceased individuals, Estate Duty was applied at rates which became ever more progressive over its lifetime (Fletcher 2021, 9), being described in the late 1960s as 'savage' once an estate exceeded a very modest size, being levied at a marginal rate of 85 per cent on amounts over £750,000, provided that the amount of duty did not exceed 80 per cent of the value of the total estate.² Fletcher (2016; 2021) has argued that Estate Duty had the unintended consequence of creating large tax bills when applied to estates which included family shareholdings in private companies due to the high valuations placed on unlisted shares by the Inland Revenue. During the 1950s and 1960s especially, Fletcher (2021, 20) argues that Estate Duty had a real impact due to 'the *anticipatory action* taken by businesses to avoid Estate Duty'. In her view, such actions resulted in a reduction of investment in production to depress asset

values, 'in less funds being available to re-invest in the business', 'impacted on the legal and financial structures of firms, ... [and] diverted attention from the running of the business' (Fletcher 2021, 20). Fletcher's analysis, focused mainly on the period to the mid-1950s, however, fails to assess the impact of the 1965 Finance Act, in which the Labour Chancellor of the Exchequer, Roy Jenkins, in his desire to crush 'discretionary trusts' used to hold family wealth, introduced changes to the rules governing 'close companies'. Though having no formal recognition or definition in law, 'close companies' have been defined in various UK Income and Corporation Tax Acts since the 1920s (Milman 2017), the term relating to private companies where the shares are held by a small number of 'individuals' (usually taken as no more than five) and are not freely transferable. The Finance Act 1965 declared that shareholdings of family members and/or trusts (charitable or otherwise), rather than being considered as separate holdings, were to be considered as being held by a single entity, further raising liability to estate duty.

Associations like the National Union of Manufacturers, regularly lobbied successive Chancellors of the Exchequer in the post-1945 era to ease the burden of estate duty on private family firms, seeing it as the principal cause of the absorption of small firms (Fletcher 2021; *The Times*, 13 January 1960, 9). Following the passing of the Finance Act 1965, many private companies decided to sell a 30 per cent stake to the public so that they would no longer be considered a 'close company' (*The Times* 29 June 1967, 'Finance for Industry', vii). The ending of discretionary trusts was seen as possibly signifying 'the end of private trading groups on the grand scale' (*The Times*, 5 May 1969, 22) while J.F. Turner set out the tax issues facing those running private companies thus:

There has probably been no previous period in history when matters of taxation have preoccupied to such a degree the attention of industrialists. The managing director of a private company must, apart from all his normal responsibilities, first concern himself with the company's corporation tax, income tax, selective employment tax, training levies and the like. In his personal capacity he must consider income tax, surtax and capital gains tax. If he has built up his company successfully, he must, as the years go by, consider more and more urgently the problem of death duty. (*The Times*, 29 June 1967, 'Finance for Industry', vii)

Perhaps not surprisingly, several large private family-run companies went public in the late 1960s and early 1970s, including S. Pearson and Son (publishing, finance and manufacturing - 1969), Pilkington Brothers (glass - 1970), H.P. Bulmer (cider - 1970), and J. Sainsbury (food retailing - 1973). Those that remained private, like Rubery Owen, however, were often forced to make further changes to their organisational structure and management style.

Organizational structure, management style and the development of managerialism

For most of its life, BRM was controlled by a large, family-owned engineering business. Given the largely private nature of such organizations, details of their internal workings and dynamics are the least known and least studied (Witzel 2009, 53). A question therefore arises as to the extent to which theories of business organization, largely based on the experiences of public companies, reflect the situation within such entities. Although theorists and historians widely recognise that each business is unique, not altogether successfully they have nevertheless sought to try to understand the relationship between organizational structure and managerial styles. Thus, for Chandler (1990), the scale and scope of an organisation both influence its management structure, while changes therein reveal structural weaknesses requiring adaptation. Despite strongly admiring the M-form structure, Chandler (1962, 1977) argued that structure followed strategy, while Miles and Snow (1978) recognised that any organisation had to be fit for purpose. Building on these ideas,

Goold, Campbell and Luchs (1993, 59) emphasised that business success not only depends on a good fit between a company's management style and its business portfolio, but recognised that change would be needed over time, though Goold and Campbell (1987) suggested that such change occurred only slowly and often as a response to either a crisis or a change in top management. More recently the role of managerial fads and fashions, reflecting wider developments within the business environment, have also been recognised (see, for example, Furnham 2015).

During the 1960s and 1970s 'British firms grew by acquisition rather than internal growth' (Wilson and Thomson 2006, 118), while diversification within large companies increased from 25 per cent in 1950 to 60 per cent in 1970 (Channon 1973, 67). Mergers, takeovers and diversification, however, did not always generate positive results, either in terms of profitability or competitiveness, the result, it has been argued, of management remaining amateurish rather than professional (Coleman 1973). For Quail (2004), a key feature of the British business scene during the study period was 'proprietary capitalism', which exhibited a strong culture of secrecy and too many directors spending most of their time on executive minutiae and too little on corporate policy (Coleman 1987). McGivering, Matthews and Scott (1960, 58-62) also pointed to the unwillingness of family firms to raise capital from external sources if this implied a loss of control. While some British firms developed Chandlerian M-form-like structures during the interwar years, most did not, owner-managers either perpetuating 'the traditional organizational culture of their firm through the persistence with autocratic, centralized structures, or they sought the security of a merger as a means of preserving control in a holding company structure' (Wilson and Thomson 2006, 67). After 1945, although there was some movement away from proprietary capitalism to managerialism (Quail 2000), the H-form holding company structure remained popular, as many businesses simply added more units to already loose organizational structures. However, this merely increased the problems of co-ordination and effective control, so firms began to seek the assistance of external consultants, resulting in significant progress during the 1960s and 1970s in the utilization of methods of financial and managerial control such as standard costing and budgetary control (Wilson and Thomson 2006, 250; Boyns and Edwards 2013, 270-271). In public companies, strategy and structure were often outsourced to the US consultancy firm, McKinsey (Wilson and Thomson 2006, 121; see also Channon 1973; Hannah 1983, 152; Toms and Wright 2002, 102, 104-105).

The picture of business developments in post-Second World War Britain outlined above, however, is largely based on the experiences of large public companies. By examining some aspects of the inner workings of Rubery Owen, this study throws light on the extent to which this picture reflects the experience of a large, private, family-run company. Thus, the next section examines the rise and decline of BRM, outlining the role played by Rubery Owen in the pursuit of developing a successful British F1 GP car.

BRM: The attempt to develop a successful British F1 GP car

BRM and the British Motor Racing Research Trust

At the end of the 1930s, the British racing driver Raymond Mays (1899-1980) and the engineer and designer Peter Berthon (1906-1971) had the idea to develop a 1½-litre supercharged British GP car capable of taking on those manufactured by the state-aided Mercedes-Benz, Auto-Union and Alfa Romeo teams, but their plans were thwarted by the Second World War. In March 1945 Mays sent out around 100 letters to key figures in the British motor industry outlining his plans to establish a British F1 GP car as part of a prestige project to advertise British engineering excellence. He quickly

secured support from two important individuals, Oliver Lucas (1892-1948), of Joseph Lucas Ltd. and Alfred Owen (hereafter AGB or, from 1961, Sir Alfred), of Rubery Owen, both of whom offered £1,000 plus free manufacture of components (Apps 2015, 41; Nockolds 1978, 116). Others then became involved: Sir John Black, managing director of the Standard Motor Company, donated £5,000, while Rolls-Royce agreed to produce the car's centrifugal supercharger (Apps 2015, 41). 'Mays estimated that, in addition to gifts of £25,000, the firms also agreed to a further £25,000 worth of support in terms of component manufacture' (Apps 2015, 41). To formalise the support for Automobile Developments Ltd., the company formed by Mays and Berthon for their project, the British Motor Racing Research Trust Ltd. (BMRRT) was established following a luncheon held at Claridge's on 3 December 1947 (Apps 2015, 42; *Motor Sport*, January 1948, 17). The BMRRT comprised 37 leading British firms, including Automotive Products, Ltd., David Brown & Sons. Ltd., Dunlop Rubber Co., Ltd., Ferodo, Ltd., Lodge Plugs, Ltd., and Joseph Lucas, Ltd. (*Motor Sport*, January 1948, 17), and it was decided that the car should be known 'by the initials B.R.M. - British Racing Motors' (*The Times*, 4 December 1947, 2). In 1949 Automobile Developments Ltd. changed its name to British Racing Motors Ltd.

Despite the financial, technical and manufacturing support of BMRRT and its members, BRM's early years were beset by delays due to mechanical problems and failures, poor results and financial difficulties. Pressure from within the BMRRT led to BRM's first car, the P15 with a 1.5-litre V16 supercharged engine, being somewhat hastily revealed to the press at the organization's Bourne works in December 1949, technical problems delaying its first on-track appearance until August 1950 in the *Daily Express* International Trophy race at Silverstone. Like many subsequent appearances of BRM cars throughout the 1950s, this first outing proved somewhat inauspicious, the P15 failing to make it off the start line due to a broken driveshaft (Apps 2015, 44; *Motor Sport*, April 2010, 137). The *Sunday Pictorial* summed up the situation in the following words: 'Four years, eighteen men and £160,000, much of it in half crown subscriptions [from members of the public], went to build a car that would not start' (quoted in Apps 2015, 44). Its early GP appearances proved disastrous. Repeated mechanical and related failures led to BRM becoming something of a joke in motor racing circles. In an attempt to rectify the situation, in February 1951, five major supporters – Austin, Standard, Rubery Owen, Rolls-Royce and Joseph Lucas³ - each agreed to guarantee subscriptions of £10,000 a year for between three and five years to the trust, to provide 'a hard core of finance' (Nockolds 1978, 195). Shortly after this decision, Mays disclosed that for much of the time since its inception the BRM project had 'been crippled for lack of finance', but that recent developments, which only applied to the current year, meant that the car must be brought 'to a successful pitch this season' (*The Times*, 21 April 1951, 3). In the event, however, BRM cars continued to be entered and then scratched from international GP races or failed to finish (Nockolds 1978, 195; see also Apps 2015, 45-54), although AGB, in his capacity as chairman of BRM Ltd., reiterated that his 'own confidence in the B.R.M. remains absolutely unshaken', noting his belief that it is 'a basically sound engineering concept, a clear two years ahead of any known rival in its design' (*The Times*, 5 October 1951, 7).

The BMRRT, however, was increasingly riven by disagreements and political intrigues, stemming in part from its complex organizational structure. On its formation, a number of committees were established to oversee its running: a main committee comprising Donald McCullough (chairman) and ten others, including Mays, Berthon, AGB, and Tony Vandervell (*Motor Sport*, January 1948, 17); AGB and another Rubery Owen man, Mr. Oldham, forming the Production Committee; and Mays, Berthon and Vandervell the Financial and Planning Committee. It was due to becoming so enraged by Mays' running of the team and criticisms of the Thinwall bearings supplied by his firm, that Vandervell quit the trust in 1951 to form Vanwall (Nye 1976; *The Times*, 11 March 1967, 12). As a co-

operative attempt of many different manufacturers and sponsors, and despite the expenditure over eight years of about £300,000 (excluding the fixed assets involved), the 16-cylinder BRM proved unsuccessful (*The Economist*, 13 September 1952, 60). Blame was levelled at the unwieldy organizational structure at BMRRT, it being suggested that there was 'a serious weakness in the organisation of the company that somehow prevented it from learning from' its failures (*The Economist*, 13 September 1952, 60). In particular, the division of responsibility between those who advised on or directed policy on the one hand and those responsible for putting it into effect on the other was identified as a major deficiency, although the complexity of the car's design, the result of 'too many brains', was also mentioned. On 4 September 1952, at a meeting of BMRRT's executive council it was decided that BRM Ltd. should be sold 'as a going concern' to the highest bidder, as long as the buyer was British, or wound up and the assets realized if no bid was received (*The Times*, 5 September 1952, 6; Apps 2015, 59-63; Nockolds 1978, 195; Nye 1976). The only bid received for BRM's assets which seemed likely to ensure the continuity of the project and which also provided sufficient funds to pay off BRM's liabilities, was that from Rubery, Owen & Co. Ltd., the sale being effected on 24 October 1952 (*The Times*, 24 October 1952, 8; Nye 1976; Apps 2015, 63), the Bourne Works becoming Rubery Owen's 'Engine Development Division' (McDonald 1997, 10). A condition of the sale was that the title B.R.M. could not be used by the new owners (*The Times*, 5 September 1952, 6), but the cars continued to be known as BRMs, even though entered into races between 1954 and 1969 under the title, the Owen Racing Organisation.

Under Rubery Owen control

If the expectation was that the sale to Rubery Owen would ease financial constraints and provide the 'single-minded direction' required for success, this did not materialise, at least, not for some years. As part of the Rubery Owen group, the BRM operation had access not only to its own technical resources but potentially also those of the wider group, but managerial and design problems continued. Commenting on the BRM V16 of the early 1950s, Stirling Moss (1929-2020) stated that 'neither Ferrari, Alfa, or any realistic race car designer would have considered such a design' (quoted in Apps 2015, 80), while Nye (1976) referred to the planners failing to allow for things to go wrong: 'When it did go bad, there was no time to recover before the next disaster. From the word go, the ambitious team management were fighting a losing battle. They were always one step behind'. The switch in 1955 to the P25 2½ litre 4-cylinder car finally brought some success in late 1957, BRM cars being placed 1-2-3 in the International Trophy at Silverstone. In response, AGB, 'anxious to sell the 2½-litre BRM engine to other British teams and private owners', responded by placing greater resources at the team's disposal, but informed Mays and Berthon 'that 1958 had to be a more successful year' (Apps 2015, 90; Nye 1976). When the hoped-for success failed to materialise, and with Stirling Moss refusing to continue to drive for the works BRM team, having more faith in his own mechanics, in 1959 AGB handed the British Racing Partnership a P25 for Moss to drive. The hope was that the privateer would be able to run the car successfully but, ironically, on 31 May 1959, a works P25 provided BRM with its first F1 GP success, Joakim Bonnier (1930-72) winning the Dutch GP at Zandvoort.

By this time, however, the era of the 'big beast' front-engined F1 racing car was coming to an end. In 1959, in response to developments introduced by British independents, BRM began developing a prototype rear-engined vehicle, the P48, the car receiving its first race outing in April 1960. At the Dutch GP on 6 June 1960, Dan Gurney (1931-2018) crashed his P48 following a brake-system failure, breaking his arm and killing an 18-year-old spectator who was in a prohibited area (Apps 2015, 101). Following the accident, Gurney and the up-and-coming Graham Hill (1929-1975) indicated that, due to the continuing mechanical problems, they would not drive for BRM again. At a meeting following

this revolt arranged by AGB's sister, (Helen) Jean Beech Owen (1912-2002) and her second husband, Louis Stanley (1912-2004), who, with AGB being an irregular attendee at GP races⁴, acted as his eyes and ears with respect to the team, the grip of Mays and Berthon on the team was substantially weakened. Anthony Cyril (Tony) Rudd (1923-2003), who had played an increasingly prominent role at BRM following his arrival in 1951 on secondment from Rolls-Royce to assist with the development of the superchargers fitted to BRM's V16 engine, was appointed chief development officer, and became responsible for replacing the failing P48 car with the P57, designed to meet the changed F1 regulations to be brought in at the start of 1961. With BRM's own V8 engine unavailable for much of the 1961 season the P57 was powered by a Coventry-Climax engine, but with little success.⁵ At the end of 1961, Mays and Berthon were finally replaced as team manager and chief engineer, Sir Alfred, with the full support of Jean and Louis Stanley, offering the positions to Rudd.⁶ A modest man, Rudd was initially reluctant to accept but relented when he was told that, if he did not, BRM would close and the 100-strong workforce would all be 'stabbed in the back' (*The Times*, 19 September 2003, 40).

Rudd's appointment persuaded Hill to remain with BRM in 1962, resulting in the P57 V8 triumphing in four GPs, winning BRM the constructors' championship and Hill the drivers' championship, only the second British driver to do so following in the footsteps of J.M. (Mike) Hawthorne (1929-1959) (*The Times*, 31 December 1962, 8). Hill, with Sir Alfred, Jean and Louis Stanley in attendance, secured the championship at the South African GP on 29 December 1962 when Jim Clark, who was leading the race and could have pipped Hill to the championship, had to retire on lap 62 of the 82-lap race with an oil leak (White 2008, 13). During each of the remaining three years of the 1½ litre F1 era, BRM came second in the constructor's cup (see Table 1), Nye (1976) attributing this success to having a chief mechanic and crew composed entirely of 'ex-Rubery Owen apprentices, [making] BRM ... a truly top-line outfit without a single weak link'. Rubery Owen's control of BRM had eventually proved successful, but thereafter the change in F1 rules for 1966 (see Table 2) negatively impacted BRM's fortunes.

Despite numerous changes in car design, problems with the development of the overly complex H16 engine were only partly rectified with the development of a V12. In 1969 Rudd was forced out and shortly after Sir Alfred suffered a disabling stroke (*The Times*, 23 October 1969, 1). Control of BRM was handed over to Jean and Louis Stanley who became joint managing directors of BRM in December 1969 (*The Times*, 3 December 1969, 30), and sponsorship was obtained from Yardley for the 1970 and 1971 seasons, Marlboro for 1972 and 1973, and Motul for 1974. Despite four GP successes, the last being at the Monaco GP in 1972, the loss of the Motul sponsorship led to BRM being handed over to Jean and Louis Stanley who ran Stanley-BRM unsuccessfully for a few years before the last appearance of a BRM car in 1977. The life cycle of BRM was complete and as Nye (1976) has put it: BRM 'spent most of its life struggling to live up to those early post-WW2 expectations, but its high moments had been just that'.

In the next section the way in which organizational and other factors affecting the Rubery Owen group impinged on the rise and fall of BRM is examined.

Management and organizational change at Rubery Owen

The development of Rubery Owen⁷

Rubery, Owen and Company was a partnership that developed from 1893, when Alfred Ernest Owen (1869-1929) joined John Tunner Rubery (c.1849-1920), whose brothers had decided to leave their existing partnership operating the Victoria Works, Darlaston, Staffordshire. Although the junior

partner, Owen increasingly became the more active and, when Rubery decided to retire in 1910, became the sole proprietor of the business. By 1912 Rubery Owen comprised five departments: roofing; fencing; motor frames; engineering; and aviation. Owen began to invest in other businesses and although persuaded in April 1920 to register a private limited company, Rubery, Owen & Co. Ltd., few of his business assets were transferred to it before his death on 29 December 1929, creating problems for his executors. Ownership of the business passed in equal shares to his three children: AGB, Ernest William Beech Owen (1910-1967) and Jean. Aged just 21, AGB abandoned his engineering studies at Emmanuel College, Cambridge, to take control of the business, being joined as joint managing director in 1934 by Ernest, upon the completion of the transfer of A.E. Owen's various business interests to Rubery, Owen & Co. Ltd. New departments related to the developing war effort were opened, while in 1939, Rubery Owen purchased half of the ordinary share capital of the Liverpool Refrigeration & Engineering Co. Ltd., subsequently Electro-Hydraulics Ltd., based in Warrington.

Rapid expansion during the war led to a peak employment within the group of c.16,000 (Jeremy 1990, 229) but fell back to c.11,000 in 1949, split equally between Rubery Owen's operations at Darlaston, and those of the subsidiary companies, while further acquisitions in the metal-working and motor vehicle components sectors led to the latter rapidly outstripping the former (see Table 3). In 1951 the Owen Organisation was established with the slogan, 'A Linked Family of more than Fifty Companies', to create a clear distinction between the Owen Family's ownership of Rubery, Owen & Co. Ltd. and their investments in other companies (McDonald 1997, 10). In 1955, in addition to Rubery Owen's 21 profit centres there were 31 subsidiaries (MSS.338/RO/11/2 – Statements 2 and 3), of which the three most significant were Electro-Hydraulics (turnover of £2.5m and 1,336 employed), Rubery Owen (Warrington) Ltd. (turnover £2.1m) and Motor Panels (Coventry) Ltd. (£1.2m turnover and 699 employed).⁸ As Table 3 shows, the Owen Organisation remained a substantial concern throughout the 1950s, 1960s and 1970s, group turnover increasing from £10m in 1946 to over £100m by the mid-1970s.

[INSERT TABLE 3 ABOUT HERE]

In 1966 Rubery Owen & Co. Ltd. was converted into a holding company, Rubery Owen Holdings Ltd. (ROH), to oversee the activities of the whole group, while the assets and trading activities of the Darlaston Works and its related factories were transferred to a new company, also called Rubery Owen & Co. Ltd. (subsequently Rubery Owen (Darlaston) Ltd. - McDonald 1997, 13). By 1969 the Owen Organisation had expanded to 84 companies (66 in the UK and 18 overseas – McDonald 1997, 12), and was described as 'one of the largest privately owned businesses in Britain' (*The Times*, 14 February 1967, 14). Up to this point, the Owen Organisation was dominated by AGB: in 1951 he had been director of 42 companies and the chairman of 24 (Jeremy 1990, 234) but by 1969 the respective figures were 99 and over 80 (*The Times*, 7 January 1969, 21). Although AGB has been described as 'pushing personal management to its absolute limit' (McDonald 1997, 3), the role played by Ernest, albeit a more backseat one, must not be ignored, and when he died suddenly on 26 February 1967 (*The Times*, 27 February 1967, 14) the organization was rocked. Having begun to take on directorial roles in the early 1960s, Sir Alfred's two elder sons, (Alfred) David (1936-) and John Ernest Owen (1939-), both Economics graduates from Emmanuel College, Cambridge, were promoted to joint managing directors. Following Sir Alfred's stroke in October 1969 they took control of the day-to-day management and proceeded apace with the structural reorganization of the business building on prior changes and those already in progress.

Financial pressures, consultants, organizational structure and the development of financial control

Although it is not known for certain when consultants were first used within the Rubery Owen group, they were employed during the Second World War in connection with the supply of Messier undercarriages for Halifax and Lancaster bombers (Mumford 2007, 8; MSS.338/ROC1/1/2, f.16 (f), Board Meeting minute, 12 August 1949). At the request of the government, around September 1940, Metropolitan-Vickers commenced to give the Liverpool Refrigeration and Engineering Co. Ltd., subsequently Rubery Owen (Messier) Ltd., 'technical, directional and management assistance' (MSS.338/ROC1/1/1, Board Meeting minute, 27 September 1940).⁹ A standard costing system, integrated with the financial accounts was put into place c.1942/3 (MSS.338/RO/11/2, App. B, para. 31), possibly by the consultancy Robson, Morrow and Co. (Walker 2005, 115).¹⁰ This firm had been formed on 1 January 1943 by Lawrence W. Robson (1904-82), whose accountancy partnership, Lawrence Robson & Co., was auditor of Rubery Owen (Messier), and Ian Thomas Morrow (1912-2006). Both chartered accountants, they had gained experience of industrial accounting and the use of financial control systems during the 1930s, Morrow becoming well-versed in the methods of standard costing and budgetary control after joining the British arm of the American consultancy firm Stevenson Jordan & Harrison in 1940.¹¹ One of Robson Morrow's early commissions was to advise on the paperwork and systems of Rubery Owen (Messier) and, in August/September 1949, they were called in to the same company, now known as Electro-Hydraulics Ltd., recommending that that the company's operating statements should be split as between the aircraft and 'Conveyancer' fork-lift truck sections of the business (MSS.338/ROC1/1/2, f.40, Board Meeting minute, 9 December 1949). Robson Morrow was then asked to examine the company's overhead expenditure and its production and production engineering departments, work which extended into 1950.

With post-war macroeconomic conditions being difficult for many companies, not least due to supply shortages, organizational and financial control of the Rubery Owen group was proving problematic due to increasing size and fragmentation. While AGB and Ernest were adamant that Rubery, Owen & Co. Ltd. should remain a family business (see, for example, MSS338/RO/11/2, para. 43)¹², finding the funds necessary to support the continued growth of the organization regularly proved to be a source of concern, leading to alternating periods of growth and retrenchment. One recurring issue and a source of disagreement amongst the directors was what to do with loss-making departments (see, for example, MSS338/RO/11/2, para. 44). Possibly reflecting the usefulness of their work at Electro-Hydraulics, where AGB was chairman, Robson Morrow were appointed in May 1950 to investigate and report on Rubery Owen's organization, structure and accounting systems (MSS.338/RO/11/1). In their 'General Report' dated November 1951, Robson Morrow noted that there had been 'no particular scheme or economic pattern linking together' the subsidiary companies that had been acquired by the Owen Organisation. As a result, the group remained 'a loose federation united by little more than common ownership and the personality of Mr. Owen' (MSS338/RO/11/1, General Report, November 1951, sheet 1).

The report went on to note that the Darlaston factory had also grown in complexity, and while this had led to the creation of 'more or less autonomous departments, supported by a group of central offices', the latter were supportive rather than controlling, resulting in a number of organizational weaknesses, not least a tendency to conservatism, excessive paperwork and a lack of overall control (MSS338/RO/11/1, General Report, November 1951, sheet 1). The report recommended an increase in the Managing Director's staff, the hiving-off of units which could stand on their own feet and introducing much stronger control of the 'remaining (nuclear) part of the business' (MSS338/RO/11/1, General Report, November 1951, sheet 2). To give effect to this enhanced control, Robson Morrow advocated the introduction of a 'system of budgetary control of expenditure in relation to output' and 'Uniform and revised record keeping in the departments, designed to produce management statistics' (MSS338/RO/11/1, General Report, November 1951,

sheet 7). A four-page appendix attached to the report provided further detail regarding the scheme for the introduction of budgetary control and standard costing, a subsequent report, dated January 1952, suggesting that such a scheme would help to generate the 'live cost consciousness' which was currently missing within the business (MSS338/RO/11/1, Report, January 1952, para. 3). However, little if anything was done in this regard over the next three years (MSS.338/RO/11/2, para.51).

In May 1955, Price, Waterhouse & Co. (PW), were called in to examine the group's accounts for the past ten years by Philip Hill, Higginson & Co. Ltd. who had been engaged to arrange an issue of £3.5m (subsequently raised to £4m) unsecured loan stock to enable Rubery Owen to pay off its indebtedness to the Midland Bank. In their report dated October 1955 (MSS.338/RO/11/2), PW found that there had been a failure to lay down a common accounting policy throughout the group, and annual or periodic accounts were not accompanied by supporting schedules or statistics. As a result, in something of an understatement, PW concluded that 'the parent company has not always been in possession of the full facts concerning the financial position of the subsidiaries' (MSS.338/RO/11/2, para. 50). Policy decision making in such circumstances was, in PW's opinion, being substantially compromised by such failings, not least since much of the information was not available until it was 'too old to be of much practical value', citing the fact that Rubery Owen's audited accounts for the year to 30 June 1954 were not completed until June 1955 (MSS.338/RO/11/2, para. 51). PW also commented on the *ad hoc* and decentralized nature of the company's organizational routines, noting that board meetings of the parent company were held only irregularly, with gaps sometimes of several months between successive meetings (MSS.338/RO/11/2, para 42) and that little or nothing was recorded in the minutes relating to either the company's trading policy or the lines along which the group should be developed. Policy decisions rather were made at daily conferences between the directors and the company's chief executive (MSS.338/RO/11/2, para. 42). At the subsidiaries, with one or two exceptions, day-to-day management was left to local officials with major policy decisions being made at monthly or bi-monthly directors' meetings (such boards normally comprising one, if not more, of the directors of Rubery Owen – MSS.338/RO/11/2, para 46).

As a result of the criticisms raised, Rubery Owen called upon PW to conduct a full examination of the organization's 'management and administrative structure and accounting and costing system'.¹³ In their preliminary report dated 22 December 1955, PW stressed two main conclusions:

- (1) The present administrative structure, in so far as we have been able to determine it, is not sufficiently well defined as to duties and responsibilities for the Board to exercise adequate control of the company's various activities.
The result of there being no effective chain of command in the higher executive levels of the company is that too many officials are responsible directly to the board of directors. The present directors of the company are thereby prevented from giving sufficient attention to matters of policy affecting both the parent company and its subsidiaries.
- (2) The present form, content and method of preparation of accounting information leads us to the conclusion that the present top level direction of the accounting departments of Rubery, Owen and its subsidiaries is inadequate and requires strengthening.
(MSS.338/RO/11/3, ff.1-2)

PW recommended the appointment of a full-time managing director and a reorganization of the organizational structure to enable the introduction of an effective method of financial control, operating through the managing director. Furthermore, they recommended the appointment of a

financial controller to the group of companies so that accounting systems could be introduced to provide the necessary financial and statistical information required for purposes of managerial (i.e. budgetary) control (MSS.338/RO/11/3, ff.2-3). In addition, it was indicated that board meetings should be held regularly each month.

As a result of the PW recommendations, organizational changes began to be put into effect, especially at Rubery Owen's Darlaston operations. The previous

loose structure of manufacturing departments operating as individual profit centres with managers responsible directly to the Chairman, was replaced by a divisional structure of seven divisions in 1956, each responsible for their own design, manufacture and sales, with central control being exercised over finance, purchasing, research, personnel and engineering plant and maintenance services. (McDonald 1997, 10-11)

In addition to the seven divisions - Motor; Structural; Contracts; Bolt and Nut; Metal Assemblies; Metal Equipment; and Rowen-Arc - there were 'also specialist factories, like Pressings in Coventry, Foundry Equipment in Shropshire, Engine Development at Bourne and Industrial Storage and Office Equipment at Wrexham, which were managed from Darlaston' (McDonald 1997, 11). From an organizational perspective, there was a Central Services Division, offering secretarial, accounting, supplies, engineering, research and development, production engineering, personnel, and public relations services to subsidiaries, which charged for the services provided (McDonald 1997, 11).

By the early 1960s, as successive governments implemented stop-go policies thereby increasing business uncertainty, financial strains were once again affecting the group. The accountants Cooper Brothers¹⁴ noted that the extensive development of the group over the previous 25 years had left it short of liquid resources, part of the problem being the 'number of subsidiaries and departments which are making losses' thereby 'impeding the expansion of the group as a whole' (MSS.338/RO/11/4, para 261). Cooper Brothers recommended that 'the time is now appropriate to review these unprofitable sections and endeavour to convert the losses into profits or else close down the operations in whole or in part' (MSS.338/RO/11/4, para. 261). While the parent company and subsidiaries utilized budgets and cash forecasts, prepared at the start of each financial year, the subsidiaries were not as active in revising them as the parent company (MSS.338/RO/11/4, para. 68). The Owen Organisation's largest subsidiary, Electro-Hydraulics, which employed c.2,000 in 1964 (*The Times*, 13 July 1964, 7), was not immune to poor macroeconomic conditions. An economic slump coupled with the abnormally high costs associated with developing new fork-lift truck models led to falling profits in 1960-61 and 1961-62, necessitating substantial financial support from Rubery Owen. To relieve the strains on the group, Electro-Hydraulics 'repaid' the £1,506,750 owed to Rubery Owen by issuing 4.4m new 5s. shares at 8s per share, the cash balance of £253,250 being used to reduce Electro-Hydraulics' bank overdraft, which had stood at £782,267 at 30 June 1964 (*The Times*, 13 July 1964, 7). Having converted Electro-Hydraulics into a public company on 9 July 1964, 2.4m (40 per cent) of Rubery Owen's holding of 6m. shares were then offered for public sale at 11/6d per share to help reduce borrowings and provide working capital.

To further improve Rubery Owen's efficiency and control, 'Value Analysis' was adopted, reputedly saving £150,000 a year (*The Economist*, 2 May 1964, 59)¹⁵, and the use of computers was extended beyond production planning and material control 'to embrace accounting routines of the parent company and several major subsidiaries' (*The Economist*, 15 May 1965, 139). Nevertheless, increasing financial concerns led Sir Alfred, in February 1967, to appoint, as his financial adviser, the former secretary of Electro-Hydraulics, Mr. Raymond Edwardes, who had had responsibility for the centralized accounts of both Electro-Hydraulics and Rubery Owen (Warrington) (*The Times*, 14

February 1967, 14). When Ernest died a fortnight later, the Owen Organisation was plunged into a financial crisis, its liability under the Finance Act 1965 eventually being settled at £1m (*The Times*, 31 December 1976, 19). A key problem for the group was that it had earned inadequate profits for several years (*The Times*, 31 December 1976, 19). Despite doubling its profits in 1969-70 to £1.75m, this represented a mere 2.5 per cent return on ROH's sales (*The Times*, 6 July 1971, 15) and 1.6 per cent on the c.£50m capital employed (*The Times*, 31 December 1976, 19). Re-structuring, which had commenced before Sir Alfred's stroke with the closure of the 70-year-old structural fabrication department at Darlaston due to the poor level of factory construction in the country (*The Times*, 15 July 1969, 24), was pushed forward as David and John Owen embarked on a policy of 'eliminating unprofitable activities and improving liquidity', including selling off loss-making activities and realizing other assets. In late 1971/early 1972, 600 redundancies were announced at Darlaston (*The Times*, 12 January 1972, 13), while deals involving the sale of businesses such as Charles Clark & Son (purchased in 1953) and Rogers & Jackson in early 1972 realized over £2m (*The Times*, 22 April 1972, 26). In 1970, Electro-Hydraulics was forced to close its aircraft business following the collapse of its main customer, Handley Page, the re-focused materials handling business being renamed Conveyancer Ltd. (*The Times*, 16 February 1972, 19). More widely, centralized financial control was established, and clearly defined divisions created, each major subsidiary being brought within one of five sub-groups headed by a new holding company, with Rubery Owen (Darlaston) Ltd. being administered as a separate sub-group (*The Times*, 6 July 1971, 15; McDonald 1997, 13-14).

A major problem of the Owen Organisation, like many private businesses, was the reliance on bank overdrafts and it was possibly the decision of the group's bankers to call for a renegotiation of the terms of unsecured loans which led, in April 1968, to Sir Alfred inviting the merchant banker and friend, David Hunter Johnson (of Schroder Wagg) to join the board (*The Times*, 18 April 1968, 25).¹⁶ Rumours began to spread that the group was considering following the path being taken by several other private companies in going public, but this did not happen, though whether a public flotation would have been possible at the time is debatable. ROH had bank borrowings at the end of 1969-70 of £10.6m, costing the group almost £1m in annual interest payments (*The Times*, 6 July 1971, 15), while Electro-Hydraulics had overdrafts totalling £1.1m, a figure that exceeded its equity capitalization of £0.9m (*The Times*, 15 July 1970, 24). The retrenchment instigated from 1969 led to a reduction in the group's employment by more than a third between 1971 and 1976 (see Table 3), but while it improved the company's balance sheet, it failed to deliver 'the sort of profits expected from a business with its level of sales' (*The Times*, 31 December 1976, 19). Fluctuating profits in those years left a picture of 'a family company, under-capitalized and not very profitable, struggling with the legacy of an inspired industrialist who nevertheless saw the impending difficulties for British manufacturing industry too late' (*The Times*, 31 December 1976, 19).

The following section examines how the problems of the Owen group impinged on the success and failure of BRM.

Discussion: BRM, Budgetary control, loss-making activities and estate duty

During its life cycle BRM was buffeted, often indirectly, by changes in the economics of F1, in macroeconomic conditions, in tax legislation, and Rubery Owen's organizational structure. Conceived as a means of showcasing British technical excellence, the need to keep up with technological developments and changing F1 regulations meant that developing a successful F1 GP car placed strains on the financial resources of the Owen Organisation. In 1955, Rubery Owen & Co. Ltd. reported a profit of £268,248, but 11 of its 21 profit centres reported losses, the second largest

(£83,842) being for 'B.R.M. and Associated Development Work' (MSS.338/RO/11/2, Statement 2). Nevertheless, AGB contributed a further £200,000 to the development of the new P25 car in the winter of 1955/56 (Apps 2015, 85). From time to time, however, and despite his long-standing support for the project, even AGB reflected on the wisdom of continuing to finance the largely failing operation. With Rubery Owen's aggregate expenditure on BRM having passed the million-pound mark by late 1961, Ernest wanted to kill the project (Nye 1976). Furthermore, having spent £100,000 in 1961 to develop a car and engine to meet the new F1 regulations, and achieving very little, Sir Alfred was inclined to agree with his brother, but the pleadings of their sister Jean persuaded him to give BRM one more year to come good.

Reflecting the ongoing changes to managerial decision-making methods being introduced within Rubery Owen, especially that of budgetary control, Sir Alfred's decision was accompanied by an ultimatum: expenditure in 1962 should be limited to £65,000 and if BRM did not win two GPs, the operation would be closed down (MSS.338/RO/11/4, para. 120). The ultimatum represented a somewhat extreme form of budgetary control, one that foreshadowed the mix of financial and non-financial control measures that would subsequently form the basis of the balanced scorecard approach (Kaplan and Norton 1992). On the face of it, the ultimatum worked: in 1962 BRM gained its first and only F1 constructors' cup, making it the only marque, alongside Ferrari, to have 'won the World [F1] Championship with a car they built completely themselves including the chassis, engine and gearbox' (BRM association webpage). Although this was the only championship BRM won, competing in 197 GPs from 1950 to 1977, winning 17 of them, was no mean feat in an era when F1 was characterized by often short-lived participation. While the success of 1962 probably owed much to the large amount expended in the development of the new 1½-litre V8 P57 car in 1961, the ultimatum probably helped to focus minds. However, if Tony Rudd's subsequent claim that BRM's costs in 1962 amounted to £96,000, then the application of budgetary control would appear to have been somewhat loose (Apps 2015, 144, letter from Rudd to Apps, 1 July 2003).

The ongoing financial problems within the Owen Organisation meant that, at a minimum, Sir Alfred 'wanted to see the team self-supporting' (Nye 1976) or, better still, that BRM should 'turn a profit through sales of racing engines' to other racing teams (MSS.338/RO/11/4, para. 120). BRM's success in the early 1960s meant that customers were found for its V8 engine, which powered various private Lotus and Brabhams and, when most teams struggled to develop engines for the new 3-litre formula in 1966, BRM's enlarged Tasman Series V8s of between 1.9 and 2.1 litre proved a popular stopgap with certain teams, units also being supplied to Matra to power its early sports-prototypes. However, despite selling the H16 3-litre engine to Lotus in 1966, the engine's complicated design was largely a failure (Tony Rudd later describing it as his biggest mistake – Apps 2015, 135), and while the replacement V12 proved more effective, engines being sold to Cooper and McLaren in 1968, BRM's ability to make money from selling engines at this time was negatively impacted by the appearance of the new Ford-Cosworth DFV engine.

Early in 1969 an ultimatum, mirroring that issued at the end of 1961, demanded greater success, noting that if they could not match the Ford-Cosworth engine, serious thought would be given to pulling BRM out of F1 (*The Times*, 7 February 1969, 14). Moreover, it was announced that 'Under their future policy the Owen Organization intend to take more advantage of the commercial opportunities which racing provides to strengthen B.R.M.' (*The Times*, 29 July 1969, 9). When the streamlining of BRM's operations commenced in February 1969 failed to have the desired effect in overcoming its coordination and administrative difficulties, a further shake-up was carried out 'to ensure integration within the Owen Organisation and to use the group's full resources' (*The Times*, 29 July 1969, 9). As part of this, Sir Alfred sought and obtained the resignation of Tony Rudd, while

Tony Southgate (1940-) was appointed chief designer (*The Times*, 1 July 1969, 7; 29 July 1969, 9). Despite securing sponsorship from Yardley (1970-71), Marlboro (1972-73) and Motul (1974), this probably covered only about a third of BRM's costs¹⁷, and given the drastic restructuring required within the Owen Organisation in the early 1970s, a division which continually failed to pay its way had to be jettisoned. Thus, in November 1974, Rubery Owen withdrew all financial support, the F1 team being handed over to Jean and Louis Stanley and gradually fading away in 1977. In October 1981, when the remains of the BRM operation were auctioned off by Rubery Owen, the group's technical director suggested that BRM's racing operations had cost it £12m (*The Times*, 17 October 1981, 10).

Reflecting on the dichotomy that lay at the heart of the BRM story Nye (1976) has commented that 'the businessmen from "The Kremlin" at Darlaston saw the chance to interest the motor industry at large in future projects', distracting much effort and talent away from the F1 car, a view supported by Tony Rudd who put it thus: 'the group had to make money, and Sir Alfred was very successful at that, but I wanted to win races, and we were being pulled in too many directions' (quoted in Cruickshank 2001, 40). Amongst such activities were BRM's involvement with Donald Campbell's successful attempt to gain the land speed record in July 1964, and the Rover gas turbine racing car which competed at Le Mans from 1963 to 1965. While these activities possibly suggest a waning in Sir Alfred's enthusiasm for the BRM project after the success in 1962, research and development conducted by BRM resulted in developments such as drive-by-wire throttles, four-wheel-drive, and on-board data logging (Cruickshank 2001). However, as Louis Stanley pointed out, the problem faced by BRM was essentially that 'Alfred was a brilliant businessman but not an engineer' (quoted in Cruickshank 2001, 40), and the growing financial problems faced by the Owen group regularly led to the investment in BRM being reassessed. The estate duty implications of Ernest's death under the Finance Act 1965, together with worsening macroeconomic conditions, and growing labour unrest within the engineering sector, especially the motor industry, proved particularly damaging to the Owen Organisation moving into the 1970s. But it was not alone: similar problems were faced at other private engineering businesses run by millionaire car enthusiasts, such as those controlled by Tony Vandervell and David Brown (1904-1993), both of whom had been closely connected with the BRM project in its early stages. Vandervell's decision in 1964 to sell a 30 per cent stake in his company, Vandervell Products, to limit future estate duty liability, failed to prevent a multi-million-pound tax bill forcing the sale of the company after his death in March 1967 (*The Times*, 29 June 1967, 'Finance for Industry', vii; 18 December 1967, 15). At the David Brown Corporation, 'one of the largest privately owned engineering companies in Britain' (*The Times*, 8 July 1972, 17) the organization's bankers forced Brown from his executive role as a condition of providing further loans, its financial difficulties necessitating the selling off in 1972 of both its tractor division and Aston Martin Lagonda (*The Times*, 18 February 1972, 15; 8 July 1972, 17).

Conclusion

This study has revealed how the rise and decline of BRM was influenced by both the professionalization of F1 and by managerial and organisational changes, in response to a combination of internal and external factors, which occurred at its parent company, Rubery Owen. The growth of this private, family-owned engineering conglomerate followed the path of many public companies in the quarter of a century or so after the Second World War, being effected largely through acquisitions (Wilson and Thomson 2006). Growth, however, was not always smooth, and was impacted by macroeconomic conditions (e.g. the short-run economic cycles generated by stop-go policy) and tax changes (e.g. those related to close companies under the Finance Act 1965),

which resulted in periodic financial crises met through the mechanism of loan rather than equity financing, reflecting the reluctance of the Owen family to relinquish family control. Despite this reluctance, the increasing scale and scope of the business under Sir Alfred's leadership did see a move from a loose, H-form organisation structure, in which directors were often too concerned with the minutiae of day-to-day operations, to an M-form structure. This process was aided, not by US management consultants, but by the consultancy arms or offshoots of domestic accountancy firms. Such activities represented 'the most significant development in the work of [British] accountancy firms in the post-war era' (Matthews, Anderson and Edwards 1998, 196) and occurred prior to McKinseys coming to Britain in 1959. Furthermore, while the emphasis of their work may have been in relation to costing and accountancy matters, at Rubery Owen they also advised on organisational structure and the need for the adoption of a more strategic approach alongside financial control. The group's gradual adoption of budgetary control adds another example to that of Ferranti (Wilson 1998), refuting Chandler's view that personally managed British firms failed to adopt extensive reporting requirements prior to the 1970s.

While the development of managerialism at Rubery Owen during the 1950s and 1960s may have been gradual, it was cemented after 1969 as the younger generation took over the reins of the business following Sir Alfred's stroke. The increasing willingness to jettison loss-making parts of the business, belatedly commenced under Sir Alfred, ultimately sounded the death-knell for the BRM project. The Rubery Owen case thus largely supports the findings of Goold and Campbell (1987) that major changes in management style emanate as a response to crisis (here, a series of periodic financial crises) and/or a change in top management. The waning performance of Rubery Owen during the latter 1960s suggest, however, that there may not have been a good fit between Sir Alfred's managerial style and the group's portfolio of businesses. A study of other private, family-run businesses, such as those of Brown and Vandervell, would help to throw further light on the extent to which the organisational and managerial developments of private and public companies during the 25 years or so after 1945 were similar. It could also reinforce the work of Fletcher (2016; 2021), by revealing the extent to which the estate duty implications of the Finance Act 1965 impacted on the conversion of private businesses into public companies.

Notes

¹ Connaught cars purchased at the auction of the company's racing assets held in September 1957, however, continued to be raced privately into the 1959 F1 season.

² When Ernest Owen died in 1967, duty of £180,407 was paid on his personal estate valued at £326,550, i.e. a rate of 55.25% (*The Times*, 8 June 1967, 12).

³ By January 1951, Joseph Lucas Ltd. alone had contributed £20,000 to the cost of the BRM project over the previous five years (Nockolds 1978, 194).

⁴ At the time, GPs were held on various days of the week. Being devoutly religious, AGB would not attend those held on Sundays.

⁵ Hill first tested BRM's own V8 engine at Monza in September 1961 (*The Times*, 30 December 1961, 6).

⁶ Berthon became a chief consultant to Rubery Owen (Apps 2015, 110).

⁷ The information contained in this sub-section relies heavily on McDondald (1997).

⁸ Most of the other subsidiaries had a turnover of less than £0.5m and employed under 500.

⁹ At the request of the government, the business was split in two: the general engineering side of the business being hived off into Rubery Owen (Warrington) Ltd. with Rubery Owen (Messier) concentrating on the production of undercarriages (MSS.338/RO/11/2, Appendix B).

¹⁰ After the war Robson Morrow would, amongst other things, go on to 'standardise the financial control and accounting for a thousand pits' following the establishment of the National Coal Board (Mumford 2007, 9).

¹¹ In 1950, against opposition from the Institute of Chartered Accountants in England & Wales, Morrow led the management accounting team which visited the United States under the auspices of the Anglo-American Council on Productivity (Walker 2005, 117). He left Robson Morrow in 1951 following a disagreement with one of the partners, linking up with Hambros Bank, in which capacity he developed a reputation as a 'company doctor', turning round the financial fortunes of several major British companies in succeeding decades, including Rolls-Royce in the early 1970s following the RB211 aero-engine fiasco.

¹² The Brooke Tool Manufacturing Co. Ltd., however, while controlled by the Owen family, was not wholly owned by them.

¹³ At this time, although PW had established a small systems department in the interwar years, it still comprised just two specialist staff, with the first systems partner not being appointed until 1961 (Jones 1995, 216, 225).

¹⁴ Cooper Brothers had established their consultancy department in 1946 (Matthews, Anderson and Edwards 1998, 197).

¹⁵ Value analysis was a technique developed by General Motors in 1947.

¹⁶ In 1969, at the time of his appointment as a part-time member of the Monopolies Commission, Hunter Johnson was described as a managing director of Schroder Wagg (*The Times*, 6 March 1969, 23).

¹⁷ An estimate by *The Economist* (17 March 1973, 75) based on the 1972 season suggested that the annual sponsorship received by major F1 teams was typically £70,000-£100,000, whereas the annual running cost of a two-car team was £300,000.

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Table 1 - Formula 1 Drivers' and Constructors' Champions, 1950-1977

	Drivers' Champion	Team	Constructors' Cup/Championship		No. of BRM wins
			Winner	BRM position	
1950	Giuseppe Farina	Alfa Romeo			0
1951	Juan Manuel Fangio	Alfa Romeo			0
1952	Alberto Ascari	Ferrari			0
1953	Alberto Ascari	Ferrari			0
1954	Juan Manuel Fangio	Maserati and Mercedes			0
1955	Juan Manuel Fangio	Mercedes			0
1956	Juan Manuel Fangio	Ferrari			0
1957	Juan Manuel Fangio	Maserati			0
1958	Mike Hawthorn	Ferrari F2 & Ferrari	Vanwall	4th	0
1959	Jack Brabham	Cooper (Various)	Cooper-Climax	3rd	1
1960	Jack Brabham	Cooper (Various)	Cooper-Climax	4th	0
1961	Phil Hill	Ferrari	Ferrari	5th	0
1962	Graham Hill	BRM	BRM	1st	4
1963	Jim Clark	Lotus (Various)	Lotus-Climax	2nd	2
1964	John Surtees	Ferrari	Ferrari	2nd	2
1965	Jim Clark	Lotus (Various)	Lotus-Climax	2nd	3
1966	Jack Brabham	Brabham (various)	Brabham-Repco	4th	1
1967	Denny Hulme	Brabham (various)	Brabham-Repco	6th	0
1968	Graham Hill	Lotus-Ford	Lotus-Ford	5th	0
1969	Jackie Stewart	Matra-Ford	Matra-Ford	5th	0
1970	Jochen Rindt	Lotus-Ford	Lotus-Ford	6th	1
1971	Jackie Stewart	Tyrell-Ford	Tyrell-Ford	2nd	2
1972	Emerson Fittipaldi	Lotus-Ford	Lotus-Ford	7th	1
1973	Jackie Stewart	Tyrell-Ford	Lotus-Ford	7th	0
1974	Emerson Fittipaldi	McLaren-Ford	McLaren-Ford	7th	0
1975	Niki Lauda	Ferrari	Ferrari		0
1976	James Hunt	McLaren-Ford	Ferrari		0
1977	Niki Lauda	Ferrari	Ferrari		0

Source: Details extracted from White (2008)

Table 2. Formula 1 engine eras and main BRM cars, 1947-1977

	Engine size		BRM Cars
	Natural	Supercharged	
1947-1953	4.5-litre	1.5-litre	P15 V16 Mk. I (front) (1949-54) P15 V16 Mk. II (front) (1952-54)
1954-1960	2.5-litre	0.75-litre	P25 4-cyl. (front) (1955-59) P48 Mk. I (rear) (1960-61) P48 Mk. II (rear) (1961)
1961-1965	1.3-litre min 1.5 litre max	prohibited	P578 V8 (rear) (1962-64) P61/261 (rear) (1963-67)
1966-1986	3 -litre	1.5-litre	P83 H16 (rear) (1966-67) P115/126/138/139/153/160 V12 (rear) (1968-73) P201 (rear) (1974)

Sources: Extracted from various websites and Apps (2015)

Table 3 - Rubery Owen, employment and turnover, 1929-1976

	Employees			Turnover (£m)
	R.O. (D)	Subsids	Group TOTAL	
1929	1750			0.58
1936				0.95
1946				10.00
1949	5500	5500	c.11000	
1952	6000	12000	18000	
1954	c.6000			
1955			12000	
1964	c.6500			
1969	6000	10000	16000	
1971			14200	75.00
1976			c.9000	>100.00

Sources: Jeremy (1990: 228-235), Jeremy and Tweedale (1994: 144), *The Times* (22 June 1954, p.8; 19 March 1964, p.6; 6 July 1971, p.13; 31 Dec. 1976, p.19)