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Abstract

This paper explores management accounting change at the St. James's Gate Brewery of Arthur Guinness & Sons Ltd brought about by the effects of World War 1 (WW1). In particular, how additional war risk costs were accounted for internally is revealed. Using organizational routines as a theoretical backdrop, new management accounting practices are interpreted. These new practices allocated war risk costs incurred by head office (in Dublin) to other parts of the company. The key role of existing management accounting routines in the formation of new routines is also revealed. Although WW1 was an exogenous driver of change, endogenous change also featured as existing practices guided the creation/adaptation of routines. In essence, accountants within the Guinness Company drew upon their existing knowledge to deal with a new and complex scenario (i.e. WW1). Thus, change and stability went hand-in-hand. Although change did occur, it was moderate and more adaptive, which signifies existing accounting routines were strong and adaptable to major drivers of change such as WW1.

Key words: World War I, war risk costs, Guinness, accounting change.

Introduction

Arthur Guinness started to brew ale (and later porter) at the St. James's Gate Brewery, Dublin in 1759 (Lynch and Vaizey, 1960, p.70). At that time, he signed a 9,000 year lease for an initial £100 and an annual rent of £45 (*ibid*, p.70). The brewery still stands at the site, producing stout and beer for global markets. Arthur Guinness and Sons Ltd (hereafter Guinness) was floated on the London Stock Exchange in 1886. The business records of Guinness are available at the St. James's Gate site. While more detail on the nature of the archive is given later, the records are a treasure trove of both company and Irish business history. Records date from 1759, but more detailed records are available from the time of flotation in 1886. Records covering the period of World War 1 (WW1) are available, and these are utilised here.

There were general effects of WW1 on business at Guinness, and these are briefly noted to provide context. As stated by Dennison & MacDonagh, "the popular wartime slogan 'business as usual' applied in many ways to Guinness" (1998, p.149). However they also note as the war progressed the company was eventually affected by government war-time restrictions. In particular, restrictions on the purchase of some materials and on the quantity and gravity of beer effected sales (Dennison & MacDonagh, 1998, pp. 150-154) - the latter restriction on beer gravity continued to affect sales into the 1920's (*ibid*, p.161). The Output of Beer (Restriction) Act 1916 restricted the output of beer in the United Kingdom to "below a rate of 26,000,000 barrels per annum" (Bird, 1918, p.1). The Act operated as follows:

> Brewers could choose whether they would brew, during the year to March 31st 1917, 15% of their total output for the year ended March 31st 1916, or 30% of their total output for the year ended September 30th 1914. A limit was then fixed in the case of each brewery for each quarter separately while the Act remained in force. This limit is known as the maximum barrelage, and if exceeded in any quarter, renders the brewer liable to a penalty of £100, in addition to a further penalty of £2 per barrel brewed in excess (Bird, 1918, pp. 1-2).

The Output of Beer (Restriction) Act 1916 continued in force until August 1st 1919 (Dennison & MacDonagh, 1998, p.153). At the same time, excise duty per barrel increased. The duty per barrel was 7s 9d (38.75p in modern terms) from the 1899/1900 tax year through to the 1913/14 tax year[1]. The Finance Act 1914 (Session 2) increased the duty to £1 3s 0d (115p) on 18th November 1914, an almost threefold increase. This increased successively to

£5 by 1920/21, which the Company Secretary referred to as "the unthought-of burden of 100s per Standard Barrel" (cited in Dennison & MacDonagh, 1998, p.150). In addition to excise duty increases and output restrictions, the original gravity of the beer was reduced to a maximum of 1036 by the Output of Beer (Restriction) Act. For Guinness, this implied a decrease from 1058 for porter (Dennison & MacDonagh, 1998, p.153). Despite the increased duty, reduced gravity and output restrictions, Guinness maintained profits in line with the rate of inflation during the war years (Dennison & MacDonagh, 1998, p.151). However, longer term effects of these years were apparent in declining sales in the post war years (see Dennison & MacDonagh, 1998, pp.160 -175).

WW1 has been cited as a catalyst for change in many aspects of society. For example, medicine (Bennett, 1990) and education (Mehaffy, 1987) both experienced change in practices. Accounting too experienced change (see later), and as noted by Loft (1986), WW1 invigorated cost accounting. Although Guinness was affected in general business terms by WW1 as outlined above, this paper focuses on how the war affected costs, and in turn, how this affected management accounting practices at the company. How the accounting department accounted for (new) war risk costs on stock-in-transit, stock-in-trade and shipment of materials forms the main thrust of the research. The remainder of the paper is structured as follows. The next section provides a brief overview of extant literature on management accounting change in a historical (including WW1) and contemporary context. The contemporary literature will highlight works on organizational routines, which are drawn upon as a theoretical underpinning. In particular, works by Feldman and Pentland (2003), Pentland (2011) and Bapuji *et al.* (2012) are drawn upon. Details of the archival records at Guinness are then given, and the methods used outlined. The research is based mainly on this primary archival source, with some use of secondary data sources such as the official corporate history, by Dennison and MacDonagh (1998). Drawing on these sources, how WW1 brought about change in the accounting department is detailed. The change will then be discussed drawing on concepts of organizational routines.

Extant literature: management accounting change in a historical context; management accounting and WW1

Management accounting change

The study of organisational (and accounting) change is a complex task for researchers, but several approaches have been used in extant accounting literature. Briefly, we could say there are three broad ways to study change; 1) a classical perspective (see for example, Lewin, 1951); 2) a contingency approach (see for example, Burns and Stalker, 1961; Donaldson, 1987); and 3) a consulting approach (see for example Kanter, 1983). These approaches stem from organisational theory, typically adopt a positivistic methodology and pay less attention to the subjective dimensions of change. Pettigrew suggests that research on organisational change which is "acontextual, ahistorical and aprocessual" will yield inadequate explanations (1985, p. 15). According to Pettigrew what is needed is to "go beyond the analysis of change and begin to theorise about changing" (1985, p. 15). Pettigrew insists change should be viewed as a process rather than a static event, where a process can explain: "how the possibilities and limitations of change ... are influenced by history ..., relationships between interest groups in and outside the firm [and] mobilisation of support within the power structure" (1985, p. 24). Pettigrew (1987) later developed his ideas into a framework that has been used to guide research on organisational change, suggesting that content, process and both inner and outer context are essential dimensions to be explicitly considered. Content refers to the portion of an organisation experiencing change. Process refers to the "actions, reactions and interactions of the various interested parties, as they seek to move the firm from its present to future state" (1987, p. 658). He later clarified his meaning of process as "a sequence of individual and collective events, actions and activities unfolding over time and in context" (1997, p. 338). Importantly, this would seem to suggest time and history are central to any processual analysis. Dawson (2003) also presents a processual framework of organisational change similar to that put forward by Pettigrew. His contribution comprises three main components, namely: (1) context; (2) substance; and, (3) politics. Dawson's framework assumes there is no single notion or account of change - multiple subjective accounts and stories of change are possible (2003, p. 10). Dawson also emphasises the subjective nature of processual research; universal laws are not sought (2003, p. 86), rather the emphasis is on interpretation and meaning (2003, p. 87).

The approaches to studying change mentioned above are typical of the study of organisational change in general. Some accounting scholars have drawn on them, and in particular a processual view on change. As this study focuses on internal accounting at Guinness, a brief review of the study of accounting change in the management accounting literature follows. As noted by Van der Stede (2011), the study of management accounting change is hardly a new phenomenon, and varying approaches have been used. First, several institutional approaches have been adopted to analyse management accounting practices. A number of Old Institutional Economics informed studies have provided evidence of how management accounting practices can change, although they exhibit a taken-for-granted nature (see for example Burns, 2000; Burns and Scapens, 2000; Coad and Cullen, 2006; Lukka, 2007; Quinn, 2014; Siti-Nabiha & Scapens, 2005; Soin *et al.*, 2002). New Institutional Sociology has also been adopted to explain management accounting change in response to external influences such as political pressures, regulatory changes and cultural factors (see for example, Collier, 2001; Modell, 2003; Nor-Aziah & Scapens, 2007; Tsamenyi *et al.,* 2006). Several studies using institutional phenomena such as rules and routines have also been undertaken (see for example, Burns, 2000; Burns and Scapens, 2000; Quinn, 2011; Van der Steen 2011, 2009). Second, Structuration Theory has been used by several researchers to analyse change and stability in accounting systems. Recent examples include work by Coad and Herbert (2009) and Jack & Kholeif (2008), but as described by Englund *et al*. (2011), structuration theory has been used in accounting research for the past 25 years or so, dating back to Roberts & Scapens (1985). Third, Actor Network Theory has also been used to study management accounting change, although less so than structuration or institutional approaches. Some examples include Alcouffe *et al*. (2008), Dechow & Mouritsen (2005) and Lowe (2000)[2]. From an accounting history perspective, the contribution of Littleton (1933) to understanding accounting change is also worthy of mention. In *Accounting Evolution to 1900*, Littleton presents a comprehensive story of how accounting evolved over time i.e. as a process. However, Littleton (1933) focuses more on financial accounting, the double entry system and external societal factors that stimulated change (see Napier, 2009).

This study focuses on management accounting practices within a single company at a particular time in history. Old Institutional Economics (OIE) thus provides a useful underpinning. OIE rejects the neo-classical economics assumptions of rational economic man and equilibrium-based theorising. Instead, it assumes actors should not be treated as "given"

(Hodgson, 1998) and that individuals' tastes and preferences should be assumed as socially conditioned. Furthermore, OIE holds that individuals' tastes and preferences should be analysed for their influence on action and behaviour. In particular, it is argued that institutional phenomena such as rules, norms and routines can impact tastes and preferences (Hodgson, 1988) and, as noted above, several studies of management accounting change have drawn upon concepts from OIE.

The concept of organizational routines in particular is used here to interpret accounting change within Guinness during WW1. Thus, some elaboration on the nature of routines is necessary. Burns & Scapens (2000) is often cited as a starting point by management accounting researchers who adopt routines to explore management accounting change (and indeed stability). A starting assumption of the OIE-based Burns & Scapens (2000) framework is that management accounting change can be interpreted using phenomena such as routines (and rules). Burns & Scapens defined routines as "the way things are done" (2000, p. 5). The picture painted by them is one of slow, longer-term, evolutionary change over an extended period of time. Although they note change can come about through internal organizational processes, they argue that revolutionary change is more likely to stem from external sources[3]. In recent years, the concept of organizational routines has received much attention in the organizational literature in particular. As noted by Pentland *et al*. (2010, p. 917), we are "still struggling with how to conceptualise, observe and compare one of our most basic kinds of phenomena: organizational routines". Although the term "organizational routine" was first mentioned by Stene (1940), Pentland (2011, pp. 280 - 281) brings together much previous research, defining organizational routines as comprising four components:

1. Routines are repetitive.
2. A recognisable pattern of action occurs. Each performance of a routine may vary from the previous performance, but a general recognisable pattern is discernible.
3. Actions are interdependent, indicating several inter-related "steps" in the performance of a routine.
4. Multiple actors are involved.

Based on these components, routines are presented as a crucial element of organizational life and a key building block for stable organizational practices over time (c.f. Burns & Scapens, 2000). Although routines are often associated with stability[4], they are also a source of change as suggested by Feldman & Pentland (2003). Feldman & Pentland (2003) provide a conceptualization of routines which *always* have potential for change (at each performance) but where an underlying relatively stable understanding of the routine remains in the minds of actors. They achieve this stability/change duality through two dimensions of organizational routines, namely: (1) the ostensive; and, (2) the performative (*ibid* 2003, p. 101). The ostensive dimension (hereafter ostensive routine) "may have a significant tacit component" which moulds the perception of what the routine is, "may be codified as a standard procedure" and "may exist as a taken-for-granted norm". The performative dimension (hereafter performative routine) is "the specific action(s) taken by people […] when engaged in an organizational routine" (Feldman & Pentland, 2003, p. 102) "at specific times, in specific places" (Pentland & Feldman, 2008, p. 286).

The four components of organizational routines provided by Pentland (2011) do provide a usable basis for accounting (and other) researchers to determine, for example how routines are formed, how and why they remain stable and how/if they change. These four components will be used here, and more detail is provided on the precise methods used later. Briefly here, how new and/or changed accounting practices came about in Guinness as a result of WW1 will be interpreted through the lens of organizational routines. Extracting routines from archival material does present some issues, and these are detailed later.

Management Accounting and WWI

Some studies of accounting (including management accounting) in the context of WW1 are evident in the extant literature – both in general accounting/business literature and accounting history literature. While it is not intended to give an exhaustive review, a brief overview of literature follows to give a flavour of research undertaken thus far, and effects of WW1 on accounting.

In a paper focusing mainly on financial accounting, Gallhofer & Haslam (1991) note the effects of WW1 on the public perception of accounting in Germany. Prior to the war, despite some secrecy regulations, accounting in Germany was perceived as "a means of ensuring a fair and 'conservative' representation which was objective in nature" (*ibid* p.513). During the war, the German state realised that higher profits of private firms involved in the war effort might meet with public disapproval. Thus, German firms - such as Daimler, as cited by Gallhofer & Haslam, (1991) – created secret (i.e. non-published) reserves to disguise extra profits from supplying war-time goods and equipment to the German states. The "Daimler Scandal" became public in March 1918, with German newspapers providing detail of warprofiteering and fraudulent costing and pricing (Gallhofer & Haslam, 1991: pp. 504-509). The end result of this and similar accounting in other German firms was that accounting carried "a negative connotation" and "was mistrusted and perceived as a mechanism for hiding immoral profit" (Gallhofer & Haslam 1991: p.513).

Boyns and Edwards note that many cost accounting practices came under closer scrutiny during WW1 in the United Kingdom (Boyns & Edwards, 1998). For example, costing systems were developed to help firms focus on cost control. Restrictions on trade and some raw materials increased costs in general, implying an increased emphasis on tracing product costs (McWatters & Foreman, 2005). Other reported effects of WW1 include an increased role for women in accounting departments (Black, 2006). Additionally some literature, notes the legacy of WW1 on accounting. For example, the aftermath of WW1 and its effects on the German economy is well known. One such effect was a relatively unstable currency, and this in turn had effected accounting and decision-making (Kobrak, 2002). As noted by Kobrak (2002), the result was that foreign exchange management became a feature of German businesses such as Schering AG. Thus, management and management accountants now found dealing with foreign exchange risks and challenges part of their role.

There is also literature which notes the development of management (or cost) accounting in and around the time of WW1. While there is some debate in the literature on her work (see Edwards & Boyns, 2013), Loft (1986) argues that cost accounting in the United Kingdom was invigorated by government efforts to keep costs of the war effort under control. As Loft (1986) notes, a change to Defence of the Realm Act, 1916, forced firms to track costs of production, as these were to be used to determine the price of items required for the war - many of which had no normal market price. These effective price controls integrated cost accounting into the accounting profession (Armstrong, 1987), which ultimately culminated in the formation of the *Institute of Cost and Works Accountants* (ICWA) in March 1919. Additionally, as noted by Fleischman & Tyson (2000), Loft (1986) and Marriner (1980), the Ministry of Munitions used two methods to attain costs: 1) engineering methods/records-based costs, or 2) comparative costs of 200 nationalised factories who maintained detailed cost records. These methods were used by government employed investigators to control costs during WW1. This focus on cost records by the Ministry "forced all governmental contractors, many of whom had never attended to costing issues, to establish accounting systems that provided the data demanded by the investigating teams" (Fleischman & Tyson, 2000). As noted by Marriner however, “if the Ministry of Munitions had any major and widespread influence on private industry’s costing systems, this had long since been dissipated” (1980, p.140). While there is debate on whether or not British management/cost accounting was in a good or poor state pre WW1, (see Edwards & Boyns, 2013; Fleischman & Tyson, 2000), the war at least focused attention on how cost accounting was done (Loft, 1986) and shaped the development of management accounting in Europe (Shields, 1998). But, as noted by Edwards & Boyns (2013, p. 190), there is some difficultly in assessing the impact of WW1 on cost accounting, as there are still insufficient studies of accounting practice encompassing this time period.

The above is by no means an exhaustive review of literature, and there are other works which describe the prevalence (or otherwise) of management accounting techniques from the late 1880’s to the outbreak of war in 1914 – see Edwards and Boyns (2013: pp. 167-203) for a useful summary of this literature[5]. This literature on costing during WW1 tends to focus on certain sectors – namely those more directly affected by wartime legislation – such as “coal, iron and steel, engineering and shipbuilding, electrical manufacturing, chemical, cotton, woollen, worsted and clothing production[6]” (Marriner, 1980, p.140; see also Edwards and Boyns, 2013, pp. 187-192). Further research into the workings of management accountants in firms during the war period in other sectors is less common. A reason for this may be the lack of sufficiently detailed archival material. For this study, the Guinness archive does not pose such an issue and the next section sets out how the archive was used.

Methods – using the archival records at Guinness

This study utilises the records of the Guinness Company archive from the WW1 years. The archival records extend from 1759 to date, with a 30 year hold on document release. According to Scott (1990), the quality of archival documents can be assessed according to four criteria, as depicted in Table 1.

Authenticity – is the evidence genuine and of unquestionable origin	Documents were examined at the archive and can be verified as being of the Guinness company.
Credibility – is the evidence free from error.	The records examined were internal reports, board memoranda and other written correspondence between managers and accountants at St. James's Gate and locations in the United Kingdom. Such records are a credible source.
Representativeness –is the evidence typical of its kind.	Some records examined are specific to a period of time and particular events. Some are thus non-typical to the organisation. Other records are typical of normal accounting records, and similar to those described by Quinn (2014).
Meaning – is the evidence clear and comprehensible	The vast majority of documents examined were typed, giving excellent clarity. Documents were also typically signed, filed with a sequence number and contained cross references to other documents.

Table 1 – quality of archival material at Guinness

The archive retains many records which are reflective of what Scott (1990, pp. 81-82) terms recurrent, regular and special administrative routines. Recurrent records are a necessary part of the daily operations of an organization; regular records that are those that are regularly produced, but not an essential element of daily operations; special records are those which are reflective of ad-hoc situations and requests. Recurrent and special records were the primary document type used for this study. The primary records used here were the Chief Accountant's papers for the WW1 period, and in particular a file entitled "War Risk Insurance". This file extends to approximately 300 pages and was opened on November 5th 1914. A separate file within the Chief Accountants papers entitled "Aircraft Risk Insurance" was also examined – this file extends to approximately 150 pages. Board minutes were also examined, as well as Board memoranda. The latter were particularly useful in revealing new policies and practices, which were typically more mundane matters than those contained within the monthly Board meeting minutes. The above mentioned files were explored in detail and photographed digitally as required.

As noted earlier, organizational routines will be drawn upon to interpret if/how management accounting practices changed as a result of WW1 at Guinness. The next section reveals that some new accounting practices were introduced to account for war risk costs. Such new practices can be explored through the lens of organizational routines – for example, 1) how existing routines influence new routines, 2) if the new practices are routines according to Pentland (2011), and 3) if routines changed or if stability prevailed. Quinn (2014) provides a useful method of using archival records to study the formation of, and change to, organizational routines. As noted by Quinn (2014), Johansson & Siverbo (2009) argue that routines cannot be observed – although we may be able to observe a performative routine as described by Feldman & Pentland (2003). Here, as archival records are used, we arguably cannot observe routines at all. What we can observe are artefacts of routines (Johansson & Siverbo, 2009). Artefacts are a "physical manifestation of the organizational routine" (Pentland & Feldman, 2008, p. 289), which typically implies they are reports, symbols, signs or some other piece of work typically created by humans[7].

Quinn (2014) details methods to use archival artefacts to determine how routines (and rules) are formed in organizations, and is drawn upon here. A focus is given to artefacts that reflect action i.e. artefacts of performative routines as defined by Feldman & Pentland (2003). Thus, ledgers, reports, memoranda and other documents may be reflective of new or changed accounting routines. Through these artefacts, the four essential components of organizational routines (see Pentland, 2011) can be established to determine if in fact accounting change became routinised. These artefacts also reflect the ostensive routine, as they reflect what actors drew upon to form new routines, or to change existing routines. According to Bapuji *et al*. (2012) artefacts are a type of intermediary – something which transmits the intentions of one actor to another. They also propose that routines can be termed *strong* when the intermediary clearly transmits the intentions from one actor to another, and suggest a strong routine is more likely to be performed as expected across many iterations. As will be revealed later in the discussion section, the term strong routine may be particularly appropriate to describe some of the management/cost accounting routines at Guinness.

Accounting for war risk costs

The location of the St. James's Gate Brewery, in Dublin, implied it was largely immune to the physical impact of WW1. However, from 1886 to the WW1 period, on average 30% of its output was sold outside Ireland. The majority was shipped by steamer to ports in England, Wales and Scotland for onward shipping and bottling. These shipments were at risk from German U-boats during WW1, and one steamer, the W.M. Barkley was torpedoed and sunk off the Kish Lighthouse in the Irish Sea on October 12th, 1917[8]. Five of the 12 crew perished. This shipping risk was noted early on by management and accountants at Guinness. And, evidence from the archive (see below) shows that the company actively accounted for war risk costs from November 1914.

Having described the concepts drawn upon for this study in the previous section, we now detail new and changed practices in the Accounting Department at Guinness brought about due to WW1. The story begins shortly after the outbreak of war. At this time, it was evident that the Accounting Department at the St. James's Gate Brewery played a key role in managing the war risks for the company in general. In particular, it played a typical head-office type role in managing war risk insurance for the companies Trade Stores (or depots) and subsequently charging these costs to the stores (see later). The Trade Stores where wholly-owned and staffed by Guinness, and at the outbreak of WW1 were located in London, Manchester, Liverpool, Newcastle-on-Tyne, Glasgow, Bristol, Cardiff and Birmingham[9]. It was the movement of stout from Dublin to these stores which raised initial concerns at St. James's Gate shortly after the outbreak of war in July 1914.

Early war risk costs and the role of accounting

The first mention of war risk and any associated costs appears to have been a discussion between the Board at St. James's Gate Brewery and Lord Iveagh[10] on September 3rd, 1914. A Board memorandum titled "Matters discussed with Lord Iveagh" on this date includes mention of the "Question of becoming our own Marine Insurers". The Board proposed to Lord Iveagh that "we would open a special marine account ourselves". Lord Iveagh's response was "it was a question that we might with wisdom take up for consideration". In essence, this discussion (which is not detailed to a great extent in the memorandum) was attempting to ascertain if it were more cost effective to self-insure rather than pay additional marine insurance costs on goods and raw materials shipped between Dublin and various ports in England, Scotland and Wales.

On November 5th, 1914, a Board memorandum summarised how the discussions at board level and with Lord Iveagh translated into new accounting procedures. In effect, the company decided to self-insure against war risk. The following extract outlines the procedure:

> What is proposed is as follows: A War Risk Insurance Fund will be opened. This will be put in credit to the extent of £10,000. The putting of the fund in credit would really be little more than cross entries in our books, as no actual cash would of course pass. The Account would be liable to pay interest on the funds placed at its disposal at our ordinary rate vis. 3% and would be debited with this amount. It would be credited, however, with all premiums which we would have paid to underwriters for insuring Malt and Beer on the Irish Channel, and Beer forwarded to London.

A War Risk file entitled "S/129, War Risk Insurance" was also opened on November 5th, 1914, and on this date a telegraph was set by C.E. Sutton (Asst. Managing Director, St. James's Gate) to T.H. Peyton at the Bristol trade stores containing the following query:

> We should be glad if you would ascertain for us in Bristol and Cardiff at what rate we could insure our Store stout-in-transit against war risk at the present time. Is the rate a standard one of a matter of bargaining? Does it vary week by week, and if so, what means do we have of ascertaining the fluctuation. We only require you to find out this information and do not wish any actual steps taken[11].

A similarly worded telegraph was also sent on the same day to Trade Stores in Lloyds Avenue (London), Liverpool, Glasgow and Manchester. The responses received over the following week or so are summarised in Table 2. The replies show rates to cover goods varying from 2/6[12] (12.5p) in Bristol to 7/6 (37.5p) in London.

Store	*Date*	*Response (summarised)*
Bristol	Nov 9th, 1914	• Messrs Henry Riseley and Sons, Bristol – offering a floating policy up to £50,000 value of goods for a premium of 2/6 per Cent. • Rate available for 1 week • Minimum war risk • No other Agent prepared to accept business except on an individual consignment.
Lloyds Avenue, London.	Nov 7th, 1914	• At present, rate is about 7/6 per Cent • No question of bargaining • Recommends an open policy based on monthly shipments of stout from Dublin
Liverpool	Nov 9th, 1914	• Present rate of 5/0 per Cent to cover all war risks • Quotation valid until December 31st, 1914
Glasgow	Nov 7th, 1914	• At present, brokers are shy of taking war risks on goods from Irish ports • Only one policy taken in Glasgow for £10,00 at 5/0 per Cent • Principal firms only inclined to quote from day to day.
Manchester	Nov 7th, 1914	• No standard war risk available • A rate of 5/0 per Cent mentioned by brokers • Maximum policy duration one week • Mention of assuring coasting trade – Manchester to Scotland, Manchester to south coast

Table 2 – Trade Store responses to query on war risks

The rates shown in Table 2 are a per Cent rate (per £100 of insured product). As can be gleaned from the summarised responses, there was a level of uncertainty at this early stage of WW1, which may explain the willingness of Guinness to self-insure – perhaps envisaging the war as a short term event. The previously mentioned Board memorandum of November 5th also notes a current rate of 10/0 (50p) for insurance on hops, and 5/0 (25p) for malts. These rates, and the rates in Table 2, were presumably used to charge war risk costs from the proposed Fund. The memorandum notes that the above War Risk Insurance Fund be established unless Lord Iveagh objected – Lord Iveagh was copied on the memorandum and as revealed below, the account was opened in the company ledger.

Shortly after, on November 18th 1915, J.A. Hayes (Chief Accountant, St. James's Gate) reported to the Board of Directors on another war risk cost issue. Based on the introduction to this report, it seems Hayes was tasked with assessing whether or not the company should take on the war risk on its steamers – this was mentioned in the Board memorandum of November 5th as a possible future consideration. Hayes reported that the two steamers had a book value of £22,200, with the Carrowdore having a value of £16,100. The report also notes the values of cargo to the United Kingdom (full casks) and return cargo values (empty casks). In addition, this report provides evidence of a ‘normal’ Marine Risk insurance policy, and notes that “the Marine Risk is included in the charge made for freight” to customers. Hayes concludes in the report:

> In the event of it being decided to take over the War Risk insurance of our vessels, the suggested names of the Account in the Red Ledger […] might be “War Risk Marine Insurance.

As noted by Quinn (2014), the Red Ledger was what we would today term a nominal ledger, and unfortunately no such ledgers are presently available at the archive. From later documents, it would appear that the decision was made to self-insure on the company steamers. A report dated 2nd December 1914 from C.E. Sutton (Asst. Managing Director) to J.A. Hayes (Chief Accountant) refers to the Board decision of November 5th to create the fund, and “that the amount of £30,000 be credited to this fund, with the intention that the company would take on the war risk of the Carrowdore and the W.M. Barkley”[13]. A later report from Hayes to Sutton dated 16th February 1915 provides evidence of transactions on the “War Risk Insurance Account”; malt, hops, porter, and the “hull and machinery” of company steamers are included in the total amount of £3,740[14] – presumably using market-based per Cent rates as described earlier (see Table 2).

To summarise thus far, by February 1915 management at the St. James’s Gate Brewery had started to realise additional war risk costs on both transit of raw materials and finished goods to/from ports in the United Kingdom and goods in Trade Stores. Even at this early stage, the role of the accounting department was a key one, not only in providing costs and estimates, but also in tracking the total costs of war risk to the company. As the next section details, the role of accounting was to become more regularised, particularly in allocating the additional war risk costs to various parts of the company.

On-going (routinised) procedures

As noted above, the Accounting Department was involved in recording and providing information on war risk to the business. New procedures which evolved around the Trade Stores in particular are now explored in some detail.

On February 18th, 1915, C.E. Sutton issued a report titled "War Risk in connection with Trade Store consignments" to the Board, company secretary and company auditor[15]. Although Sutton had initiated contact with these stores in November 1914 (see previous section), it was this February report which initiated what was to become a more regular practice in terms of accounting for (and insuring) product at their stores. The report notes a discussion at Board level, and reflects on past events which may have affected Trade Stores:

> The entire question with regard to War Risk Insurance, both on our steamers and in respect of Beer in transit to our stores is a matter which it would be proposed should now be taken up again. It has been our practice, in order not to interfere with comparative store figures, to charge special strike accounts exceptional expenditure which has arisen during the period of labour troubles or other such contingencies, but this course has been adopted particularly in view of the fact that the troubles referred to have been of short duration.

As noted by Dennison and MacDonagh (1998, p.144), Ireland was the subject of many transport strikes during the period 1911-1914. These strikes cost the company £80,000 (*ibid*) and resulted in the eventual purchase of the two steamers mentioned previously. It is presumed this is what Sutton is referring to in the above report – while there may have been a period of industrial unrest, the relative duration of any one strike was relatively short. For this reason, costs of strikes were absorbed into special strike accounts. The view on WW1 was different, as Sutton notes:

> The present European War it is felt raises perhaps an entirely different issue. The effects of war, so far as regards rates chargeable on Porter to our stores, whether "insured rates" or otherwise, is likely to continue for a very considerable period. The Secretary would be asked to take up with Mr Carnegie[16] and Mr Hayes the question as to whether it would not be preferable to debit all these charges directly against the Stores in the same manner as for example, War Risk insurance on barley is at present being debited to the Malt Department.

The above extract reveals a number of things. First, it reveals that internal re-charging of costs occurred – which in modern-day terms we might describe with terms such as cost object or cost centre. The files examined also revealed freight costs were allocated to Trade Stores as a matter of course. Thus, even before WW1, Guinness traced freight costs to individual stores in the United Kingdom (see also, below). Second, the report reveals that a standard procedure had been established whereby costs of war risk insurance on barley were assigned directly to the Malt Department. Third, it reveals that the nature of the additional costs brought about by WW1 were viewed in a different manner to that which Sutton referred to as "other such contingencies". The key differentiating factor, as noted in the above report extract was "the considerable duration". The report continues with reference to additional freight costs to stores in Glasgow, Liverpool and London:

> So far as the question of war risk on our own boats is concerned we have to face the fact that in this case, for example, of Liverpool traffic we are not increasing the freight charge to the Store because the boat is our own, whereas in the case of London we are paying bonuses on the traffic carried, which is for all practical purposes and increase on freight costs; and that similarly we are paying increased freight on all our Scotch trade arising direct from the war. If our Glasgow Store is to be debited with increased charges owing to the freight being increased incident to the war, it would appear reasonable that Liverpool should be debited with the war risk on our ship in the form of increased freight charges to recoup the war risk paid.

The above extract reveals there were inconsistencies in the internal allocation of war risk costs. The previous extract suggests a procedure had been established for additional costs on barley, but the above suggests differing treatment of costs according to which Trade Store goods were shipped to. The report concludes that such inconsistencies may have been problematic:

> […] When owing to the war additional cost has to be incurred […] to enable us to place our beer in a position to be sold, and when the liability appears to be likely to continue for a considerable time, it would appear almost preferable that the Store itself should be debited with the cost, so that it may show relatively, from a geographical point of view, how each store is situated.

This suggests that Guinness already traced the relative costs and performance of each of its Trade Stores, and as noted previously, traced costs to the Malt Department – see also Quinn (2014) where costs were also traced to the Cooperage. C.E. Sutton was of the view that this existing practice be extended to include the additional war risk costs. Sutton's suggestions seem to have been implemented, based on an (unsigned) report[17] to the company's internal auditor dated April 6th 1915. The report, titled "War Risk Marine Insurance in connection with Stores consignments", outlines how the additional war risk costs were accounted for as previously mentioned. This April 6th report begins by referring to Suttons February 18th 1915 report noting "we gather that the store is to be debited with its share" of the war risk marine insurance cost. It continues, noting that a total of £540 would be credited from the War Risk account and debited to the various stores. From this date, it appears that all potential war risk costs taken on by the brewery were first debited to the War Risk account and then subsequently charged out to various departments and each Trade Store. After this date, there are several examples of requests by accounting clerks as to the amounts to be debited to each department and on enquiries as to what insurance rate to use – the per Cent rate increased as the war progressed. For example, a memorandum for Accounting to the Managing Director dated April 11th 1917 quotes the rate on Malt at between 10/0 (50p) and 40/0 (£2.00) depending on the location. Finally, although Aircraft Risk was perhaps less of an issue in WW1, mention of it is also briefly noted in a separate (smaller) Aircraft Risk Insurance file. The risks here related specifically to London, and a report dated October 2nd 1915 notes that the company also self-insured against this risk and operated the same accounting procedure as noted above. In this case however, only the London store was debited with the additional costs.

As the war progressed, based on the War Risk file, Guinness began to transfer some of the war risks to external insurers. For example, on June 8th 1915, the steamer W.M. Barkley was insured for £12,000, with a balance of £8,000 in "the Brewery books". Similarly, on June 16th 1915, a policy in the amount of £16,000 was taken out on the Carrowdore steamer, with £4,000 remaining "under the Brewery scheme"[18]. Later, on March 5th 1917, an invoice from Hobson, Allfrey and Wheeler notes £10,000 insurance on stout and casks between Dublin and Southampton/Plymouth. A stock valuation report dated April 4th 1917 in the War Risk file values stocks at UK Trade Stores at just under £105,000, with approximately £3,000 of this held at Southampton. A few weeks later, on May 8th 1917, a Board Endorsement (No. 3933)[19] noted that "[empty] casks in transit are to be covered against War Risk under the Company's insurance scheme". The endorsement notes that premiums were to be paid to the insurance company based on casks received in Dublin in the previous month. This implied the Cask Department had to produce a monthly report showing the quantity and value of empty casks by each UK Trade Store.

In summary, WW1 increased the operating costs of Guinness through additional war risk costs. Some of these costs were assumed by the company itself through a special reserve account, while others were passed to external insurers. The costs were charged to internal departments, to "see how each store is situated" as C.E. Sutton put it. This charging of costs was based on the existing cost accounting system, which it seems was easily adapted to generate a new set of management accounting practices. These practices were enacted throughout the WW1 years, with the War Risk Insurance file formally closed on March 1st, 1921.

Discussion and conclusion

Before discussing the changes to management accounting (routines) revealed above, the general nature of accounting practices is worthy of brief mention. As Edwards and Boyns (2013) note, there is debate on the nature of cost accounting prior to WW1. In short, there is "not a broad consensus on the matter" (Edwards and Boyns, 2013, p. 187), with positive and negative views on the value and use of management accounting prior to WW1. While it is not the objective here to add substantially to this debate, the analysis of war risk accounting at Guinness has revealed some relatively complex management accounting practices, which can be summarised briefly as below – using present day terminology:

- Indirect costs (such as war risk insurance costs) were traced to cost centres (Trade Stores).
- Departmental performance was monitored/controlled, similar to a responsibility accounting system – e.g. comparisons of Trade Stores (see also, Quinn (2014) and the Cooperage).
- Cost of capital was recognised – an inputted interest rate of 3% was charged on the "loan" to the War Risk Insurance Fund from general reserves.

Guinness was a large, public company at that time with profits of approximately £1.5m during the WW1 period[20]. Thus, arguably more complex management accounting practices might be expected. However, the above does add in a small way to the aforementioned debate on the nature of management accounting pre-WW1.

As noted earlier, organisational routines are drawn upon to explore change to management accounting at Guinness as a result of WW1. As revealed in the previous section, a "new" management accounting practice at Guinness was the allocation of war risk costs. Using Pentland's (2011) criteria, Table 3 shows this is a routine. The dynamics of routine formation has been widely discussed in the organisational literature, and having established accounting for war risk costs as a new management accounting routine, we can now begin to explore the effect of an external stimulus (WW1) on existing and new routines.

The work of Feldman and Pentland (2003) is quite useful in our interpretation. As noted previously, they suggest two dimensions of routines, the ostensive and performative. They also note "people can use the ostensive aspect of routines progressively" (2003, p.105), implying new routines can be created from existing routines. While Feldman and Pentland (2003, pp. 111-114) refer more to endogenous change brought about through the on-going interactions of the ostensive/performative dimension of routines, they do not dismiss exogenous change. Based on the data revealed from Guinness, there would appear to be a complex melange of exogenous and endogenous change, and stability – which is now detailed.

Routine criterion (Pentland, 2011)	*Evidence*
Repetitive	• Evidence of war risk cost allocation from 1914 on regular basis within the company ledgers (as referred to in Board memoranda in the previous section).
Multiple actors	• Managers, accounting staff, departmental staff.
Recognisable pattern of action	• Similar accounting entries made periodically and for each war risk cost type (risk on Malt, Barley, goods in transit, goods at Trade Stores).
Interdependent	• War risk costs agreed (by Managers for self-insurance, or by cover (later) through brokers); costs allocated to departments based on some allocation method (e.g. value of inventory); performance of departments monitored (including the war risk cost).

Table 3 – war risk costs as management accounting routines

As noted by scholars such as Winter (2003) and Burns and Scapens (2000), change can be brought about by external shocks to organisations. Although referring to dynamic capabilities, Winter's statement that "organisations often have to cope with problems they are not well prepared for" (2003, p.992) is a useful starting point in the story of new (and changed) management accounting routines at Guinness. WW1 was an event that businesses could not have envisaged and they had to deal with additional costs, risks and restrictions. At Guinness, this exogenous event caused managers to consider the additional risk (and cost), and to account for this by setting up a War Risk Insurance Fund account in the company's ledger i.e. creating new management accounting routines as per Table 3.

However, an exogenous change driver is only the starting point, and here we can use the ostensive/performative dimensions of routines to explain changes to management accounting described earlier. Feldman and Pentland (2003) detail how ostensive (tacit) routines become performative (acting out) routines. Ostensive routines can be used in a guiding, accounting and referring manner to the acting out of a routine i.e. the performative routine (*ibid* p. 106). Guiding implies the ostensive routine can "serve as a template for behaviour" (*ibid*. p.106); accounting allows actors to explain what they are doing with reference to the ostensive routine; referring allows actors to use the ostensive routine to refer to patterns of action that otherwise may not be sensible e.g. allocating costs. In terms of the War Risk Insurance Fund, and subsequent cost allocations at Guinness, we can describe how new management accounting routines were formed:

- An exogenous factor (WW1) prompted managers/accountants at Guinness to consider and account for new additional costs.
- Existing management accounting routines were drawn upon by actors as a template to determine behaviour. The existing ostensive routines for tracing costs to departments/Trade Stores guided the formation of new ostensive routines. This is evidenced by various discussions in Board Memorandum as outlined earlier from September 1914 through to April 1915.
- These new ostensive routines were acted out, i.e. a performative routine emerged from the discussions at Board level.
- The new routine was formed, and meets the essential criteria of an organizational routine as set out in Table 3.

This formation of a new management accounting routine highlights several interesting issues for contemporary research. First, it reveals how an exogenous event arguably brings about endogenous change to an *existing* organizational routine i.e. there is no *new* routine. This is eloquently summarised by Feldman and Pentland: "people combine elements of past repertoires of a particular routine or actions from other sources to deal with present situations" (2003, p. 112). The changes to management accounting (accounting for additional war risk costs) could be described as an adaptation of an existing routine to new circumstances; as Feldman and Pentland note, routines can be created/ modified through acting out of the performative routine, whereby actors can through reflection choose variations of existing ostensive routines (pp. 107-108). This latter point – variations on existing ostensive routines – suggests change is endogenous. However, in terms of the war risk costs themselves, these costs are brought about by an exogenous factor, and thus, both exogenous and endogenous change to existing routines arguably occurs.

Second, building on the first issue, the new management accounting routines reveal the entwined nature of change and stability – as Burns and Scapens note "change and stability are not independent - they are both simultaneously part of the same on-going processes" (2000, p.18). We could (and do here) state that new routines formed (Table 3) to account for war risk costs i.e. change to existing management accounting practices did occur due to WW1. However, we could also state that the existing management accounting routines remained quite stable, with some modifications to deal with new events i.e. no management accounting change occurred. This is similar to Quinn's (2014) finding, where he suggests stability and change in management accounting routines can go hand-in-hand. Whether we should regard accounting for war risk costs at Guinness as change, stability or both reveals the complex nature of organisational routines. However, if we reflect on Pentland's (2011) four criteria of organisational routines (see also, Feldman and Pentland, 2003; Pentland *et al*., 2010), we can say that there are similar patterns of action in cost allocation routines at Guinness. Costs were allocated to departments and Trade Stores before WW1, and this continued through the war – albeit with the addition of war risk costs. Thus, despite there being some variation due to the additional war risk costs, there is still a similar (not identical) basic pattern of action in the performance of cost allocation routines. Of course, as proposed in Table 3, we could also argue there are new routines which deal specifically with the additional war risk costs. Theoretically, the argument that the cost allocation routines had a varied but similar pattern of action due to WW1 is probably more correct if we refer to 'cost allocation' routines – at least drawing on the works of Pentland (2011) and Feldman and Pentland (2003). One possible solution, which presently does not have much empirical support[21], is to consider routines as mechanisms with multiple levels as suggested by Vromen (2011). Here for example, we could consider "cost allocation" as a high level mechanism with many component parts. Using this conceptualisation of routines, the war risk cost routines at Guinness could be a “new” component routine in the larger routine of cost allocation. However, the present study did not set out to specifically explore Vromen’s (2011) proposition but future historical and contemporary studies in this area may prove very fruitful.

Third, accounting for war risk costs at Guinness suggests some routines may be quite versatile and adaptable, even when faced with new and large forces for change (such as WW1). Bapuji *et al.* (2012) suggest routines emerge from a human/non-human interaction which is enabled by intermediaries such as artefacts. They suggest routines can be termed “strong” if the intention of the routine is transmitted in a clear and unambiguous way through intermediaries. Such a strong routine is more likely to be repeated in a similar way over time. At Guinness, according to Quinn (2014) relatively complex ledgers were maintained well before incorporation in 1886. Thus, double entry accounting had been practised at the company for a considerable time before WW1. This application of the double entry system over time creates intermediaries (artefacts) i.e. ledgers and nominal accounts. Within any organisation, arguably these intermediaries combined with the rules of double entry create strong routines – routines which are repeated in a similar and expected way over time. Based on how Guinness changed its accounting to incorporate war risk costs – a new and highly unpredictable exogenous factor – we could argue that strong routines are not only strong as described by Bapuji *et al.* (2012), but also strong in that they are resilient and adaptable. As the evidence from Guinness shows, we could also argue based on Bapuji *et al.* (2012), that strong routines remain relatively stable (a similar pattern of action occurs, Pentland, 2011) even in the face of major external events[22]. Of course, as noted earlier change and stability go hand-in-hand and whether management routines at Guinness exhibited change, stability or both as a result of WW1, depends on our level analysis. However, as noted by Bapuji *et al.* “the benefits of routines accrue to organizations that have strong routines – not weak routines – in place” (2012, p. 1603). Before WW1 Guinness had in place a set of management accounting practices on allocating costs which were well understood, routinised and produced many artefacts (ledgers, reports etc). This, in Bapuji *et al.* (2012) terminology, is a strong routine – one which is easily understood, conveyed through artefacts and performed in a similar way over time. Thus, when a large external event such as WW1 presented some new cost types, the routine could be easily adapted. It could be argued that what we have presented here is another cost type and the response of Guinness was to be expected.

However, whether we argue the war risk cost accounting routines described here are new or adapted, the presence of the existing strong routine played a key role in how Guinness adapted its management accounting practices. In short, the strong cost allocation routines made the effects a non-routine event (WW1) routine.

This study has some limitations. The primary limitation is it is a single case, with arguably a unique history in an Irish context. We cannot be certain that the practices found at Guinness were replicated in other Irish firms. Further research on industries which supplied the war effort directly may offer some confirmatory evidence – the linen industry in Belfast may be a fruitful source[23]. Second, although efforts have been made to thoroughly research the archives, we cannot be absolutely certain that we have captured the complete story of change in accounting practices due to WW1. Despite these limitations, it is hoped this study will encourage more research not only on the effects of key events in history on management accounting practices, but also encourage further research on organisational and management accounting routines using historical/archival data. Although not explored in great detail in the present research, artefacts[24] such as archival records are often (as here) utilised to study organisational routines (D'Adderio, 2011). Such research may assist us in not only exploring the accounting history of organisations, but also in furthering our understanding of routines in contemporary settings – to paraphrase Pentland (2011, p.290) "empirical evidence [of routines] is relevant".

References

Primary sources

Guinness Archive, St. James's Gate, Dublin, Ireland.
National Archives, Kew, London, United Kingdom.

Secondary sources

Alcouffe, S., Berland, N., Levant, Y. 2008, "Actor-networks and the diffusion of management accounting innovations: A comparative study", *Management Accounting Research,* 19(1):1-17.

Armstrong, P. 1987, "The rise of accounting controls in British capitalist enterprises", *Accounting, Organizations and Society,* 12(5): 415-436.

Bapuji, H., Hora, M. and Saeed. A.M. 2012, "Intentions, Intermediaries, and Interaction: Examining the Emergence of Routines", *Journal of Management Studies*, 49 (8), 1586-1607.

Bennett, J.D. 1990, "Medical advances consequent to the Great War 1914-1918", *Journal of the Royal Society of Medicine*, 83(11): 738–742.

Bird, W.H. 1918, "Digest of the Output of Beer (Restriction) Acts, 1916, and of the Statutory Orders relating thereto", *Journal of the Institute of Brewing* 24(1): 1-12.

Black, J. 2006, "War, women and accounting: Female staff in the UK army pay department offices, 1914–1920" *Accounting, Business & Financial History*, 16(2): 195-218.

Boyns, T., & Edwards, R. 1998, "Budgets and budgetary control in British businesses to c.1945", *Accounting, Business & Financial History*, 8(3):261-301.

Burns, J. 2000, "The dynamics of accounting change: inter-play between new practices, routines, institutions, power and politics", *Accounting, Auditing and Accountability Journal,* 13(5): 566-596.

Burns, J. & Scapens, R. 2000, "Conceptualising management accounting change: an institutional framework", *Management Accounting Research,* 11(1): 3-25.

Burns, T. & Stalker, G.M. 1961, *The Management of Innovation*, Tavistock.

Coad, A. & Cullen, J. 2006, "Inter-organisational cost management: towards an evolutionary perspective", *Management Accounting Research*, 17(4): 342-369.

Coad, A. & Herbert, I. 2009, "Back to the future: New potential for structuration theory in management accounting research?", *Management Accounting Research*, 20(3):177-192

Collier, P. M. 2001, "The power of accounting: a field study of local financial management in a police force", *Management Accounting Research*, 12(4):465-486

D'Adderio, L. 2011, "Artifacts at the centre of routines: performing the material turn in routines theory", *Journal of Institutional Economics,* 7(2): 197-230.

Dawson, P. 2003, *Reshaping Change: A Processual Perspective*, Routledge, London.

Dechow, N. & Mouritsen, J. 2005, "Enterprise resource planning systems, management control and the quest for integration", *Accounting, Organizations and Society,* 30 (7-8):691-733.

Dennison, S., MacDonagh, O. 1998, *Guinness 1886-1939 – from incorporation to the Second World War*, Cork University Press, Ireland.

Donaldson, L. 1987, "Strategy and structural adjustment to regain fit and performance: in defence of contingency theory", *Journal of Management Studies*, 24 (1): 1-24.

Edwards, R., Boyns, T. 2013. *A history of management accounting: the British experience*, Routledge, New York.

Englund, H., Gerdin, J., Burns, J. 2011, "25 Years of Giddens in accounting research: Achievements, limitations and the future", *Accounting, Organizations and Society*, 36(8): 494 -513.

Feldman, M. & Pentland, B. 2003, "Reconceptualising organizational routines as a sources of flexibility and change", *Administrative Science Quarterly,* 48: 94-118.

Fleischman, R. K., & Tyson, T. N. 2000, "Parallels between US and UK cost accountancy in the World War I era", *Accounting, Business & Financial History, 10*(2), 191-212.

Gallhofer, S., Haslam, J, 1991 “The aura of accounting in the context of a crisis: Germany and the First World War”, *Accounting, Organizations and Society*, 16(5–6):487-520.
Hodgson, G. 1998, "The approach of institutional economics", *Journal of Economic Literature,* XXXVI, 166-192.
Hodgson, G. 1988, *Economics and Institutions*, Polity Press, Cambridge.
Jack, L. & Kholeif, A. 2008, “Enterprise Resource Planning and a contest to limit the role of management accountants: A strong structuration perspective”, *Accounting Forum,* 32(1): 30-45.
Jackson, W., Paterson, A., Pong, C., Scarparo, S. 2012, “‘How easy can the barley brie’: Drinking culture and accounting failure at the end of the nineteenth century in Britain”, *Accounting, Auditing & Accountability Journal*, 25(4): 635 – 658.
Johansson, T., Siverbo, S. 2009, “Why is research on management accounting change not explicitly evolutionary? Taking the next step in the conceptualization of management accounting change”, *Management Accounting Research,* 20(2): 146-162.
Kanter, R.M. 1983, *The Change Masters: Corporate Entrepreneurs at Work*, Routledge, London.
Kobrak, C. 2002, “Foreign-currency transactions and the recovery of German industry in the aftermath of the First World War: The case of Schering AG”, *Accounting, Business & Financial History*, 12(1):25-42.
Lewin, K. 1951, *Field Theory in Social Science*, Harper & Row.
Littleton, A. C. 1933, *Accounting Evolution to 1900,* American Institute Publishing Co., New York.
Loft, A. 1986, "Towards a Critical Understanding of Accounting: The Case of Cost Accounting in the UK, 1914-1925" *Accounting Organizations and Society* 11:137-69.
Lowe, A. 2000, “The construction of a network at Health Waikato: the ‘towards clinical budgeting project’”, *Accounting, Auditing and Accountability Journal*, 13(1): 84-114.
Lukka, K. 2007, "Management accounting change and stability: loosely coupled rules and routines in action", *Management Accounting Research,* 18(1): 76-101.
Lynch, P., Vaizey, J. 1960, *Guinness’s Brewery in the Irish Economy 1759-1976*, Cambridge University Press, UK.
Marriner, S. 1980, “The Ministry of Munitions 1915–1919 and Government Accounting Procedures, Accounting and Business Research, 10:1, 130-142.
McWatters, C. S., & Foreman, P. 2005, “Reaction to World War I constraints to normal trade: The meat-packing industry in Canada and Australia, *Accounting History*, 10(2):67-102
Mehaffy, G.L. 1987, “Social Studies in World War One: A Period of Transition” *Theory and Research in Education*, 15(1).
Modell, S. 2003, "Goals versus institutions: the development of performance measurement in the Swedish university sector", *Management Accounting Research,* 14(4):333-359.
Napier, C. 2009, “Accounting Historiography”, in *The Routledge Companion to Accounting History* pp. 30-49, J.R. Edwards and S.P. Walker (eds), United Kingdom
Nor-Aziah, A.K. & Scapens, R. 2007, "Corporatisation and accounting change: the role of accountants in a Malaysian public utility", *Management Accounting Research,* 18(2): 209-247.
Oldham, C.H., 1919, “Changes in Irish exports during twelve years”, *Statistical and Social Inquiry Society of Ireland*, Vol. XIII (Part XCVII, 1917-1919): pp541-553.
Ogata, K., Spraakman, G. 2013, “The persistence of delegitimated structures - Insights from changes to management accounting at the Hudson’s Bay Company 1670-2005”, *Journal of Accounting & Organizational Change,* 9(3): 280-303
Pentland, B. 2011, “The foundation is solid, if you know where to look: comment on Felin and Foss”, *Journal of Institutional Economics*, 7(2): 279 -293.
Pentland, B., Feldman, M. 2008, “Issues in field studies of organizational routines” in *Handbook of Organizational Routines*, ed. M. Becker, 281-300, Edward Elgar Publishing, UK.
Pentland, B., Haerem, T., Hillison, D. 2010, “Comparing organizational routines as recurrent patterns of action”, *Organization Studies,* 31(7): 917-940.
Pettigrew, A. 1997, "What is processual analysis?", *Scandinavian Journal of Management,* 13(4): 337-348.
Pettigrew, A. 1987, "Context and action in the transformation of the firm", *Journal of Management Studies,* 24(6): 649-670.
Pettigrew, A. 1985, *The Awakening Giant: Continuity and Change at ICI,* Basil Blackwell, Oxford.

Quinn, M. 2014, “Stability and change in management accounting over time—A century or so of evidence from Guinness”, *Management Accounting Research,* 25(1): 76-92.
Quinn, M. 2011, “Routines in management accounting: some further exploration”, *Journal of Accounting and Organizational Change*, 7(4): 337-357.
Roberts, J. & Scapens, R. 1985, “Accounting systems and systems of accountability — understanding accounting practices in their organisational contexts”, *Accounting, Organizations and Society,* 10(4):443-456.
Scott, J. 1990, *A matter of record – documentary sources in social research*, Polity Press, Cambridge.
Shields, M.D. 1998, “Management accounting practices in Europe: a perspective from the States”, *Management Accounting Research*, 9: 501-513.
Siti-Nabiha, A.K. & Scapens, R. 2005, "Stability and change: an institutionalist study of management accounting change", *Accounting, Auditing and Accountability Journal,* 18(1): 44-73.
Soin, K., Seal, W. & Cullen, J. 2002, "ABC and organisational change: an institutional perspective", 13(2): 249-271
Spraakman, G. 2006, “The impact of institutions on management accounting changes at the Hudson’s Bay Company”, *Journal of Accounting and Organizational Change,* 2(2): 101-122.
Stene, E. 1940, “An approach to the science of administration”, *American Political Science Review*, 34(6):1124 – 1137.
Tsamenyi, M., Cullen, J. & Gonzalez, J. 2006, "Changes in accounting and financial information systems in a Spanish electricity company: a new institutional theory analysis", *Management Accounting Research,* 17(4): 389-408.
Van der Stede, W., 2011, “Management Accounting Research in the wake of a crisis: some reflections”, *European Accounting Review*, 20(4): 605-623.
Van der Steen, M., 2011, “The emergence and change of management accounting routines” *Accounting, Auditing and Accountability Journal*, 24(4): 502-547.
Van der Steen, M. 2009, “Inertia and Management Accounting change”, *Accounting, Auditing and Accountability Journal*, 22(5): 736-761.
Vromen, J. 2011, “Routines as multilevel mechanisms”, Journal of Institutional Economics, 7(2): 175-196.
Winter, S.G. 2003, “Understanding dynamic capabilities”, *Strategic Management Journal*, 24: 991-995.

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[1] Excise duty rates obtained from *Excise Tariff of the United Kingdom – 1851/52 to 1959/60”*, Customs Intelligence Branch, available at National Archives, Kew, London.
[2] Although the literature on management accounting change mentioned here is not typically historical, there are many published archival/historic studies of management accounting (some drawing on institutional theories) in contemporary literature - see for example, Jackson et al., (2012); Ogata and Spraakman, (2013); Quinn, (2014); Spraakman (2006).
[3] Burns and Scapens (2000) also include rules in their analysis of the processes of change. It is not intended here to provide an extensive discussion on Burns and Scapens’ work, but see Quinn (2014) for a more detailed discussion.
[4] Some literature adopts the term *continuity* as opposed to stability. We regard these terms are interchangeable.
[5] Two particularly important areas noted by Edward and Boyns (2013) are overhead allocation and uniform (standardised) costing.
[6] There is a relative paucity of literature on the alcoholic drinks industry, from in both an historical context and more generally.
[7] For a more detailed discussion on artefacts, see for example D’Adderio (2011).
[8] More information can be found at http://www.marine.ie/NR/exeres/C22BBD59-9B20-4FE9-B56B-927A7BAC3405,frameless.htm, accessed September 23rd, 2013.
[9] Similarly, there were stores on the island of Ireland in Cork, Limerick, Galway, Ballinasloe, Carlow, Longford, and Carrick-on-Shannon.

[10] This is the First Earl of Iveagh, Edward Cecil Guinness, who was Chairman of the Board and divided his time between Dublin and London. When in London, he was regularly updated on events by other members of the Board.
[11] It is presumed this telegraph, and the opening of a war risk file arose following the discussions with Lord Iveagh.
[12] 2/6 is 2 shillings and 6 pence. A shilling was worth 12 old pence, and equates to 5 new pence.
[13] Following a German submarine raid in the Irish Sea in early 1916, a report dated February 2nd of that year notes the transfer of insurance to underwriters and cessation of the fund in the company ledger.
[14] This is a report authored by J. A. Hayes (Chief Accountant) and mentions transaction amounts. As noted, no ledgers have survived, but it is reasonable to assume that the report is a reflection of underlying ledger entries.
[15] This refers to an internal auditor.
[16] W.C. Carnegie, Audit Department.
[17] It is likely this report was authored by J.A. Hayes, the Chief Accountant.
[18] Later documentation dated March 30th 1917 shows that the value of insurance on the steamers which the company took on was charged to the Forwarding Department account in the ledgers – i.e. costs were allocated to departments as described previously.
[19] A Board Endorsement was used to communicate decisions made by the Board, where the original proposal was brought to the Board for consideration.
[20] Source, Annual Reports 1914-1918.
[21] Further research using Vromen's (2011) work is to be encouraged.
[22] It should be noted that Bapuji *et al.* (2012) specifically studied the emergence of routines as either strong or weak. They did not explore what could be termed the resilience of strong routines over time.
[23] Oldham (1919) noted a very large increase in linen exports during the war period in comparison to the previous decade. Beer and whiskey exports in contrast remained stable over the same period.
[24] Artefacts are the "physical manifestation of the organizational routine" (Pentland and Feldman, 2008, p. 289).