

***Growth, development and accounting:
seeing the bigger picture***



ICAEW Information for Better Markets initiative

ICAEW operates under a Royal Charter, working in the public interest. It is a world leading professional membership organisation that promotes, develops and supports over 147,000 chartered accountants worldwide.

ICAEW's vision is a 'World of strong economies' in which economic opportunities bring benefit to many, not just the few. A world where businesses of all sizes are both profitable and sustainably minded, where public institutions are effective and accountable, where developing economies have the infrastructure to thrive, where everyone has access to decent jobs and services.

To achieve this vision, strong leadership and robust institutions will be critical. ICAEW supports a global network of Chartered Accountants and business professionals to help raise standards in policy and practice.

The ICAEW Financial Reporting Faculty provides its members with practical assistance and support with IFRS, UK GAAP and other aspects of business reporting. It also comments on business reporting issues on behalf of ICAEW to standard setters and regulators.

The ICAEW Financial Reporting Faculty's *Information for Better Markets* thought leadership programme subjects key questions in business reporting to careful and impartial analysis so as to help achieve practical solutions to complex problems. The programme focuses on three key themes: disclosure, measurement and regulation.

This report is the fourth in a series of short Public Policy Papers within the *Information for Better Markets* programme. Earlier reports in the series are:

- *SME accounting requirements: basing policy on evidence* (December 2015)
- *Long-term investment and accounting: overcoming short-term bias* (April 2016)
- *Incentives and institutions in accounting: thinking beyond standards* (May 2016)

The reports in this series are intended to contribute to a better understanding of the role of accounting in society, so that policy making is more soundly based. They are aimed at all who have an interest in public policy debates on whether and how financial reporting should be regulated.

We welcome comments and enquiries on this report and on the other aspects of the *Information for Better Markets* programme. To contact us or to learn more about our work, please email bettermarkets@icaew.com or visit icaew.com/bettermarkets

Executive summary

INTRODUCTION

In this report we examine the role of accounting in promoting economic growth and development. We consider the ways in which it does so by contributing to: the quality of management decisions, the volume and quality of investment, and the ease and efficiency with which market transactions are conducted. Accounting also contributes to an effective tax system.

We emphasise the importance of accounting in a modern economy while acknowledging that the world is constantly changing. We explore some of the current and future challenges faced by the accounting profession in light of these changes, recognising the need for accounting to adapt and evolve if it is to retain its relevance.

MANAGING

Accounting information, in particular internal reporting, has long been used by managers as part of the decision-making process. There is ample evidence of accounting records being used for the purpose of management during the 18th and 19th centuries, at the time of the industrial revolution when large scale organisations emerged. While this research is inconclusive with regard to the causal effect between accounting records and this period of economic development, it is clear that accounting information was increasingly used for coordination of operations during this period.

INVESTING

A good financial reporting system provides confidence to potential equity investors in capital markets. Research also finds that high financial reporting quality is of particular importance to investors at an individual firm level, helping them to identify good investment opportunities over bad, to monitor the performance of their investments and to reduce the risk of information asymmetries.

With reference to debt finance we find that financial reporting quality is equally important; the evidence suggests that poor financial reporting quality will lead to lower access to debt markets, poorer debt ratings and higher interest rates.

BUYING AND SELLING

Historically, there is a clear association between the use of accounting records and the development of trade. Research suggests that it is plausible that early accounting records, which started out as simple tokens, were used to increase trust between buyers and sellers and therefore encourage transactions with a larger number of parties in distant locations. Today, while the format of accounting information may have changed, it is still used to establish trust between parties involved in a transaction.

TAXATION

Accounting also contributes to the integrity and efficiency of the tax system. The integrity of a company's financial reporting information is of central importance to tax authorities, providing the underlying basis for a firm's tax calculations. In turn, it is these tax revenues that are used to finance public goods which promote economic development.

CURRENT AND FUTURE CHALLENGES

We make the case that accounting is important in the economy today. However, the world is not static and will continue to evolve. Accelerated technological advancements, changes in business models and rising demand for sustainable development all create challenges – as well as opportunities – for accounting in the future. In response, the accounting profession will need to adapt to this changing environment in order to retain its relevance in the global economy.

Operating under its Royal Charter to work in the public interest, ICAEW has a series of ongoing initiatives that explore the future role of accounting. These are examined in the final section of this report.

Introduction

PURPOSE AND OBJECTIVES

In this report we investigate the role of accounting in promoting economic growth and development. The report follows on from ICAEW's 2016 thought leadership report, *Incentives and Institutions: Thinking beyond Standards*, in which we explored how incentives and institutions affect one particular aspect of accounting: financial reporting. In this report we look at the bigger picture and examine how broader accounting, rather than just financial reporting, affects outcomes in relation to economic growth.

The report acknowledges that the connection between accounting and economic growth is not widely understood and that the contribution of accountancy to the economy is, therefore, often undervalued. Accountants are regarded by many purely as number-crunchers. Our aim is to challenge this misconception and provide evidence that, throughout history, accounting has been integral to economic growth and development. In doing so, we recognise that there are counter views to this. For example, accounting can have a negative impact on economic growth due to its procyclical effects. The over-regulation of accounting could also lead to potential economic benefits being outweighed by the cost. However, our intention is simply to explain why accounting has been fundamental in forming the foundations of the economy and society that we live in today and why it should not be overlooked.

In addition to challenging common misconceptions about accounting, we also offer important insights for policymakers in emerging economies. Perhaps, one need look no further than the correlation between the significant investment made by China in accounting over the past 40 years, and the related increase in international trade and growth of its capital markets, as a testament to the economic importance of accounting. However, for policymakers in emerging economies requiring incentives to adopt better accounting practices, it is important to understand why accounting plays an essential role.

There are also considerations for policymakers in developed countries. There are many opportunities and challenges for both the economy and the accounting profession in a world that is constantly evolving. Advances in technology create possibilities for organisations to be more innovative with their product offering, as well as offer new methods for recording, reporting and analysing data. In the pursuit of a more sustainable future it will be important to understand how to incorporate sustainability into management decision-making, what records to keep and how best to report sustainable outcomes. Accounting will be integral to all these things and will need to adapt to these changes. Understanding the historic role of accounting in economic growth will offer important insights for policymakers and ensure that accounting is considered as a key part of the solutions to these challenges. This in turn will ensure that accounting retains its relevance in the global economy.

APPROACH

Our approach examines the role of accounting in promoting economic growth. We acknowledge that there are many accounting-related factors that help promote growth and development, in isolation or in combination with other factors. We do not intend to produce a comprehensive list, but instead focus on four important factors:

- the quality of management;
- the volume and quality of investment;
- the ease and efficiency with which market transactions – buying and selling – can be conducted; and
- the integrity and efficiency of the tax system, which finances spending on infrastructure, education, healthcare and other essential services.

Accounting, from basic record keeping to reporting, is integral to all these things. Indeed, it is inconceivable that any of them could make a significant contribution to growth and development without relevant and reliable accounting information. This report explores and provides evidence of this contribution examining specifically the role of accounting in resource allocation, pricing, performance monitoring, determining contractual payments, providing contractual and statutory protections and routine operations.

In formulating this view, we accept that accounting cannot be done in isolation and that the institutions that support accounting will also have an impact on economic growth and development. However, it is difficult to disentangle the effects of any single institution from the bundle of practices to which it belongs.

We also consider what history and academic research tell us about the contribution of accounting to economic growth. We find many correlations between developments in accounting and periods of economic growth stretching back as far as the emergence of the first cities around 10,000 years ago. Yet, despite these observations and the importance of economic growth to government agendas, researchers do not usually look directly at the relationship between the two. Where evidence does exist, it is considered – as part of the appendices to this report – in conjunction with research that supports the role of accounting in managing, investing, buying and selling and taxation.

In the remainder of this report we briefly explain what is regarded as accounting for the purposes of this report before looking at accounting's contribution to managing, investing, buying and selling, and taxation. Finally, we explore some of the current and future accounting challenges.

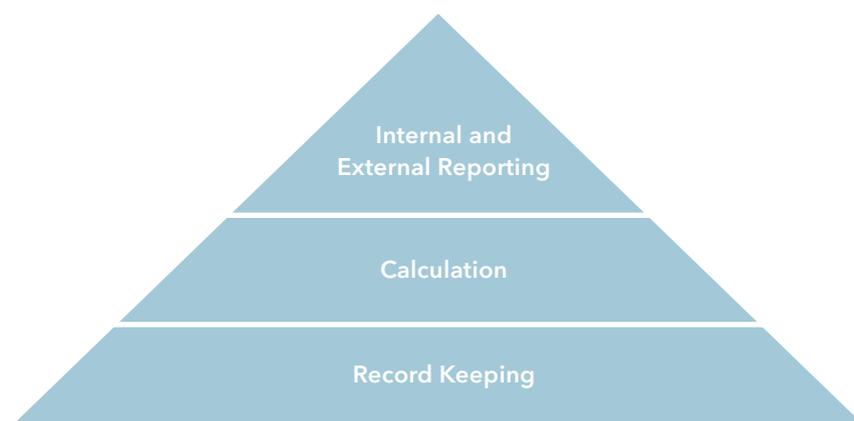
An appendix summarising the evidence we considered is included at the back of this report.

Comments on this report are welcome and can be sent to bettermarkets@icaew.com

What is accounting?

'Accounting' covers a number of activities: record keeping, calculation, internal reporting and external reporting, of which some is public reporting. These different forms of accounting are logically linked in the manner shown in figure 1 below.

FIGURE 1



The most basic form of accounting is record keeping, the origins of which can be traced back to 8000 BC.

It is essential, not only because of the limitations of human memory, but as a means of verifying among different parties what has happened - what has been bought and sold, paid and received - within firms as well as for arm's-length transactions. Record keeping allows calculations of various types, such as product and project costing and measurements of profit or loss. Records and calculations form the basis of the internal reporting that management uses to run the business, which in turn often forms the basis of the information that a firm reports externally. Some of this external reporting will be public.

Much discussion of accounting focuses on the tip of the pyramid (figure 1) and specifically on public reporting by listed companies. This means that the relative importance of the different forms of accounting may be misunderstood. This report too will focus to some extent on public reporting, but the importance of the more basic accounting activities that underlie it should not be overlooked, and we refer to these where appropriate. We also acknowledge that conversations at board level increasingly concern the quality and integrity of internal reporting as the volume of data provided - and on which board decisions are based - continues to grow.

The most common method of accounting is double-entry bookkeeping. While it is possible to do accounting without it, and historically much accounting used alternative approaches broadly labelled single-entry bookkeeping and record keeping, today it is almost universal for publicly traded and large firms. Double-entry provides an internal check on the accuracy of accounting records, calculation and reports, and also facilitates calculations (of profit, for example) and the preparation of accounting reports.

Alternative approaches to information that do not use accounting rely essentially on memory and personal contacts. These become less effective as transactions increase in number, as organisations become larger, as both transactions and organisations become more complex and take place across greater distances. Such developments in economic activity both create a demand for accounting information and are in turn facilitated by accounting information.

'When people start engaging in numerous and complex reciprocal exchanges, formal recordkeeping emerges to supplement imperfect human memory, which cannot accurately track many partners' past behaviour.' **Basu and Waymire (2006)**¹

Managing

Growth and development depend on efficient management. Since the industrial revolution, managers have used accounting information to run businesses. Indeed, there is some interesting research that specifically explores how accounting developed during the industrial revolution and the impact that this had on the economy. During this period, the use of administrative coordination allowed organisations to take advantage of technological advancements which in turn led to a period of accelerated economic growth. This era also saw a growing demand for, and use of, management accounting to enable managers to allocate resources more effectively as well as monitor output from employees. Some researchers go so far as to argue that accounting facilitated administrative coordination which in turn led to the transformation of small companies into the large organisations of the modern world. Such research supports the view that accounting was an integral part of economic growth during the industrial revolution.

Today, managers still use accounting information in similar ways to help make decisions about resource allocation and pricing and to monitor lower-level employees while themselves being monitored through accounting reports. They may use accounting information to determine some contractual payments to employees. And they rely on and are responsible for the accounting systems that underpin the firm's routine operations.

THE ROLE OF ACCOUNTING IN MANAGEMENT

Resource allocation

Accounting information tells managers how particular projects and activities are performing. While this is not necessarily a guide to future performance, it is at least a starting point. If an activity is losing money, managers will ask whether it should be discontinued and the resources deployed elsewhere. If it is doing well, managers will ask whether further investment could increase returns.

Pricing

Costing information tells managers how much they need to charge customers in order to make a profit, both on existing products and services and, subject to the proviso that past costs may be an unreliable guide to future costs, in bidding for new work.

Monitoring performance

When managers look at the performance of particular projects and activities, they are not only assessing whether the investment is a good one, but how it has been managed. A perfectly good investment can make a loss if it is badly managed, and a well-managed investment will earn better returns than a merely competently managed one. Managers are therefore constantly using accounting information to help them decide whether and how things could be managed better and whether action should be taken to improve the performance of individual lower-level managers and whether they should be replaced or promoted, punished or rewarded. And they are judged in the same way themselves.

In a survey of management accounting practices in UK manufacturing companies carried out by Drury et al (1993)², the authors found that in a sample of 303 manufacturing organisations, with a turnover in excess of £10m, 76% used standard costing systems for a variety of purposes. The table below shows the percentage of respondents that rated the use of standard costing systems for five different purposes as 'above average importance' or 'vitaly important'

	%
Cost control and performance evaluation	72
Costing inventories	80
Computing product costs for decision-making	62
As an aid to budgeting	69
Data processing economies	43

Determining contractual payments

Employment contracts, including those of top managers, sometimes include provisions relating pay to accounting information. Relevant accounting information is usually about sales or profitability.

Routine operations

The use of accounting information by lower-level employees is also important, for example, to ensure correct payments to suppliers and collections from customers, maintenance of desired stock levels, and so on. Much of this sort of use may not involve any human intervention once the system is running smoothly. Payments, for example, may be automatically triggered by instructions that have been inserted at an earlier date. Management is not usually a direct user of this information except when queries arise and need to be investigated and in the sense that it forms the basis of calculations and of the firm's internal reporting.

Management relies on such basic record keeping for the proper and effective running of the business, and managers have a responsibility to ensure that the accounting systems are fit for purpose.

In small firms, some or all of the distinctions that we have made between managers, lower-level managers and lower-level employees may be less significant or even irrelevant.

WHAT WOULD MANAGERS DO IN THE ABSENCE OF RELEVANT AND RELIABLE ACCOUNTING INFORMATION?

- They could still take decisions on resource allocation, but they would not be as well informed. It is likely that more money would be wasted on bad investments. Opportunities for good investments could be missed.
- Pricing, except for relatively simple products and services, would be a matter of guesswork.
- Performance monitoring would be less effective if there were no sensible measures of performance. At some point it would be noticed that some operations had run out of money while others seemed to have lots of it, but this is no way to run a business of any size. For small and simple operations, such as a market stall, perhaps there would not be a problem. But managing large and complex businesses would become more challenging.
- Using accounting information in employment contracts would become impossible and managers would be required to find alternative methods to measure staff performance. This may include the need for closer direct supervision.
- Many routine operations too would become more difficult except in small and simple businesses.

In short, management decision-making would become much more challenging, and in a large business virtually impossible.

Investing

Growth and development depend on the volume and quality of investment in capital markets. As summarised in the recent publication by Baruch Lev and Feng Gu (2016)³:

'no economy can grow or prosper without an active and deep capital market that channels the savings of individuals and business organisations to the most productive investment uses by the private sector.'

This message is certainly not a new one. Indeed, in *An Inquiry Into the Nature and Causes of the Wealth of Nations*, first published in 1776, Adam Smith states that:

'Every increase or diminution of capital ... tends to increase or diminish the real quantity of industry, the number of productive hands, and consequently the exchangeable value of the annual produce of the land and labour of the country, the real wealth and revenue of all its inhabitants.'

Organisations such as the United Nations, the OECD, the WTO and the World Bank place a huge emphasis on the importance of investment in the global economy because it is so critical for development. Indeed, in 2016, the G20 issued its *Guiding principles for global investment policy*, produced by G20 members in conjunction with such organisations, which includes the following principle:

'Recognising the critical role of investment as an engine of economic growth in the global economy, governments should avoid protectionism in relation to cross-border investment.'

Acknowledging the significance of investment to the economy, we then turn to the role of accounting information within it, which according to Baruch Lev and Feng Gu is, *'the "fuel" running this sophisticated capital accumulation and allocation "machine"'*. It is in this context that we find research that demonstrates the clearest association between accounting and growth. There is evidence that suggests that certain sectors, particularly industries involving technological innovation, grow faster or see a more rapid transfer of resources to that sector when the quality of general disclosures, financial systems or financial reporting is perceived to be high.

Investors' use of the accounting information produced by the firms they invest in is similar to its use by the managers who produce it, but they just have a different perspective on it.

THE ROLE OF ACCOUNTING IN INVESTMENT

Resource allocation

Accounting information tells investors how particular firms and, to some extent, segments within firms are performing. While this is not necessarily a guide to future performance, it is a starting-point, and it provides investors with useful information in deciding how they should allocate their investments among competing firms. Information about one firm is also relevant to others. It may give investors useful indications as to which other firms or which activities of other firms are likely to do well or badly.

Research also suggests that high quality financial reporting, produced in a timely manner, can in fact increase the volume of investment into the capital market. Providing such information to potential investors reduces the risk of incurring a loss, which would otherwise arise when trading with more informed investors, a situation known as adverse selection.

Pricing

An important role of accounting for investors is to help them form a view on the price at which they should buy or sell or, if they are lenders, what interest rate they should charge.

With specific reference to lending, there is research evidence that demonstrates a link between the quality of financial reporting, interest rates and debt ratings. Finance providers face challenges in assessing the financial position of the borrower when financial reporting quality is poor. As a result, companies with low quality financial reporting incur higher interest rates and lower debt ratings.

Monitoring performance

Just as the top managers in a firm monitor lower-level managers, so investors monitor top managers. Accounting information helps investors decide whether action should be taken to intervene in managers' decisions, whether they should be replaced and how they should be rewarded. This is the corporate governance function of financial reporting.

Bushman and Smith (2001) discuss three ways in which financial accounting information can affect investment:

- *'to identify good versus bad projects by managers and investors (project identification)'*
- *'in corporate control mechanisms that discipline managers to direct resources towards projects identified as good and away from projects identified as bad (governance channel)'*
- *'to reduce information asymmetries among investors (adverse selection)'*

Determining contractual payments

Top managers' employment contracts sometimes include provisions relating pay to accounting information. Relevant accounting information would usually concern profitability. Although in law the contract in such cases is between the firm and the manager, the economic relationship is between the investors as principals and the manager as their agent.

Routine operations

Any party that transacts with a firm may well rely on the accuracy and efficiency of that firm's accounting records and processes. Investors' relationship with the firms in which they invest is a distinctive one (different from that of buyers and sellers of goods and services), but they still rely on the firms' accounting records and processes. Equity investors rely on investee firms to maintain accurate records of, for example, who their shareholders are, how many shares they hold, entitlements to dividends, and dividend payments. Lenders have corresponding needs.

Providing contractual protections

Debt contracts may include provisions, based on accounting information, that protect the position of lenders. For example, the contract may empower lenders to intervene in the management of the business if specified balance sheet ratios are breached. Some research suggests that empowering lenders in this way can facilitate loan negotiations.

Providing statutory protections

In some jurisdictions, including the EU, lenders' and others' rights are protected by statutory capital maintenance requirements that limit distributions to shareholders and which are based on accounting information. These may be supported by statutory requirements on how profits are to be calculated which are also intended to provide protection to lenders (and others), for example, by requiring accounting measurements to be made on a prudent basis.

WHAT WOULD INVESTORS DO IN THE ABSENCE OF RELEVANT AND RELIABLE ACCOUNTING INFORMATION?

- They could obtain other types of information. These might be either more expensive, less reliable or less useful.
- Where they do decide to invest, they could demand 'price protection'. That is, they could demand a higher rate of return or a higher rate of interest to reflect their lack of information. This could translate into a higher cost of capital for the business.
- Where they do invest, they are likely to make worse decisions. While there may be other forms of information available, accounting information is often the basis for these alternative sources of information. Investors would therefore be less well informed, resulting in a misallocation of capital.
- If they are lenders, they could require other protections, such as security or a shorter loan period. This could translate into a higher cost of capital for the business.
- Many investments might not take place.

Most share transactions take place in secondary markets, between one investor and another or between an investor and a market-maker. At an economic level, a robust system of financial reporting provides confidence to investors who wish to invest in these markets. At an individual firm level, accounting information can facilitate transactions in secondary markets by providing improved transparency. This translates into improved liquidity, reducing the cost of transacting (lower bid/ask spreads); this in turn should lead to a lower cost of capital for the business (even though it is not a party to the transactions).

Overall, in the absence of relevant and reliable accounting information, we should expect less investment in total, that the investment that takes place would be relatively poorly allocated, and that the cost of capital to firms would be higher.

Buying and selling

Growth and development are affected by the ease and efficiency with which market transactions can be conducted.

Buyers and sellers of goods or services often want to know about their counterparty's financial position and they often rely on the accuracy and effectiveness of its accounting records and systems.

There are plenty of historical examples that demonstrate the correlation between increased trade and the development of accounting records. The earliest example is the use of clay tokens in 8,000 BC which may have been used to support trade by improving trust between buyer and seller, and therefore enabled trade to take place between parties with no personal connection. The need for accounting information and records became ever more crucial as relationships took place over wider distances. This is evident in the development of accounting practices during the crusades of the 13th century, a time in which trade between Europe and the Middle East became commonplace. It is these early practices that would ultimately lead to the creation of double-entry bookkeeping, the principles of which are still used today.

In more recent times, the importance of accounting information is reflected in the current practices of the World Trade Organisation (WTO). With the aim to 'ensure that trade flows as smoothly, predictably and freely as possible', the WTO now generally requires new members to make specific commitments in key sectors, including accounting, as part of the terms of their trade agreements. Improvements to financial reporting associated with the introduction of International Financial Reporting Standards, and subsequent adoption by more than 125 countries across the world, has also given rise to benefits in trade. There is some evidence, for example, from the research on the mandatory adoption of IFRS in the EU which shows developments in trade and investment between European countries since the adoption.

THE ROLE OF ACCOUNTING IN TRADE

Resource allocation

Buyers are sometimes expected to pay in advance, in which case they will temporarily become a source of finance for the supplier. They will want reassurance that they will get whatever they have paid for and that the supplier will not become insolvent in the meantime. Or the purchase may involve a long-term commitment to the supplier, an investment in the relationship with the supplier. For example, if the purchase is of plant and machinery, it may be compatible only with further purchases from the same supplier or it may depend on the continuing provision of training or repair services by the supplier. Again, the purchaser will want to form a judgement on whether the supplier will continue in existence for the foreseeable future, and accounting information should help this judgement.

Similar considerations apply for those who supply goods or services. If they are extending credit (and so temporarily becoming a source of finance for the buyer), they will want to form a judgement as to whether the buyer will be able to pay for the purchase. Or the supplier may be making a long-term commitment to the buyer (an investment in the relationship with the buyer), even to the extent of buying special plant and machinery to manufacture the goods. It will therefore need to know what the buyer's long-term prospects are; accounting information should help with this judgement too. This may include the use of financial statements or internal records including payment history to assess credit risk. Alternatively, credit rating agencies may be used to assess the risk and if this is the case, the agencies themselves will rely on accounting information to a certain extent.

Employees are suppliers of services and they may well want to know that the firm they work for, or are considering working for, is financially sound and whether it is growing or shrinking. The longer an employee works for a firm, and the more the individual's skills become shaped by the particular employer's needs, the greater the risk that their human capital becomes less readily transferable to other employers. Again, employees who commit their human capital in this way may want to know about the financial position and prospects of the employer that they are committing themselves to, and accounting information should help them.

Pricing

Where prices are negotiated, buyers and sellers may use accounting information about the other party to help decide how much they should charge or the level they should pay.

Determining contractual payments

Sometimes payments between suppliers and customers are determined by accounting information. For example, suppliers may agree to pay a rebate to retailers if sales of their products reach a specified level. Determining whether there should be a payment and, if so, how much it should be, requires agreement between the two parties' accounting records.

Routine operations

Credit purchases and sales have to be accurately recorded so as to ensure proper and efficient payments and collections subsequently. Buying and selling on credit become more difficult where either party's accounting systems are inadequate. This is of particular importance to small companies who may depend on credit as a source of financing and, therefore, survival.

Providing statutory protections

Statutory capital maintenance requirements, where they exist, provide protection to suppliers who provide credit and to customers who pay in advance as well as to lenders. As noted earlier, such requirements may be supported by further requirements on how profits are to be calculated.

WHAT WOULD BUYERS AND SELLERS DO IN THE ABSENCE OF RELEVANT AND RELIABLE ACCOUNTING INFORMATION?

- In some cases, buyers and sellers would try to find alternative sources of information, which might be more expensive, less reliable or less useful.
- Some transactions would not take place. Most non-cash transactions that now take place would be virtually impossible.

In short, relevant and reliable accounting underpins economic activity, facilitating buying and selling of goods and services by creating trust between parties involved in these transactions.

Taxation

Just as historical records demonstrate the parallels between trade and accounting records, the same is true of the relationship between taxation and accounting records. From the days of the Inca, to the Dutch and British Empires, there is ample evidence to indicate that accounting records were used as a reliable basis on which to create an effective taxation system.

Governments rely on firms for various types of taxation, and they therefore have a strong interest in the accuracy and integrity both of these entities' accounting records and of their financial reporting. Likewise, the integrity and accuracy of the system plays a vital part in securing the trust of the entities that pay or collect the tax on the government's behalf. These taxes take the following forms:

- Firms collect taxes from third parties on behalf of the government. For example, they collect various taxes, excises and duties on sales to their customers and then pass them on to the government; they collect employees' social security contributions and taxes on income from employment and pass them on to the government. Financial institutions such as annuity providers and pension funds collect taxes on beneficiaries' income and pass them on to the government.
- Firms pay their own social security contributions to government.
- Firms pay taxes based on their profits.

All three forms of taxation depend on accurate accounting records and, while in some countries tax codes frequently adjust reported profits for tax purposes, reported profit is the starting point. If it is wrong, either through incompetence or dishonesty, then, to the extent that the problem is a widespread one, the foundation of the system of taxes on profits will be unsound.

According to PwC's UK 'Total Tax Contribution survey for the 100 Group', an estimated £82.3 billion was collected from 100 group companies in 2016, of which £23.7 billion is taxes borne and the remaining £58.6 billion is tax collected. This contribution is estimated to represent 13.3% of total government receipts in 2016.

THE ROLE OF ACCOUNTING IN TAXATION

A sound accounting basis for the taxes paid and collected by firms and other financial institutions is important for growth and development because these taxes pay for all the essential contributions that government spending makes, such as infrastructure, defence, education, research, healthcare and law enforcement. There are specific lessons in this respect for countries wishing to attract foreign direct investment. Some research suggests that the quality of infrastructure - and therefore the ability of potential investors to operate effectively in the target country - is of greater importance to investors than low tax rates.

The government also receives income from other sources. However, governments these days usually depend on firms and other financial institutions, such as banks, for most of their income, even if the taxes they pay are ultimately borne by third parties. Governments can also borrow, but the ability to do so depends on the expectation of future interest payments and ultimate repayment, both from future taxation.

Accounting also makes other contributions to good government. For example, it enables prudential regulation, price regulation, competition investigations, national income statistics, financial honesty in society, and the effective management of government departments. Some historians, Jacob Soll for example, even argue that good accounting by governments is associated with the rise of nations and poor accounting with their decline.⁴ This is partly for reasons of governance; good accounting facilitates accountability for governments as well as for firms.

Current and future challenges

In this report we have examined how accounting information, from basic record keeping to external financial reporting, forms an integral part of economic growth. Historically, non-accounting approaches to information that relied on memory and personal contacts became less effective as transactions increased in number, as organisations became larger, as both transactions and organisations became more complex, and as relations became more impersonal. Such developments in economic activity create a demand for accounting and are in turn facilitated by accounting.

A modern and efficient economy is now inconceivable without a rigorous set of accounting practices. Today, accounting information is used to establish trust and encourage trade between buyers and sellers. Accounting information enables managers to make more informed strategic and operational decisions. Reliable external financial reporting also provides assurances to those looking to invest in capital markets and forms the basis of an efficient tax system.

However, the world is constantly evolving and the continued relevance of accounting in the economy is not something that should be taken for granted. If accounting is to retain its status as an integral component of economic growth, it will be required to change and adapt in the face of many challenges. We outline some of these challenges below, alongside ICAEW initiatives that form part of an ongoing programme of publications and events designed to explore the future role of accounting.

THE FUTURE OF CORPORATE REPORTING

As organisations increasingly depend on internally-generated assets to create value (assets that often cannot be recognised in the financial statements), the question of whether external financial reporting – and more broadly corporate reporting – will continue to be relevant to investors in the future is now being raised by some. In addition, increased varieties of data sources made possible by advancements in technology, coupled with the speed at which this data can be obtained, also creates the risk that the information provided in the corporate report is not timely enough to be relevant to the user.

In an effort to address some of these questions and influence the international debate on corporate reporting, the ICAEW Financial Reporting Faculty launched a series of communications and events on the topic of the future of corporate reporting as part of its 2017 thought leadership programme.

In June 2017 the ICAEW Financial Reporting Faculty published a thought leadership report, *What's next for corporate reporting: time to decide?* The report captures the views of key stakeholders on the subject of corporate reporting. It considers what the future of corporate reporting may look like, what the opportunities and challenges are and where there are barriers to change. For each of these barriers, the report encourages debate by putting forward principal policy options on the following themes:

- How corporate reporting can meet the demands of diverse stakeholders
- How data and technology can improve corporate reporting
- How to report on intangible assets as we transition to a knowledge-based society
- How to achieve consistency and quality in non-financial reporting

The faculty is collating comments on this report and encouraging discussions of its findings through digital and other channels. A follow-up paper is expected in 2018, drawing on these discussions and related outputs and activities.

In December 2017, the ICAEW Financial Reporting Faculty's Information for Better Markets (IFBM) thought leadership conference will ask *Corporate reporting: is it heading in the right direction?* It will provide an opportunity to bring together the academic and non-academic communities to debate the issues, and, in particular, the findings of four academic research papers specifically commissioned by the faculty for the event.

The four papers are as follows:

- *Financial reporting for investors: do the financial statements give them what they need?* Baruch Lev, NYU Stern
- *Reporting on business's external impacts: do we know enough about them?* Jeffery Unerman, Royal Holloway University of London
- *The non-financial reporting explosion: who benefits?* Hervé Stolowy, HEC Paris
- *Is corporate reporting information being communicated successfully?* Niamh Brennan, University College Dublin

A response to each paper will be provided by a non-academic before question and answer sessions take place with the conference delegates. The papers will be published in 2018 in a special edition of *Accounting and Business Research*, along with the transcripts of the responses to each paper delivered at the conference.

TECHNOLOGICAL ADVANCEMENTS

The pace of change in technology is fast. Digital trends such as artificial intelligence, blockchain, cyber security and data analytics, all create opportunities for the accounting profession to better serve the economy by improving the quality of services currently provided as well as developing new services. However, with this opportunity also comes the risk that accounting becomes marginalised if it fails to adapt appropriately to these technologies.

The ICAEW IT faculty has a number of projects underway that consider the impact of technology on the accounting profession, most notably on the use of artificial intelligence and blockchain. The faculty's most recent publication is *Blockchain and the future of accountancy*. The paper sets out the key features of the technology and the likely impact it will have on business, in particular on the accounting profession. The report explores the huge challenges that will be faced embedding blockchain into financial record keeping systems. It also identifies the opportunities for accountants as 'experts in record keeping, application of complex rules, business logic and standard setting' to drive blockchain forward and influence how it is embedded and used in the future.

The ICAEW IT Faculty's report *Artificial intelligence and the future of accountancy* looks at the rise of artificial intelligence, which in the coming decades will take over more and more decision-making tasks from humans. The report considers the impact of artificial intelligence on the accountancy profession and how it can be used by accountants.

TRANSITIONING TO A SUSTAINABLE FUTURE

In 2015 the United Nations General Assembly formally adopted the 2030 Agenda for Sustainable Development which included **17 Global Goals for Sustainable Development** with 169 associated targets. These Goals were signed off by all 193 member nations and built via the UN's largest ever consultation – they represent a vision that the world wants to achieve. Prosperous and resilient economies based on fair and just societies and all within what nature can afford.

However achieving this vision will be hugely ambitious – public and private enterprise will have to align, and the accounting profession will have a vital role to play. In particular the profession will be critical in enabling businesses and other organisations to measure and report their progress while building trust in those processes and disclosures.

As an international professional body with a public interest role, ICAEW is committed to raising awareness of the global goals and the supporting role of the accounting profession. It does so by building partnerships and working collaboratively with ICAEW members. To date, ICAEW has run workshops about the global goals with over 4,000 people.

While measuring and reporting externally on how organisations connect with communities and the natural world will become increasingly important in the future, so too will be the need to create reliable information systems on which to base internal decisions. As one of the founding members and host to the scheme, ICAEW continues to promote the work of the **Natural Capital Coalition (NCC)**. The NCC is a global, multi-stakeholder open source platform for supporting the development of methods for natural and social capital valuation in business. Among other projects, the coalition has produced a Natural Capital Protocol which acts as a framework to help generate credible, actionable information for business managers to inform decisions. This is achieved by enabling the integration of natural capital into decision-making.

INTRODUCTION

The structure of this appendix mostly follows that of the main report. By way of introduction, we start by looking at the research on the historical use of record keeping as well as the research that broadly considers possible relationships between accounting and economic growth and development. We then look more specifically at accounting's contribution to managing, investing, buying and selling and taxation.

RECORD KEEPING AND LINKS TO ECONOMIC GROWTH

Record keeping

The earliest known accounting records, from Mesopotamia, date from about 8,000 BC. They are clay tokens whose differing shapes represented different physical items. Over the next 4,000 years a system of marks on the tokens developed, indicating both different items and quantities. By about 3,000 BC the first written scripts had evolved from the markings used in such accounting records. **Basu and Waymire (2006)** summarise the key points in this evolution.

Our knowledge of very early accounting records is fragmentary and their context and meaning are often unclear. But it seems likely that even these records were being used to support transactions between:

- individuals and governments;
- individuals and religious authorities (eg, temples); and
- individuals and other individuals, either in commercial transactions or as stewardship reports in what we would now regard as employment relationships, although in the ancient world these were often master-slave (or similar) relationships.

Carmona and Ezzamel (2007) discuss the evidence for ancient Mesopotamia and ancient Egypt so far as it relates to accountability.

Our interest in these records for the purposes of this report is to establish whether or not they supported economic activity. This is difficult to determine several thousand years later, but it seems reasonable to assume that as societies grew larger and more complex, record keeping became increasingly necessary to facilitate economic transactions. The case for this is developed in Basu and Waymire (2006), **Waymire and Basu (2007)** and **Basu et al (2009)**. Basu and Waymire (2006) argue that:

‘Permanent records emerge to supplement memory when complex intertemporal exchange between strangers becomes more common and...systematic records and other exchange-supporting institutions co-evolve and feed back to increase gains from economic coordination and division of labor.’

Although statistical surveys of ancient civilisations are impracticable, Basu et al (2009), using ethnographic data for 186 societies ranging over the past 4,000 years, but mainly from the past 200, find:

‘Strong support for our ... hypothesis that the expansion of impersonal exchange facilitated by recordkeeping is ... associated with increasingly specialized division of labor and greater overall investment in physical, tangible and political capital.’⁵

The data in this paper’s sample are mainly drawn from the work of anthropologists or using historical records.

It would be useful to look at more developed modern societies to investigate the importance of record keeping. For example, we would expect to see a correlation between economic growth and the number of people with bookkeeping and accounting qualifications, although as economic growth is commonly associated with other trends such as educational improvements and growth of the services sector, it might be difficult to establish causal relationships. It is also worth noting that recent developments in IT, notably artificial intelligence, may reduce the demand for the more basic accounting qualifications in the future.

The International Federation of Accountants (IFAC) (2015) reports research finding:

‘A strong correlation between the number of accountants working in economies with GDP per capita, and an even stronger correlation with the UN Human Development Index, which measures indicators including life expectancy, years of schooling, and income.’

But without further investigation it is impossible to say what the nature of the link is underlying these correlations. They could mean that growth and development produce accountants, rather than the opposite, or that these related phenomena have a common cause.

Economic growth

Explaining economic growth is a complex problem and identifying the effects of any single cause in promoting or retarding it clearly poses challenges. We therefore provide a selection of research on economic growth in relation to a variety of accounting activities.

Disclosure: Rajan and Zingales (1998) look at ‘whether industrial sectors that are relatively more in need of external finance develop disproportionately faster in countries with more-developed financial markets’ and find that they do. Their data cover 36 industries in 43 countries over the period 1980-1990 and their measures of financial development are based on stock market capitalisation and the ratio of domestic credit to gross domestic product (GDP). As a robustness test the authors use the extent of disclosure in different countries as an alternative measure of financial development. This confirms their key finding.

Using data for 27 industries in 18 countries (14 with high GDP and four with low GDP) for the period 1970-1995, **Carlin and Mayer (2003)** look at, among other things, correlations between the extent of disclosure and:

- economic growth,
- spending on research and development (R&D); and
- fixed capital formation

For the high GDP countries they find that 'disclosure is associated with faster growth of industries that are equity dependent and have a skilled labour force'. They also find 'an association between ... [disclosures] and growth of equity dependent industries' for the low GDP countries.

In Rajan and Zingales (1998) the extent to which industrial sectors are in need of external finance is calculated from data on how far US firms are externally financed, using data for 1980-1989. The sectors most in need of external finance are: 'drugs', 'plastic products', 'office, computing' and 'radio'. The sectors least in need of external finance are: 'tobacco', 'pottery', 'leather' and 'spinning'. Carlin and Mayer (2003)'s measure of 'equity dependence' is also taken from data for US firms for 1980-1989, but looking at the ratio between the net amount of equity issues and capital expenditure.⁶ This gives similar results to those of Rajan and Zingales (1998) for 'need of external finance'. The most equity dependent sectors are: 'drugs', 'office, computing', 'professional goods' and 'radio'. The least equity dependent sectors are 'spinning' and 'tobacco'; five sectors - including 'leather' - tie for third place.

It therefore appears that, as might be expected, the sectors most in need of external finance or most equity dependent tend to be those that involve technological innovation and significant uncertainties, while those least in need of external finance tend to be well established industries with little innovation and risks that are probably well understood: 'cash cows'.

Both these papers use an index prepared by the Center for International Financial Analysis and Research (CIFAR). As **Bushman et al (2004)** explain, this index of the extent of corporate disclosure in different countries is based on an:

'Average ... of 90 accounting and non-accounting items disclosed by a sample of large companies in their annual reports ... including general information; items from the income statement, balance sheet, and funds flow statement; accounting standards; stock data; governance data; and special items.'

The score for each country is based on a minimum of three companies. The index goes beyond financial reporting; it is a general disclosure index rather than an accounting disclosure index.

Francis et al (2009) examine 'whether the country-level information environment is positively associated with the timely reallocation of resources in response to growth shocks (or changes in growth opportunities) by improving the transfer of resources from industries which experience negative growth shocks to those that experience positive growth shocks'. 'Growth shocks' are unexpected changes in technology or prices that affect the relative prospects of different industries.

The authors note that there are a number of reasons for thinking that greater disclosure tends to lead to higher economic growth:

'First, transparency improves firms' access to lower cost external financing. In the absence of transparency, higher cost external financing will impede firms' ability to take advantage of growth opportunities. Second, transparency contributes to more informative stock prices. Informed stock prices reflect greater firm-specific information and this ensures that prices remain close to their fundamental value and reflect available growth opportunities. Third, transparency plays an important governance role in that it allows greater monitoring by outside investors. This greater monitoring in turn ensures that managers take advantage of value enhancing growth opportunities and prevents diversion of firms' resources.'

They conclude that 'overall, the evidence points to a first-order importance of corporate transparency ... in the efficient allocation of resources and economic growth'. They warn, however, that their positive conclusion on the value of corporate transparency 'is contingent on the social benefits of improved resource allocations exceeding the private (firm-level) costs of better accounting systems and expanded public disclosures'.

Francis et al (2009) measure transparency in several ways, including using the CIFAR index, none of which is restricted to accounting disclosures.

Li & Shroff (2010) investigate 'cross-sectional differences in information uncertainty across industries to detect the role of financial reporting in facilitating economic growth'. They find that:

'High information uncertainty industries grow disproportionately faster in countries with better reporting quality. Specifically ... high information uncertainty industries grow between 0.12% and 0.22% faster in countries with high reporting quality.'

The authors suggest that the results could indicate that:

'Reporting quality may not be a critical growth factor for countries that are heavily invested in low information-uncertainty industries (eg, mature industries or industries with more tangible assets). However, as a country's industry base evolves to include more industries with greater information uncertainty, such as high-growth or high-tech industries, a high-quality financial reporting system can play a pivotal role in fostering faster economic growth.'

All four of these papers - Rajan and Zingales (1998), Carlin and Mayer (2003), Francis et al (2009) and Li and Shroff (2010) - find an association between increased disclosure or increased transparency and either growth in particular sectors or more rapid transfer of resources to growth sectors. But they do not show a link with economic growth in total and they are looking at disclosure or transparency in a wider sense than just accounting disclosures. However, we are not aware of any studies suggesting that increased disclosures, through the costs they impose on preparers and users, have tended to retard economic growth.

Accounting infrastructure: Lee (1987) argues that 'capital market inefficiency is often the greatest stumbling block to economic growth'. Lee examines emerging industries in developing countries such as Taiwan and finds barriers to economic growth and the expansion of advanced technology. 'An underdeveloped capital market has two major weaknesses. One is the thinness of the market and the other is the fact that security prices do not reflect much of the underlying fundamental information.'

The 'thinness' of the market arises due to the small number of transactions in the capital market of a developing country. Limited separation between owners and managers means that investors often finance a new project directly. An inability to diversify risk means investors are less inclined to invest in uncertain and 'risky' emerging industries. Lee (1987) suggests that better accounting infrastructure in the form of information providers, intermediaries and laws and regulations would improve communication between management and shareholders and 'make it possible for the investment of better quality to command a higher price and hence will induce management to seek financing in an organized market'.

Improved accounting infrastructure would also serve to reduce the variations between security prices and the underlying value of a firm's assets and thereby improve the efficiency of the capital market and the incentives to invest. Lee (1987) concludes that, 'lacking a proper accounting infrastructure, the economy cannot have an efficient capital market. Without an efficient capital market, further progress in production technology will be difficult and frustrating'.

Accounting standards: Larson (1993) examines the link between adoption of the IASC international accounting standards (pre-IASB) and economic growth in developing countries. The study analyses growth in GDP and GDP per capita across a five year period, for a sample of 35 African countries and finds that 'the rate of economic growth is significantly higher (statistically) for those countries that adopt and modify IASC's standards as compared with those countries that do not adopt IASC' standards or that adopt them without modification'.

The study supports the case for the adoption and modification of international standards to promote economic growth.

Financial statement analysis: Konchitchki and Patatoukas (2014) observe that financial statement ratios, in particular return on net assets, have been used to predict economic growth at firm level and consider whether the same analysis can be used to predict economic growth at a macro level.

In a study of US firms from 1981 to 2011, Konchitchki and Patatoukas (2014) consider the relationship between data on subsequent real GDP growth and profitability measures from quarterly returns of the largest US firms. They find that 'accounting profitability data aggregated across the 100 largest firms have predictive content for subsequent real Gross Domestic Product'. Thus demonstrating the potential usefulness of financial statement analysis to improve macro forecasting.

MANAGING

Demski & Feltham (1977) identify two broad roles of accounting information for management purposes. These roles, well established in management accounting theory, are decision-facilitating and decision-influencing.

Christensen & Feltham (2003) explain:

'In its decision-facilitating role, accounting reports provide information that affects a decision maker's beliefs about the consequences of his actions, and accounting forecasts may be used to represent the predicted consequences.'

Accounting information is used to assist decision makers in formulating a course of action, consistent with the organisation's objectives, when faced with uncertainty.

The 'decision influencing' role of accounting information is in its use after the decision has been taken, in order to evaluate the performance of the decision maker. According to **Sprinkle (2003)**, this 'is intended to influence employees behaviors via the effects that monitoring, measuring, evaluating and rewarding actions and performance have on motivation'.

We find little evidence that demonstrates a clear link between the use of managerial accounting information and economic growth. However, insights can be gained in examining the use of cost and management accounting with the emergence of large corporations during the industrial revolution.

Hoskin and Macve (2000) find that the purposes of management accounting 'remained embryonic until choice between significant economic alternatives became available' and:

'Gained a new intensity in the industrial revolution as technological innovation accelerated, as well as acquiring a much more significant role in enabling the coordination of large enterprises.'

Johnson and Kaplan (1987) argue 'that developments in management accounting, rather than having been a consequence of the emergence of large scale businesses, may have facilitated the growth of large scale firms'.

The literature on the industrial revolution is vast. In this appendix we can do little more than scratch the surface. With this in mind, we point to a few key examples that illustrate the link between cost accounting and the rise of modern businesses.

Chandler (1977) and Hoskin and Macve (2000) consider the Springfield Armory to be one of the first examples of an organisation using administrative coordination. This is attributed to an ex-military background of its engineers, educated through 'writing, examining, and grading within a highly divisionalized and decentralized administrative structure' at West Point. Chandler 1977 suggests that 'administrative coordination permitted greater productivity, lower cost, and higher profits than coordination by market mechanisms' and led to the transformation of small operations to the large, geographically dispersed operations that are recognisable in modern society.

Hoskin and Macve (2000) argue that accounting played a fundamental role in this development:

'Accounting is a significant factor in this transformation to administrative coordination because it was already there at hand, functioning in existing economic practices in various ways. Double-entry and charge-discharge accounting systems already put values on objects in problematic yet familiar ways. With the translation of writing, examining and grading practices into the economic sphere, an historically new extension of accounting practice and knowledge occurred.'

Springfield was also the setting for Tyler's detailed 'time' study which generated a pioneering method of monitoring human performance. Tyler 'spent six months "watch in hand" carefully observing and timing every operation in order to determine a 'fair price' for every division of piece-work' (**Ezzamel et al (1990)**). Not only did it enable a 'fair price' to be set, it also improved efficiency by allowing management to 'see each individual worker in terms of norms and deviations from the norms' and thereby monitor and motivate workers. Ezzamel et al (1990) observe:

'Detailed records of actual performance were kept, deviations from performance norms acted upon (including behavioural norms of conduct and punctuality), and workers were paid only for effective work done so that the new accountability became internalised through incentives to self-discipline. Within three years, in the barrel-welding shop, piece rates halved and production doubled.'

In the context of the railroads, Johnson and Kaplan (1987) explain that 'the division of specialized tasks was carried out on such a vast and complex scale that there also had to be divisions of management tasks as well'. They find that cost accounting developed into 'more than just a tool for evaluating internal conversion processes ... it became a tool for assessing the performance of subordinate managers'.

Boyns and Edwards (1996) illustrate the importance of administrative coordination using Dowlais ironworks, a firm with numerous operating units and locations which warranted the need of administrative coordination to ensure operations ran smoothly. Following a change of management in the 1850s, accounting information was utilised to improve coordination between departments, each department being required to submit weekly reports 'on a few centrally-determined strategic statistics, such as output, cost and hours'. According to the authors, not only was this information useful for 'co-ordinating and controlling the works of departments and the managerial personnel running those departments' but, more importantly, it could be used to 'aid strategic decision making'.

'Key decisions such as to purchase the Penyarden coal field and enter the sale coal trade in a major way, and to switch from manufacturing iron to making steel, were based on reports prepared by Jenkins, or under his supervision, utilizing the costing information provided by the company's accounting system.'

Johnson and Kaplan (1987) use Du Pont to demonstrate the use of accounting in accelerating the rise of vertically integrated businesses. This example is summarised by Ezzamel et al (1990):

'Top management was faced with the problem of the centralised coordination of the diverse activities of vertically integrated business units and of ensuring the most profitable allocation of capital to these activities. In order to cope with these problems effectively, Du Pont invented 'return on investment' (ROI) which provided not only a summary statistic of it through the famous 'Du Pont' formula and which measured the commercial success of each of the diverse activities as compared with alternative uses for capital as well as the financial performance of the firm as a whole.'

INVESTING

Bushman and Smith (2001) argue that there are three ways in which financial reporting should affect financial performance. All relate to investing at the individual firm level:

- project identification;
- governance; and
- adverse selection.

Project identification: Bushman and Smith (2001) state that they 'expect financial accounting information of firms and their competitors to help managers and investors identify and distinguish between good and bad investment opportunities'. They point out that this applies to improving the productivity of assets in place as well as to making new investments. It also applies to the investment of human capital - for example, where people decide to work - as well as to financial capital.

Bushman and Smith (2001) also argue that better information of the sort that leads to improved project identification will also lead to a lower cost of capital by reducing estimation risk.

Governance: Bushman and Smith (2001) state that:

‘Financial accounting information is a direct input to corporate control mechanisms designed to discipline managers to guide resources toward projects identified as good and away from projects identified as bad, and to prevent managers from expropriating the wealth of investors. In addition, financial accounting information supports the information aggregation and monitoring functions of stock markets.’

Their use of ‘discipline’ in this context includes incentivising managers as well as deterring them. For example, managers’ pay could be linked to the firm’s share price, and this incentive will be more effective if the share price reflects transparent financial reporting information. At the same time, a well-informed share price should mean that the stock market is more effective as a source of takeover threat to poorly performing managers.

This last point is an American view of governance. In other jurisdictions, there is often less reliance on the takeover threat as a form of governance, and more on the board and the shareholders. However, boards and shareholders are also likely to benefit from transparent financial reporting information in overseeing managers’ performance.

Bushman and Smith (2001) also argue that the improved governance, specifically reduced expropriation risk, that follows from better financial reporting information will also lead to a lower cost of capital.

Adverse selection: Bushman and Smith (2001) state that:

‘Firms’ pre-commitment to the timely disclosure of high-quality financial accounting information reduces investors’ risk of loss from trading with more informed investors, thereby attracting more funds into the capital markets, lowering investors’ liquidity risk... Capital markets with low liquidity risk for individual investors can facilitate high-return, long-term (illiquid) corporate investments, including long-term investments in high return technologies, without requiring individual investors to commit their resources over the long term.’

There is research linking liquidity directly to economic growth. Levine and Zervos (1998) investigate the relationship between financial sector development (stock market liquidity and banking development) and economic growth for 47 countries from 1976 to 1993. For stock market liquidity, they find that:

‘Stock market liquidity - as measured both by the value of stock trading relative to the size of the market and by the value of trading relative to the size of the economy - is positively and significantly correlated with current and future rates of economic growth, capital accumulation, and productivity growth. Stock market liquidity is a robust predictor of real per capita gross domestic product (GDP) growth, physical capital growth, and productivity growth after controlling for initial income, initial investment in education, political stability, fiscal policy, openness to trade, macroeconomic stability, and the forward-looking nature of stock prices.’

Although the authors note that their investigation ‘does not establish the direction of causality between financial-sector development and growth’, they comment that the paper’s results ‘are certainly consistent with the view that the services provided by financial institutions and markets are important for long-run growth’.

Investment efficiency: Among the evidence linking financial reporting indirectly to increased investment or higher quality investment decisions are a number of papers on 'investment efficiency'. **Biddle et al (2009)**, for example, find that unless a firm has access to external funds when they have a good investment case, they tend to invest when they have the money (ie, are not 'cash constrained') or can access funding (eg, because they are not 'highly levered') regardless of whether they have a good investment case. This state of affairs is inefficient. Higher quality financial reporting should facilitate firms' access to funding when they have a good investment case, leading to greater investment efficiency.

ICAEW (2015) reviews a number of papers that look at whether mandatory IFRS adoption affects investment efficiency. The report states that:

'It seems reasonable to conclude on the evidence available that mandatory IFRS adoption in the EU is associated with an improvement in investment efficiency at the firm level. As with other topics discussed in this report, the evidence suggests that any effects vary among firms and countries, depending on institutions and incentives. It would also be useful to investigate further the effects of concurrent institutional changes intended to increase the efficiency of capital markets.'

Monitoring performance and contractual payments: Shivakumar (2013) considers the importance of accounting information to the board, stating that 'earnings provide more precise measures for monitoring CEOs, and being typically backward-looking are more grounded in reality and based on actual outcomes, rather than subjective expectations'. On this basis, accounting information is also suitable for determining contractual payments to executive directors. Shivakumar (2013) observes that 'heavy reliance on accounting measures in compensation contracts is driven primarily by an inability to observe managerial effort directly'. Accounting data is therefore used to assess the performance of managers. The author acknowledges that this type of reward structure creates an incentive to manage earnings but notes that 'as long as managerial actions are not fully observable, incentives for manipulation cannot be entirely eliminated'.

Debt contracting: Francis et al (2005) examine the importance of accounting quality to debt and equity markets, in a study of firms between 1988 and 1999. Analysing a large sample of firms, using eight proxies for earnings quality, they find that for each proxy, 'firms with lower quality earnings have lower debt ratings and higher ratios of interest expense to interest-bearing debt than firms with higher quality earnings'.

Bharath et al (2008) also find 'significantly higher' interest rates when accounting quality is poor. Financial statements assist lenders in predicting future cash flows. If this information is poor, it is harder to assess the firm's ability to repay the debt and therefore lenders incorporate the risk into the interest rate.

In the case of private debt, Bharath et al (2008) find that accounting quality has a broader impact on the debt contract. 'Firms with poorer accounting quality face significantly higher interest costs, lower maturity, and higher likelihood of posting collateral.' This is attributed to the private lender's ability to access private information about the firm and renegotiate terms. As a result, 'borrowers agree to more stringent non-price terms knowing the contracts can be renegotiated ex post with the arrival of new information. On the other hand, public lenders, lacking the flexibility to renegotiate, prefer to incorporate the impact of the accounting quality purely in price terms'.

Demerjian (2017) explores the use of financial covenants in debt contracting. He identifies that uncertainty about a borrower's financial position or future creates challenges for the lender when establishing contract terms. The use of financial covenants can facilitate loan negotiation, giving the lender control rights and the ability to renegotiate terms if the financial covenants are breached. The study, that sampled private loan contracts, finds an increased use of financial covenants when uncertainty exists, supporting the hypothesis that covenants facilitate contracting under uncertainty. In the absence of accounting records, the use of financial covenants would not be possible.

It is also worth noting that research on the role of accounting quality in debt contracting for private companies is explored in the appendix to ICAEW's 2015 thought leadership report *SME Accounting Requirements: Basing Policy on Evidence*.

BUYING AND SELLING

General trade

The 'Record keeping and links to economic growth' section of this report addresses the general role of record keeping in facilitating trade and thereby increasing the number of transactions possible. Basu and Waymire (2009) argue that 'records can ... establish reliable social memory and common knowledge useful to two or more parties in structuring an exchange', and that, 'as record keeping evolves to encode more information, it enables drafting and enforcing contracts that govern complex exchange transactions across time and geographical boundaries'.

Basu et al (2009) suggest that the 'basic accounting function of record keeping is a precursor to economic development through impersonal exchange and division of labour'.

We do not intend to repeat the points made in the earlier section in this section. Instead we consider some additional examples that demonstrate the link between accounting and trade.

Previts et al (2010) summarise the importance of accounting during the crusades of the 13th century, during which there was an explosion of overseas transactions and a rise in the number of merchants in Italian cities such as Venice. As a result:

'A new class of merchants therefore began to depend on accounting bookkeeping to manage and monitor multiple transactions, often financed by bank loans.'

The authors state that the information needs of merchants and banks, 'together with public management needs, made the systematic usage of accounting books a real necessity, particularly in Italy, where commercial flows were highly intensive'.

Márquez-Ramos (2011) looks at the effects of mandatory IFRS adoption in 2005 on trade in goods within the EU. The sample covers exports of goods between EU countries for 2002-07. The author finds evidence that 'benefits exist in terms of trade in goods [ie, trade in goods increases] ... when IFRS are adopted'. The report concludes that:

'Adopting a high quality set of harmonised accounting standards fosters trade and FDI⁷, as the improvement in accounting information in turn fosters financial transparency and comparability and reduces information asymmetries and unfamiliarity among agents in different countries.'

Trade on Credit. **Paul and Boden (2014)** conducted a review of trade credit and find that 'investing and maintaining good relationships with customers are one of the most important motives for suppliers to offer credit'. They find that trade credit is of particular importance to SMEs, with 27% of SMEs using trade credit as a source of finance, according to the SME Finance Monitor. **Petersen and Rajan (1997)** suggest that, amongst other factors, 'suppliers lend to firms no one else lends to because they may have a comparative advantage in getting information about buyers cheaply'. They further explain that:

'The supplier may visit the buyer's premises more often than financial institutions would. The size and timing of the buyer's orders also give him an idea of the condition of the buyer's business. The buyer's inability to take advantage of early payment discounts may serve as a tripwire to alert the supplier of a deterioration in the buyer's creditworthiness. While financial institutions may also collect similar information, the supplier may be able to get it faster and at lower cost because it is obtained in the normal course of business.'

Rather than scrutinise the buyer's financial statements, the supplier uses internal accounting information to 'get a quick read on a firm's financial and economic health'. Without these records, suppliers may be less inclined to offer trade credit which may have significant consequence to the buyer. According to Paul and Boden (2014), 'some firms' survival, small ones especially depends on whether they get credit or not'.

There is some research that support the use of financial statements in securing credit. In a survey of 1294 SMEs in the UK, **Collis (2008)** finds that 64% of respondents believed that suppliers and other trade creditors use published accounts to evaluate credit risk.⁸

TAXATION

The historical link between accounting records and the creation of tax systems is evident in the research conducted on early accounting records. **Basu and Waymire (2006)**, for example, note the use of accounting records by Mesopotamian kings to raise taxes to support large irrigation projects. They also refer to the quipus, knotted string records, as an indication that tax records were kept by the Inca people in the 15th century.

Carmona and Ezzamel (2006) demonstrate the importance placed upon accounting records in developing tax systems in ancient Egypt by summarising the work of **Gardiner (1941)**:

'For every case of tax collection/delivery, the scribes recorded the date and location of the activity, the precise threshing of the floor for the crops, the exact amount of tax whose collection was entrusted to an official/scribe, the names of the ship captains that transported the tax collected, the amount of tax carried by each boat, the rations allocated out of the tax collected for the consumption of the crew of each ship and finally the delivery of tax collected to the state granaries and the deficit remaining.'

Soll (2014) attributes the strength of the tax system in the Netherlands throughout history to the country's prolific use of accounting and strong accounting culture. The system was perceived as so effective and reliable that European interest rates were pegged to Dutch bonds because tax receipts were deemed so reliable.

The work of **Goncharov and Jacob (2014)** demonstrates the use of accounting in modern day tax systems and how it can be used to manage public spending. The authors explore the use of accruals accounting in tax codes of 26 OECD countries and find that 'countries with a larger volume of government services and difficult-to-predict future expenditure mandate high accruals'. This is achieved by incorporating accruals into the definition of corporate taxable income.

Accrual accounting is used to 'lower the volatility of tax revenues' by matching income to expenses and smoothing out fluctuations in profits that would otherwise arise from timing differences in cash accounting. This gives governments the ability to better predict future tax revenues and thereby manage public spending.

Using research and development as an example, the authors also explain how the use of accruals-based tax codes can 'make tax revenues procyclical by increasing the correlation between aggregate corporate tax revenues and aggregate economic activity'. Capitalising and amortising development costs, in an accruals based system, creates increased profits and taxes in the first year of investment compared to lower profits and taxes in a cash-based system, in which the total cost of investment would be expensed. As investment in research and development is more likely in periods of economic growth, there will be increased tax revenues in growth periods and decreases when the economy contracts. If not effectively managed, this could lead to shortfalls in public spending and is a reason for reduced use of accruals-based tax codes in some countries.

What both examples illustrate is that accounting techniques are used by countries in various ways to 'define taxable income to best fit their revenue and spending portfolio'.

Insights into the role of taxation in economic growth can be found in the literature on tax in developing countries. **Pfister (2009)** sets out the taxation policy challenges faced by African countries and explains the importance of an efficient tax administration:

'Taxation is central to the current economic development agenda. It provides a stable flow of revenue to finance development priorities, such as strengthening physical infrastructure, and is interwoven with numerous other policy areas, from good governance and formalizing the economy, to spurring growth.'

Bellak et al (2009) support this view in their research on central and eastern European countries. They find that infrastructure, in particular information and communication, are a 'relevant location factor' for foreign direct investment (FDI). They suggest that infrastructure can be more relevant to a foreign investor than low tax rates finding that 'the tax-rate sensitivity of FDI indeed decreases with the level of infrastructure endowment'.

The creation of a tax system is therefore necessary to finance the infrastructure that will attract investment. However, the tax system itself must also be seen as transparent and reliable if it is to encourage investment. Pfister (2009) finds that 'both foreign investors (critical for new technology and corporate know-how and capital) and small businesses (engines for local growth, employment and innovation) require clarity when dealing with tax issues so they can operate and grow'.

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None of the commentators should be assumed to agree with the views expressed in the report or the appendix, and they are not responsible for any errors or omissions.

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Endnotes

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- ⁵ Data in **Murdock and White** (1969) indicate that two of the societies in the sample are from the period 1750-1 BC, 18 from 1-1800 AD, and 171 from 1801-1965 AD. The numbers do not add up to 186, presumably because some societies in the sample appear in more than one period.
- ⁶ In fact taken from Rajan and Zingales (1998).
- ⁷ Foreign Direct Investment
- ⁸ 89% of respondents were directors or company secretaries. 11% were managers or accountants.

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