Computerisation and E-Government in Social Security: A Comparative International Study

E-Government Series

Michael Adler
Professor of Socio-Legal Studies
School of Social and Political Studies
University of Edinburgh

Paul Henman
Lecturer in Social Policy
School of Social Work & Applied Human Sciences
University of Queensland

with Jackie Gulland, University of Edinburgh
and Sharon Gaby, Macquarie University

IBM Center for
**The Business
of Government**

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F O R E W O R D

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On behalf of the IBM Center for The Business of Government, we are pleased to present this report, "Computerisation and E-Government in Social Security: A Comparative International Study," by Michael Adler and Paul Henman. This publication is the third in a new series of reports published by the IBM Center for The Business of Government that examines public management in Europe.

Specifically, this report continues our examination of social security in Europe. In April, the Center published the report "Cooperation Between Social Security and Tax Agencies in Europe," which argued that governments need to look beyond the traditional organisational structures of social security and taxation. That report described the relationship between social security and taxation organisations in nine European nations: Austria, Belgium, Denmark, Estonia, Germany, Ireland, Italy, the Netherlands, and the United Kingdom.

In this report, Professors Adler and Henman provide comparative data collected in mid-2000 and late 2004 on the impact of computerisation on social security in 13 Organisation for Economic Co-operation and Development (OECD) countries. Social security organisations have historically been active users of information technology for paying benefits, maintaining contribution records, and supporting their business operations. Now, information technology is a critical component in social security, but many organisations have yet to take advantage of newer technologies prevalent in the banking, insurance, and retail industries, including technologies that many people are now using every day such as the Internet, call centres, SMS messaging, interactive television, and smart cards.

Professors Adler and Henman provide an overview of the history of computerisation in social security and the current impact of newer technologies on social security. By comparing across countries and social systems, the authors offer unique insights to social security computerisation and the evolving role of e-government. We trust that this report will provide new and valuable information and insights to public executives around the world who are engaged in improving and transforming the delivery of social security and other government services to citizens.

Albert Morales
Managing Partner
IBM Center for The Business of Government
albert.morales@us.ibm.com

Chris Gibbon
Partner
IBM Global Social Segment
chris_gibbon@uk.ibm.com

E X E C U T I V E   S U M M A R Y

This report provides comparative data collected in mid-2000 and in late 2004 on the impact of computerisation on social security in 13 Organisation for Economic Co-operation and Development (OECD) countries. The study examines what the implications of computerisation for social security have been and, in particular, whether these have been the same for all countries or, alternatively, whether they vary across countries. The countries included in the study (Australia, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, the Netherlands, Norway, Sweden, the United Kingdom [UK], and the United States of America [USA]) are drawn from three 'welfare state regimes'—they include four Scandinavian 'social democratic' countries, four continental European 'corporatist' countries, and five Anglo-American 'liberal' countries. They do not include any Southern European, Central and Eastern European, South American, African, or Asian countries. Belgium, Finland, and Germany did not take part in our 2004 follow-up survey, which included only 10 countries.

The initial data for the study were collected during the middle of 2000 from 23 expert informants, who included 'insiders' working for the government or for a social security institution, and 'outsiders', who were usually independent researchers or consultants. The 2004 survey involved 14 informants. Questionnaires covered the history, current scope, past and present aims, and consequences (for organisation, costs, and procedural justice) of computerisation; surveillance and data collection; the relationship between policy makers and computer professionals; and experience of and attitudes to new and emerging technologies. The questionnaires were sent out and, in most cases, returned by e-mail. The 2000 study refers mainly to the period from 1985 until 2000 but also includes some

consideration of possible future developments. The 2004 study focuses on developments since 2000, again with some consideration of possible future developments.

Although the findings are presented in numerical form, it is important to stress that they are based on, in the large majority of cases, the opinions of two, but, in a few cases, only one expert informant in each country. The findings are, at best, provisional and come with a *health warning:* They are intended to serve as a platform for more systematic research in circumstances where no other relevant data sources are available.

Germany, Australia, and the USA computerised their social security systems in the mid-1950s, and most other countries did so during the 1960s and early 1970s. Belgium, the exception, did not begin to computerise its social security system until the mid-1980s. Paying benefits, assessing entitlement to benefits, and maintaining contribution records were usually among the first functions to be computerised. Priority was most frequently given to computerising retirement pensions and other social insurance benefits.

The most widespread computerised functions today are paying benefits, implementing changes to benefit rates, financial accounting, assessing entitlement to benefits, and maintaining contribution records. Although the extent of computerisation is greatest for social insurance and least for social assistance and housing allowances, all types of benefits are now, at least to some extent, computerised.

Five (out of a total of 14) aims (increasing productivity, improving decisions, cutting costs, increasing responsiveness, and improving information flows)

Summary of Findings

1. Most countries computerised their social security systems during the 1970s and early 1980s—Germany, Australia, and the USA did so earlier (in the mid-1950s), but Belgium did not do so until the mid-1980s.

2. Paying benefits, assessing entitlement to benefit, and maintaining contribution records were among the first functions to be computerised.

3. The most widespread computerised functions today are paying benefits, implementing changes to benefit rates, financial accounting, assessing entitlement to benefit, and maintaining contribution records.

4. Although the extent of computerisation is greatest for social insurance and least for social assistance and housing allowances, all types of benefits are, at least to some extent, computerised today.

5. The aims that were regarded as the most important in the period 1985–2000 were increasing productivity, improving decision making, cutting costs, increasing responsiveness, and managing complexity. Cutting costs is given highest priority today.

6. Experts believe that computerisation achieved the predicted level of savings in the period 1985–2000, but are much less confident that predicted savings were achieved in the period 2000–2004.

7. Computerisation has led to an increase in the importance of bureaucracy and managerialism in the delivery of social security.

8. As at mid-2000, the most common uses of computer technology were for electronic payment of benefits, automated determination of benefits, and electronic receipt of information. Four years later, the most common uses were for the Internet and for establishing electronic data networks between social security institutions.

9. Some countries are clearly much more advanced in their use of new technologies than others—the English-speaking 'liberal welfare states' (Australia, Canada, and the USA) appear to have been the most innovative while the Scandinavian 'social democratic welfare states' (Denmark, Norway, Sweden, and Finland) appear to have been less so.

10. In late 2004, the USA had the highest level of online functionality, but other countries were not far behind. Online functionality was lowest in the Netherlands.

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were regarded as important by all 13 countries for the period 1985–2000. A further nine aims (managing complexity, detecting overpayments and fraud, reducing staff, providing more individualised services, improving policy analysis, improving management information, promoting institutional reform, improving information for frontline staff, and improving working conditions) were regarded as important by at least half the countries. Three aims (promoting universal access to new technology, increasing take-up, and encouraging private computer suppliers) were regarded as important by less than half the countries in the study.

The aims that were regarded as the most important for the period 1985–2000 were increasing produc-

tivity (included in the top three aims by eight countries) and improving decision making, cutting costs, increasing responsiveness, and managing complexity (included in the top three aims by five countries each).

There has been little change between those aims that were considered to have been important in the past and those that are considered to be important now. The only differences are that securing more individualised services is now regarded as an important aim in all countries—that is, in two more countries than in the recent past—and promoting universal access to new technology is now regarded as an important aim in five more countries than it was in the recent past.

Cutting costs is now regarded as the most widespread priority aim. Increasing productivity remains a widespread priority, although some countries appear to have dropped it from their list of priorities. Increasing responsiveness and detecting overpayments and fraud are still priority aims in five and four countries, respectively. Among the new aims, responding to user demand and facilitating self-assessment are now included among the three most important aims in two countries.

Technologies that could have been but were not implemented also tell a story about the aims of computerisation, or, rather, a story about possible aims that were not regarded as important. We asked informants whether any technologies had been piloted but not adopted. Most informants were able to provide some examples, but there was no clear pattern among the responses.

It is important to distinguish the aims of computerisation from its consequences. In mid-2000, there were four consequences of computerisation whose importance or incidence was thought to have greatly increased. These were, in rank order, the production of social security statistics (9 out of 13 countries), the speed of decision making (8), the consistency of decision making (7), and the ability to receive or check claimant information (7). On the other hand, there were three consequences whose importance or incidence was thought to have greatly decreased. They were reducing staff numbers (10 out of 13 countries), reducing the number of local offices (6), and reducing personal contact between clients and staff (5). As far as identifying fraud and overpayments, the extent of means-testing, and changes in staffing levels were concerned, there was contradictory evidence. In each case, one group of countries reported increases, another group reported no change, and a third group reported decreases. On the other hand, there was little support for the view that computer systems had limited policy change. However, it was recognised that the need to adapt IT systems meant that changes were often delayed.

There was general agreement that computerisation had been accompanied by changes in work processes. There was also widespread agreement that it had been used to automate decision making, to provide staff with improved access to up-to-date information, and to deal with social security fraud and overpayments, and that it had led to changes in organisational structure. On some issues, there was considerable disagreement. For example, informants from Australia, Canada, Finland, the Netherlands, Norway, and Sweden agreed that the identification of overpayments is given higher priority than the identification of underpayments, but informants from Belgium, France, Germany, the UK, and the USA disagreed. Similarly, informants from Belgium, Finland, Ireland, Norway, Sweden, and the USA agreed with the statement 'the computer gives reasons for its decisions', while those from Denmark and the Netherlands disagreed.

Most informants thought that computerisation had achieved the predicted level of savings over the period 1985–2000, but were far more skeptical that predicted savings had been achieved in the period 2000–2004. Savings were most commonly directed to enhancing service delivery rather than to widening coverage or raising benefit levels. While savings were used to reduce government expenditure and to enhance the range of administrative tasks in the period 1985–2000, that did not tend to be the case for the period 2000–2004.

The effects of computerisation on procedural justice—that is, on the justice inherent in administrative decision making—were also examined. Developing an approach first put forward 20 years ago by Jerry Mashaw in *Bureaucratic Justice,* it is argued that, in addition to the three normative models of procedural justice that he put forward (bureaucracy, professionalism, and legality), three further models (managerialism, consumerism, and the market) are now in play.

The bureaucratic model was particularly strong and the professional model particularly weak in most countries. Legality, managerialism, and consumerism were all present, but, with some exceptions (notably Belgium, Finland, and Sweden) there was not much evidence that the market model was all that important.

Computerisation has contributed to an increase in the importance of the dominant bureaucratic model of decision making. It had either reduced or had no effect on the professional model and had a minimal effect on the influence of the legal model of decision making. It was thought to have increased the

importance of managerialism, to have had rather little effect on consumerism, and to have increased the influence of the market in many countries—the exceptions being the Netherlands, where the influence of the market appears to have declined, and Belgium, Denmark, Finland, and the USA, where no change was reported.

With regard to the effects of computerisation on surveillance and data protection, with one exception, informants from all countries reported that the sharing of data is constrained by data protection legislation. In the large majority of cases, they noted that data protection legislation extends to private computer firms working for government agencies (there were three exceptions: Canada and Sweden, where the responses were neutral, and the UK, where it was negative). Informants from most countries reported that the accuracy of input data is checked against data from independent sources, that the reviewing of claimants' circumstances has increased as a result of computerisation, and that *the timing of policy change is constrained by continuing considerations*. On other issues, there was less agreement between informants from different countries. Few informants reported that computerised benefit systems could be accessed, either by applicants or by their representatives, and there was general agreement that claimants had not been involved in the design of computer systems in social security.

As at mid-2000, the great majority of countries used private IT contractors to provide computer hardware. In most countries, in-house staff were used for the management of computer processing. However, there was a greater mix of providers for supplying computer software and IT training. Most informants reported that, in their home country, IT professionals were the driving force behind new technologies. On the other hand, some informants reported that, in their home country, new technologies were largely driven by government.

As at mid-2000, the most common uses of computer technology were for electronic payment of benefits, automated determination of benefits, and electronic receipt of contributions—which, with one exception, were described as being in at least limited use in all countries in the study. Claiming benefits online was least well used, with informants indicating that it was in widespread use in only one country.

Four years later, the most widespread use of new and emerging technologies was for the Internet and electronic data networks among social security institutions, closely followed by call/service centres and integrated computer systems within each agency. Other technologies in widespread use in late 2004 were fully online computer systems and data-matching. Seven technologies were found to be in more limited use: one-stop shops, electronic data networks between social security and other public organisations, expert systems for claim assessment, publicly available benefit calculators, touch-screen kiosks, electronic business-to-government transactions, and client self-service. Three technologies—smart cards, computer modelling (for example, for policy analysis), and electronic data networks between social security and private institutions—have not yet reached this stage in any country. Six technologies were either not used or in minimal use: client self-assessment of new claims, Internet phone access, magnetic strip cards, cellular/mobile phone text (or SMS) messaging to clients, electronic purses/wallets, and access through interactive television.

Some countries were clearly much more advanced in their use of new technological capabilities than others. Canada, Australia, and the UK appear to have applied new technologies most extensively, while Norway stands out as a country that appears to make little use of new and emerging technologies. Thus it would appear that the English-speaking 'liberal welfare states' have been the most willing to use these new technologies while the Scandinavian 'social democratic welfare states' have been the least willing to do so.

Of the 14 items of online functionality, two—social security organisations having their own website and agency brochures being available online—were widely available in late 2004. Two online functions had between limited and widespread use: an overarching national social security portal and online rate calculators to estimate eligibility and pay rates. Online claim forms, online client access to personal details, online client update of personal details, online lodgment of new claims, and online self-assessment of new claims were in limited use. However, there was little evidence that online rate calculators linked to client's personal details, integrated online service, booking appointments online,

full online self-service, and lodging appeals online were in use.

In late 2004, the USA had the highest level of online functionality. Most of the other surveyed countries were not far behind: France, Canada, Sweden, Australia, the UK, and Denmark. The Netherlands was found to have the lowest online presence.

The country rankings of online functionality do not replicate the country rankings for the level of new and emerging technologies. The USA is listed first in online functionality and fourth in the usage of new technologies. This indicates that while the USA has been a leader in the use of the Internet, it has put most of its energies into this technological platform and paid relatively little attention to a wide range of new and emerging technologies, such as smart cards, electronic purses/wallets, and Internet access through mobile phones and interactive television.

The common features in the experiences of different countries suggest that global technological imperatives do, to a large extent, determine what computers are used for and what their consequences are. In all 13 countries, computerisation was adopted in the expectation that it would lead to increased productivity, higher standards of performance, and financial savings. However, at the same time, variations in the experiences of the 13 countries in this study suggest that the socio-political values associated with different welfare state regimes have also had some effect in shaping the ways in which computer technology have been used in national social security systems. Over and above that, there are clearly substantial national variations, indicating that individual countries can also affect how technologies are constructed, adopted, and put to use.

Introduction

Background to the Study

Like other large governmental and non-governmental organisations, social security institutions are heavily reliant on computer technology for their operations. The pace of computerisation and the growth of new information and communication technologies are astounding. While a number of discrete studies of the implications of computerisation for social security have been undertaken, no systematic comparative study has so far been carried out.

In devising a comparative international study, we were aware of a number of trends and developments that have been reported in the literature that such a study could help to illuminate. A review of some of these trends and developments can be found in Henman and Adler (2001).

Some recent studies of technology (for example, MacKenzie and Wajcman 1999) have emphasised the importance of social factors in shaping how technologies are constructed, adopted, and put to use. Within organisations, the shape of computerisation and the focus of its operations are largely defined by those with the most institutional power, in particular by management and by computer professionals. This explains why the use of technology to support the needs of clients and customers is often secondary to the achievement of management objectives—for example, cutting costs and increasing efficiency. It also explains why many innovative technologies are not taken up. Although the technical aspects of computerisation are undoubtedly important, an understanding of social factors is essential for understanding the uses to which computerisation are put.

The nature and scope of computerisation are also influenced by organisational (or institutional) considerations. The organisational and institutional settings define the problems that technology is used to address and the constraints that apply to the application of new technologies. Studies have repeatedly demonstrated that a technically correct computer system will fail unless it takes account of organisational structures and processes.

In the adoption and use of advanced information and communication technologies, it is important to recognise that they have effects on frontline staff, on management, and on clients. For management, computerisation has led to a proliferation of management statistics that can be used to manage staff, clients, and organisational processes. For staff, it has involved a complex mix of 'de-skilling', with a reduction in the discretion of frontline officers, and 'up-skilling', as a result of giving frontline officers more access to information (Bovens and Zouridis 2002). For clients, it has meant new and often less personal forms of organisational interaction, greater consistency in decision making, and greater transparency of personal records.

Because computer technology is often regarded as a neutral management tool, which enables policy to be implemented more efficiently, it is not regarded as having an impact on policy itself. However, recent studies have shown that computerisation has led to increased policy change, greater policy complexity, and the use of population segmentation (Henman 1999).

One objective of this comparative international study is to assess the extent to which one can generalise about the aims and impact of computerisa-

tion in social security in a number of countries with very different types of welfare provision. Some of the findings from this study have already been presented at conferences and published in a number of academic journals (see Adler and Henman 2001, 2005; Henman and Adler 2003). However, in this report, we present the first comprehensive account of our findings.

Definitions

Throughout this report, the term *social security* refers to the payments individuals receive from the state in response to the loss or interruption of their earning power, or as a contribution to the additional costs associated with children, disability, and housing. It includes *social insurance, social assistance,* and *categorical benefits,* but excludes tax allowances, private insurance benefits, health insurance, and the provision of services. Social security benefits may be delivered by national, regional, and/or local government or by the 'social partners', i.e., by employers' organisations or trade unions. Each country's social security system is highly complex in terms of policy and administration, and there are many important differences between countries.

Computer technology refers to computer hardware, computer software, data exchange networks, and the World Wide Web, and covers a wide range of applications, including mainframe and personal computers, graphical interfaces, online processing, and computer networking. *Computerisation* refers to the process of introducing and using computer technology into an organisation.

Methodology

Given the complexity of national social security systems, it would have been virtually impossible to achieve an in-depth study of computerisation in all the major social security institutions in each of the countries included in a comparative study. Accordingly, we decided to obtain an abstracted overview of the experience of computerisation in social security in each country. Obtaining such an overview was, however, fraught with many difficulties including language barriers.

To get round these problems, we decided to rely on expert informants. We attempted to identify two expert informants in each of the countries in our study, one of whom would be an 'insider', working for the government or for a social security institution, and the other an 'outsider', usually either an independent researcher or a consultant. Since communication was, in most cases, by electronic mail, we were able to seek clarification where the two informants gave different answers to the same question or where their responses were incomplete or internally inconsistent. Preliminary findings and working papers were distributed electronically, and informants were invited to correct and comment on them.

Thirteen countries that are members of the Organisation for Economic Co-operation and Development (OECD) were included in the 2000 study: Australia, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, the Netherlands, Norway, Sweden, the United Kingdom (UK), and the United States of America (USA). We managed to recruit 23 expert informants. In three countries (Finland, Sweden, and the USA), we were able to identify only one expert who was prepared to take part in the study. Ten of the 13 OECD countries participated in our 2004 survey (Australia, Canada, Denmark, France, Ireland, the Netherlands, Norway, Sweden, the UK, and the USA). A list of the informants who took part in the study, together with their institutional affiliations, can be found in the Appendix. The 13 countries represent a mix of policy and organisational systems. In terms of Esping-Andersen's categorisation of welfare states, they include five liberal welfare states, four social democratic welfare states, and four conservative (or corporatist) welfare states. Data were collected during the Northern Spring, Summer, and Autumn of 2000, and again in the Northern Autumn and Winter of 2004. The 2000 study refers mainly to the period from 1985 to 2000 but also includes some consideration of possible future developments. The 2004 study focuses on developments since 2000, again with some consideration of possible future developments.

This research method appears to have a number of advantages over other methods of data collection. It is certainly cheaper and more convenient than visiting each of the countries concerned and provides an effective means of understanding the detailed operation of policies and procedures in different countries. It helped us to overcome what might otherwise have been insuperable language barriers. The use of two expert informants with dif-

ferent backgrounds in most countries improved the accuracy of the data. Where the two informants from the same country gave different responses to the same question, the mean was calculated and taken as the response of the country. Interactive communication with our expert informants not only enabled us to clarify inconsistencies in the data, but also provided a check on our interpretation of the data and on the validity of our conclusions. In addition, the study enabled us to explore the potential of e-mail as a research tool.

However, we did encounter some problems. In practice, identifying and recruiting two expert informants from each country proved to be much more difficult and time-consuming than we had anticipated. We had to drop one country (Italy) from the study because, in spite of sustained efforts, we were unable to identify any expert informants who were willing to take part. In addition, we were unable to find a second expert in three countries (Finland, Sweden, and the USA) and, in each case, had to make do with one. Furthermore, some of those who agreed to take part were very slow to respond. The questionnaire called for an extensive knowledge of computerisation in social security, and some of our expert informants were unable to complete all the questions. They were encouraged to consult colleagues and, although some clearly did so, others apparently did not. Although the use of two complementary experts from 10 of the 13 countries enabled us to combine and check their responses, and improved the accuracy of the country ratings, it is important to stress that the data that are presented and analysed in this report reflect the knowledge and opinions of just one or two people in each country who were set the difficult task of assessing a very complex and diverse set of causes and consequences. This was even more significant in our 2004 study, in which we were able to recruit only two informants in four of the 10 countries in the study. Differences in meaning associated with different languages and cultures were another complicating factor.

History and Process of Computerisation

Informants were asked when computerisation of social security in their country began. There was some variation in the answers of informants from the same country. This may have been because they were not referring to the same system or because they were unsure of the date when computerisation began. In this analysis, we have selected the earliest date reported for each country on the grounds that it indicates that some form of computerisation had taken place at that point. Figure 1 shows the point at which each country started to computerise its social security system.

From Figure 1, we can see that Germany, Australia, and the USA were the first to computerise their social security systems, in the mid-1950s, and that, in most other countries, computerisation followed during the 1960s and early 1970s. Belgium is the exception in that it did not begin to computerise its social security system until the mid-1980s.

Informants were asked which of seven functions were the first to be computerised. Some were unable to answer this question while others listed a number of functions. The results are summarised in Table 1 on page 14.

Table 1 suggests that three functions—paying benefits, assessing entitlement to benefits, and maintaining contribution records—were usually among the first to be computerised.

These findings are reasonably consistent with other research which has found that mechanisation and computerisation within organisations are generally focused on mundane and well-defined processing activities, such as recording data and maintaining financial records (c.f. Smith 1985). This is largely because, in the early period, the technology was most applicable to simple, well-defined tasks, particularly those involving numerical calculations, and

Figure 1: Timing of First Computerisation of Social Security
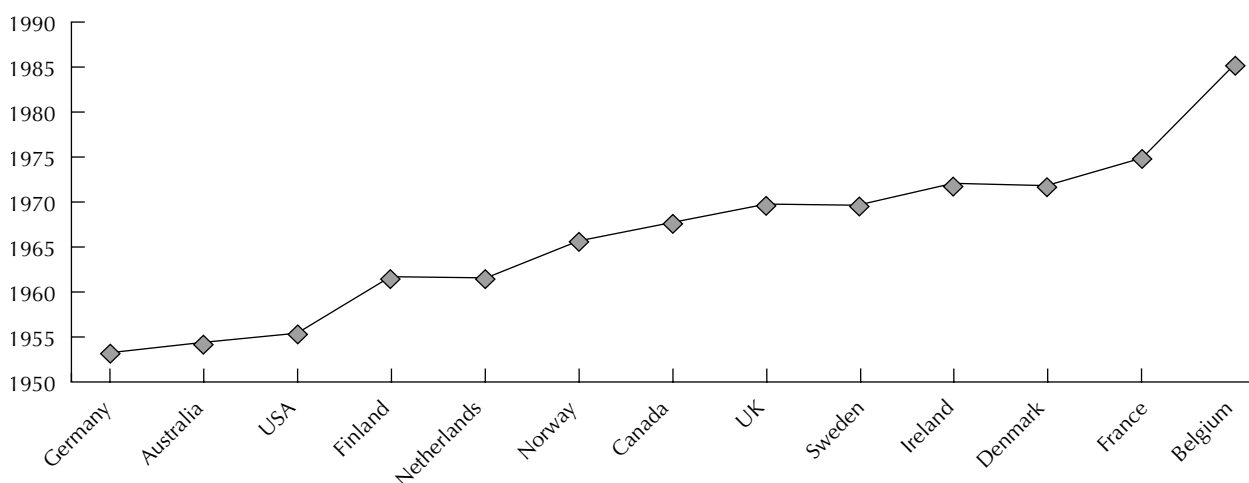
Approximate date of first computerisation

Table 1: Functions Computerised First

Function	Number of countries
Paying benefits	11
Assessing entitlement to benefits	11
Maintaining contribution records	9
Dealing with changes in an individual's circumstances	4
Financial accounting	3
Implementing changes to benefit rates	2
Compliance testing	1

Table 2: Benefits Computerised First

Benefit	Number of countries
Retirement positions	8
Social insurance	6
Children's allowances	3
Categorical benefits	2
Social assistance	2
Unemployment benefits	2
Benefits for sickness and disability	2
Housing allowances	1
Work injuries	1

because of the apparent efficiencies of automating such mundane tasks. In light of this, it is surprising that 'financial accounting' does not appear to have been computerised earlier in many countries.

Informants were also asked which types of benefits were among the first to be computerised. As with the previous question, some were unable to answer this question while others listed a number of benefits. The results are summarised in Table 2.

Unfortunately, some informants referred to specific benefits, like retirement pension, while others referred to types of benefit, like social insurance. While it is clear that, in most countries, social insurance benefits (in particular retirement pensions) were the first to be computerised, it is striking that in some countries this was not the case. For example, in Ireland, benefits for sickness and disability were the first to be computerised. In other countries, a variety of different benefits, alongside retirement pensions, were computerised early on. For example, in Canada, the UK, and the Netherlands, benefits for children were mentioned as examples of early computerisation.

There are several reasons for the priority given to computerising retirement pensions and other social insurance benefits. First, social insurance tends to be more large-scale and routinised than social assistance, and so more intrinsically suited to computerisation in the early stages. This is largely due to the fact that social insurance tends to be more clearly defined in law, is organised at the national level, and operates on a much larger scale than social assistance schemes, which tend to involve significant levels of administrative discretion and, in many cases, are organised at the local level.

Second, computerisation appears to be initially directed to benefits received by the 'deserving', rather than the 'undeserving' poor. Since computerisation usually calls for large-scale investment, there are political pressures to insure that the beneficiaries are the 'deserving' poor, at least in the first instance.

Current Scope of Computerisation

Having identified those functions and benefits that were among the first to be computerised, we asked our informants about the extent to which a wide range of functions and benefits are currently computerised. This not only highlights different priorities for the computerisation of social security but also reveals some interesting differences in the priorities of different countries.

Computerisation of Functions

Informants were asked to indicate the extent to which 11 possible functions of social security administration are currently computerised.

Table 3 on pages 16–17 indicates that, as of mid-2000, all 13 countries were using computers, at least in part, for most of these functions. There was very little difference in the reported usage of computerisation by different countries. Australia, Belgium, Denmark, France, Germany, Norway, the UK, and the USA all reported full computerisation of five or six of the 11 functions listed and partial computerisation for most of the others. On the other hand, Sweden and Finland reported partial computerisation of most functions. By late 2004, there was little change in the extent to which these various functions were computerised. Clear increases in computerised functionality appear in France (dealing with changes in an individual's circumstances and staff management), Sweden (maintaining contribution records and implementing changes to benefits), and the USA (financial accounting). Somewhat unexpectedly, some functions were reported to have had *decreased* levels of computerisation. However, this probably reflects differences of opinion between our informants rather than reduced levels of computerisation.

Table 4 on page 18 shows the computerised functions in order, with the most computerised at the top of the table and the least computerised at the bottom. The most widespread computerised functions are paying benefits, implementing changes to benefit rates, financial accounting, assessing entitlement to benefits, and maintaining contribution records. Risk assessment of clients, policy modelling, policy development and/or analysis, and staff management were the functions that were least computerised. The level of computerisation tends to reflect how clearly defined and routine a task is. It also reflects the phases of computerisation as identified by Scott Morton (1991), who has pointed out that computer technologies are used first to automate organisational practices and then to 'informate' them. Similar to the results presented in Table 3, Table 4 shows that there have been minimal changes between 2000 and 2004 in the level of functionality of computerisation.

Computerisation of Benefits

In the 2000 survey, informants also were asked to indicate the extent of computerisation by type of benefit. Table 5 on page 18 makes it clear that the extent of computerisation is greatest for social insurance and least for social assistance and housing allowances. In all but one of the 12 countries that have a social insurance system (Australia does not), social insurance was described as 'fully computerised'. On the other hand, social assistance and housing allowances were described in this way in only five countries: For social assistance, these were Australia, Canada, Ireland, the UK, and the USA; for housing allowances, Australia, Finland, Germany, the Netherlands, and Sweden. Elsewhere,

Table 3: Functions Currently Computerised by Country, as at 2000 and 2004

Function	Year	AUS	BEL	CAN	DEN	FIN	
Maintaining contribution records	2000	NA	all	all	all	some	
	2004	NA	NR	some	all	NR	
Assessing entitlement to benefits	2000	all	all	all/some	all	all/some	
	2004	all	NR	some	some	NR	
Paying benefits	2000	all	all	all	all	all	
	2004	all	NR	some	all	NR	
Dealing with changes in an individual's circumstances	2000	all	all/some	all/some	all/some	all/some	
	2004	all	NR	some	some	NR	
Implementing changes to benefit rates	2000	all	all	all	all	all	
	2004	all	NR	all	all	NR	
Compliance testing	2000	all/some	some	all/some	all	some	
	2004	all/some	NR	all	some	NR	
Staff management	2000	all/some	some	some	all/some	some	
	2004	all	NR	none	some	NR	
Financial accounting	2000	all	all	all	all	all/some	
	2004	all	NR	all	all	NR	
Policy development and/or analysis	2000	some	all/some	some	some	all/some	
	2004	some	NR	some	some	NR	
Policy modelling	2000	all/some	all/some	some	some	some/none	
	2004	all/some	NR	some	none	NR	
Risk assessment of claimants	2000	some	NR	some	none	none	
	2004	all	NR	some	none	NR	

Notes: NA = not applicable, NR = no response; all/some and some/none indicate disagreement between the two respondents from the same country.

	FRA	GER	IRL	NL	NOR	SWE	UK	USA
	all	all	all	all	all	some	all	all
	all	NR	NR	all	NR	all	all	all
	all	all	some	all/some	all	some	all	all
	all/some	NR	NR	all/some	NR	some	all	all
	all	all	all	all	all	all	all/some	all
	all	NR	NR	all	NR	all	all/some	all
	some	all	all	all/some	some	some	all	all
	all	NR	NR	some	NR	some	all	some
	all	all	all	all/some	all	some	all	all
	all	NR	NR	some	NR	all	all	all
	all/some	all/some	some	some	some	NR	all/some	all
	all/some	NR	NR	some	NR	all	all/some	some
	some	some	all/some	some	some	some	some	some
	all	NR	NR	some	NR	some	some	some
	all	all	all/some	all	all	all	all	some
	all	NR	NR	all/some	NR	all	some	all
	all/some	some	some/none	some	some	some	some/none	some
	some	NR	NR	some/none	NR	some	some	some
	all/some	none	some/none	some	some	some	some/none	some
	some	NR	NR	some/none	NR	some	some	some
	some	none	some	some/none	NR	some	some/none	some
	some	NR	NR	some/none	NR	some	some	some

Table 4: Functions by Degree of Computerisation, as at 2000 and 2004

Function	Number of fully computerised countries		Number of partly computerised countries		Number of countries not computerised	
	2000 (N=13)	2004 (N=8)	2000 (N=13)	2004 (N=8)	2000 (N=13)	2004 (N=8)
Paying benefits	12.5	6.5	0.5	1.5	0	0
Implementing changes to benefit rates	11.5	7	0.5	1	0	0
Financial accounting	11	7	2	1	0	0
Assessing entitlement to benefits	11	4	2	4	0	0
Maintaining contribution records	10	6	2	1	0	1
Dealing with changes in an individual's circumstances	7.5	3.5	5.5	4.5	0	0
Compliance testing	4	3	7	5	1.5	0
Staff management	1.5	2	11.5	5	0	1
Policy development and/or analysis	1.5	0	10.5	7.5	1	0.5
Policy modelling	1.5	0.5	9	6	2.5	1.5
Risk assessment of claimants	0	1	7	5.5	6	1.5

Scoring: where the two respondents from the same country disagreed, the country was given a score of 0.5

they were described as partly computerised. All informants reported that each type of benefit was to some extent computerised in their country. This pattern again reflects the finding that payments that are clearly defined, intended for the deserving poor, administered nationally, and claimed by large numbers of recipients are likely to be given highest priority for computerisation.

Informants also were asked to assess the level of sophistication of their computer systems for different types of benefit. The answers to this question were difficult to analyse because it was clear that informants had interpreted the question in different ways and because internal and external informants did not always agree. The results do not reveal any consistent pattern in the level of sophistication of computer systems for different types of benefit.

Table 5: Type of Benefit by Extent of Computerisation, as at 2000

Type of benefit	Number of countries fully computerised
Social insurance	11 out of 12*
Categorical benefits	7 out of 13
Social assistance	5 out of 13
Housing allowances	5 out of 12**

*No social insurance in Australia
**No housing allowances in the USA

Technologies Not Yet Implemented

Those technologies that could have been but were not implemented also tell a story about the aims of computerisation, or, rather, a story about possible aims that were not regarded as important. In our 2000 survey, we asked informants whether any technologies had been piloted but not adopted. Most informants were able to provide some examples, but there was no clear pattern among the responses. Examples of technologies that were not pursued include:

- Document imaging (mentioned by two informants)

- Kiosks (mentioned by two informants)

- Electronic service counters

- Expert systems for allowances

- Expert systems for estimating effects of policies

- Online storage

- Scanning for claims

- Systems to allow claimants to calculate benefit

- Systems to allow claimants to input personal data

- Workflow management

The reasons for not adopting these technologies were also varied; once again, no clear pattern could be adduced. Among the reasons cited were the following:

- Change of management priorities

- Cost

- Difficulties with maintenance

- Insufficient use (by the public, for example, with kiosks)

- Staff resistance

- Technical problems

Technical developments, such as the increased power and speed of computer technologies, computer networking capabilities, and the Internet, have meant that some of these abandoned technologies are now being reconsidered. The move towards customer-orientated operations and individualised service delivery as the public demands better services and governments seek enhanced outcomes are part of a shift towards more customer-driven technologies.

Aims of Computerisation

The main aims or objectives of computerisation tell a complex story about what it is that computerisation is attempting to achieve, the interests that it serves, and the relative institutional power of various groups. In 2000, we asked our informants about the past aims of computerisation—i.e., those that applied from 1985 to 2000—and about the current aims for computerisation—i.e., those that applied at mid-2000. In 2004, we asked our informants about the aims in the intervening period—i.e., from 2000 to the end of 2004. For the period 1985–2000, we provided informants a list of 17 possible aims of computerisation; whereas for the current aims in 2000 and the period 2000–2004, we provided an extended list of 29 possible aims of computerisation. In each case, informants were first asked to identify those aims that have been (or are) important in their country and then to rank the most important aims.

Aims of Computerisation, 1985–2000

Table 6 shows that for the period 1985–2000, 14 of the 17 aims were acknowledged by more than half the countries in the 2000 study. Five aims (increasing productivity, improving decisions, cutting costs, increasing responsiveness, and improving information flows) were regarded as important by all 13 countries, and a further nine aims (managing complexity, detecting overpayments and fraud, reducing staff, providing more individualised services, improving policy analysis, improving management information, promoting institutional reform, improving information for frontline staff, and improving working conditions) by at least half the countries. Three aims (promoting universal access to new technology, increasing take-up, and encouraging private computer suppliers) were regarded as important by less than half the countries in the study.

The most widespread aims suit many purposes and can, in theory, generate benefits for a heterogeneous set of interested parties. Increased productivity either saves money for government or can, potentially, free resources for other activities. Productivity improvements mean that staff are able to reduce the time spent on processing claims and can, if the savings are not used for another purpose, spend more time with claimants. Improving the accuracy and consistency of decision making benefits claimants, the general public, and the government. It should also reduce the number of appeals and, by increasing the integrity of the social security system, enhance public support for it. Increasing the responsiveness of service delivery—which generally means assessing claims, responding to changes in claimants' circumstances, and making or adjusting payments more quickly—is primarily of benefit to claimants. However, it also helps governments and policy makers by improving their ability to introduce changes in policy or practice. Finally, improving information flows within and beyond the social security system is often regarded as a crucial means of improving service delivery to claimants by providing an infrastructure for 'one-stop shops' and for dealing with 'the whole person'. Improved information flows also promote greater administrative efficiency and an enhanced ability to detect fraud and overpayments. Government and policy makers also benefit from the provision of more information on policy implementation and evaluation.

Table 7 on page 22 shows which aims the informants ranked as most important. When we consider the three aims that our informants ranked most highly in their country for the period 1985–2000, increasing productivity again came out on top. Increasing productivity was regarded as one of the three most important aims by eight of the 13 countries (Australia, Denmark, Finland, Ireland,

Table 6: Past Aims of Computerisation, 1985–2000 and 2000–2004

Aim of Computerisation	Aims in all countries		Aims in at least half, but not all, countries		Aims in less than half the countries	
	'85–00	'00–04	'85–00	'00–04	'85–00	'00–04
Increasing productivity	✓			✓		
Improving decisions	✓			✓		
Cutting costs	✓			✓		
Increasing responsiveness	✓			✓		
Improving information flows*	✓					
- between SS & private organisations		✓				
- within social security (SS) institutions				✓		
- between SS institutions				✓		
- between SS & other government sectors				✓		
- between national SS systems				✓		
Managing complexity			✓	✓		
Detecting overpayments and fraud			✓	✓		
Reducing staff			✓	✓		
Providing more individualised services			✓	✓		
Improving policy analysis			✓	✓		
Improving management information			✓	✓		
Promoting institutional reform			✓	✓		
Providing information for frontline staff			✓	✓		
Improving working conditions			✓	✓		
Measuring administrative performance				✓		
Responding to user demand				✓		
Implementing policy changes				✓		
Conforming to policy on e-business in government				✓		
Enabling self-assessment				✓		
Promoting access to new technology				✓	✓	
Increasing take-up				✓	✓	
Encouraging private computing suppliers					✓	✓
Automating decision making						✓
Enhancing labour market efficiency						✓
Keeping up with developments in cognate institutions						✓
Delivering online global services to clients (e.g., employers)						✓

Items in italics were not included in the question about aims of computerisation for the period of 1985–2000
* Items were more detailed in subsequent questions

Table 7: Three Most Important Aims of Computerisation in Three Different Time Periods

Aim	Percentage of countries including aim among their top three aims		
	1985–2000 (N = 13)	2000 (N = 13)	2000–2004 (N = 8)
Increasing productivity	62%	46%	50%
Cutting costs	38%	54%	50%
Increasing responsiveness	38%	38%	50%
Improving decisions	38%	23%	25%
Managing complexity	38%	23%	0%
Detecting overpayments and fraud	31%	31%	50%
Reducing staff	23%	15%	25%
Providing more individualised services	15%	23%	13%
Responding to user demand		15%	13%
Enabling self-assessment		15%	0%
Improving information flows*	8%		
- within social security (SS) institutions		31%	0%
- between SS and other government sectors		15%	25%
- between SS institutions		8%	13%
- between SS and private organisations		0%	0%
- between national SS systems		0%	0%
Improving policy analysis	8%	8%	0%
Implementing policy changes		8%	38%
Conforming to policy on e-business in government		8%	13%
Enhancing labour market efficiency		8%	13%
Promoting institutional reform	8%	0%	13%
Improving working conditions	8%	0%	0%
Promoting access to new technology	0%	8%	0%
Providing information for frontline staff	0%	0%	13%
Increasing take-up	0%	0%	13%
Improving management information	0%	0%	0%
Encouraging private computing suppliers	0%	0%	0%
Measuring administrative performance		0%	0%
Automating decision making		0%	0%
Keeping up with developments in cognate institutions		0%	0%
Delivering online global services to clients (e.g., employers)			0%

Items in italics were not included in the question about aims of computerisation for the period of 1985–2000
* Items were more detailed in subsequent questions

the Netherlands, Norway, Sweden, and the USA). Improving decision making (Belgium, Finland, France, Norway, and the USA); cutting costs (Canada, France, Germany, Sweden, and the UK); increasing responsiveness (Canada, Finland, Ireland, Sweden, and the USA), and managing complexity (Australia, Belgium, Germany, Ireland, and the Netherlands) were included in the three most important aims by five countries.

For the period 1985–2000, four countries (Australia, Canada, the Netherlands, and the UK) included detecting overpayments and fraud among the three most important aims; three countries (Denmark, Norway, and the UK) included reducing staff; and two countries (Ireland and Germany) listed more individualised services in their top aims. One country each included improving information flows (Belgium), improving policy analysis (France), improving working conditions (Canada), and promoting institutional reform (Denmark) amongst their most important aims. Five aims (improving management information, improving information for frontline staff, promoting access to new technology, increasing take-up, and encouraging private computing suppliers) were not included among the three most important aims for 1985–2000 by any of the 13 countries in the study.

Comparing Tables 6 and 7 for the period 1985–2000, there was a remarkable level of consistency between the two rank orderings—i.e., between those aims that were recognised in different countries and those aims that countries included in their top three aims. However, it should be noted that there was considerable variation between the two informants from the same country in identifying the top three aims of computerisation in social security.

In Adler and Henman (2005), we provide a more detailed analysis of the past aims of computerisation in different countries. There was an almost universal concern to use computer technology to achieve financial savings—for example, by reducing staff, increasing productivity, decreasing fraud, or cutting costs. This finding reflects a widespread view that computers can be used to enhance efficiency and achieve financial savings. It also reflects the ready ability of computers to manage numerical data. Notwithstanding the common concern with financial savings, we found some evidence of differences between the liberal welfare states of Anglophone

countries, the conservative welfare states of continental Europe, and the social democratic welfare states of Scandinavia. Other management issues—such as improving decision making, enhancing information flows, and managing complexity—were more likely to be key aims for conservative welfare states, which tended to have less of a focus on expenditure issues than other welfare states.

Aims of Computerisation, 2000

In mid-2000, informants also were asked about those factors that are currently shaping plans for the computerisation of social security. In addition to the same questions they had been asked about past aims, we included eight additional aims that are now more feasible as a result of developments in technology and public administration. These new aims were:

- Automated decision making

- Responding to user demand

- Measuring administrative performance

- Conforming to policy on e-business in government

- Enabling self-assessment

- Implementing policy changes

- Enhancing the efficiency of the labour market

- Keeping up with developments in cognate institutions

In addition, we asked more detailed questions about the organisations in which information flows were being improved. The results are set out in Table 7 and in Table 8 on page 24.

Table 8 shows that there has been little change between those aims that informants considered to have been important in the past (i.e., 1985–2000) and those that they considered to be important in mid-2000. The only significant changes are that securing more individualised services was seen to be an important aim in all countries (i.e., in two more countries than in the past) and promoting universal access to new technology was seen as an important aim in five more countries than

Table 8: Aims of Computerisation as at Mid-2000

Aim of computerisation	Aims in all countries	Aims in at least half, but not all, countries	Aims in less than half the countries	Change from past aims, 1985–2000
Increasing productivity	✓			No change
Improving decisions	✓			No change
Cutting costs	✓			No change
Increasing responsiveness	✓			No change
Improving information flows	✓			No change
Providing more individualised services	✓			2 more countries
Providing information for frontline staff	✓			1 more country
Responding to user demand	✓			N/A
Measuring administrative performance	✓			N/A
Conforming to policy on e-business in government	✓			N/A
Managing complexity		✓		1 more country
Detecting overpayments and fraud		✓		No change
Reducing staff		✓		No change
Improving policy analysis		✓		No change
Improving management information		✓		No change
Promoting institutional reform		✓		No change
Improving working conditions		✓		1 more country
Promoting access to new technology			✓	5 more countries
Increasing take-up			✓	1 less country
Encouraging private computer suppliers			✓	1 more country
Enabling self-assessment			✓	N/A
Implementing policy changes			✓	N/A
Enhancing the efficiency of the labour market			✓	N/A
Automating decision making			✓	N/A
Keeping up with developments in cognate institutions			✓	N/A

it had been between 1985 and 2000. In addition, four aims (providing information for frontline staff, managing complexity, improving working conditions, and encouraging private computer suppliers) were identified as important in one more country in mid-2000 than had been the case for the period 1985–2000. One aim (increasing take-up) was no longer regarded as important in one country that had previously regarded it as important.

Table 8 also shows that, in mid-2000, three of the new eight aims (responding to user demand, conforming to policy on e-business in government, and measuring administrative performance) were recognised as important in all 13 countries in the study. Each of the remaining five aims was recognised as important by at least half the countries in the survey.

Returning to Table 7, this shows the percentage of countries surveyed that included a specific aim

among their top three priorities across the three time periods considered. It indicates that, by mid-2000, there had been only minor changes in the most important aims of computerisation compared with the period 1985–2000. Given that a number of additional aims were listed, it would not have been surprising if there had been a reduction in the number of countries that continued to give priority to the aims they had regarded as important for 1985–2000. Accordingly, those aims that increased in importance are particularly noteworthy. These aims include cutting costs and improving information flows within social security institutions (both increased in importance in two countries) and more individualised services, improved information flows between the social security sector and government, and promoting access to new technology (all increased in importance in one country). Less widespread attention appears to have been given to increasing productivity, improving decisions, and managing complexity (both decreased in importance in two countries). The decline in importance of these three aims may be due to the fact that the initial aims of computerisation had been met. However, it is more likely that they simply reflect changing priorities.

As of mid-2000, cutting costs was the most widespread priority aim. France, Germany, Sweden, and the UK all retained this as a priority aim, while Australia, Denmark, and the USA included it for the first time in their top three aims. On the other hand, Canada no longer appeared to give it priority. Increasing productivity was also a widespread priority aim in mid-2000, with Australia, Denmark, Norway, Sweden, and the USA maintaining it as a priority, and France including it in their list of priorities. However, Finland, Ireland, and the Netherlands appear to have dropped it from their list of priorities. Increasing responsiveness and detecting overpayments and fraud remained priority aims in five and four countries, respectively. By mid-2000, increasing information flows within social security institutions had become a priority aim in Finland and the UK and remained a priority aim in Belgium. Australia and the Netherlands gave priority to providing more individualised services, Germany continued to do so, but Ireland no longer did.

Among the 'new' aims, responding to user demand was included among the three most important aims in two countries (Canada and Norway), as was facilitating self-assessment (Finland and the

Netherlands). One country each now includes conforming to policy on e-business in government (Belgium), implementing policy changes (Australia), and enhancing the efficiency of the labour market (Ireland), among their three priority aims.

A more detailed analysis of current aims is provided in Henman and Adler (2003), in which the ability of computer technology to variously govern process, control or empower staff, and control or empower claimants is examined. Generalising across countries, controlling staff was given greatest priority, closely followed by controlling claimants and governing process. Although computer technologies could support the empowerment of staff and claimants, there was little evidence that this was one of the main aims of computerisation in social security. The only meaningful difference between countries was that those with strong trade unions and corporatist traditions were less inclined to use computers for controlling staff than other countries.

Aims of Computerisation, 2000–2004

In our late 2004 survey, the same list of 29 aims was asked of informants for the period 2000–2004. However, we have responses from only 10 of the original 13 countries. As is evident in Table 6, the five aims which were previously recognised in all countries were no longer universally recognised. These aims (increasing productivity, improving decisions, cutting costs, and increasing responsiveness) were no longer recognised in Ireland. Apart from this change, there were very few changes in the aims of computerisation when the period 2000–2004 is compared with the period 1985–2000. Improving information flows seemed to drop from being an aim in all countries, to an aim in a majority of countries. However, this change could reflect the fact that in the 2004 survey, instead of including the aim of improving information flows, we included five more specific aims. Two aims, promoting access to new technology and increasing the take-up of benefits, became more widespread between 1985–2000 to 2000–2004, moving from being recognised in a minority of the countries surveyed to being recognised in a majority of the countries.

While Table 6 highlights the relative continuity of the aims of computerisation over time, Table 7 summarises the changes in the top three aims of comput-

erisation over the period 1985–2000 to 2000–2004. Again, there is a significant level of continuity between the aims of computerisation in the recent and more distant past. However, there are some noticeable changes. Detecting overpayments and fraud jumped from being one of the top three aims in four of 13 countries (31 percent) in the period 1985–2000 to being one of the top three aims in four of eight countries (50 percent), and implementing policy changes has moved from being one of the top three aims in one of 13 countries (8 percent) to one of the top three aims in three of eight countries (38 percent). At the same time, managing complexity has progressively reduced in importance over time, dropping from being one of the top three aims in five countries to one in which none of the countries identified it as such.

Of the most widespread priority aims, increasing productivity was identified as a priority aim in France, Norway, Sweden, and the USA; cutting costs was identified as a priority aim in Canada, the Netherlands, the UK, and the USA; increasing responsiveness was identified in Canada, Ireland, the UK, and the USA; and detecting overpayments and fraud was identified in Australia, Canada, Denmark, and the Netherlands. Implementing policy change was found to have significantly increased in importance and is now a priority aim in Australia, the Netherlands, and Sweden.

Aims of Computerisation Across Country Groupings

In Adler and Henman (2005), the question of whether the top three aims of computerisation vary across country groupings—in particular whether some of the differences in the top three aims can be attributed to different welfare state regimes, different politico-administrative arrangements, different institutional structures in social security, or different forms of capitalism—is examined. Although there is no simple answer, it appears to be the case that some of the variation in the aims of computerisation can be explained in terms of differences in welfare state regimes. Differences in politico-administrative arrangements also appear to have a small effect.

Consequences of Computerisation

Aiming to achieve a given outcome by using computer technology is one thing; the actual outcome may be something quite different. This is not only because computerisation has intended and unintended consequences, but also because stated aims may not be as readily achievable as initially envisaged. Furthermore, stated aims may not accurately reflect what happens in practice. In our 2000 survey, informants were asked to assess a large number of possible consequences of computerisation. In each case, they were asked to assess what the effects of computerisation had been in the period 1985–2000—i.e,. whether the variable in question had greatly increased (score = +2), increased (+1), decreased (-1), or greatly decreased (-2), or whether it had had no effect (0). The results are set out in Figure 2 on page 28.

Figure 2 presents the effects of computerisation from 1985 to 2000 on various aspects of the operation of social security systems. Computerisation was found to have increased aspects of social security operation in quite a range of areas including administration, compliance, management, policy making, and information provision. The greatest average effect across countries was to increase the production of social security statistics, which received an average score of 1.54 (on a scale of -2 to +2 as outlined above). Not far behind was an increased speed of decision making regarding new claims for benefits (1.42); ability to receive and/or check claimant information from other organisations such as banks, employers, and taxation authorities (1.35); ability and speed to update benefit rates (1.35); and consistency of decision making (1.31). The only area that computerisation seems to have reduced was staff numbers (-0.65), although there was some suggestion that the number of local offices had declined as a result of computerisation (-0.23).

The results in Figure 2 report changes resulting from computerisation averaged across all 13 countries surveyed. However, in some areas, the consequences of computerisation in different countries were very similar; in others there was considerable variation. However, it should be noted that there were some differences in the responses of informants from the same country.

The responses for 2000 can be divided into four groups in terms of the modal category. There were four items whose importance or incidence was thought by the largest number of countries to have greatly increased. They were, in rank order, the production of social security statistics (9 out of 13 countries), the speed of decision making (8), the consistency of decision making (7), and the ability to receive or check claimant information (7). All of these items refer to improvements in administrative processes.

This first group was followed by a much larger group of items whose importance or incidence was thought by the largest group of informants to have increased, but not greatly. This category comprised (in rank order): number of ways of contacting social security institutions (11 out of 13 countries), the depth of analysis of new policy proposals (10), availability of information on entitlement to social security (9), the identification of underpayments (9), the number and frequency of reviews of a recipient's entitlement (9), the number of benefit types (8), the ability and speed to update benefit rates (7), the use of performance indicators (7), the identification of fraud and overpayments (7), the extent of means-testing (6), the level of outsourcing (6), the regularity of policy changes (6), and the complexity of social security policy (5).

The third category consisted of two items whose importance or incidence was felt by the largest group of informants to be unchanged: the number of appeals (7 out of 13) and the de-skilling of staff (6).

Finally, there were three items whose importance or incidence was felt by the largest group of informants to have decreased: staff numbers (10 out of 13 countries), number of local offices (6), and personal contact between clients and staff (5). All these items relate directly or indirectly to customer service, and are perhaps indicative of a shift from face-to-face contact as the dominant mode of contact to more virtual forms of contact, especially telephone and increasingly the Internet.

It is clear from the data that computerisation has had a large number of consequences for social security. In many cases—for example, increases in the speed and accuracy of decision making and reductions in the number of staff—these have occurred across the board, although the extent of change, as assessed by our informants, varied across countries. In other cases, informants differed in their assessment of the direction of change. Thus, for example, in two

countries (Australia and Finland), informants reported that computerisation had greatly increased the ability of governments to introduce new policy changes, and in most other countries, informants noted that it had increased their ability to some extent. However, in two countries (the Netherlands and the UK), informants thought that the ability to introduce new policy changes had decreased as a result of computerisation. Such a finding may relate to legacy systems, which evolved from early computerisation and become antiquated and poorly suited to the more radical changes demanded in a new policy environment. Related to this issue is whether there have been more frequent policy changes. Policy change is described as having greatly increased in frequency in Australia, which supports the informants' view that computerisation had made this easier, but it is described as having become less frequent in Finland. No change, or only a modest increase in the frequency of change, was reported for most countries.

Following on from this concern with the effects of computerisation on policy processes, informants were asked in an open-ended question whether computer systems had limited policy change. There was little

Figure 2: Consequences of Computerisation, 2000

Average change from +2 = greatly increased to -2 = greatly decreased
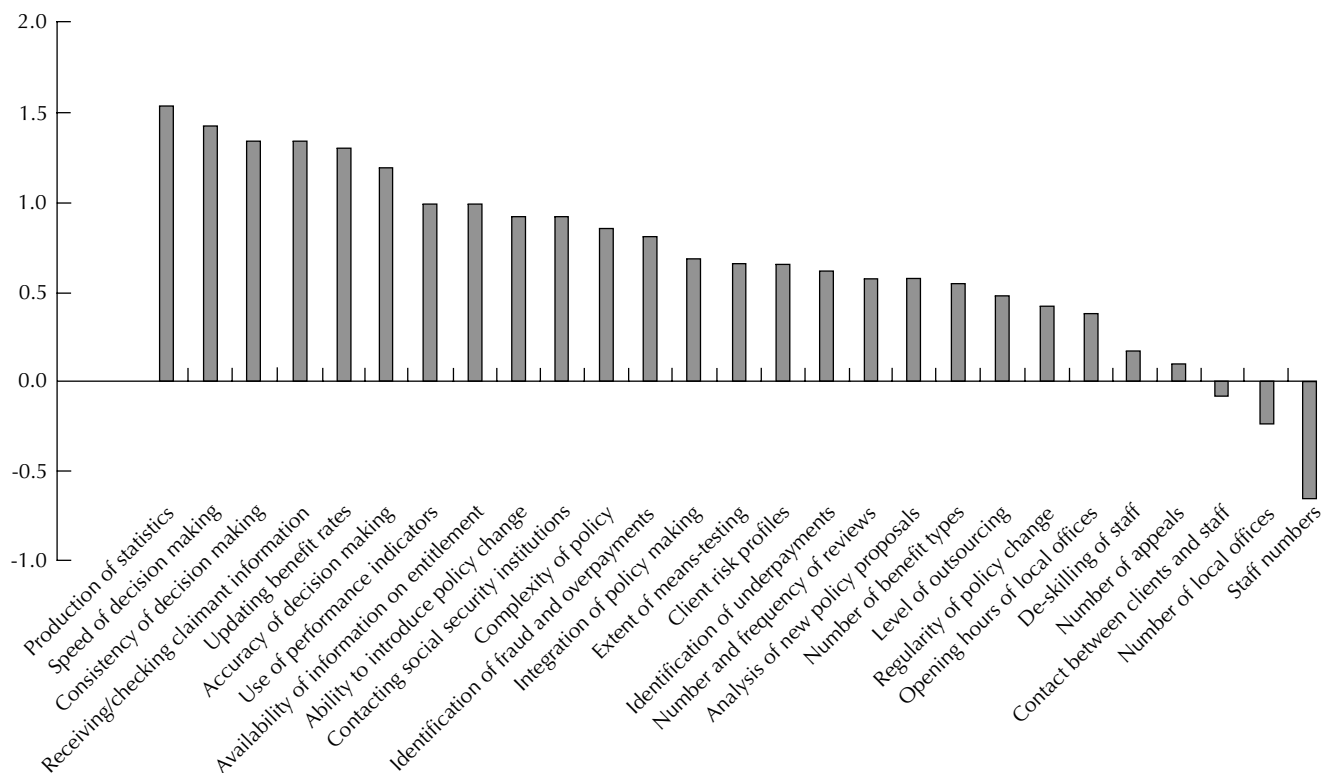
support for this view. However, several informants pointed out that the need to adapt IT systems meant that changes were often delayed. Examples mentioned included the IT system for employment offices in Denmark, the system for identifying recipients of pension points for caregivers of people with disabilities in Norway, and the introduction of 'one-stop shops' and changes to the 'Christmas Bonus' and cold weather payments in the UK.

Identification of fraud and overpayments is one area where there was some disagreement. In Ireland and the UK, this was described as having greatly increased, and, in most other countries, informants reported that it had increased somewhat. However, no change was reported in Finland or Sweden, and the identification of fraud and overpayments was reported to have decreased as a result of computerisation in France. It is notable that identification of underpayments follows a similar pattern. Informants reported an increase in 10 countries, no change in Finland, and a decrease in France and the Netherlands.

The extent of means-testing resulting from computerisation is another area where there was contradictory evidence. Most informants saw this as having increased, but those from Denmark, Norway, and the USA reported no change. This diversity of responses clearly demonstrates that the policies that are implemented result from both technical capability and political will. While computerisation has increased the capacity of the state to means-test benefits, the extent to which this is taken up results from political decisions.

The final questions in this section relate to staffing. The responses to the effects of computerisation on staff skills were rather mixed, with informants from four countries (Australia, Canada, Ireland, and the UK) reporting an increase, two countries (Finland and the Netherlands) reporting a decrease, and the other seven countries reporting no change. This result reflects the capacity of computers either to empower and enhance the capacity of welfare workers, as was found in Finland and the Netherlands, or to automate and displace them, as evidenced in Australia, Canada, Ireland, and the UK. This division between corporatist European and liberal Anglo-Saxon welfare states is not entirely surprising and reflects their different approaches to the use of technology in industrial relations and to the strength and role of trade unions.

Henman and Adler (2003) studied the consequences of computerisation for governing organisational process, for controlling or empowering staff, and for controlling or empowering claimants. In that analysis, the consequences of computerisation were compared with the aims of computerisation to assess whether outcomes mirrored intentions. Although at the international and aggregate level there was some evidence that outcomes mirrored intentions, when each country was examined there was a rather poor relationship between the stated aims and actual consequences. This may result from a number of factors, including technical problems, poor implementation, unintended consequences, or differences between the stated and the actual goals of computerisation.

Consequences of the Internet

Given the increasing significance of the Internet in the administration and delivery of social security, in our 2004 survey, we asked our informants to assess the impact of Internet only, not computer technology more broadly, on various aspects of social security over the period 2000–2004. In addition to the 27 areas examined in the 2000 survey, seven new areas relating specifically to the Internet were asked of our informants.

Figure 3 on page 30 presents scores for the consequences of e-government from 2000 to 2004. The scale ranges from a maximum of +2, meaning that aspect of social security administration greatly increased, to a minimum of -2, meaning that aspect greatly decreased. A score of 0 represents no change.

The greatest impact of the deployment of the Internet on the operation of social security for the 2000–2004 period (see Figure 3) was an increased level of client self-service (average score of 1.27); an increase in the number of ways of contacting social security institutions (1.25); a greater ability of social security institutions to receive and check claimant information from other organisations (1.17); an increased availability of information on benefit entitlement (1.17); and an increased ability and speed to update benefit rates (1.00). On average, the Internet was found to increase the range of aspects of social security asked about, but not to the same extent as computerisation for the period 1985–2000. The lowest score was the level of personal contact between clients and staff, which was thought to be relatively unaffected by the use of the Internet.

Figure 3: Consequences of the Internet, 2004

**Average change from +2 = greatly increased
to -2 = greatly decreased**
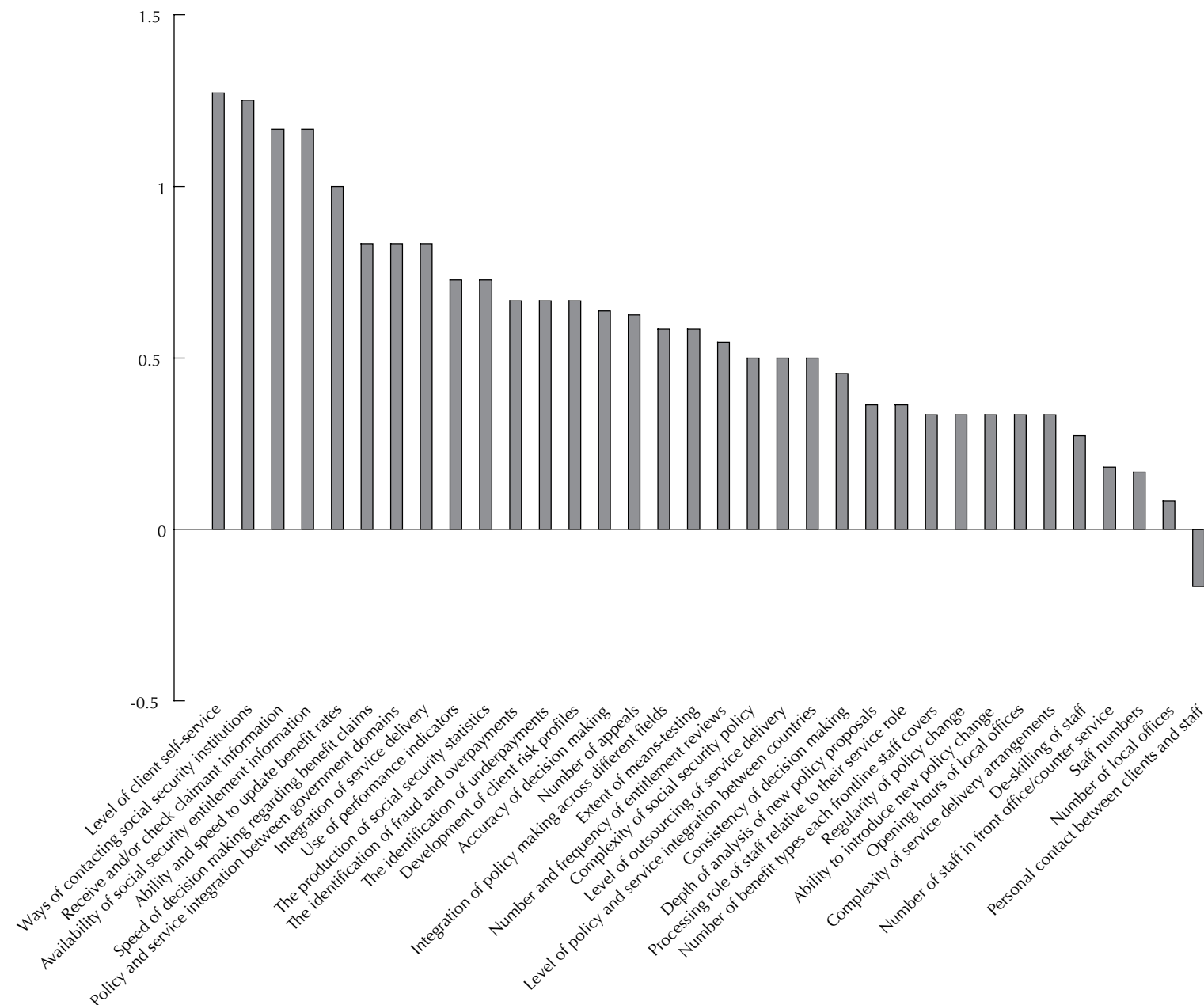
It is interesting to compare the impact of computerisation from 1985 to 2000 with the impact of the Internet from 2000 to 2004. The survey data suggest that, in general, the effects of the Internet have been less than the effects of computerisation. This could be due to the fact that the period for examining the effects of the Internet is shorter than the period for examining the effects of computerisation, or that the impact of e-government is less than that of computer technology more generally. Looking

at the specific areas, it can be seen that, for most items, the Internet appears to have had a smaller impact than computerisation. In some areas (ability to receive and/or check claimant information from other organisations, use of performance information, extent of means-testing, development of client risk profiles, level of outsourcing of service delivery, and the regularity of policy change), the impact of the Internet was similar to that of computerisation. However, there are some notable items in which

the Internet was found to have had a greater impact than computerisation, despite the shorter time frame being compared: number of ways of contacting social security institutions (0.92 for computerisation, 1.25 for the Internet); availability of information on benefit entitlements (1.00, 1.18); number of appeals (0.10, 0.63); number of local offices (-0.23, 0.08); and staff numbers (-0.65, 0.27). Interestingly, the level of staffing was found to be unchanged or slightly increased as a result of the deployment of the Internet, whereas the number of staff decreased as a result of computerisation.

Organisational Impact of Computerisation

In our 2000 survey, we asked informants a number of questions in an attempt to assess the organisational impact of computerisation from 1985 to 2000. Their responses are summarised in Table 9 on page 32.

The responses can be divided into three distinct groups: five items where the average scores ranged from 1.0 (agree) to 2.0 (agree strongly) and were clearly positive; 11 items where the average scores ranged from 0.0 (neutral) to 0.99 (agree) and were somewhat positive; and three items where the average score ranged from 0.0 (neutral) to 0.99 (disagree) and were either neutral or somewhat negative.

Among the first group of responses, informants from all countries agreed that computerisation had been accompanied by changes in work processes. There was also widespread agreement that it had been used to automate decision making, used to provide staff with improved access to up-to-date information, accompanied by changes in organisational structure, and used to deal with social security fraud and overpayments.

Among the second set of responses, informants indicated that computerisation has had a different impact in different countries. In most cases, there were only one or two 'outliers', but in some cases, the data suggest that the experiences of different countries have been quite disparate. For example, while informants in 10 countries judged that computerisation had resulted in the targeting of surveillance towards specific risk groups, those from three countries (Germany, Sweden, and the USA) reported that it had not had this outcome. Likewise, while informants thought that in eight countries computerisation had been associated with an

increase in decision making by frontline staff in local offices, in three countries (Canada, the Netherlands, and the UK) they indicated that this was not the case. Similarly, while informants reported that computerisation has been associated with an increased use of call and service centres in six countries, others indicated that this was not the case in three countries (France, Germany, and the USA). In a number of respects, the experiences of different countries have clearly been quite varied. Thus, for example, in six countries, informants indicated that computerisation had been used to shift the locus of decision making to areas of labour surplus and/or to call centres, but in the same number of countries (six) they indicated that this had not been the case; in five countries they were of the view that it had resulted in fewer complaints and in four that this had not been the case; and in four countries that it had improved claimants' understanding of decision making in their own case and in three countries that it had not.

Among the third group of responses, informants from four countries (Belgium, Germany, the Netherlands, and Sweden) thought that computerisation had led to a simplification of social security policy, while informants from seven countries thought that it had not. There was very little support for the view that computerisation had had any impact on the number of appeals, and informants from only two countries (Australia and Belgium) thought that it had brought about an increase in the customisation of benefits.

Financial Outcomes

As the earlier discussion on the aims of computerisation highlights, computers are often introduced in the hope of generating financial savings. In both our 2000 and 2004 surveys, we asked informants a number of questions about the extent to which financial savings had resulted from computerisation and, if so, what those savings were used for.

Table 10 on page 33 indicates that most informants thought that computerisation from 1985 to 2000 had achieved the predicted level of savings, the only exceptions being Canada and the UK. However, it should be noted that the informants from Denmark and Finland disagreed with each other. On the other hand, when they were asked if computerisation from 2000 to 2004 had resulted in the predicted level of savings, only one of the eight respondent countries (France) agreed. However, the two Australian informants disagreed with each other.

Table 9: Organisational Impact of Computerisation, 1985–2000

	Computerisation has:	Number of countries agreeing	Number of countries neutral	Number of countries disagreeing
Strong agreement to overall agreement	been accompanied by changes in work processes	13	0	0
	been used to provide staff with improved access to up-to-date information and legislation to support their decision making	12	1	0
	been accompanied by changes in organisational structure	12	1	0
	been used to automate decision making	11	2	0
	been used to reduce social security fraud or overpayments, e.g., through initial checks at the point of application or data-matching	10	2	1
Neutral to overall agreement	been associated with greater surveillance of claimants	10	1	2
	increased the targeting of surveillance towards specific risk groups	10	0	3
	resulted in the provision of more personalised information to claimants	9	3	1
	resulted in a more personalised service	9	3	1
	led to a greater integration of formerly separate modes of service delivery for different benefit types, e.g., through 'one-stop shops'	8	3	2
	been associated with an increase in decision making by frontline staff in local offices	8	1	3
	resulted in the provision of more generalised information to claimants	7	4	2
	been associated with an increase in decision making in distant processing centres, e.g., call/service centres	6	4	3
	been used to shift the locus of decision making to different geographical areas, e.g., to areas of labour surplus or to call/service centres	6	1	6
	resulted in fewer complaints about service	5	4	4
	improved claimants' understanding of decisions regarding their own case	4	6	3
Neutral to overall disagreement	been used to help simplify social security policy	4	2	7
	resulted in fewer appeals against decisions	3	9	1
	been used to customise the receipt of benefits, e.g., by giving claimants cash advances in lieu of regular payments	2	5	6

Table 10: Financial Implications of Computerisation

Question	Average Score	
	1985–2000	**2000–2004**
Have the predicted savings of computerisation been achieved?	0.71	0.27
If there have been savings, have they been used to enhance service delivery?	0.77	0.67
If there have been savings, have they been used to reduce government expenditure?	0.75	0.44
If there have been savings, have they been used to enhance the range of administrative tasks?	0.65	0.33
If there have been savings, have they been used to widen coverage?	0.19	0.11
If there have been savings, have they been used to raise benefit levels?	0.04	0.00

Scoring: no = 0, yes = 1

In the period 1985–2000, the savings achieved from computerisation were most commonly directed to enhancing service delivery (score 0.77 out of 1.0) and reducing government expenditure (0.75). Ireland and Sweden were the only two countries where financial savings from computerisation were not used to reduce government expenditure. In most countries—the exceptions being Australia, Germany, the UK, and the USA—savings were also used to enhance the range of administrative tasks. This is consistent with the findings of other studies in suggesting that the technology does not simply replace former forms of operation but opens up new possibilities for administration and service delivery. Very rarely were savings used to widen the coverage of benefits (although it was suggested that this had been the case in Australia and, to some extent, in Canada, the Netherlands, and the UK). It was also clear that financial savings from computerisation were not used to raise benefit levels.

In the period 2000–2004, savings resulting from computerisation were mainly used to enhance service delivery (0.67). Many fewer countries than before used the savings to reduce government expenditure (0.44 c.f. 0.75) or widen the range of administrative tasks (0.33 c.f. 0.65). As in the earlier survey, there was very little indication that savings had been used to widen the coverage of benefits or to raise benefit levels.

Consequences of Computerisation for Procedural Justice

In our 2000 survey, we also sought to assess the implications of computerisation for procedural justice—that is, whether people are treated fairly in the delivery of social security (a fuller account of this issue can be found in Adler and Henman 2001). Two indicators for each of six models of procedural justice were selected, and informants were asked to rate their importance to the operation of social security on a 5-point scale, ranging from 1 (very important) to 5 (unimportant). Of the six models, three (bureaucracy, professionalism, and legality) are well established, while the other three (managerialism, consumerism, and the market) reflect more recent developments. Informants were then asked whether computerisation had made each of them more or less important on another 5-point scale, ranging from 1 (greatly increased importance) to 5 (greatly decreased importance).

Figure 4 on page 35 presents the strengths of each of the six models of procedural justice in each of the 13 countries that were included in our 2000 survey. Although there are some variations between countries, some consistent patterns can also be observed. The bureaucratic model, evidenced by the use of well-defined rules to assess eligibility and of internal review procedures for dealing with complaints, is strong in all countries. In this approach, users are placed in a relatively passive position vis-à-vis the social security institution, their treatment being assessed through the circumscribed information that is collected on standardised forms. As might be expected, from 1985 to 2000, computerisation contributed to an increase in the importance of this model across the board (see Figure 5). This increase can be seen in the strengthening of well-defined rules for assessing entitlement rather than in an increased use of internal review, which appears to have been unaffected by computerisation.

Models of Procedural Justice

Procedural justice refers to the fairness associated with the ways in which claimants are treated by those who administer public services. Six competing models of procedural justice have been identified:

Bureaucracy: The application of rules to ensure that like cases are treated alike

Professionalism: The use of expert knowledge in assessing and meeting claimants' needs

Legality: The recognition of claimants' rights and the use of independent adjudication

Managerialism: The exercise of managerial autonomy in meeting performance targets

Consumerism: The participation of claimants in decision making

Markets: The use of competition and the price mechanism in service delivery

The professional model, exemplified by the exercise of administrative discretion in assessing eligibility and the availability of a second opinion, scored quite low in most countries, with Sweden (63 percent), Germany (56 percent), Belgium (50 percent), and Norway (50 percent) having the highest scores (see Figure 4). In most cases, computerisation was found either to reduce or not to affect the influence of the professional model (the exceptions here being Denmark, France, Sweden, and the Netherlands). In fact, the professional model, more than any of the other models of procedural justice, suffered most from computerisation. Consistent with the findings of earlier studies, computerisation has tended to reduce the role of administrative discretion in determining eligibility (c.f. Alexander 1990; Garson 1989; Henman 1996). Somewhat surprisingly, an increase in discretion resulting from computerisation was reported in Denmark and the Netherlands, which could be due to the use of computers to provide enhanced information to support frontline decision making, rather than to automate it.

The importance of the legal model of procedural justice, reflected in the emphasis on claimants' rights and the existence of independent appeal procedures, appears to be greater than or equal to professional-

ism but less than bureaucracy. Computerisation seems to have had a minimal effect on the influence of the this model, having had little or no effect on appeal procedures or on the capacity of claimants to access their personal records, although Finland and Ireland reported that as a result of computerisation, there was a greater emphasis on claimants checking and correcting their personal records. Given that information technologies increasingly make it easier for claimants to access personal data, the lack of developments in this area indicates that this is not a priority for social security institutions.

The managerial model, evidenced by the use of performance targets and performance indicators, is second in importance behind bureaucracy in Australia, Canada, the Netherlands, Norway, the UK, and the USA. In each of these six countries, managerialism had a rating of greater than 50 percent. In 10 of the 13 countries in our study, computerisation in social security has been associated with the increased use of performance targets and performance indicators (in Denmark a decrease was reported, while in Sweden and the USA usage appears to have remained much the same). Indeed, compared with other models of procedural justice, computerisation appears to have had the greatest (or equally greatest) effect on managerialism. Although our informants made it clear that the rise of managerialism has a number of causes and is not entirely attributable to computerisation, it is clear that the role of information technology has been critically important in contributing to and enhancing this development.

The consumerist model of procedural justice, which is evidenced by the development of customer charters and the active involvement of claimants in decision making, appears to be much stronger in some countries (Denmark, Belgium, Norway, Germany, Ireland, and Finland) than in others. The effect of computers on the influence of this model of procedural justice has tended to be small and mixed. Small overall increases were reported for some countries (Australia, Belgium, France, Germany, Ireland, and Norway), small overall decreases for others (Canada, Finland, and the Netherlands), while no change was reported for Denmark, Germany, Sweden, the UK, and the USA. Most experts thought that computerisation had increased the use of customer charters (although a decrease was reported for Finland). On the other hand, most of them reported either that computerisation had decreased the participation

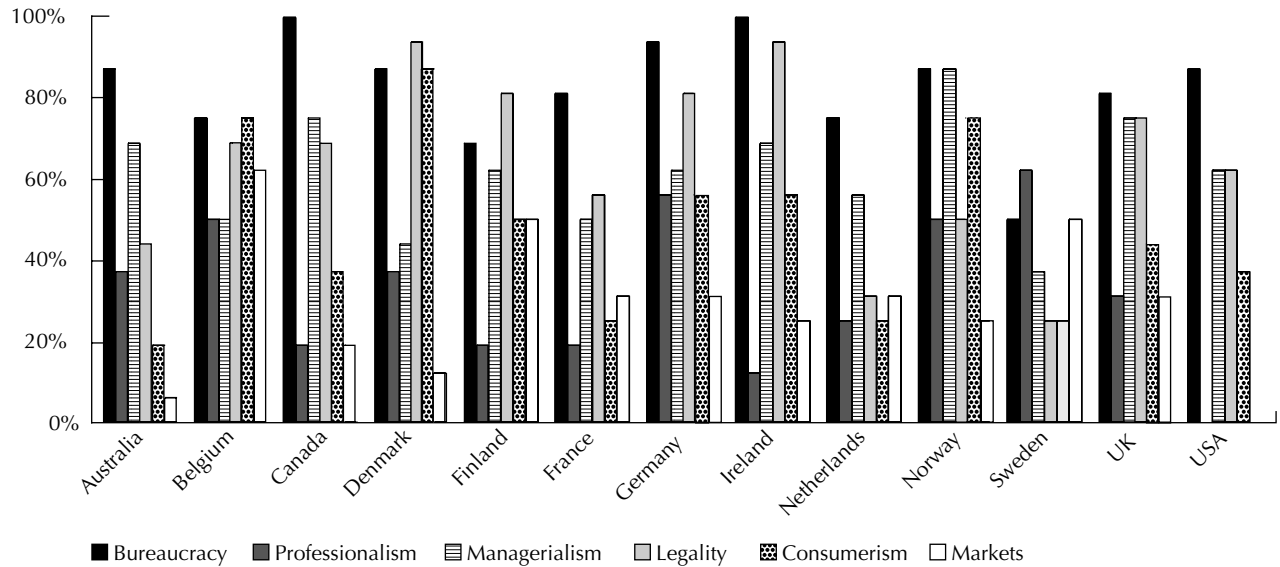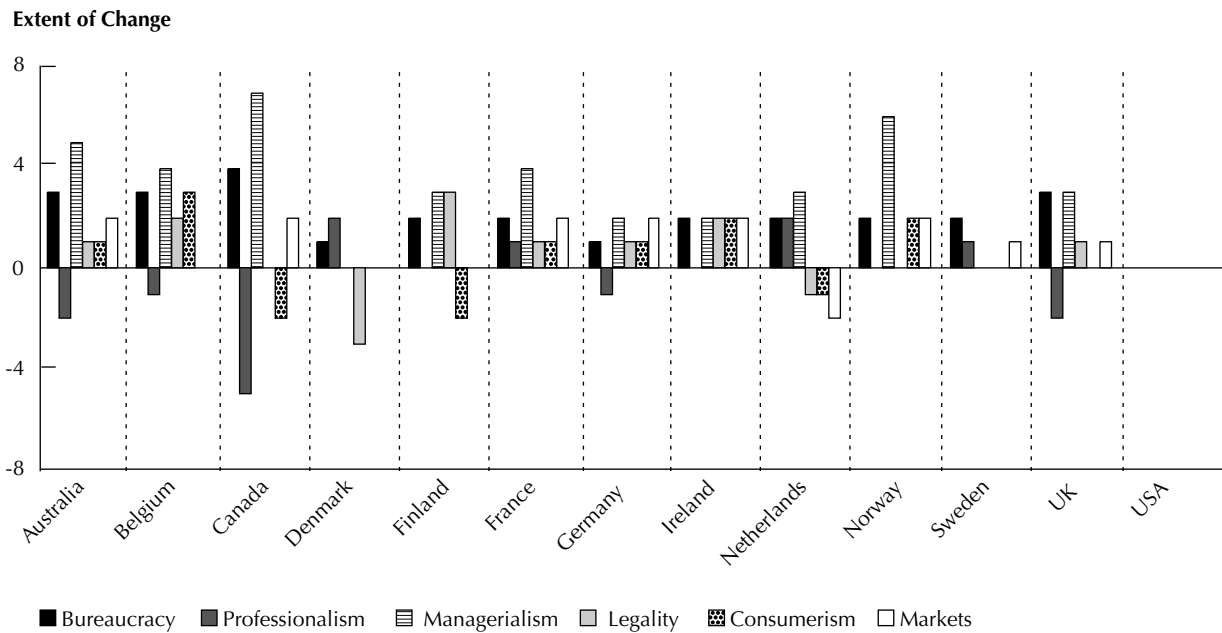**Figure 4: Relative Strengths of Procedural Justice Models in National Social Security Systems, 2000**

■ Bureaucracy ■ Professionalism ▤ Managerialism □ Legality ▩ Consumerism □ Markets

Figure 5: Change in Types of Procedural Justice Resulting from Computerisation, 2000

Extent of Change

■ Bureaucracy ■ Professionalism ▤ Managerialism □ Legality ▩ Consumerism □ Markets

of claimants in decision making or that participation had not been affected by computerisation (Ireland was the exception here in that an increase in participation due to computerisation was reported). This is consistent with the process of automation that tends to reduce professional discretion and formalise strict rules, thereby reinforcing the role of social security administrations.

In general, the existence of the market model of procedural justice, exemplified by the use of non-governmental organisations to implement social security policy and the ability of consumers to choose their preferred service provider, appears to be very limited, the exceptions being Belgium, Finland, and Sweden. This finding is rather surprising given that those countries noted for their advocacy of private market mechanisms—generally the

English-speaking countries—do not seem to have employed such mechanisms in social security. On closer examination, it would appear that these countries have introduced internal markets into the delivery of social security, including the outsourcing of 'non-core' activities such as computing and the establishment of purchaser-provider relationships. By contrast, in those continental European countries that provide some level of choice, the competing funds must all provide benefits that satisfy the legislative requirements, and competition is more in terms of the level of service provided. For example, in Belgium, employees can now choose which fund to register with for sickness and unemployment insurance, and employers can select which fund should provide family allowances.

Computerisation has had some effect in increasing the influence of the market model, the exceptions being the Netherlands, where it appears to have reduced the importance of this model, and Belgium, Denmark, Finland, and the USA, where no change was reported. The contribution of computerisation appears to have been to increase the extent to which governments purchase the delivery of social security from non-governmental organisations, but computerisation has had a minimal effect so far on the ability of users to choose their preferred service provider.

An increase in managerialism is often associated with a shift to markets. However, our findings indicate little correspondence between the managerial and the market models in national social security systems. These observations probably reflect the fact that managerialism has, to date, led to outsourcing and the creation of internal or quasi markets, rather than open competitive markets. Whether such a progression will occur remains an open question. Countries where the market model is strong are generally those with a long history of many social security organisations delivering benefits that are defined by statute. This form of arrangement can be found in many of the countries of continental Europe, in particular Belgium and Germany.

Surveillance and Data Protection

In our 2000 survey, informants were asked about the effects of computerisation from 1985 to 2000 on a range of surveillance and data protection issues. The results are set out in Table 11.

With one exception, informants from all countries reported that the sharing of data is constrained by data protection legislation (the one exception was Canada, where the response was neutral). In the large majority of cases, they noted that data protection legislation extends to private computer firms working for government agencies (there were three exceptions: Canada and Sweden, where the responses were neutral, and the UK, where it was negative). Informants from most countries reported that the accuracy of input data is checked against data from independent sources, that review processes of claimants have increased as a result of computerisation, and that *the timing of policy change is constrained by continuing considerations*.

On other issues, there was less agreement among informants from the various countries. For example, informants from Australia, Canada, Finland, the Netherlands, Norway, and Sweden agreed that the identification of overpayments is given higher priority than the identification of underpayments, but informants from Belgium, France, Germany, the UK, and the USA disagreed that this was the case. Similarly, informants from Belgium, Finland, Ireland, Norway, Sweden, and the USA agreed with the statement 'the computer gives reasons for its decisions', while those from Denmark and the Netherlands disagreed.

Few informants reported that computerised benefit systems could be accessed either by applicants or their representatives. The only informants to report that this was the case were from Sweden, Ireland, and the USA. The informants from the UK and the USA were the only ones to state that copies of benefit decision-making programmes were available to external persons. Moreover, there was general agreement that claimants had not been involved in the design of computer systems in social security.

Relationships Between Policy Makers and Computer Professionals

Informants were asked who, in mid-2000, provided computing services for social security institutions in each of the following four areas: hardware, software development, the management of computer processing, and IT training for staff.

Figure 6 on page 38 reveals that in mid-2000 the great majority of countries used private IT contrac-

Table 11: Effect of Computerisation on Surveillance and Data Protection, 1985–2000

	Number of countries agreeing	Number of countries neutral	Number of countries disagreeing
Sharing of data is constrained by data protection legislation.	12	1	0
Data protection legislation extends to private computer firms working for government agencies.	10	2	1
Review processes of claimants have increased as a result of computerisation.	9	3	1
The accuracy of input data is checked with data from independent sources.	9	2	2
The timing of policy change is constrained by computing considerations.	9	0	4
The identification of overpayments is given higher priority than underpayments.	6	2	5
The computer system gives reasons for its decisions.	6	5	2
The benefit decision-making system can be accessed by applicants or their representatives.	3	4	6
Copies of the benefit decision-making programme are available to external persons, e.g., to lawyers, welfare rights workers, academics, or the general public.	2	3	8
Claimants (and/or organisations representing them) have been involved in the design of computer systems in social security.	0	2	11

tors to provide computer hardware. In most countries, in-house staff were used for the management of computer processing. It is clear that there was a greater mix of providers for supplying computer software and IT training.

Table 12 on page 38 shows that there were very different patterns in different countries. For example, Belgium used in-house contractors or a government IT agency for all the services described; Denmark and Germany used private contractors for most services; the UK used private contractors for all services; while the USA used in-house staff for all services except for supplying hardware.

Further questions were asked about the ways in which the supply of services had changed. Most informants reported that there had been no significant changes since 1985. However, informants reported a trend towards using in-house contractors in Australia, and a trend towards outsourcing IT developments was reported by informants from Ireland, the Netherlands, Sweden, and the UK.

Most informants (those from Australia, Belgium, Canada, Denmark, Finland, Germany, Ireland, Norway, and the USA) felt that IT professionals were the driving force behind new technologies. However, they also

Definitions of Computer Professionals

In-house staff: IT professionals employed as public servants

In-house contractors: Private IT contractors working alongside government IT staff where government maintains management responsibility

Private IT contractors: Outsourcing an IT function to private management, usually off site from the government organisation

Government IT agency: Using a specialised government-owned IT agency to provide IT services

Figure 6: Providers of Computing Services, Mid-2000

Number of countries

Legend:
- ■ In-house staff
- ☐ In-house contractors
- ▨ Private IT contractors
- ▨ Government IT agency
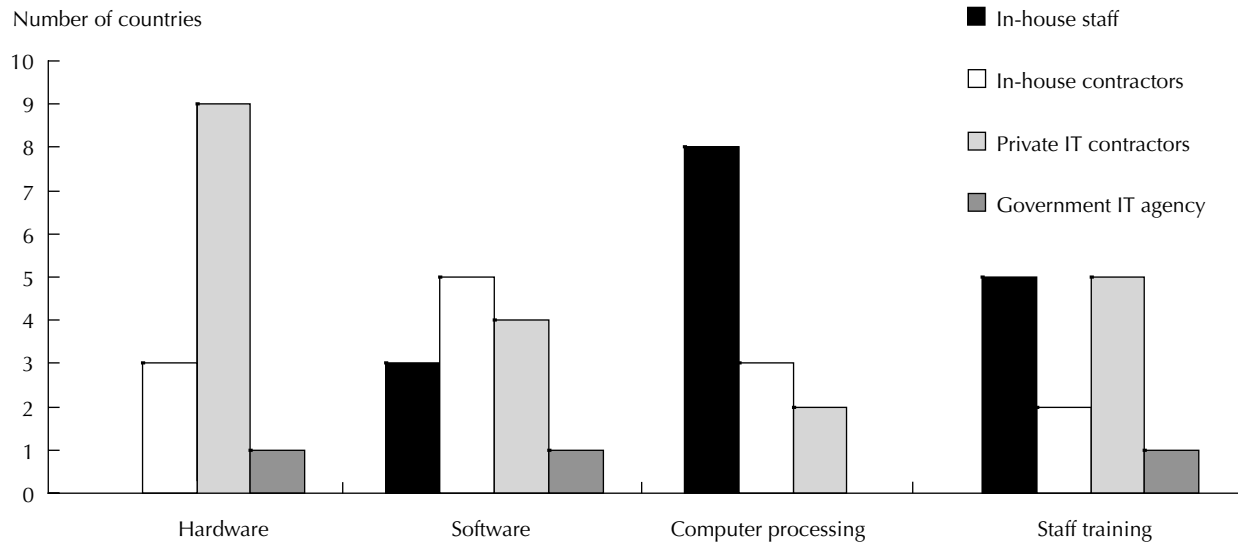
indicated that they acted in conjunction with policy makers. On the other hand, informants from France, the Netherlands, Sweden, and the UK believed that new technologies were largely driven by government.

Informants from Australia, Belgium, Canada, France, the UK, and the USA reported that decisions about computer systems either were the result of negotiation or were taken following consultation between government officials and others, in particular computing professionals. Some pointed out that decisions involving major items of expenditure were made at government level. One Canadian respondent felt that although decisions were the result of negotiation, computing professionals played the lead role because of the technical nature of the decisions and noted that 'soft policy' issues, such as the effect on claimants, were sometimes overlooked. Informants from Denmark,

Finland, Germany, Ireland, and the Netherlands reported that government officials or social security institution officials made the key decisions.

A majority of informants replied that checks on the legal accuracy of the computer programme were undertaken by testing the software and by audit once the software was in place. Informants from Australia and the Netherlands noted that the courts had picked up some problems when people had complained or appealed.

Most informants thought that the accountability of providers to the government was achieved through the enforcement of contracts. However, one of the UK informants pointed out that even rigid contractual requirements and penalties were not always effective.

Table 12: Average National Responses for the Provision of Computer Services, 2000

	AUS	BEL	CAN	DEN	FIN	FRA	GER	IRL	NL	NOR	SWE	UK	USA
Hardware supplies	C	B	D	C	C	C	C	C	C	B	B	C	C
Software development	B	B	C	D	B	A	C	A	B	C	B	C	A
Management of computer processing	A	B	A	C	B	A	A	A	A	A	A	C	A
Staff training	A	D	C	C	A	B	C	B	C	A	A	C	A

Coding: *A = in-house staff, B = in-house contractors, C = private IT contractors, D = government IT agency*

New and Emerging Technologies

We asked informants about the level of use of new and emerging technologies and about the level of consideration being given to such technologies.

Level of Use of New and Emerging Technologies

In mid-2000, informants were asked about new technologies and technological capabilities and whether or not they were in use or planned at the time. They were presented with 16 new and emerging technologies and asked to rate them on a 5-point scale as follows: in widespread use = 4; in limited use = 3; pilot projects undertaken = 2; introduction planned = 1; not implemented or planned/ no answer = 0. Figure 7 on page 40 presents the data in the form of a bar chart, with those new technologies and technological capabilities in most widespread use on the left and those that are furthest away from implementation on the right.

The most widespread of the new technologies was the Internet (with an average score of 3.7 out of 4), followed by data-matching (3.4) and the development of data networks among social security institutions (3.1). Five new technologies were in more limited use: the development of data networks between social security institutions and other public organisations (2.9), computer modelling, e.g,. for policy analysis (2.8), call centres/service centres (2.8), electronic data networks between social security institutions and private organisations, e.g., banks (2.6), and 'one-stop shops' (2.6). Five other new technologies were still at the pilot or planning stage: 'expert systems' (2.0), publicly available benefit calculators (1.8), touch-screen kiosks (1.7), smart cards (1.7), and magnetic strip cards (1.3). Finally, three new technologies had not yet gotten to that point:

Internet phones (0.8), access through interactive television (0.6), and electronic purses or wallets (0.2).

In late 2004, informants were asked a similar question about 22 new and emerging technologies. This time they were asked to respond using a 3-point scale as follows: in widespread use = 2; in limited use = 1; not in use = 0. Figure 8 on page 40 presents the resulting data.

Electronic data networks among social security institutions were the most widespread (with an average score of 1.9 out of 2). The Internet and call/service centres were found to be the second most widespread of the new technologies (1.8). These technologies were closely followed by an integrated computer system within each social security institution (1.7). Other technologies in widespread use in late 2004 were fully online computer systems (1.6) and data-matching (1.6). Seven technologies were found to be in more limited use: one-stop shops (1.4), electronic data networks between social security and other public organisations (1.3), expert systems for claim assessment (1.2), publicly available benefit calculators (1.1), touch-screen kiosks (1.1), electronic business-to-government transactions (1.1), and client self-service (1.0). Three technologies—computer modelling (e.g., for policy analysis) (0.9), smart cards (0.8), and electronic data networks between social security and private institutions (0.7)—have not yet reached limited use in all countries. Six technologies were found to have no use or minimal use: client self-assessment of new claims (0.5), Internet phone access (0.5), magnetic strip cards (0.4), SMS messaging to clients (0.3), electronic purses/wallets (0.2), and access through interactive television (0.2).

Figure 7: Level of Use of New and Emerging Technologies, 2000

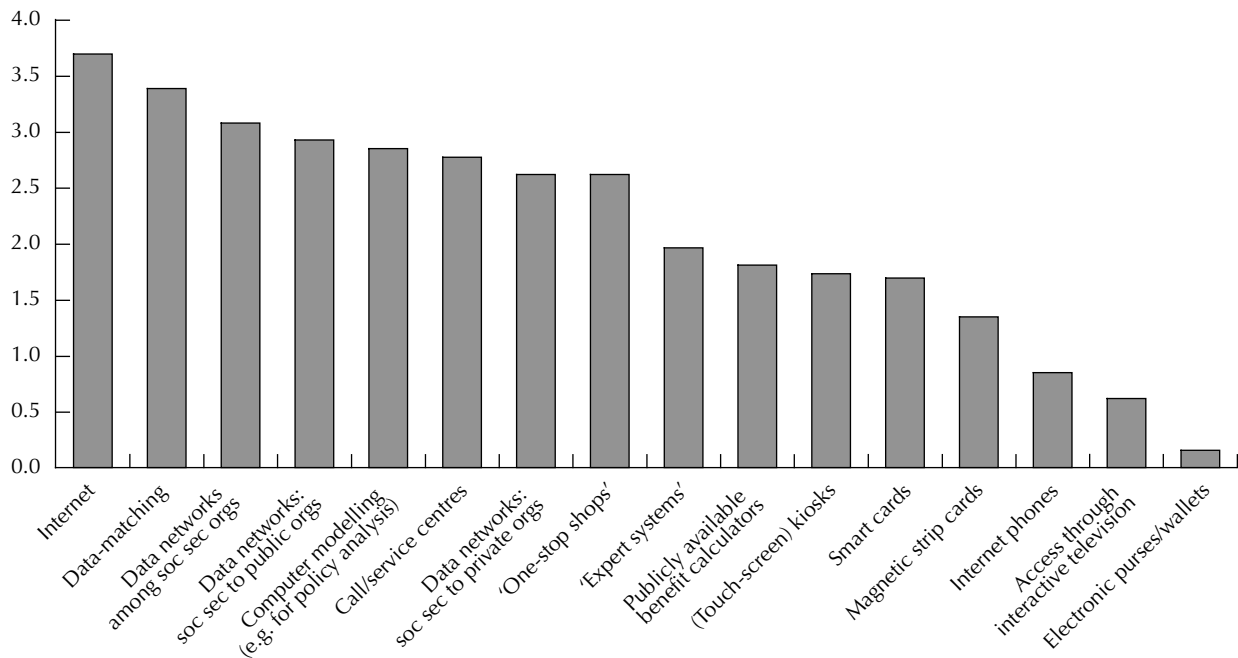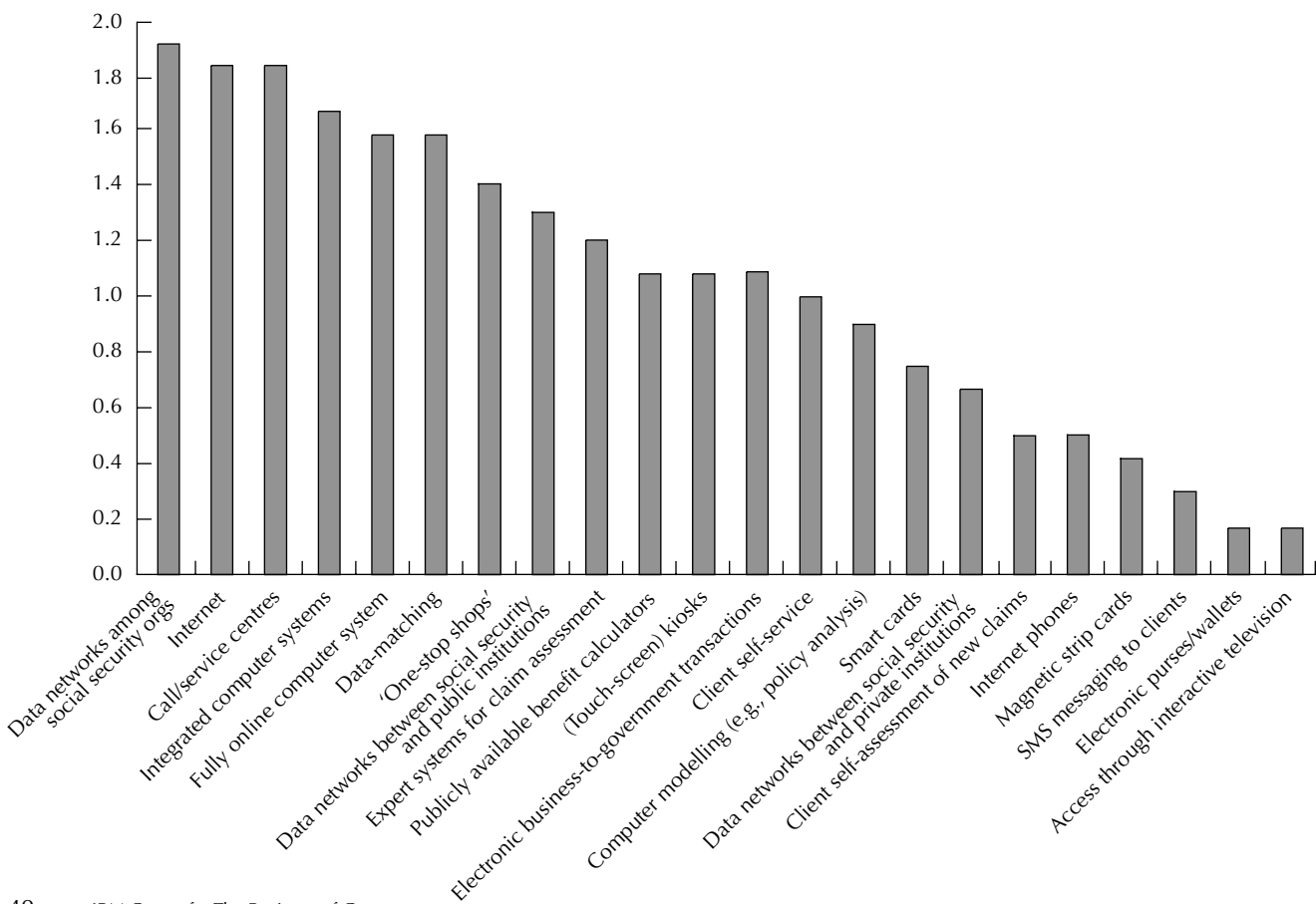**Average of responses, from 0 (not implemented or planned)
to 4 (in widespread use)**

Figure 8: Average Level of Use of New and Emerging Technologies, 2004

**Average of responses, from 0 (not in use)
to 2 (in widespread use)**

When comparing the results from late 2004 with those from mid-2000, and taking into account the different scales, electronic data networks between social security institutions and call/service centres increased from limited to widespread use. Other technologies which appear to have increased in use are: one-stop shops, the use of electronic data networks between social security institutions and other public organisations, expert systems, publicly available benefit calculators, and smart cards. However, the penetration of the Internet, data-matching, electronic data networks between social security institutions and private organisations, and computer modelling remain much the same, as have many of the technologies in minimal use.

Figure 9 depicts the level of use of new and emerging technologies in each country. The level of use is based on the extent of use of all the technologies surveyed. It shows that some countries have taken up a greater range of new technologies than others and thus might be considered more innovative. At first glance, Figure 9 seems to suggest that some countries have reduced their level of use of new and innovative technologies. However, this is an artifact of the fact that we asked informants about six new technologies not covered in the earlier survey. Despite this, the data suggest that there have been some changes in country rankings of the level of use of new and emerging technologies. Canada has slipped from first to third place, whereas the UK has moved from third to second place, and Australia from second to first place. Most notably, the Netherlands has slipped from fourth place (out of 13) to last place (out of 8), and the USA has moved from seventh place (out of 13) to fourth place (out of 8). Only Sweden registered an increase in the level of use of new and emerging technologies, suggesting a significantly increased focus in new and emerging technologies between 2000 and 2004.

Figure 9: Level of Use of New and Emerging Technologies by Country

■ 2000
■ 2004
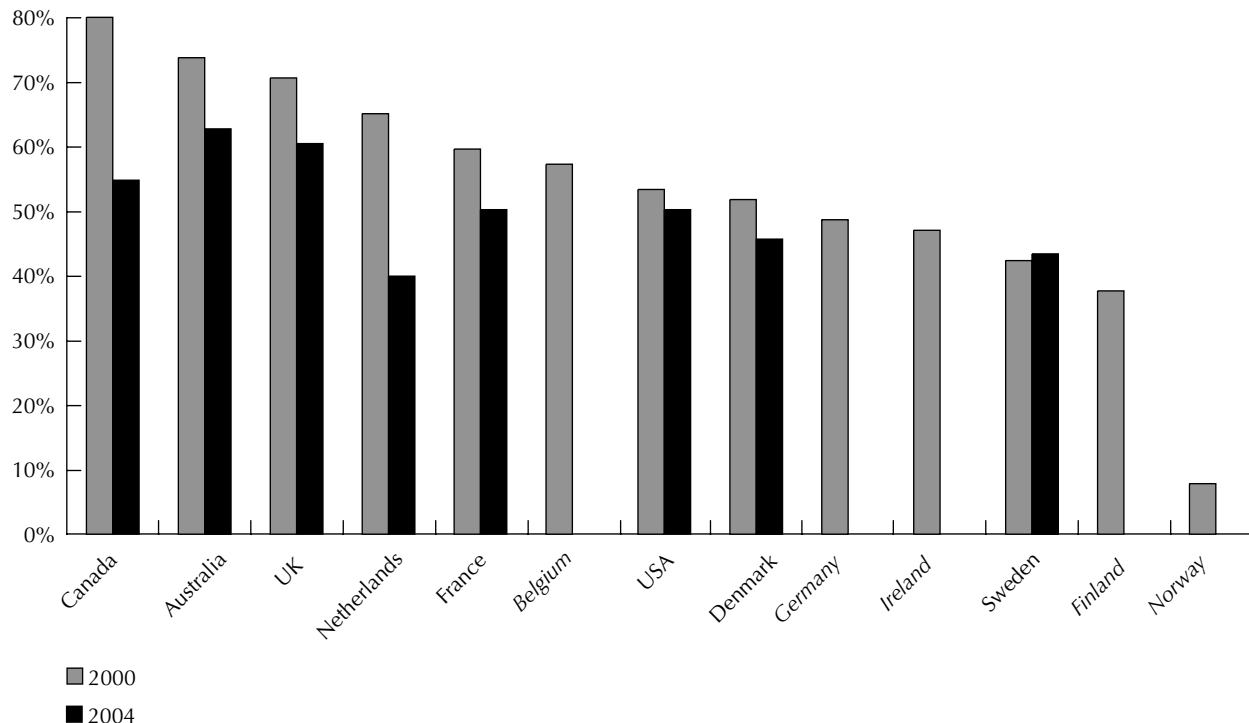
Note: Each country was given a rating based on the extent to which the respondents indicated that different technologies were in use. For example, a score of 2 was given for full computerisation of a particular technology, 1 for part computerisation, and 0 for none. In the 2000 survey, the highest possible score was 32, whereas in 2004, it was 44. The figure shows percentage scores out of the maximum possible in each survey.

Country names in italics are those that did not participate in the 2004 study.

There appears to be a pattern of development indicating that the English-speaking 'liberal welfare states' have been the most willing to use innovative technologies, while the Scandinavian 'social democratic welfare states' have been the least willing to do so.

Canada, Australia, and the UK appear to have applied these new technologies most extensively, reporting that all the different technologies are either in use or planned. There is more variation in most of the other countries, with a number of technologies in widespread use, others at the pilot planning stage, and others not even under consideration.

Norway stands out as a country that makes very little use of new and emerging technologies. In mid-2000, the Norwegian informants described the Internet as being 'in limited use' and the introduction of electronic data networks between social security institutions and other organisations as being at the planning stage.

Combining the data in Figures 7 and 9 produces quite a complex picture. In mid-2000, of the technologies mentioned, the Internet was most often described as in 'widespread use'. This was reported to be the case in nine countries, while in the remaining four (Belgium, Finland, Germany, and Norway) its use was described as 'limited'—for a detailed study of variations in Internet usage, see Nickless and Duggan (1999). Data-matching was described as being in widespread use in 10 of the 13 countries in the 2000 study, the exceptions being Finland, Germany, and Sweden. Electronic data networks among social security institutions and between social security institutions and public organisations were also well developed, with most countries describing them as being either in widespread or in limited use. Electronic data networks between social security institutions and private organisations appeared to be less well developed than between social security institutions and public organisations in Denmark, Sweden, the Netherlands, and the UK. Computer modelling for policy analysis was reported as widely used in Belgium, Denmark, France, and the USA, and used to some extent in all other countries except Norway.

Next came a range of technologies that in mid-2000 were reported as being more widely used in some countries than others. Call/service centres are reported as being widely used in Australia, Canada, Sweden, the UK, and the USA, and used to some extent in France, Germany, and the Netherlands. In other countries, informants refer to pilot projects, planned introduction, or no forms of development at all. 'One-stop shops' were widely used in Australia, Canada, Denmark, Ireland, and the UK, and used to some extent in France, Germany, the Netherlands, and Sweden.

In mid-2000, expert systems were mainly at the pilot or planning stage, with the exception of Canada, the Netherlands, the UK, and the USA, where they were described as being in limited use. Publicly available benefit calculators were likewise at a pilot or planning stage, except in Canada, Germany, Sweden, the UK, and the USA, where limited use was made of them. The use of smart cards was apparently even more varied: Informants in Belgium and France described them as being in widespread use; informants in most other countries reported that they were still at the pilot or planning stage; while those in Ireland, Norway, and the USA reported that there were currently no plans to introduce them. Touch-screen kiosks were widely used in Canada and to some extent in the Netherlands; all other countries (except Finland and Norway) reported that they were at the pilot or planning stage.

Magnetic strip cards were not described anywhere as being in widespread use, although some use was made of them in Australia, Canada, and Ireland, and they were reported to be at a pilot stage in Denmark, Germany, the Netherlands, and the UK. Internet phones were not under consideration in most countries, although some use was made of them in Belgium and Canada, and they were reported to be at a pilot stage in Australia, the UK, and the USA. Access through interactive television was likewise not being considered in most countries, although some use was reported in Canada, it was at a pilot stage in Australia and the Netherlands, and planned in the UK. Electronic purses or wallets were the least used of the new technologies, with only Australia and Canada planning their introduction and no countries actively using them.

In the first survey, informants also were asked about the use of six new technologically facilitated aspects of claiming, determining entitlement to, and paying benefits. These activities or processes—which com-

Table 13: Extent of Use of New and Emerging Technological Capacities, 2000

	Number of Countries				
	Widespread use	**Limited use**	**Pilot projects**	**Total**	**Average Rating***
Electronic payment of benefits	11	1	0	12	3.9
Automated determination of entitlement	9	3	0	12	3.8
Electronic receipt of contributions	9	2	0	11	3.8
Computer simulations	6	5	1	12	3.4
Customisation of payments	2	3	1	8	2.5
Claiming benefits online	1	5	4	11	2.5

* Scale from 0 = not in use or planned to 4 = widespread use

prised claiming benefits online; electronic receipt of contributions; automated determination of entitlement; electronic payment of benefits, e.g,. automated credit transfer; customisation of payments, e.g., payment of advances; and computer simulations of new policy proposals to assess impacts and costs—were chosen on the grounds that they were most likely to give an accurate picture of the state of affairs at the time informants were surveyed in mid-2000. They were rated on the same 5-point scale, and the results are set out in Table 13.

Table 13 shows that the most common uses of new technological capabilities were for electronic payment of benefits, automated determination of benefit, and electronic receipt of contributions, which—with one exception (Norway)—were described as being in widespread or limited use by all countries in the study. Computer simulations of new policy proposals also were described as being in widespread use or limited use by nearly all countries. The least well used of these technological capabilities related to the customisation of payments, which was described as being in widespread use in two countries, and claiming benefits online, which was reported as being in widespread use in only one country.

Some countries were clearly much more advanced in their use of new technological capabilities than others. Informants from eight of the 13 countries in the study (Australia, Belgium, Canada, Denmark, France, Germany, the UK, and the USA) reported that three or more of the six capabilities were in wide-

spread use. On the other hand, informants from five countries (Finland, Ireland, the Netherlands, Norway, and Sweden) reported that only one or two were in widespread use. The inclusion of three of the four Scandinavian countries in this list is rather surprising.

These findings reinforce the earlier observations that the liberal Anglophone countries of Australia, Canada, Ireland, the UK, and the USA tend as a group to be more hi-tech and readily receptive of new technologies for public administration than other country groupings.

Level of Consideration Given to New and Emerging Technologies

We also sought to gauge the level of the importance attached to the introduction and development of new and emerging technologies. Using the technologies listed in Figure 7, informants indicated in mid-2000 whether no consideration (score = 0), some consideration (1), or a great deal of consideration (2) was given to the introduction of each technology. The results are set out in Table 14 on page 44.

Table 14 shows that at the time of the survey in mid-2000, the introduction of many new and emerging technologies was being given considerable attention, with an integrated computer system within each social security system given, on average, the greatest level of consideration among the countries surveyed (score 1.73). This was closely followed by Internet access through computers (1.69), electronic data net-

Table 14: Number of Countries Giving Priority to Specific New and Emerging Technologies

Technology	International Average*	Number of countries including it as a top 3 priority	
	2000	2000 (N = 12)	2004 (N = 8)
Integrated computer system within each social security institution	1.73	4	3
Internet access through computers	1.69	9	7
Electronic data networks among social security institutions	1.67	3	1
Data-matching	1.58	0	3
Call/service centres	1.46	3	4
'One-stop shops'	1.46	3	2
Fully online computer systems	1.42	4	3
Electronic data networks between social security institutions and public organisations	1.38	1	1
Smart cards	1.35	6	1
Electronic data networks between social security institutions and private organisations	1.21	1	0
Computer modeling for policy analysis	1.21	0	0
'Expert systems' (for claim assessment)	1.19	1	0
Publicly available benefit calculators	0.92	1	0
Magnetic strip cards	0.79	1	1
(Touch-screen) kiosks	0.71	1	1
Access through interactive television	0.54	0	0
Internet access through mobile phones	0.46	0	0
Electronic purses/wallets	0.42	0	0
Client self-service	NA	NA	2
Electronic business-to-government (B2G) transactions	NA	NA	1
Client self-assessment of new claims	NA	NA	0
SMS messaging to clients	NA	NA	0

Notes: * Scale: 0 = none to 2.0 = 'a great deal'
Items in italics were not included in the 2000 survey (also indicated as NA).

works among social security institutions within a single country (1.67), data-matching (1.58), call/service centres (1.46), 'one-stop shops' (1.46), fully online computer systems (1.42), and electronic data networks between social security institutions and private organisations (1.38). The technologies that were given least consideration were electronic purses/wallets, Internet access through mobile phones, and access through interactive television.

When these findings are compared with the extent to which new and emerging technologies were already in use, there is a very high level of similarity. Those new and emerging technologies that already had a greater level of use and penetration were those technologies whose implementation and development was being given greater consideration.

Table 14 also shows the number of countries including a particular new technology in their top three priorities for development and introduction in mid-2000 and in late 2004. In mid-2000, access to the Internet was among the top three priority priorities in nine of the 12 countries (there was no response from Denmark)—the exceptions being Australia, Germany, and the UK. By late 2004, almost all countries surveyed (seven of eight) included the Internet in their top three aims, the exception being the Netherlands. This would seem to be because these countries make widespread use of the Internet. However, as Nickless and Duggan (1999) have observed, there are a number of levels of Internet usage, ranging from the provision of passive generalised information to more personalised and interactive modes of operation. To date, no country has developed personalised and interactive services through the Internet to any significant extent. However, our 2004 survey shows that client self-service (both through the Internet and through the telephone) is a priority in two countries.

In mid-2000, smart cards were among the top three priority technologies in the next highest number of countries (six). These countries—Belgium, Denmark, Finland, France, Ireland, and Sweden—are, with one exception (Ireland), all continental European countries. One might speculate that smart cards have not made much headway in liberal welfare states because of the greater suspicion of the state and greater concern with privacy in these countries. However, by late 2004, smart cards significantly lost priority as an area of development and were listed as a priority only in

France. This could be because they have been implemented as far as possible and no further development work is required. However, a more realistic reason is that the technology was not found to be as useful as had been expected in 2000.

Interestingly, including a technology in a country's top three priorities is not closely related to the average level of consideration given to the introduction of that technology. For example, in mid-2000, data-matching was ranked fourth in the importance attached to its introduction, but no country regarded it as a priority technology. By late 2004, three countries (Australia, the Netherlands, and the UK) regarded it as a priority technology. This disparity reflects the great variation in priorities across countries.

Between mid-2000 and late 2004, data-matching, call/service centres, electronic data networks between social security and public organisations, and possibly fully online computer systems have increased in priority. At the same time, smart cards and publicly available benefit calculators have reduced in priority.

Level of E-Government

In our 2004 survey, we also asked a question to identify the level of online presence of each country's social security system. Fourteen items of online functionality were provided to informants, who were asked to rate them on a 3-point scale as follows: in widespread use = 2; in limited use = 1; not in use = 0. Table 15 provides the average availability score for each online function.

Table 15 shows that two online functions—each social security organisation has its own website (2.0) and agency brochures are available online (1.9)—have widespread availability. Somewhere between limited and widespread use are two other online functions: an overarching national social security portal (1.4) and online rate calculators to estimate eligibility and pay rates (1.4). In limited use are online claim forms (1.1), online client access to personal details (0.9), online client update of personal details (0.8), online lodgment of new claims (0.8), and online self-assessment of new claims (0.7). Online functions which have little or no use are online rate calculators linked to client's personal details (0.6), integrated online service (0.5), booking appointments online (0.5), full online self-service (0.5), and lodging appeals online (0.4).

The various items of online functionality indicate the level of online presence of a country. Figure 10 shows that of a maximum score of 28, the USA has the highest score of 17. Most other surveyed countries were not far behind: France (16), Canada (15), Sweden (14), Australia (13.5), UK (12.5), and Denmark (12). The Netherlands was found to have the lowest online presence (10). These results are reasonably consistent with other international research about country levels of e-government. In 2004, the United Nations found that the USA,

Denmark, and the UK were the top three countries of those surveyed (2004). Accenture (2004) found that of the countries included in our study, Canada, USA, and Australia were the top three countries in the level of maturity of e-government. Of the other countries included in our study, Darrell M. West (2004) found that the USA, Canada, and Australia were ranked first, second, and third in the level of e-government globally in 2004. However, in 1999, Nickless and Duggan (1999) examined the level of functionality of European social security websites and found the three top countries to be Finland, Ireland, and Sweden, with the UK fifth of the 12 countries surveyed.

It is interesting to note that the country rankings of online functionality (Figure 10) do not directly relate to the country rankings for the level of new and emerging technologies (Figure 9). For example, for 2004, the USA is listed first in online functionality and fourth in the usage of new technologies. This result occurs because the latter includes many other technologies in addition to the Internet and World Wide Web. However, it illustrates that while the USA, for example, has been a leader in the use of the Internet, it has put its energies into this technological platform and given relatively less attention to a wider range of new and emerging technologies, such as smart cards, electronic purses/wallets, and Internet access through mobile phones and interactive television.

Table 15: Average Level of Online Presence by Function, 2004

	Average*
Each social security organisation has its own website	2.0
Agency brochures available online	1.9
There is an overarching national social security portal website that provides an overview and links with each social security agency	1.4
Online rate calculators to estimate eligibility and pay rates	1.4
Online claim forms	1.1
Clients can access their personal details online	0.9
Clients can update their details (such as income and address) online	0.8
Clients can lodge new claims online	0.8
Online self-assessment of new claims	0.7
Online rate calculators are linked with client's personal details	0.6
Integrated online service, so that data input on one website flows through to several social security agencies	0.5
Clients can book appointments online	0.5
Full online self-service	0.5
Clients can lodge appeals online	0.4

Notes: * scale: 0.0 to 2.0 (not in use = 0; in limited use = 1; in widespread use = 2)

Figure 10: Level of Online Functionality in Each Country, 2004

Total score for indicators of online functionality
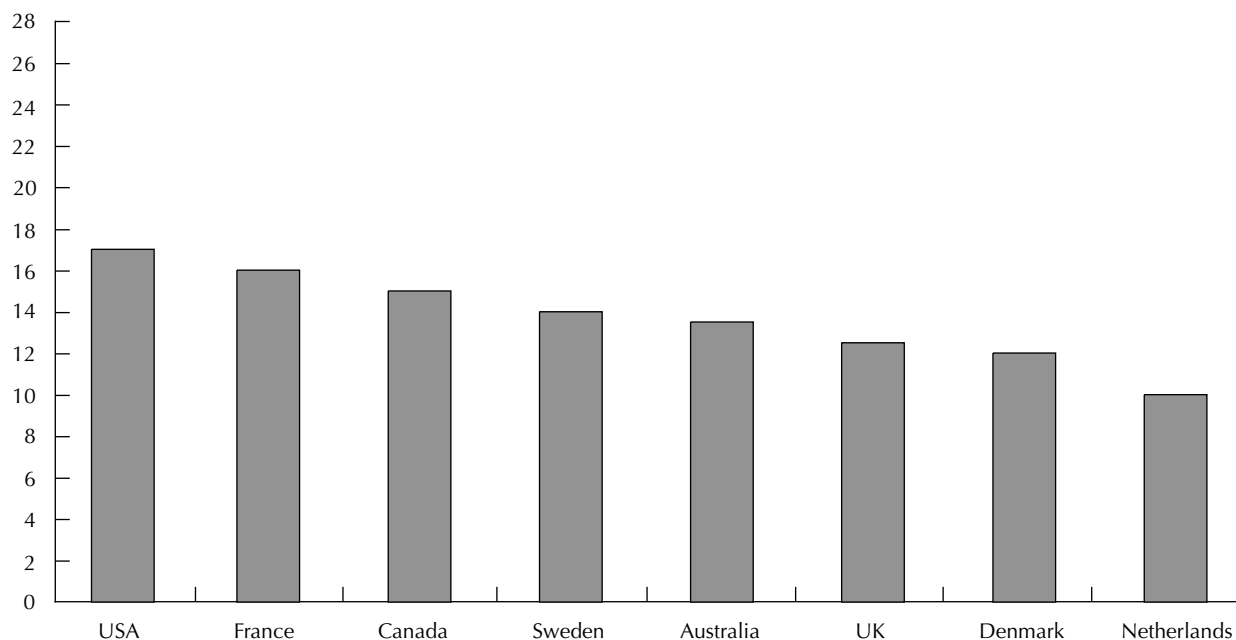
Note: *Each country was given a rating based on the level of online functionality indicated by respondents. For example, a score of 2 was given for widespread use of a particular function, 1 for limited use, and 0 for not in use. The highest possible score was 28.*

Conclusions

In interpreting the responses to our survey questions, we need to acknowledge weaknesses in our data and to be modest about our conclusions. Many of the questions we asked were far from straightforward and any analysis of the responses must bear this in mind. In particular, in countries where there are a variety of social security institutions, our informants sometimes had to make a 'best guess' at an appropriate response to questions dealing with areas they were not familiar with. Informants who were very well informed about the present may likewise have had to make a 'best guess' in answering questions relating to the past. Similarly, informants who were very well informed about the recent past may likewise have had to make a 'best guess' when answering questions relating to the present and the future. While many expert informant studies allow informants to consult published sources on a clearly defined topic, there were no readily available sources that informants could have consulted on this particular topic.

One aim of this comparative international study was to assess the extent to which one can generalise about the aims and impact of computerisation in social security in a number of countries with very different types of provision. An analysis of the responses of our expert informants indicates that, to a certain extent, we can and that the similar experiences of different countries suggests that technological imperatives do, to some extent, determine what computers are used for and what their consequences are. However, the differences in the experiences of different countries show that social factors are also important in shaping how technologies are constructed, adopted, and put to use. Although computers are frequently used to assist in the achievement of management objectives—for exam-

ple, cutting costs and increasing efficiency, rather than supporting the needs of clients and customers—the many differences in the experiences of the 13 countries in this study are all too evident. Thus, although technical imperatives are undoubtedly important, an understanding of social factors is essential for understanding the uses to which computers are put by social security institutions and the consequences for clients, staff, and policy makers.

Summary of Findings

1. Most countries computerised their social security systems during the 1970s and early 1980s—Germany, Australia, and the USA did so earlier (in the mid-1950s), but Belgium did not do so until the mid-1980s.

2. Paying benefits, assessing entitlement to benefit, and maintaining contribution records were among the first functions to be computerised.

3. The most widespread computerised functions today are paying benefits, implementing changes to benefit rates, financial accounting, assessing entitlement to benefit, and maintaining contribution records.

4. Although the extent of computerisation is greatest for social insurance and least for social assistance and housing allowances, all types of benefits are, at least to some extent, computerised today.

5. The aims that were regarded as the most important in the period 1985–2000 were increasing productivity, improving decision making, cutting costs, increasing responsiveness, and managing complexity. Cutting costs is given highest priority today.

6. Experts believe that computerisation achieved the predicted level of savings in the period 1985–2000, but are much less confident that predicted savings were achieved in the period 2000–2004.

7. Computerisation has led to an increase in the importance of bureaucracy and managerialism in the delivery of social security.

8. As at mid-2000, the most common uses of computer technology were for electronic payment of benefits, automated determination of benefits, and electronic receipt of information. Four years later, the most common uses were for the Internet and for establishing electronic data networks between social security institutions.

9. Some countries are clearly much more advanced in their use of new technologies than others—the English-speaking 'liberal welfare states' (Australia, Canada, and the USA) appear to have been the most innovative while the Scandinavian 'social democratic welfare states' (Denmark, Norway, Sweden, and Finland) appear to have been less so.

10. In late 2004, the USA had the highest level of online functionality, but other countries were not far behind. Online functionality was lowest in the Netherlands.

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We are extremely indebted to all our expert informants, who put a great deal of time and effort into answering our questionnaires. Without their input, this study could clearly not have been conducted. Although we rely heavily on their responses to the questionnaire, we are responsible for any errors in interpreting and analysing the information they provided for us.

Appendix: Study Informants

(Affiliation at time of serving as informant)

Australia
Dr Paul Henman (2000 & 2004)
Department of Social Work and
Applied Human Sciences
University of Queensland

Vic Rogers (2000) (now retired)
General Manager
Business Assurance Services
Centrelink

John Wadeson (2004)
General Manager
New Business Solutions
Centrelink

Belgium
Prof. Bea Van Buggenhout (2000) (now deceased)
Institute of Social Law
K.U. Leuven
Leuven

Frank Robben (2000)
Administrateur-Generaal
Kruispuntbank van de Sociale Zekerheid
(Crossroads Bank for Social Security)
Brussels

Canada
Dr Cynthia J. Alexander (2000 & 2004)
Political Science
Acadia University
Wolfville, Nova Scotia

Ms Nada Semaan (2000)
Development Program Policy and Planning
Income Security Programs
Department of Human Resources
Ottawa

Denmark
Steen Bengtsson (2000 & 2004)
Senior Researcher
Danish Institute of Social Research
Socialforskningsinstituttet
København

Soren Edelfsen (2000)
Vice President
Kommunedata International

Finland
Matti Toiviainen (2000)
Deputy Director
Insurance Department
Ministry of Social Affairs and Health
Helsinki

France
Norbert Paquel (2000 & 2004)
Director
Canope
Paris

Jacques Sauret (2000 & 2004)
Directeur
Agence pour le développement de l'administration
électronique (ADAE)
Paris

Germany
Prof. Lutz Leisering (2000)
Universität Bielefeld
Fakultät für Soziologie
Bielefeld

Bernhard Ritz (2000)
German Employees' Pension Insurance

Ireland
Frank Bannister (2000)
Department of Statistics
Trinity College
Dublin

Rory O'Shea (2000 & 2004)
IBM Global Social Segment
Dublin
(now retired)

Netherlands
Dr Arre Zuurmond (2000 & 2004)
Zenc
(IT firm working for public sector)

Paul Zeef (2000)
Ministry of Social Affairs and Employment
Department of Analysis and Research
The Hague

Wijnand Heijnen (2004)
Consultant BK WI
Amsterdam

Norway
Professor Dag Wiese Schartum (2000)
Section for Information Technology and
Administrative Systems
University of Oslo
Oslo

Ms Elizabeth Sunde (2000)
Benefits Department
Rikstrygdeverket
(National Insurance Administration)

Anders Ekeland (2004)
Norwegian Institute for Studies of Innovation,
Research and Education (NIFU STEP)
Oslo

Sweden
Dr Agneta Ranerup (2000)
Department of Informatics
University of Göteborg
Göteborg

Bengt Sibbmark (2004)
Social Ministry
with Jan Andersson
National Social Insurance Board

United Kingdom
Professor Christine Bellamy (2000 & 2004)
Department of Public Administration
Nottingham Trent University
Nottingham

Gerry Mulrooney (2000 & 2004)
Manager, External Communication
ITSA

United States of America
Dick Eckert (2000)
Social Security Administration
Baltimore MD USA

Dean Mesterharm (2004)
Social Security Administration

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A B O U T   T H E   A U T H O R S

Michael Adler is Professor of Socio-Legal Studies in the School of Social and Political Studies at the University of Edinburgh, where he has been since 1971. With the exception of periods of leave spent at the Center for Law and Society at UC Berkeley, the Centre for Socio-Legal Studies at Oxford University, and the Faculty of Laws at University College, London, he has taught and carried out research in Edinburgh continuously since then. His main research interests focus on the interface between public law and social policy. He has just completed a small-scale development project—funded by the Nuffield Foundation—on administrative griev-ances. His hope is that this will eventually lead to a large-scale survey of the problems people experience in their dealings with government depart-ments and public bodies, and the ways in which they deal with them. He has recently been awarded a two-year research grant from the British Economic and Social Research Council (ESRC) to carry out research on self-representation in appeal tribunals and a two-year seminar grant—also from the ESRC—to organise a series of seminars for academics and professionals on administrative justice.

In the past, Professor Adler has carried out research in four discrete policy areas: social security, educational policy, penal policy, and consumer credit/consumer indebtedness. Major studies—all with external funding—have been concerned with parental choice in education, decision making in the prison service, assessment of special educational needs, and computerisation in social security. Together with Roy Sainsbury, he undertook research on the 'Social Implications of the *Operational Strategy'*, an early attempt by the UK Government to computerise the entire social security system, which not only resulted in a number of joint publications but also led to an invitation to examine Paul Henman's PhD thesis and to their collaboration on the research described in this report.

Professor Adler teaches a wide range of courses in social and public policy, social and political theory, and meth-ods of social research to students at all levels. These range from courses for first-year undergraduates to courses for students in the doctoral programme in the social sciences. He also supervises a large number of doctoral students, mainly on socio-legal topics or in one of the substantive fields of policy in which he has worked.

He is the co-author—with Alison Petch and Jack Tweedie—of *Parental Choice and Educational Policy,* Edinburgh: Edinburgh University Press (1989) and—with Brian Longhurst—of *Discourse, Power and Justice: Towards a New Sociology of Imprisonment,* London: Routledge (1994), and the editor or co-editor of four other books. In the course of his career, he has published 10 research reports, eight edited collections of papers, and more than 80 articles and book chapters. Together with Professor Frans Pennings (University of Tilburg, The Netherlands), he has edited the *European Journal of Social Security* since its foundation in 1999.

Professor Adler has an undergraduate degree in the Natural Sciences from Oxford University, an AM in Sociology from Harvard University, and a PhD in Socio-Legal Studies from Edinburgh University.

Paul Henman is lecturer in social policy in the School of Social Work & Applied Human Sciences at the University of Queensland, where he was appointed in 2004. Since being awarded his PhD in 1996, his previous positions include senior policy analyst in the Australian Department of Social Security (1996–99), a postdoctoral fellowship at Edinburgh University (1999) and a research fellowship at Macquarie University, Sydney (1999–2004).

Dr. Henman's main area of research interest focuses on the nexus between social policy, public administration, and new information and communications technologies. Together with Mitchell Dean, he has recently completed a three-year study—funded by the Australian Research Council—of e-government in Australia's social security, taxation, and health sectors. He has also undertaken comparative studies of the role of administrative technologies in British and Australian welfare and banking sectors during the 19th and 20th centuries.

Dr. Henman also maintains an active research programme on the expenditure involved in raising children, where he has undertaken seminal work on the costs to non-resident parents in maintaining regular contact with their children. His expertise in this area has called him to provide over 60 expert reports in legal compensation cases, and to serve on an Australian Ministerial Taskforce to reform child support policy.

He is co-editor—with Menno Fenger—of *Administering Welfare Reform: International transformations in welfare governance,* Bristol: Policy Press (2006), and is currently preparing a monograph entitled *E-government: reconfigurations in public administration, social policy and power.* His work is widely published in international academic journals covering a range of disciplines, including sociology, social policy, public administration, social studies of technology, and socio-legal studies.

Dr. Henman has a prize-winning first class honours degree in computer science and a PhD in sociology, both from the University of Queensland.

K E Y   C O N T A C T   I N F O R M A T I O N

To contact the authors:

Michael Adler
School of Social and Political Studies
University of Edinburgh
Adam Ferguson Building
George Square
Edinburgh EH8 9LL
UK
+44 131 650 3931
+44 131 650 3945
Michael.Adler@ed.ac.uk

Paul Henman
Social Policy Unit
Social Work & Applied Human Sciences
University of Queensland QLD 4072
Australia
+61 7 3365 1845
+61 7 3365 1788 (fax)
P.Henman@uq.edu.au

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Executive Director
IBM Center for The Business of Government
1301 K Street, NW
Fourth Floor, West Tower
Washington, DC, USA 20005
(202) 515-4504, fax: (202) 515-4375

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IBM
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Netherlands
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