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## Productivity change in the public sector: innovation, new public management and cultural resistance to 'digital era governance' in UK social security

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# **PRODUCTIVITY CHANGE IN THE PUBLIC SECTOR: INNOVATION, NEW PUBLIC MANAGEMENT AND CULTURAL RESISTANCE TO "DIGITAL ERA GOVERNANCE" IN UK SOCIAL SECURITY**

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*Abstract:*

The analysis of government sector productivity is still in an early stage of development. We look in detail at productivity trends in the UK social security system, which accounts for almost a quarter of total state spending. We look across twenty years, 1998-2008, and in detail at a period of heavy capital investment and modernization spending from 1997-2008 under 'new Labour' governments which created an integrated Department of Work and Pensions (DWP). During the heyday of 'new public management' DWP productivity declined despite new IT and buildings, although in recent years there has been some renewed growth. A programme of highly conservative modernization successfully shifted the UK's social security systems into phone-based methods from paper-based ones. But this change also generated an initial storm of non-value-adding phone calls that took years to eradicate, and meant that DWP made virtually no progress in moving customer contacts online throughout this period.

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Few intertwined topics in public management are more important but yet so little systematically studied as the interplay between policy and administrative innovations (especially structural reform programmes) on the one hand and the development of public sector productivity on the other. In this paper we develop a meso-level analysis of the long-run co-dependence of innovations and productivity within one of the largest and most integrated administrative operations of the UK central state, its social security system, which pays out £138 billion of welfare benefits annually, accounting for 23 per cent of total UK annual public expenditure. Looking across the two decades from 1988 to 2008 we show how a major change programme radically remodelled the giant department involved on archetypal ‘new public management’ (NPM) lines, yet without triggering any sustained or substantial advances in productivity. Instead, the prevailing conservatism of the department’s organizational culture and the inherent limits of NPM in embracing ‘digital era’ changes produced as yet somewhat superficial modernization.

We briefly introduce the limited literature on public sector productivity, showing how this badly neglected topic has recently become salient. Section 2 gives a summary outline of the key structural and organizational changes in the administration of the UK’s social security system over two decades, along with the major investments made in more capital-intensive processes. Section 3 shows that despite the commitment of substantial management efforts and new expenditures the overall period has seen only limited progress in increasing either total factor productivity or labour productivity. Finally, section 4 traces the factors associated with positive productivity changes in UK social security and considers how a cultural resistance to accepting ‘digital era governance’ processes underlay the adoption of only limited and conservative modernization.

## **1. PUBLIC SECTOR PRODUCTIVITY CHANGE AND INNOVATIONS**

Productivity is a key performance measure. Defined as the ratio of outputs divided by inputs, at first glance it seems to be a simple index. In fact, in the private sector, its measurement is rather straightforward. The total volume of outputs for a firm or an industry can be derived from the prices and volumes of the outputs produced and sold. Dividing this amount by the total costs of producing the outputs yields total factor productivity, and dividing outputs by the total number of staff employed yields labour or staff productivity. Where outputs are sold in competitive markets, we can also safely assume that consumers buy what they find most worthwhile, and thus that genuine product innovations will (most often) be reflected in increasing market share

or sales volumes. Competition helps to ensure that firms and industries with better products achieve more sales and hence that over time the proportion of outputs shifts towards the most efficient and innovative producers. Hence the social benefits of innovations are already integrally incorporated in increased productivity.

Transposed to the public sector, productivity has been seen as valuable in indicating how efficiently public resources are employed in providing key government sector services. Public sector productivity is (and must remain) a deliberately limited measure, focusing solely on how many outputs are produced for a given level of inputs (see Figure 1). It needs to be carefully separated from the distinct concept of policy *effectiveness*, which is concerned with how the outputs produced translate (or not) into desired policy outcomes. Because the public sector context is a non-market one, we cannot generally assume that effectiveness is consistently maximized. Instead the translation of outputs into outcomes is likely to be affected by partisan changes of government, individual strategy decisions by ministers or government executives, and ideological hang-ups debarring or privileging certain activities or approaches – for instance, think of the Clinton to Bush and back to Obama changes in whether US overseas aid can help encourage contraception. However, there are some economic arguments which suggest that public policy search processes in liberal democracies will optimize over the long-run, especially where policies are revenue-based (rather than regulatory) and hence a long-run ‘total subsidies = total taxes’ constraint applies.<sup>1</sup> Under the classical politics/administration dichotomy, control over effectiveness decisions rests with (top) politicians, whereas productivity decisions should be ‘owned’ by state bureaucracies. In practice, the allocation of control is muddier than this, but productivity changes are undoubtedly strongly influenced by the co-ordinating systems of budgetary, human resources and other controls in a government organization.

Figure 1 also shows that (as in the private sector) innovations are likely to be an important influence on productivity, through:

- improving the conversion of inputs into outputs for established activities; for example, by reducing the staff numbers needed to accomplish a task;
- introducing new inputs into the production of established outputs; as with the successive waves of back-office computer automation of record-keeping;
- improving productivity using qualitatively new inputs; for instance, pervasively deploying networked automatic cameras on roads to catch speeding motorists, and
- introducing new outputs; for instance, creating electronic tax forms that are simpler and quicker for people or firms to submit.

*Figure 1 about here*

In addition, Figure 1 suggests that many macro-innovation factors in the public sector *cannot* be incorporated into the study of productivity. It might be objected that in Figure 1 some policy-changes should undoubtedly qualify for recognition as top-level innovations. Indeed ministers or government executives will routinely present all policy changes as innovations. But which should these be? No clear methods exist for distinguishing them. Many top-level changes may only represent a ‘churning’ of political priorities; or the cycling through of repeated or re-used solutions; or simply stochastic (‘white noise’) policy shifts in response to new personnel arriving at key positions in the executive branch, recent media priorities or the shifting balance of power in interest group politics. This difficulty strengthens the rationale for focusing narrowly on productivity as the conversion of inputs into outputs, although we shall see below that the picture has become a bit more complicated in recent discussions and evolutions. In addition, in areas like social security or taxation the ‘consumers’ of these changes typically have little or no choice about whether they take up new requirements, but must instead comply at a risk of substantial financial penalty for non-compliance. Hence we have no clear way of distinguishing welfare-enhancing policy changes (which we might well wish to include as innovations) from those which are harmful in welfare terms or that represent only routine or stochastic ‘policy churn’.

This necessary blindness of public sector productivity measures to many top-level or political innovations (allegedly) targeted on improving effectiveness, must also extend to a careful agnosticism about the impacts of major structural reorganizations on administrative efficacy and about the necessity or desirability of existing administrative arrangements. Without some form of market competition test to validate the efficacy of organizational arrangements, it cannot be right to regard ‘reform’ or change programmes as clearly delivering ‘quality of service’ improvements of some intangible kind – although they may on occasion do so. Some public officials react adversely to productivity analyses or comparisons because they argue that their services are more ‘complex’ to administer than others, and that this should somehow be taken into account in calculating productivity. Yet how complex or simple it is to administer services itself represents a choice made by decision-makers (at either or both the political/policy level and the administrative/public management level). Government organizations that opt for complex-to-administer and hence high cost alternatives when simpler alternatives exist have simply chosen to be less productive, and such decisions should not be compensated for in determining public sector productivity.

However, two other dimensions of quality of service and organization changes are much more inherently related to productivity, and hence it is useful to take cognisance of them wherever they prove measurable, namely:

- (i) The level of *modernity and convenience* of services in terms of users' experiences and expectations. For government, citizens' point of service expectations will tend to be dynamically defined by private sector developments. If the 'tools of government' are to remain useable, especially in the digital era, then they must look and feel to customers comparably modern to corporate sector practice.<sup>2</sup> If they do not, government services will no longer be set up in a manner that is viable in delivering 'public value' or longer-term public support.<sup>3</sup>
- (ii) The *organizational sustainability* of government services arrangements. In private industry, firms with unsustainable set-ups go out of business under competition. But in the government sector ways of doing things that get progressively more out of date or very costly to operate over time (such as running millions of lines of un-modernized codes in out of date computer languages) can be maintained even by 'permanently failing organizations'.<sup>4</sup>

In practice, however, the characteristically poor development of organizational data for the public sector means that no viable or well-used metrics currently exist for service modernity or longer-term sustainability. Instead, we must simply caution readers that short-term peaks in productivity may be produced by running down older ways of doing things and neglecting necessary investments in the public sector, just as they can in the private sector. But whereas such behaviours are characteristically limited to short periods by cost and quality competition in the private sector, in the public sector the potential for maximizing short term productivity at the expense of long-term viability may be stronger and last longer, perhaps producing a markedly cyclical pattern of productivity development over time.

These considerations are important for the recent UK, EU and OECD efforts to develop more sophisticated measures and realistic public sector productivity estimates. Much of the progress comes from the national accounts level. The UN System of National Accounts 1993 (SN93) recommended countries to move away from the previously conventional 'input equals output' approach to government productivity. The UK Office of National Statistics (ONS) from the early 2000s proposed a new methodology for measuring public sector productivity in which outputs should be directly measured by using cost-weighted activity measures.<sup>5</sup> The Atkinson Review (2005) endorsed this view and recommended developing a cost-weighted index of outputs based on the actual number of specific activities performed by any given public sector

department.<sup>6</sup> This output measure is then divided by the volume of inputs employed (hopefully already well-measured) to produce productivity ratios for any given department or sector.

We closely follow these methods suggestions here, mostly using the same cost-weighted measures of outputs deployed in UK government official reports.<sup>7</sup> However, we have chosen not to follow ONS down the route of seeking to embody ‘quality adjustments’ into productivity measures directly, which we believe is a controversial step for the several reasons set out above. Instead we have chosen to focus our initial analysis on ‘core’ areas of government-sector operations where there is good reason to believe that quality levels have either been constant or at best have only very moderately improved over time. So we study outputs and inputs in areas such as social protection and social security, where government is delivering monetary transfers to individuals and families, discussed here; and in areas like taxation and customs regulation, where government is collecting revenues or monitoring large-volume business processes.<sup>8</sup>

A final problem of measuring public sector productivity is specific to the characteristically very large, national-scale organizations that deliver social protection, tax collection and customs regulation in advanced industrial state. Usually these functions are accomplished by a single very large bureaucracy in each country, without domestic competitors or viable direct comparators. The toolkit open to investigators here is limited by excluding comparative approaches. Within-country analyses of productivity variations across regional or local agencies represents a very potent approach for tackling many of the problems analysed above. In a leading study, Garicano and Heaton employed specific measures of organisational changes to characterize changes in a large panel of US police departments.<sup>9</sup> They found that a combination of managerial good practice reforms along with making IT investments was positively related to partial productivity and output estimates across their agencies. Other smaller analyses have shown that productivity can be compared across courts systems.<sup>10</sup> But this fine-grain analysis route is closed in our policy sectors. Nor are cross-national comparisons easy, because what activities are being undertaken varies sharply across countries, even in fields like social protection or tax-collection. Data levels are also still poor – although the OECD’s ‘Government at a Glance’ datasets are beginning to signal a very hopeful change here.<sup>11</sup>

However, at the national level, in areas like social protection, tax and customs, productivity analyses cannot compare across agencies – instead they must focus essentially on comparing across time. This approach seeks to glean an understanding of the dynamics of productivity change in government from a close analysis of patterns and trends, set against an account of the key policy and organizational influences – which we now briefly describe for UK social security.

## 2. UK SOCIAL SECURITY ADMINISTRATION

In comparative public policy terms the UK welfare state has long been something of a half-way house between the minimalism of the USA and the generous social security provided in the older EU member states. The traditional UK approach to social security is statist, integrated, universalistic and centralized, indeed more centralized than continental Europe - but it is also characteristically mean.<sup>12</sup> This stance changed partially under the Blair governments, to be more generous for older people. But it persisted in attitudes to working age people – the main unemployment benefit in 2009 (called Jobseekers' Allowance) was just £65 per week. Even so, the annual value of all UK social benefits paid in 2008 amounted to £129 billion, and according to the PES database total government social protection expenditure amounted to almost £137 billion, that is 12 per cent of the country's GDP.

The social security system is now administered by one main department, the Department of Work and Pensions (DWP), which is a classic 'transfer agency' in the well-known 'bureau-shaping' typology.<sup>13</sup> As in other countries its running costs are less than one twentieth of the sums being administered. However, this still means that the total administrative costs for social security in 2008 were £7.5 billion, making this the largest administrative cost bore by any government sector (the tax department came second at £5 billion). Personnel numbers in the relevant department peaked at over 131,000 in 2002, but fell back to a low of just over 105,000 by 2008 - before substantially expanding again in 2009, reflecting the impact of recession in raising unemployment levels and benefit claimant numbers (see Annex 1).

The policy and organizational context for delivering social security has changed extensively in the period since 1988, when useful data begin. Figure 2 below summarizes some key influences:

*Figure 2 about here*

- There was a rapid succession of *legislative changes* (32 separate acts in 20 years) and the *top ministers altered* frequently (12 times in the period), with a single alternation of the governing party in 1997 from Conservative to Labour.
- Main *policy programme changes* in this area always centre on the introduction of new benefits and the phasing out of old ones. Before 1997 some new benefits were introduced (such as Disability Living Allowance and Incapacity Benefit) and there was some movement towards linking welfare to work with the introduction of



Jobseekers Allowance (JSA). From 1997 on, the new Labour government introduced radical reforms to the benefits system for working age people, linking welfare to work much more stringently with the introduction of the New Deal and Sure Start programmes, and moving towards an active labour market policy. An effort to re-centralise the administration of benefits and simplify access was also quite important, for example in the cases of Child Support and Attendance Allowance. The most important benefit change for older people under Labour was the introduction in 2002 of a top-up Pension Credit benefit, which more or less guaranteed all elderly people over 60 a relatively generous income level (reaching £159 per week by 2008). This programme was the department's first attempt at a wholly phone-based benefits application process. Its introduction represented a decisive shift away from DWP's previous reliance on face-to-face contacts (retained for working age people) and paper forms (which remained a fundamental form of customer contact in UK social security even by 2009).

- *Changes in the macro-organizational architecture* for administering social security benefits were also extensive in this period. The initial system from 1988 had a separate Department of Social Security administering benefits, with an internal set-up of 'Next Steps' executive agencies organized on functional lines, one for paying benefits, one for collecting contributions, one for IT, etc. Labour market services were separately organized in another department covering Employment (brigaded with Education). A key reorganization took place in 2001 when Labour ministers merged both social security benefits delivery and labour market services into a single Department of Work and Pensions, moving across the Employment Service Agency, previously part of the Department for Education and Employment. In addition, the Health and Safety Executive joined DWP in 2002. The DWP was reorganized into three client-focused agencies, the first being for the unemployed and called Job Centre Plus (JCP). Its mission was to provide advice to the unemployed to find new jobs and to help working age people claim benefits if they clearly could not find work. It also sought to help older people to find work and to reduce their reliance on Incapacity Benefit as a pathway to retirement (Pendleton, 2006). The second agency created looked after pensions and the elderly, and the third ran benefits for disability and carers. The last two were subsequently merged to form the Pensions, Disability and Carers' Service (PDCS) in 2008.

- *The use of ICTs and contractors* formed a strong dynamic in the administrative development of social security, with a major outsourcing in 1992, renewed in more comprehensive ways in 1998. Social security relies heavily on large and complex legacy IT systems, mostly run in this period by EDS, the dominant government IT contractor in the UK with up to 64 per cent of the market at its peak in 2003.<sup>14</sup> The performance of the social security IT systems has been periodically problematic, with some significant benefits administration crises, most notably over pension credits in 2002-5 and more chronically with the Child Support Agency, which chased divorced fathers for maintenance payments for their children. Spending on ICTs varied from a low of 4.5 per cent of administrative costs in 2002-3 to highs over 11 per cent in 2006-8, averaging 6.6 per cent in the last decade of our period – see Table 1 for details. But closely related spending also took place on consultants (around 2 per cent of administrative costs per year) and PFI new building contracts (around 5 to 7 per cent of administrative costs per year). All of this represented a sustained increase in the capital intensity of services provision under the Labour government, responding (according to ministers) to the widespread under-investment in the system under Conservative governments.
  
- *Modernization changes in IT and social security buildings* provided a vital element of administrative change. In all modern social security systems ICT systems are severely restrictive on what policies can be changed and over what time period.<sup>15</sup> The DWP's massive transition towards phone-based customer contacts and away from paper forms and face-to-face contacts entailed massive new investment in ICT systems and in new buildings (see section 4 below). The integration of labour market services with benefits administration for working age people also entailed major ICT and estates changes, with a streamlined network of around 780 modernized local job centres replacing the previously separate 'labour exchanges' and benefits offices.
  
- *General contextual changes* are summarized at the bottom of Figure 2. The burden of supporting an aging population grew appreciably but gradually across the period. For working age people, the DWP's activity levels are effectively counter-cyclical. From 1988 to 1993 unemployment levels were high, but from 1996 onwards until late 2007 they fell very appreciably, greatly reducing the demands placed on the working age benefits. Labour ministers also credited the switch to active labour market policies for some of this change.

Two more general public management events are also captured in Figure 2. In 2000-2 the DWP suffered an important loss of institutional memory, when it failed to brief its customers properly on changes to a particular supplementary pension entitlements (called SERPS). A reduction in benefits was legislated well in advance in 1986 under the Thatcher government, but it was only due to come into force in 2002 and in the interim the pensions information given out by the DSS and DWP lost sight of the forthcoming change, resulting in misleading information being given to thousands of customers.<sup>16</sup> The extra costs incurred here ran into several billions of pounds. A second significant event was that in 2004, in the run-up to the 2005 general election, Labour ministers initiated a major cross-government efficiency drive, called the Gershon review, which aimed to save £20 billion by 2008 and to cutback 84,000 central civil service jobs in ‘back office’ roles. Badged as ‘moving resources to the frontline’ in the NHS, education and policing, this initiative had a major impact on the DWP. By this time one in five UK civil servants were in this one department, while in Gershon terms its activities were classed as ‘back office’ roles. Hence cutbacks in DWP staff numbers beginning in 2005 ended up accounting for a quarter of all Gershon staff reductions in central government. The last round of Gershon cuts in the ‘golden’ economic year of 2007 also coincided with the lowest unemployment levels for 27 years, and had to be partly reversed in 2009 as unemployment levels soared (see Annex 1). With these background factors in mind, we turn next to charting productivity levels over time

### **3. SOCIAL SECURITY PRODUCTIVITY FROM 1988 TO 2008**

The key past constraint on organizational learning about productivity in government has been the absence of reliable data on output measures. In the UK this information deficit in social security only began to be officially addressed in the mid 1990s. Our main analysis thus covers the period 1997-2008, which provides a useful perspective. However, the value of an over-time analysis is restricted when we have poor information about the start date, and it can also be influenced by the choice of base year. For example, choosing the first year for which data are available will make productivity series look quite different than choosing a specific year in the middle of the observed period. Since ten years is still a relatively restricted perspective, we have also undertaken a longer-run 20 year analysis, covering the period 1988 to 2008, computing productivity trends from publicly available data with some known (but in our view constant and non-significant) limitations. Finally, we compare our main and long-term productivity trends with each other and show a high level of agreement between both of them, and also with two (different) official estimates of

productivity in social protection for the later 1998-2008 period. We conclude that a strong level of confidence can be placed in the aggregate picture from these four analyses.

(a) Main productivity series:

These series draw on data on the output volumes of fourteen different benefits, described in detail in Annex 1.<sup>17</sup> Because responsibility for the payment of some smaller ‘social protection’ benefits was transferred from the DSS/DWP to other government departments during the period under analysis, we excluded these benefits from our calculations to ensure that our output measure is fully comparable over time (again, see Annex 1).<sup>18</sup> Data were assembled on a financial year basis starting in financial year 1997/98 and running forward for ten years.

Following the methodology suggested by the Atkinson review on measuring productivity in the public sector, output volumes were weighted according to the share of total administrative costs for processing new applications for benefits (claims) and for the maintenance of existing benefit caseloads (loads). In this paper, we used weights calculated by the internal productivity unit at DWP, which are based on total factor costs per unit of activity. The unit costs thus show how much was spent to produce each benefit payment as a share of total administrative expenditure (this includes administration costs and the actual amount of money spent in paying or each benefit). Since 2004-5 DWP calculates weights based on unit costs on an annual basis. Calculations for this paper have weighted output volumes utilizing weights for 2004/05 and 2005/06 and we have then combined them using a process called ‘chain linking’ to obtain the final output index measure.<sup>19</sup>

Our analysis includes a calculation of both total factor productivity and staff productivity (based on FTE numbers). Total Factor Productivity (TFP) is an aggregate measure of productivity that takes into account all the resources employed to produce outputs in terms of staff salaries and contributions, intermediate goods and services expenditure, and asset and capital depreciation. These data, referred as total relevant expenditure, are available on a consistent basis since financial year 1999-2000 and they include also one-off investment costs. DWP deflates these data using specific deflators to produce a total expenditure index series. We used this data as our index of input for our total factor productivity analysis. Figure 3 below shows our results for total factor productivity calculations.

*Figure 3 about here*

The overall productivity trend shown here declined from financial year 1999-2000, and the decline steepened in 2001-2 because of the creation of the new DWP. At this time, the department absorbed a number of previously autonomous agencies that dealt with social protection and labour

market functions (described above). In addition, the newly created DWP implemented a major modernization programme to update its IT, so that expenditure in IT and management consulting more than tripled from £94 million in 2001-2 to £306 million in 2003-4.<sup>20</sup> In addition, many significant ICT and capital investment programmes were procured under Private Finance Initiatives (PFI) by the new department. Amongst others, the deals included the management of the departmental estate and the modernisation of IT systems for the processing and payment of a number of different key benefits. All these expensive reorganization changes, plus the introduction of new benefits which ran into teething problems, seem to have contributed to initially depressing DWP's productivity levels.

However, Figure 3 also shows that since 2004-5 onwards productivity gains were achieved and in a strikingly consistent pattern. The volume of outputs in social protection remained perhaps surprisingly constant over this later period, with increasing elderly numbers and new benefit activity on innovations like Pensions Credit filling the gap that might perhaps have been expected from the reduction of unemployment. Hence, Figure 3 shows that the later improvement in productivity was wholly attributable to the reduction of overall social protection expenditures. We examine in section 4 below how far this can be construed as the result of DWP's heavy expenditure on ICT, consulting and outsourcing starting to pay off in cutting staff numbers.

Because total factor productivity is such an aggregate measure, interpreting its trend is difficult and so there are many advantages to considering a much simpler measure, namely staff productivity. Here we divide the total outputs index for social protection by the number of staff (measured in 'full time equivalent' terms) involved in its administration. These data are also readily available and collected in very well-regulated and consistent ways. We have collated data from the Department of Social Security and its agencies and those from the DWP.<sup>21</sup> Figure 4 below shows the staff productivity trends that result.

*Figure 4 about here*

The key feature is the large jump in staff levels in 2001-3 following the implementation of the new DWP, which also produced an apparent slump in staff productivity levels. However, a trend for falling productivity was evident before this acute downwards blip, and the 2002-3 nadir coincided with the troubled introduction of Pension Credit and a range of other new DWP initiatives. All policy changes that might normally be expected to have some significant negative impacts on staff productivity as new systems bedded in and benefits workers gain expertise in how to operate different procedures.

A substantial recovery of staff productivity levels occurred from 2004-5 onwards, with a somewhat steeper curve than for total factor productivity. This improvement is also tricky to interpret, as we discuss below in section 4. It is likely to have reflected both the realization of some internal payoffs from DWP's modernization efforts, and the external impact of the Gershon review in demanding staff reductions from the most densely populated central government agencies.

(b) Longer term trends:

These trends cannot be estimated using the better quality officially available data on cost-weighted outputs, which are unavailable before 1997-8. To remedy this gap, and to provide some longer term perspective, we have computed our own cost-weighted activity measure, using the data published by the Office of National Statistics, the Department of Social Security and the DWP in a series of official statistics and the department's Annual Reports. This output series is consistently calculated for the whole period 1988 to 2008 but it carries a 'health warning' that it is of clearly somewhat lower data-quality than the information in Figures 3 and 4 in two key respects. First, the cost-weighting of benefits activities that we have been able to accomplish is far less granulated than in the later internal government data, utilizing cruder allocations of costs across benefits derived from the Annual Reports costs attributions.

None the less it is worth noting that these are the primary sources of public information to Parliament, the UK media and citizens at large that the department provides, and it is these cost data (rather than the relatively esoteric internal cost weightings) that dominate public and political awareness of the costs of different areas of the department's activities. Second, the 'social protection' outputs measure used here in fact includes some small elements of transfer payments not paid by the DSS/DWP, most importantly, a diminishing amount of veterans payments administered by part of the Ministry of Defence (the Service Personnel and Veterans Agency). Although, we have included the relevant administrative staff and costs in the inputs line, the effect is to capture a slightly more inclusive definition of social security than in our earlier (or in official) analyses.

With these caveats in place, Figure 5 shows that across the whole period there have been two dips and two recoveries in total factor productivity, whose net effect across twenty years has left social security TFP rather unchanged. Because we use 1988 as the base year for the series here, the data also show gentler TFP curves than in Figures 3 and 4. In terms of inputs, the period from 1988 to 1994 shows a substantial increase (40 per cent), reflecting the impact of the 1989-93 recession on increasing unemployment. Costs were then pruned sharply for a period to 1998, after which cost increases resumed even before the creation of DWP in 2001. The cost reductions from 2003-4 were the largest falls in inputs achieved across two decades. However, in the early part of the period social security outputs grew until 1996 (especially fast in the 1989-92 recession period),

so that overall total factor productivity levels were for a long time constrained, despite the rising inputs costs. Thereafter output levels have drifted downwards.

*Figure 5 about here*

(c) Comparing productivity estimates:

In this section, we assess how far our productivity estimates offer compatible or partly inconsistent pictures of the same phenomena in the 1997-2008 period, where they overlap. In addition, two official estimates of social security productivity for this period have been made within the UK government apparatus itself. The first from the Office of National Statistics promotes the Atkinson agenda of working towards more realistic and properly founded national economic statistics.<sup>22</sup> The second comes from DWP's internal section analysing and promoting productivity changes.<sup>23</sup> Like ONS, DWP's analysis also uses an Atkinson-derived methodology for cost-weighting outputs, and it is this output data that we have used in Figures 3 and 4 above. However, DWP estimates diverge slightly from those used by ONS and their inputs are also slightly different. To make the most effective comparison we rebase all four data series for total factor productivity on the same base year, which is 1999-2000.

Figure 6 shows the results. There is a striking level of broad agreement between the four data series for their common 1998-2008 period.

*Figure 6 about here*

All four estimates show that productivity levels fell appreciably for the first part of the period, bottoming out in 2003-4. However, the ONS data show a marked upwards blip in productivity that our long-term series records only as a flattening of decline, and which the DWP and our shorter-term analyses do not recognize at all. The divergences amongst the four series are greater in charting the upturn in productivity since 2004. ONS shows very sharp increases in 2004 and again in 2007, which find no counterpart in the more modest increases shown in the other series. DWP's internal data identifies a large increase in 2008 which does not show up in either of the our series. Our long term series points to the largest increase in productivity occurring in 2005, but the other series show nothing exceptional for this year.

Taken overall the ONS clearly offers the most benign interpretation of the last ten years' data, identifying the gentlest decline in productivity to 2003 and the strongest recovery since . The other three projections are much more broadly consistent, and our long-term view agrees closely with the DWP series on the 2008 endpoint, while our short-term series is somewhat more pessimistic on the revival of productivity achieved. The degree of agreement between the four

series for 1997 to 2008 also suggests that our long-term series is a credible and worthwhile one across the whole period. Because its picture of the most recent decade is moderate and granular, we believe that its picture of the previous decade is also worthwhile, especially when we consider that we have no other sources for a long-term picture. Rebased on 1999-2000, the long term series offers a disappointing picture, suggesting that total factor productivity in 2008 was no higher (perhaps even appreciably lower) than that in 1988. In the next section we turn to consider the factors that may help account for this relative stasis.

#### **4. Analysing the sources of productivity trends**

The most general background explanation of disappointing productivity trends in the public sector is the well-known argument by Baumol et al <sup>24</sup>, amongst others, that in inflationary conditions low productivity sectors of the economy (such as both private and government services and smaller or profession-run businesses) will tend to become relatively more costly over time compared to high productivity (generally the more corporate or high-tech) sectors.<sup>25</sup> Broadly comparable levels of wage inflation will prevail across low and high productivity sectors, implying that low productivity sectors will absorb increasing proportions of GDP over time, in the absence of corrective public policy interventions. In the UK the Treasury has long built in such relative price effects for forecasting public sector costs. Yet at the same time, from the late 1980s successive UK governments of both parties have used universal and automatic ‘efficiency dividend’ requirements (usually of around 3 per cent a year off base costs) to counteract any automatic cost push. The dividend is supposed to create stronger and pervasive incentives for public services managers to search vigorously for productivity gains.

We might also query whether it is right to think of all government sector activities as inherently areas of low productivity advance, given that in areas like social security and tax collection government has invested heavily in IT, new offices construction and new business processes. Estimates of UK government IT investment currently run at £17 billion per year (in 2009-10). One of the distinctive features of ‘digital-era governance’ is that some of the previously lowest-tech government services (like immigration) have increasingly been transformed into high-tech, risk-based systems of administration.<sup>26</sup> At the same time, there is evidence that internet-driven activities have shown the greatest productivity gains. In private sector services productivity in the USA, UK and other Anglo-Saxon countries appears to have grown relatively rapidly in historical terms since 1995.<sup>27</sup> There are also close parallels between the activities of some large public sector areas, both in terms of administrative activities and in sectors like health care. Yet at the same time



there is evidence that internet-driven ‘disintermediation’ processes in government services are slower and more resisted by most civil servants and by some kinds of government ‘customers’ than in the private sector.<sup>28</sup>

We analyse three varying influences that may help explain parts of the change picture for UK social security:

- a) the impact of business process change investments in ICT, consultancy and new buildings in shaping productivity trends, especially the late increase shown in all four productivity tracks in Figure 6;
- b) the counter-argument that this last change was largely attributable to external pressure on DWP from the Gershon expenditure review process; and
- c) interpretations in terms of the cultural barriers inside the massive DWP bureaucracy to moving away from outmoded ‘new public management’ models of delivery and towards more advanced ‘digital era governance’ approaches.

(a) *Business process change and productivity* has been the focus of a great deal of work in the private sector and has begun to be deployed also in the public sector. Organization theory and strategy research argues that a configuration of characteristics can jointly contribute to high performance among private firms.<sup>29</sup> Empirical analyses have tried to account for the joint or configurational effect of a number of factors on performance by using a number of statistical techniques such as clustering algorithms or interaction effects.<sup>30</sup> Key industrial studies have used panel data of firms across a number of years to show that specific measures of organisational and management changes are positively related to partial or total factor productivity measures.<sup>31</sup> However, these techniques require a large number of observations to achieve meaningful results and are not easily applicable in centralized government services across a limited number of years, such as the current study.

In the government sector, a useful literature on performance and “best practice” research suggests different approaches to identify the factors that can lead to the most efficient results in managing public organisations.<sup>32</sup> Building upon this theoretical literature, Mukhopadhyay et al analyzed the impact of IT capital on the performance of the US Post Service.<sup>33</sup> Elsewhere, large N studies found a positive relationship between IT capital and output in their study of a number of US agencies from 1987 to 1992.<sup>34</sup> More recent studies have also tested whether specific measures of IT use and management practices are statistically related to partial productivity estimates. Garicano

and Heaton found that additional ICT use was positively related to the productivity and output growth in decentralized US police services only when interacted with some measure of changes in managerial practices towards more performance-focused indicators.<sup>35</sup>

Within the limits of the available data we have set out to see if investments in ICT, organisational changes and outsourcing can be positively related with output and productivity ratios in UK social security (see Annex 1 for data source details).

Table 1 shows the assembled data on ICT, consulting and outsourcing (non-IT) expenditure for the available years as percentages of total administration expenditure in DWP and its predecessor DSS. The combined spend doubled from a tenth of total administrative spending in 2001-2 to a fifth in 2006-7, a major increase in investment and capital intensification.

*Table 1 about here*

In Annex 1 we chart how the three areas of spending are associated with total factor productivity levels (lagged for one year). A moderately positive link clearly exists for spending on ICTs, explaining about one eighth of the variance in total factor productivity. The relationship for new building investments is also positive, but explains only a tiny fraction of the variance. And the relationship for consulting shows a coefficient close to zero. The overall level of combined spending across the three areas shows a positive relationship with the lagged TFP data. These results seem to support expectations for a positive relationship between some of the key factors identified in the specialised literature and the calculated productivity trends, but clearly the data we are able to consider covers only a small time period and so these results need to be interpreted with a great deal of caution.

(b) *Disentangling the post-2004 impact of the Gershon Review* does not matter at all in terms of measuring productivity change, but it is important in seeking to understand the causes of the late-on positive trends in Figures 2-6 above. A sceptical view might suggest that traditional political pressures from the Prime Minister and Chancellor of the Exchequer (anxious to win the more close-run 2005 general election) proved much more effective than previous New Labour policy regimes in extracting from the huge DWP apparatus the large-scale reductions in staffing numbers that the massive investments made in new IT, buildings and business processes were all along designed to deliver. An NAO report in early 2007 found that DWP had shed 20,000 staff with a further 10,000 in target.<sup>36</sup> The report also found that the general increase in service standards suggests that this was a sustainable business process change, unlike some earlier large-scale Gershon cuts.

(c) *The slow transition of DWP organizational culture from new public management (NPM) to 'digital era governance (DEG) patterns* is strongly suggested as a key influence on the overall productivity stasis across the two decades from 1988 by Dunleavy et al.<sup>37</sup> They point to a general pattern of first dominance and later decay of NPM ideas in advanced industrial states' public management, focusing on three themes - disaggregating large bureaucracies (as with the DSS agencification reforms); introducing competition and outsourcing (as with the abolition of ITSA and the outsourcing of all DSS's IT services); and incentivization (as with performance-related pay for senior DWP managers and the asset transfers of its entire built estate to the private sector). As Figure 7 shows, Dunleavy et al. argue for a general transition towards an alternative DEG paradigm from around the early 'noughties' onwards that focuses on three orthogonal themes - reintegration (as with the reabsorbing of agencies into the DWP and its 'joining-up' of social security and labour market services); needs-based holism (as in the remodelling of DWP's internal structures around different client groups, instead of around business process components); and digitalization (such as the department's heavy investment in new IT to set up phone-based systems of benefits administration, instead of paper-based systems).

*Figure 7 about here*

However, elsewhere in their analysis Dunleavy et al. also remark pessimistically on the extraordinary difficulties of getting cohorts of politicians and public managers whose approaches to managing the public sector were formed during the NPM period to genuinely or whole-heartedly make the transition to the DEG era.<sup>38</sup> The larger a bureaucracy is, and especially the more conservative its organizational culture is, the more we might expect that the curves of organizational responses and transitions shown in Figure 7 will be delayed - and the more problematic, cross-cut and crisis-ridden the shift from NPM to DEG practices will be.

The organizational culture of the UK's social security system has always been extremely conservative, especially in the adoption of new technologies. Key studies of the 1980s 'Operational Strategy' by Helen Margetts covered an IT investment programme in new technologies designed to last 15 years. Yet in practice the programme became completely out of date before it was even a third implemented.<sup>39</sup> In the 1990s the department's IT thinking continued to be dominated by 'mainframe thinking' and old-style 'big bang' planning, now focused on the outsourcing of every last IT function to the ACCORD consortium dominated by EDS – itself the largest and most conservative of the system integrator firms.

In 1998-9 Dunleavy et al. analysed in detail for the National Audit Office the response of the DSS's largest agency to the development of internet- and web-based business processes.<sup>40</sup> They

found that in the Benefits Agency with 68,000 employees there were at this time only 8 internet-connected PCs, and staff had to fill in specially vetted forms to gain access to them. All other staff were still using dumb-terminals connected via networks to the department's legacy mainframes. The National Audit Office report resulting from this study concluded that the department's websites 'have been relatively static and under-developed, cautiously funded and under-resourced, providing information within conservative and unimaginative designs which are rarely refreshed or overhauled, and designed from the organization's viewpoint rather than starting with users' needs'.<sup>41</sup> The report (agreed by the department before it went to the Public Accounts Committee) went on:

'DSS accepts that until mid-1999 the department has been so pre-occupied with delivering its "active modern service" vision and negotiating the ACCORD programme that it has "taken its eye off the ball" of Web developments. The perceived need to concentrate senior management attention on major, long-term schemes for investing heavily in new ICT may mean that the department's business units miss some important current opportunities for learning incrementally about citizens' behaviour on the Web, and about what kind of facilities for electronic communication or transactions work well and which do not. Web technology is changing so rapidly and so unpredictably that organizations need strategies for experimenting flexibly with techniques and changing them in response to customer behaviour'.<sup>42</sup>

There were three main organizational culture problems inside DSS at this time, which dominated the views of the vast majority of senior and middle-ranking DSS officials. First, they did not believe that the households and individuals receiving welfare benefits would *ever* get internet access. In 1998 there was still a strong class-based 'digital divide' pattern, and households on low incomes were by far the least likely to own a PC or to have internet access. Policy-level officials did not believe that this picture would alter quickly, despite a plethora of planning projections pointing to the likely pervasive spread of the Web in the near future to reach most social groups except the very elderly. In 2008 DWP officials discovered to their surprise that 51 per cent of their clients were now online with internet access. Second, officials with little or no IT background or information fundamentally saw the Web as administratively irrelevant anyway – merely a place for posting static billboards of information. They had no conception of creating a more interactive Web experience and rejected the 'advanced' commercial sites already in existence as possible models of what government Web provision could become, believing that government need do no more than develop a bare-bones provision. Third, internal organizational power over policy on ICTs was concentrated in officials running the big-budget mainframe systems that controlled millions of benefit payments. These managers (in their late 40s and 50s) were trained on and used to centralized and costly large ICT systems, negotiated daily with contractors sharing their view, and thought of web processes as a financially trivial (and hence organizationally irrelevant) side line.

Despite the clear warnings from NAO, the cultural inheritance of DSS dominated the newly created Department of Work and Pensions after 2001. Looking at the current preferences and capabilities of their various client groups (who already had near-universal phone access), the department's administrators plumped wholesale for rebuilding virtually all the main benefits applications processes around phone contacts and large call-centres. Web-based technologies were used to inform staff answering questions and completing forms, but it was assumed that clients would either ring up or use mailed-in paper forms.

The only part of the department's activities to escape phone-based processes were a legacy from the Employment Services Agency (now swallowed up by DWP). Its labour market and job-search services did move onto websites and expand their scale of activities, at first in competition with large private sector providers, and later (after 2005) in collaboration with them. By 2007 the DWP job-search websites were hosting 40 per cent of all vacancies in the UK, and had generated enormous traffic volumes. Yet even here the forces of conservatism were strong – DWP's provision remains text-only, with no provision for employers to use photographs, video or other means and no provision for prospective workers to post CVs. In addition, the one place where not a single job-seeker could look at any of the DWP's online job vacancies was inside the network local Job Centres. Despite offering a much improved ambience and a more efficient service with carefully managed appointments and flows of claimants that eliminated queuing, the Job Centres contained not a single PC available for clients' use. Instead, very restricted dumb 'kiosks' were installed that (slowly) displayed limited job details.<sup>43</sup> People seeking jobs could print these out, but not apply online or even email for fuller details.

This micro-tragedy inside the Job Centres themselves was mirrored by a macro-scale problem as the shift to phone-based technologies generated a massive growth in phone calls. In 1999 DSS received 130 million calls a year, most of them being rather poorly and randomly handled in local offices. Major IT and new buildings investments investment moved all the DWP pension staff from run-down offices and even pre-fab huts into huge new call centres in glamorous surroundings to process the first new phone-based benefit, Pensions Credit. By 2002, this shift boosted the total contacts between DWP and its clients to 330 million per year, not least because Pensions Credit created a wave of new clients and encountered a lot of teething problems. Many of the calls received were analysed by DWP managers and 44 were found to be 'not value-adding' – that is, they reflected client confusions and concerns, were requests for information or repeat calls, or were calls to try and track missing benefits or to correct mistakes.<sup>44</sup> Even by 2005, Figure 8 shows that phone calls to DWP were running at 145 million per year and total customer contacts at 240 million a year. Even so a quarter of customers' phone calls to Job Centre Plus were not being picked up in this period, compared with a target of no more than 10 per cent missed calls.<sup>45</sup>

At the same time, Figure 8 shows that paper-based processes proved extraordinarily resilient and top managers comparing phone-based and paper processes were disturbed to find no great savings from the transition. The only gains the department had made were in reducing expensive face-to-face contacts and local office presence for the elderly, in favour of remote phone access. But it was an essential feature of the active labour market ambitions for how working age people were treated, that all clients had to attend job centres for progress meetings in person every two weeks – so that Job Centre Plus retained a strong face-to-face element.

Perhaps the most significant feature of Figure 8 is that DWP had developed virtually no e-transactions at all for benefits processing in the whole period from 1999 to 2005.

*Figure 8 about here*

While e-commerce had grown strongly in the private sector throughout this period, and electronic income tax self-assessment had grown to more than a third of transactions, only a tiny fraction of one per cent of DWP's business ran by e-mail or the internet, and no social security benefit could yet be applied for online.

From 2005 onwards, DWP management made strenuous efforts to curtail the swamping avalanche of phone-calls by refining their business processes, improving forms and information giving, simplifying transactions, and conducting more business in a single phone call. The result was to eliminate much of the clutter of multiple non-value-adding calls by 2008 and to radically cut total customer contacts to 145 million per year. As Figure 8 shows, phone calls fell by over 40 per cent in three years, which greatly stabilized the new business model and largely explains some of the late growth in productivity levels charted in earlier sections. Yet postal processes increased (because most phone-based applications also required documentation to be sent in). Further cuts in face-to-face services also helped cut costs.

Meanwhile e-transactions and e-contacts with customers increased barely at all, to just 340,000 per year, still a tiny fraction of one per cent of the department's annual total. At the same time its own research had found that more than half of its allegedly 'digitally excluded' customer base were online with internet access, but without any significant service availability. During 2008 itself a new online system allowing people to register their interest in receiving unemployment pay (called 'Job Seekers' Allowance) quickly built up to receive more than 50,000 contacts per month, catching the department unawares. By 2009 DWP moved hurriedly to begin to process full online JSA applications for over the web, responding to a new wave of customers hit by the recession and who expected to be able to use Web services as a matter of course. To get some measure of contrast, in 2009-10 three quarters of income tax self-assessment forms in the UK were submitted

online, reflecting a long learning process about the internet by the tax agencies (Inland Revenue and later Her Majesty's Revenue and Customs) that started much earlier in 1999-2002.<sup>46</sup>

## Conclusions

Public sector productivity matters because all opportunities for efficiency-enhancing and quality-maintaining changes in public services that are not taken up are inadvertent purchases by taxpayers of avoidable and largely pointless luxury goods. Right-wing think tanks in the UK have been quick to point out that the scale of such 'waste' mounts up alarmingly over time, especially in an economy where government's share of final consumption was 25 per cent in 2007 (*before* the onset of recession). For instance the well-known Centre of Economic and Business Research claimed in mid 2009:

*'In a little noticed revision slipped out on 14 August, the Office for National Statistics let on that the public sector's productivity performance had been even worse than earlier admitted, with a decline of 3.4% from 1997 to 2007. At the same time productivity in the market sector rose by 27.9%, so had productivity in the public sector moved in line with that in the market sector, productivity would have been 32.4% higher. On the other hand... over the whole period from 1997 to 2007 pay in the public sector rose by slightly less. So in looking at the cost of public expenditure it is probably fairer to use the unit labour cost comparison which shows public sector costs rising by 30.5% relative to the market sector. This productivity calculation ... applies to General Government Final Consumption Expenditure ... [which] amounts to about £250 billion a year. So had costs risen in line with the market sector, this would have cost £58.4 billion less'.<sup>47</sup>*

Cashing out what this might mean in the case of DWP's neglect of internet and web-based technologies, one rough estimate suggested that by 2009 the department was incurring up to £430 million of avoidable expenditure in Job Centre Plus alone.<sup>48</sup> However, departmental sources strongly contest such estimates – arguing in contrast that by retaining a strong face-to-face element as part of its 'active labour market' interactions with working age people, DWP had contributed to slowing the growth of unemployment in the 2008-10 recession below previously forecast levels, and thus to containing the rise in unemployment payouts.<sup>49</sup> This controversy cannot be resolved from existing evidence or public information, but it does illustrate the centrality of understanding government productivity for the evaluation of contemporary public policy.

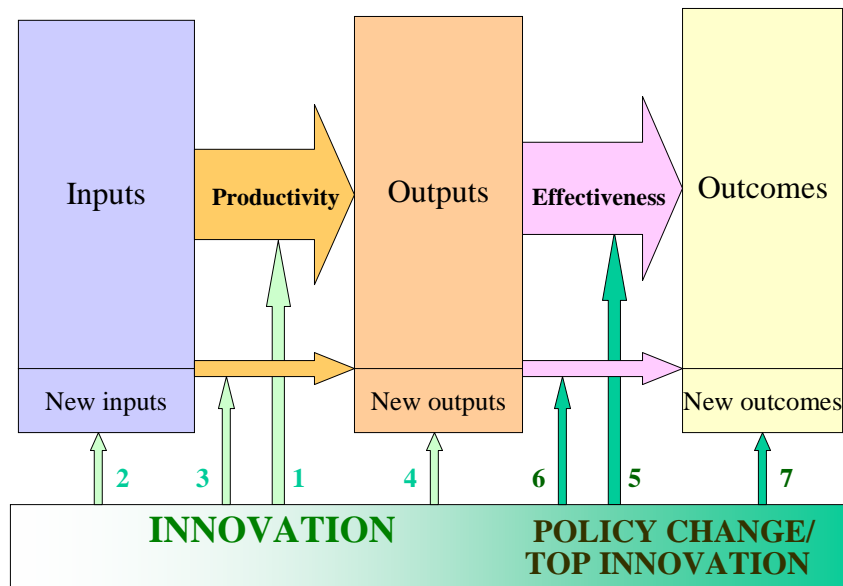
Over the longer term considered here, it seems clear that there was an initial slump in social security productivity from 1999 to 2004, and something of a recovery in productivity from 2005 on. This pattern fits closely with the longer run indications that twenty years of progress in ICTs, interactions with customers and business process innovation have left the productivity of the UK's benefits administration largely unchanged. Defenders of the 'flat productivity' argument might find in this pattern some ammunition for the alleged pushback against transitioning to measuring

government productivity explicitly, a move previously agreed by EU foreign ministers and supposed to be implemented by Eurostat.<sup>50</sup>

Yet this disappointing picture for social security needs to be located in a wider landscape. In the UK alone studies by LSE Public Policy Group have documented very substantial cases in tax collection and customs inspections where long-run productivity in central government services has increased dramatically (Carrera et al, 2009); cases where productivity has been basically flat, again despite large-scale IT change, as in vehicle and drive registration; and cases like the Prisons Service where long-run productivity appears to have fallen consistently, despite extensive privatization and some significant countervailing quality improvements.<sup>51</sup> Explaining and understanding these variations within a single country is of the first importance for the long-run task of improving overall government efficiency. In addition, the cross-national study of government productivity is as yet in its infancy.<sup>52</sup> But as similar international macro-trends in public administration begin to take hold, such as the now well-established transition of tax systems online, and the just beginning transition of social security systems online,<sup>53</sup> so the opportunities to learn further well-evidenced lessons about what works and what does not should expand in the near future.

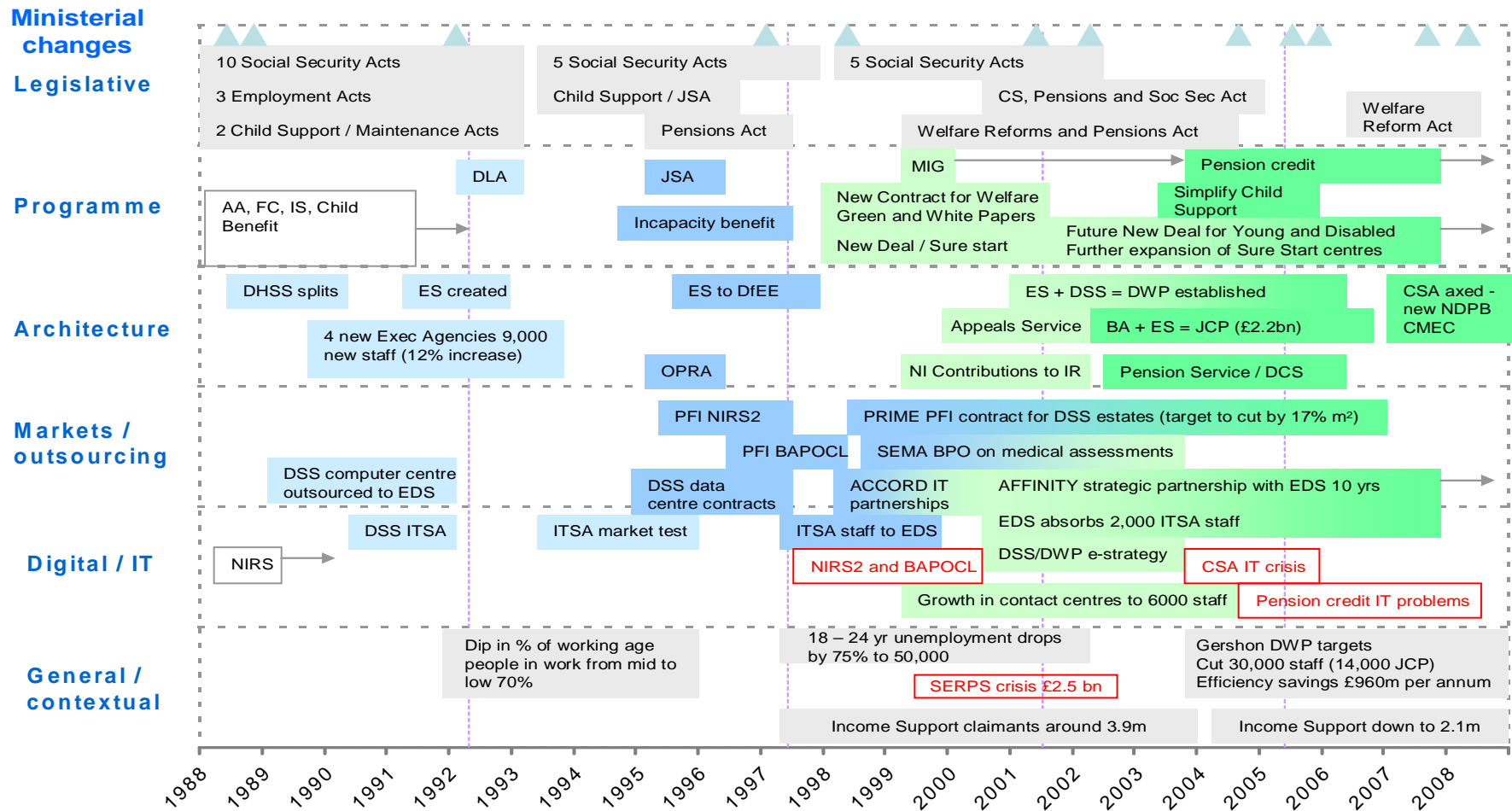


**Figure 1: How innovation influences productivity, effectiveness and the introduction of new inputs, outputs and outcomes in central government organisations**

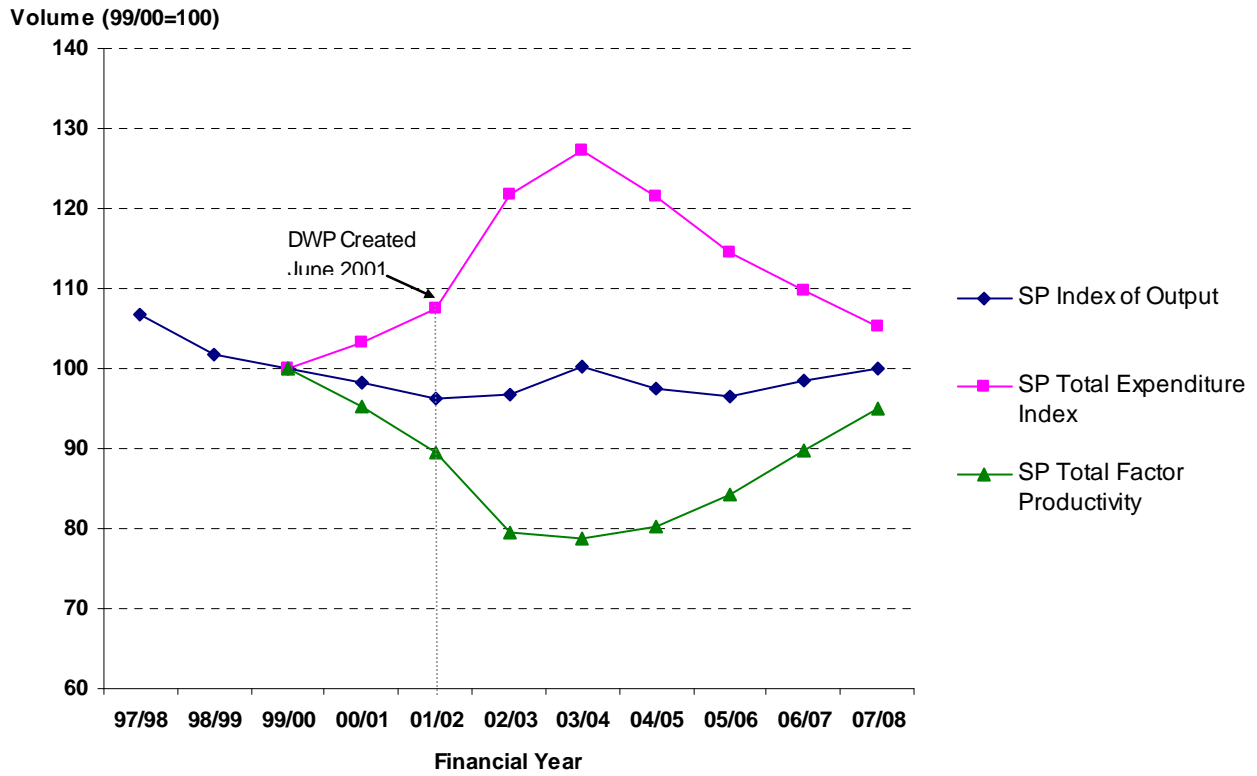


- Types of innovation impacts:*
- 1 improving the productivity of existing inputs;
  - 2 introducing new inputs;
  - 3 improving productivity using new inputs;
  - 4 introducing new outputs;
  - 5 improving the effectiveness of existing outputs;
  - 6 increasing policy effectiveness via new outputs;
  - 7 introducing new outcomes.

**Figure 2: Main developments in the administration of UK social protection, 1988-2008**

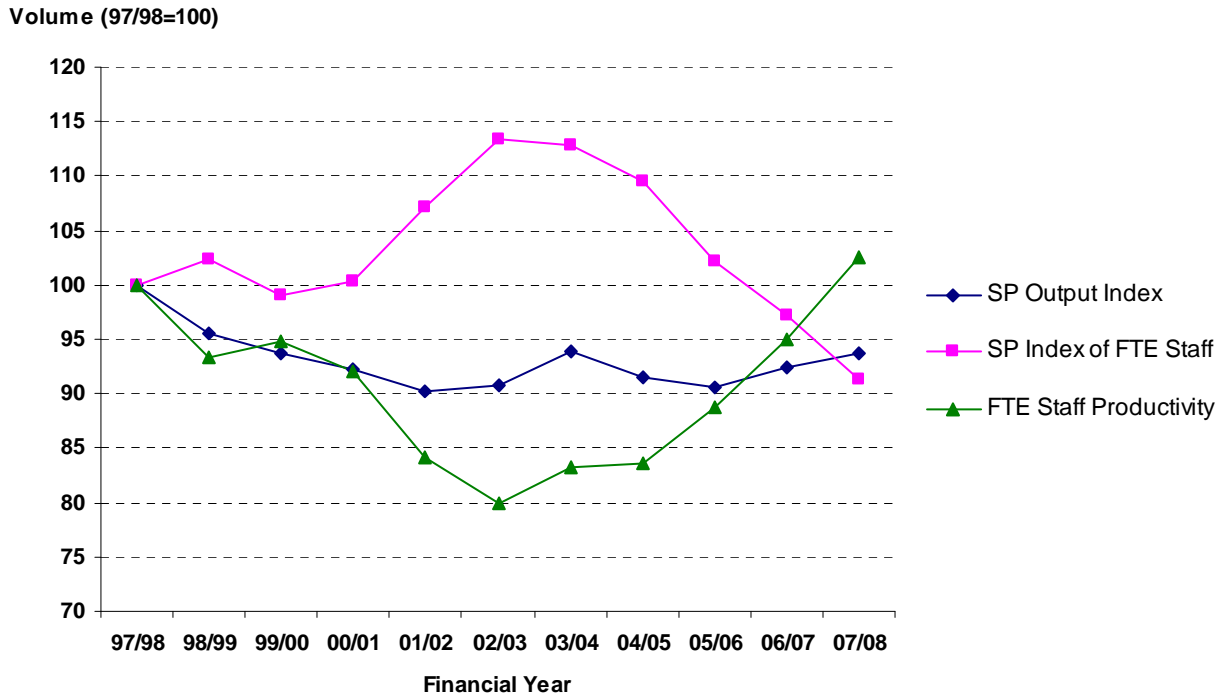


**Figure 3: Social Protection Total Factor Productivity**



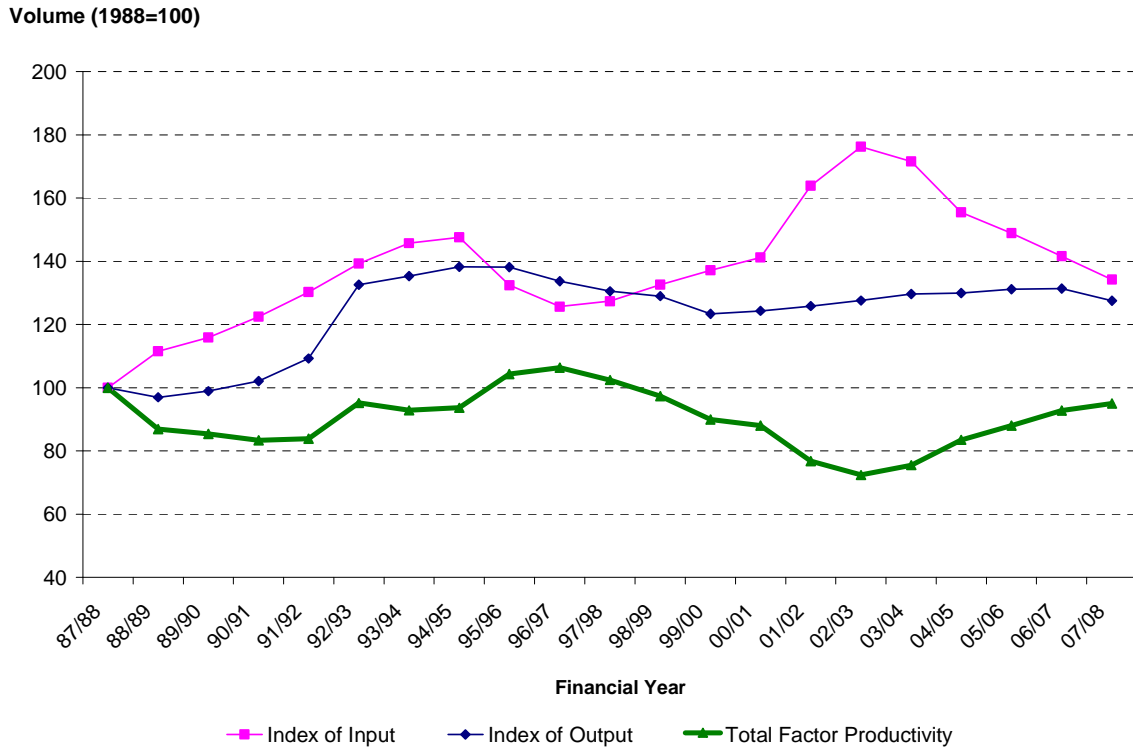
Source: Authors' calculations based on data provided by DWP

**Figure 4: FTE Staff Productivity**



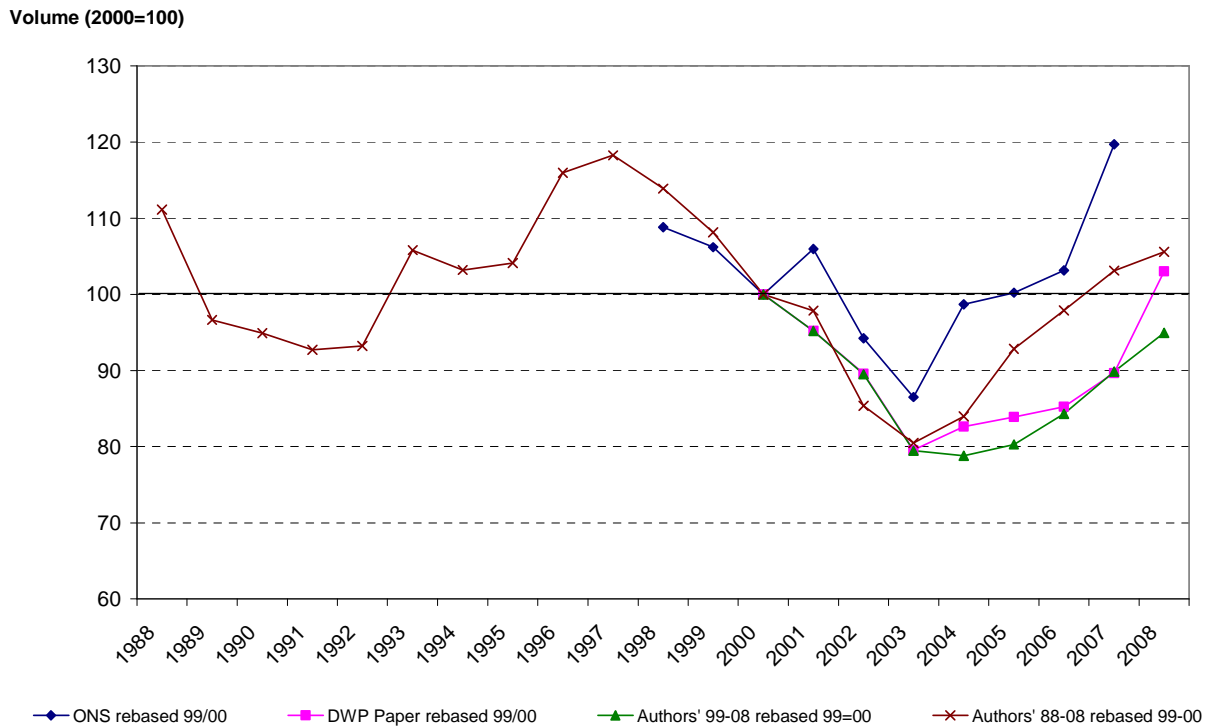
Source: Authors' calculations based on data from DWP

**Figure 5: Long-term estimates of changes social security productivity, since 1988**



Source: Authors' calculations

**Figure 6: Comparing four estimates of total factor productivity in UK social security, 1988 to 2008**



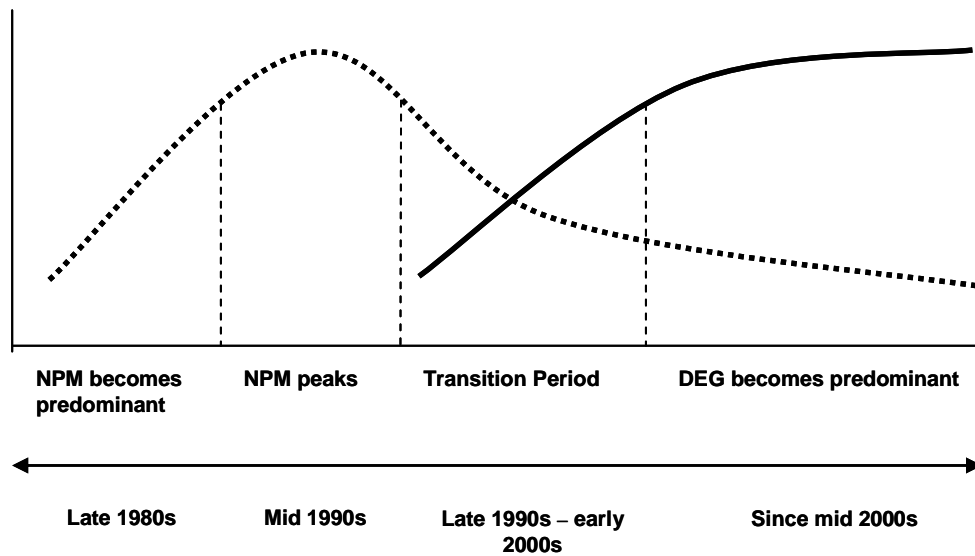
Notes: ONS Office of National Statistics; DWP Department of Work and Pensions; PPG LSE Public Policy Group. All estimates are rebased to 100 in 2000.

**Table 1: Spending on ICTs, consulting and PFI non-IT contracts as percentages of total administration expenditures, DWP and DSS. (£ million)**

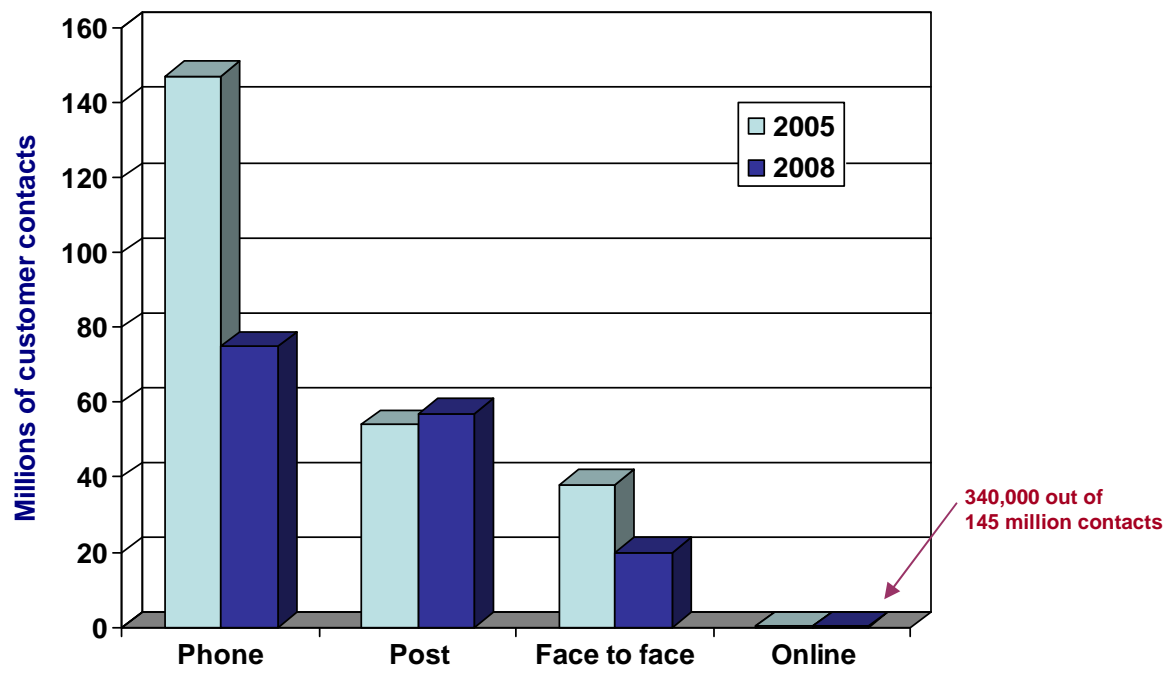
Year	1997-8	1998-9	1999-2000	2000-1	2001-2	2002-3	2003-4	2004-5	2005-6	2006-7	2007-8
ICT	7.18	6.06	5.47	5.00	4.55	3.91	4.88	6.88	6.44	11.27	11.43
PFI (non-IT contracts)		5.11	4.73	4.49	4.50	4.18	4.85	6.64	7.15	6.94	6.88
Consulting					1.57	2.07	4.04	2.18	1.69	2.12	
<b>Combined spend</b>		<b>11.17</b>	<b>10.20</b>	<b>9.49</b>	<b>10.62</b>	<b>10.16</b>	<b>13.77</b>	<b>15.7</b>	<b>15.28</b>	<b>20.33</b>	<b>18.31</b>

Notes: Before the financial year 2001-2 data for ICT corresponds to spending by the ITSA agency (Information Technology Services agency). From this point onwards ITSA activities were outsourced to EDS via a PFI contract. ICT values after 2001/02 are annual payments for all ICT-related PFI contracts. Grey cells show where data is not available.

**Figure 7: The general transition from NPM to DEG in advanced industrial countries**



**Figure 8: The changing pattern of the DWP's customer contacts, 2005 to 2008**



Source: Dunleavy et al (2009), Figure 3, p. 13.

## Annex1 : Methodology, data sources and further analyses

For outputs data for the 1997-2008 series we relied on information provided by the Department of Work and Pensions from their own productivity work and covering a total of 14 benefits. These include both the number of benefits paid (load) and the number of new applications for benefits processed (claims): Each benefit was weighted according to the total costs of administering each benefit. Weighted benefits were then added and converted into a total index of output.

**Table A1: Benefits analysed 1999-2008 (both load and claim measures unless otherwise stated)**

Income Support	State Pension
Jobseekers' Allowance	Minimum Income Guarantee (until 2003)
Social Fund Payments	Pension Credit (after 2003)
Incapacity Benefit	International Pension Credit
Other Working Age Benefits	Future Pension Forecasts
Carers Allowance	Attendance Allowance
Child Support Benefit (here we used a DWP measure for the number of children benefiting).	Disability Living Allowance

The *index of total relevant expenditure* for the 1997-2008 total factor productivity analysis was based on deflated expenditure data from the DSS/DWP for the period under analysis. The index of FTE staff was built according to the total number of FTE staff for DWP/DSS, with key results shown in Table A2 below. Staff productivity was the ratio of the index of output to the index of staff. Our staff measure draws on data from the DWP, DSS and other DWP-predecessor agencies.

**Table A2: Staff numbers in the Department of Work and Pensions, and before 2001 in the Department for Social Security, in FTEs (full-time equivalents).**

Year	1997/8	1998/9	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
<b>FTE Staff (000s)</b>	115.8	118.5	114.6	116.1	124.1	131.4	130.8	126.9	118.3	112.7	105.9

Source: Authors' calculations assembled upon data from DWP, DSS and relevant agencies.

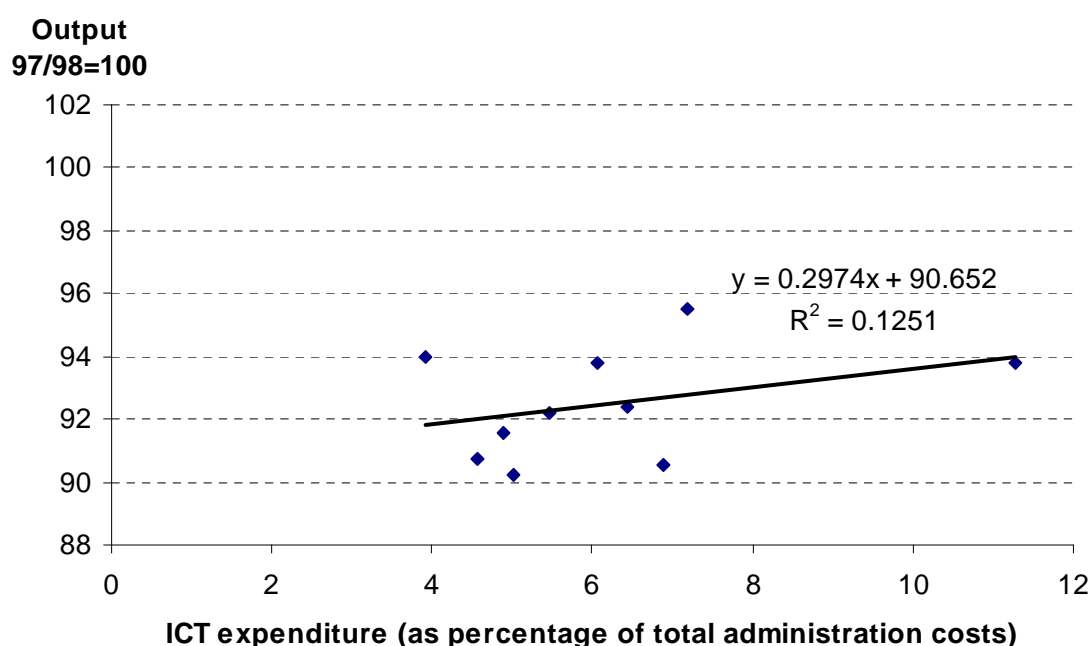
Turning next to our *20 year index (covering 1988-2008)* we used outputs data on the benefits described in Table A.3 below that were taken from the Abstract on National Statistics. We checked the reliability of these data with the Work and Pensions Statistics (88-99) and the Work and Pensions Longitudinal Study from DWP (99-08). For this series we included only 'payments' (that is, the total number of benefits paid or 'loads'). Unfortunately 'claims' were not reported in the public sources referred above. For *the index of total inputs*, we used data from the Abstract of National Statistics on 'General Government Total Final Expenditure on Social Security Administration'.

**Table A3: Benefits analysed 1988-2008**

<b>Working age benefits</b>	Income Support (Introduced in 1988, until 1996 it includes IS for unemployed, replaced in 1996 by Jobseeker Allowance) Jobseeker's Allowance (before 1996 the Unemployment Benefit was considered) Social Fund Grants and Loans (introduced in 1993) Incapacity Benefit (before 1995, data include Invalidity and Sickness Benefit) Other WA benefits: Maternity Allowance, and Widow Bereavement. Child Benefit.
<b>Disability and carers' benefits</b>	Attendance Allowance Disability Living Allowance (since 1993) Invalid Carers' - Carers' Allowance
<b>Benefits for elderly people</b>	State Pension Pension Credit (before 2003 Minimum Income Guarantee was considered; between 1993 and 2000 data are from the IS for people aged 60 and over) War Pensions
<b>Housing</b>	Housing Benefit

On *ICT spending* our data for the DSS period corresponds to total administration costs for the IT Services Agency (ITSA), which at that time had responsibility for the management and development of all the IT systems. In 2001, ITSA tasks were outsourced to the private sector via the ITSA outsourcing PFI contract. Consequently, for the period after 2001, ICT comparable data corresponds to annual payments for all the IT related PFI contracts. Information on *consulting expenditure by the DSS/DWP* proved more difficult to find and we can only use publicly available data from Hansard between financial year 2001-2 and 2006-7. Finally, *data for DWP outsourcing* corresponds to annual payments for all non-ICT related PFI contracts (mainly building and service provision contracts), which includes the PRIME contract of 1997 for the maintenance of the departmental estate and its expansion in 2003.

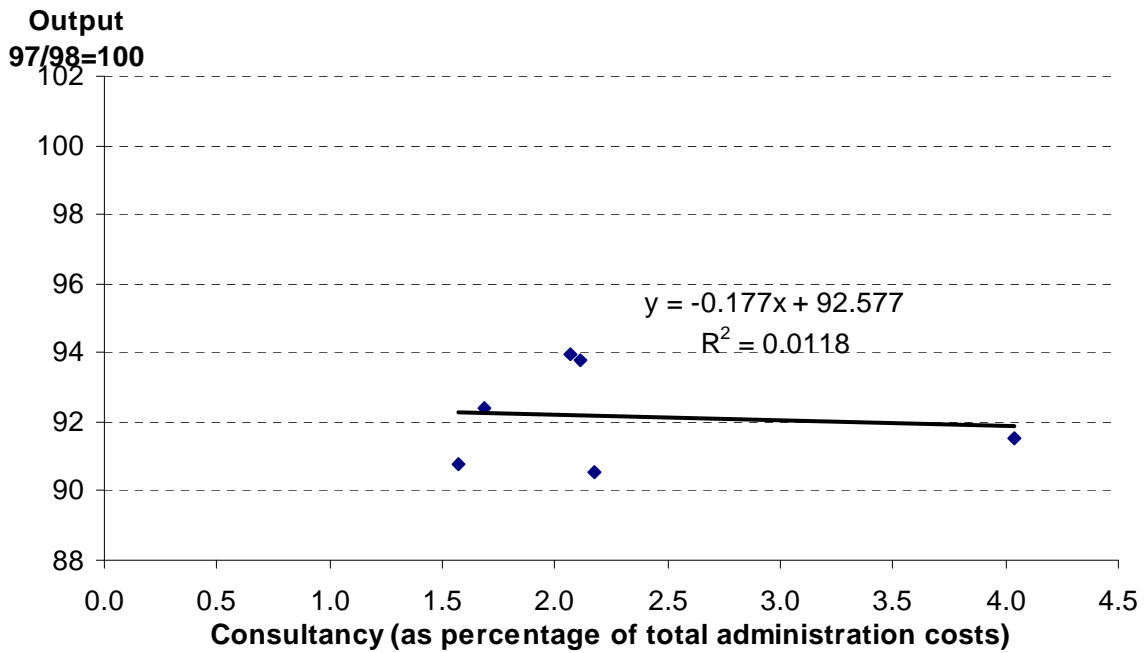
**Figure A1: ICT expenditure (lagged) and Output**





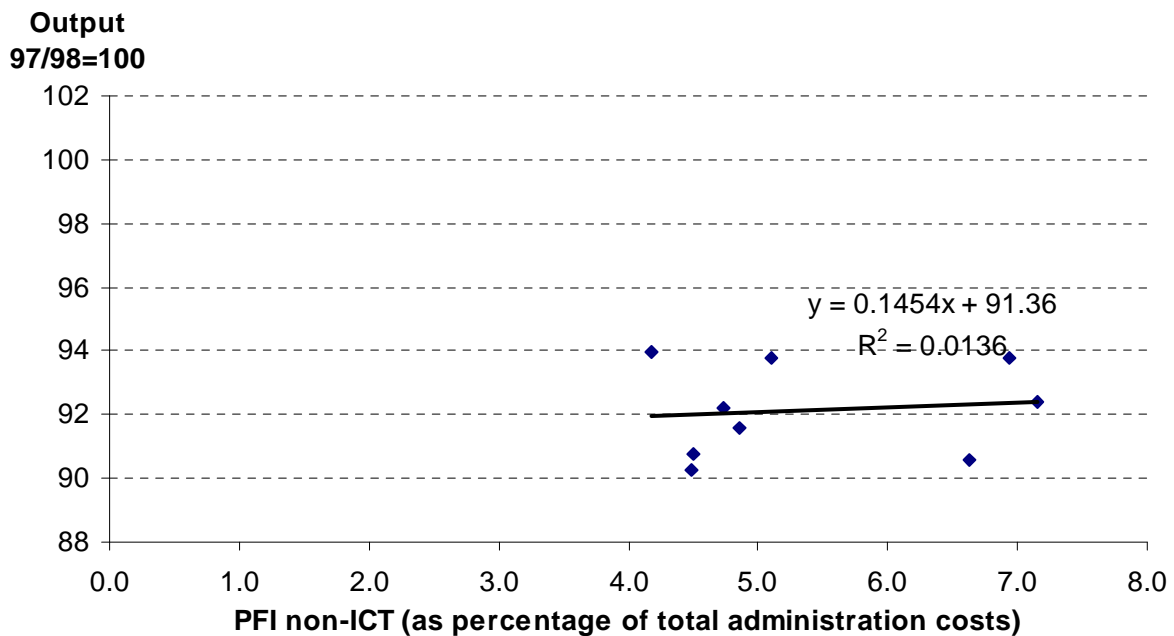
Source: Authors' elaboration based on data from DWP departmental Reports

**Figure A2: Consulting expenditure (lagged) and Output**



Source: Authors' elaboration based on data from DWP Departmental Reports

**Figure A3: PFI non IT expenditure (lagged) and Output**



Source: Authors' elaboration based on data from DWP Departmental Reports

In terms of considering quality adjustments, we primarily followed Atkinson in looking at the levels of recorded fraud and error in DWP payments, which have generally fallen over the study period from 2.8 to 2.1 per cent of total payments. Around a third of this amount can be attributed to

genuine customer errors. A test of maintaining a stable level of quality is clearly passed here, and accordingly we do not believe that any quality weighting of outputs is necessary in this respect. The UK's social security also seem to perform reasonably on fraud and error by international benchmarks (NAO, 2006).

**Table A4: The levels of recorded fraud and error in DWP benefit payments, 2000-8.**

	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
<b>Total Benefit Expenditure (£bn)</b>	107.0	112.0	105.8	110.9	115.8	119.8	128.0
<b>Total Estimated Fraud and Error (£bn)</b>	3.0	3.0	2.6	2.6	2.7	2.7	2.7
<b>Fraud and Error as % of Expenditure</b>	2.8	2.7	2.5	2.3	2.3	2.3	2.1

Source: Authors' calculations based on data from DWP Resource Accounts

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- <sup>1</sup> See G. Becker, 'A Theory of Competition Among Pressure Groups for Political Influence', *Quarterly Journal of Economics*, 98 (1983), 371-400 and G. Becker, 'Public Policies, Pressure Groups and Deadweight Costs', *Journal of Public Economics*, 28 (1985), 329-47.
- <sup>2</sup> See P. Dunleavy, H. Margetts, S. Bastow and J. Tinkler, *Digital Era Governance: IT Corporations, the State and e-Government* (Oxford: Oxford University Press, 2008), Chs. 1-2; also: C. Hood and H. Margetts, *The Tools of Government in the Digital Age* (London: Palgrave Macmillian, 2007).
- <sup>3</sup> See M. Moore, *Creating Public Value: Strategic Management in Government* (Cambridge, MA: Harvard University Press, 1997).
- <sup>4</sup> M.W. Mayer and L.G. Zucker, *Permanently Failing Organizations* (London: Sage, 1989).
- <sup>5</sup> See A. Pritchard, 'Measuring Productivity Change in the Provision of Public Services', *Economic Trends*, 582 (2002), 20-32. See also A. Pritchard, 'Understanding Government Output and Productivity', *Economic Trends*, 596, 40-52.
- <sup>6</sup> T. Atkinson, *Atkinson Review: Final report. Measurement of Government Output and Productivity for the National Accounts* (London: HMSO, 2005). Downloadable at:  
[http://www.statistics.gov.uk/about/data/methodology/specific/PublicSector/Atkinson/final\\_report.asp](http://www.statistics.gov.uk/about/data/methodology/specific/PublicSector/Atkinson/final_report.asp)
- <sup>7</sup> See Office of National Statistics (ONS), 'Public Service Productivity: Social Security' (ONS: 2008), 1-40. See also Department of Work and Pensions (DWP), 'An Analysis of DWP Productivity 1997/2008', (DWP: 2008), 1-106.
- <sup>8</sup> See L. Carrera, P. Dunleavy and S. Bastow, 'Understanding Productivity Trends in UK Tax Collection' (LSE Public Policy Group, 2009)
- <sup>9</sup> L. Garicano and P. Heaton, 'Information Technology, Organization, and Productivity in the Public Sector: Evidence from Police Departments' (Centre for Economic Performance, 2007). Downloadable at:  
<http://works.bepress.com/psheaton/5Garicano and Heaton>
- <sup>10</sup> Netherlands Institute for Social Research, 'The Judiciary: Productivity in Perspective' (Report summarizing work by the Dutch Council for the Judiciary, Raad voor de rechtspraak, or Rvdr, no date), available at:  
<http://www.scp.nl/english/dsresource?objectid=22254&type=org> (Netherlands Institute for Social Research, no date)
- <sup>11</sup> OECD, 'Towards Better Measurement of Government', *OECD Working Papers on Public Governance* (2007), 1-186
- <sup>12</sup> P. Dunleavy, 'The Architecture of the British Central State', *Public Administration*, 67 (1989), 249-76.
- <sup>13</sup> P. Dunleavy, *Democracy, Bureaucracy and Public Choice: Economic Explanations in Political Science* (Hemel Hempstead: Harvester Wheatsheaf, 1991), 1-286, Ch.7.
- <sup>14</sup> Dunleavy et al, *Digital Era Governance*, Ch.7.
- <sup>15</sup> Dunleavy et al, *Digital Era Governance*, Chs. 2 and 7.
- <sup>16</sup> National Audit Office, *State Earnings-Related Pension Scheme: The Failure to Inform the Public of Reduced Pension Rights for Widows and Widowers*, (London: The Stationery Office, HC 320, 2000).
- <sup>17</sup> Data to calculate output and input series was kindly provided by the Department of Work and Pensions. A list of all the benefits analysed is provided in the Methodological Appendix.
- <sup>18</sup> This was the case of War Pensions and Child Benefit. Responsibility for the payment of War Pensions was transferred from the Department of Work and Pensions to the Ministry of Defence on 11th June 2001. The payment of Child Benefit has been the responsibility of Her Majesty's Customs and Revenue (HMRC) since 1st April 2003.
- <sup>19</sup> OECD, *Compilation Manual for an Index Services Production* (Paris: OECD Publishing, 2007).

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- <sup>20</sup> Hansard written answers to Commons 6 Dec 2005 Column 1196W and 23 July 2007 : Column 725W. See also BBC News, 26th November 2004, “Benefits IT Chaos Exaggerated.”
- <sup>21</sup> In addition to the FTE figures from the Department of Social Security (DSS), we included similar figures from the following agencies: Employment Service, Child Support Agency, Health and Safety Executive and the Contributions Agency. Regarding the latter, it was included in our series only until financial year 98/99 since in April 1999 it was transferred to the Inland Revenue.
- <sup>22</sup> Office on National Statistics, ‘Public Service Productivity: Social Security’
- <sup>23</sup> Department of Work and Pensions, ‘An Analysis of DWP Productivity 1997/2008’
- <sup>24</sup> See W.J. Baumol, S.A.B Blackman and E.N. Wolf, *Productivity and American Leadership*, (Cambridge, MA: MIT Press, 1989).
- <sup>25</sup> See A. Ott and R. Cebula, *The Elgar Companion to Public Economics: Empirical Public Economics* (Franborough: Elgar, 2006), p. 117.
- <sup>26</sup> Dunleavy et al, *Digital Era Governance*, Ch. 7.
- <sup>27</sup> See D. Jorgenson, M. Ho and K. Stiroh, *A Retrospective Look at the US Productivity Growth Resurgence*, *Staff Report No 277* (New York: Federal Reserve Bank of New York, February 2007).
- <sup>28</sup> P. Dunleavy, H. Margetts, S. Bastow, O. Pearce, and J. Tinkler, *Government on the Internet: Progress in Delivering Information and Services Online* (London: The Stationary Office. HC 239, 2007).
- <sup>29</sup> See M. Bensaou and N. Venkatraman, ‘Configurations or Interorganizational Relationships: A Comparison Between the US and Japanese Automakers’, *Management Science*, 41 (1995), 1471-92. See also D. Ketchen and J. Combs, ‘Organisational Configurations and Performance: a Meta-Analysis’, *Academy of Management Journal*, 40 (1997), 223-40.
- <sup>30</sup> G. Dess, G. Lumpkin and J. Covin, ‘Entrepreneurial Strategy-Making and Firm Performance: Tests of Contingency and Configurational Models’, *Strategic Management Journal*, 18 (1997), 677-95.
- <sup>31</sup> On this point, see: C. Ichniowski, K. Shaw and G. Prennushi, ‘The Effects of Human Resource Management Practices on Productivity: A Study of Steel Finishing Lines’, *American Economic Review*, 87 (1997), 291-313; E. Caroli and J. Van Reenen, ‘Skill Biased Organizational Change? Evidence from a Panel of British and French Establishments’, *Quarterly Journal of Economics*, 116 (2001), 1449-92; N. Bloom, R. Sadun and J. Van Reenen, ‘It Ain’t What You Do It’s the Way You Do IT. Testing Explanations of Productivity Growth Using US Affiliates’, *Discussion Paper*, Centre for Economic Performance, 1-55.
- <sup>32</sup> On this point see: G. Boyne, K. Meier, L. O’Toole and R. Walker, *Public Service Performance. Perspectives on Measurement and Management* (London: Cambridge University Press, 2006); S. Bretschneider, F. Marc-Aurele and W. Jiannan, ‘Best Practice Research: A Methodological Guide for the Perplexed’, *Journal of Public Administration Research and Theory*, 15 (2004), 1-17; S. Overman and K. Boyd, ‘Best Practice Research and Post-Bureaucratic Reform’, *Journal of Public Administration Research and Theory*, 4 (2004), 67-83.
- <sup>33</sup> T. Mukhopadhyay, R. Surendra and K. Srinivasan, ‘Information Technology Impact on Process Output and Quality’, *Management Science*, 4 (1997), 1645-59.
- <sup>34</sup> W. Lehr and F. Lichtenberg, ‘Computer Use and Productivity Growth in Federal Government Agencies, 1987 to 1992’, *Journal of Industrial Economics*, 46 (1998), 257-79.
- <sup>35</sup> Dunleavy et al, *Digital Era Governance*.
- <sup>36</sup> National Audit Office (NAO), *The Efficiency Programme: A Second Review of Progress* (London: The Stationery Office, HC 156-I, 2007), p.4.

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- <sup>37</sup> Dunleavy et al, *Digital Era Governance*.
- <sup>38</sup> Dunleavy et al, *Digital Era Governance*, Ch. 9.
- <sup>39</sup> H. Margetts, *Information Technology in Central Government: Britain and the United States*, (London: Routledge). See also H. Margetts, 'The Computerization of Social Security: The Way Forward or a Step Backward?', *Public Administration*, 69 (1991), 325-43.
- <sup>40</sup> See P. Dunleavy, H. Margetts, S. John and D. McCarthy, *Government on the Web* (London: The Stationary Office. HC 87, 1999), 24-35.
- <sup>41</sup> Dunleavy, H. Margetts, S. John and D. McCarthy, *Government on the Web*, paragraph 2.31.
- <sup>42</sup> Dunleavy, H. Margetts, S. John and D. McCarthy, *Government on the Web*, paragraph 2.32
- <sup>43</sup> P. Dunleavy, H. Margetts, D. Raraty and J. Tinkler (and with D. Dorrell, T. Escher, T. S. Goldchluk, L. Hinds, M. Khan, and S. Reissfelder), *Department of Work and Pensions: Communicating with Customers* (London: The Stationary Office, HC 241, 2009), p. 22.
- <sup>44</sup> P. Dunleavy, H. Margetts, D. Raraty and J. Tinkler (and with D. Dorrell, T. Escher, T. S. Goldchluk, L. Hinds, M. Khan, and S. Reissfelder), *Department of Work and Pensions: Communicating with Customers*, p. 13.
- <sup>45</sup> Work and Pensions Select Committee, *The Efficiency Savings Programme in Jobcentre Plus: Second Report of Session 2005-06* (London: The Stationary Office. HC834-II, 2006), Ev. 46. Available at <http://www.publications.parliament.uk/pa/cm200506/cmselect/cmworpen/834/834ii.pdf>
- <sup>46</sup> See: National Audit Office, *e-Revenue* (London: The Stationary Office. HC 492, 2002) and National Audit Office, *Filing of Income Tax Self-Assessment Returns* (London: The Stationary Office. HC 74, 2005). See also: P. Dunleavy, H. Margetts, S. Bastow, R. Callaghan and H. Yared, *Government on the Web II* (London: The Stationary Office, HC 764, 2002) p. 17-28.
- <sup>47</sup> Centre for Economic and Business Research, 'The UK's Public Sector Productivity Shortfall is Costing Tax-payers £58.4 billion a Year' (London: CEBR, 2009) press release, 23<sup>rd</sup> August.
- <sup>48</sup> P. Dunleavy, H. Margetts, D. Raraty and J. Tinkler (and with D. Dorrell, T. Escher, T. S. Goldchluk, L. Hinds, M. Khan, and S. Reissfelder), *Department of Work and Pensions: Communicating with Customers* (London: The Stationary Office, HC 241, 2009).
- <sup>49</sup> A. Sharples, 'The Government's Response to Unemployment', Paper to the LSE Public Policy Group seminar on 'Innovating out of the Recession: New Strategies in Human Resources', 29 January 2010. Available at <http://www.lse.ac.uk/collections/LSEPublicPolicy/Docs/2010.01.28%20LSE%20Seminar%20AS%20Final%20-%20Version%20for%20publication.ppt>
- <sup>50</sup> W. Van Dooren, 'After Atkinson. The Implementation of Measurement Innovations', Paper to the UK Political Studies Association Annual Conference, Edinburgh, 30 April. Available at: [http://www.psa.ac.uk/2010/UploadedPaperPDFs/1440\\_1246.pdf](http://www.psa.ac.uk/2010/UploadedPaperPDFs/1440_1246.pdf)
- <sup>51</sup> L. Carrera, P. Dunleavy, C. Aguilar and A. White, *Government Productivity in the UK: Core Report*. National Audit Office. See also S. Bastow, 'Measuring Productivity in the England and Wales Prison System, 1979 to 2009', Paper to the UK Political Studies Association Annual Conference, Edinburgh, 30 April. Available at: [http://www.psa.ac.uk/2010/UploadedPaperPDFs/1323\\_1201.pdf](http://www.psa.ac.uk/2010/UploadedPaperPDFs/1323_1201.pdf)
- <sup>52</sup> On this point see the following works: A. Hughes, 'Guide to the Measurement of Government Productivity', *International Productivity Monitor*, 5 (2002), 64-77; A. Iorwerth, 'How to Measure Government Productivity: A Review Article on 'Measurement of Government Output and Productivity for the National Accounts (The Atkinson

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Report), *International Productivity Monitor*, 13, 57-74; Statistics New Zealand, *Measuring Government Sector Productivity in New Zealand: a Feasibility Study* (Wellington, NZ: Statistics New Zealand, 2010), Ch 10.

<sup>53</sup> L. Osterweil, L. Millet, and J. Winston, *Social Security Administration Electronic Service Provision: A Strategic Assessment*, Report of the Committee on the Social Security Administration's E-Government Strategy (Washington, DC: National Research Council, 2007)