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Volume Title: The Trend of Government Activity in the United States Since 1900

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Volume Publisher: NBER

Volume ISBN: 0-87014-055-8

Volume URL: <http://www.nber.org/books/fabr52-1>

Publication Date: 1952

Chapter Title: Productivity in Government and the Output of Government Services

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Chapter URL: <http://www.nber.org/chapters/c3121>

Chapter pages in book: (p. 84 - 111)

## CHAPTER 5

### Productivity in Government and the Output of Government Services

The factors underlying the rising trend of government's use of resources may be put into two groups: first, those affecting the relation between these resources and the services into which they are transformed — that is, government's productivity; second, those affecting the volume of services rendered. We begin our exploration of these factors with a study of the changing relation between the input and output of government. Has government's productivity declined so that part of the rise in input reflects the need for more resources in order to maintain a given volume of services? Or has productivity risen, thereby causing government's output to rise even more rapidly than its input?

#### *Declining Hours of Work*

Changes in hours worked by government employees and in the rate of use of government's capital goods, as well as changes in the efficiency with which resources are used, influence the ratio of input to output. What can be said about the first factor? Since little is known about changes in the number of hours per week during which government capital goods are in use, except that they are probably associated with changes in hours of employment, we shall have to let the latter tell the tale for both.

In practically all industries in the private sector of the economy — the outstanding exception may be agriculture — hours of labor put in by workers declined between 1900 and 1940. The average reduction was probably about 20 percent including agriculture, perhaps 25 or 30 percent excluding agriculture. In such an environment should we not expect to find the hours of the average government worker also declining?

In some types of government work there is no specific work

week. The military and naval service is the prime example, and mention may be made also of the proverbial lighthouse keeper and the small-town chief of police on "continuous duty", subject to call at all hours of the day and night. In some others, hours per employee seem actually to have risen. The average public school year, for example, was lengthened. And the regular work week of federal employees in the District of Columbia today is little different from the 39 hours that prevailed in 1900-03.

Scattered reports on postal employees, prison guards, hospital attendants, firemen and policemen, New York City Health Department employees, and similar groups suggest, however, that hours in most government posts lessened after 1900, even without taking into account the extension and lengthening of the annual vacation.<sup>1</sup> That the decline has been as much as the 20 or 30 percent in private industry seems doubtful. Since government was already acting the part of the "ideal employer", setting standards of work and pay, at the opening of the century, it is likely that the strong pressures toward shorter hours in private industry, especially after 1929, were not matched by corresponding pressures in government.

Now, any fall in the hours of government work per week tends to push government employment up.<sup>2</sup> In some cases the effect of fewer hours might be partly offset by higher productivity induced by the reduction. But this offset could hardly be complete. There must be some government services which require a substantially fixed number of manhours per unit of service rendered. (Police protection provided by foot patrol may be an example.) In such cases, reduction of hours would tend to lead to corresponding rises in employees per unit of service rendered.

We have here, then, a factor making for increase in government employment. In some functions reduction in hours might conceivably have been the major factor. On the whole, however, it must be counted as contributing no more than 10 or 15 percent to the

<sup>1</sup> The data are from diverse sources: the U. S. Civil Service Commission, the Bureau of Labor Statistics, the Municipal Year Book, communications from the American Federation of Government Employees, and Paul Douglas' *Real Wages in the United States* (Houghton Mifflin, 1930), among others.

<sup>2</sup> Except when service is reduced as a consequence; but this is rare and usually only temporary

rise of government input — if we are right in our surmise that hours fell less than 20 percent.

We turn to what probably has been a more important factor: change in the efficiency of government's use of resources.

### *Improvements in Technology*

Application of mechanical, electrical, and chemical devices in ever increasing quantity and quality is a major theme in the history of economic development. We may look, therefore, to technological advance as a potent cause of increased productivity in government activities as well as in private industry.

Developments in the postal system illustrate the increasing number, widening variety, and improving quality of mechanical devices put to use by government.<sup>3</sup>

Mechanical methods are not economically applicable in some phases of Post Office work, especially facing the mail preparatory to cancellation and sorting. But for handling a wide variety of other jobs, mechanical methods were devised and extended during the twentieth century to an extent seldom realized by patrons who use only the front entrance to the Post Office.

By 1940 improved machines were cancelling and postmarking letters at the rate of 600 per minute, as compared with hand cancellation of 1500 per hour. Letters were stacked mechanically and fed automatically into the cancelling machines. And the masses of mail were handled by automatic conveyors and other devices: chutes, floor wells, belt conveyors, bucket elevators, travelling hoppers with tripping devices, and floor trucks driven by hand or power. To use these devices the physical plant of the postal system has been modified by an extensive building and adaptation program. We have already seen the large investment in new federal facilities made during the 1930's, presumably in buildings technically better than older structures. And for carrying letters to and between post offices, motor trucks have displaced the earlier horse-drawn vehicles.

<sup>3</sup> Bureau of Labor Statistics *Bulletin 574*, "Technological Changes and Employment in the U. S. Postal Service", by Witt Bowden, December 1932, and annual reports of the Post Office Department.

Most of the new devices for handling the mail are not economical in smaller post offices, of which there are still a great many although their number has been declining.<sup>4</sup> The mere increase in average size must therefore have pushed up the percentage of mail handled mechanically, apart from the increase resulting from more and better machines in an office of a given size.

Mechanical devices have also speeded up the office work of the Post Office Department. Bookkeeping and calculating machines, introduced mainly during the period under discussion, save time and labor and reduce the number of errors — a further labor saver. Check-writing machines, signature devices, machines for computing the complicated rates on second class matter, time recorders, and many other appliances are now in use. Handling several hundred million postal money orders per year would be a burdensome task, indeed, without the aid of mechanical tabulating and summarizing equipment.

Census operations on the scale described in Chapter 4 would be quite impossible without these devices, to turn to another division of the federal government. The "three billion facts" said to have been collected in the 1940 Census would never have seen the light of day had hand operations been used; nor could the five million forms returned to the Census Bureau in 1938 (each containing an average of 44 entries) have been processed with the speed to which we have become accustomed.<sup>5</sup> The use of punch card tabulating equipment began, it is true, before 1900.<sup>6</sup> But there have been many improvements since the opening of the century. The first mechanical tabulator, for example, involved much labor in operation. Improvements in the Census Bureau laboratory reduced

<sup>4</sup> In 1900 there were 72,000 fourth class post offices out of a total of 77,000; in 1940, 29,000 out of a total of 44,000.

<sup>5</sup> See F. C. Mills and C. D. Long, *The Statistical Agencies of the Federal Government* (National Bureau of Economic Research, 1949), p. 34; and annual reports of the Department of Commerce (Department of Commerce and Labor until 1913). The remarkably short current lags between the period to which data refer and the date of their release are indicated on pp. 116-8 of the book by Mills and Long.

<sup>6</sup> Hollerith's "unit card" principle, the fundamental basis of all punch card tabulating systems, was embodied in equipment as early as 1890.

the amount of manual work, added a printing device, and a high speed feed system. Scores of columns can now be handled simultaneously. Part of the editing job, one of the most time consuming in census operations, has in effect been mechanized by a reject mechanism: cards failing to meet certain requirements (e.g., that all married people be over a certain age) are put aside for review. In addition, auxiliary equipment now moves the cards and duplicates information on two or more cards. Sorters, collators, summary punches, reproducers, multipliers, interpreters (which read the holes on a card and print the data read on the top of the same card) have been devised and extensively used.

Motorization spread quickly and widely throughout government. The horse-drawn vehicles once operated by city police departments, for example, had been entirely replaced by motorized vehicles in 1946.<sup>7</sup> Auto patrol has of course reduced the number of men needed for patrol duty. Its advantages are indicated by the fact that in 1938 close to two-fifths of all police officers on patrol duty rode in automobiles.<sup>8</sup> Mobilization of men and equipment has been expedited greatly by these means. Aided by modern signaling equipment (the telephone, teletype, and radio), motorization has made it possible largely to dispense with the reserve force.<sup>9</sup> Eleven years after Detroit had set up the first publicly owned police radio system (in 1928) over 700 municipal radio transmitters were in operation.<sup>10</sup>

In the growing portion of police duties relating to traffic control, also, mechanization has played a large part. Efforts to develop mechanical traffic signals began about 1910. But commercial development did not start until the 1920's. Today the number of

<sup>7</sup> Bureau of the Census, *Statistics of Cities Having a Population of over 30,000: 1905; Financial Statistics of Cities: 1915*; the International City Managers' Association, *Municipal Year Book*, 1946, p. 416.

<sup>8</sup> Federal Bureau of Investigation, *Uniform Crime Reports*, 2nd Quarter, 1939 (cited by Bruce Smith, *Police Systems in the United States*, Harper, 1940, p. 142).

<sup>9</sup> One consequence was a drastic cut in hours of policemen. This illustrates a way in which hours and efficiency — which we are treating as independent factors — are in fact inter-related.

<sup>10</sup> Bruce Smith, *ibid.*, p. 329.

intersections protected by traffic lights must be enormous compared with the 8,000 estimated for 1926.<sup>11</sup>

It is easy to multiply the examples:<sup>12</sup> automotive transport of fire-fighting equipment; use of construction equipment in road building and maintenance; use of the radio and motion picture in education; and widespread acceptance of office machines and calculators (federal employees today receive their pay in the form of checks printed on punch cards, and New York State income taxes are billed on punch cards). Even the simple listing of the special-purpose automotive equipment operated by the Sanitation Department of New York City is impressive: in 1947 there were 1,390 refuse collection trucks, 3 offal trucks, 193 flusher trucks, 68 mechanical brooms, 178 snow loaders, 556 cross walk snow plows, 49 rotary snow brooms, and 115 salt spreaders.<sup>13</sup>

Besides mechanization, other scientific advances have been used, of which two examples may be given. One is the technique of scientific sampling introduced in the Census Bureau's operations. A carefully devised small sample can be made to yield information of a specified level of accuracy at a fraction of the cost of a complete census, and to do it more quickly.<sup>14</sup> Thus by sampling only

<sup>11</sup> B. W. Marsh, "Traffic Control", *The Annals of the American Academy of Political and Social Science*, September 1927.

<sup>12</sup> Indeed, there is danger of giving too strong an impression of the benefits of mechanization. Some authorities feel, for example, that many police departments are overburdened with equipment. "Teletype systems are installed without regard to their specific local value as supplementary recording devices; and signal switchboards are provided with multicolored panels and decorative schemes of illumination which delight the eye of the beholder without contributing anything of value to the grim business of police protection. Ingenious contrivances have in truth become a special kind of police problem, both because they are costly and also because they serve to distract the attention of administrators and public alike away from . . . organization, personnel and procedure . . ." Bruce Smith, *op. cit.*, p. 144.

<sup>13</sup> *A Better Government for a Better City, A Study of Five Departments of the City of New York at the Request of Honorable William O'Dwyer, Mayor* (The Citizens Budget Commission, 1948), pp. 96-7.

<sup>14</sup> The increase in efficiency made possible can be determined with some precision. Suppose, for example, that an estimate of government nonmilitary employment within plus or minus 6 percent of the complete census figure is satisfactory. An estimate of such accuracy (or better) can be obtained, 19 times out of 20, from a sample of only 25,000 households — just 0.06 percent of the

25,000 households the Bureau of the Census can keep the country informed monthly of the national level of employment and unemployment only one month before. Further, when a small sample is taken, it is possible to use highly trained enumerators, more detailed instructions, and more elaborate schedules, at less than prohibitive cost, and thus reduce the possibility of errors that even censuses suffer from. The application of the scientific sampling method has multiplied the productivity in certain Census Bureau operations many-fold.

Adaptation and application of scientific methods and apparatus to the detection of crime and to judicial proof is another example.<sup>15</sup> Fingerprinting is especially noteworthy. The means of identification used about 1900, photographs and Bertillon anthropometric measurements, were complex and could not be found in any decisive records left at the scene of a crime. In addition, the use of photography for recording evidence, maintaining departmental records, and court presentation has spread widely, well beyond the point attained in 1900.<sup>16</sup>

In the past two decades, moreover, elaborate laboratories have been set up by many police forces, and the Federal Bureau of Investigation and state laboratories have placed their facilities at the disposal of smaller police units that do not operate their own.

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population of 40 million households — using the same schedules, instructions, and enumerators. (See any of the Census Bureau monthly reports on the labor force.)

<sup>15</sup> *Municipal Police Administration*, 2nd ed., 1943, the International City Managers' Association, published for the Institute for Training in Municipal Administration.

<sup>16</sup> Most applications of "police science" are relatively new. Readers of detective stories will be surprised to learn that until well into the twentieth century, "the criminal identification unit of the Boston police had only one small table for taking fingerprints. . . . The bureau had no photographer of its own . . . no portable photographic equipment for taking pictures at the scene of crimes. There was no laboratory . . . no *modus operandi* system of records to identify the acts of crime in the metropolitan area, no equipment for photostating fingerprints or documents, or for taking plaster-of-paris impressions of footprints or other tell-tale marks, no comparison lenses for matching fingerprints, no enlargement apparatus for analyzing handwriting and no ballistics apparatus." A number of these deficiencies had been remedied by 1932. (L. V. Harrison, *Police Administration in Boston*, Harvard University Press, 1934, pp. 123-4.)



*Changes in Public Administration*

A major trend in public administration has been the spread of the merit system — the selection and promotion on a permanent tenure of public employees on the basis of specified standards of training, ability, effort, and experience rather than patronage. The merit system dates from its adoption by Congress and the State of New York in 1883. Yet at the close of the nineteenth century it was applied on only a limited scale.<sup>17</sup> Since 1900 there has been extensive expansion in three ways. First, the number of civil service commissions has increased greatly.<sup>18</sup> Second, the merit system has come to be applied by many government units without using the particular instrumentality of a civil service commission. Other personnel bodies, or a system without special administrative agencies or even without statutory provisions, have also provided the basis for a merit system. "City-manager" cities, for example, have merit systems although usually no civil service commission.<sup>19</sup> Third, the coverage of the various merit systems has grown. Often they at first included only certain specified classes of employees, for example, police officers and firemen, and were then gradually

<sup>17</sup> In 1900, civil service commissions — one indication of the existence of the merit system — had been established only by the federal government, two states, one county, and sixty-five cities. On this question see L. D. White, *Trends in Public Administration* (McGraw-Hill, 1933), and *Introduction to the Study of Public Administration* (Macmillan, 1939).

<sup>18</sup> By 1931, according to not quite complete data collected by White (see his *Trends*), there were civil service commissions in 12 states, 12 counties, and 250 cities. Further additions have since been made: in December 1944, e.g., 19 states had a service-wide merit system, one covered three classes of employees, and the system of the other 28 covered at least social security agencies. (*The Book of the States, 1945-6*, pp. 155-61; the inclusion of personnel in the social security agencies in the 28 states is the fruit of a subsidy provision of the federal Social Security Act.)

These numbers do not fully describe the trend, of course. Some commissions never become effective because of lack of funds or other handicaps, and some perform functions so limited as hardly to warrant accepting them as an indication of the existence of a merit system. On the other hand, the number of commissions understates the degree of coverage. For example, it is largely the bigger cities that have set up civil service commissions. Further, some commissions, such as that of New York State, cover county and certain other local government employees as well as state employees.

<sup>19</sup> Since about 1910 over 400 such city governments have been adopted, and along with this form of administration, the merit system.

widened to cover other classes of workers. The merit system of the federal government illustrates this trend, as well as the backsliding and forward spurts that have caused fluctuations about the trend.<sup>20</sup>

Current application of the merit system is by no means complete. Most counties, many states, and the smaller municipalities are still backward in this respect. But the coverage is far greater than it was at the opening of the century.<sup>21</sup> Even with considerable allowance for the nominal character of some existing merit systems, and the use of veterans' preferences and other exceptions, the trend away from patronage and toward an actual merit system is clear.

Some persons might question whether widening the scope of the merit system has tended to raise government's productivity. To them the merit system is merely a system for maintaining mediocrity.<sup>22</sup> But most informed opinion inclines to the view that the merit system tends to reduce corruption and waste in government. It increases efficiency by reducing turnover and creating a professional class of workers. Expressed in the terms we have been using, the merit system tends to reduce the number of government em-

<sup>20</sup> The basis for the expansion was the provision of the Pendleton Act (which set up the U. S. Civil Service Commission) conferring on the President the power to add to the Commission's jurisdiction. The initial coverage was rather small: in 1884 only 10 percent of all positions in the executive civil service were subject to examination; by 1900 the percentage was about 40; it grew to 80 in 1932, dropped sharply when the New Deal agencies came into being, then rose to 68 in 1939.

See *The Classified Executive Civil Service of the United States Government*, a pamphlet published by the U. S. Civil Service Commission, March 1933, for additions to the classified service made by executive order and Congressional action in each administration up to 1933. The percentages cited appear on p. 29; percentages for later years were computed from current Civil Service Commission data.

<sup>21</sup> Current data on merit systems will be found in the *Municipal Year Book* and *The Book of the States*.

<sup>22</sup> The civil service is "a unique system under which it is assumed that people are simple organic compounds, subject to laboratory methods. Examinations are given to these specimens, and on the basis of the results they are neatly catalogued and filed until needed. Orders are filled on the general understanding that short of an Act of God there will be no returns or exchanges. The finished product is a pale, quiet individual, faithful in a dim sort of way, disinclined to originality, but capable within a limited field of an insolence that makes one wonder why it is called 'civil'.

"The chief advantage of the civil service system appears to be that it offers regular, light employment at a moderate remuneration. This undoubtedly

ployees (and the quantity of other resources) required to produce a given volume of government services. On this view, expansion in the scope of the merit system has been a factor contributing to increased productivity in government during the last half-century.

Other developments in personnel management have tended to improve worker efficiency and thus increase productivity. Examples are: the raising of standards of qualification, the classification of positions and standardization of rates of pay, the introduction of pension systems, establishment of training programs, and the development of techniques for handling transfers, illness, and so on. All these tend to improve morale, reduce the rate of turnover, eliminate superannuated employees, and thus raise efficiency. These developments, largely a product of the more recent decades of the twentieth century, constitute a significant factor that we must count among those that have raised productivity in government since 1900.<sup>23</sup>

The merit system is a device for getting the most out of government's dollars when labor is purchased. Centralized purchasing — like the centralized civil service commission — is a means of getting the most out of each dollar spent in the purchase of goods. Thus centralized purchasing also must be considered in analyzing government's productivity.

Strictly defined, centralized purchasing is a form of organiza-

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attracts large numbers of steady-going, unimaginative people, but I question whether their services are of any greater value to the public than the less routine but more lively efforts of patronage appointees who have a personal stake in the business. Andrew Jackson (said), 'I cannot but believe that more is lost by the long continuance of men in office than is generally to be gained by their experience.' " (William Turn, "In Defense of Patronage", *The Annals of the American Academy of Political and Social Science*, January 1937.)

<sup>23</sup> The *Report of the Congressional Joint Commission on Reclassification of Salaries*, March 12, 1920 (66th Cong., 2d Sess., House Doc. 686) describes the situation in the federal government before the introduction of the changes noted above. (An important factor in 1920 was the rise in the cost of living and other distortions caused by the war; nevertheless, the report provides a graphic picture of the influence on morale of lack of uniformity in pay for the same work and other factors of more immediate concern to us.) To cite one example, of the 3,000 employees 65 and older on Washington payrolls in 1920, it was reported that 1,800 would elect or could be compelled to retire if a retirement law were passed, and these could be replaced by a fourth the number of younger employees (Part 1, p. 125).

tion in which one office is delegated the authority to buy the supplies, materials, and equipment needed by all the branches of an organization.<sup>24</sup> It has many advantages over decentralized buying. Graft or favoritism tends to be reduced. The size of orders is materially increased. Excessive variety is eliminated. The use of trained buyers is enhanced. Central storage and distribution reduces the total volume of stocks held and the piling up of surpluses that become obsolete. These advantages are reflected in two ways: by reductions in the average price paid per unit and in the overhead cost of buying. (There are related benefits: the use of specifications and standardization, testing laboratories, and checking of bids against open market prices are noteworthy.) While it is easy to cite striking examples of the savings made by centralized purchasing,<sup>25</sup> no comprehensive measure is available except for such opinions as the following: "Experience has demonstrated beyond a doubt that by centralized purchasing the unit cost of supplies, materials, and equipment can be reduced, on an average, from 10 to 15 percent."<sup>26</sup> Duly discounting the enthusiasm of the proponent, there remains a factor of some substance.<sup>27</sup>

Like the merit system, centralized purchasing is a product

<sup>24</sup> Russell Forbes, *Governmental Purchasing* (Harper, 1929), p. 1.

<sup>25</sup> A number have been collected by Russell Forbes, *ibid.*, esp. Chapter 1 and Appendix A. See also various issues of the *National Municipal Review*.

<sup>26</sup> *Ibid.*, p. 4.

<sup>27</sup> It might be questioned that a mere reduction in the price paid for goods purchased — and the greater part of the advantages of centralized buying materializes in that form — enhances the productivity of government. Can the ratio of volume of government services to volume of resources used be raised by reducing the price paid for the resources? The answer is "no" only if an exceedingly narrow interpretation is placed on volume of resources used. But when goods are purchased, the resources acquired consist of more than just the goods themselves. The services involved in selling, packing, transporting, and billing the goods must also be counted. When centralization of purchases succeeds in reducing the volume of these services, as it does when it leads to larger purchases, a real reduction has occurred in the volume of resources used even though the total number of units purchased over the years remains unchanged. And this reduction is measured by the reduction in price.

mainly of the twentieth century.<sup>28</sup> It has spread not only with its acceptance in principle by various government units, but also through the growth of cooperative buying plans to provide the smaller government units with the advantages of centralized purchasing,<sup>29</sup> and through extension of a given system to cover more of the purchases of the government unit concerned.

Few government units have complete centralized purchasing even today. Exceptions for certain classes of specialized equipment or supplies, or a division among several central purchasing agen-

<sup>28</sup> In 1900 centralized purchasing is known to have been used only in the Navy Department of the federal government, in 4 states, and in 3 of the 41 cities having populations of 200,000 or more in 1930.

Since 1900, and especially since 1910, it has spread widely. In the federal government the organization of the General Supply Committee in 1909, and substantial extension of its powers in 1929, represent steps toward widening the scope of central purchasing. In 1933, upon the establishment of the Procurement Division, the full principle of central purchasing came to be applied to the majority of the federal government's purchases.

Of the 40 states with some degree of central purchasing by 1931, 19 set up the organization between 1910 and 1929.

As for cities with more than 10,000 inhabitants, by 1926 about 25 percent had centralized purchasing, the percentage being close to 100 for the very large cities, diminishing to about 15 for smaller cities. For cities under 10,000 in population the percentage was probably under 15. Centralized purchasing was instituted in cities chiefly between 1910 and 1919, to judge from data for cities of over 200,000 in 1930. Most city-manager cities adopted central purchasing, just as they did the merit system and other improvements, along with the manager

Counties have been backward in this as in other respects. By 1930 centralized purchasing had been established in fewer than a hundred of the 3,000 counties in the United States.

The data are largely from Forbes, *op. cit.*, Chapters 1-3; A. E. Buck, "The Coming of Centralized Purchasing in State Governments", Supplement to the *National Municipal Review*, February 1920; L. D. White, *Trends in Public Administration*, Chapters 13, 14, and 15; L. D. White, *Introduction to the Study of Public Administration*, Chapter 5; John A. Fairlie and C. M. Kneier, *County Government and Administration* (Century, 1930), p. 404. Some rather different figures are given in a note in the *National Municipal Review*, June 1937, where it is reported that centralized purchasing, in one form or another, is found in 250 cities, 50 counties, and 36 states. No source is given.

<sup>29</sup> These have been set up in about 20 states, either by state legislation or by municipal leagues. The purchasing may be done through the state purchasing agent, through a large municipality or county, or through a cooperative organization. See the *National Municipal Review* for 1939, pp. 874-5, and other issues.

cies in the same unit are found.<sup>30</sup> And the system itself varies in effectiveness.<sup>31</sup> Yet on the whole the trend has been toward greater realization of the advantages of centralized purchasing, and this seems to have been another significant factor heightening government productivity.

The rise of the merit system and the spread of centralized purchasing are only two aspects of the reorganization of public administration that has been taking place in the United States (and other countries) during the last century. Since 1900 there has been a trend toward integrating internal administrative responsibility in city governments, and since about 1915, a corresponding development in state governments.<sup>32</sup> The reform of municipal government, which began with the commission plan and continued with the council-manager plan, illustrates the development toward internal integration. In the federal government also, efforts sprang up aimed at better internal organization. Recent Congressional approval of executive powers to improve the organization of the executive branch is the latest stage in this trend.

There also has been a trend towards better coordination between government units seeking the economies of large scale organization. This has involved absorption of counties by expanding cities, consolidation of school districts, setting up of authorities or special districts to perform functions required by participating governments, and contractual agreements whereby one unit performs for the others.

The expansion of state administrative power and influence at the expense of the cities and counties has also played a part. County functions, for example, have tended to be absorbed by the states,

<sup>30</sup> See A. M. Freiberg, "How Government Buys: An Appraisal", *Public Policy* (Harvard University Press, 1941), for a description of the pre-World War II organization of purchasing in the federal government.

<sup>31</sup> For example, out of 40 state purchasing acts analyzed in 1931, 22 did not specifically vest the power to modify a requisition in the central purchasing office (L. D. White, *Trends*, pp. 207-8). Lack of the power to modify lessens the degree to which purchasing is truly centralized. In effect, the purchasing officer is then merely a purchasing clerk, and the advantages of centralized purchasing are considerably less than they would be if control by the central office were strong.

<sup>32</sup> L. D. White, *Introduction to the Study of Public Administration*, Ch. 2.

and supervision of "the inefficient county"<sup>33</sup> by state governments has come to be recognized as a need and some steps taken to meet it. But this trend is still in its infancy.

There is a question whether efforts at better public administration have done more than to offset, perhaps only in part, the inefficiencies that tend to creep in as government units and procedures and organization become obsolescent. In a world of constant change, continual reorganization — especially difficult in government, whose structure tends to be static — is necessary even to maintain efficiency. Like the efforts of the Red Queen, changes in public administration may have succeeded only in preventing a decline in organizational efficiency, rather than in advancing it beyond the point it had reached at the opening of the century.

The rising scale of operations of federal, state, and city governments raises another question. Many of these units have expanded to huge proportions. Would not this tend to cause waste rather than reduction of resources per unit of service rendered by government? A tendency for unit costs to rise when the size of establishment goes beyond some optimum point, supposed to affect private operations (the evidence is ambiguous), may have affected government operations.

On the other hand, the same rather vague reasoning suggests that an increase in the scale of operations before the optimum size is reached reduces costs; and some of the growth in government operations may have had this effect. Some students of public administration think that many smaller units of government are obsolete and that consolidation into larger units would make for more efficiency.<sup>34</sup> Thus counties with small populations (because of

<sup>33</sup> "Like an octopus or a centipede, the county is a governmental unit which has to be seen to be believed. . . . Their junketory, thriftless, expensive, ramshackle, outmoded governments. . . ." Miriam Roher, "The Patient Lived", *National Municipal Review*, Feb. 1939, p. 120.

<sup>34</sup> See, e.g., William Anderson, *The Units of Government in the United States*, Public Administration Service, Publication 83, 1942. Professor Anderson suggests that larger units would attract more able men, could be more easily watched by voters, and would reduce overhead and waste. For an excellent discussion of the inefficiencies of local government and the problems its reconstruction would encounter, see L. W. Lancaster, *Government in Rural America* (Van Nostrand, 1937), Ch. 15.

small area or low population density) tend to have higher per capita county government expenditures than more populated counties.<sup>35</sup> These higher per capita expenditures presumably reflect higher costs for a given level of service per capita, rather than more services per capita, for service per capita is probably positively correlated with population size. Here, too, the evidence is inadequate;<sup>36</sup> nor is it possible to reach a firm conclusion by *a priori* reasoning.

It does seem fair to suppose, however, that a very rapid rate of expansion, such as occurred in the federal government during the two wars, and has sometimes occurred in other governments when population grew very rapidly, will tend to depress efficiency rather severely for a time. (A contraction after a war or because of loss of population might have a similar effect. Inflation also lowers morale and accelerates turnover.) Those familiar with the inside of the federal government's operations under the impact of the defense and war programs and the subsequent reconversion will appreciate this possibility. Yet adjustments of one kind or another ultimately take place, given time. Some of the changes in administration previously noted are intended to be adjustments of this kind. As far as the *trend* is concerned — and it is the trend in which we are interested — there is no clear case for expecting that change in the scale of operations will exert any large influence on efficiency.

### *Probable Trend in Government's Productivity*

Review of some factors affecting the trend of government productivity — the use of improved technology and equipment, the spread of the merit system, the introduction of centralized purchasing, and various other advances in public administration — leaves the im-

<sup>35</sup> Clarence Heer, "Comparative Costs of County Government in the South", *Social Forces*, December 1932; J. Berolzheimer, "Influences Shaping Expenditures for Operations of State and Local Governments", *Bulletin of the National Tax Association*, March, April, May, 1947; and below, Ch. 6.

<sup>36</sup> Mabel L. Walker once made a valiant attempt to prepare objective measures of service per capita rendered by cities and compare them with size of city and government cost per capita (*Municipal Expenditures*, Johns Hopkins Press, 1930). No important, or even significant, relation appears between size of city and cost per capita, at a given level of service per capita.



pression that labor savings have been made. Indeed, it is hard to think of any factor tending in the opposite direction except possibly the very increase in the scale of government operations.<sup>87</sup> Nor does it appear that these savings of labor reflect merely increase in the volume of other resources — capital goods and other purchases — used per worker. *Total* productivity, output per combined unit of all resources, appears to have risen in government.

It is well to emphasize the uncertainties surrounding this conclusion. Unable to weigh all the factors affecting productivity, we cannot be sure what the net balance is. Yet, as has been suggested, government operations are not entirely unlike those of private enterprise, however different the objectives and means of financing; nor are government bureaus cut off from technological changes. Strong forces make for the development and spread of progressive ideas: organized research within government, the instinct of workmanship of officials, independent municipal research bureaus,<sup>88</sup> organizations of public officials and citizens, government commissions and legislative committees,<sup>89</sup> the press. For the few areas of

<sup>87</sup> The slow pace with which government structure and administration are adjusted to new needs and new situations might be thought to be another negative factor. But to cause increase in unit labor requirements, however, the lag would have to grow longer and longer.

Mention may be made, also, of the political power wielded by civil service workers, which might prevent the introduction of some new machines or methods. (See Sterling D. Spero's interesting account of the struggle over the Taylor system in the Ordnance Department of the Army, *Government as Employer*, Remsen Press, 1948, Ch. 19.) This could only lessen the advance in productivity, not cause it to fall.

<sup>88</sup> These are a product of the twentieth century. The first Bureau of Municipal Research was set up in New York in 1906. By 1944 there were 20 principal privately supported municipal research bureaus; see N. N. Gill, *Municipal Research Bureaus* (American Council on Public Affairs, Washington, 1944).

<sup>89</sup> In his discussion of the Post Office, Bowden (Bureau of Labor Statistics *Bulletin* 574) mentions the Penrose-Overstreet Commission, a joint congressional commission on second class matter created in the Appropriations Act for 1906-07; the Joint Commission on Business Methods of the Post Office Department and the Postal Service, created by act of Congress of 1907; the Hughes Commission, another commission on second class matter, 1911; four commissions consisting of Post Office inspectors and representatives of the Division of Post Office Service, making during 1913 and 1914 extensive studies of principal post offices; the Joint Commission on the Postal Service, composed of certain members of the Senate and House Post Office Committees, established in 1920 to investigate conditions and needs in detail; and important

government for which some sort of measure can be attempted, for example, the postal service (Chart 15),<sup>40</sup> there is clearer evidence of substantial advance in productivity. It seems reasonably safe to assume that, as in practically all private industry, a given volume of government production is turned out today with a smaller input of resources than at the opening of the century. The long term trend in government's productivity has probably been upward.<sup>41</sup>

Whether government productivity rose more or less rapidly than

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surveys by Department officials during 1929-31 of 55 principal offices and various operations. The most recent example is the Hoover Commission.

The very charges that government agencies are slow to profit from technological advance, frequently made by investigating commissions and citizens' committees, and the accompanying recommendations for equipment pooling and better maintenance procedures, for example, themselves provide evidence that government's productivity has been advancing.

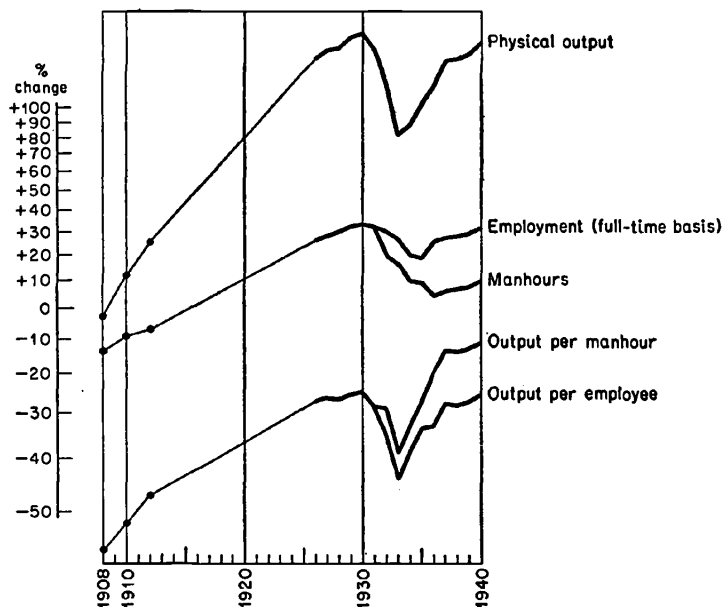
<sup>40</sup> Even the trend revealed, distinctly and sharply upward though it is, understates the true rise in output per worker or per manhour in postal operations. The measure of output fails to take into account an important element of quality improvement in postal service (recall Ch. 4). The index of output per manhour also may be biased downward because of a probable decline in overtime not caught by the figures on hours, which measure only the regular work week.

While for this government activity we can at least measure, if only conservatively, the trend in output per man and per manhour, we cannot measure the rise in output relative to the input of all resources. There is some evidence that the Post Office does more of its own work now than formerly. Local transfer or carriage of bulk mails, e.g., largely performed by contractors in 1908, is now done by the Post Office's own employees and equipment; and the story is the same for star routes, a class of contractual carriers that has declined in relative importance. As for capital assets, the earlier review may give the impression that some increase has occurred relative to employment and manhours and perhaps also relative to output. But we have no specific information on this; and we should not fall into the error of assuming that improvements in capital equipment, and least of all improvements in organization, necessarily mean increases in capital per worker.

<sup>41</sup> Our inability to obtain a more definite notion of what has happened arises not because statistical data are unpublished, but because government officials do not even collect or analyze such data. Nor can this failure, in turn, be ascribed entirely to conceptual difficulties in determining government product and government productivity. Suggested measures (e.g., the interesting list prepared by Clarence E. Ridley and Herbert A. Simon, *Measuring Municipal Activities*, International City Managers' Association, 1943, 2d ed.) seem hardly to have been applied. Since such data are needed for the information and education of the public and its representatives, for the more efficient control of government operations, and for sound government programming and budgeting, it is surely the responsibility of government officials to collect and analyze them.

productivity in private enterprise is another matter, and one on which lack of information makes it idle to speculate. Another disclaimer may be in order. To hold that government productivity probably has advanced does not imply an opinion about its abso-

Chart 15  
Postal System  
Indexes of Output, Employment, Manhours,  
and Output per Employee and per Manhour, 1908-1940



lute level or the relation of that level to the level in private business. Whether government is more or less efficient than nongovernment enterprise is another important question, but one not immediately relevant to the matter under discussion, and in any case not answerable with the data we have considered.

To sum up: Reduction in hours tended to raise employment and the quantity of capital goods used per unit of government product. The other factors we have noted worked, on net balance, in the opposite direction. The net result probably has been a decline in input relative to output. To put it conservatively, not much, if any, of the big increase in government input since 1900 can be

attributed to the factors affecting the ratio between input and output. The major factor accounting for the increase in government's use of labor and other resources has been growth in government services.

*Increase in Volume of Government Services: Some Indications of the Trend*

The volume of government services today is larger than at the opening of the century. The question is, how much larger?

As we already know, there is no direct measure of total government output or even of a substantial sample of its components. We must therefore make shift with what we have learned about government input and productivity to obtain a notion of what has happened to the volume of government services.

Recall that employment in government rose about six-fold between 1900 and 1949. Suppose, as an extreme case, that output per government worker had not changed at all in this interval. Government output would then have risen 500 percent — the same as government employment. It is true that hours fell somewhat, but government capital assets at least kept pace with employment, and purchases grew more rapidly; and the burden of what evidence we have been able to muster is that output increased per unit of all resources, and therefore also per worker. Indeed, the estimate of a 500 percent increase in government output, large as it is, is probably conservative. Yet even a figure of 500 percent would put the rise of government output above that of the output of the private sector of the economy, which was under 300 percent.

Any assumption that productivity in government increased would, of course, widen the difference between the rise in government output and the rise in private output. Suppose, for example, that output per worker in government had risen as much as in private industry — of the order of 75 percent.<sup>42</sup> In that case, gov-

<sup>42</sup> The estimate rests on Simon Kuznets' calculation of real national income (*National Product since 1869*), brought up to 1949 by later unpublished estimates. It is supposed to apply to the whole economy, rather than to private industry alone; but the difference could not be large, and it may therefore be accepted as a rough measure for the latter.

ernment output went up between 1900 and 1949 by the very large amount of 1,000 percent ( $1.75 \times 6 = 10.5$ ).

Readers taking a narrow view of government output may consider a rise of even 500 percent to be unbelievably high. It is necessary to point out, therefore, that the government output discussed here covers services to business and the community at large, as well as services to household and other final consumers. We are viewing the production of a sector of the economy, not the production of a class of final goods. Indeed, we need not concern ourselves with the difficult question: which government services are or are not final goods?<sup>43</sup> Municipal garbage collection is clearly a valuable service, whether we take it to be a final good or only a cost of living and working in cities not to be included in the aggregate net real income of city dwellers; and the same reasoning goes for national defense and similar government services. Further, government output includes all goods and services produced by government, whatever our individual tastes and predilections may lead us to think of their intrinsic value, and whatever some of us may believe their ultimate effect on the economy at large to be. Thus government services include anti-monopoly regulation and administration of tariffs and agricultural price supports, one or the other of which many feel to be detrimental activities. (Similarly, cigars are included in indexes of private output, though this commodity is frowned upon by some.)

### *Wider Scope and Variety of Government Services*

The output of government services expanded through the spread of old services and the addition of new.

The volume of old services grew, first, through a wider diffusion among government units of types of service already rendered here and there in 1900. Every student of American history is familiar with the maps designed to show the states with certain types of legislation at a series of dates, and thus to describe the process of

<sup>43</sup> A brave attempt to set forth the criteria for such a determination will be found in Simon Kuznets' "Government Product and National Income", International Association for Research in Income and Wealth, *Income and Wealth, Series I* (Bowes and Bowes, Cambridge, 1951).

diffusion. In 1900, for example, one state already had legislation providing specifically for aid to the blind. By 1919 the number of states was 10; by 1929, 20; by 1935, 32; and now, under the stimulus of the Social Security Act, the number is 48.<sup>44</sup>

Education provides another example. The fact that standards for the length of school year set by the advanced states in 1900 were later met or approached by other states accounts almost wholly for the rise in public school days per school year from 99 in 1900 to 155 in 1948: there was little change in the length of the school year in the advanced states.<sup>45</sup>

Within areas in which various types of service were already offered, expansion has occurred through wider coverage of the resident population. The national figures on education are suggestive, though they are influenced also by other factors: in 1900, 72 percent of all children 5-17 were enrolled in public elementary and secondary schools, while in 1940 the percentage was 86. And coverage has been expanded also by widening the scope of old activities to absorb peripheral areas, such as extension and adult education courses and nursery classes. Here, of course, the distinction between old and new services becomes hazy.

The continuing trend toward urbanization has been another way in which a larger and larger proportion of the population has been provided various public services. The wide variety of municipal services offered by cities are now enjoyed by a larger percentage of the population than in 1900. The simple movement of people away from the farm and toward the city has thus played a part.

Not only has the percentage of the population enjoying specified public services risen, but there has been a trend also to a higher level of service per capita, such as by improvement in quality. The standard of hospital and institutional care generally has been pushed up: equipment and facilities now frequently include laboratories, X-ray machines, physiotherapy devices, and sun parlors; special dental and dietary services are sometimes provided; there

<sup>44</sup> A. E. Geddes, *Research Monograph X*, "Trends in Relief Expenditures, 1910-1935" (Works Progress Administration, 1937), pp. 91-2; *Statistical Abstract of the United States*, 1949, p. 269.

<sup>45</sup> In the next chapter we shall look more closely into the trend of interstate differences in government activity.

is closer segregation of age and disease groups (segregation of tubercular patients, first in wards, then in separate buildings, began early in the twentieth century) ; personnel is better trained and less overworked; hygienic procedures have been improved. Roads are wider, better graded, better paved, sometimes lighted, and more carefully marked; one can now drive from Jones Beach to Hartford over parkways with hardly a stop, little hazard, and some enjoyment. Better trained teachers listen to recitations; equipment in schools is better and more plentiful; pedagogical methods are next to the latest. In 1900 charity was doled out to paupers, usually in almshouses; today, public welfare services and funds are provided clients in their homes.<sup>46</sup>

And, finally, many new services have been added to the production of government units. The examples cited for Detroit, California, and the federal government may create an exaggerated impression of their number since services new to a particular unit of government are often already being rendered elsewhere by similar units or are functions transferred from another type of unit in the same region. But many services new to the United States did appear. Technological advance made possible and sometimes necessary services not possible in 1900. And some services possible, but not provided in 1900, came to be offered by government.<sup>47</sup> Not until the twentieth century, for example, did government really try to conserve our natural resources.

### *Encroachment on the Private Sphere?*

Did government's encroachment on the private sphere play any large role in expanding government activity? The answer hinges on how one defines encroachment. It depends, first, on whether

<sup>46</sup> M. P. Smith, "Trends in Municipal Administration of Public Welfare, 1900-1930", *Social Forces*, March 1932.

<sup>47</sup> Examples of new services and changes in old services are frequently available in the vast number of annual reports of city, county, state, and federal units. Excellent summaries for the federal government appear in the monographs, one for each of 66 federal agencies, published by the Institute of Government Research of the Brookings Institution during the 1920's and 1930's. A recent review of the growth of government's various activities in the field of real estate finance is given by M. L. Colean, *The Impact of Government on Real Estate Finance in the United States* (National Bureau of Economic Research, 1950)

one considers encroachment to be expansion by government in all or only in certain areas of production; and second, on whether one measures encroachment by absolute increase in government's output or only by increase in government's share of output.

The question may be put most narrowly in terms of the area of production in which public enterprises participate. Government in the United States operates many more enterprises than it did in 1900. For the federal government as many as 42 are now listed by the National Income Division of the Department of Commerce.<sup>48</sup> Except for the Post Office, and presumably the armed forces post exchanges and ship stores, none of these existed in 1900.

In 1949 a little over half the state governments operated enterprises, the most important of which were alcoholic beverage monopoly systems, but including also airports, harbors, ferries, and other enterprises. Workmen's compensation funds may also be considered as enterprises for the present purpose. The most important of these were absent in 1900, to judge by their nature (the airports), the factors accounting for them (the alcoholic beverage monopoly systems came into existence after the repeal of the prohibition amendment), or what we know of the time when relevant legislation was passed (the workmen's compensation laws in the country are entirely a fruit of the twentieth century).

<sup>48</sup> The full list follows: Agricultural Marketing Act Revolving Fund, Alaska Railroad Company, Army Post Exchanges, Banks for Cooperatives, Bonneville Power Administration, Boulder Canyon Project, Commodity Credit Corporation, Defense Homes Corporation, Disaster Loan Corporation, Electric Home and Farm Authority, Emergency Crop and Feed Loans, Export-Import Bank, Federal Crop Insurance Corporation, Federal Deposit Insurance Corporation, Federal Farm Mortgage Corporation, Federal Home Loan Bank System, Federal Housing Administration, Federal Intermediate Credit Banks, Federal Land Banks, Federal National Mortgage Association, Federal Prison Industries, Inc., Federal Public Housing Authority, Federal Savings and Loan Insurance Corporation, Home Owners Loan Corporation, Inland Waterways Corporation, Navy Ship Stores and Ship's Service Stores, Panama Canal Zone, Panama Railroad Company, Petroleum Reserves Corporation, Post Office, Production Credit Corporations, Reconstruction Finance Corporation (including Office of Defense Plants, Defense Supplies, Metals Reserve, and Rubber Reserve), Regional Agricultural Credit Corporations, RFC Mortgage Company, Rubber Development Corporation, Rural Electrification Administration, Smaller War Plants Corporation, Tennessee Valley Authority, U. S. Commercial Company, U. S. Maritime Commission (operating activities), War Damage Corporation, War Shipping Administration (commercial operating and war risk insurance activities). *Survey of Current Business*, National Income Supplement, 1947, Table 8, note 17.



One or more utilities and enterprises are currently owned and operated by nine-tenths of our municipalities. Indeed, public enterprises constituted the leading function of cities in 1942 (Table 13).<sup>49</sup> It has also been one of the most rapidly growing (Table 20). Some of this growth may have come about simply through increase in the average population per city, for more of the bigger than of the smaller cities own and operate enterprises.<sup>50</sup> More significant appears to have been increase in the number of cities, which doubled; greater per capita output of water, electricity, and so on, by utilities already held in 1900; and the acquisition of new utilities, e.g., local transportation, taken over from private operators

<sup>49</sup> Ownership and operation of specified public utilities by cities with populations over 5,000 was as follows in 1950:

UTILITY	CITIES REPORTING OWNERSHIP AND OPERATION OF SPECIFIED UTILITY AS A PERCENTAGE OF ALL CITIES	
	<i>Number</i>	<i>Population</i>
Auditorium	19	29
Bus or trolley bus system	2	22
Street railway	0.4	21
Electric distribution only	8	4
Electric generation and distribution	13	11
Gas distribution only	2	1
Gas manufacturing and distribution	2	6
Incinerator	14	52
Port facilities	4	27
Sewage treatment plant	48	63
Slaughter house	2	1
Water distribution only	6	3
Water supply and distribution	68	81
Airport	21	45
One or more of above	89	95
Not reporting	0.4	0.2

Source: *Municipal Year Book, 1950*. Utilities owned but not operated by cities are excluded.

<sup>50</sup> This is suggested by the difference between the two columns in the preceding note's tabulation and the fact that population per city averaged 17,000 in 1900, 22,000 in 1940. However, in 1903 waterworks were operated by cities accounting for 86 percent of the population of all cities over 25,000, as compared with 84 percent of cities over 5,000 in 1950; and the corresponding percentages for electric power were 15 as against 15; and for gas works, 8 as against 8. (Data for 1903 are reported in Census *Bulletin 20*, "Statistics of Cities Having a Population of over 25,000, 1902 and 1903," Table 9.) The 1950 figures are too small because of the inclusion of cities under 25,000. However, for these three utilities — among the largest of municipal enterprises — increase in average size of city seems to have had little effect.

suffering under the handicap of competing transport and rigid fares.

In addition to the increase in federal, state, and municipal utilities, there has developed the type of government unit exemplified by the Port of New York Authority, included in earlier tables among "special districts". Most of these were set up to handle (and finance) new toll bridges and highways and, a product of the twentieth century, public housing projects. The trend, then, has been up here, too.

Data on the output of public enterprises are inadequate, but employment suggests what has happened. Public enterprises employed in 1949 as much as 5.6 times the 1900 number. Relative to other government activities, however, public enterprises merely held their position. They employed no more than 10 percent of all government workers in 1949, 11 percent in 1900 (Table 15). While they contributed to the growth of government activity, they cannot be held accountable for more than a tenth or so of the increase. Measured in this way and in this sense, increased "socialization" of production was a cause of the rise in government production but not a large cause.<sup>51</sup>

Part of the increase in public enterprises came simply because many of the industries in which government operates enterprises (water works, electric power, and the Post Office, for example) have grown relative to most other industries. Even a constant government share of these growing industries would have meant relative expansion of government enterprise. Encroachment, therefore, might be measured only by increase in government's share (which occurred, e.g., in electric power,<sup>52</sup> banking, liquor stores, and local

<sup>51</sup> Perhaps we need to keep in mind that to most Europeans, used to public ownership of the railroads, the telephone, and the telegraph, and even such ventures as mines, the dimensions of public enterprise in this country would seem very modest, and the trend here anything but one towards socialization. In this connection it is interesting to note that if all the railroads and the telephone and telegraph were publicly owned and operated in this country (and — a hazardous assumption — these industries were as large and as efficient in government as in private hands), government employment would be two million larger today, and public employment would account for one out of every six workers.

<sup>52</sup> Publicly owned electric utilities accounted for 8 percent of total utility power produced in 1902, 5 percent in 1922, 10 percent in 1939, and 20 percent in

transit). So measured, encroachment by public enterprises accounted for substantially less than a tenth of the increase in government activity.

Attention need not be confined to public enterprises, which are simply those so financed that their costs are largely or entirely borne by fees or charges levied on the user of their services. Government may be said to encroach on the private sphere also by expanding those of its services for which there is no specific or significant charge to the consumer, but which are also privately produced in relatively substantial quantities. The question now becomes: did absorption by government of functions commonly performed at the opening of the century by private enterprise (as well as by government) play any role in expanding government activity?

The difficulty here (not to mention lack of adequate data) is deciding which functions of government were commonly performed at the opening of the century also by private enterprise. However, we may obtain some rough idea of the possible effect of government encroachment on this area if we suppose that all government functions other than general control, national defense and other public safety, highways, natural resources, and half of the miscellaneous group fall within it. This means including all of sanitation and waste removal, health and hospitals, public welfare, schools, public enterprises, and the other half of the miscellaneous group — surely more than most people would want to.

Growth of these functions accounted for about half of the increase in government expenditures, excluding transfers, between 1903 and the period just before World War II (Tables 7 and 14), less over the full half-century. If we interpret *all* growth in these functions above the level at the opening of the century as encroachment on the private sphere, a very substantial portion indeed of growth in government activity has been the result of encroachment — even after liberal allowance for including rather more functions than we should.

The inquiry may be directed, alternatively, at the change in the

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1949: Bureau of the Census, *Historical Statistics of the United States, 1789-1945*, and *Statistical Abstract of the United States, 1951*, Series G184 and G186.

fraction of these functions or industries performed by government, rather than at the absolute change. There is evidence that government's share in a number of them did rise. Voluntary societies have expanded their welfare activities, but government's activities in this field have grown even more rapidly, before as well as after 1929.<sup>53</sup> Housing is an obvious example that does not need documentation. The rise in government's share in finance (from zero in 1900) is indicated by the simple list given in Table 17 of new federal agencies in this field.<sup>54</sup> Enrollments in public institutions of higher learning accounted for 38 percent of total enrollments in 1900, 53 percent in 1940.<sup>55</sup> Government's share in hospitals rose somewhat — from 62 percent of the beds in 1923 to 71 percent in 1949.<sup>56</sup> And it is likely also, though figures are lacking, that government's share in other medical services, and perhaps also construction (including roads), has increased.

On the other hand, private elementary and secondary schools have grown somewhat more rapidly than public: academic personnel, from 7.7 percent of the total in 1900 to 10.5 percent in 1946.<sup>57</sup> And this "industry" is the largest of those mentioned (except construction, about which the trend is more doubtful).

On the whole, however, it is probable that the trend has been up in government's share in this group of activities. There has been decline in the share not only of private enterprise of the profit-making variety, but also of private nonprofit organizations. Just how important a factor this type of encroachment has been, measured in the terms available (employment, real investment, and purchases of goods and services), it is difficult to say, however. Let us suppose that only in education did government fail to grow

<sup>53</sup> Geddes, *loc. cit.*, summarizes the data on outdoor relief expenditures by both private and public agencies for 1910-35.

<sup>54</sup> One would have to go back to the first half of the nineteenth century to find any important amount of direct government activity in the financial field.

<sup>55</sup> President's Commission on Higher Education, cited by George Stigler, *Employment and Compensation in Education* (National Bureau of Economic Research, Occasional Paper 33, 1950), p. 33.

<sup>56</sup> Bureau of the Census, *Historical Statistics of the United States*, Series C105-111; *Statistical Abstract of the United States*, 1951.

<sup>57</sup> Stigler, *op. cit.*, p. 1.

relative to private enterprise; and that *all* government activity in all the other functions had arisen only since 1900, i.e., that the share of government in these functions was zero in 1900. On this rather extreme assumption, about a fourth of the increase in government input (and presumably output) between 1900 and 1940 — less between 1900 and today — would be accounted for by encroachment on the private sphere. This is surely too high a figure. It seems reasonably safe to conclude, therefore, that in the sense considered, encroachment on the private sphere has not been the major factor in swelling government operations, though it has surely played a substantial part.

Encroachment may be defined much more broadly, finally, to include expansion of government services that are also privately produced even in slight degree, or of government services that *could* be produced by private contractors. (In principle, production of these services wholly by government contractors, to be distributed gratis, or even — in some cases — by independent private industry to state-subsidized consumers, is not impossible.) If this be considered encroachment on the private sphere, most of the expansion of government activity since 1900 may be said to have involved encroachment. For there is some private counterpart to most government produced services — witness private watchmen. And there are many services, rendered gratis to the public because government financed, already produced by private contractors — for example, road building and maintenance, and beds for the indigent in private hospitals. But few would wish to put the question in this way.

Encroachment on the private sphere through government subsidies, loans, regulations, tariffs, price supports, and similar means not involving direct ownership and operation is, of course, another matter. It is a matter of great importance. Constriction of the area of the free market, though aimed at obviously beneficial effects, can have serious and less obvious effects on the efficiency of the economy and its rate of advance. Such far-reaching government activities still account for only a small part of the whole job of government, measured by number of workers or other resources used; but these measures are not appropriate.