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Research and Development in Official Statistics and Scientific Co-operation with Universities: A Follow-Up Study

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This article summarizes the main results of a follow-up survey of National Statistical Institutes concerning two related aspects: (a) Research and Development (R&D) work within an agency, and (b) scientific co-operation of a National Statistical Institute with the universities. The initial survey was carried out in 1999/2000 and the follow-up in 2006. We concentrated for the aspect (a) on the infrastructure available for R&D within an agency, and for (b) on networking and similar co-operation arrangements of National Statistical Institutes with universities. The levels of R&D infrastructure and of R&D networking were measured by means of summary indicators constructed from the questionnaire items. Both indicators show that a large variation exists between National Statistical Institutes (and groups of such institutes). A high level of infrastructure often accompanied a high level of networking. When both levels were high, the chances of a successful implementation of research results into the production of statistics were improved. However, the incidence of successful implementation is lower than desirable. In National Statistical Institutes of European Union countries, the levels of both infrastructure and networking were improved between the survey years. The results of the 2006 survey show an increasing use of the agency's anonymized microdata files by researchers located outside the agency. This was found to hold for the National Statistical Institutes of the EU countries in particular. A total of 41 agencies (80%) responded to the 2000 survey and 44 agencies (85%) to the 2006 survey.

Key words: Research and development; R&D infrastructure; forms of networking; university disciplines; implementing research results; use of agency's microdata.

1. Introduction

In this article we report the main results of a follow-up survey of National Statistical Institutes around the world concerning two inter-related activities: (a) Research and Development (R&D) work within an agency, and (b) scientific co-operation of a National Statistical Institute with the universities. The initial survey was conducted in 1999/2000; we call it S-2000. The follow-up survey, S-2006 for short, was implemented in 2006. The results of S-2000 have been published (Lehtonen, Pahkinen, and Särndal 2002).

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The two surveys covered essentially the same set of National Statistical Institutes. S-2006 had a somewhat broader content than S-2000, but essentially all items in the S-2000 questionnaire were also present in the one used for S-2006. Six years may seem a relatively short time period between two very similar surveys. However, it was felt important to repeat the survey again in 2006 for several reasons. One reason is the important geopolitical changes occurring in Europe, through the enlargement of the European Union. In particular, the new Member States are taking significant and rapid steps forward in their approach to surveys and official statistics production. One possible explanation for this progress is the need of Member States to adapt their statistical systems to the EU regulation on Community Statistics.

The article is organized as follows. We first outline the conceptual framework of the survey (Chapter 2). In Chapter 3 we describe the implementation of the survey. Chapter 4 summarizes the main results for S-2006. Results of S-2000 and S-2006 are compared in Chapter 5. Some general observations are given in Chapter 6.

2. Conceptual Framework

For the purposes of the survey, research and related development work was defined as the systematic application of theories, concepts, methods and principles of scientific research in an attempt to increase existing knowledge and to apply that knowledge in the development of new practical applications. This definition of R&D is in close agreement with the definition in the 2002 Frascati Manual (OECD 2003).

Application of the concept of R&D in the context of official statistics is not straightforward. Scientific research is carried out mainly in universities and other scientific communities. National Statistical Institutes, on the other hand, do not view scientific research as their main duty. However, they do consider scientific research to be an important basis for improving the quality of the official statistics that they produce. Through their R&D work they strive to implement the results of pure or applied scientific research within their statistics production processes.

Official statistics is not a university discipline. It cuts across and borrows from several university disciplines, including for example Statistical Science and Survey Methodology, Economics, Demography, Informatics, and Sociology. By R&D in official statistics we therefore mean sciences that have relevance for official statistics.

A prerequisite for R&D is the existence, within a statistical agency, of a certain *R&D infrastructure*. It should include such components as a well-documented research plan that fits with the agency's objectives, a scientific or professional board with representation from the academic community, and funds and procedures to support scientific research by staff members. *Networking* is another key element. Forms of networking with universities include long-term frame contracts, joint academic posts, various fellowship schemes, and joint research projects. A more complete conceptual framework is outlined in Lehtonen, Pahkinen, and Särndal (2002).

3. Implementation of the Follow-up Survey

As in S-2000, the aim of S-2006 was to collect data from a number of National Statistical Institutes about research and development (R&D) activities within the agencies, and about

research and other scientific co-operation with universities. We concentrated on the organization, contents and functioning of such activities. The survey covered not only activities in Statistical Science and Survey Methodology, but also in fields such as Informatics and Computer Science, Economics, Demography, Sociology, and other social sciences.

S-2000 used a detailed questionnaire with around 150 items (see Lehtonen, Pahkinen, and Särndal 2002). Essentially all of the items on that questionnaire were maintained for S-2006. Some items reflecting new developments were added to the questionnaire, notably questions concerning the use by researchers outside the National Statistical Institute of anonymized microdata files, both licensed files and public use files. The new questionnaire items are included in Appendix 1.

The data for S-2006 were collected by means of an electronic questionnaire form. In most cases the questionnaire was sent to a preselected contact person in the agency (usually the same person as in S-2000). The survey data were collected during May–September 2006.

In the questionnaire, we focused on *networking* as a vehicle for promoting research activities in official statistics. Networking with university departments presupposes a certain *infrastructure within the statistical agency*. The questionnaire covers the following features that were considered important components of an R&D infrastructure (the detailed questionnaire items are included in Lehtonen, Pahkinen, and Särndal 2002):

Coverage of R&D with respect to scientific disciplines
A well-documented research plan or similar document
One or more committees or advisory boards with representation from the university sphere
Funds and procedures to support scientific research by staff members
Teaching and lecturing activities by agency staff in universities.

Networking includes the following examples of joint activities with universities:

Use of expertise from university departments in methods R&D
University professorships with various funding arrangements
Fellowship schemes funded by the agency
Joint research projects with universities.

Another important aspect is the degree of *implementation of research results* accomplished by the agency. Such implementation cannot always be taken for granted; it occurs when research results become operationalized and incorporated as an integral part of the agency's statistics production.

S-2000 covered a selected group of 51 National Statistical Institutes around the world. It included most European countries and a few countries outside Europe. The survey thus gave strong emphasis to Europe, in particular to the European Union member states at that time. A total of 41 agencies (80%) responded to S-2000. The targeted agencies are listed in Lehtonen, Pahkinen, and Särndal (2002).

The target group for S-2006 consisted of 52 statistical agencies. The majority of the agencies were the same as in S-2000. The grouping of National Statistical Institutes was different, however, because of the geopolitical changes in Europe between the

survey years. We distinguished three agency groups: European Union agencies (27), Other Europe agencies (14), and Non-Europe agencies (11). For illustrative purposes, the EU agencies were further divided into two subgroups, depending on the year of accession: agencies of countries that joined EU before the year 2004 (denoted Group EU-1, consisting of 15 agencies) and agencies belonging to the fifth enlargement process of the EU (denoted Group EU-2, consisting of 12 agencies). The 14 agencies of the other European countries formed the Group Other Europe. The group of Non-Europe agencies, denoted Non-Europe, was purposively selected. It consists of agencies considered advanced with respect to R&D activities and is not representative for the rest of the world. It is, however, useful as a reference group. The targeted agencies of S-2006, by agency group, are listed in Appendix 2.

A total of 44 agencies (85%) responded to S-2006. The response rate varied slightly between agency groups (Table 1). The highest response rate, 100%, occurred in Group EU-1 and the lowest, 71%, occurred in Group Other Europe.

4. Empirical Results for S-2006

4.1. Organization and Coverage of R&D

We concentrate first on our main findings for S-2006. We asked agencies to make a selection from a list of five alternatives describing the current organzisation of the agency's Methods R&D. We define Methods R&D to mean R&D activities in the following areas: Survey Methodology (covering the whole survey process), statistical methods more generally, and Informatics (Information Technology, Computer Science). The results are given in Table 2.

The most common organization type for Methods R&D was a mixed-mode one, so that the agency has a centralized methodology unit (or several such units) as well as Methods R&D activities decentralized to subject matter units. A centralized mode was the second most frequent. As compared to S-2000, the popularity of the centralized mode was increased at the expense of the decentralized mode. Five of the 44 responding agencies reported a complete absence of Methods R&D (two agencies in S-2000). Four of them were European agencies.

Turning to the coverage of R&D with respect to scientific disciplines, we found that a total of 39 agencies had R&D activities in Statistical Science (including Survey Methodology) (Table 3). Economics was the second most popular, followed by Demography, Informatics (Information Technology, Computer Science) and Sociology.

Table 1. The number of responding National Statistical Institutes and response rate (%) by agency group, 2006

Agency group	Number of responding agencies	Response rate (%)
EU	26	96
EU-1	15	100
EU-2	11	92
Other Europe	10	71
Non-Europe	8	73
All	44	85

Table 2. Organization of Methods R&D by agency group, 2006

	Mode of arrangement					
Agency group	Centralized	Decentralized	Mixed mode	Other arrangement[a]	No Methods R&D	All
EU	8	2	11	2	3	26
EU-1	5	1	9	0	0	15
EU-2	3	1	2	2	3	11
Other Europe	4	1	3	1	1	10
Non-Europe	3	0	4	0	1	8
All	15	3	18	3	5	44

[a] E.g., a separate research institute with some degree of autonomy and support from the statistical agency.

Out of the 39 agencies, 31 reported that their R&D covered three or more disciplines, and three agencies covered the whole spectrum of seven disciplines (one in Group EU and two in Group Non-Europe).

4.2. R&D Infrastructure

For a summary picture of the R&D infrastructure in a National Statistical Institute, we constructed a simple overall indicator consisting of the following components:

A. Coverage of R&D: Statistical Science and at least two of the other disciplines in Table 3,
B. Published research plan or similar document,
C. Scientific or professional advisory board with representation from the academic community,
D. Funding to support scientific research by staff members via a formal application procedure,
E. Funding to support Ph.D. studies of staff members via a formal application procedure, and
F. Regular teaching and lecturing by NSI staff members in universities.

A presence of the feature was scored as 1, absence as 0. We call it the "General Index of Infrastructure" (GII). The maximum GII score is thus six; the minimum score is 0. The coverage of each component of GII, and the mean GII score, varied between the three main agency groups (Table 4).

Table 4 shows that, across all the agencies, the two most frequently implemented components of the R&D infrastructure were Coverage of R&D with respect to university disciplines (item A) and Scientific or professional advisory board (item C), both items implemented within 32 of the 44 responding agencies. A published research plan or similar document (item B) was a rare component, implemented in only five agencies.

The mean of the General Index of Infrastructure, GII, varied little between the three main groups. The highest GII mean, 2.9, was scored by Group Non-Europe and by Group EU-1. The other two European agency groups scored lower. The lowest mean, 1.8, was found in Group EU-2.

Table 3. Coverage of R&D with respect to scientific disciplines, 2006

		Disciplines covered by agencies' R&D activities						
Agency group	All agencies	Statistical science	Economics	Demography	Informatics	Sociology	Geography	Psychology
EU	26	23	16	18	15	12	7	3
EU-1	15	15	11	12	9	9	7	3
EU-2	11	8	5	6	6	3	0	0
Other Europe	10	9	8	7	6	4	2	0
Non-Europe	8	7	7	6	6	4	5	2
All	44	39	31	31	27	20	14	5

Table 4. Presence of different components of R&D infrastructure, and mean of the General Index of Infrastructure (GII, range 0–6) by agency group, 2006

		Presence of the GII components A to F						
Agency group	All agencies	A	B	C	D	E	F	Mean of GII
EU	26	18	4	19	7	6	9	2.4
EU-1	15	12	4	12	6	4	5	2.9
EU-2	11	6	0	7	1	2	4	1.8
Other Europe	10	7	1	7	4	2	3	2.4
Non-Europe	8	7	0	6	4	4	2	2.9
All	44	32	5	32	15	12	14	2.5

A. Coverage of R&D with respect to university disciplines; B. Published research plan or similar document; C. Scientific or professional advisory board; D. Funding of scientific research by staff members; E. Funding to support Ph.D. studies of staff members; F. Regular teaching and lecturing at universities by staff members.

4.3. R&D Networking and Similar Co-operation With Universities

R&D networking of a National Statistical Institute with universities can take different forms. For our study, we considered an important feature of the co-operation between an agency and the university to be the following: either a substantial part of the funding for the activity is assumed entirely by the agency, or that the funding is evenly shared in some way by both parties. To obtain a summary picture of the networking undertaken by an agency, we constructed a simple overall indicator consisting of the following six forms of co-operation:

a. Use of experts from university departments to contribute to the Methods R&D or as consultants on methodology,
b. University professorships with funding shared by a university and the agency,
c. University professorships funded by a university but with some duties at the agency,
d. University professorships completely funded by the agency,
e. Fellowship schemes funded by the agency, and
f. Joint research projects with universities.

A presence of the feature was scored as 1, absence as 0. The indicator was constructed as the sum of the scores on the six components. We call it the "General Index of Networking" (GIN). The maximum score on GIN thus is six and the minimum score is zero. The coverage of each component of GIN, and the mean of GIN, varied considerably between the three main groups of agencies (Table 5).

Table 5 shows that the most frequently implemented component of the R&D networking was Use of experts from university departments to contribute to the Methods R&D (item a). This feature was present within 35 of the 44 responding agencies. The second common component was Joint research projects with universities (item f), implemented within 25 agencies. University professorships completely funded by the agency (item d) was a rare component, implemented within eight agencies.

A clear variation emerges in the mean of the General Index of Networking, GIN. The highest GIN mean, 2.9, was scored by Group Non-Europe and the lowest, 1.2, by Group Other Europe. Among the European agency groups, Group EU-1 had the highest score, 2.8.

Table 5. Presence of different components of R&D networking, and mean of the General Index of Networking (GIN, range 0–6) by agency group, 2006

Agency group	All agencies	Presence of the GIN components a to f						Mean of GIN
		a	b	c	d	e	f	
EU	26	24	7	5	5	5	17	2.4
EU-1	15	14	4	4	4	5	11	2.8
EU-2	11	10	3	1	1	0	6	1.9
Other Europe	10	4	1	2	0	2	3	1.2
Non-Europe	8	7	3	2	3	3	5	2.9
All	44	35	11	9	8	10	25	2.2

a. Use of university experts in Methods R&D or as consultants; b. University professorships with shared funding; c. University professorships funded by the university; d. University professorships funded by the agency; e. Fellowship schemes funded by the agency; f. Joint research projects with universities.

4.4. Access to Agencies Microdata Files for Scientific Research

In the S-2006 questionnaire we presented a series of questions on the use by researchers outside the National Statistical Institute of agencies anonymized microdata files for scientific research. The term "microdata file" refers here to an element-level data set where elements are, for example, persons, households, farms or business firms. A microdata file may have its origin in administrative registers, a population census or a sample survey, or in a combination of these sources (United Nations 2007).

We included both *licensed microdata files* and *public use microdata files*. The term "licensed microdata file" refers to a file such that the use of the data has been approved by the agency through an established procedure. The approval may be in the form of a contract, co-signed by the user and the agency, or a similar arrangement. Public use microdata files are files available for general public use outside the National Statistical Institute, without any specific agency approval.

Results regarding the mode of access to licensed microdata files are presented in Table 6. We considered five different access modes. The off-site mode refers to the release of the agency's licensed microdata files on a CD-ROM or disk, or a similar facility. On-site mode means direct access to the agency's licensed microdata files, for example from the agency's Research Data Centre(s). On-line mode refers to on-line or remote access to the agency's licensed microdata files through computer networks. Data Archive mode means the use via some other governmental organization, as when access to a licensed microdata file is granted through a national Data Archive, choosing one of the said options.

Table 6 shows that a total of 40 out of the 44 responding agencies provided access by license to microdata files. There were no clear differences between the agency groups. The most common mode was the off-site mode, followed by the on-site and on-line modes. Data Archive was a relatively rare access mode, except in Group EU-1. Out of the 40 agencies, 19 relied on a single data access mode and 21 used two or more modes. Five agencies reported using four or more access modes (three in Group EU-1 and two in Group Non-Europe).

Table 6. Access by license to agency's microdata files by agency group, 2006

Agency group	All agencies	Agencies providing access by license to microdata	Mode of access: Off-site mode	On-site mode	On-line mode	Data archive	Other modes[a]
EU	26	24	19	10	7	6	2
EU-1	15	15	12	8	6	5	2
EU-2	11	9	7	2	1	1	0
Other Europe	10	9	9	2	1	1	2
Non-Europe	8	7	7	5	5	1	2
All	44	40	35	17	13	8	6

[a] Various ad hoc arrangements.

Results regarding the mode of access to public use microdata files are presented in Table 7. A total of 24 out of 44 agencies reported offering this option. Such access was most common in Group EU-1 and in Group Non-Europe, but it was a rare feature in Group EU-2. The off-site mode was the most common mode of access. Of the 24 agencies, 12 used a single mode for data access.

Table 8 shows that in the past five years, the use of agencies' anonymized microdata for scientific research purposes has increased, in some cases considerably, in 29 of the 40 agencies that provided access by license to microdata. This development was most apparent in Group EU-2.

5. Comparison of Year 2000 and Year 2006 Survey Results

For a comparison of the year 2000 and the year 2006 survey results, we constructed a balanced panel consisting of the 37 agencies that responded to both surveys. There were 22 such agencies in Group EU (13 in Group EU-1 and 9 in Group EU-2), seven in Group Other Europe and eight in Group Non-Europe.

We compared the levels of R&D infrastructure and R&D networking in the two survey years by calculating the General Index of Infrastructure (GII) and the General Index of Networking (GIN) for the agencies in the balanced panel. Because the six items of GII and

Table 7. Access to agencies public use microdata files by agency group, 2006

Agency group	All agencies	Agencies providing access to public use microdata	Mode of access: Off-site mode	On-site mode	On-line mode	Data archive	Other modes[a]
EU	26	13	10	4	4	4	1
EU-1	15	11	8	4	4	4	1
EU-2	11	2	2	0	0	0	0
Other Europe	10	5	3	1	0	0	1
Non-Europe	8	6	6	3	4	2	1
All	44	24	19	8	8	6	3

[a] Various ad hoc arrangements.

Table 8. Changes in the use of agencies' anonymized microdata for scientific research purposes in the past five years

	Changes in the use of agencies' microdata					
Agency group	Increased considerably	Increased to some extent	Not increased	Clearly declined	Not responded	All
EU	13	6	4	0	1	24
EU-1	7	4	4	0	0	15
EU-2	6	2	0	0	1	9
Other Europe	1	3	2	0	3	9
Non-Europe	1	5	1	0	0	7
All	15	14	7	0	4	40

the six items of GIN are present in both the S-2000 and the S-2006 questionnaire, it is possible to compute GII and GIN for all 37 agencies of the balanced panel. The summary indicators GII and GIN were constructed in a manner described in Sections 4.2 and 4.3. Thus the maximum score on both indicators is six and the minimum is zero. One can expect a fairly high correlation between GII and GIN. It was 0.60 for S-2000 and 0.63 for S-2006.

The results for the General Index of Infrastructure (GII) and the General Index of Networking (GIN) are presented in Table 9. The average GII and GIN figures indicate that across all agencies, the levels of both R&D infrastructure and R&D networking were improved between the study years. However, most of the improvement occurred in Group EU; in the other two main groups the indicators show no change or a slight decrease. Averages of both GII and GIN were increased for Group EU-1 and Group EU-2 agencies. The most apparent improvement was found in Group EU-1.

If we examine GIN in particular, we note a strikingly large increase for Group EU-1 (2.3 in S-2000, compared to 2.9 in S-2006), a negligible increase for Group EU-2 (1.7 as compared to 1.8) and a surprising decrease in Group Other Europe (1.9 as compared to 1.4). One can only speculate as to the possible reasons for the considerable differences between the three groups of agencies. For Group EU-1, the increase in GIN and GII has put these indices at the same levels as for Group Other Europe, which, as we recall, is a group of highly regarded agencies.

Table 9. Mean of the General Index of Infrastructure (GII, range 0–6) and the General Index of Networking (GIN, range 0–6) by agency group, 2000 and 2006 (the balanced panel)

		Mean of GII		Mean of GIN	
Agency group	Number of agencies	Year 2000	Year 2006	Year 2000	Year 2006
EU	22	2.1	2.5	2.0	2.5
EU-1	13	2.4	2.9	2.3	2.9
EU-2	9	1.7	2.0	1.7	1.8
Other Europe	7	2.7	2.6	1.9	1.4
Non-Europe	8	2.9	2.8	2.9	2.9
All	37	2.4	2.6	2.2	2.4

One factor that has almost certainly played a role for Group EU-2 is the fact that their recently acquired EU membership status has necessitated special efforts on their part to satisfy EU procedures and legislation, as indicated by an increased level of GII (1.7 as compared to 2.0). These efforts have probably left little time and resources in the last few years for expanding R&D networking.

We finally turn to results regarding the implementation of research in statistics production. By implementation we mean here that research results are incorporated into the agency's statistics production process. Out of 32 agencies responding to this item for 2006, 21 reported one or more successful experiences (Table 10). A wide variety of R&D areas with successful implementation was reported, including calibration methods, data integration, demographic projections, edit and imputation, estimation, record linkage, sample coordination, sampling, seasonal adjustment, small area estimation, statistical disclosure control, time series analysis, and variance estimation.

Table 11 shows that successful implementation of research results in statistics production often accompanied a high level on both R&D infrastructure and on R&D networking.

6. General Observations and Challenges

It has been recognized before that R&D in official statistics meets with various challenges and difficulties. The reader is referred, for example, to Dillman (1996) and Platek and Särndal (2001) and to the extensive discussion that followed these articles. Another source of information is Fellegi (2004). More recently, at a Eurostat conference held in Luxemburg in December 2007 (see Eurostat 2007 Conference) and at the NTTS (New Techniques and Technologies for Statistics) conference organized by Eurostat in Brussels in 2009, issues of co-operation were addressed both by representatives of official statistics and by representatives of the academic sector.

Dillman (1996) maintains that statistical agencies are often reluctant, or disappointingly slow, when it comes to implementing new research in production. He notes the existence in such agencies of a "production culture" as opposed to a "research culture," the respective goals and aspirations of which do not always coincide. Out of the 37 agencies of the balanced panel in our study, as many as 17 report difficulties in implementing (with or without success) the results of research because of differences existing between the two cultures.

Table 10. Number of agencies reporting successful implementation of R&D results by agency group, 2006 (the balanced panel)

Agency group	Number of agencies	Agencies with successful implementation
EU	20	11
EU-1	12	6
EU-2	8	5
Other Europe	5	3
Non-Europe	7	7
All	32	21

Table 11. Mean of the General Index of Infrastructure (GII, range 0–6) and the General Index of Networking (GIN, range 0–6) by successfulness of implementation of research results, by agency group, 2000 and 2006 (the balanced panel)

Successfulness of implementation	Number of agencies	Mean of GII		Mean of GIN	
		Year 2000	Year 2006	Year 2000	Year 2006
Successful experiences	21	2.7	2.7	2.7	2.9
No success or no experiences	11	1.9	2.2	1.3	1.5
All	32	2.4	2.5	2.2	2.4

We find in this article that the implementation of research results in statistics production is less than desirable. One might have expected that all agencies would have reached the fairly modest goal of at least some successful implementation. This is, rather disappointingly, not the case. As many as 11 out of 32 agencies report the absence of successful implementation.

Table 9 indicates that a high level of R&D infrastructure (as measured by GII) is associated with a high level of R&D networking (as measured by GIN). Furthermore, as Table 11 suggests, when both levels are high, the chances are improved of successful implementation of research results into the statistics production processes.

Many of the important innovations in survey methodology have started from the recognition of a pressing practical problem in official statistics production. Examples in the most recent decades include the growth of research on nonresponse treatment (adjustment weighting and imputation) and on estimation for population subgroups (domains) with insufficient sample data (the field of research known as small area estimation). As a result, in both of these areas there has been a flow of research articles, and specialized international conferences have been held.

Although an important research area may have its roots in practical problems of statistics production, it is clear that the universities, with their supply of skilled and research-oriented personnel, have a key role to play in the research process. A successful implementation chain might be as follows: University-based pure research – Applied research to fit agency needs – Development work puts the ideas into production processes. Prerequisites for this type of chain to be successful are both a well-developed R&D infrastructure within the agency and a well-established co-operation between the official statisticians and the academics. However, it might not be straightforward to apply the implementation chain. For example, cultural differences between the world of official statistics and the academic world, and low responsiveness of the latter to the needs of the former, can prevent fruitful c-operation. Several agencies in our study did report difficulties in co-operation between the two communities. Within a statistical agency, the already mentioned differences between a "production culture" and a "research culture" may hinder the implementation of research results in production. It might be useful to explore these issues in more detail in future research.

Obviously there are two parties to networking: the National Statistical Institute on the one hand, and the scientific communities on the other. We have chosen to explore networking only from the side of the National Statistical Institute. That is, we did not gather data from universities and other scientific communities to obtain their view of co-operation with the National Statistical Institutes. Such data collection would require a study design that lies outside the scope of this article, but it can be proposed as a future research objective.

7. Appendix 1

Questionnaire items of S-2006 that were not included in the year 2000 survey

	YES	NO
B10 Is it possible for outside researchers or research groups to have access to the agency's anonymized microdata files for scientific research purposes?	—	—

The term "microdata file" refers to an element-level data set where elements are, for example, persons, households, farms or business firms. (By contrast, the term "data cube" refers to aggregate or tabular data.) A microdata file may have its origin in administrative registers, a population census or a sample survey, or in a combination of these sources.

B10.1 If YES in B10, which of the following options/arrangements are available for access to the agency's **licensed** microdata files?

The term "licensed microdata file" refers to a file such that the use of the data has been approved by the agency through an established procedure. The approval may be in the form of a contract, co-signed by the user and the agency, or a similar arrangement.

	YES	NO
B10.1a Off-site use Release of the agency's licensed microdata files on a CD-ROM or disk, or a similar facility.	—	—
B10.1b On-line use On-line or remote access to the agency's licensed microdata files through computer networks, or a similar facility.	—	—
B10.1c On-site use Direct access to the agency's licensed microdata files from one of the agency's Research Data Centres, or a similar facility.	—	—
B10.1d Use via some other governmental organization, as when access to a licensed microdata file is granted through a national Data Archive, by one of the options a, b and c, or through a similar facility.	—	—
B10.1e Other options	—	—

B10.1.1 If YES in B10.1.e, i.e., if **none** of the options a, b, c or d described in B10.1 fits well for your agency, please describe briefly the arrangements your agency is using for access by outside users to the agency's anonymized **licensed** microdata files for scientific research purposes:

B10.2 If YES in B10, i.e., if it is possible for outside researchers to have access to the agency's anonymized microdata files for scientific research purposes, which of the following options/arrangements does your agency offer for **public use** microdata files?

Public use microdata files are files available for general public use outside the NSI, without any specific agency approval.

	YES	NO
B10.2a Off-site use Release of the agency's public use microdata files on a CD-ROM or disk, or a similar facility.	—	—
B10.2b On-line use On-line or remote access to the agency's public use microdata files through computer networks, or a similar facility.	—	—
B10.2c On-site use Direct access to the agency's public use microdata files from the agency's Research Data Centres, or a similar facility.	—	—
B10.2d Use via some other governmental organization, as when access to a public-use microdata file is provided through a national Data Archive, by one of the options a, b and c, or through a similar facility.	—	—
B10.2e Other options	—	—

B10.2.1 If YES in B10.2e, i.e., if **none** of the options a, b, c or d described in B10.2 fits well for your agency, please describe briefly the arrangements your agency is using for access by outside users to the agency's anonymized **public use** microdata files for scientific research purposes:

B10.3 If YES in B10, i.e., if it is possible for outside researchers to have access to the agency's anonymiszed microdata files for scientific research purposes, has this activity changed in the past five years?
(Please specify one alternative)

1. Yes, the activity has increased considerably	—
2. Yes, the activity has increased to some extent	—
3. The activity has not increased	—
4. The activity has clearly declined	—

B10.3.1 If the activity has **increased**, please explain briefly the possible reasons:

B10.3.2 If the activity has **declined**, please explain briefly the possible reasons:

	YES	NO
B10.4 If NO in B10, i.e., if it is **not** possible for outside researchers to have access to the agency's anonymized microdata files for scientific research purposes, is your agency planning to make progress in this area?	—	—

B10.4.1 If YES in B10.4, please describe briefly:

8. Appendix 2

Responding National Statistical Institutes (NSI:s) in S-2006
Target NSI:s: 52
Responding NSI:s: 44

1 Group EU (EU27; 26 respondents 1 nonrespondent)
1.1 Group EU-1 (EU15; 15 respondents)
AUSTRIA: Statistik Austria
BELGIUM: Institut National de Statistique (INS)
DENMARK: Danmarks Statistik (Statistics Denmark)
FINLAND: Tilastokeskus (Statistics Finland)
FRANCE: INSEE, Direction générale
GERMANY: Statistisches Bundesamt (Destatis)
GREECE: National Statistical Service of Greece
IRELAND: Central Statistics Office
ITALY: Istituto Nazionale di Statistica (ISTAT)
LUXEMBOURG: Service Central de la Statistique et des Etudes Economiques
NETHERLANDS: Centraal Bureau voor de Statistiek (CBS)
PORTUGAL: Instituto Nacional de Estatistica
SPAIN: Instituto Nacional de Estadistica (INE)
SWEDEN: Statistiska centralbyrån (SCB) (Statistics Sweden)
UK: Office for National Statistics (ONS)

Group EU-2 (EU12; 11 respondents, 1 nonrespondent)
BULGARIA: National Statistical Institute
REPUBLIC OF CYPRUS: Statistical Service of Cyprus
CZECH REPUBLIC: Czech Statistical Office
ESTONIA: Statistical Office of Estonia
HUNGARY: Hungarian Central Statistical Office
LATVIA: Central Statistical Bureau of Latvia
LITHUANIA: Statistics Lithuania
POLAND: Central Statistical Office (GUS)
ROMANIA: Institutul National de Statistica (INSSE)
SLOVENIA: Statistical Office of the Republic of Slovenia
SLOVAK REPUBLIC: Statistical Office of the Slovak Republic

Group Other Europe (10 respondents, 4 nonrespondents)
ALBANIA: Institute of Statistics of Albania
REPUBLIC OF CROATIA: Croatian Bureau of Statistics (CROSTAT)
ICELAND: Hagstofa Íslands (Statistics Iceland)
REPUBLIC OF MACEDONIA: State Statistical Office of Macedonia
REPUBLIC OF MOLDOVA: Department for Statistics and Sociology of the Republic of Moldova
NORWAY: Statistisk sentralbyrå (Statistics Norway)
SERBIA: Republic Statistical Office of Serbia

SWITZERLAND: Bundesamt für Statistik
TURKEY: State Institute of Statistics
UKRAINE: State Statistics Committee of Ukraine

3 Group Non-Europe (8 respondents, 3 nonrespondents)
AUSTRALIA: Australian Bureau of Statistics
CANADA: Statistics Canada
ISRAEL: Central Bureau of Statistics
JAPAN: Statistics Bureau
MEXICO: National Statistics, Geography and Informatics Institute (INEGI)
NEW ZEALAND: Statistics New Zealand
U.S.A.: U.S. Bureau of Labour Statistics (BLS)
U.S.A.: U.S. Census Bureau

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