

# Clean Technology Innovations in Germany: Human Capital Accumulation under Heterogeneous Knowledge Inputs\* - Data and Methodology Report

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## Abstract

This report describes the data and methodology of a self-administered survey of German inventors in three high-technology fields: clean technology, nanotechnology and mechanical elements. Responses were received from 1,932 inventors responsible for 14,873 EP patent applications between 1978 and 2010. The survey data contain potentially important information on individual characteristics such as professional experience, knowledge, skills, abilities, and personality traits.

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## 1. Introduction

Research on innovation and technological progress has shown that innovation critically relies on the recombination of existing ideas and artifacts (Fleming 2001). Most research on innovation productivity has been conducted at the firm level. Nevertheless, important micro-level factors also shape knowledge recombination in firms. Grant (1996), for instance, argues that “[i]n contrast to earlier literature, knowledge is [...] residing within the individual, and the primary role of the organization is knowledge application” (p. 109). Even though they are clearly relevant, individual characteristics are typically missing in innovation studies, mainly due to limitations in data availability.

In the last few years, several large-scale inventor surveys have been conducted. One of their goals was to gain a deeper understanding of which individual characteristics drive innovations. The PatVal-EU project (PatVal I) was conducted between 2002 and 2004. It queried inventors listed on EP patents from six European countries (DE, FR, GB, IT, ES, NL) on their education, employment status, job mobility, knowledge sources, and rewards. Responses were received from 9,216 inventors (Giuri et al. 2007). The PatVal II survey, conducted between 2009 and 2011, addressed inventors from 21 European countries, Israel, Japan, and the US. It resulted in 23,044 responses (Gambardella et al. 2014). The RIETI and GT/RIETI surveys from 2007, which strongly relied on PatVal I, surveyed inventors in the US and Japan. They included inventor demographics, job mobility, collaborations, motivations, the process leading to the invention, and uses of the patent. Answers were received from 1,900 US inventors and 5,300 Japanese inventors (Walsh 2013). In 2009, the Korean Institute of S&P Evaluation and Planning conducted an inventor survey. It was again based on the PatVal I survey. The survey resulted in 1,067 responses from Korean inventors (Kim et al. 2010).

Our data set also relies on the knowledge gained from the PatVal I and II surveys with regard to the methodology of identifying inventors from patent documents, sending out questionnaires, and matching survey data with patent data. In contrast to the existing surveys, our survey does not ask questions about one particular patent of the inventors. It rather aims at tracing the inventors' education and career over time and thus enables us to analyze their accumulation of human capital.

Our survey focuses on three high-technology fields: clean technology (CT), nanotechnology (NT) and mechanical elements (ME). CT is a high-growth and high-impact technology field, especially in Germany.<sup>1</sup> This emergent technology field was chosen since it is characterized as a cross-sectional technology field, which heavily relies on knowledge recombination.<sup>2</sup> The knowledge mainly stems from applied research. NT, which is also a cross-sectional and emergent technology field, mainly draws upon basic research and is highly science-

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<sup>1</sup> According to a study by the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, in Germany alone – one of the leading countries in clean technology – 1.6 million employees generated 300 billion euros in revenues on the world market in 2011 (equivalent to 15% of world market share) and revenues are expected to rise to 674 billion euros by 2025 (BMU 2012).

<sup>2</sup> Studies emphasize three distinctive features of CT innovations compared with other key technologies: Wexler et al. (2008) and Cooke (2009, p. 37) point out that knowledge from information technology, nanotechnology, natural and life sciences, as well as various engineering sciences, converges into CT innovations. Furthermore, Ragnitz et al. (2009) note that CT is not a clearly defined industry, since relevant innovations are often developed in companies which are not active in the production of environmental goods or services. Thirdly, innovations especially in the field of resource efficiency require a supply-chain-spanning perspective (Hall 2000, Sarkis 2006, Hugo and Pistikopoulos 2005).

dependent. ME, finally, is an established technology field and is highly focused, i.e. it relies on a restricted number of applied technologies. These three technology fields enable us to get a better understanding of the human capital endowments needed to create innovations in different types of technologies (established vs. emerging / cross-sectional vs. focused).

Our sample consists of German inventors who filled out an online questionnaire. The resulting data were linked with the patent histories of the responding inventors.<sup>3</sup> The survey resulted in a unique dataset with nearly 2,000 observations merged with data on nearly 14,500 EP patents.

In the next chapter, the procedure for collecting patent data is described. The chapter further describes the structure of the online questionnaire and the surveying process, as well as our procedure for merging patent and survey data. Chapter 3 contains selected descriptive statistics of relevant variables. A complete overview of the variables derived from survey and patent data as well as descriptive statistics for the total sample and broken down by the three technology fields are provided in appendix 1. Further information on the data set and some statistical analyses can be found in Frosch et al (2015a).

## 2. Data collection

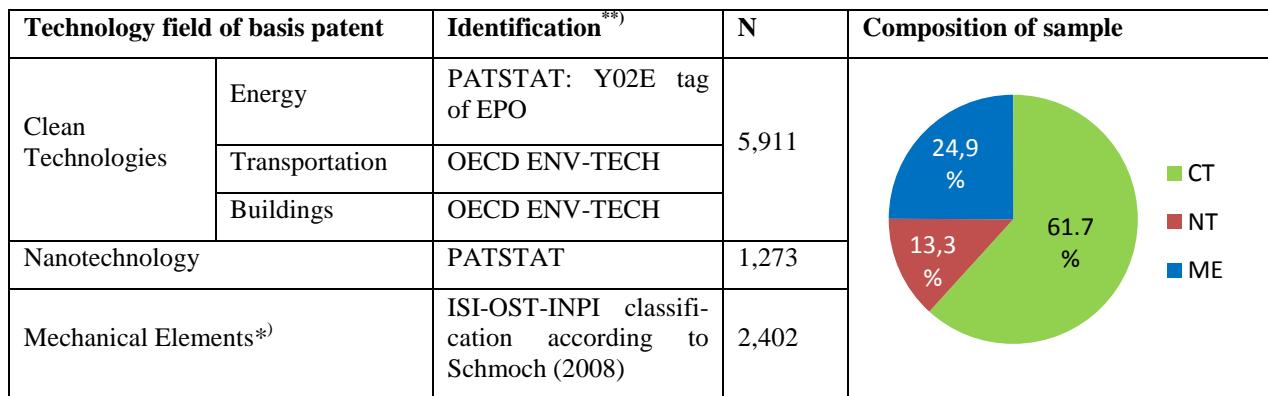
### 2.1 Definition of the inventor sample

Based on a list of all European patent (EP) applications with priority dates between 2004 and 2008, we identified all patent applications assigned to our three technology fields that listed at least one inventor with a home address in Germany. This resulted in 16,593 EP applications. Applications were removed from the dataset when they contained missing address information or incomplete inventor names, or when they listed deceased inventors. This resulted in a sample of 16,485 EP applications, 11,108 from CT, 2,170 from NT, and 3,953 from ME. 373 patent applications were assigned to more than one of the three technological areas. In a second step, we identified inventors listed on the patent documents who had an address in Germany at the time of the patent filing. We removed 458 randomly selected inventors from the sample (305 inventors mentioned on CT patents and 153 inventors mentioned on ME patents) because we wanted to question them in a related survey (see Frosch et al. 2015b). In addition, 150 randomly selected inventors were used to pre-test our survey instrument (100 inventors mentioned on CT patents and 25 inventors each mentioned on NT and ME patents). We kept all inventors listed on CT or NT patents and, for budgetary reasons, selected at random 35% of the inventors listed on patents assigned to ME (2,402 inventors). This resulted in 9,586 inventors, who form our basic sample (see table 1 for the distribution across technological fields).<sup>4</sup> The data sources and the composition of the sample are displayed in table 1.

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<sup>3</sup> By patent history of an inventor we mean all the patents one inventor is listed on. It can be seen as the life's work of an inventor's patented inventive activity.

<sup>4</sup> Even though some of the patents are assigned to more than one field, for the basic sample we unambiguously assigned them to one focus technology field according to the inventors' main field of activity. If the inventors had the same number of patents in two or more fields, those with at least one CT patent were assigned to CT. Those with no CT but at least one NT patent were assigned to NT.

**Table 1:** Data sources and composition of the inventor sample

*Notes:*

<sup>\*)</sup> Random sample drawn from a total of 6,856 ME inventors.

<sup>\*\*)</sup> The patent data sources are described in detail in section 2.3.

## 2.2 Survey data

The central goal of the survey was to collect information about relevant human capital endowments and their development over time, as well as about personality traits and professional networks. Hence, our questionnaire contained six sections: (A) educational biography, (B) professional biography, (C) record of inventions, (D) knowledge sources and networking in the invention process, (E) change of employer, (F) socio-demographics, and (G) convictions, basic attitudes, and other skills.

The online questionnaire was programmed using the open source software LimeSurvey and was hosted on the server of the Ludwig-Maximilians-University Munich.

The pre-test started on February 5, 2013. Answers were collected until April 2013. The pre-test aimed at testing the survey procedure, the time necessary to answer the questions, and the clarity of the questions. We sent out letters by mail to 150 inventors who were randomly drawn from our list of all inventors according to the distribution of the technology fields within the full sample. The pre-test resulted in a response rate of 23.9%, i.e. 26 responses.<sup>5</sup>

After adjusting the questionnaire based on the feedback we received from the pre-test, the full-scale survey was launched in mid-April 2013. Again, the inventors were contacted via a letter.<sup>6</sup> A reminder letter was sent out to inventors who had not answered the questionnaire until July 10, 2013.

We shut down the online questionnaire on September 17, 2013. By then, 1,932 inventors had responded, 1,174 assigned to CT, 232 assigned to NT, and 526 assigned to ME. After correcting for quality-neutral dropouts (3,044)<sup>7</sup>, the corrected response rate amounted to 29.5% (see table 2).

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<sup>5</sup> In all, 41 letters were returned because they had wrong addresses and thus were accounted for as sampling losses.

<sup>6</sup> The letter is enclosed in appendix 2.

<sup>7</sup> The information on how many addressees could not be reached by our letter (2,922) was delivered by an address check of the German Post. Another 99 losses resulted from returned letters and 23 from deceased inventors.

**Table 2:** Sample sizes and response rates

Technology field	Sample size (# inventors)	Responses (# inventors)	Response rate [%]	Corrected response rate [%]
Clean technology (CT)	5,911 (all)	1,174	19.9	
Nanotechnology (NT)	1,273 (all)	232	18.2	
Mechanical elements (ME)	2,402 (random sample*)	526	21.9	
<b>Total</b>	<b>9,586</b>	<b>1,932</b>	<b>20.2</b>	<b>29.5</b>

*Notes:*

\*) Random sample drawn from a total of 6,856 ME inventors.

### 2.3 Patent data

To trace patent activity over time, we collected all patent applications on which the responding inventors are listed between the years 1978 and 2012 (“patent histories”) using the PATSTAT database as of April 2012 provided by the European Patent Office (EPO). The name matching was conducted using the standard identification number (ID) provided by the EPO Worldwide Patent Statistical Database (PATSTAT). In a second step, we corrected the matches manually. We followed a conservative strategy by eliminating common names that potentially refer to different persons. In other words, inventors with common last names were only kept in the dataset in cases in which the identified patents could unambiguously be assigned to these inventors. Examples of common German last names are “Müller”, “Schmid”, “Meier”, “Schulze” etc.<sup>8</sup>

This procedure resulted in a total number of 14,873 EP applications. As the most recent data tend to be incomplete (publication lag, grant lag, citation lag, etc.), we base our empirical analysis on EP applications filed between the years 1978 and 2010.

The data were supplemented with bibliographic and procedural information on the respective patent obtained from the PATSTAT database as of April 2012 and the European Patents Administration System (EPASYS) database as of 2012. Added information includes: technology classes, forward and backward citations, the number of co-inventors, and the type of patenting activity of applicant organizations.

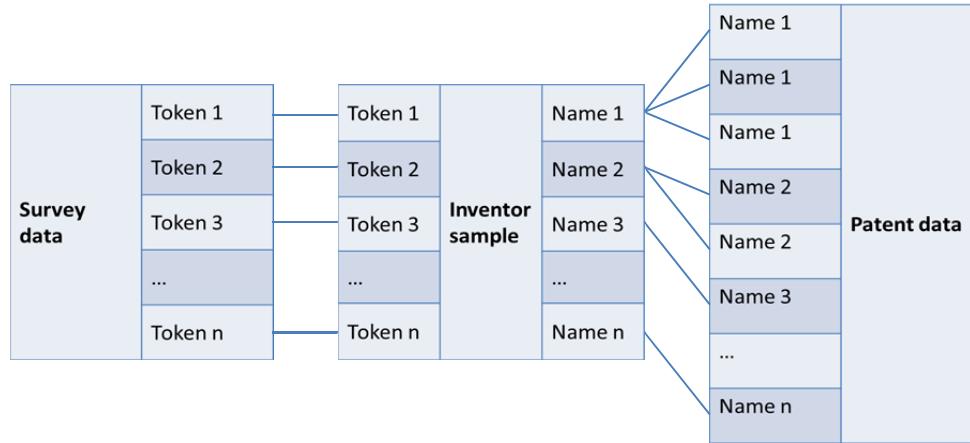
### 2.4 Merging the datasets

The patent data and the survey data were merged using a unique token generated for each observation. European patents can be uniquely identified by using the publication number, an identifier assigned to EP applications before publication. The patent data contained in PATSTAT also have a so-called person ID that is assigned to inventor and applicant names. However, this identifier is ambiguous since it is generated by using a simple string comparison of the inventor names: Different persons with the same name get the same ID and one person with different spellings of the name (e.g. because of typos or missing hyphens or academic titles) gets different IDs. A manual check of the person ID, thus, was inevitable. After manually correcting our name matching results (see fig. 1 and fig. 2), we created an

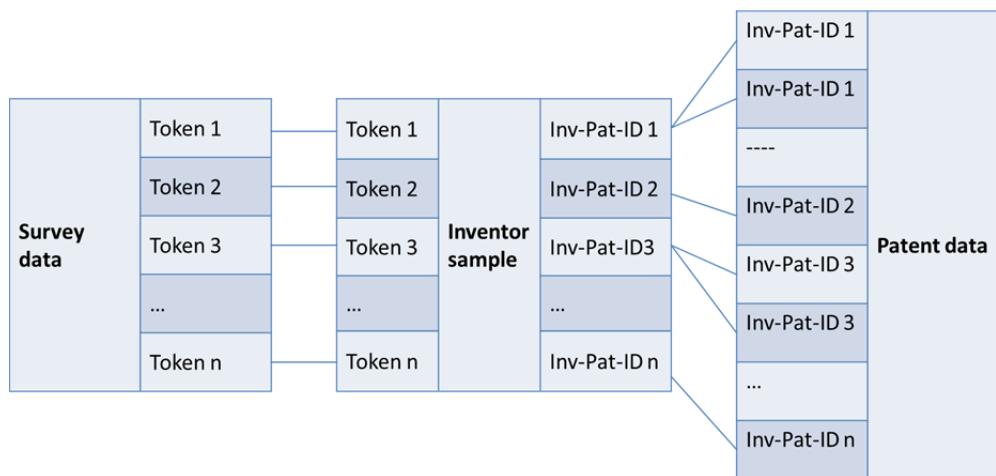
<sup>8</sup> The indicators for identifying potentially wrong persons were illogical changes of (a) the home address, (b) the employer corresponding to the applicant, and c) activity in strongly heterogeneous technology fields over the patent history of the inventor.

inventor patent ID. This ID allowed us to assign the patent histories to our respondents. The publication number enabled us to link the additional patent applications of the patent histories to the original sample of CT, NT, and ME patents. The tokens and the inventor patent ID provided the link between survey and patent data.

**Fig. 1:** 1:n merge of the inventor sample with the data from the patent histories via their names illustrated *before* manual name correction



**Fig. 2:** 1:n merge of the inventor sample with the data from patent histories *after* manual name correction via the inventor patent ID (*Note*: “----” = patent dropped after manual name checking)



### 3. Description of survey and patent data results

The following chapter provides selected descriptive statistics of variables obtained from the inventor survey as well as from PATSTAT (see appendix 1 for a complete list of variables).

### 3.1 Variables from the inventor survey

The average age of the respondents is 48.6 years (F02\_age) and 97.8% of the inventors are male (F03\_gender).<sup>9</sup> However, nearly 10% of the inventors in NT<sup>10</sup> are female. Age differences between inventors in different fields might be an explanation for this finding, since in recent years the share of women in scientific fields of study has increased. However, inventors in NT have on average the same age as inventors in the other two fields. Hence, the difference may be explained by the fact that NT is more a science-dependent field and the share of female scientists is larger at universities than in firms (Leszczensky et al. 2003). On average, 6.6% of the respondents were born abroad (F01\_birth\_country) and nearly 80% have children (F04\_children).

In the first section of the questionnaire, we asked for the educational background such as the schooling level and levels of professional education. The ME respondents have the lowest average educational level, NT respondents the highest, and the differences are significant (A01\_schooling\_secedu\_\* in section “*Highest schooling level*” and A02\_\* in section “*Levels of education*” in appendix 1). Again, since these differences cannot be explained by age (in more recent years the general propensity to obtain a university degree has increased), another explanation has to be found. Possibly, inventors who work in NT and CT are more likely to have studied chemistry, biology, or biotechnology. These study fields exhibit the largest shares of PhDs (the highest possible level of education in our questionnaire) in comparison to other academic fields (Leszczensky et al. 2003).

In school, the respondents favored the subjects natural sciences (share of 83.3%, A04\_favsubj\_natsci) and mathematics (63.5%, A04\_favsubj\_math). Comparing fields of academic education between the three technology fields, we find significantly higher shares of CT respondents in chemistry-related fields compared to ME respondents (A02\_FH\_chemeng, A02\_FH\_chem, A02\_unidipl\_chemeng, A02\_unidipl\_chem, A02\_phd\_chemeng, A02\_phd\_chem). As expected, NT respondents exhibit the highest probability of having been educated in those fields.

Additionally, we asked for a possible specialization during education in one of the three focus technology fields (A02\_eduspec\_none, A02\_ct, A02\_nt, A02\_me in section “*Specialized during education in clean technology, nanotechnology or mechanical elements*”). During their education, most of the respondents did not specialize in any of the three technology fields to which they were assigned in our sampling process (79.0%). Notably, CT respondents are significantly less likely to have specialized in CT during their studies (7.7%) compared to ME respondents having specialized in ME (20.7%) and NT respondents having specialized in NT (25.1%). A possible explanation for this finding is that hardly any university offers programs with a CT focus. The study field of strongest interest to NT respondents is natural sciences (92.7%, A05\_studyfield\_natsci). NT respondents are significantly more likely to have selected this field of study than the other two groups of inventors (CT and ME). ME respondents, in contrast, have had a strong interest in engineering as a field of study (91.6%, A05\_studyfield\_eng). CT respondents are most likely to have chosen both natural sciences (60.1%) and engineering (80%).

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<sup>9</sup> This finding is in line with the results of the PatVal I survey. The highest share of female inventors there was found in pharmacy (4%).

<sup>10</sup> In the remainder of this work, respondents are simply referred to as ME (CT/NT) respondents if they were identified via an ME (CT/NT) patent.

The variables related to the career path were derived from the second section of the questionnaire. Most of the respondents started their career with a first job in applied R&D (71.2%, B02\_firstjob\_area\_applRD). Surprisingly, this is also the case for NT respondents (68.1%). Only a relatively small share of CT respondents started their career in CT (4.9%, B02\_1\_firstjob\_techfield\_\* in section “*Technical field of first job*”). CT respondents rather had their first job in engineering fields such as, for example, transportation/engines (21.1%), electrical engineering (15.6%), or mechanical engineering (11.9%). The same applies to ME respondents. A possible explanation for this finding is that CT – even though the technologies relied on for knowledge recombination are quite established – is a relatively new technology field. The same applies in part to NT. Hence, it is likely that the share of inventors who stated that they started their career in CT or NT is higher in more recent years, i.e. for younger inventors. This is also confirmed by our data. NT inventors often start their career in the chemical industry (29.7%), semiconductors, or NT (11.0% each).

The strongest motivation of all respondents for the first job was self-regulated work (average value 4.1 on a scale of 0 to 5, B03\_firstjob\_freedom in section “*Reason for first job*”). For ME respondents (3.7), it was significantly more important to have a secure job than for the other two groups of inventors (3.5 for CT and 3.4 for NT respondents, B02\_firstjob\_secur). For respondents from NT (3.7), it was more important to work as a job expert than for the other respondents (3.4 for ME, 3.5 for CT respondents, B02\_firstjob\_expert).

The section “*Career biography*” contained questions on the employment status, circumstances of job change, activity in basic or applied research, share of working time spent in R&D, salary levels, and employment periods as specialists or generalists. The questionnaire offered the respondents, as it were, calendars with nine 5-year periods and a tenth 4-year period at the topical end (together covering the years 1965-2013) and asked them to mark answers that applied for the respective periods. Multiple answers per period were possible. Table 3 provides an example of such a question.

**Table 3:** Employment status of the inventors in different periods

	1965-1969	1970-1974	1975-1979	1980-1984	1985-1989	1990-1994	1995-1999	2000-2004	2005-2009	2010-today
Employed	<input type="checkbox"/>									
Self-employed	<input type="checkbox"/>									
Not employed	<input type="checkbox"/>									

In line with the definition of NT as an emergent, highly science-dependent technology, NT respondents are usually significantly more active in basic research and less in applied research compared to ME and CT respondents (B04\_3\_rd\_\* in section “*Career biography: Working in basic or applied research*”). In nearly all periods, they also exhibit significantly higher shares of intensive R&D activity (B04\_4\_rd\_\* in section “*Career biography: Share of working time spent on R&D activities*”).

In accordance with the results summarized for the field of the first job, CT respondents report the smallest share of earlier experience in “their” technology field (15.1%, B05\_techfield\_\* in section “*Technology fields worked in for at least two years*”) compared to inventors from the other two technology fields (ME 33.7% and NT 51.5%). On average, 60.8% of the respondents see the greatest success during their career in the development of an important technological novelty (B09\_success\_type\_tech). Significantly fewer NT respondents (11.7%) than ME (21.6%) and CT respondents (18.7%) consider a promotion in their job their greatest career success (B09\_success\_type\_prom).

The respondents estimated that 55.7% of their inventions had been patented (C03\_inv\_patented). The share provided by NT respondents (60.3%) is significantly higher than the share provided by the respondents of the other two technology fields. Since there is no reason to believe that patent propensity should be higher in NT than in CT or ME, a possible explanation for this finding might again be the fact that NT is a relatively young technology. In recent years, the patenting propensity of all firms has increased (Hall 2004).

The inventors were further asked whether one or more of their prior inventions were related to one of our three focus technologies. Respondents from NT show the strongest connection to “their” field, i.e. more than 70% have at least one invention assigned to NT (C05\_spec\_NT), and CT respondents show the weakest connection, i.e. only about 40% report that they have at least one invention in CT (C05\_spec\_CT). A possible explanation for this finding is that – whereas NT and ME can be seen as a well-defined industry – CT is rather a technology field than an industry. If inventors work in the energy or in the automotive sector and make an invention – even if this work is CT-related according to our definition – they might rather assign it to energy or automotive than to CT. Whether this conjecture is true has to be verified in future analyses.

The field most often mentioned by our respondents as their main field of inventive activity (C06\_maintechfield\_\* in section “*Technical field of most inventions*”) is transportation and engines (22.0%). This is true for about 20% of the CT respondents and for about 30% of the ME respondents. NT respondents, indeed, exhibit the strongest inventive activity in NT (27.8%). The data show exactly the same patterns for the question on the technical field in which the respondents made their most important invention (C08\_greatinv\_field\_\* in section “*Technical field of greatest invention*”).

The most important knowledge sources (D01\_knowsource\_\* in section “*Knowledge sources for inventive activity*”) are the inventor’s own expert knowledge (average value of 4.6 on a scale from 1 to 7), his or her cross-sectional knowledge (4.5), and input from co-inventors (3.8). The importance of the three network-related knowledge sources co-inventors, network contacts to experts from the same (3.0 on average) and other fields (2.6 on average) differs significantly between the three inventor groups. For CT and NT respondents, these three knowledge sources seem to be more important than for ME respondents, and for NT even more than for CT respondents. Co-operations with universities and companies are most important for NT and least important for ME inventors. The same applies to the problem-solving competency of co-inventors. It is rated significantly stronger from CT and NT respondents compared to ME respondents. The usefulness of reading earlier patent documents on inventive activity is considered of moderate importance by all respondent groups (maximum value 2.3 on a scale of 0 to 5, D02\_1\_patlit\_\* in section “*Influence of reading patent literature for inventive activity*”). We also find considerable differences between the three technology fields with respect to the importance of technological fields as sources of knowledge (D01\_techfield1\_\*, D01\_techfield2\_\*, D01\_techfield3\_\*). ME respondents consider knowledge from transportation and engines, mechanical engineering, and machinery as most important. NT respondents mainly apply knowledge from the chemicals field. CT respondents are rather indifferent with respect to the importance of technology input. The latter finding is in line with CT being a cross-sectional technology relying on different knowledge fields.

According to Trajtenberg (2005) and Hoisl (2007, 2009), mobility of inventors is positively related to their productivity. Mobility in our context means a change of the employer. Overall, 61.3% of the respondents changed their employer before 2008 (E01\_move). The strongest motivation for quitting a job was a better job alternative (average value 3.2 on a scale of 0 to 5, E01\_3\_pre\_move\_betterj in section “*Reasons for changing the employer*”). The opportunity to change the technical field (2.7, E01\_3\_pre\_move\_techchange) is rated

significantly more important by CT than by NT inventors. ME inventors are significantly more likely to change employer because of dissatisfaction with their previous job than CT and especially NT respondents (E01\_3\_pre\_move\_dissat). The prospect of an attractive R&D environment is by far the strongest motivation for taking a new job for all respondents (E01\_post\_move\_attd, 4.0 on a scale of 0 to 5). Interestingly, CT respondents show a stronger tendency to select their next job in CT (share of 25.8%, E02\_nextjob\_field\_CT in section “*Technical field of next job*”) than NT inventors in NT (21.2%, E02\_nextjob\_field\_NT) and ME inventors in ME (12.0%, E02\_nextjob\_field\_ME). The prospect of self-regulated work is the most important reason for the respondents to change into a certain technology field (4.4 on a scale of 0 to 5, E03\_nextjob\_freedom in section “*Reasons for choosing a certain technical field for future inventive activity*”). The second most important reason, a promising technology (4.2, E03\_nextjob\_promtech), is significantly more important to the two groups assigned to the cross-sectional technology fields, i.e. for CT and NT respondents, than for ME respondents. The same applies to the reason “building new expertise” (E03\_nextjob\_newexp).

We further asked for information about risk-taking propensity, personality dispositions, and cognitive capabilities. The average self-assessed risk-taking propensity on a scale ranging from 0 to 10 is 5.7 (F08\_risktaking). One of the most common concepts in research on personality psychology is an inventory with five dimensions, the so-called Big Five: openness, conscientiousness, extraversion, agreeableness, and neuroticism (cf. Costa and McCrae 1992). Over the years, many different item batteries have been developed in order to retrieve data on the Big Five (John et al. 1991; Costa and McCrae 1992; Goldberg 1992; Borkenau and Ostendorf 1993; Gosling et al. 2003; Angleitner and Ostendorf 2004; Rammstedt et al. 2004). The item battery BFI-S we selected was conceptualized by Gerlitz and Schupp (2005) for the SOEP<sup>11</sup>. It particularly fits multi-topic surveys because it uses a short scale with only 15 items, and thus should not take the respondent longer than two minutes to fill out. In spite of its shortness, the reliability is acceptable, with Cronbach’s Alpha values usually between 0.50 and 0.73 (Gerlitz and Schupp 2005, p. 21). Furthermore, this short inventory depicts a validated tool to be used in self-administered surveys (Gerlitz and Schupp 2005, p. 25 ff.). Additionally, it is provided in German, the language of the questionnaire and, therefore, we did not have to translate the statements. For each of the five personality dimensions, the BFI-S contains three items with scores from 1 (applies not at all) to 7 (totally applies) (G01\_bigfive\* in section “*Big-Five Inventory short scale items*”).

We further examined the cognitive ability of the inventors within our sample. To do so, we relied on the approach proposed by Frederick (2005), in which he postulates that “[...] cognitive abilities are important causal determinants of decision making.” (p. 25). He introduced a short test-scale consisting of three brain-teasers for measuring cognitive capability – the *Cognitive Reflection Test* (CRT). The questions provoke answers intuitively springing to the respondents’ mind that actually are wrong. That is, the items spark one of two cognitive processes (Stanovich and West 2000): When human beings are exposed to such brain-teasing questions, either “system I process” is activated, which leads to spontaneous decision-making not affected by intellect, or “system II process” is activated, which requires mental operations and concentration. NT respondents perform best in the test, and CT slightly better than ME respondents (G02\_CRT\_q\* in section “*Cognitive Reflection Test*”).

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<sup>11</sup> SOEP (Socio-economic panel) is a panel study of German households. The SOEP works with a representative sample of the German population. It asks questions about income, employment, education, and health (cf. DIW 2014).

Furthermore, we used the taxonomy of factors of human intelligence by Guilford (1956) to test for the spontaneous flexibility factor.<sup>12</sup> This flexibility factor is subsumed under the so-called divergent-thinking processes. Divergent thinking means to come up with suitable ideas only few others in a peer group do. The verbal test used for this factor is the *Brick Uses Test*. The examinees are required to find as many different uses for a brick as they can in a given time (three minutes in our questionnaire). Based on the answers to this short test, indicators such as the length of the text written down, the number of different meaningful responses or the originality of the responses can be computed. The information was collected since inventions which typically rely on knowledge recombination profit from an inventor's ability to think divergently. The average length of the strings our respondents entered is 124.4 characters (G03\_div\_length) and the average number of different ideas is 8.8 (G03\_div\_no).

### 3.2 Patent data

As described in sections 2.1 and 2.2, we relied on patent data derived from PATSTAT to trace the patent activity of our respondents between 1978 and 2010. The following section provides some descriptive statistics on patent characteristics. It is important to mention that we report means over patents and not over inventors as this report intends to describe the raw data of the patents our survey respondents are listed on. Hence, the average number of claims, for instance, cannot be interpreted as the average number of claims per respondent but the average number of claims over all EP patent applications in our sample.

The median of the priority year (first filing) is 2004 (variable yr\_pr). 96.0% of the patent applications were filed by companies, only 2.4% were filed by universities or other research institutes, and 1.6% by individual inventors (section “*Type of applicant of the patent*”). The teams contributing to the patent application consisted of an average of 3.5 inventors (RINV). 61.1% of the patent applications were filed under the Patent Cooperation Treaty assisting patent protection of inventions internationally. Nearly 50% of the patents had been granted as of 2012, another 31.3% were still pending and 18.2% had been withdrawn by the applicants. Only 1.3% of the patent applications were refused (section “*Status of patent*”). Within three years after the publication of the search report, the patents received on average 0.6 citations. The average number of citations rises to 1.0 for the five-year window and 1.4 for the ten-year window (cit\_3yrs, cit\_5yrs, cit\_10yrs). The search reports of the patents contain references to about 1.8 different technology areas (areas\_cited) including the patent's own area and 0.9 areas excluding that area (areas\_cited\_plus). Subsequent patents citing our sample patents were assigned to an average of 1.4 technology areas including the patent's own area (areas\_ctng) and 0.6 areas excluding that area (areas\_ctng\_plus). The patent families (patent filings related to the same invention that have at least one priority date in common) on average consist of 1.0 equivalent EP filings (ep\_equivs) and 8.0 equivalents in total (tot\_equivs).

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<sup>12</sup> The taxonomy of Guilford (1956) is a hierarchical system of cognitive processes in which the base level contains the cognitive factors. Those factors always have a content dimension and a dimension for the type of result when activated.

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## Appendix

### Appendix 1: Variable list

Variable	Variable label	All respondents					ME respondents <sup>1)</sup>					CT respondents <sup>1)</sup>					NT respondents <sup>1)</sup>					Significance differences of means/ proportions of binary variables <sup>2)</sup>			
		Obs. <sup>3)</sup>	Std. Dev.	Med.	Min	Max	Obs.	Std. Dev.	Med.	Min	Max	Obs.	Std. Dev.	Med.	Min	Max	Obs.	Std. Dev.	Med.	Min	Max	ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>	
<b>Technical field of sample inventor identifying patent</b>																									
_CTsampleinv	CT inventors according to sample	1,932	0.610		0	1																			
_NTsampleinv	NT inventors according to sample	1,932	0.127		0	1																			
_MEsampleinv	ME inventors according to sample	1,932	0.306		0	1																			
<b>Survey variables</b>																									
<i>Highest schooling level</i>																									
A01_schooling_secedu_hauptschule	Schooling: 'Hauptschule' (yes=1)	1,867	0.041		0	1	575	0.066		0	1	1,137	0.033		0	1	234	0.017		0	1	0.001	0.005	0.142	
A01_schooling_secedu_realschule	Schooling: 'Realschule' (yes=1)	1,867	0.063		0	1	575	0.101		0	1	1,137	0.051		0	1	234	0.034		0	1	0	0.002	0.239	
A01_schooling_vocdipl	Schooling: Berufsausbildung	1,867	0.249		0	1	575	0.355		0	1	1,137	0.225		0	1	234	0.107		0	1	0	0	0	
A01_schooling_alevels	Schooling: Abitur	1,867	0.647		0	1	575	0.478		0	1	1,137	0.691		0	1	234	0.842		0	1	0	0	0	
<i>Levels of education(multiple answers were possible)</i>																									
A02_vocedu	Vocational (yes=1)	1,861	0.359		0	1	574	0.505		0	1	1,130	0.320		0	1	235	0.179		0	1	0	0	0	
A02_FH	FH (University of applied sciences; yes=1)	1,861	0.335		0	1	574	0.463		0	1	1,130	0.314		0	1	235	0.119		0	1	0	0	0	
A02_bach	Bachelor (yes=1)	1,861	0.012		0	1	574	0.014		0	1	1,130	0.012		0	1	235	0.013		0	1	0.933	0.902	0.887	
A02_unidipl	University diploma (yes=1)	1,861	0.497		0	1	574	0.347		0	1	1,130	0.542		0	1	235	0.664		0	1	0	0	0.001	
A02_mas	Master (yes=1)	1,861	0.031		0	1	574	0.026		0	1	1,130	0.029		0	1	235	0.051		0	1	0.681	0.071	0.058	
A02_phd	PhD (yes=1)	1,861	0.361		0	1	574	0.143		0	1	1,130	0.382		0	1	235	0.779		0	1	0	0	0	
<i>Vocational education, field</i>																									
A02_vocedu_craft	Education for a craftsmanship profession (yes=1)	677	0.097		0	1	291	0.082		0	1	360	0.117		0	1	52	0.058		0	1	0.127	0.541	0.238	
A02_vocedu_techn	Education for a technical profession (yes=1)	677	0.744		0	1	291	0.859		0	1	360	0.725		0	1	52	0.269		0	1	0	0	0	
A02_vocedu_natsci	Education for a natural science profession (yes=1)	677	0.114		0	1	291	0.017		0	1	360	0.108		0	1	52	0.654		0	1	0	0	0	
A02_vocedu_comm	Education for a business or administration profession (yes=1)	677	0.021		0	1	291	0.031		0	1	360	0.017		0	1	52	0		0	0	0.206	0.199	0.361	
A02_vocedu_social	Education for a social profession (yes=1)	677	0.003		0	1	291	0.003		0	1	360	0.003		0	1	52	0		0	0	0.871	0.672	0.711	
A02_vocedu_oth	Education in other fields (yes=1)	677	0.021		0	1	291	0.007		0	1	360	0.031		0	1	52	0.019		0	1	0.034	0.378	0.687	
<i>Field of applied sciences studies (Fachhochschule)</i>																									
A02_FH_civeng	Studies in civil engineering (yes=1)	594	0.012		0	1	253	0.004		0	1	337	0.018		0	1	26	0		0	0	0.131	0.748	0.517	
A02_FH_eleceng	Studies in electrical and information engineering (yes=1)	594	0.152		0	1	253	0.103		0	1	337	0.193		0	1	26	0.038		0	1	0.002	0.291	0.071	
A02_FH_energy	Studies in energy technology and management (yes=1)	594	0.015		0	1	253	0.004		0	1	337	0.024		0	1	26	0		0	0	0.056	0.748	0.453	
A02_FH_auto	Studies in vehicle and traffic engineering (yes=1)	594	0.045		0	1	253	0.055		0	1	337	0.045		0	1	26	0		0	0	0.557	0.218	0.299	
A02_FH_mecheng	Studies in mechanical engineering and mechanics (yes=1)	594	0.512		0	1	253	0.664		0	1	337	0.436		0	1	26	0.038		0	1	0	0	0	
A02_FH_mechatr	Studies in mechatronics, microtechnology and opto-technology (yes=1)	594	0.039		0	1	253	0.055		0	1	337	0.027		0	1	26	0.077		0	1	0.062	0.652	0.107	
A02_FH_medeng	Studies in technical health systems and medical technology (yes=1)	594	0.003		0	1	253	0		0	0	337	0.006		0	1	26	0		0	0	0.225	.	0.710	
A02_FH.nano	Studies in nanotechnology (yes=1)	594	0		0	0	253	0		0	0	337	0		0	0	26	0		0	0	.	.	.	
A02_FH_enveng	Studies in environmental engineering and environment protection (yes=1)	594	0.007		0	1	253	0.004		0	1	337	0.009		0	1	26	0		0	0	0.481	0.748	0.648	
A02_FH_chemeng	Studies in process and chemical technology (yes=1)	594	0.062		0	1	253	0.020		0	1	337	0.083		0	1	26	0.192		0	1	0.001	0	0.125	
A02_FH_matsci	Studies in materials engineering and sciences (yes=1)	594	0.019		0	1	253	0.012		0	1	337	0.021		0	1	26	0.077		0	1	0.426	0.017	0.393	
A02_FH_indeng	Studies in industrial engineering (yes=1)	594	0.008		0	1	253	0.016		0	1	337	0.006		0	1	26	0		0	0	0.184	0.518	0.710	
A02_FH_otheng	Studies in other engineering sciences (yes=1)	594	0.040		0	1	253	0.040		0	1	337	0.033		0	1	26	0.115		0	1	0.617	0.081	0.020	

Variable	Variable label	All respondents										ME respondents <sup>1)</sup>					CT respondents <sup>1)</sup>					NT respondents <sup>1)</sup>					Significance differences of means/ proportions of binary variables <sup>2)</sup>		
		Std.					Std.					Std.					Std.					Std.					ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>
		Obs. <sup>3)</sup>	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>	
A02_FH_bio	Studies in biology (yes=1)	594	0			0	0	253	0		0	0	337	0		0	0	26	0		0	0		.	.	.	.	.	
A02_FH_chem	Studies in chemistry and pharmacy (yes=1)	594	0.035			0	1	253	0.004		0	1	337	0.030		0	1	26	0.423		0	1	0.024	0	0	0	0.598	0.793	
A02_FH_compsci	Studies in computer sciences (yes=1)	594	0.007			0	1	253	0		0	0	337	0.012		0	1	26	0		0	0	0.085	.	0.598	0.793	0.793		
A02_FH_math	Studies in mathematics or statistics (yes=1)	594	0.002			0	1	253	0		0	0	337	0.003		0	1	26	0		0	0	0.391	.	0.101	0.649	0.425		
A02_FH_phys	Studies in physics (yes=1)	594	0.019			0	1	253	0.008		0	1	337	0.027		0	1	26	0		0	0	0	0	0	0.310	0.748	0.598	
A02_FH_othnatsci	Studies in other natural sciences (yes=1)	594	0.008			0	1	253	0.004		0	1	337	0.012		0	1	26	0		0	0	0	0	0	0	0	0	
A02_FH_hummed	Studies in human medicine and health sciences (yes=1)	594	0			0	0	253	0		0	0	337	0		0	0	26	0		0	0	0	0	0	0	0	0	
A02_FH_cultsci	Studies in art, music, languages and cultural sciences (yes=1)	594	0			0	0	253	0		0	0	337	0		0	0	26	0		0	0	0	0	0	0	0	0	
A02_FH_jureconsoc	Studies in law, business and economics and social sciences (yes=1)	594	0.008			0	1	253	0.004		0	1	337	0.009		0	1	26	0.038		0	1	0.481	0.047	0.128	0.128	0.128		
A02_FH_oth	Studies in other fields (yes=1)	594	0.007			0	1	253	0.004		0	1	337	0.009		0	1	26	0		0	0	0.481	0.748	0.648	0.648	0.648		
<i>Field of bachelor studies</i>																													
A02_bach_civeng	Studies in civil engineering (yes=1)	23	0			0	0	8	0		0	0	14	0		0	0	3	0		0	0	.	.	.	.	.		
A02_bach_eleceng	Studies in electrical and information engineering (yes=1)	23	0.174			0	1	8	0.125		0	1	14	0.214		0	1	3	0		0	0	0.688	0.521	0.377	0.377	0.377		
A02_bach_energy	Studies in energy technology and management (yes=1)	23	0.043			0	1	8	0		0	0	14	0.071		0	1	3	0		0	0	0.467	.	0.633	0.633	0.633		
A02_bach_auto	Studies in vehicle and traffic engineering (yes=1)	23	0.043			0	1	8	0.125		0	1	14	0		0	0	3	0		0	0	0.146	0.521	0.218	0.218	0.218		
A02_bach_mecheng	Studies in mechanical engineering and mechanics (yes=1)	23	0.348			0	1	8	0.625		0	1	14	0.357		0	1	3	0		0	0	0.289	0.064	0.218	0.218	0.218		
A02_bach_mechatr	Studies in mechatronics, microtechnology and opto-technology (yes=1)	23	0.043			0	1	8	0		0	0	14	0		0	0	3	0.333		0	1	0.087	0.026	0.026	0.026	0.026		
A02_bach_medeng	Studies in technical health systems and medical technology (yes=1)	23	0			0	0	8	0		0	0	14	0		0	0	3	0		0	0	.	.	.	.	.		
A02_bach_nano	Studies in nanotechnology (yes=1)	23	0			0	0	8	0		0	0	14	0		0	0	3	0		0	0	.	.	.	.	.		
A02_bach_enveng	Studies in environmental engineering and environment protection (yes=1)	23	0			0	0	8	0		0	0	14	0		0	0	3	0		0	0	.	.	.	.	.		
A02_bach_chemeng	Studies in process and chemical technology (yes=1)	23	0			0	0	8	0		0	0	14	0		0	0	3	0		0	0	.	.	.	.	.		
A02_bach_matsci	Studies in materials engineering and sciences (yes=1)	23	0.043			0	1	8	0		0	0	14	0.071		0	1	3	0		0	0	0.467	0.633	0.633	0.633	0.633		
A02_bach_indeng	Studies in industrial engineering (yes=1)	23	0			0	0	8	0		0	0	14	0		0	0	3	0		0	0	.	.	.	.	.		
A02_bach_otheng	Studies in other engineering sciences (yes=1)	23	0			0	0	8	0		0	0	14	0		0	0	3	0		0	0	.	.	.	.	.		
A02_bach_bio	Studies in biology (yes=1)	23	0			0	0	8	0		0	0	14	0		0	0	3	0		0	0	.	.	.	.	.		
A02_bach_chem	Studies in chemistry and pharmacy (yes=1)	23	0.087			0	1	8	0		0	0	14	0.071		0	1	3	0.333		0	1	0.467	0.087	0.201	0.201	0.201		
A02_bach_compsci	Studies in computer sciences (yes=1)	23	0			0	0	8	0		0	0	14	0		0	0	3	0		0	0	.	.	.	.	.		
A02_bach_math	Studies in mathematics or statistics (yes=1)	23	0			0	0	8	0		0	0	14	0		0	0	3	0		0	0	.	.	.	.	.		
A02_bach_phys	Studies in physics (yes=1)	23	0.130			0	1	8	0.125		0	1	14	0.071		0	1	3	0.333		0	1	0.596	0.425	0.201	0.201	0.201		
A02_bach_othnatsci	Studies in other natural sciences (yes=1)	23	0			0	0	8	0		0	0	14	0		0	0	3	0		0	0	.	.	.	.	.		
A02_bach_hummed	Studies in human medicine and health sciences (yes=1)	23	0			0	0	8	0		0	0	14	0		0	0	3	0		0	0	.	.	.	.	.		
A02_bach_cultsci	Studies in art, music, languages and cultural sciences (yes=1)	23	0			0	0	8	0		0	0	14	0.000		0	0	3	0		0	0	.	.	.	.	.		
A02_bach_jureconsoc	Studies in law, business and economics and social sciences (yes=1)	23	0.087			0	1	8	0		0	0	14	0.143		0	1	3	0		0	0	0.289	0.486	0.486	0.486	0.486		
A02_bach_oth	Studies in other fields (yes=1)	23	0			0	0	8	0		0	0	14	0		0	0	3	0		0	0	.	.	.	.	.		
<i>Field of university diploma studies</i>																													
A02_unidipl_civeng	Studies in civil engineering (yes=1)	886	0.01			0	1	188	0.005		0	1	586	0.014		0	1	153	0		0	0	0.423	0.367	0.158	0.158	0.158		
A02_unidipl_eleceng	Studies in electrical and information engineering (yes=1)	886	0.14			0	1	188	0.074		0	1	586	0.181		0	1	153	0.039		0	1	0.001	0.169	0	0	0		
A02_unidipl_energy	Studies in energy technology and management (yes=1)	886	0.016			0	1	188	0.011		0	1	586	0.020		0	1	153	0		0	0	0.475	0.201	0.083	0.083	0.083		
A02_unidipl_auto	Studies in vehicle and traffic engineering (yes=1)	886	0.016			0	1	188	0.032		0	1	586	0.014		0	1	153	0		0	0	0.059	0.026	0.158	0.158	0.158		
A02_unidipl_mecheng	Studies in mechanical engineering and mechanics (yes=1)	886	0.279			0	1	188	0.649		0	1	586	0.246		0	1	153	0.013		0	1	0	0	0	0	0		
A02_unidipl_mechatr	Studies in mechatronics, microtechnology and opto-technology (yes=1)	886	0.003			0	1	188	0.005		0	1	586	0		0	0	153	0.013		0	1	0.060	0.445	0.004	0.004	0.004		
A02_unidipl_medeng	Studies in technical health systems and medical technology (yes=1)	886	0.001			0	1	188	0.005		0	1	586	0		0	0	153	0		0	0	0.060	0.367	0.367	0.367	0.367		
A02_unidipl_nano	Studies in nanotechnology (yes=1)	886	0			0	0	188	0		0	0	586	0		0	0	153	0		0	0	.	.	.	.	.		
A02_unidipl_enveng	Studies in environmental engineering and environment protection (yes=1)	886	0.001			0	1	188	0		0	0	586	0.002		0	1	153	0		0	0	0.594	0.619	0.619	0.619	0.619		
A02_unidipl_chemeng	Studies in process and chemical technology (yes=1)	886	0.058			0	1	188	0.027		0	1	586	0.075		0	1	153	0.046		0	1	0.010	0.328	0.058	0.058	0.058		
A02_unidipl_matsci	Studies in materials engineering and sciences (yes=1)	886	0.034			0	1	188	0.021		0	1	586	0.036		0	1	153	0.033		0	1	0.452	0.512	0.940	0.940	0.940		
A02_unidipl_indeng	Studies in industrial engineering (yes=1)	886	0.007			0	1	188	0.011		0	1	586	0.007		0	1	153	0.007		0	1	0.890	0.687	0.991	0.991	0.991		

Variable	Variable label	All respondents										ME respondents <sup>1)</sup>					CT respondents <sup>1)</sup>					NT respondents <sup>1)</sup>					Significance differences of means/ proportions of binary variables <sup>2)</sup>		
		Std.					Std.					Std.					Std.					Std.					ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>
		Obs. <sup>3)</sup>	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>	
A02_unidipl_otheng	Studies in other engineering sciences (yes=1)	886	0.036			0	1	188	0.037		0	1	586	0.043		0	1	153	0.007		0	1	0.774	0.063	0.038				
A02_unidipl_bio	Studies in biology (yes=1)	886	0.01			0	1	188	0		0	0	586	0.005		0	1	153	0.039		0	1	0.355	0.006	0				
A02_unidipl_chem	Studies in chemistry and pharmacy (yes=1)	886	0.179			0	1	188	0.021		0	1	586	0.155		0	1	153	0.451		0	1	0	0	0	0.482	0	0	
A02_unidipl_compsci	Studies in computer sciences (yes=1)	886	0.002			0	1	188	0		0	0	586	0.003		0	1	153	0		0	0	0.450	.	0.482				
A02_unidipl_math	Studies in mathematics or statistics (yes=1)	886	0.007			0	1	188	0.005		0	1	586	0.007		0	1	153	0.007		0	1	0.908	0.883	0.991				
A02_unidipl_phys	Studies in physics (yes=1)	886	0.176			0	1	188	0.085		0	1	586	0.167		0	1	153	0.307		0	1	0.010	0	0				
A02_unidipl_othnatsci	Studies in other natural sciences (yes=1)	886	0.014			0	1	188	0		0	0	586	0.012		0	1	153	0.039		0	1	0.156	0.006	0.031				
A02_unidipl_hummed	Studies in human medicine and health sciences (yes=1)	886	0			0	0	188	0		0	0	586	0		0	0	153	0		0	0	.	.	.				
A02_unidipl_cultsci	Studies in art, music, languages and cultural sciences (yes=1)	886	0			0	0	188	0		0	0	586	0		0	0	153	0		0	0	.	.	.				
A02_unidipl_jureconsoc	Studies in law, business and economics and social sciences (yes=1)	886	0.008			0	1	188	0.011		0	1	586	0.009		0	1	153	0		0	0	0.680	0.201	0.265				
A02_unidipl_oth	Studies in other fields (yes=1)	886	0.003			0	1	188	0		0	0	586	0.005		0	1	153	0		0	0	0.355	.	0.388				
<i>Field of master studies</i>																													
A02_mas_civeng	Studies in civil engineering (yes=1)	56	0			0	0	14	0		0	0	33	0		0	0	11	0		0	0	.	.	.				
A02_mas_eleng	Studies in electrical and information engineering (yes=1)	56	0.071			0	1	14	0.143		0	1	33	0.061		0	1	11	0		0	0	0.301	0.191	0.403				
A02_mas_energ	Studies in energy technology and management (yes=1)	56	0.054			0	1	14	0		0	0	33	0.091		0	1	11	0		0	0	0.264	.	0.300				
A02_mas_vehic	Studies in vehicle and traffic engineering (yes=1)	56	0.107			0	1	14	0.286		0	1	33	0.091		0	1	11	0		0	0	0.089	0.053	0.300				
A02_mas_mecheng	Studies in mechanical engineering and mechanics (yes=1)	56	0.232			0	1	14	0.357		0	1	33	0.273		0	1	11	0		0	0	0.622	0.027	0.052				
A02_mas_mechat	Studies in mechatronics, microtechnology and opto-technology (yes=1)	56	0.018			0	1	14	0		0	0	33	0		0	0	11	0.091		0	1	.	0.250	0.080				
A02_mas_medeng	Studies in technical health systems and medical technology (yes=1)	56	0			0	0	14	0		0	0	33	0		0	0	11	0		0	0	.	.	.				
A02_mas_nano	Studies in nanotechnology (yes=1)	56	0.018			0	1	14	0		0	0	33	0		0	0	11	0.091		0	1	.	0.250	0.080				
A02_mas_enveng	Studies in environmental engineering and environment protection (yes=1)	56	0.018			0	1	14	0		0	0	33	0.030		0	1	11	0		0	0	0.529	.	0.559				
A02_mas_proc	Studies in process and chemical technology (yes=1)	56	0.018			0	1	14	0		0	0	33	0.030		0	1	11	0		0	0	0.529	.	0.559				
A02_mas_matsci	Studies in materials engineering and sciences (yes=1)	56	0.054			0	1	14	0		0	0	33	0.061		0	1	11	0.091		0	1	0.368	0.250	0.730				
A02_mas_indeng	Studies in industrial engineering (yes=1)	56	0.018			0	1	14	0		0	0	33	0.030		0	1	11	0		0	0	0.529	.	0.559				
A02_mas_otheng	Studies in other engineering sciences (yes=1)	56	0			0	0	14	0		0	0	33	0		0	0	11	0		0	0	.	.	.				
A02_mas_bio	Studies in biology (yes=1)	56	0.018			0	1	14	0		0	0	33	0		0	0	11	0.091		0	1	.	0.250	0.080				
A02_mas_chem	Studies in chemistry and pharmacy (yes=1)	56	0.089			0	1	14	0		0	0	33	0.061		0	1	11	0.273		0	1	0.368	0.037	0.055				
A02_mas_compsci	Studies in computer sciences (yes=1)	56	0			0	0	14	0		0	0	33	0		0	0	11	0		0	0	.	.	.				
A02_mas_math	Studies in mathematics or statistics (yes=1)	56	0			0	0	14	0		0	0	33	0		0	0	11	0		0	0	.	.	.				
A02_mas_phys	Studies in physics (yes=1)	56	0.125			0	1	14	0.071		0	1	33	0.091		0	1	11	0.273		0	1	0.892	0.173	0.128				
A02_mas_othnatsci	Studies in other natural sciences (yes=1)	56	0			0	0	14	0		0	0	33	0		0	0	11	0		0	0	.	.	.				
A02_mas_hummed	Studies in human medicine and health sciences (yes=1)	56	0			0	0	14	0		0	0	33	0		0	0	11	0		0	0	.	.	.				
A02_mas_cultsci	Studies in art, music, languages and cultural sciences (yes=1)	56	0			0	0	14	0		0	0	33	0		0	0	11	0		0	0	.	.	.				
A02_mas_jureconsoc	Studies in law, business and economics and social sciences (yes=1)	56	0.071			0	1	14	0		0	0	33	0.121		0	1	11	0		0	0	0.191	.	0.226				
A02_mas_oth	Studies in other fields (yes=1)	56	0.089			0	1	14	0.143		0	1	33	0.061		0	1	11	0.091		0	1	0.301	0.692	0.730				
<i>Field of Ph.D. studies</i>																													
A02_phd_civeng	Studies in civil engineering (yes=1)	655	0.006			0	1	80	0		0	0	422	0.009		0	1	179	0		0	0	0.419	.	0.199				
A02_phd_eleceng	Studies in electrical and information engineering (yes=1)	655	0.078			0	1	80	0.075		0	1	422	0.095		0	1	179	0.028		0	1	0.856	0.080	0.006				
A02_phd_energy	Studies in energy technology and management (yes=1)	655	0.026			0	1	80	0		0	0	422	0.040		0	1	179	0		0	0	0.091	.	0.007				
A02_phd_auto	Studies in vehicle and traffic engineering (yes=1)	655	0.021			0	1	80	0.025		0	1	422	0.028		0	1	179	0		0	0	0.968	0.033	0.025				
A02_phd_mecheng	Studies in mechanical engineering and mechanics (yes=1)	655	0.145			0	1	80	0.563		0	1	422	0.137		0	1	179	0.017		0	1	0	0	0				
A02_phd_mechatr	Studies in mechatronics, microtechnology and opto-technology (yes=1)	655	0.006			0	1	80	0.013		0	1	422	0.005		0	1	179	0.006		0	1	0.33	0.553	0.869				
A02_phd_medeng	Studies in technical health systems and medical technology (yes=1)	655	0.006			0	1	80	0.037		0	1	422	0		0	0	179	0.006		0	1	0	0.553	0.117				
A02_phd_nano	Studies in nanotechnology (yes=1)	655	0.005			0	1	80	0		0	0	422	0		0	0	179	0.017		0	1	.	0.246	0.007				
A02_phd_enveng	Studies in environmental engineering and environment protection (yes=1)	655	0.008			0	1	80	0		0	0	422	0.012		0	1	179	0		0	0	0.366	.	0.151				
A02_phd_chemeng	Studies in process and chemical technology (yes=1)	655	0.076			0	1	80	0.013		0	1	422	0.095		0	1	179	0.056		0	1	0.026	0.112	0.102				
A02_phd_matsci	Studies in materials engineering and sciences (yes=1)	655	0.063			0	1	80	0.05		0	1	422	0.062		0	1	179	0.073		0	1	0.613	0.505	0.636				

Variable	Variable label	All respondents										ME respondents <sup>1)</sup>					CT respondents <sup>1)</sup>					NT respondents <sup>1)</sup>					Significance differences of means/ proportions of binary variables <sup>2)</sup>		
		Std.					Std.					Std.					Std.					ME-CT <sup>4)</sup>			ME-NT <sup>4)</sup>		CT-NT <sup>4)</sup>		
		Obs. <sup>3)</sup>	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>	
A02_phd_indeng	Studies in industrial engineering (yes=1)	655	0			0	0	80	0		0	0	422	0		0	0	179	0		0	0		.	.	.	.		
A02_phd_otheng	Studies in other engineering sciences (yes=1)	655	0.031			0	1	80	0.075		0	1	422	0.038		0	1	179	0		0	0	0.300	0	0.010				
A02_phd_bio	Studies in biology (yes=1)	655	0.014			0	1	80	0		0	0	422	0.012		0	1	179	0.022		0	1	0.366	0.179	0.304				
A02_phd_chem	Studies in chemistry and pharmacy (yes=1)	655	0.318			0	1	80	0.05		0	1	422	0.277		0	1	179	0.52		0	1	0	0	0	0	0		
A02_phd_compsci	Studies in computer sciences (yes=1)	655	0			0	0	80	0		0	0	422	0		0	0	179	0		0	0	.	.	.	.			
A02_phd_math	Studies in mathematics or statistics (yes=1)	655	0.003			0	1	80	0		0	0	422	0.005		0	1	179	0		0	0	0.569	.	0.365				
A02_phd_phys	Studies in physics (yes=1)	655	0.163			0	1	80	0.1		0	1	422	0.149		0	1	179	0.218		0	1	0.327	0.024	0.036				
A02_phd_othnatsci	Studies in other natural sciences (yes=1)	655	0.023			0	1	80	0		0	0	422	0.026		0	1	179	0.028		0	1	0.177	0.132	0.970				
A02_phd_hummed	Studies in human medicine and health sciences (yes=1)	655	0.002			0	1	80	0		0	0	422	0		0	0	179	0.006		0	1	.	0.504	0.117				
A02_phd_cultsci	Studies in art, music, languages and cultural sciences (yes=1)	655	0			0	0	80	0		0	0	422	0		0	0	179	0		0	0	.	.	.	.			
A02_phd_jureconsoc	Studies in law, business and economics and social sciences (yes=1)	655	0.003			0	1	80	0		0	0	422	0.002		0	1	179	0.006		0	1	0.687	0.504	0.512				
A02_phd_oth	Studies in other fields (yes=1)	655	0.005			0	1	80	0		0	0	422	0.007		0	1	179	0		0	0	0.485	.	0.267				
A02_vocedu_year	Vocational education, year completed	627			1981	1948	2008	274			1981	1954	2003	334			1981	1948	2008	41			1975	1949	1998	0.621	0.298	0.500	
A02_FH_year	FH education, year completed	586			1989	1951	2012	251			1988	1959	2011	331			1989	1955	2011	27			1990	1951	2012	0.557	0.707	0.375	
A02_bach_year	Bachelor education, year completed	19			1994	1978	2007	6			1987	1978	1997	12			1999	1986	2007	3			1981	1978	1997	0.016	0.768	0.042	
A02_unidipl_year	University diploma, year completed	882			1990	1950	2010	187			1991	1965	2006	582			1990	1950	2010	155			1989	1956	2006	0.043	0.015	0.167	
A02_mas_year	Master education, year completed	53			1998	1974	2013	13			1998	1980	2013	30			1998	1976	2013	12			1992	1974	2007	0.999	0.187	0.111	
A02_phd_year	PhD, year completed	636			1994	1900	2013	74			1995	1968	2007	411			1994	1955	2013	177			1993	1900	2012	0.514	0.151	0.166	
<i>Specialized education in clean technology, nanotechnology or mechanical elements</i>																													
A02_none	No specialization in education (yes=1)	1,831	0.790		0	1	561	0.774			0	1	1,115	0.800		0	1	231	0.740		0	1	0.329	0.297	0.058				
A02_ct	Specialization in education: CT (yes=1)	1,831	0.049		0	1	561	0.009			0	1	1,115	0.077		0	1	231	0.004		0	1	0	0.502	0	0			
A02_nt	Specialization in education: NT (yes=1)	1,831	0.058		0	1	561	0.011			0	1	1,115	0.043		0	1	231	0.251		0	1	0	0	0	0	0		
A02_me	Specialization in education: ME (yes=1)	1,831	0.103		0	1	561	0.207			0	1	1,115	0.080		0	1	231	0.004		0	1	0	0	0	0	0		
<i>Financing education (multiple answers were possible)</i>																													
A03_edufin_parents	Parents (yes=1)	1,852	0.671		0	1	569	0.626			0	1	1,125	0.679		0	1	235	0.762		0	1	0.016	0	0.014				
A03_edufin_bafög	Bafög (yes=1)	1,852	0.352		0	1	569	0.395			0	1	1,125	0.346		0	1	235	0.277		0	1	0.042	0.002	0.053				
A03_edufin_scholar	Scholarship (yes=1)	1,852	0.114		0	1	569	0.081			0	1	1,125	0.114		0	1	235	0.204		0	1	0.049	0	0.001				
A03_edufin_credit	Credit (yes=1)	1,852	0.017		0	1	569	0.016			0	1	1,125	0.018		0	1	235	0.013		0	1	0.882	0.751	0.657				
A03_edufin_workSem	Work during the semester (yes=1)	1,852	0.369		0	1	569	0.343			0	1	1,125	0.384		0	1	235	0.328		0	1	0.140	0.664	0.101				
A03_edufin_workBreak	Work during the semester break (yes=1)	1,852	0.344		0	1	569	0.357			0	1	1,125	0.340		0	1	235	0.328		0	1	0.507	0.417	0.678				
A03_edufin_other	Other funding (yes=1)	1,852	0.063		0	1	569	0.076			0	1	1,125	0.057		0	1	235	0.055		0	1	0.093	0.313	0.745				
<i>Favorite subjects at school (multiple answers were possible)</i>																													
A04_favsubj_math	Mathematics (yes=1)	1,851	0.635		0	1	570	0.640			0	1	1,124	0.633		0	1	234	0.624		0	1	0.779	0.673	0.937				
A04_favsubj_lit	German, literature, philosophy (yes=1)	1,851	0.078		0	1	570	0.056			0	1	1,124	0.077		0	1	234	0.128		0	1	0.095	0	0.007				
A04_favsubj_lang	Foreign languages (yes=1)	1,851	0.104		0	1	570	0.081			0	1	1,124	0.114		0	1	234	0.120		0	1	0.018	0.079	0.800				
A04_favsubj_natsci	Natural sciences (yes=1)	1,851	0.833		0	1	570	0.751			0	1	1,124	0.850		0	1	234	0.919		0	1	0	0	0	0	0		
A04_favsubj_tech	Technics and handicrafts (yes=1)	1,851	0.440		0	1	570	0.565			0	1	1,124	0.431		0	1	234	0.197		0	1	0	0	0	0	0		
A04_favsubj_sport	Sports (yes=1)	1,851	0.324		0	1	570	0.344			0	1	1,124	0.316		0	1	234	0.291		0	1	0.171	0.136	0.452				
A04_favsubj_art	Music and arts (yes=1)	1,851	0.118		0	1	570	0.116			0	1	1,124	0.113		0	1	234	0.137		0	1	0.726	0.395	0.362				
A04_favsubj_geo	Geography (yes=1)	1,851	0.206		0	1	570	0.189			0	1	1,124	0.217		0	1	234	0.197		0	1	0.176	0.791	0.444				
A04_favsubj_oth	Other subjects (yes=1)	1,851	0.024		0	1	570	0.023			0	1	1,124	0.022		0	1	234	0.034		0	1	0.997	0.352	0.217				
<i>Interest in study fields (multiple answers were possible)</i>																													
A05_studyfield_natsci	Natural sciences (yes=1)	1,845	0.566		0	1	566	0.343			0	1	1,123	0.601		0	1	233	0.927		0	1	0	0	0	0	0		
A05_studyfield_eng	Engineering (yes=1)	1,845	0.788		0	1	566	0.917			0	1	1,123	0.800		0	1	233	0.433		0	1	0	0	0	0	0		

Variable	Variable label	All respondents										ME respondents <sup>1)</sup>										CT respondents <sup>1)</sup>										Significance differences of means/ proportions of binary variables <sup>2)</sup>		
		Std.					Std.					Std.					Std.					Std.												
		Obs. <sup>3)</sup>	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>						
A05_studyfield_med	Medicine (yes=1)	1,845	0.086			0	1	566	0.048		0	1	1,123	0.086		0	1	233	0.172		0	1	0.005	0	0									
A05_studyfield_art	Arts, music, languages or cultural sciences (yes=1)	1,845	0.042			0	1	566	0.028		0	1	1,123	0.042		0	1	233	0.090		0	1	0.121	0	0.006									
A05_studyfield_math	Mathematics (yes=1)	1,845	0.104			0	1	566	0.088		0	1	1,123	0.095		0	1	233	0.155		0	1	0.812	0.006	0.002									
A05_studyfield_IT	Computer sciences (yes=1)	1,845	0.125			0	1	566	0.099		0	1	1,123	0.141		0	1	233	0.099		0	1	0.012	0.991	0.115									
A05_studyfield_law	Law, economic or social sciences (yes=1)	1,845	0.062			0	1	566	0.049		0	1	1,123	0.066		0	1	233	0.064		0	1	0.213	0.387	0.949									
<i>Interest for job in (multiple answers were possible)</i>																																		
A06_job_sci	Scientific activity (yes=1)	1,841	0.569			0	1	565	0.350		0	1	1,121	0.606		0	1	231	0.905		0	1	0	0	0	0	0	0	0	0	0			
A06_job_eng	Engineering activity (yes=1)	1,841	0.814			0	1	565	0.920		0	1	1,121	0.831		0	1	231	0.485		0	1	0	0	0	0	0	0	0	0				
A06_job_tech	Skilled manual or technical job	1,841	0.282			0	1	565	0.361		0	1	1,121	0.272		0	1	231	0.139		0	1	0	0	0	0	0	0	0	0				
A06_job_social	Social or pedagogic activity	1,841	0.045			0	1	565	0.034		0	1	1,121	0.047		0	1	231	0.065		0	1	0.191	0.046	0.495									
A06_job_envirm	Job in environment/natural protection or agriculture (yes=1)	1,841	0.122			0	1	565	0.074		0	1	1,121	0.134		0	1	231	0.186		0	1	0	0	0	0.054								
A06_job_consult	Consulting activity (yes=1)	1,841	0.067			0	1	565	0.044		0	1	1,121	0.074		0	1	231	0.078		0	1	0.013	0.054	0.653									
A06_job_admin	Administrative activity (yes=1)	1,841	0.032			0	1	565	0.039		0	1	1,121	0.030		0	1	231	0.017		0	1	0.330	0.122	0.333									
A06_job_mgmt	Management activity (yes=1)	1,841	0.174			0	1	565	0.138		0	1	1,121	0.192		0	1	231	0.182		0	1	0.004	0.152	0.643									
A06_job_startup	Starting-up an own business (yes=1)	1,841	0.132			0	1	565	0.104		0	1	1,121	0.147		0	1	231	0.117		0	1	0.015	0.663	0.302									
A06_job_creat	Artistically creative activity (yes=1)	1,841	0.048			0	1	565	0.058		0	1	1,121	0.036		0	1	231	0.078		0	1	0.018	0.299	0.003									
B01_firstjob	Year of job entry (= entry in the job market)	1,849		1990	1950	2013	567		1990	1956	2010	1,123			1991	1950	2013	236		1991	1959	2011	2011	0.058	0.007	0.411								
<i>Functional area of first job</i>																																		
B02_firstjob_area_applRD	Applied R&D (yes=1)	1,841	0.712			0	1	562	0.742		0	1	1,120	0.707		0	1	235	0.681		0	1	0.162	0.071	0.468									
B02_firstjob_area_basesr	Basic Research (yes=1)	1,841	0.079			0	1	562	0.032		0	1	1,120	0.073		0	1	235	0.221		0	1	0.001	0	0									
B02_firstjob_area_marsal	Marketing and Sales (yes=1)	1,841	0.021			0	1	562	0.023		0	1	1,120	0.025		0	1	235	0		0	0	0.751	0.019	0.017									
B02_firstjob_area_prod	Production (yes=1)	1,841	0.072			0	1	562	0.091		0	1	1,120	0.071		0	1	235	0.021		0	1	0.102	0	0.007									
B02_firstjob_area_oth	Other (yes=1)	1,841	0.116			0	1	562	0.112		0	1	1,120	0.124		0	1	235	0.077		0	1	0.501	0.135	0.032									
<i>Technical field of first job</i>																																		
B02_1_firstjob_techfield_eleceng	Electrical engineering (yes=1)	1,431	0.124			0	1	427	0.098		0	1	859	0.156		0	1	209	0.029		0	1	0.006	0.002	0									
B02_1_firstjob_techfield_ict	Information and communication technology (yes=1)	1,431	0.027			0	1	427	0.009		0	1	859	0.034		0	1	209	0.024		0	1	0.014	0.142	0.545									
B02_1_firstjob_techfield_semicon	Semiconductors (yes=1)	1,431	0.045			0	1	427	0.007		0	1	859	0.050		0	1	209	0.110		0	1	0	0	0.005									
B02_1_firstjob_techfield_instr	Instruments (yes=1)	1,431	0.022			0	1	427	0.028		0	1	859	0.015		0	1	209	0.033		0	1	0.079	0.7	0.059									
B02_1_firstjob_techfield_chemind	Chemical industry (yes=1)	1,431	0.100			0	1	427	0.014		0	1	859	0.094		0	1	209	0.297		0	1	0	0	0	0								
B02_1_firstjob_techfield_pharm	Biotechnology and Pharmacy (yes=1)	1,431	0.021			0	1	427	0		0	0	859	0.013		0	1	209	0.091		0	1	0.023	0	0									
B02_1_firstjob_techfield_chemeng	Chemical and Process engineering (yes=1)	1,431	0.070			0	1	427	0.026		0	1	859	0.091		0	1	209	0.081		0	1	0	0.001	0.572									
B02_1_firstjob_techfield_transp	Transportation and Engines (yes=1)	1,431	0.203			0	1	427	0.288		0	1	859	0.212		0	1	209	0.01		0	1	0.003	0	0									
B02_1_firstjob_techfield_cons	Consumptions (yes=1)	1,431	0.009			0	1	427	0.014		0	1	859	0.002		0	1	209	0.024		0	1	0.009	0.365	0									
B02_1_firstjob_techfield_mecheng	Mechanical engineering and Machinery (yes=1)	1,431	0.157			0	1	427	0.300		0	1	859	0.119		0	1	209	0.029		0	1	0	0	0	0								
B02_1_firstjob_techfield_ME	Mechanical elements (yes=1)	1,431	0.046			0	1	427	0.122		0	1	859	0.026		0	1	209	0		0	0	0	0	0.023									
B02_1_firstjob_techfield_NT	Nanotechnology (yes=1)	1,431	0.027			0	1	427	0		0	0	859	0.020		0	1	209	0.110		0	1	0.005	0	0									
B02_1_firstjob_techfield_CT	Clean technology (yes=1)	1,431	0.032			0	1	427	0.005		0	1	859	0.049		0	1	209	0.014		0	1	0	0.192	0.016									
B02_1_firstjob_techfield_other	Other technical field (yes=1)	1,431	0.116			0	1	427	0.089		0	1	859	0.120		0	1	209	0.148		0	1	0.100	0.027	0.323									
<i>Reason for first job</i>																																		
B03_firstjob_secur	Job security	1,788	3.488	1.230	4	0	5	549	3.661	1.125	4	0	5	1,093	3.452	1.248	4	0	5	222	3.365	1.286	4	0	5	0.001	0.001	0.001	0.159					
B03_firstjob_career	Career Opportunities	1,754	3.186	1.135	3	0	5	539	3.210	1.071	3	0	5	1,069	3.188	1.145	3	0	5	219	3.192	1.189	3	0	5	0.822	0.777	0.936						
B03_firstjob_attract	Attractive employer	1,779	3.899	1.079	4	0	5	547	3.887	1.021	4	0	5	1,086	3.911	1.097	4	0	5	220	3.945	1.054	4	0	5	0.562	0.478	0.852						
B03_firstjob_envirm	Involvement in environmental issues	1,732	2.487	1.285	2	0	5	529	2.229	1.099	2	0	5	1,060	2.652	1.349	3	0	5	212	2.307	1.237	2	0	5	0	0	0.425	0					
B03_firstjob_society	Involvement in society and politics	1,726	1.941	1.096	2	0	5	528	1.835	1.007	2	0	5	1,054	2.001	1.139	2	0	5	213	1.911	1.071	2	0	5	0.003	0.369	0.358						
B03_firstjob_tasks																																		

Variable	Variable label	All respondents										ME respondents <sup>1)</sup>										CT respondents <sup>1)</sup>										Significance differences of means/ proportions of binary variables <sup>2)</sup>			
		Std.					Std.					Std.					Std.					Std.					ME-CT <sup>4)</sup>		ME-NT <sup>4)</sup>		CT-NT <sup>4)</sup>				
		Obs. <sup>3)</sup>	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>							
B03_firstjob_freedom	Self-regulated work	1,779	4.126	1.129	4	0	5	546	4.112	1.065	4	0	5	1,083	4.116	1.130	4	0	5	225	4.231	1.206	5	0	5	0.974	0.19	0.234							
B03_firstjob_workh	Regular working hours	1,752	2.652	1.156	2	0	5	537	2.791	1.161	3	0	5	1,070	2.632	1.143	2	0	5	214	2.453	1.157	2	0	5	0.009	0	0.025							
B03_firstjob_place	Working place close to home	1,770	2.680	1.417	3	0	5	544	2.980	1.384	3	0	5	1,081	2.613	1.407	2	0	5	217	2.300	1.426	2	0	5	0	0	0.003							
B03_firstjob_salary	Above-average salary	1,773	3.012	1.107	3	0	5	546	3.137	1.034	3	0	5	1,080	2.956	1.112	3	0	5	220	3.014	1.199	3	0	5	0.001	0.145	0.463							
B03_firstjob_nochoice	Difficult to find a job at all	1,759	1.753	1.860	1	0	5	540	1.783	1.835	1	0	5	1,072	1.749	1.885	1	0	5	217	1.604	1.826	1	0	5	0.582	0.209	0.302							
B03_firstjob_tech	Developing path-breaking technologies	1,760	3.160	1.409	3	0	5	538	2.994	1.331	3	0	5	1,075	3.209	1.429	3	0	5	218	3.399	1.415	4	0	5	0.001	0	0.071							
B03_firstjob_startup	Starting an own company	1,751	1.275	1.133	1	0	5	535	1.264	1.105	1	0	5	1,068	1.287	1.143	1	0	5	218	1.179	1.111	1	0	5	0.771	0.301	0.33							
B03_firstjob_mgmt	Probability of taking on management responsibility	1,753	2.272	1.373	2	0	5	536	2.216	1.344	2	0	5	1,072	2.305	1.385	2	0	5	217	2.318	1.400	2	0	5	0.138	0.386	0.96							
B03_firstjob_life	Work-life balance	1,769	3.210	1.352	3	0	5	544	3.241	1.357	4	0	5	1,077	3.223	1.333	3	0	5	221	3.077	1.417	3	0	5	0.823	0.137	0.166							
B03_firstjob_other	Other	857	0.803	1.481	0	0	5	261	0.732	1.386	0	0	5	523	0.855	1.527	0	0	5	99	0.677	1.470	0	0	5	0.258	0.741	0.375							
<i>Career biography: employment status of at least one year</i>																																			
B04_1_empstat_empl_p1	Employed between 1965 and 1969	84	0.905		0	1	30	0.967			0	1	51	0.882			0	1	8	0.875			0	1	0.209	0.261	0.863								
B04_1_empstat_empl_p2	Employed between 1970 and 1974	193	0.891		0	1	57	0.912			0	1	125	0.872			0	1	21	0.905			0	1	0.378	0.887	0.374								
B04_1_empstat_empl_p3	Employed between 1975 and 1979	344	0.927		0	1	99	0.919			0	1	222	0.923			0	1	41	0.951			0	1	0.963	0.515	0.587								
B04_1_empstat_empl_p4	Employed between 1980 and 1984	548	0.918		0	1	165	0.903			0	1	347	0.925			0	1	66	0.924			0	1	0.353	0.626	0.917								
B04_1_empstat_empl_p5	Employed between 1985 and 1989	829	0.931		0	1	257	0.938			0	1	503	0.920			0	1	106	0.972			0	1	0.386	0.190	0.07								
B04_1_empstat_empl_p6	Employed between 1990 and 1994	1,106	0.934		0	1	359	0.925			0	1	662	0.932			0	1	133	0.970			0	1	0.652	0.07	0.114								
B04_1_empstat_empl_p7	Employed between 1995 and 1999	1,472	0.942		0	1	482	0.950			0	1	885	0.937			0	1	169	0.964			0	1	0.391	0.456	0.191								
B04_1_empstat_empl_p8	Employed between 2000 and 2004	1,672	0.954		0	1	528	0.970			0	1	1,006	0.947			0	1	207	0.966			0	1	0.056	0.800	0.310								
B04_1_empstat_empl_p9	Employed between 2005 and 2009	1,690	0.944		0	1	520	0.958			0	1	1,025	0.940			0	1	216	0.944			0	1	0.169	0.431	0.806								
B04_1_empstat_empl_p10	Employed between 2010 and 2013	1,544	0.924		0	1	479	0.952			0	1	934	0.914			0	1	193	0.927			0	1	0.015	0.204	0.714								
B04_1_empstat_selfempl_p1	Self-employed between 1965 and 1969	84	0		0	0	30	0			0	0	51	0			0	0	8	0			0	0	.	.	.								
B04_1_empstat_selfempl_p2	Self-employed between 1970 and 1974	193	0.036		0	1	57	0.018			0	1	125	0.048			0	1	21	0			0	0	0.360	0.547	0.325								
B04_1_empstat_selfempl_p3	Self-employed between 1975 and 1979	344	0.035		0	1	99	0.030			0	1	222	0.041			0	1	41	0			0	0	0.755	0.263	0.203								
B04_1_empstat_selfempl_p4	Self-employed between 1980 and 1984	548	0.049		0	1	165	0.061			0	1	347	0.043			0	1	66	0.045			0	1	0.340	0.662	0.887								
B04_1_empstat_selfempl_p5	Self-employed between 1985 and 1989	829	0.042		0	1	257	0.039			0	1	503	0.046			0	1	106	0.028			0	1	0.688	0.627	0.451								
B04_1_empstat_selfempl_p6	Self-employed between 1990 and 1994	1,106	0.054		0	1	359	0.050			0	1	662	0.056			0	1	133	0.038			0	1	0.781	0.571	0.436								
B04_1_empstat_selfempl_p7	Self-employed between 1995 and 1999	1,472	0.058		0	1	482	0.048			0	1	885	0.063			0	1	169	0.036			0	1	0.304	0.519	0.191								
B04_1_empstat_selfempl_p8	Self-employed between 2000 and 2004	1,672	0.054		0	1	528	0.047			0	1	1,006	0.056			0	1	207	0.043			0	1	0.594	0.828	0.567								
B04_1_empstat_selfempl_p9	Self-employed between 2005 and 2009	1,690	0.070		0	1	520	0.054			0	1	1,025	0.074			0	1	216	0.069			0	1	0.159	0.406	0.830								
B04_1_empstat_selfempl_p10	Self-employed between 2010 and 2013	1,544	0.085		0	1	479	0.052			0	1	934	0.099			0	1	193	0.088			0	1	0.003	0.08	0.571								
B04_1_empstat_unempl_p1	Unemployed between 1965 and 1969	84	0.095		0	1	30	0.033			0	1	51	0.118			0	1	8	0.125			0	1	0.209	0.261	0.863								
B04_1_empstat_unempl_p2	Unemployed between 1970 and 1974	193	0.083		0	1	57	0.070			0	1	125	0.096			0	1	21	0.095			0	1	0.476	0.684	0.591								
B04_1_empstat_unempl_p3	Unemployed between 1975 and 1979	344	0.067		0	1	99	0.051			0	1	222	0.077			0	1	41	0.073			0	1	0.234	0.584	0.978								
B04_1_empstat_unempl_p4	Unemployed between 1980 and 1984	548	0.044		0	1	165	0.061			0	1	347	0.040			0	1	66	0.015			0	1	0.263	0.146	0.336								
B04_1_empstat_unempl_p5	Unemployed between 1985 and 1989	829	0.046		0	1	257	0.051			0	1	503	0.050			0	1	106	0.019			0	1	0.997	0.170	0.176								
B04_1_empstat_unempl_p6	Unemployed between 1990 and 1994	1,106	0.032		0	1	359	0.045			0	1	662	0.030			0	1	133	0			0	0	0.197	0.014	0.046								
B04_1_empstat_unempl_p7	Unemployed between 1995 and 1999	1,472	0.030		0	1	482	0.035			0	1	885	0.028			0	1	169	0.012			0	1	0.363	0.122	0.239								
B04_1_empstat_unempl_p8	Unemployed between 2000 and 2004	1,672	0.011		0	1	528	0.008			0	1	1,006	0.012			0	1	207	0.010			0	1	0.488	0.775	0.83								
B04_1_empstat_unempl_p9	Unemployed between 2005 and 2009	1,690	0.008		0	1	520	0			0	0	1,025	0.012			0	1	216	0.014			0	1	0.016	0.007	0.910								
B04_1_empstat_unempl_p10	Unemployed between 2010 and 2013	1,544	0.015		0	1	479	0.013			0	1	934	0.016			0	1	193	0.016			0	1	0.684	0.755	0.684								
<i>Career biography: Job changing events</i>																																			
B04_2_mob_invol_p1	Involuntary job change between 1965 and 1969	43	0.116		0	1	17	0.176			0	1	25	0.080			0	1	4	0			0	0	0.314										

Variable	Variable label	All respondents										ME respondents <sup>1)</sup>										CT respondents <sup>1)</sup>										Significance differences of means/ proportions of binary variables <sup>2)</sup>		
		Std.					Std.					Std.					Std.					Std.												
		Obs. <sup>3)</sup>	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>						
B04_2_mob_invol_p7	Involuntary job change between 1995 and 1999	585	0.123			0	1	187	0.155		0	1	343	0.111		0	1	73	0.096		0	1	0.117	0.222	0.584									
B04_2_mob_invol_p8	Involuntary job change between 2000 and 2004	574	0.141			0	1	162	0.111		0	1	357	0.151		0	1	75	0.147		0	1	0.274	0.437	0.813									
B04_2_mob_invol_p9	Involuntary job change between 2005 and 2009	423	0.163			0	1	100	0.110		0	1	279	0.165		0	1	61	0.213		0	1	0.273	0.072	0.316									
B04_2_mob_invol_p10	Involuntary job change between 2010 and 2013	296	0.176			0	1	59	0.203		0	1	204	0.172		0	1	47	0.191		0	1	0.546	0.879	0.884									
B04_2_mob_vol_p1	Voluntary job change between 1965 and 1969	43	0.674			0	1	17	0.706		0	1	25	0.680		0	1	4	0.500		0	1	0.927	0.432	0.882									
B04_2_mob_vol_p2	Voluntary job change between 1970 and 1974	74	0.676			0	1	24	0.667		0	1	44	0.659		0	1	10	0.700		0	1	0.800	0.850	0.929									
B04_2_mob_vol_p3	Voluntary job change between 1975 and 1979	127	0.622			0	1	32	0.719		0	1	85	0.588		0	1	16	0.625		0	1	0.136	0.509	0.962									
B04_2_mob_vol_p4	Voluntary job change between 1980 and 1984	200	0.620			0	1	57	0.719		0	1	124	0.565		0	1	25	0.600		0	1	0.026	0.285	0.612									
B04_2_mob_vol_p5	Voluntary job change between 1985 and 1989	296	0.635			0	1	88	0.761		0	1	183	0.585		0	1	39	0.564		0	1	0.001	0.025	0.813									
B04_2_mob_vol_p6	Voluntary job change between 1990 and 1994	417	0.568			0	1	124	0.581		0	1	247	0.571		0	1	57	0.491		0	1	0.791	0.259	0.426									
B04_2_mob_vol_p7	Voluntary job change between 1995 and 1999	585	0.576			0	1	187	0.604		0	1	343	0.569		0	1	73	0.534		0	1	0.405	0.277	0.613									
B04_2_mob_vol_p8	Voluntary job change between 2000 and 2004	574	0.591			0	1	162	0.623		0	1	357	0.580		0	1	75	0.613		0	1	0.428	0.881	0.615									
B04_2_mob_vol_p9	Voluntary job change between 2005 and 2009	423	0.537			0	1	100	0.570		0	1	279	0.530		0	1	61	0.492		0	1	0.446	0.313	0.656									
B04_2_mob_vol_p10	Voluntary job change between 2010 and 2013	296	0.497			0	1	59	0.441		0	1	204	0.485		0	1	47	0.511		0	1	0.764	0.473	0.306									
B04_2_mob_reg_p1	Move to a job more than 100km away between 1965 and 1969	43	0.233			0	1	17	0.176		0	1	25	0.280		0	1	4	0.250		0	1	0.475	0.736	0.326									
B04_2_mob_reg_p2	Move to a job more than 100km away between 1970 and 1974	74	0.257			0	1	24	0.250		0	1	44	0.227		0	1	10	0.400		0	1	0.722	0.382	0.422									
B04_2_mob_reg_p3	Move to a job more than 100km away between 1975 and 1979	127	0.228			0	1	32	0.219		0	1	85	0.235		0	1	16	0.188		0	1	0.826	0.802	0.828									
B04_2_mob_reg_p4	Move to a job more than 100km away between 1980 and 1984	200	0.285			0	1	57	0.263		0	1	124	0.266		0	1	25	0.400		0	1	0.997	0.215	0.144									
B04_2_mob_reg_p5	Move to a job more than 100km away between 1985 and 1989	296	0.338			0	1	88	0.295		0	1	183	0.339		0	1	39	0.487		0	1	0.284	0.037	0.081									
B04_2_mob_reg_p6	Move to a job more than 100km away between 1990 and 1994	417	0.309			0	1	124	0.315		0	1	247	0.312		0	1	57	0.281		0	1	0.943	0.602	0.782									
B04_2_mob_reg_p7	Move to a job more than 100km away between 1995 and 1999	585	0.393			0	1	187	0.374		0	1	343	0.408		0	1	73	0.356		0	1	0.452	0.820	0.461									
B04_2_mob_reg_p8	Move to a job more than 100km away between 2000 and 2004	574	0.348			0	1	162	0.309		0	1	357	0.339		0	1	75	0.467		0	1	0.419	0.018	0.021									
B04_2_mob_reg_p9	Move to a job more than 100km away between 2005 and 2009	423	0.326			0	1	100	0.240		0	1	279	0.358		0	1	61	0.311		0	1	0.026	0.307	0.523									
B04_2_mob_reg_p10	Move to a job more than 100km away between 2010 and 2013	296	0.291			0	1	59	0.237		0	1	204	0.309		0	1	47	0.234		0	1	0.245	0.969	0.629									
B04_2_mob_reg_p1	Job abroad of at least one month between 1965 and 1969	43	0.070			0	1	17	0.059		0	1	25	0.040		0	1	4	0.250		0	1	0.754	0.241	0.069									
B04_2_mob_reg_p2	Job abroad of at least one month between 1970 and 1974	74	0.095			0	1	24	0.125		0	1	44	0.114		0	1	10	0		0	0	0.977	0.242	0.282									
B04_2_mob_reg_p3	Job abroad of at least one month between 1975 and 1979	127	0.094			0	1	32	0.094		0	1	85	0.094		0	1	16	0.063		0	1	0.899	0.712	0.766									
B04_2_mob_reg_p4	Job abroad of at least one month between 1980 and 1984	200	0.075			0	1	57	0.070		0	1	124	0.089		0	1	25	0.080		0	1	0.362	0.875	0.923									
B04_2_mob_reg_p5	Job abroad of at least one month between 1985 and 1989	296	0.064			0	1	88	0.045		0	1	183	0.077		0	1	39	0.077		0	1	0.176	0.473	0.993									
B04_2_mob_reg_p6	Job abroad of at least one month between 1990 and 1994	417	0.072			0	1	124	0.073		0	1	247	0.073		0	1	57	0.088		0	1	0.805	0.696	0.639									
B04_2_mob_reg_p7	Job abroad of at least one month between 1995 and 1999	585	0.082			0	1	187	0.086		0	1	343	0.076		0	1	73	0.110		0	1	0.748	0.534	0.282									
B04_2_mob_reg_p8	Job abroad of at least one month between 2000 and 2004	574	0.078			0	1	162	0.093		0	1	357	0.073		0	1	75	0.067		0	1	0.461	0.504	0.905									
B04_2_mob_reg_p9	Job abroad of at least one month between 2005 and 2009	423	0.083			0	1	100	0.110		0	1	279	0.086		0	1	61	0.049		0	1	0.594	0.187	0.231									
B04_2_mob_reg_p10	Job abroad of at least one month between 2010 and 2013	296	0.095			0	1	59	0.119		0	1	204	0.098		0	1	47	0.106		0	1	0.939	0.843	0.766									
B04_2_mob_none_p1	No job change between 1965 and 1969	43	0.186			0	1	17	0.176		0	1	25	0.160		0	1	4	0.250		0	1	0.839	0.736	0.484									
B04_2_mob_none_p2	No job change between 1970 and 1974	74	0.351			0	1	24	0.208		0	1	44	0.386		0	1	10	0.600		0	1	0.067	0.026	0.136									
B04_2_mob_none_p3	No job change between 1975 and 1979	127	0.260			0	1	32	0.156		0	1	85	0.259		0	1	16	0.438		0	1	0.207	0.034	0.076									
B04_2_mob_none_p4	No job change between 1980 and 1984	200	0.230			0	1	57	0.193		0	1	124	0.218		0	1	25	0.440		0	1	0.577	0.02	0.032									
B04_2_mob_none_p5	No job change between 1985 and 1989	296	0.267			0	1	88	0.125		0	1	183	0.317		0	1	39	0.359		0	1	0	0.002	0.611									
B04_2_mob_none_p6	No job change between 1990 and 1994	417	0.261			0	1	124	0.210		0	1	247	0.259		0	1	57	0.421		0	1	0.229	0.003	0.023									
B04_2_mob_none_p7	No job change between 1995 and 1999	585	0.303			0	1	187	0.235		0	1	343	0.315		0	1	73	0.425		0	1	0.038	0.002	0.056									
B04_2_mob_none_p8	No job change between 2000 and 2004	574	0.249			0	1	162	0.228		0	1	357	0.238		0	1	75	0.360		0	1	0.670	0.034	0.018									
B04_2_mob_none_p9	No job change between 2005 and 2009	423	0.322			0	1	100	0.330		0	1	279	0.319		0	1	61	0.344		0	1	0.912	0.830	0.805									
B04_2_mob_none_p10	No job change between 2010 and 2013	296	0.324			0	1	59	0.390		0	1	204	0.314		0	1	47	0.319		0	1	0.338	0.451	0.965									

Variable	Variable label	All respondents										ME respondents <sup>1)</sup>					CT respondents <sup>1)</sup>					NT respondents <sup>1)</sup>					Significance differences of means/ proportions of binary variables <sup>2)</sup>		
		Std.					Std.					Std.					Std.					Std.					ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>
		Obs. <sup>3)</sup>	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>	
B04_3_rd_basic_p6	Basic research activity between 1990 and 1994	983	0.159			0	1	315	0.089			0	1	583	0.146			0	1	132	0.348			0	1	0.016	0	0	
B04_3_rd_basic_p7	Basic research activity between 1995 and 1999	1,319	0.150			0	1	428	0.084			0	1	781	0.152			0	1	169	0.284			0	1	0.001	0	0	
B04_3_rd_basic_p8	Basic research activity between 2000 and 2004	1,574	0.129			0	1	506	0.107			0	1	928	0.107			0	1	205	0.268			0	1	0.770	0	0	
B04_3_rd_basic_p9	Basic research activity between 2005 and 2009	1,611	0.106			0	1	503	0.097			0	1	968	0.089			0	1	207	0.222			0	1	0.577	0	0	
B04_3_rd_basic_p10	Basic research activity between 2010 and 2013	1,362	0.086			0	1	427	0.087			0	1	810	0.070			0	1	178	0.169			0	1	0.309	0.003	0	
B04_3_rd_appl_p1	Applied research activity between 1965 and 1969	59	0.627			0	1	15	0.867			0	1	37	0.622			0	1	9	0.333			0	1	0.094	0.004	0.118	
B04_3_rd_appl_p2	Applied research activity between 1970 and 1974	145	0.683			0	1	43	0.767			0	1	90	0.711			0	1	20	0.400			0	1	0.540	0.003	0.012	
B04_3_rd_appl_p3	Applied research activity between 1975 and 1979	280	0.757			0	1	83	0.843			0	1	176	0.778			0	1	37	0.514			0	1	0.281	0	0.001	
B04_3_rd_appl_p4	Applied research activity between 1980 and 1984	452	0.752			0	1	131	0.824			0	1	280	0.771			0	1	63	0.587			0	1	0.331	0	0.001	
B04_3_rd_appl_p5	Applied research activity between 1985 and 1989	689	0.785			0	1	210	0.824			0	1	414	0.795			0	1	100	0.700			0	1	0.447	0.012	0.027	
B04_3_rd_appl_p6	Applied research activity between 1990 and 1994	983	0.823			0	1	315	0.854			0	1	583	0.834			0	1	132	0.712			0	1	0.381	0	0.001	
B04_3_rd_appl_p7	Applied research activity between 1995 and 1999	1,319	0.843			0	1	428	0.895			0	1	781	0.839			0	1	169	0.746			0	1	0.006	0	0.003	
B04_3_rd_appl_p8	Applied research activity between 2000 and 2004	1,574	0.891			0	1	506	0.909			0	1	928	0.902			0	1	205	0.810			0	1	0.757	0	0	
B04_3_rd_appl_p9	Applied research activity between 2005 and 2009	1,611	0.909			0	1	503	0.905			0	1	968	0.921			0	1	207	0.841			0	1	0.348	0.014	0	
B04_3_rd_appl_p10	Applied research activity between 2010 and 2013	1,362	0.883			0	1	427	0.876			0	1	810	0.891			0	1	178	0.826			0	1	0.554	0.122	0.033	
B04_3_rd_oth_p1	Other activity between 1965 and 1969	59	0.102			0	1	15	0.067			0	1	37	0.108			0	1	9	0.111			0	1	0.675	0.674	0.979	
B04_3_rd_oth_p2	Other activity between 1970 and 1974	145	0.076			0	1	43	0.093			0	1	90	0.078			0	1	20	0.050			0	1	0.852	0.574	0.694	
B04_3_rd_oth_p3	Other activity between 1975 and 1979	280	0.071			0	1	83	0.072			0	1	176	0.074			0	1	37	0.027			0	1	0.892	0.336	0.332	
B04_3_rd_oth_p4	Other activity between 1980 and 1984	452	0.077			0	1	131	0.076			0	1	280	0.086			0	1	63	0.016			0	1	0.923	0.090	0.061	
B04_3_rd_oth_p5	Other activity between 1985 and 1989	689	0.073			0	1	210	0.090			0	1	414	0.072			0	1	100	0.020			0	1	0.327	0.021	0.058	
B04_3_rd_oth_p6	Other activity between 1990 and 1994	983	0.064			0	1	315	0.073			0	1	583	0.065			0	1	132	0.038			0	1	0.651	0.168	0.267	
B04_3_rd_oth_p7	Other activity between 1995 and 1999	1,319	0.050			0	1	428	0.047			0	1	781	0.052			0	1	169	0.041			0	1	0.685	0.791	0.617	
B04_3_rd_oth_p8	Other activity between 2000 and 2004	1,574	0.041			0	1	506	0.043			0	1	928	0.043			0	1	205	0.024			0	1	0.986	0.230	0.252	
B04_3_rd_oth_p9	Other activity between 2005 and 2009	1,611	0.049			0	1	503	0.052			0	1	968	0.049			0	1	207	0.053			0	1	0.877	0.931	0.814	
B04_3_rd_oth_p10	Other activity between 2010 and 2013	1,362	0.075			0	1	427	0.082			0	1	810	0.073			0	1	178	0.084			0	1	0.639	0.976	0.743	
<i>Career biography: Share of working time spent on R&amp;D activities</i>																													
B04_4_rd_none_p1	No R&D activity between 1965 and 1969	73	0.260			0	1	19	0.211			0	1	46	0.261			0	1	12	0.417			0	1	0.540	0.189	0.424	
B04_4_rd_none_p2	No R&D activity between 1970 and 1974	175	0.257			0	1	50	0.260			0	1	112	0.259			0	1	23	0.217			0	1	0.987	0.733	0.807	
B04_4_rd_none_p3	No R&D activity between 1975 and 1979	317	0.208			0	1	93	0.237			0	1	202	0.213			0	1	41	0.146			0	1	0.787	0.250	0.417	
B04_4_rd_none_p4	No R&D activity between 1980 and 1984	495	0.166			0	1	154	0.227			0	1	303	0.165			0	1	66	0.061			0	1	0.128	0.003	0.036	
B04_4_rd_none_p5	No R&D activity between 1985 and 1989	748	0.138			0	1	236	0.191			0	1	445	0.128			0	1	105	0.057			0	1	0.021	0.001	0.048	
B04_4_rd_none_p6	No R&D activity between 1990 and 1994	1,049	0.134			0	1	343	0.157			0	1	618	0.138			0	1	136	0.066			0	1	0.404	0.008	0.030	
B04_4_rd_none_p7	No R&D activity between 1995 and 1999	1,404	0.101			0	1	458	0.118			0	1	834	0.104			0	1	174	0.040			0	1	0.433	0.003	0.011	
B04_4_rd_none_p8	No R&D activity between 2000 and 2004	1,634	0.067			0	1	523	0.073			0	1	970	0.078			0	1	208	0.014			0	1	0.540	0.002	0.001	
B04_4_rd_none_p9	No R&D activity between 2005 and 2009	1,651	0.063			0	1	513	0.074			0	1	996	0.068			0	1	212	0.042			0	1	0.960	0.118	0.094	
B04_4_rd_none_p10	No R&D activity between 2010 and 2013	1,455	0.110			0	1	460	0.113			0	1	870	0.122			0	1	185	0.070			0	1	0.435	0.105	0.049	
B04_4_rd_less_p1	50% or less between 1965 and 1969	73	0.233			0	1	19	0.368			0	1	46	0.196			0	1	12	0.083			0	1	0.099	0.081	0.397	
B04_4_rd_less_p2	50% or less between 1970 and 1974	175	0.246			0	1	50	0.300			0	1	112	0.232			0	1	23	0.174			0	1	0.347	0.274	0.647	
B04_4_rd_less_p3	50% or less between 1975 and 1979	317	0.252			0	1	93	0.312			0	1	202	0.238			0	1	41	0.195			0	1	0.150	0.176	0.484	
B04_4_rd_less_p4	50% or less between 1980 and 1984	495	0.273			0	1	154	0.331			0	1	303	0.274			0	1	66	0.182			0	1	0.259	0.027	0.103	
B04_4_rd_less_p5	50% or less between 1985 and 1989	748	0.270			0	1	236	0.322			0	1	445	0.283			0	1	105	0.133			0	1	0.352	0	0.001	
B04_4_rd_less_p6	50% or less between 1990 and 1994	1,049	0.276			0	1	343	0.309			0	1	618	0.290			0	1	136	0.147			0	1	0.522	0	0	
B04_4_rd_less_p7	50% or less between 1995 and 1999	1,404	0.291			0	1	458	0.352			0	1	834	0.284			0	1	174	0.178			0	1	0.011	0	0.005	
B04_4_rd_less_p8	50% or less between 2000 and 2004	1,634	0.316			0	1	523	0.369			0	1	970	0.316			0	1	208	0.173			0	1	0.031	0	0	
B04_4_rd_less_p9	50% or less between 2005 and 2009	1,651	0.362			0	1	5																					

Variable	Variable label	All respondents								ME respondents <sup>1)</sup>								CT respondents <sup>1)</sup>								NT respondents <sup>1)</sup>								Significance differences of means/ proportions of binary variables <sup>2)</sup>		
		Std.				Std.				Std.				Std.				Std.				Std.														
		Obs. <sup>3)</sup>	Mean	Dev.	Med.	Min	Max		Obs.	Mean	Dev.	Med.	Min	Max		Obs.	Mean	Dev.	Med.	Min	Max		Obs.	Mean	Dev.	Med.	Min	Max	ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>					
B04_4_rd_more_p5	More than 50% between 1985 and 1989	748	0.596			0	1	236	0.496			0	1	445	0.589			0	1	105	0.819			0	1	0.022	0	0	0							
B04_4_rd_more_p6	More than 50% between 1990 and 1994	1,049	0.590			0	1	343	0.531			0	1	618	0.574			0	1	136	0.787			0	1	0.187	0	0	0							
B04_4_rd_more_p7	More than 50% between 1995 and 1999	1,404	0.614			0	1	458	0.537			0	1	834	0.618			0	1	174	0.782			0	1	0.004	0	0	0							
B04_4_rd_more_p8	More than 50% between 2000 and 2004	1,634	0.623			0	1	523	0.564			0	1	970	0.612			0	1	208	0.813			0	1	0.072	0	0	0							
B04_4_rd_more_p9	More than 50% between 2005 and 2009	1,651	0.581			0	1	513	0.528			0	1	996	0.566			0	1	212	0.745			0	1	0.230	0	0	0							
B04_4_rd_more_p10	More than 50% between 2010 and 2013	1,455	0.487			0	1	460	0.461			0	1	870	0.464			0	1	185	0.622			0	1	0.902	0	0	0							
<i>Career biography: Salary level</i>																																				
B04_5_sal_10k_p1	Under 10,000 euros between 1965 and 1969	75	0.640			0	1	26	0.692			0	1	45	0.578			0	1	9	0.778			0	1	0.325	0.373	0.335								
B04_5_sal_10k_p2	Under 10,000 euros between 1970 and 1974	177	0.316			0	1	57	0.263			0	1	112	0.304			0	1	18	0.667			0	1	0.386	0.001	0.002								
B04_5_sal_10k_p3	Under 10,000 euros between 1975 and 1979	329	0.188			0	1	102	0.127			0	1	207	0.159			0	1	38	0.500			0	1	0.437	0	0								
B04_5_sal_10k_p4	Under 10,000 euros between 1980 and 1984	492	0.108			0	1	151	0.086			0	1	306	0.082			0	1	61	0.279			0	1	0.776	0	0								
B04_5_sal_10k_p5	Under 10,000 euros between 1985 and 1989	753	0.077			0	1	245	0.065			0	1	449	0.056			0	1	96	0.188			0	1	0.465	0.001	0								
B04_5_sal_10k_p6	Under 10,000 euros between 1990 and 1994	1025	0.046			0	1	335	0.057			0	1	609	0.036			0	1	124	0.056			0	1	0.108	0.990	0.255								
B04_5_sal_10k_p7	Under 10,000 euros between 1995 and 1999	1334	0.022			0	1	441	0.020			0	1	791	0.018			0	1	156	0.045			0	1	0.738	0.100	0.027								
B04_5_sal_10k_p8	Under 10,000 euros between 2000 and 2004	1415	0.012			0	1	454	0.013			0	1	844	0.009			0	1	171	0.018			0	1	0.476	0.682	0.308								
B04_5_sal_10k_p9	Under 10,000 euros between 2005 and 2009	1295	0.008			0	1	413	0.005			0	1	773	0.010			0	1	157	0.013			0	1	0.350	0.311	0.289								
B04_5_sal_10k_p10	Under 10,000 euros between 2010 and 2013	961	0.009			0	1	316	0.009			0	1	562	0.011			0	1	114	0.009			0	1	0.902	0.949	0.332								
B04_5_sal_10k30k_p1	Between 10,000 and 29,999 euros between 1965 and 1969	75	0.307			0	1	26	0.308			0	1	45	0.333			0	1	9	0.222			0	1	0.811	0.373	0.614								
B04_5_sal_10k30k_p2	Between 10,000 and 29,999 euros between 1970 and 1974	177	0.559			0	1	57	0.667			0	1	112	0.536			0	1	18	0.278			0	1	0.063	0.005	0.032								
B04_5_sal_10k30k_p3	Between 10,000 and 29,999 euros between 1975 and 1979	329	0.556			0	1	102	0.618			0	1	207	0.575			0	1	38	0.368			0	1	0.623	0.010	0.011								
B04_5_sal_10k30k_p4	Between 10,000 and 29,999 euros between 1980 and 1984	492	0.431			0	1	151	0.444			0	1	306	0.444			0	1	61	0.377			0	1	0.845	0.402	0.258								
B04_5_sal_10k30k_p5	Between 10,000 and 29,999 euros between 1985 and 1989	753	0.305			0	1	245	0.306			0	1	449	0.316			0	1	96	0.281			0	1	0.681	0.676	0.417								
B04_5_sal_10k30k_p6	Between 10,000 and 29,999 euros between 1990 and 1994	1025	0.195			0	1	335	0.185			0	1	609	0.189			0	1	124	0.234			0	1	0.975	0.270	0.315								
B04_5_sal_10k30k_p7	Between 10,000 and 29,999 euros between 1995 and 1999	1334	0.118			0	1	441	0.107			0	1	791	0.119			0	1	156	0.135			0	1	0.550	0.326	0.459								
B04_5_sal_10k30k_p8	Between 10,000 and 29,999 euros between 2000 and 2004	1415	0.035			0	1	454	0.020			0	1	844	0.037			0	1	171	0.058			0	1	0.063	0.012	0.137								
B04_5_sal_10k30k_p9	Between 10,000 and 29,999 euros between 2005 and 2009	1295	0.017			0	1	413	0.010			0	1	773	0.021			0	1	157	0.025			0	1	0.068	0.150	0.593								
B04_5_sal_10k30k_p10	Between 10,000 and 29,999 euros between 2010 and 2013	961	0.025			0	1	316	0.013			0	1	562	0.032			0	1	114	0.035			0	1	0.030	0.126	0.750								
B04_5_sal_30k50k_p1	Between 30,000 and 49,999 euros between 1965 and 1969	75	0.053			0	1	26	0			0	0	45	0.089			0	1	9	0			0	0	0.127	.	0.375								
B04_5_sal_30k50k_p2	Between 30,000 and 49,999 euros between 1970 and 1974	177	0.102			0	1	57	0.070			0	1	112	0.125			0	1	18	0.056			0	1	0.333	0.330	0.455								
B04_5_sal_30k50k_p3	Between 30,000 and 49,999 euros between 1975 and 1979	329	0.222			0	1	102	0.245			0	1	207	0.217			0	1	38	0.132			0	1	0.417	0.094	0.296								
B04_5_sal_30k50k_p4	Between 30,000 and 49,999 euros between 1980 and 1984	492	0.374			0	1	151	0.391			0	1	306	0.382			0	1	61	0.295			0	1	0.887	0.158	0.274								
B04_5_sal_30k50k_p5	Between 30,000 and 49,999 euros between 1985 and 1989	753	0.428			0	1	245	0.461			0	1	449	0.428			0	1	96	0.333			0	1	0.364	0.035	0.102								
B04_5_sal_30k50k_p6	Between 30,000 and 49,999 euros between 1990 and 1994	1025	0.423			0	1	335	0.448			0	1	609	0.425			0	1	124	0.387			0	1	0.588	0.277	0.355								
B04_5_sal_30k50k_p7	Between 30,000 and 49,999 euros between 1995 and 1999	1334	0.388			0	1	441	0.417			0	1	791	0.378			0	1	156	0.365			0	1	0.135	0.247	0.494								
B04_5_sal_30k50k_p8	Between 30,000 and 49,999 euros between 2000 and 2004	1415	0.257			0	1	454	0.256			0	1	844	0.252			0	1	171	0.257			0	1	0.688	0.944	0.992								
B04_5_sal_30k50k_p9	Between 30,000 and 49,999 euros between 2005 and 2009	1295	0.134			0	1	413	0.114			0	1	773	0.128			0	1	157	0.197			0	1	0.547	0.009	0.015								
B04_5_sal_30k50k_p10	Between 30,000 and 49,999 euros between 2010 and 2013	961	0.078			0	1	316	0.063			0	1	562	0.084			0	1	114	0.088			0	1	0.287	0.372	0.896								
B04_5_sal_50k70k_p1	Between 50,000 and 69,999 euros between 1965 and 1969	75	0			0	0	26	0			0	0	45	0			0	0	9	0			0	0	.	.	.								
B04_5_sal_50k70k_p2	Between 50,000 and 69,999 euros between 1970 and 1974	177	0.023			0	1	57	0			0	0	112	0.036			0	1	18	0			0	0	0.162	.	0.438								
B04_5_sal_50k70k_p3	Between 50,000 and 69,999 euros between 1975 and 1979	329	0.030			0	1	102	0.010			0	1	207	0.043			0	1	38	0			0	0	0.139	0.544	0.205								
B04_5_sal_50k70k_p4	Between 50,000 and 69,999 euros between 1980 and 1984	492	0.079</td																																	

Variable	Variable label	All respondents										ME respondents <sup>1)</sup>					CT respondents <sup>1)</sup>					NT respondents <sup>1)</sup>					Significance differences of means/ proportions of binary variables <sup>2)</sup>			
		Std.					Std.					Std.					Std.					ME-CT <sup>4)</sup>			ME-NT <sup>4)</sup>			CT-NT <sup>4)</sup>		
		Obs. <sup>3)</sup>	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>		
B04_5_sal_70k_p5	70,000 euros and more between 1985 and 1989	753	0.027			0	1	245	0.037		0	1	449	0.022		0	1	96	0.010		0	1	205	0.198	0.474					
B04_5_sal_70k_p6	70,000 euros and more between 1990 and 1994	1025	0.076			0	1	335	0.063		0	1	609	0.077		0	1	124	0.105		0	1	372	0.157	0.256					
B04_5_sal_70k_p7	70,000 euros and more between 1995 and 1999	1334	0.144			0	1	441	0.118		0	1	791	0.154		0	1	156	0.167		0	1	0.053	0.140	0.544					
B04_5_sal_70k_p8	70,000 euros and more between 2000 and 2004	1415	0.246			0	1	454	0.229		0	1	844	0.255		0	1	171	0.251		0	1	221	0.541	0.855					
B04_5_sal_70k_p9	70,000 euros and more between 2005 and 2009	1295	0.466			0	1	413	0.465		0	1	773	0.476		0	1	157	0.408		0	1	691	0.233	0.182					
B04_5_sal_70k_p10	70,000 euros and more between 2010 and 2013	961	0.570			0	1	316	0.570		0	1	562	0.589		0	1	114	0.491		0	1	544	0.135	0.049					
<i>Career biography: Working as generalist or specialist</i>																														
B04_6_type_gen_p1	Working as generalist between 1965 and 1969	208	0			0	0	68	0		0	0	129	0		0	0	22	0		0	0	.	.	.	.	.	.	.	
B04_6_type_gen_p2	Working as generalist between 1970 and 1974	146	0.774			0	1	41	0.683		0	1	96	0.792		0	1	18	0.778		0	1	0.174	0.498	0.524					
B04_6_type_gen_p3	Working as generalist between 1975 and 1979	276	0.772			0	1	77	0.701		0	1	178	0.775		0	1	36	0.917		0	1	0.192	0.012	0.073					
B04_6_type_gen_p4	Working as generalist between 1980 and 1984	444	0.741			0	1	125	0.688		0	1	283	0.742		0	1	59	0.864		0	1	0.183	0.011	0.033					
B04_6_type_gen_p5	Working as generalist between 1985 and 1989	672	0.696			0	1	194	0.670		0	1	411	0.681		0	1	99	0.808		0	1	0.729	0.014	0.008					
B04_6_type_gen_p6	Working as generalist between 1990 and 1994	992	0.686			0	1	310	0.652		0	1	595	0.681		0	1	131	0.786		0	1	0.393	0.006	0.014					
B04_6_type_gen_p7	Working as generalist between 1995 and 1999	1,358	0.648			0	1	438	0.630		0	1	810	0.651		0	1	170	0.706		0	1	0.387	0.088	0.185					
B04_6_type_gen_p8	Working as generalist between 2000 and 2004	1,603	0.628			0	1	514	0.625		0	1	955	0.622		0	1	200	0.660		0	1	0.924	0.391	0.226					
B04_6_type_gen_p9	Working as generalist between 2005 and 2009	1,627	0.553			0	1	503	0.565		0	1	986	0.539		0	1	207	0.570		0	1	0.259	0.918	0.299					
B04_6_type_gen_p10	Working as generalist between 2010 and 2013	1,452	0.483			0	1	449	0.506		0	1	879	0.457		0	1	184	0.522		0	1	0.054	0.738	0.077					
B04_6_type_spec_p1	Working as specialist between 1965 and 1969	208	0			0	0	68	0		0	0	129	0		0	0	22	0		0	0	.	.	.	.	.	.		
B04_6_type_spec_p2	Working as specialist between 1970 and 1974	146	0.253			0	1	41	0.341		0	1	96	0.240		0	1	18	0.222		0	1	0.285	0.394	0.681					
B04_6_type_spec_p3	Working as specialist between 1975 and 1979	276	0.264			0	1	77	0.312		0	1	178	0.270		0	1	36	0.139		0	1	0.542	0.054	0.138					
B04_6_type_spec_p4	Working as specialist between 1980 and 1984	444	0.329			0	1	125	0.384		0	1	283	0.329		0	1	59	0.203		0	1	0.188	0.011	0.05					
B04_6_type_spec_p5	Working as specialist between 1985 and 1989	672	0.368			0	1	194	0.381		0	1	411	0.387		0	1	99	0.263		0	1	0.975	0.036	0.015					
B04_6_type_spec_p6	Working as specialist between 1990 and 1994	992	0.385			0	1	310	0.413		0	1	595	0.390		0	1	131	0.298		0	1	0.475	0.021	0.047					
B04_6_type_spec_p7	Working as specialist between 1995 and 1999	1,358	0.426			0	1	438	0.422		0	1	810	0.425		0	1	170	0.406		0	1	0.901	0.700	0.763					
B04_6_type_spec_p8	Working as specialist between 2000 and 2004	1,603	0.456			0	1	514	0.440		0	1	955	0.462		0	1	200	0.455		0	1	0.447	0.687	0.818					
B04_6_type_spec_p9	Working as specialist between 2005 and 2009	1,627	0.551			0	1	503	0.537		0	1	986	0.556		0	1	207	0.570		0	1	0.399	0.396	0.703					
B04_6_type_spec_p10	Working as specialist between 2010 and 2013	1,452	0.603			0	1	449	0.570		0	1	879	0.623		0	1	184	0.609		0	1	0.031	0.348	0.639					
<i>Technology fields worked in for at least two years (multiple answers were possible)</i>																														
B05_techfield_eleng	Electrical engineering (yes=1)	1,808	0.232			0	1	558	0.152		0	1	1,096	0.289		0	1	229	0.105		0	1	0	0.084	0					
B05_techfield_ict	Information and communication technology (ICT) (yes=1)	1,808	0.097			0	1	558	0.065		0	1	1,096	0.110		0	1	229	0.096		0	1	0.003	0.119	0.604					
B05_techfield_semi	Semiconductors (yes=1)	1,808	0.101			0	1	558	0.025		0	1	1,096	0.109		0	1	229	0.249		0	1	0	0	0					
B05_techfield_inst	Instruments (yes=1)	1,808	0.120			0	1	558	0.099		0	1	1,096	0.121		0	1	229	0.144		0	1	0.230	0.062	0.319					
B05_techfield_chem	Chemical industry (yes=1)	1,808	0.141			0	1	558	0.025		0	1	1,096	0.141		0	1	229	0.424		0	1	0	0	0					
B05_techfield_bioph	Biotechnology and Pharmacy (yes=1)	1,808	0.034			0	1	558	0.004		0	1	1,096	0.022		0	1	229	0.170		0	1	0.006	0	0					
B05_techfield_proc	Chemical and Process engineering (yes=1)	1,808	0.194			0	1	558	0.111		0	1	1,096	0.239		0	1	229	0.175		0	1	0	0.022	0.007					
B05_techfield_trans	Transportation and Engines (yes=1)	1,808	0.313			0	1	558	0.425		0	1	1,096	0.322		0	1	229	0.017		0	1	0	0	0					
B05_techfield_cons	Consumptions (yes=1)	1,808	0.032			0	1	558	0.038		0	1	1,096	0.021		0	1	229	0.052		0	1	0.029	0.340	0.004					
B05_techfield_meng	Mechanical engineering and Machinery (yes=1)	1,808	0.329			0	1	558	0.498		0	1	1,096	0.305		0	1	229	0.061		0	1	0	0	0					
B05_techfield_ME	Mechanical elements (yes=1)	1,808	0.143			0	1	558	0.337		0	1	1,096	0.078		0	1	229	0.004		0	1	0	0	0					
B05_techfield_NT	Nanotechnology (yes=1)	1,808	0.106			0	1	558	0.013		0	1	1,096	0.069		0	1	229	0.515		0	1	0	0	0					
B05_techfield_CT	Clean technology (yes=1)	1,808	0.100			0	1	558	0.025		0	1	1,096	0.151		0	1	229	0.039		0	1	0	0.277	0					
B05_techfield_other	Other fields (yes=1)	1,808	0.163			0	1	558	0.120		0	1	1,096	0.177		0	1	229	0.183		0	1	0.003	0.027	0.710					
<i>Types of organization worked in for at least two years (multiple answers were possible)</i>																														
B06_orgtype_firm	Company (yes=1)	1,809	0.933			0	1	555	0.984		0	1	1,099	0.932		0	1	230	0.830		0	1	0	0	0					
B06_orgtype_repub	Public research institute (yes=1)	1,809	0.112			0	1	555	0.038		0	1	1,099	0.116		0	1	230	0.248		0	1	0	0	0					
B06_orgtype_univ	University (yes=1)	1,809	0.292			0	1	555	0.169		0	1	1,099	0.301		0	1	230	0.535		0	1	0							

Variable	Variable label	All respondents										ME respondents <sup>1)</sup>					CT respondents <sup>1)</sup>					NT respondents <sup>1)</sup>					Significance differences of means/ proportions of binary variables <sup>2)</sup>				
		Std.					Std.					Std.					Std.					ME-CT <sup>4)</sup>			ME-NT <sup>4)</sup>			CT-NT <sup>4)</sup>			
		Obs. <sup>3)</sup>	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>			
B06_orgtype_othpubl	Other public organization (yes=1)	1,809	0.013			0	1	555	0.007		0	1	1,099	0.016		0	1	230	0.009		0	1	0.154	0.823	0.433						
B06_orgtype_other	Other type of organization (yes=1)	1,809	0.032			0	1	555	0.014		0	1	1,099	0.031		0	1	230	0.065		0	1	0.063	0.000	0.006						
<i>Sizes of organizations worked in for at least two years (multiple answers were possible)</i>																															
B07_orgsize1	1-9 employees (yes=1)	1,807	0.076			0	1	557	0.068		0	1	1,095	0.070		0	1	229	0.105		0	1	0.994	0.080	0.087						
B07_orgsize2	10-49 employees (yes=1)	1,807	0.174			0	1	557	0.154		0	1	1,095	0.180		0	1	229	0.183		0	1	0.175	0.343	0.807						
B07_orgsize3	50-249 employees (yes=1)	1,807	0.205			0	1	557	0.183		0	1	1,095	0.206		0	1	229	0.240		0	1	0.255	0.075	0.145						
B07_orgsize4	250-999 employees (yes=1)	1,807	0.231			0	1	557	0.259		0	1	1,095	0.221		0	1	229	0.223		0	1	0.069	0.271	0.905						
B07_orgsize5	More than 1000 employees (yes=1)	1,807	0.823			0	1	557	0.849		0	1	1,095	0.819		0	1	229	0.795		0	1	0.136	0.058	0.447						
B08_success_year	Year of greatest career success	1,713			2005	1900	2013	531			2005	1974	2013	1,034			2006	1900	2013	219			2005	1973	2013	0.026	0.062	0.945			
<i>Type of greatest career success</i>																															
B09_success_type_tech	Development of an important technological novelty (yes=1)	1,586	0.608			0	1	473	0.617		0	1	972	0.603		0	1	205	0.624		0	1	0.638	0.849	0.732						
B09_success_type_acquis	Acquisition of a major assignment for the employer (yes=1)	1,586	0			0	0	473	0		0	0	972	0		0	0	205	0		0	0	.	.	.	.	.	.			
B09_success_type_prom	Career promotion (yes=1)	1,586	0.187			0	1	473	0.216		0	1	972	0.187		0	1	205	0.117		0	1	0.192	0.003	0.018						
B09_success_type_job	Attractive job offer by another firm (yes=1)	1,586	0.073			0	1	473	0.057		0	1	972	0.078		0	1	205	0.083		0	1	0.137	0.245	0.631						
B09_success_type_oth	Other (yes=1)	1,586	0.132			0	1	473	0.111		0	1	972	0.132		0	1	205	0.176		0	1	0.277	0.018	0.081						
<i>Leisure activities of at least 5 years activity since first job (multiple answers were possible)</i>																															
B10_LT_sport	Sports (yes=1)	1,795	0.682			0	1	554	0.682		0	1	1,086	0.669		0	1	230	0.743		0	1	0.588	0.096	0.020						
B10_LT_lit	Literature and cultural events (yes=1)	1,795	0.328			0	1	554	0.253		0	1	1,086	0.338		0	1	230	0.461		0	1	0	0	0.001	.	.	.	.		
B10_LT_volunt	Volunteering (yes=1)	1,795	0.292			0	1	554	0.334		0	1	1,086	0.273		0	1	230	0.278		0	1	0.005	0.138	0.934						
B10_LT_models	Handicraft, model-making and gardening (yes=1)	1,795	0.500			0	1	554	0.545		0	1	1,086	0.501		0	1	230	0.396		0	1	0.073	0	0.001						
B10_LT_creative	Artistic and creative activities (yes=1)	1,795	0.151			0	1	554	0.152		0	1	1,086	0.145		0	1	230	0.161		0	1	0.590	0.723	0.389						
B10_LT_nature	Nature-related activities (yes=1)	1,795	0.444			0	1	554	0.406		0	1	1,086	0.447		0	1	230	0.504		0	1	0.106	0.010	0.054						
B10_LT_educ	Continuing education (e.g. reading technical literature) (yes=1)	1,795	0.353			0	1	554	0.294		0	1	1,086	0.383		0	1	230	0.335		0	1	0	0	0.272	0.335					
B10_LT_freelance	Freelance work (besides job) (yes=1)	1,795	0.092			0	1	554	0.083		0	1	1,086	0.096		0	1	230	0.083		0	1	0.352	1.000	0.714						
B10_LT_other	Other (yes=1)	1,795	0.080			0	1	554	0.087		0	1	1,086	0.078		0	1	230	0.078		0	1	0.505	0.715	0.751						
C01_startrd	First year of R&D activity	1,728			1993	1955	2013	532			1993	1964	2010	1,049			1994	1955	2013	218			1992	1957	2011	0.539	0.855	0.205			
<i>Number of inventions</i>																															
C02_inv_no_1_3	1-3 inventions (yes=1)	1,807	0.092			0	1	555	0.077		0	1	1,096	0.099		0	1	231	0.091		0	1	0.172	0.517	0.669						
C02_inv_no_4_6	4-6 inventions (yes=1)	1,807	0.129			0	1	555	0.117		0	1	1,096	0.136		0	1	231	0.117		0	1	0.305	0.989	0.445						
C02_inv_no_7_10	7-10 inventions (yes=1)	1,807	0.144			0	1	555	0.144		0	1	1,096	0.138		0	1	231	0.173		0	1	0.742	0.289	0.134						
C02_inv_no_11_20	11-20 inventions (yes=1)	1,807	0.229			0	1	555	0.249		0	1	1,096	0.223		0	1	231	0.203		0	1	0.189	0.159	0.413						
C02_inv_no_21_30	21-30 inventions (yes=1)	1,807	0.139			0	1	555	0.148		0	1	1,096	0.140		0	1	231	0.139		0	1	0.784	0.758	0.892						
C02_inv_no_31_50	31-50 inventions (yes=1)	1,807	0.105			0	1	555	0.097		0	1	1,096	0.103		0	1	231	0.121		0	1	0.746	0.306	0.335						
C02_inv_no_51_100	51-100 inventions (yes=1)	1,807	0.099			0	1	555	0.095		0	1	1,096	0.102		0	1	231	0.100		0	1	0.554	0.843	0.998						
C02_inv_no_101_9999	More than 100 inventions (yes=1)	1,807	0.064			0	1	555	0.072		0	1	1,096	0.060		0	1	231	0.056		0	1	0.304	0.350	0.814						
C03_inv_patented	Share of inventions patented (in %)	1,787	55.706	27.181	50	0	100	550	53.949	27.547	50	0	100	1,083	55.797	26.567	50	0	100	226	60.261	27.789	62	0	100	0.157	0.004	0.022			
C04_art_sci	Scientific articles published during professional career (yes=1)	1,804	0.484	0.500	0	0	1	555	0.292	0.455	0	0	1	1,093	0.525	0.500	1	0	1	230	0.778	0.416	1	0	1	0	0	0	0		
<i>Number of scientific articles published</i>																															
C04_art_no_none	No scientific article (yes=1)	1,798	0.034			0	1	554	0.031		0	1	1,089	0.038		0	1	229	0.022		0	1	0.452	0.502	0.177						

Variable	Variable label	All respondents										ME respondents <sup>1)</sup>					CT respondents <sup>1)</sup>					NT respondents <sup>1)</sup>					Significance differences of means/ proportions of binary variables <sup>2)</sup>			
		Std.					Std.					Std.					Std.					ME-CT <sup>4)</sup>			ME-NT <sup>4)</sup>			CT-NT <sup>4)</sup>		
		Obs. <sup>3)</sup>	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>		
C04_art_no_1	1 scientific article (yes=1)	1,798	0.141			0	1	554	0.125		0	1	1,089	0.150		0	1	229	0.140		0	1	0.092	0.547	0.967					
C04_art_no_2_4	2-4 scientific articles (yes=1)	1,798	0.116			0	1	554	0.072		0	1	1,089	0.138		0	1	229	0.153		0	1	0	0.001	0.924					
C04_art_no_5_10	5-10 scientific articles (yes=1)	1,798	0.192			0	1	554	0.063		0	1	1,089	0.198		0	1	229	0.463		0	1	0	0	0	0				
C04_art_no_11	More than 10 scientific articles (yes=1)	1,798	0			0	0	554	0		0	0	1,089	0		0	0	229	0		0	0		.	.	.	.			
C05_spec_ME	Inventive activity related to mechanical elements (yes=1)	1,814	0.260			0	1	556	0.547		0	1	1,100	0.173		0	1	232	0.034		0	1	0	0	0	0	0	0		
C05_spec_CT	Inventive activity related to clean technology (yes=1)	1,814	0.272			0	1	556	0.085		0	1	1,100	0.405		0	1	232	0.103		0	1	0	0	0.386	0	0			
C05_spec_NT	Inventive activity related to nanotechnology (yes=1)	1,814	0.169			0	1	556	0.040		0	1	1,100	0.125		0	1	232	0.716		0	1	0	0	0	0	0			
C05_spec_none	Inventive activity related to none of these fields (yes=1)	1,814	0.416			0	1	556	0.415		0	1	1,100	0.433		0	1	232	0.284		0	1	0.69	0	0	0	0			
C05_spec_ME_first	Year of first invention in mechanical elements	456				1998	1955	2012	296		1998	1966	2010	183		1999	1955	2010	8		1999	1977	2012	0.627	0.445	0.554				
C05_spec_CT_first	Year of first invention in clean technology	484				2003	1969	2012	47		1999	1969	2012	437		2003	1971	2012	24		2005	1988	2012	0.002	0.006	0.198				
C05_spec_NT_first	Year of first invention in nanotechnology	298				2002	1965	2012	21		2002	1966	2009	133		2002	1965	2012	161		2002	1966	2011	0.564	0.806	0.148				
<i>Main technology field (field of most inventions)</i>																														
C06_maintechfield_eleng	Electrical engineering (yes=1)	1,796	0.091			0	1	554	0.042		0	1	1,088	0.128		0	1	227	0.013		0	1	0	0.046	0	0				
C06_maintechfield_ict	Information and communication technology (ICT) (yes=1)	1,796	0.014			0	1	554	0.005		0	1	1,088	0.017		0	1	227	0.022		0	1	0.073	0.036	0.490					
C06_maintechfield_semi	Semiconductors (yes=1)	1,796	0.027			0	1	554	0.004		0	1	1,088	0.026		0	1	227	0.093		0	1	0.002	0	0					
C06_maintechfield_inst	Instruments (yes=1)	1,796	0.018			0	1	554	0.022		0	1	1,088	0.012		0	1	227	0.040		0	1	0.095	0.155	0.004					
C06_maintechfield_chemind	Chemical industry (yes=1)	1,796	0.059			0	1	554	0.007		0	1	1,088	0.059		0	1	227	0.189		0	1	0	0	0	0				
C06_maintechfield_bioph	Biotechnology and Pharmacy (yes=1)	1,796	0.019			0	1	554	0.002		0	1	1,088	0.007		0	1	227	0.110		0	1	0.169	0	0					
C06_maintechfield_proc	Chemical and Process engineering (yes=1)	1,796	0.072			0	1	554	0.032		0	1	1,088	0.093		0	1	227	0.066		0	1	0	0.042	0.148					
C06_maintechfield_transp	Transportation and Engines (yes=1)	1,796	0.220			0	1	554	0.305		0	1	1,088	0.228		0	1	227	0		0	0	0.001	0	0					
C06_maintechfield_cons	Consumptions (yes=1)	1,796	0.016			0	1	554	0.023		0	1	1,088	0.009		0	1	227	0.022		0	1	0.013	0.911	0.076					
C06_maintechfield_meng	Mechanical engineering and Machinery (yes=1)	1,796	0.112			0	1	554	0.197		0	1	1,088	0.088		0	1	227	0.022		0	1	0	0	0	0.001				
C06_maintechfield_ME	Mechanical elements (yes=1)	1,796	0.089			0	1	554	0.255		0	1	1,088	0.030		0	1	227	0		0	0	0	0	0	0.010				
C06_maintechfield_NT	Nanotechnology (yes=1)	1,796	0.049			0	1	554	0.002		0	1	1,088	0.024		0	1	227	0.278		0	1	0.001	0	0					
C06_maintechfield_CT	Clean technology (yes=1)	1,796	0.106			0	1	554	0.018		0	1	1,088	0.170		0	1	227	0.018		0	1	0	0.974	0					
C06_maintechfield_oth	Other field (yes=1)	1,796	0.106			0	1	554	0.087		0	1	1,088	0.109		0	1	227	0.128		0	1	0.169	0.092	0.344					
C07_greatinv_year	Year of greatest invention	1,670				2004	1966	2013	517		2004	1966	2013	1,006		2004	1966	2013	216		2004	1970	2013	0.718	0.500	0.889				
<i>Technology field of greatest invention</i>																														
C08_greatinv_field_eleng	Electrical engineering (yes=1)	1,754	0.084			0	1	542	0.037		0	1	1,061	0.118		0	1	223	0.018		0	1	0	0.175	0	0				
C08_greatinv_field_ict	Information and communication technology (yes=1)	1,754	0.018			0	1	542	0.013		0	1	1,061	0.020		0	1	223	0.018		0	1	0.388	0.590	0.942					
C08_greatinv_field_semic	Semiconductors (yes=1)	1,754	0.025			0	1	542	0.002		0	1	1,061	0.024		0	1	223	0.085		0	1	0.002	0	0					
C08_greatinv_field_instr	Instruments (yes=1)	1,754	0.027			0	1	542	0.028		0	1	1,061	0.019		0	1	223	0.058		0	1	0.189	0.039	0.001					
C08_greatinv_field_chemind	Chemical industry (yes=1)	1,754	0.056			0	1	542	0.007		0	1	1,061	0.056		0	1	223	0.179		0	1	0	0	0	0				
C08_greatinv_field_bio	Biotechnology and Pharmacy (yes=1)	1,754	0.017			0	1	542	0.002		0	1	1,061	0.006		0	1	223	0.099		0	1	0.301	0	0					
C08_greatinv_field_chemeng	Chemical and Process engineering (yes=1)	1,754	0.074			0	1	542	0.041		0	1	1,061	0.093		0	1	223	0.049		0	1	0	0.579	0.020					
C08_greatinv_field_transp	Transportation and Engines (yes=1)	1,754	0.213			0	1	542	0.282		0	1	1,061	0.225		0	1	223	0		0	0	0.017	0	0					
C08_greatinv_field_cons	Consumptions (yes=1)	1,754	0.017			0	1	542	0.022		0	1	1,061	0.010		0	1	223	0.027		0	1	0.043	0.685	0.036					
C08_greatinv_field_mecheng	Mechanical engineering and Machinery (yes=1)	1,754	0.107			0	1	542	0.196		0	1	1,061	0.082		0	1	223	0.013		0	1	0	0	0	0.012				
C08_greatinv_field_mechel	Mechanical elements (yes=1)	1,754	0.092			0	1	542	0.264		0	1	1,061	0.029		0	1	223	0		0	0	0	0	0	0.012				
C08_greatinv_field_nano	Nanotechnology (yes=1)	1,754	0.054			0	1	542	0.002		0	1	1,061	0.025		0	1	223	0.327		0	1	0.001	0	0					
C08_greatinv_field_clean	Clean technology (yes=1)	1,754	0.118			0	1	542	0.024		0	1	1,061	0.189		0	1	223	0.013		0	1	0	0.359	0	0				
C08_greatinv_field_oth	Other fields (yes=1)	1,754	0.098			0	1	542	0.081		0	1	1,061	0.105		0	1	223	0.112		0	1	0.107	0.239	0.65					
<i>Importance of knowledge sources for inventive activity</i>																														
D01_knowsource_patdoc	Patent documents	1,738	3.119	1.289	0	5	537	3.069	1.242	0	5	1,050	3.036	1.301	0	5	222	3.698	1.131	1	5	0.698	0	0						

Variable	Variable label	All respondents					ME respondents <sup>1)</sup>					CT respondents <sup>1)</sup>					NT respondents <sup>1)</sup>					Significance differences of means/ proportions of binary variables <sup>2)</sup>				
		Std.		Obs. <sup>3)</sup>			Std.		Obs.			Std.		Obs.			Std.		Obs.			ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>		
		Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	
D01_knowsource_scipubl	Scientific publications	1,706	3.259	1.305	0	5	527	2.816	1.181	0	5	1,032	3.310	1.317	0	5	213	4.221	0.913	1	5	0	0	0	0	
D01_knowsource_techdoc	Unpublished technical documents	1,669	2.617	1.311	0	5	520	2.417	1.282	0	5	1,007	2.699	1.304	0	5	210	2.786	1.354	0	5	0	0.001	0.273	0	
D01_knowsource_confer	Participation in technical conferences	1,734	3.067	1.305	0	5	539	2.792	1.285	0	5	1,048	3.112	1.305	0	5	217	3.594	1.115	0	5	0	0	0	0	
D01_knowsource_expertown	Own expert knowledge	1,775	4.606	0.751	0	5	549	4.616	0.673	0	5	1,074	4.601	0.774	0	5	224	4.652	0.724	0	5	0.772	0.531	0.367	0	
D01_knowsource_crossown	Own cross-discipline knowledge	1,766	4.477	0.838	0	5	545	4.453	0.835	0	5	1,069	4.504	0.822	0	5	223	4.439	0.841	0	5	0.189	0.802	0.326	0	
D01_knowsource_man	Input by own organization's manager	1,741	2.813	1.163	0	5	538	2.792	1.154	0	5	1,055	2.854	1.165	0	5	219	2.790	1.170	0	5	0.232	0.974	0.157	0	
D01_knowsource_coinv	Input from co-inventors	1,759	3.811	1.197	0	5	543	3.645	1.238	0	5	1,067	3.858	1.181	0	5	221	4.023	1.033	0	5	0	0	0	0.072	
D01_knowsource_coll	Input from other colleagues	1,747	3.205	1.144	0	5	540	3.144	1.106	0	5	1,062	3.244	1.167	0	5	217	3.244	1.054	1	5	0.054	0.249	0.892	0	
D01_knowsource_netsame	Networking with experts from same field	1,741	2.970	1.364	0	5	539	2.724	1.379	0	5	1,054	3.029	1.358	0	5	220	3.355	1.272	0	5	0	0	0	0.001	
D01_knowsource_netother	Networking with experts from other fields	1,736	2.642	1.326	0	5	537	2.480	1.369	0	5	1,051	2.684	1.299	0	5	219	2.913	1.277	0	5	0.001	0	0	0.020	
D01_knowsource_univ	Cooperation with universities	1,736	2.440	1.333	0	5	538	2.117	1.268	0	5	1,050	2.507	1.350	0	5	219	3.005	1.217	0	5	0	0	0	0	
D01_knowsource_comp	Cooperation with other companies	1,742	2.524	1.325	0	5	539	2.343	1.326	0	5	1,057	2.579	1.331	0	5	218	2.766	1.243	0	5	0	0	0	0.090	
D01_knowsource_priv	Private contacts	1,729	1.892	1.203	0	5	536	1.832	1.227	0	5	1,045	1.931	1.209	0	5	220	1.823	1.123	0	5	0.125	0.892	0.217	0	
<i>1st choice of technical field serving as knowledge input</i>																										
D01_techfield1_eleng	Electrical engineering (yes=1)	1,780	0.156		0	1	549	0.100		0	1	1,078	0.199		0	1	226	0.053		0	1	0	0.036	0	0	0
D01_techfield1_ict	Information and communication technology (yes=1)	1,780	0.022		0	1	549	0.007		0	1	1,078	0.026		0	1	226	0.035		0	1	0.015	0.004	0.349	0	
D01_techfield1_semi	Semiconductors (yes=1)	1,780	0.035		0	1	549	0.005		0	1	1,078	0.036		0	1	226	0.106		0	1	0	0	0	0	
D01_techfield1_inst	Instruments (yes=1)	1,780	0.028		0	1	549	0.035		0	1	1,078	0.022		0	1	226	0.035		0	1	0.114	0.946	0.308	0	
D01_techfield1_chemind	Chemical industry (yes=1)	1,780	0.107		0	1	549	0.022		0	1	1,078	0.110		0	1	226	0.301		0	1	0	0	0	0	
D01_techfield1_bioph	Biotechnology and Pharmacy (yes=1)	1,780	0.019		0	1	549	0		0	1	1,078	0.005		0	1	226	0.124		0	1	0.120	0	0	0	
D01_techfield1_proc	Chemical and Process engineering (yes=1)	1,780	0.099		0	1	549	0.064		0	1	1,078	0.122		0	1	226	0.071		0	1	0	0.706	0.034	0	
D01_techfield1_transp	Transportation and Engines (yes=1)	1,780	0.178		0	1	549	0.264		0	1	1,078	0.174		0	1	226	0.004		0	1	0	0	0	0	
D01_techfield1_cons	Consumptions (yes=1)	1,780	0.012		0	1	549	0.016		0	1	1,078	0.006		0	1	226	0.018		0	1	0.041	0.891	0.075	0	
D01_techfield1_meng	Mechanical engineering and Machinery (yes=1)	1,780	0.155		0	1	549	0.275		0	1	1,078	0.124		0	1	226	0.022		0	1	0	0	0	0	
D01_techfield1_ME	Mechanical elements (yes=1)	1,780	0.057		0	1	549	0.162		0	1	1,078	0.018		0	1	226	0		0	0	0	0	0	0.051	
D01_techfield1_NT	Nanotechnology (yes=1)	1,780	0.029		0	1	549	0.002		0	1	1,078	0.019		0	1	226	0.150		0	1	0.006	0	0	0	
D01_techfield1_CT	Clean technology (yes=1)	1,780	0.064		0	1	549	0.011		0	1	1,078	0.103		0	1	226	0.018		0	1	0	0.597	0	0	
D01_techfield1_oth	Other fields (yes=1)	1,780	0.039		0	1	549	0.036		0	1	1,078	0.036		0	1	226	0.062		0	1	0.862	0.111	0.047	0	
<i>2nd choice of technical field serving as knowledge input</i>																										
D01_techfield2_eleng	Electrical engineering (yes=1)	1,712	0.081		0	1	528	0.068		0	1	1,041	0.090		0	1	215	0.056		0	1	0.178	0.545	0.098	0	
D01_techfield2_field_ict	Information and communication technology (yes=1)	1,712	0.053		0	1	528	0.044		0	1	1,041	0.062		0	1	215	0.023		0	1	0.113	0.192	0.032	0	
D01_techfield2_field_semi	Semiconductors (yes=1)	1,712	0.044		0	1	528	0.006		0	1	1,041	0.057		0	1	215	0.079		0	1	0	0	0	0.52	
D01_techfield2_field_inst	Instruments (yes=1)	1,712	0.055		0	1	528	0.042		0	1	1,041	0.057		0	1	215	0.070		0	1	0.304	0.135	0.342	0	
D01_techfield2_field_chemind	Chemical industry (yes=1)	1,712	0.061		0	1	528	0.009		0	1	1,041	0.070		0	1	215	0.126		0	1	0	0	0	0.004	
D01_techfield2_field.bioph	Biotechnology and Pharmacy (yes=1)	1,712	0.012		0	1	528	0		0	1	1,041	0.011		0	1	215	0.047		0	1	0.021	0	0	0	
D01_techfield2_field_proc	Chemical and Process engineering (yes=1)	1,712	0.119		0	1	528	0.081		0	1	1,041	0.130		0	1	215	0.153		0	1	0.004	0.004	0.415	0	
D01_techfield2_field_transp	Transportation and Engines (yes=1)	1,712	0.105		0	1	528	0.180		0	1	1,041	0.092		0	1	215	0.005		0	1	0	0	0	0	
D01_techfield2_cons	Consumptions (yes=1)	1,712	0.015		0	1	528	0.017		0	1	1,041	0.011		0	1	215	0.019		0	1	0.223	0.876	0.275	0	
D01_techfield2_meng	Mechanical engineering and Machinery (yes=1)	1,712	0.180		0	1	528	0.265		0	1	1,041	0.172		0	1	215	0.037		0	1	0	0	0	0	
D01_techfield2_ME	Mechanical elements (yes=1)	1,712	0.091		0	1	528	0.203		0	1	1,041	0.053		0	1	215	0.009		0	1	0	0	0	0.007	
D01_techfield2_NT	Nanotechnology (yes=1)	1,712	0.063		0	1	528	0.009		0	1	1,041	0.041		0	1	215	0.298		0	1	0.001	0	0	0	
D01_techfield2_CT	Clean technology (yes=1)	1,712	0.071		0	1	528	0.021		0	1	1,041	0.109		0	1	215	0.019		0	1	0	0.852	0	0	
D01_techfield2_oth	Other fields (yes=1)	1,712	0.051		0	1	528	0.055		0	1	1,041	0.046		0	1	215	0.060		0	1	0.385	0.754	0.278	0	
<i>3rd choice of technical field serving as knowledge input</i>																										
D01_techfield3_eleng	Electrical engineering (yes=1)	1,610	0.085		0	1	493	0.083		0	1	986	0.097		0	1	202	0.045		0	1	0.321	0.076	0.004	0	
D01_techfield3_field_ict	Information and communication technology (yes=1)	1,610	0.052		0	1	493	0.049		0	1	986	0.052		0	1	202	0.069		0	1	0.631	0.269	0.32	0	

Variable	Variable label	All respondents					ME respondents <sup>1)</sup>					CT respondents <sup>1)</sup>					NT respondents <sup>1)</sup>					Significance differences of means/ proportions of binary variables <sup>2)</sup>						
		Std.					Std.					Std.					Std.					ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>				
		Obs. <sup>3)</sup>	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max			
D01_techfield3_field_semi	Semiconductors (yes=1)	1,610	0.023			0	1	493	0.008		0	1	986	0.023		0	1	202	0.054		0	1	0.054	0	0.019			
D01_techfield3_field_inst	Instruments (yes=1)	1,610	0.066			0	1	493	0.057		0	1	986	0.064		0	1	202	0.094		0	1	0.542	0.072	0.073			
D01_techfield3_field_chemind	Chemical industry (yes=1)	1,610	0.044			0	1	493	0.012		0	1	986	0.043		0	1	202	0.134		0	1	0.002	0	0			
D01_techfield3_field_biph	Biotechnology and Pharmacy (yes=1)	1,610	0.009			0	1	493	0.004		0	1	986	0.009		0	1	202	0.025		0	1	0.179	0.013	0.045			
D01_techfield3_field_proc	Chemical and Process engineering (yes=1)	1,610	0.102			0	1	493	0.122		0	1	986	0.093		0	1	202	0.109		0	1	0.097	0.572	0.431			
D01_techfield3_field_transp	Transportation and Engines (yes=1)	1,610	0.073			0	1	493	0.101		0	1	986	0.069		0	1	202	0.010		0	1	0.018	0	0.002			
D01_techfield3_cons	Consumptions (yes=1)	1,610	0.015			0	1	493	0.016		0	1	986	0.011		0	1	202	0.025		0	1	0.339	0.445	0.098			
D01_techfield3_meng	Mechanical engineering and Machinery (yes=1)	1,610	0.134			0	1	493	0.166		0	1	986	0.134		0	1	202	0.035		0	1	0.068	0	0			
D01_techfield3_ME	Mechanical elements (yes=1)	1,610	0.101			0	1	493	0.172		0	1	986	0.091		0	1	202	0.005		0	1	0	0	0			
D01_techfield3_NT	Nanotechnology (yes=1)	1,610	0.048			0	1	493	0.014		0	1	986	0.041		0	1	202	0.168		0	1	0.006	0	0			
D01_techfield3_CT	Clean technology (yes=1)	1,610	0.062			0	1	493	0.008		0	1	986	0.095		0	1	202	0.020		0	1	0	0.187	0			
D01_techfield3_oth	Other fields (yes=1)	1,610	0.186			0	1	493	0.187		0	1	986	0.177		0	1	202	0.208		0	1	0.532	0.551	0.248			
<i>Change of importance of knowledge sources over time</i>																												
D02_know_chnge_patdoc	Patent documents	1,736	2.297	0.709	0	3	540	2.294	0.705	0	3	1,047	2.271	0.722	0	3	217	2.433	0.657	0	3	0.486	0.013	0.005				
D02_know_chnge_sciupbl	Scientific publications	1,713	2.047	0.685	0	3	537	2.026	0.674	0	3	1,035	2.047	0.701	0	3	211	2.090	0.667	0	3	0.546	0.260	0.408				
D02_know_chnge_techdoc	Unpublished technical documents	1,689	1.880	0.762	0	3	529	1.845	0.778	0	3	1,020	1.911	0.737	0	3	211	1.829	0.850	0	3	0.069	0.799	0.213				
D02_know_chnge_confer	Participation in technical conferences	1,721	2.105	0.763	0	3	533	2.101	0.774	0	3	1,042	2.125	0.762	0	3	217	2.018	0.739	0	3	0.512	0.165	0.075				
D02_know_chnge_expertown	Own expert knowledge	1,738	2.590	0.598	0	3	541	2.664	0.569	0	3	1,051	2.562	0.602	0	3	218	2.578	0.604	0	3	0.002	0.067	0.819				
D02_know_chnge_crossown	Own cross-discipline knowledge	1,730	2.654	0.550	0	3	537	2.670	0.558	0	3	1,046	2.651	0.541	0	3	217	2.668	0.553	0	3	0.659	0.928	0.747				
D02_know_chnge_man	Input by own organization's manager	1,717	1.762	0.688	0	3	539	1.800	0.652	0	3	1,036	1.777	0.692	0	3	213	1.615	0.747	0	3	0.572	0.001	0.001				
D02_know_chnge_coinv	Input from co-inventors	1,723	2.138	0.614	0	3	537	2.127	0.637	0	3	1,041	2.141	0.611	0	3	217	2.152	0.593	0	3	0.636	0.562	0.929				
D02_know_chnge_coll	Input from other colleagues	1,714	2.098	0.772	0	3	535	1.996	0.807	0	3	1,035	2.126	0.760	0	3	214	2.238	0.695	0	3	0.001	0	0.113				
D02_know_chnge_netsame	Networking with experts from same field	1,717	2.054	0.602	0	3	535	2.060	0.612	0	3	1,040	2.062	0.603	0	3	213	2.009	0.575	0	3	0.890	0.303	0.197				
D02_know_chnge_netother	Networking with experts from other fields	1,719	2.017	0.796	0	3	538	1.968	0.840	0	3	1,037	2.036	0.768	0	3	215	2.098	0.817	0	3	0.062	0.060	0.341				
D02_know_chnge_univ	Cooperation with universities	1,716	1.843	0.828	0	3	534	1.753	0.874	0	3	1,037	1.879	0.814	0	3	216	1.931	0.759	0	3	0.002	0.009	0.442				
D02_know_chnge_comp	Cooperation with other companies	1,715	1.941	0.854	0	3	536	1.871	0.909	0	3	1,037	1.964	0.821	0	3	214	2.019	0.833	0	3	0.032	0.048	0.574				
D02_know_chnge_priv	Private contacts	1,702	1.614	0.843	0	3	531	1.584	0.846	0	3	1,026	1.629	0.840	0	3	215	1.544	0.879	0	3	0.482	0.570	0.139				
<i>Influence of reading patent literature for inventive activity</i>																												
D02_1_patlit_time	Reading patent literature saved time	1,728	2.143	1.361	0	5	538	2.113	1.325	0	5	1,043	2.115	1.360	0	5	218	2.376	1.416	0	5	0.964	0.019	0.02				
D02_1_patlit_proj	Reading patent literature led to suspension of whole projects	1,704	1.620	1.093	0	5	529	1.664	1.108	0	5	1,030	1.556	1.082	0	5	216	1.773	1.099	0	5	0.039	0.223	0.007				
D02_1_patlit_subproj	Reading patent literature led to suspension of whole subprojects	1,717	1.864	1.160	0	5	533	1.889	1.136	0	5	1,040	1.803	1.159	0	5	216	2.056	1.196	0	5	0.117	0.075	0.003				
D02_1_patlit_fast	Reading patent literature led to faster project implementation	1,711	2.282	1.333	0	5	532	2.231	1.322	0	5	1,032	2.263	1.335	0	5	219	2.566	1.313	0	5	0.609	0.002	0.009				
D02_1_patlit_stretchng	Reading patent literature led to change of research direction	1,714	1.909	1.279	0	5	534	1.876	1.301	0	5	1,034	1.896	1.266	0	5	218	2.115	1.270	0	5	0.741	0.025	0.067				
D02_1_patlit_coop	Reading patent literature led to cooperation	1,720	1.788	1.224	0	5	534	1.605	1.139	0	5	1,040	1.837	1.241	0	5	218	2.096	1.283	0	5	0	0	0.020				
D02_1_patlit_other	Other effects	881	0.436	1.008	0	5	291	0.430	0.946	0	5	518	0.431	1.013	0	5	99	0.515	1.232	0	5	0.915	0.474	0.425				
<i>Time savings based on reading patent literature</i>																												
D02_2_patlit_timesav_0_2	0-2 hours (yes=1)	1,932	0.100		0	1	592	0.115		0	1	1,176	0.098		0	1	245	0.082		0	1	0.299	0.160	0.481				
D02_2_patlit_timesav_3_5	3-5 hours (yes=1)	1,932	0.060		0	1	592	0.066		0	1	1,176	0.063		0	1	245	0.033		0	1	0.912	0.059	0.092				
D02_2_patlit_timesav_6_10	6-10 hours (yes=1)	1,932	0.062		0	1	592	0.071		0	1	1,176	0.065		0	1	245	0.041		0	1	0.738	0.103	0.092				
D02_2_patlit_timesav_11_20	11-20 hours (yes=1)	1,932	0.064		0	1	592	0.047		0	1	1,176	0.071		0	1	245	0.078		0	1	0.032	0.100	0.838				
D02_2_patlit_timesav_21_50	21-50 hours (yes=1)	1,932	0.069		0	1	592	0.084		0	1	1,176	0.058		0	1	245	0.078		0	1	0.022	0.755	0.160				
D02_2_patlit_timesav_51_100	51-100 hours (yes=1)	1,932	0.047		0	1	592	0.046		0	1	1,176	0.043		0	1	245	0.073		0	1	0.698	0.100	0.058				
D02_2_patlit_timesav101	More than 100 hours (yes=1)	1,932	0.050		0	1	592	0.030		0	1	1,176	0.052		0	1	245	0.090		0	1	0.030	0	0.045				
D02_2_patlit_timesav_notquant	Time saved cannot exactly be quantified (yes=1)	1,932	0.193		0	1	592	0.258		0	1	1,176	0.203		0	1	245	0		0	0	0.011	0	0				
D02_2_morethan	If not exactly quantified, more than (hours)	151	30.437	50.274	10	0	500	46	25.478	26.672	15	0	100	91	33.110	60.155	10	0	500	18	29.056	35.653	10	0	100	0.415	0.663	0.834
D02_2_lessthan	If not exactly quantified, less than (hours)	115	127.087	212.809	100	0	1,000	29	159.793	261.899	100	0	1,000	76	114.868	200.509	100	0	1,000	13	119.692	130.652	100	2	500	0.299		

Variable	Variable label	All respondents										ME respondents <sup>1)</sup>					CT respondents <sup>1)</sup>					NT respondents <sup>1)</sup>					Significance differences of means/ proportions of binary variables <sup>2)</sup>			
		Std.					Std.					Std.					Std.					ME-CT <sup>4)</sup>			ME-NT <sup>4)</sup>			CT-NT <sup>4)</sup>		
		Obs. <sup>3)</sup>	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>		
<i>Number of patents read during last year</i>																														
D02_3_pats_read_1	1 patent (yes=1)	1,749	0.043			0	1	544	0.033			0	1	1,056	0.049			0	1	221	0.032			0	1	0.132	0.93	0.324		
D02_3_pats_read_2	2 patents (yes=1)	1,749	0.092			0	1	544	0.090			0	1	1,056	0.097			0	1	221	0.072			0	1	0.731	0.438	0.201		
D02_3_pats_read_3	3 patents (yes=1)	1,749	0.083			0	1	544	0.090			0	1	1,056	0.086			0	1	221	0.059			0	1	0.884	0.118	0.177		
D02_3_pats_read_4	4 patents (yes=1)	1,749	0.064			0	1	544	0.063			0	1	1,056	0.064			0	1	221	0.068			0	1	0.921	0.769	0.987		
D02_3_pats_read_5	More than 4 patents (yes=1)	1,749	0.557			0	1	544	0.607			0	1	1,056	0.524			0	1	221	0.602			0	1	0.001	0.913	0.029		
D02_3_pats_read_ifmany_num	Number of patents read, if more than 4	924	58.96	229.704	20	3	6,000	314	57.309	135.762	20	3	1,100	518	55.471	276.101	20	5	6,000	129	68.295	167.762	20	5	1,000	0.866	0.462	0.564		
<i>Number of scientific articles read during last year</i>																														
D02_4_art_read_1	1 scientific article (yes=1)	1,744	0.029			0	1	542	0.037			0	1	1,052	0.030			0	1	222	0			0	1	0.476	0.004	0.010		
D02_4_art_read_2	2 scientific articles (yes=1)	1,744	0.101			0	1	542	0.129			0	1	1,052	0.094			0	1	222	0.050			0	1	0.016	0.001	0.031		
D02_4_art_read_3	3 scientific articles (yes=1)	1,744	0.072			0	1	542	0.101			0	1	1,052	0.061			0	1	222	0.045			0	1	0.002	0.012	0.457		
D02_4_art_read_4	4 scientific articles (yes=1)	1,744	0.092			0	1	542	0.116			0	1	1,052	0.094			0	1	222	0.032			0	1	0.222	0	0.002		
D02_4_art_read_5	More than 4 scientific articles (yes=1)	1,744	0.597			0	1	542	0.491			0	1	1,052	0.607			0	1	222	0.820			0	1	0	0	0		
D02_4_art_read_ifmany_num	Number of scientific articles read, if more than 4	994	55.71	241.678	20	5	5,000	252	36.036	95.335	20	5	1,000	609	58.405	296.928	20	5	5,000	178	74.433	128.510	30	5	1,000	0.212	0	0.452		
<i>Co-inventor influence</i>																														
D03_coinv_infl_ownf	Input from own field	1,700	3.724	1.351	0	5	532	3.692	1.274		0	5	1,027	3.728	1.387		0	5	212	3.830	1.320		0	5	0.548	0.171	0.408			
D03_coinv_infl_otherf	Input from other fields	1,686	3.091	1.401	0	5	528	3.042	1.322		0	5	1,019	3.104	1.419		0	5	209	3.230	1.449		0	5	0.293	0.095	0.312			
D03_coinv_infl_newpr	Approval of new projects	1,684	2.378	1.549	0	5	528	2.356	1.498		0	5	1,017	2.358	1.552		0	5	209	2.636	1.609		0	5	0.844	0.027	0.026			
D03_coinv_infl_drive	Advancing projects	1,687	3.166	1.538	0	5	528	3.174	1.505		0	5	1,022	3.146	1.553		0	5	208	3.317	1.476		0	5	0.875	0.248	0.164			
D03_coinv_infl_netw	Access to network	1,683	2.256	1.474	0	5	527	2.216	1.452		0	5	1,017	2.251	1.458		0	5	210	2.438	1.589		0	5	0.522	0.077	0.090			
D03_1_probsolv	Problem solved based on co-inventors' input	1,562	4.541	1.026	1	7	498	4.382	1.032		1	7	931	4.614	0.979		1	7	198	4.601	1.139		1	7	0	0.011	0.605			
<i>Frequency of communication media use</i>																														
D04_commfreq_pers	Personal contact	1,687	4.961	1.241	1	6	526	4.913	1.303		1	6	1,017	4.966	1.233		1	6	212	5.090	1.083		1	6	0.441	0.085	0.277			
D04_commfreq_phone	Telephone	1,611	4.038	1.569	1	6	501	3.994	1.670		1	6	971	4.033	1.533		1	6	204	4.216	1.439		1	6	0.571	0.096	0.125			
D04_commfreq_email	E-mail	1,621	4.410	1.480	1	6	505	4.299	1.553		1	6	978	4.414	1.462		1	6	202	4.703	1.312		1	6	0.135	0.001	0.021			
D04_commfreq_other	Other media	1,337	2.244	1.481	1	6	424	2.224	1.454		1	6	818	2.268	1.504		1	6	144	2.201	1.461		1	6	0.581	0.851	0.482			
D05_cinv_cont	Frequency of making friends with co-inventors	1,719	3.261	1.489	1	7	534	3.118	1.469		1	7	1,037	3.297	1.488		1	7	218	3.413	1.467		1	7	0.024	0.014	0.301			
E01_move	Change of employer before 2008 (yes=1)	1,706	0.613		0	1	533	0.614			0	1	1,026	0.618			0	1	219	0.589			0	1	0.912	0.496	0.423			
E01_move_year	Year of last change of employer before 2008	1,032			1999	1963	2012	320			1999	1963	2012	629			2000	1964	2011	127			1999	1973	2012	0.190	0.367	0.927		
E01_1_move_known_yes	Known about change of employer 1 year prior to the change (yes=1)	1,037	0.558		0	1	323	0.557			0	1	630	0.554			0	1	128	0.531			0	1	0.729	0.621	0.721			
E01_1_move_known_no	Not known about change of employer already 1 year prior to the change (yes=1)	1,037	0.411		0	1	323	0.406			0	1	630	0.416			0	1	128	0.445			0	1	0.601	0.446	0.639			
E01_1_move_known_notknow	Do not know if changing the employer known already 1 year prior to the change (yes=1)	1,037	0.031		0	1	323	0.037			0	1	630	0.030			0	1	128	0.023			0	1	0.622	0.473	0.751			
E01_2_move_type_vol	Voluntary last change of employer (yes=1)	1,037	0.832		0	1	322	0.851			0	1	631	0.829			0	1	128	0.820			0	1	0.466	0.466	0.872			
E01_2_move_type_invol	Involuntary last change of employer (yes=1)	1,037	0.137		0	1	322	0.112			0	1	631	0.144			0	1	128	0.156			0	1	0.183	0.227	0.816			
E01_2_move_type_notknow	Do not know if last change of employer was voluntary or involuntary (yes=1)	1,037	0.031		0	1	322	0.037			0	1	631	0.027			0	1	128	0.023			0	1	0.302	0.470	0.896			
<i>Reasons for changing the employer</i>																														
E01_3_pre_move_fam	Family (yes=1)	967	2.067	1.658	0	5	308	2.221	1.615		0	5	581	2.036	1.701		0	5	119	1.908	1.600		0	5	0.112	0.058	0.301			

Variable	Variable label	All respondents										ME respondents <sup>1)</sup>										CT respondents <sup>1)</sup>										Significance differences of means/ proportions of binary variables <sup>2)</sup>			
		Std.					Std.					Std.					Std.					Std.					ME-CT <sup>4)</sup>		ME-NT <sup>4)</sup>		CT-NT <sup>4)</sup>				
		Obs. <sup>3)</sup>	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>							
E01_3_pre_move_firmclos	Bankruptcy, suspension or sale of firm (yes=1)	963	1.227	1.753	0	5	299	1.184	1.717	0	5	583	1.245	1.770	0	5	119	1.143	1.679	0	5	0.823	0.849	0.351											
E01_3_pre_move_restruct	Restructuring (yes=1)	962	1.621	1.886	0	5	302	1.632	1.863	0	5	581	1.602	1.894	0	5	119	1.681	1.935	0	5	0.743	0.945	0.786											
E01_3_pre_move_startup	Starting an own company (yes=1)	939	0.700	1.281	0	5	296	0.682	1.199	0	5	567	0.700	1.325	0	5	115	0.739	1.250	0	5	0.870	0.772	0.660											
E01_3_pre_move_dissat	Dissatisfied with current job (yes=1)	964	2.571	1.955	0	5	308	2.838	1.920	0	5	578	2.519	1.953	0	5	118	2.051	1.982	0	5	0.013	0	0.019											
E01_3_pre_move_betterj	Better job alternative (yes=1)	980	3.203	1.970	0	5	308	3.201	1.948	0	5	593	3.211	1.960	0	5	120	3.100	2.068	0	5	0.980	0.622	0.730											
E01_3_pre_move_techchange	Opportunity to change technical field (yes=1)	967	2.689	1.931	0	5	305	2.675	1.944	0	5	582	2.725	1.916	0	5	119	2.370	1.987	0	5	0.853	0.183	0.077											
E01_3_pre_move_oth	Other (yes=1)	590	1.369	2.108	0	5	185	1.405	2.125	0	5	364	1.374	2.121	0	5	64	1.469	2.123	0	5	0.860	0.799	0.504											
<i>Reasons for taking the new job after change of employer</i>																																			
E01_4_post_move_fam	Family (yes=1)	973	2.339	1.699	0	5	306	2.386	1.650	0	5	591	2.369	1.731	0	5	118	2.203	1.737	0	5	0.997	0.268	0.264											
E01_4_post_move_promo	Promotion (yes=1)	947	2.116	1.670	0	5	294	2.228	1.675	0	5	578	2.052	1.650	0	5	114	2.202	1.801	0	5	0.133	0.785	0.354											
E01_4_post_move_highsal	Higher salary (yes=1)	986	3.112	1.545	0	5	307	3.228	1.486	0	5	603	3.076	1.557	0	5	118	2.932	1.668	0	5	0.133	0.062	0.545											
E01_4_post_move_attrd	Attractive R&D environment (yes=1)	1,000	4.001	1.450	0	5	312	3.955	1.393	0	5	611	3.997	1.480	0	5	120	4.158	1.432	0	5	0.647	0.199	0.252											
E01_4_post_move_noalt	No alternative job offer (yes=1)	931	1.015	1.571	0	5	286	1.003	1.562	0	5	571	0.956	1.537	0	5	112	1.259	1.702	0	5	0.573	0.158	0.053											
E01_4_post_move_oth	Other (yes=1)	575	0.685	1.584	0	5	181	0.657	1.558	0	5	355	0.704	1.609	0	5	56	0.500	1.335	0	5	0.803	0.515	0.517											
E01_5_nca_no	No compliance with a non-compete-agreement (yes=1)	1,043	0.913		0	1	326	0.917		0	1	632	0.918		0	1	129	0.860		0	1	0.990	0.081	0.061											
E01_5_nca_yes	Compliance with a non-compete-agreement (yes=1)	1,043	0.061		0	1	326	0.064		0	1	632	0.055		0	1	129	0.101		0	1	0.555	0.223	0.100											
E01_5_nca_noansw	No answer with respect to compliance with a non-compete-agreement (yes=1)	1,043	0.026		0	1	326	0.018		0	1	632	0.027		0	1	129	0.039		0	1	0.374	0.197	0.395											
E01_5_nca_dur	Duration of non-compete-agreement (years)	63	2.968	4.310	2	0	33	21	2.524	1.990	2	1	10	35	3.229	5.542	2	0	33	12	2.667	1.775	2	1	5	0.598	0.939	0.844							
<i>Impact of non-compete-agreement on choice of new job</i>																																			
E01_5_nca_impact_limjob	Limited job choice (yes=1)	61	3.508	1.468	1	5	19	3.316	1.565	1	5	35	3.600	1.397	1	5	12	3.333	1.435	1	5	0.492	0.911	0.650											
E01_5_nca_impact_lowsal	Lower salary (yes=1)	59	4.695	0.749	1	5	18	4.611	0.979	1	5	34	4.765	0.606	2	5	12	4.667	0.651	3	5	0.510	0.890	0.522											
E01_5_nca_impact_nocomp	Could not start own company (yes=1)	58	4.741	0.849	1	5	18	4.778	0.732	2	5	33	4.879	0.696	1	5	12	4.417	1.165	1	5	0.597	0.287	0.079											
E01_5_nca_impact_techchg	Need to change technological field (yes=1)	59	3.763	1.524	1	5	18	2.889	1.530	1	5	34	4.441	1.160	1	5	12	3.167	1.586	1	5	0	0.593	0.003											
E01_5_nca_impact_noprop	Could not join projects at new employer (yes=1)	59	4.390	1.313	1	5	18	4.167	1.425	1	5	34	4.618	1.101	1	5	12	3.833	1.749	1	5	0.220	0.625	0.045											
E01_5_nca_impact_reghchg	Need to move to another region (yes=1)	60	4.433	1.320	1	5	18	4.222	1.555	1	5	35	4.486	1.314	1	5	12	4.500	1.168	1	5	0.606	0.626	0.910											
E01_5_nca_impact_oth	Other (yes=1)	38	4.579	1.244	1	5	11	4.636	1.206	1	5	25	4.520	1.327	1	5	5	5.000	0.000	5	5	0.805	0.549	0.525											
<i>After the change of employer...</i>																																			
E01_6_matching_knowobs	...existing knowledge became obsolete	1,011	2.552	1.765	0	5	314	2.538	1.688	0	5	614	2.471	1.815	0	5	124	2.927	1.668	0	5	0.474	0.033	0.012											
E01_6_matching_knowrec	...recombining existing knowledge with the knowledge of the new organization led to more inventive activity	1,035	1.962	1.218	0	5	322	2.143	1.232	0	5	628	1.866	1.217	0	5	128	1.945	1.082	0	5	0.001	0.122	0.485											
<i>Technical field of next job</i>																																			
E02_nextjob_field_eleng	Electrical engineering (yes=1)	1,651	0.079		0	1	515	0.050		0	1	993	0.101		0	1	212	0.024		0	1	0.002	0.105	0.001											
E02_nextjob_field_ict	Information and communication technology (yes=1)	1,651	0.028		0	1	515	0.014		0	1	993	0.034		0	1	212	0.033		0	1	0.018	0.081	0.814											
E02_nextjob_field_semi	Semiconductors (yes=1)	1,651	0.015		0	1	515	0		0	0	993	0.011		0	1	212	0.075		0	1	0.020	0	0											
E02_nextjob_field_inst	Instruments (yes=1)	1,651	0.037		0	1	515	0.043		0	1	993	0.029		0	1	212	0.061		0	1	0.152	0.279	0.023											
E02_nextjob_field_chemind	Chemical industry (yes=1)	1,651	0.050		0	1	515	0.014		0	1	993	0.044		0	1	212	0.160		0	1	0.002	0	0											
E02_nextjob_field_bioph	Biotechnology and Pharmacy (yes=1)	1,651	0.028		0	1	515	0.017		0	1	993	0.011		0	1	212	0.127		0	1	0.294	0	0											
E02_nextjob_field_proc	Chemical and Process engineering (yes=1)	1,651	0.084		0	1	515	0.054		0	1	993	0.100		0	1	212	0.066		0	1	0.005	0.528	0.134											
E02_nextjob_field_transp	Transportation and Engines (yes=1)	1,651	0.173		0	1	515	0.252		0	1	993	0.172		0	1	212	0.009		0	1	0	0	0											
E02_nextjob_field_cons	Consumptions (yes=1)	1,651	0.016		0	1	515	0.029		0	1	993	0.007		0	1	212	0.014		0	1	0	0.241	0.261											
E02_nextjob_field_meng	Mechanical engineering and Machinery (yes=1)	1,651	0.124		0	1	515	0.243		0	1	993	0.086		0	1	212	0.009		0	1	0	0	0											
E02_nextjob_field_ME	Mechanical elements (yes=1)	1,651	0.047		0	1	515	0.120		0	1	993	0.023		0	1	212	0.009		0	1	0	0	0											
E02_nextjob_field_NT	Nanotechnology (yes=1)	1,651	0.053		0	1	515	0.023		0	1	993	0.035		0	1	212	0.212		0	1	0.171	0	0											

Variable	Variable label	All respondents										ME respondents <sup>1)</sup>					CT respondents <sup>1)</sup>					NT respondents <sup>1)</sup>					Significance differences of means/ proportions of binary variables <sup>2)</sup>			
		Std.					Std.					Std.					Std.					ME-CT <sup>4)</sup>			ME-NT <sup>4)</sup>			CT-NT <sup>4)</sup>		
		Obs. <sup>3)</sup>	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>		
E02_nextjob_field_CT	Clean technology (yes=1)	1,651	0.180			0	1	515	0.066			0	1	993	0.258			0	1	212	0.099			0	1	0	0.148	0		
E02_nextjob_field_oth	Other fields (yes=1)	1,651	0.086			0	1	515	0.074			0	1	993	0.089			0	1	212	0.099			0	1	0.362	0.248	0.702		
<i>Reasons for choosing a certain technical field for future inventive activity</i>																														
E03_nextjob_secur	Job security (yes=1)	1,613	3.363	1.380	0	5	503	3.483	1.346	0	5	974	3.341	1.392	0	5	203	3.182	1.368	0	5	0.047	0.007	0	0.105					
E03_nextjob_career	Career opportunities (yes=1)	1,593	3.001	1.310	0	5	495	3.032	1.316	0	5	963	3.003	1.298	0	5	201	2.975	1.373	0	5	0.708	0.570	0	0.652					
E03_nextjob_attract	Attractive employer (yes=1)	1,610	3.738	1.304	0	5	501	3.745	1.296	0	5	975	3.754	1.284	0	5	200	3.665	1.401	0	5	0.864	0.528	0	0.293					
E03_nextjob_envirm	Involvement in environmental issues (yes=1)	1,611	3.152	1.376	0	5	499	2.874	1.353	0	5	977	3.349	1.341	0	5	202	2.856	1.440	0	5	0	0.915	0	0	0.000				
E03_nextjob_society	Involvement in society and politics (yes=1)	1,582	2.284	1.347	0	5	493	2.108	1.309	0	5	959	2.411	1.355	0	5	196	2.097	1.346	0	5	0	0.973	0.002	0	0.000				
E03_nextjob_tasks	High variety of tasks (yes=1)	1,605	3.611	1.324	0	5	497	3.340	1.385	0	5	970	3.685	1.286	0	5	204	3.858	1.257	0	5	0	0	0	0.102					
E03_nextjob_expert	Job as expert (yes=1)	1,626	3.828	1.235	0	5	504	3.754	1.261	0	5	983	3.845	1.220	0	5	206	3.879	1.273	0	5	0.175	0.226	0	0.593					
E03_nextjob_freedom	Self-regulated work (yes=1)	1,624	4.363	1.045	0	5	504	4.313	1.089	0	5	985	4.364	1.040	0	5	203	4.414	0.993	0	5	0.481	0.260	0	0.552					
E03_nextjob_workh	Regular working hours (yes=1)	1,602	2.799	1.261	0	5	496	2.859	1.290	0	5	971	2.788	1.242	0	5	202	2.649	1.246	0	5	0.174	0.050	0	0.095					
E03_nextjob_newexp	Building new expertise (yes=1)	1,603	3.655	1.267	0	5	497	3.495	1.323	0	5	968	3.692	1.238	0	5	204	3.922	1.138	0	5	0.002	0	0	0.009					
E03_nextjob_promtech	Promising technology field (yes=1)	1,631	4.188	1.062	0	5	508	4.079	1.105	0	5	988	4.239	1.032	0	5	204	4.279	1.010	0	5	0.003	0.026	0	0.694					
E03_nextjob_salary	Above-average salary (yes=1)	1,607	3.439	1.192	0	5	497	3.533	1.162	0	5	975	3.412	1.193	0	5	202	3.337	1.268	0	5	0.038	0.045	0	0.347					
E03_nextjob_tech	Developing path-breaking technologies (yes=1)	1,610	3.624	1.266	0	5	500	3.510	1.295	0	5	974	3.669	1.243	0	5	203	3.695	1.245	0	5	0.017	0.087	0	0.907					
E03_nextjob_startup	Starting an own company (yes=1)	1,598	1.499	1.404	0	5	497	1.380	1.352	0	5	971	1.551	1.415	0	5	198	1.540	1.527	0	5	0.017	0.207	0	0.906					
E03_nextjob_mgmt	Probability to take management responsibility (yes=1)	1,603	2.829	1.565	0	5	498	2.731	1.573	0	5	971	2.908	1.554	0	5	201	2.692	1.620	0	5	0.034	0.722	0	0.057					
E03_nextjob_life	Work-life balance (yes=1)	1,602	3.645	1.359	0	5	499	3.651	1.402	0	5	969	3.684	1.323	0	5	200	3.495	1.414	0	5	0.607	0.184	0	0.029					
E03_nextjob_other	Other (yes=1)	784	0.295	0.983	0	5	242	0.318	1.003	0	5	480	0.275	0.967	0	5	89	0.326	1.020	0	5	0.577	0.936	0	0.563					
F01_birth_country	Birth country: born abroad (yes=1)	1,715	0.066		0	1	531	0.064		0	1	1,037	0.068		0	1	217	0.074		0	1	0.644	0.616	0	0.729					
F02_age	Inventor age in 2010	1,841	48.637	9.837	47	27	82	565	48.510	9.153	47	27	72	1,119	48.710	10.120	47	27	82	233	48.777	10.229	48	29	80	0.536	0.775	0.537		
F03_gender	Gender (male=1)	1,692	0.978		0	1	524	0.996		0	1	1,022	0.981		0	1	215	0.902		0	1	0.010	0	0	0					
F04_children	Having children (yes=1)	1,680	0.799		0	1	520	0.825		0	1	1,015	0.796		0	1	214	0.748		0	1	0.136	0.022	0	0.077					
F04_children_year	Year of birth of the first child	1,319		1992	1900	2013	417			1992	1964	2013	795			1993	1959	2013	160		1989	1900	2013	0.844	0.196	0.039				
F05_livepar_both	Living with both parents at the age of 15	1,714	0.915		0	1	532	0.915		0	1	1,035	0.920		0	1	218	0.904		0	1	0.622	0.672	0	0.394					
F05_livepar_fath	Living only with the father at the age of 15	1,714	0.012		0	1	532	0.009		0	1	1,035	0.013		0	1	218	0.014		0	1	0.655	0.592	0	0.816					
F05_livepar_moth	Living only with the mother at the age of 15	1,714	0.063		0	1	532	0.071		0	1	1,035	0.055		0	1	218	0.073		0	1	0.149	0.986	0	0.208					
F05_livepar_none	Living neither with father nor mother at the age of 15	1,714	0.009		0	1	532	0.004		0	1	1,035	0.013		0	1	218	0.009		0	1	0.108	0.352	0	0.386					
<i>Highest educational level of the father</i>																														
F06_edufath_lev_alev	Secondary education or A-levels (yes=1)	1,694	0.153		0	1	519	0.164		0	1	1,024	0.149		0	1	218	0.147		0	1	0.461	0.520	0	0.929					
F06_edufath_lev_voc	Vocational education (yes=1)	1,694	0.564		0	1	519	0.613		0	1	1,024	0.534		0	1	218	0.583		0	1	0.002	0.452	0	0.232					
F06_edufath_lev_acad	Academic education (yes=1)	1,694	0.219		0	1	519	0.195		0	1	1,024	0.239		0	1	218	0.188		0	1	0.033	0.863	0	0.099					
F06_edufath_lev_phd	Ph.D. (yes=1)	1,694	0.063		0	1	519	0.029		0	1	1,024	0.077		0	1	218	0.078		0	1	0	0.003	0.805	0					
F06_edufath_lev_oth	Other (yes=1)	1,694	0.001		0	1	519	0		0	0	1,024	0		0	0	218	0.005		0	1	.	0.122	0.026	0					
<i>Highest educational level of the mother</i>																														
F06_edumoth_lev_alev	Secondary education or A-levels (yes=1)	1,712	0.386		0	1	532	0.453		0	1	1,032	0.363		0	1	219	0.361		0	1	0.001	0.019	0	0.939					
F06_edumoth_lev_voc	Vocational education (yes=1)	1,712	0.515		0	1	532	0.476		0	1	1,032	0.521		0	1	219	0.543		0	1	0.125	0.090	0	0.549					
F06_edumoth_lev_acad	Academic education (yes=1)	1,712	0.089		0	1	532	0.066		0	1	1,032	0.102		0	1	219	0.082		0	1	0.022	0.414	0	0.236					
F06_edumoth_lev_phd	Ph.D. (yes=1)	1,712	0.010		0	1	532	0.006		0	1	1,032	0.013		0	1	219	0.014		0	1	0.070	0.256	0	0.826					
F06_edumoth_lev_oth	Other (yes=1)	1,712	0.001		0	1	532	0		0	0	1,032	0.001		0	0	219	0		0	0	0.485	.	0.654	0					

Variable	Variable label	All respondents												ME respondents <sup>1)</sup>						CT respondents <sup>1)</sup>						NT respondents <sup>1)</sup>						Significance differences of means/ proportions of binary variables <sup>2)</sup>																																																																																									
		Std.				Std.				Std.				Std.				Std.				Std.				ME-CT <sup>d)</sup>		ME-NT <sup>d)</sup>		CT-NT <sup>d)</sup>																																																																																											
		Obs. <sup>3)</sup>	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	ME-CT <sup>d)</sup>	ME-NT <sup>d)</sup>	CT-NT <sup>d)</sup>																																																																																													
F07_entpr_fam	Entrepreneur in the family (yes=1)	1,700	0.225			0	1	527	0.243			0	1	1,027	0.220			0	1	216	0.227			0	1	0.406	0.610	0.791																																																																																													
F08_risktaking	Risk taking propensity, self-evaluation	1,726	5.670	2.068		0	10	535	5.667	2.066		0	10	1,042	5.659	2.054		0	10	220	5.727	2.117		0	10	0.999	0.750	0.544																																																																																													
<i>Big-Five Inventory short scale items</i>		<i>"Ich bin jemand, der..."</i>												Item 1: "...gründlich arbeitet" (conscientiousness)						Item 2: "...kommunikativ, gesprächig ist" (extraversion)						Item 3: "...manchmal etwas grob, harsch zu anderen ist" (social agreeableness, linguistically negative item)		Item 4: "...originell ist, neue Ideen einbringt" (openness for experience)		Item 5: "...sich oft Sorgen macht" (neuroticism)				Item 6: "...verzeihen kann" (social agreeableness)				Item 7: "...eher faul ist" (conscientiousness, linguistically negative item)				Item 8: "...aus sich herausgehen kann, gesellig ist" (extraversion)				Item 9: "...künstlerische Erfahrungen schätzt" (openness for experience)				Item 10: "...leicht nervös wird" (neuroticism)				Item 11: "...Aufgaben wirksam und effizient erledigt" (conscientiousness)				Item 12: "...zurückhaltend ist" (extraversion, linguistically negative item)				Item 13: "...rücksichtsvoll und freundlich mit anderen umgeht" (social agreeableness)				Item 14: "...eine lebhafte Phantasie, Vorstellung hat" (openness for experience)				Item 15: "...entspannt ist, mit Stress gut umgehen kann" (neuroticism, linguistically negative item)				Question 1 (correct=1)				Question 2 (correct=1)				Question 3 (correct=1)				G02_CRT_q1				G02_CRT_q2				G02_CRT_q3				G03_div_length				G03_div_no				G03_div_length				G03_div_no				G03_div_length				G03_div_no			
G01_bigfive1		1,711	5.735	1.143	6	1	7	534	5.751	1.186	6	1	7	1,031	5.701	1.155	6	1	7	216	5.843	0.999	6	2	7	0.318	0.337	0.151																																																																																													
G01_bigfive2		1,704	4.843	1.327	5	1	7	528	4.78	1.336	5	1	7	1,030	4.862	1.345	5	1	7	216	4.917	1.306	5	2	7	0.235	0.197	0.709																																																																																													
G01_bigfive3		1,706	3.375	1.593	3	1	7	531	3.471	1.572	3	1	7	1,029	3.388	1.601	3	1	7	216	3.111	1.566	3	1	7	0.317	0.004	0.013																																																																																													
G01_bigfive4		1,709	5.553	1.109	6	1	7	534	5.567	1.090	6	2	7	1,031	5.545	1.128	6	1	7	214	5.551	1.081	6	2	7	0.722	0.833	0.820																																																																																													
G01_bigfive5		1,707	3.851	1.568	4	1	7	532	3.897	1.583	4	1	7	1,032	3.838	1.570	4	1	7	213	3.822	1.535	4	1	7	0.480	0.536	0.794																																																																																													
G01_bigfive6		1,705	5.216	1.348	5	1	7	531	5.192	1.379	5	1	7	1,031	5.250	1.312	5	1	7	213	5.127	1.488	5	1	7	0.362	0.621	0.158																																																																																													
G01_bigfive7		1,708	2.640	1.574	2	1	7	534	2.687	1.630	2	1	7	1,031	2.624	1.535	2	1	7	213	2.535	1.525	2	1	7	0.414	0.252	0.518																																																																																													
G01_bigfive8		1,706	4.283	1.453	4	1	7	532	4.261	1.437	4	1	7	1,031	4.316	1.450	4	1	7	213	4.263	1.525	4	1	7	0.335	0.979	0.511																																																																																													
G01_bigfive9		1,703	4.164	1.728	4	1	7	531	4.217	1.711	4	1	7	1,029	4.114	1.720	4	1	7	213	4.343	1.809	4	1	7	0.266	0.387	0.128																																																																																													
G01_bigfive10		1,708	3.112	1.468	3	1	7	533	3.154	1.462	3	1	7	1,031	3.097	1.470	3	1	7	213	3.169	1.536	3	1	7	0.506	0.950	0.708																																																																																													
G01_bigfive11		1,709	5.593	1.068	6	1	7	532	5.605	1.041	6	2	7	1,033	5.577	1.102	6	1	7	213	5.62	0.962	6	3	7	0.567	0.882	0.530																																																																																													
G01_bigfive12		1,707	4.069	1.534	4	1	7	531	4.115	1.543	4	1	7	1,031	4.061	1.535	4	1	7	214	4.023	1.493	4	1	7	0.514	0.434	0.655																																																																																													
G01_bigfive13		1,710	5.348	1.118	6	1	7	532	5.367	1.111	6	1	7	1,031	5.332	1.118	5	1	7	216	5.375	1.147	6	2	7	0.520	0.883	0.760																																																																																													
G01_bigfive14		1,712	5.218	1.339	5	1	7	534	5.333	1.282	6	2	7	1,032	5.177	1.358	5	1	7	216	5.176	1.359	5	1	7	0.032	0.124	0.991																																																																																													
G01_bigfive15		1,713	4.689	1.380	5	1	7	534	4.687	1.350	5	1	7	1,034	4.665	1.389	5	1	7	215	4.767	1.395	5	1	7	0.646	0.459	0.449																																																																																													
<i>Cognitive Reflection Test</i>		Question 1 (correct=1)												Question 2 (correct=1)						Question 3 (correct=1)						G02_CRT_q1				G02_CRT_q2				G02_CRT_q3				G03_div_length				G03_div_no				G03_div_length				G03_div_no																																																																							
G02_CRT_q1		1,658	0.620			0	1	517	0.574			0	1	1,004	0.638			0	1	206	0.621			0	1	0.016	0.212	0.704																																																																																													
G02_CRT_q2		1,642	0.875			0	1	513	0.862			0	1	994	0.881			0	1	204	0.902			0	1	0.191	0.150	0.445																																																																																													
G02_CRT_q3		1,618	0.916			0	1	496	0.899			0	1	988	0.913			0	1	201	0.945			0	1	0.523	0.053	0.079																																																																																													
<i>Divergent thinking (brick test)</i>		Total length of answer (characters)												Number of ideas						G03_div_length						G03_div_length				G03_div_no				G03_div_length				G03_div_no																																																																																			
G03_div_length		1,932	124.422	88.144	130	0	244	592	121.662	85.057	127	0	244	1,176	126.557	88.503	132	0	244	245	121.706	93.457	133	0	244	0.215	0.979	0.382																																																																																													
G03_div_no		1,544	8.754	4.252	8	1	36	923	8.776	4.130	9	1	36	188	8.564	4.487	8	1	20	472	8.765	4.302	9	1	28	0.889	0.641	0.663																																																																																													

#### **Patent variables of respondents' patent history**

Variable	Variable label	All respondents								ME respondents <sup>1)</sup>								CT respondents <sup>1)</sup>								Significance differences of means/ proportions of binary variables <sup>2)</sup>						
		Std.				Std.				Std.				Std.				Std.				Std.				ME-CT <sup>4)</sup>		ME-NT <sup>4)</sup>		CT-NT <sup>4)</sup>		
		Obs. <sup>3)</sup>	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	Obs.	Mean	Dev.	Med.	Min	Max	ME-CT <sup>4)</sup>	ME-NT <sup>4)</sup>	CT-NT <sup>4)</sup>				
CLMSNR	number of claims	14,870	13.316	7.821		0	104																									
Status of patent granted withdrawn refused pending	Patent status: granted (yes=1) Patent status: withdrawn (yes=1) Patent status: refused (yes=1) Patent status: pending (yes=1)	14,870	0.492			0	1	14,870	0.182		0	1																				
desig	number of designated countries	14,870	21.096	13.081		0	38																									
cit_3yrs	Number of all citations within 3 years	14,870	0.629	1.378		0	53																									
cit_5yrs	Number of all citations within 5 years	14,870	1.031	2.025		0	56																									
cit_10yrs	Number of all citations within 10 years	14,870	1.407	2.669		0	60																									
pref_tot	Total number of patent literature references (any origin)	14,870	4.402	2.7		0	28																									
npref_tot	Total number of non-patent literature references (any origin)	14,870	0.299	1.061		0	22																									
areas_cited	Number of areas cited	13,520	1.837	0.958		1	8																									
areas_cited_plus	Number of areas cited, own area excluded	13,520	0.93	1.005		0	7																									
areas_ctng	Number of citing areas	7,289	1.405	0.768		1	9																									
areas_ctng_plus	Number of citing areas, own area excluded	7,289	0.600	0.827		0	8																									
ep_equivs	Number of equivalent EP filings	14,060	1.021	0.43		0	9																									
tot_equivs	Total number of equivalents	14,060	8.037	7.699		0	134																									

Notes:

1) Inventors are assigned to the focus technology with which they are associated on the patent that identified them for the sample

2) p-value  $\leq 0.01$ ; p-value  $\leq 0.05$ ; p-value  $\leq 0.1$

3) The total number of observations is 1,930; deviations from this number result from the exclusion of missing values in the analysis

4) The difference tests between the three focus technologies exclude inventors associated with more than one of the three focus technologies

**Appendix 2:** Invitation letter to participate in the survey (English translation)

Dear Sir or Madam,

the Julius-Maximilians-University Würzburg and the Ludwig-Maximilians-University Munich are currently conducting a research project on invention processes and career paths of inventors. The main goal is to expand our knowledge about the invention process itself, the significance of educational and career paths, and the benefit of networks for the inventive activity. The project is financially supported by the German Research Association (DFG).

You have been chosen as participant of this survey because one or more of your inventions were registered for a European patent with priority date in the years 2004 to 2008. We would be delighted to have you as a participant in our survey. About 25-30 Minutes will be needed to complete the questionnaire. Please follow this link to our online questionnaire:

<http://www.inno-tec.de/projekt>

Keyword: Xx0000

We will treat any information provided to us with the highest confidentiality. The results of the study will be published in anonymized form only, in order to make sure that no conclusions can be drawn on your information. Upon request, we will be pleased to send you a report on the results of the study.

Your participation in this project would generate tremendous value for us. On behalf of the entire team we would like to thank you in advance for your participation.

Best regards,

Prof. Dr. Thomas Zwick

Prof. Dietmar Harhoff, Ph.D.