Examining the Relationship Between Digital Transformation and Work Quality: Substitution Potential and Work Exposure in Gender-Specific Occupations

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Online-Appendix
| Code  | Name                                                                 | Requirement level                  | Gender-specific occupation | Substitution potential | Physical work exposure | Psychosocial work exposure |
|-------|----------------------------------------------------------------------|-----------------------------------|----------------------------|------------------------|------------------------|---------------------------|
| 1111  | Occupations in farming                                               | unskilled/semi-skilled            | male-dominated             | 0.50                   | 6                      | 3                         |
| 1112  |                                                                      | specialist                         | male-dominated             | 0.58                   | 6                      | 3                         |
| 1113  |                                                                      | complex specialist                 | male-dominated             | 0.35                   | 6                      | 3                         |
| 1114  |                                                                      | highly complex                     | male-dominated             | 0.23                   | 6                      | 3                         |
| 1121  | Occupations in animal husbandry                                       | unskilled/semi-skilled            | male-dominated             | 0.27                   | 10                     | 8                         |
| 1122  |                                                                      | specialist                         | male-dominated             | 0.36                   | 10                     | 8                         |
| 1123  |                                                                      | complex specialist                 | male-dominated             | 0.18                   | 10                     | 8                         |
| 1151  | Occupations in animal care                                           | unskilled/semi-skilled            | gender-integrated          | 0.15                   | 10                     | 4                         |
| 1152  |                                                                      | specialist                         | gender-integrated          | 0.03                   | 10                     | 4                         |
| 1161  | Occupations in vini- and viticulture                                 | complex specialist                | male-dominated             | 0.54                   | 6                      | 5                         |
| 1171  | Occupations in forestry, hunting and landscape preservation          | unskilled/semi-skilled            | male-dominated             | 0.21                   | 10                     | 1                         |
| 1172  |                                                                      | specialist                         | male-dominated             | 0.19                   | 10                     | 1                         |
| 1173  |                                                                      | complex specialist                 | male-dominated             | 0.26                   | 10                     | 1                         |
| 1174  |                                                                      | highly complex                     | male-dominated             | 0.22                   | 10                     | 1                         |
| 1211  | Occupations in horticulture                                          | unskilled/semi-skilled            | male-dominated             | 0.43                   | 10                     | 4                         |
| 1212  |                                                                      | specialist                         | male-dominated             | 0.46                   | 10                     | 4                         |
| 1213  |                                                                      | complex specialist                 | male-dominated             | 0.33                   | 10                     | 4                         |
| 1214  |                                                                      | highly complex                     | male-dominated             | 0.17                   | 10                     | 4                         |
| 1222  | Occupations in floristry                                             | specialist                         | female-dominated           | 0.03                   | 8                      | 7                         |
| 2111  | Occupations in underground and surface mining and blasting engineering| specialist                         | male-dominated             | 0.72                   | 10                     | 8                         |
| 2112  |                                                                      | complex specialist                 | male-dominated             | 0.66                   | 10                     | 8                         |
| 2113  |                                                                      |                                     |                            |                        |                        |                           |
| 2121  | Conditioning and processing of natural stone and minerals, production of building materials | unskilled/semi-skilled            | male-dominated             | 0.67                   | 10                     | 7                         |
| 2122  |                                                                      | specialist                         | male-dominated             | 0.76                   | 10                     | 7                         |
| 2123  |                                                                      | complex specialist                 | male-dominated             | 0.64                   | 10                     | 7                         |
| 2131  | Occupations in industrial glass-making and -processing               | unskilled/semi-skilled            | male-dominated             | 0.72                   | 10                     | 10                        |
| 2132  |                                                                      | specialist                         | male-dominated             | 0.91                   | 10                     | 10                        |
| 2133  |                                                                      | complex specialist                 | male-dominated             | 0.68                   | 10                     | 10                        |
| 2141  | Occupations in industrial ceramic-making and -processing             | unskilled/semi-skilled            | male-dominated             | 0.63                   | 10                     | 7                         |
| 2142  |                                                                      | specialist                         | male-dominated             | 0.93                   | 10                     | 7                         |
| 2211  | Occupations in plastic- and rubber-making and -processing            | unskilled/semi-skilled            | male-dominated             | 0.78                   | 9                      | 8                         |
| 2212  |                                                                      | specialist                         | male-dominated             | 0.94                   | 9                      | 8                         |
| 2213  |                                                                      | complex specialist                 | male-dominated             | 0.72                   | 9                      | 8                         |
| 2214  |                                                                      | highly complex                     | male-dominated             | 0.54                   | 9                      | 8                         |
| 2221  | Occupations in colour coating and varnishing                         | unskilled/semi-skilled            | male-dominated             | 0.65                   | 10                     | 6                         |
| 2222  |                                                                      | specialist                         | male-dominated             | 0.74                   | 10                     | 6                         |
| 2223  |                                                                      | complex specialist                 | male-dominated             | 0.63                   | 10                     | 6                         |
| 2231  | Occupations in wood-working and -processing                          | unskilled/semi-skilled            | male-dominated             | 0.63                   | 10                     | 3                         |
| 2232  |                                                                      | specialist                         | male-dominated             | 0.58                   | 10                     | 3                         |
| 2233  |                                                                      | complex specialist                 | male-dominated             | 0.51                   | 10                     | 3                         |
| 2311  | Technical occupations in paper-making and -processing and packaging  | unskilled/semi-skilled            | male-dominated             | 0.79                   | 8                      | 10                        |
| 2312  |                                                                      | specialist                         | male-dominated             | 0.77                   | 8                      | 10                        |
| 2313  |                                                                      | complex specialist                 | male-dominated             | 0.58                   | 8                      | 10                        |
| 2314  |                                                                      | highly complex                     | male-dominated             | 0.48                   | 8                      | 10                        |
| 2322  | Occupations in technical media design                                | specialist                         | gender-integrated          | 0.58                   | 3                      | 4                         |
| 2323  |                                                                      | complex specialist                 | gender-integrated          | 0.30                   | 3                      | 4                         |
| 2324  |                                                                      | highly complex                     | gender-integrated          | 0.25                   | 3                      | 4                         |
| 2332  | Occupations in photography and photographic technology                | specialist                         | gender-integrated          | 0.50                   | 5                      | 8                         |
| 2341  | Occupations in printing technology, print finishing, and book binding| unskilled/semi-skilled            | gender-integrated          | 0.85                   | 10                     | 10                        |
| 2342  |                                                                      | specialist                         | male-dominated             | 0.90                   | 10                     | 10                        |
| 2343  |                                                                      | complex specialist                 | male-dominated             | 0.81                   | 10                     | 10                        |
| 2411  | Occupations in metal-making                                         | unskilled/semi-skilled            | male-dominated             | 0.80                   | 10                     | 10                        |
| 2412  |                                                                      | specialist                         | male-dominated             | 0.99                   | 10                     | 10                        |
| 2413  |                                                                      | complex specialist                 | male-dominated             | 0.73                   | 10                     | 10                        |
| 2414  |                                                                      | highly complex                     | male-dominated             | 0.56                   | 10                     | 10                        |
| 2421  | Occupations in metalworking                                         | unskilled/semi-skilled            | male-dominated             | 0.79                   | 9                      | 8                         |
| 2422  |                                                                      | specialist                         | male-dominated             | 0.85                   | 9                      | 8                         |
| 2423  |                                                                      | complex specialist                 | male-dominated             | 0.63                   | 9                      | 8                         |
| 2431  | Occupations in treatment of metal surfaces                           | unskilled/semi-skilled            | male-dominated             | 0.73                   | 10                     | 8                         |
| 2432  |                                                                      | specialist                         | male-dominated             | 0.97                   | 10                     | 8                         |
| 2433  |                                                                      | complex specialist                 | male-dominated             | 0.66                   | 10                    | 10                        |
| 2441  | Occupations in metal constructing and welding                        | unskilled/semi-skilled            | male-dominated             | 0.76                   | 9                      | 8                         |
| 2442  |                                                                      | specialist                         | male-dominated             | 0.70                   | 9                      | 8                         |
| 2443  |                                                                      | complex specialist                 | male-dominated             | 0.58                   | 9                      | 8                         |
| 2444  |                                                                      | highly complex                     | male-dominated             | 0.28                   | 9                      | 8                         |
| Code  | Name                                                                 | Requirement level                      | Gender-specific occupation | Substitution potential | Physical work exposure | Psycho-social work exposure |
|-------|----------------------------------------------------------------------|----------------------------------------|----------------------------|------------------------|------------------------|-----------------------------|
| 2451  | Occupations in precision mechanics and tool making                   | unskilled/semi-skilled specialist      | male-dominated             | 0.84                   | 5                      | 3                           |
| 2452  |                                                                        | complex specialist                     | male-dominated             | 0.80                   | 5                      | 3                           |
| 2453  |                                                                        | highly complex                         | male-dominated             | 0.68                   | 5                      | 3                           |
| 2511  | Occupations in machine-building and -operating                      | unskilled/semi-skilled specialist      | male-dominated             | 0.79                   | 7                      | 7                           |
| 2512  |                                                                        | complex specialist                     | male-dominated             | 0.72                   | 7                      | 7                           |
| 2513  |                                                                        | highly complex                         | male-dominated             | 0.57                   | 7                      | 7                           |
| 2514  |                                                                        |                                        | male-dominated             | 0.34                   | 7                      | 7                           |
| 2521  | Technical occupations in the automotive, aeronautic, aerospace and   | unskilled/semi-skilled specialist      | male-dominated             | 0.53                   | 7                      | 6                           |
| 2522  | ship building industries                                            | complex specialist                     | male-dominated             | 0.62                   | 7                      | 6                           |
| 2523  |                                                                        | highly complex                         | male-dominated             | 0.55                   | 7                      | 6                           |
| 2524  |                                                                        |                                        | male-dominated             | 0.39                   | 7                      | 6                           |
| 2512  | Occupations in mechanical, automation and control technology         | specialist                             | male-dominated             | 0.87                   | 5                      | 2                           |
| 2513  |                                                                        | complex specialist                     | male-dominated             | 0.71                   | 5                      | 2                           |
| 2514  |                                                                        | highly complex                         | male-dominated             | 0.57                   | 5                      | 2                           |
| 2622  | Technical occupations in energy technologies                        | specialist                             | male-dominated             | 0.75                   | 6                      | 4                           |
| 2623  |                                                                        | complex specialist                     | male-dominated             | 0.83                   | 6                      | 4                           |
| 2624  |                                                                        | highly complex                         | male-dominated             | 0.67                   | 6                      | 4                           |
| 2631  | Occupations in electrical engineering                               | unskilled/semi-skilled specialist      | male-dominated             | 0.56                   | 4                      | 3                           |
| 2632  |                                                                        | complex specialist                     | male-dominated             | 0.93                   | 4                      | 3                           |
| 2633  |                                                                        | highly complex                         | male-dominated             | 0.71                   | 4                      | 3                           |
| 2634  |                                                                        |                                        | male-dominated             | 0.61                   | 4                      | 3                           |
| 2722  | Occupations in technical research and development                    | complex specialist                     | male-dominated             | 0.62                   | 3                      | 4                           |
| 2723  |                                                                        | highly complex                         | male-dominated             | 0.43                   | 3                      | 4                           |
| 2724  | Draftspersons, technical designers, and model makers                | specialist                             | male-dominated             | 0.65                   | 3                      | 2                           |
| 2725  |                                                                        | complex specialist                     | male-dominated             | 0.78                   | 3                      | 2                           |
| 2726  |                                                                        | highly complex                         | male-dominated             | 0.38                   | 3                      | 2                           |
| 2732  | Technical occupations in production planning and scheduling          | specialist                             | male-dominated             | 0.68                   | 4                      | 6                           |
| 2733  |                                                                        | complex specialist                     | male-dominated             | 0.39                   | 4                      | 6                           |
| 2734  |                                                                        | highly complex                         | male-dominated             | 0.33                   | 4                      | 6                           |
| 2822  | Occupations in the production of clothing and other textile products | specialist                             | female-dominated           | 0.75                   | 4                      | 2                           |
| 2823  |                                                                        | complex specialist                     | female-dominated           | 0.47                   | 4                      | 2                           |
| 2831  | Occupations in leather- and fur-making and -processing              | unskilled/semi-skilled specialist      | male-dominated             | 0.79                   | 8                      | 2                           |
| 2832  |                                                                        | complex specialist                     | male-dominated             | 0.83                   | 8                      | 2                           |
| 2833  |                                                                        | highly complex                         | male-dominated             | 0.65                   | 8                      | 2                           |
| 2912  | Occupations in textile making                                       | specialist                             | male-dominated             | 0.88                   | 6                      | 9                           |
| 2913  |                                                                        | complex specialist                     | male-dominated             | 0.68                   | 6                      | 9                           |
| 2914  |                                                                        | highly complex                         | male-dominated             | 0.29                   | 6                      | 9                           |
| 2921  | Occupations in the production of foodstuffs, confectionery and       | unskilled/semi-skilled specialist      | male-dominated             | 0.79                   | 9                      | 10                          |
| 2922  | tobacco products                                                      | complex specialist                     | male-dominated             | 0.66                   | 9                      | 10                          |
| 2923  |                                                                        | highly complex                         | male-dominated             | 0.54                   | 9                      | 10                          |
| 2924  |                                                                        |                                        | male-dominated             | 0.30                   | 9                      | 10                          |
| 2931  | Cooking occupations                                                  | unskilled/semi-skilled specialist      | male-dominated             | 0.13                   | 10                     | 8                           |
| 2932  |                                                                        | complex specialist                     | male-dominated             | 0.29                   | 10                     | 8                           |
| 2933  |                                                                        | highly complex                         | male-dominated             | 0.33                   | 10                     | 8                           |
| 2934  |                                                                        |                                        | male-dominated             | 0.42                   | 10                     | 8                           |
| 3112  | Occupations in construction scheduling and supervision, and         | specialist                             | male-dominated             | 0.51                   | 5                      | 3                           |
| 3113  | architecture                                                          | complex specialist                     | male-dominated             | 0.41                   | 5                      | 3                           |
| 3114  |                                                                        | highly complex                         | male-dominated             | 0.19                   | 5                      | 3                           |
| 3122  | Occupations in surveying and cartography                             | specialist                             | male-dominated             | 0.53                   | 3                      | 1                           |
| 3123  |                                                                        | complex specialist                     | male-dominated             | 0.59                   | 3                      | 1                           |
| 3124  |                                                                        | highly complex                         | male-dominated             | 0.52                   | 3                      | 1                           |
| 3211  | Occupations in building construction                                 | unskilled/semi-skilled specialist      | male-dominated             | 0.15                   | 10                     | 4                           |
| 3212  |                                                                        | complex specialist                     | male-dominated             | 0.04                   | 10                     | 4                           |
| 3213  |                                                                        | highly complex                         | male-dominated             | 0.04                   | 10                     | 4                           |
| 3312  | Floor layers                                                         | specialist                             | male-dominated             | 0.35                   | 10                     | 2                           |
| Code  | Name                                                      | Requirement level | Gender-specific occupation | Substitution potential | Physical work exposure | Psychological work exposure |
|-------|-----------------------------------------------------------|-------------------|----------------------------|------------------------|------------------------|-----------------------------|
| 3322  | Painters and varnishers, plasterers, occupations in the   | specialist        | male-dominated             | 0.31                   | 10                     | 2                           |
|       | waterproofing of buildings, preservation of structures     | complex specialist| male-dominated             | 0.32                   | 10                     | 2                           |
| 3323  | Occupational in the interior construction and dry         | specialist        | male-dominated             | 0.25                   | 10                     | 3                           |
|       | walling, insulation, carpentry, glazing, roller          | complex specialist| male-dominated             | 0.21                   | 10                     | 3                           |
| 3421  | Occupations in building services engineering              | specialist        | male-dominated             | 0.58                   | 6                      | 5                           |
| 3422  | Occupations in building services and waste disposal       | unskilled/semi-skilled | male-dominated       | 0.47                   | 10                     | 6                           |
| 3423  | Occupations in building services and waste disposal       | specialist        | male-dominated             | 0.53                   | 9                      | 2                           |
| 3424  | Occupations in building services and waste disposal       | complex specialist| male-dominated             | 0.61                   | 9                      | 2                           |
| 3425  | Occupations in building services and waste disposal       | highly complex    | male-dominated             | 0.55                   | 9                      | 2                           |
| 4112  | Occupations in mathematics and statistics                | gender-integrated | male-dominated             | 0.07                   | 3                      | 2                           |
| 4123  | Occupations in biology                                   | specialist        | female-dominated           | 0.53                   | 5                      | 4                           |
| 4124  | Occupations in biology                                   | complex specialist| male-dominated             | 0.34                   | 5                      | 4                           |
| 4131  | Occupations in chemistry                                 | unskilled/semi-skilled | male-dominated       | 0.83                   | 6                      | 5                           |
| 4132  | Occupations in chemistry                                 | specialist        | male-dominated             | 0.91                   | 6                      | 5                           |
| 4133  | Occupations in chemistry                                 | complex specialist| male-dominated             | 0.63                   | 6                      | 5                           |
| 4134  | Occupations in physics                                   | highly complex    | male-dominated             | 0.27                   | 6                      | 5                           |
| 4213  | Occupations in geology, geography and meteorology        | complex specialist| male-dominated             | 0.16                   | 3                      | 3                           |
| 4214  | Occupations in geology, geography and meteorology        | highly complex    | male-dominated             | 0.13                   | 3                      | 3                           |
| 4223  | Occupations in environmental protection engineering       | specialist        | male-dominated             | 0.23                   | 6                      | 1                           |
| 4224  | Occupations in environmental protection engineering       | complex specialist| male-dominated             | 0.29                   | 6                      | 1                           |
| 4225  | Occupations in environmental protection management and    | specialist        | male-dominated             | 0.42                   | 6                      | 1                           |
|       | environmental protection consulting                       | complex specialist| male-dominated             |                        |                        |                             |
| 4312  | Occupations in computer science                          | specialist        | male-dominated             | 0.29                   | 2                      | 3                           |
| 4313  | Occupations in computer science                          | complex specialist| male-dominated             | 0.34                   | 2                      | 3                           |
| 4314  | Occupations in computer science                          | highly complex    | male-dominated             | 0.13                   | 2                      | 3                           |
| 4322  | Occupations in IT-system-analysis, IT-application-        | complex specialist| male-dominated             | 0.47                   | 2                      | 4                           |
|       | consulting and IT-sales                                   | highly complex    | male-dominated             |                        |                        |                             |
| 4333  | Occupations in IT-network engineering, IT-coordination,  | complex specialist| male-dominated             | 0.45                   | 2                      | 7                           |
|       | IT-administration and IT-organisation                     | highly complex    | male-dominated             | 0.18                   | 2                      | 7                           |
| 4342  | Occupations in software development and programming      | specialist        | male-dominated             | 0.21                   | 1                      | 1                           |
| 4343  | Occupations in software development and programming      | complex specialist| male-dominated             | 0.13                   | 1                      | 1                           |
|       |                                                            | highly complex    | male-dominated             |                        |                        |                             |
| 5112  | Technical occupations in railway, aircraft and ship       | specialist        | male-dominated             | 0.50                   | 10                     | 7                           |
|       | operation                                                | complex specialist| male-dominated             | 0.56                   | 10                     | 7                           |
| 5113  | Technical occupations in railway, aircraft and ship       | highly complex    | male-dominated             | 0.88                   | 10                     | 7                           |
|       | operation                                                |                      |                           |                        |                        |                             |
| 5122  | Occupations in the inspection and maintenance of traffic  | specialist        | male-dominated             | 0.07                   | 10                     | 5                           |
|       | infrastructure                                           | complex specialist| male-dominated             |                        |                        |                             |
| 5131  | Occupations in warehousing and logistics, in postal and   | unskilled/semi-skilled | male-dominated       | 0.61                   | 8                      | 8                           |
|       | other delivery services, and in cargo handling            | specialist        | male-dominated             | 0.32                   | 8                      | 8                           |
| 5132  | Occupations in warehousing and logistics, in postal and   | complex specialist| male-dominated             | 0.16                   | 8                      | 8                           |
|       | other delivery services, and in cargo handling            | highly complex    | male-dominated             |                        |                        |                             |
| 5142  | Service occupations in passenger traffic                  | specialist        | female-dominated           | 0.17                   | 9                      | 10                          |
| 5143  | Service occupations in passenger traffic                  | complex specialist| male-dominated             | 0.11                   | 9                      | 10                          |
| 5152  | Occupations in traffic surveillance and control           | specialist        | male-dominated             | 0.27                   | 4                      | 10                          |
| 5153  | Occupations in traffic surveillance and control           | complex specialist| male-dominated             | 0.20                   | 4                      | 10                          |
| 5154  | Occupations in traffic surveillance and control           | highly complex    | male-dominated             | 0.12                   | 4                      | 10                          |
| 5162  | Management assistants in transport and logistics          | specialist        | male-dominated             | 0.40                   | 4                      | 6                           |
| 5163  | Management assistants in transport and logistics          | complex specialist| male-dominated             | 0.27                   | 4                      | 6                           |
| 5164  | Management assistants in transport and logistics          | highly complex    | male-dominated             | 0.21                   | 4                      | 6                           |
| 5212  | Driver of vehicles in road traffic                        | specialist        | male-dominated             | 0.21                   | 7                      | 9                           |
| 5222  | Drivers of vehicles in railway traffic                    | specialist        | male-dominated             | 0.00                   | 8                      | 10                          |
| 5233  | Aircraft pilots                                           | complex specialist| male-dominated             | 0.50                   | 6                      | 10                          |
| 5251  | Drivers and operators of construction and transportation  | unskilled/semi-skilled | male-dominated       | 0.83                   | 10                     | 6                           |
|       | vehicles and equipment                                    | specialist        | male-dominated             | 0.18                   | 10                     | 6                           |
| 5252  | Drivers and operators of construction and transportation  | complex specialist| male-dominated             | 0.42                   | 10                     | 6                           |
| Code | Name | Requirement level | Gender-specific occupation | Substitution potential | Physical work | Psychosocial work |
|------|------|-------------------|---------------------------|------------------------|---------------|-----------------|
| 5311 | Occupations in physical security, personal protection, fire protection and workplace safety | unskilled/semi-skilled | gender-integrated | 0.29 | 6 | 9 |
|      |      | specialist | male-dominated | 0.05 | 6 | 9 |
|      |      | complex specialist | male-dominated | 0.16 | 6 | 9 |
|      |      | highly complex | male-dominated | 0.14 | 6 | 9 |
| 5321 | Occupations in public and criminal investigation, jurisdiction and the penitentiary | unskilled/semi-skilled | gender-integrated | 0.14 | 3 | 9 |
|      |      | specialist | male-dominated | 0.28 | 3 | 9 |
|      |      | complex specialist | male-dominated | 0.23 | 3 | 9 |
|      |      | highly complex | male-dominated | 0.00 | 3 | 9 |
| 5331 | Occupations in occupational health and safety administration, public health authority, and disinfection | specialist | gender-integrated | 0.29 | 4 | 4 |
|      |      | complex specialist | gender-integrated | 0.34 | 4 | 4 |
| 5411 | Occupations in cleaning services | unskilled/semi-skilled | female-dominated | 0.23 | 9 | 9 |
|      |      | specialist | gender-integrated | 0.12 | 9 | 9 |
|      |      | complex specialist | gender-integrated | 0.18 | 9 | 9 |
| 6112 | Occupations in purchasing and sales | specialist | gender-integrated | 0.45 | 2 | 3 |
|      |      | complex specialist | male-dominated | 0.17 | 2 | 3 |
|      |      | highly complex | male-dominated | 0.26 | 2 | 3 |
| 6122 | Trading occupations | specialist | gender-integrated | 0.41 | 3 | 2 |
|      |      | complex specialist | gender-integrated | 0.22 | 3 | 2 |
|      |      | highly complex | male-dominated | 0.26 | 3 | 2 |
| 6132 | Occupations in real estate and facility management | specialist | gender-integrated | 0.38 | 3 | 5 |
|      |      | complex specialist | male-dominated | 0.40 | 3 | 5 |
|      |      | highly complex | male-dominated | 0.32 | 3 | 5 |
| 6212 | Sales occupations in retail trade (without product specialisation) | unskilled/semi-skilled | female-dominated | 0.50 | 5 | 9 |
|      |      | specialist | female-dominated | 0.44 | 5 | 9 |
|      |      | complex specialist | gender-integrated | 0.20 | 5 | 9 |
|      |      | highly complex | gender-integrated | 0.22 | 5 | 9 |
| 6222 | Sales occupations in retail trade selling clothing, electronic devices, furniture, motor vehicles and other durables | specialist | gender-integrated | 0.41 | 5 | 5 |
| 6232 | Sales occupations (retail) selling foodstuffs | unskilled/semi-skilled | female-dominated | 0.33 | 8 | 6 |
|      |      | specialist | female-dominated | 0.31 | 8 | 6 |
| 6242 | Sales occupations (retail) selling drugstore products, pharmaceuticals, medical supplies and healthcare goods | specialist | female-dominated | 0.42 | 6 | 4 |
| 6252 | Sales occupations (retail) selling books, art, antiques, musical instruments, recordings or sheet music | specialist | female-dominated | 0.29 | 4 | 5 |
| 6312 | Occupations in tourism and the sports (and fitness) industry | specialist | female-dominated | 0.30 | 3 | 6 |
|      |      | complex specialist | gender-integrated | 0.13 | 3 | 6 |
|      |      | highly complex | gender-integrated | 0.20 | 3 | 6 |
| 6322 | Occupations in hotels | unskilled/semi-skilled | female-dominated | 0.24 | 5 | 8 |
|      |      | specialist | female-dominated | 0.18 | 5 | 8 |
|      |      | complex specialist | female-dominated | 0.32 | 5 | 8 |
|      |      | highly complex | gender-integrated | 0.12 | 5 | 8 |
| 6332 | Gastronomy occupations | unskilled/semi-skilled | gender-integrated | 0.15 | 9 | 10 |
|      |      | specialist | gender-integrated | 0.16 | 9 | 10 |
|      |      | complex specialist | gender-integrated | 0.30 | 9 | 10 |
|      |      | highly complex | gender-integrated | 0.33 | 9 | 10 |
| 6342 | Occupations in event organisation and management | unskilled/semi-skilled | gender-integrated | 0.06 | 3 | 9 |
|      |      | specialist | gender-integrated | 0.03 | 3 | 9 |
|      |      | complex specialist | gender-integrated | 0.09 | 3 | 9 |
|      |      | highly complex | gender-integrated | 0.11 | 3 | 9 |
| 7112 | Managing directors and executive board members | highly complex | male-dominated | 0.28 | 3 | 7 |
| 7122 | Legislators and senior officials of special interest organisations | highly complex | male-dominated | 0.07 | 3 | 4 |
| 7132 | Occupations in business organisation and strategy | specialist | gender-integrated | 0.57 | 3 | 4 |
|      |      | complex specialist | male-dominated | 0.20 | 3 | 4 |
|      |      | highly complex | male-dominated | 0.20 | 3 | 4 |
| 7142 | Office clerks and secretaries | unskilled/semi-skilled | female-dominated | 0.61 | 2 | 2 |
|      |      | specialist | female-dominated | 0.59 | 2 | 2 |
|      |      | complex specialist | female-dominated | 0.46 | 2 | 2 |
|      |      | highly complex | gender-integrated | 0.10 | 2 | 2 |
| 7152 | Occupations in human resources management and personnel service | specialist | female-dominated | 0.48 | 1 | 2 |
|      |      | complex specialist | female-dominated | 0.25 | 1 | 2 |
|      |      | highly complex | gender-integrated | 0.06 | 1 | 2 |
| 7212 | Occupations in insurance and financial services | specialist | gender-integrated | 0.49 | 1 | 1 |
|      |      | complex specialist | male-dominated | 0.31 | 1 | 1 |
|      |      | highly complex | gender-integrated | 0.12 | 1 | 1 |
| 7222 | Occupations in accounting, controlling and auditing | specialist | female-dominated | 0.64 | 1 | 1 |
|      |      | complex specialist | female-dominated | 0.70 | 1 | 1 |
|      |      | highly complex | gender-integrated | 0.53 | 1 | 1 |
| 7232 | Occupations in tax consultancy | specialist | female-dominated | 0.83 | 1 | 2 |
|      |      | complex specialist | gender-integrated | 0.55 | 1 | 2 |
|      |      | highly complex | gender-integrated | 0.49 | 1 | 2 |
| 7312 | Occupations in legal services, jurisdiction, and other officers of the court | specialist | female-dominated | 0.64 | 2 | 2 |
|      |      | complex specialist | gender-integrated | 0.11 | 2 | 2 |
|      |      | highly complex | gender-integrated | 0.17 | 2 | 2 |
| Code  | Name                                                                 | Requirement level | Gender-specific occupation | Substitution potential | Physical work exposure | Psycho-social work exposure |
|-------|----------------------------------------------------------------------|-------------------|---------------------------|------------------------|------------------------|---------------------------|
| 7322  | Occupations in public administration                                 | specialist female-dominated | 0.33                      | 1                      | 1                      |
| 7323  | Occupations in public administration                                 | complex specialist female-dominated | 0.24                      | 1                      | 1                      |
| 7324  | Occupations in public administration                                 | highly complex female-dominated | 0.02                      | 1                      | 1                      |
| 7332  | Occupations in media, documentation and information services         | specialist highly complex female-dominated | 0.68                      | 3                      | 1                      |
| 8112  | Doctors’ receptionists and assistants                                | specialist female-dominated | 0.51                      | 6                      | 5                      |
| 8113  | Doctors’ receptionists and assistants                                | complex specialist female-dominated | 0.27                      | 6                      | 5                      |
| 8122  | Laboratory occupations in medicine                                  | specialist female-dominated | 0.54                      | 5                      | 9                      |
| 8123  | Laboratory occupations in medicine                                  | complex specialist female-dominated | 0.59                      | 5                      | 9                      |
| 8124  | Laboratory occupations in medicine                                  | highly complex female-dominated | 0.34                      | 5                      | 9                      |
| 8131  | Occupations in nursing, emergency medical services and obstetrics   | unskilled/semi-skilled female-dominated | 0.20                      | 8                      | 10                     |
| 8132  | Occupations in nursing, emergency medical services and obstetrics   | complex specialist female-dominated | 0.21                      | 8                      | 10                     |
| 8133  | Occupations in nursing, emergency medical services and obstetrics   | female-dominated | 0.17                      | 8                      | 10                     |
| 8134  | Occupations in nursing, emergency medical services and obstetrics   | female-dominated | 0.18                      | 8                      | 10                     |
| 8144  | Occupations in human medicine and dentistry                         | highly complex gender-integrated | 0.06                      | 6                      | 10                     |
| 8154  | Occupations in veterinary medicine and non-medical animal health practitioners | highly complex gender-integrated | 0.00                      | 10                     | 7                      |
| 8163  | Occupations in psychology and non-medical psychotherapy             | complex specialist highly complex female-dominated | 0.50                      | 3                      | 4                      |
| 8164  | Occupations in psychology and non-medical psychotherapy             | highly complex female-dominated | 0.02                      | 3                      | 4                      |
| 8172  | Occupations in non-medical therapy and alternative medicine         | specialist female-dominated | 0.22                      | 6                      | 2                      |
| 8173  | Occupations in non-medical therapy and alternative medicine         | complex specialist female-dominated | 0.01                      | 6                      | 2                      |
| 8174  | Occupations in non-medical therapy and alternative medicine         | highly complex female-dominated | 0.01                      | 6                      | 2                      |
| 8182  | Occupations in pharmacy                                             | specialist highly complex female-dominated | 0.65                      | 4                      | 7                      |
| 8183  | Occupations in pharmacy                                             | complex specialist female-dominated | 0.00                      | 4                      | 7                      |
| 8184  | Occupations in pharmacy                                             | female-dominated | 0.36                      | 4                      | 7                      |
| 8211  | Occupations in geriatric care                                       | unskilled/semi-skilled specialist highly complex female-dominated | 0.11                      | 9                      | 10                     |
| 8212  | Occupations in geriatric care                                       | complex specialist highly complex female-dominated | 0.00                      | 9                      | 10                     |
| 8213  | Occupations in geriatric care                                       | female-dominated | 0.00                      | 9                      | 10                     |
| 8214  | Occupations in geriatric care                                       | female-dominated | 0.22                      | 9                      | 10                     |
| 8222  | Occupations providing nutritional advice or health counselling, and occupations in wellness | specialist highly complex female-dominated | 0.15                      | 4                      | 4                      |
| 8223  | Occupations providing nutritional advice or health counselling, and occupations in wellness | complex specialist female-dominated | 0.09                      | 4                      | 4                      |
| 8224  | Occupations providing nutritional advice or health counselling, and occupations in wellness | highly complex female-dominated | 0.16                      | 4                      | 4                      |
| 8231  | Occupations in body care                                            | unskilled/semi-skilled specialist highly complex female-dominated | 0.22                      | 8                      | 3                      |
| 8232  | Occupations in body care                                            | complex specialist female-dominated | 0.01                      | 8                      | 3                      |
| 8233  | Occupations in body care                                            | female-dominated | 0.05                      | 8                      | 3                      |
| 8242  | Occupations in funeral services                                      | specialist female-dominated | 0.13                      | 4                      | 7                      |
| 8252  | Technical occupations in medicine, orthopaedic and rehabilitation    | specialist highly complex male-dominated | 0.32                      | 5                      | 3                      |
| 8253  | Technical occupations in medicine, orthopaedic and rehabilitation    | complex specialist male-dominated | 0.44                      | 5                      | 3                      |
| 8254  | Technical occupations in medicine, orthopaedic and rehabilitation    | highly complex male-dominated | 0.26                      | 5                      | 3                      |
| 8311  | Occupations in education and social work, and pedagogic specialists in social care work | unskilled/semi-skilled specialist highly complex female-dominated | 0.00                      | 5                      | 4                      |
| 8312  | Occupations in education and social work, and pedagogic specialists in social care work | complex specialist highly complex female-dominated | 0.06                      | 5                      | 4                      |
| 8313  | Occupations in education and social work, and pedagogic specialists in social care work | male-dominated | 0.10                      | 5                      | 4                      |
| 8314  | Occupations in education and social work, and pedagogic specialists in social care work | female-dominated | 0.05                      | 5                      | 4                      |
| 8321  | Occupations in housekeeping and consumer counselling                 | unskilled/semi-skilled specialist female-dominated | 0.27                      | 7                      | 7                      |
| 8322  | Occupations in housekeeping and consumer counselling                 | complex specialist female-dominated | 0.16                      | 7                      | 7                      |
| 8323  | Occupations in housekeeping and consumer counselling                 | female-dominated | 0.42                      | 7                      | 7                      |
| 8332  | Occupations in theology and church community work                    | specialist highly complex gender-integrated | 0.44                      | 4                      | 9                      |
| 8333  | Occupations in theology and church community work                    | complex specialist gender-integrated | 0.09                      | 4                      | 9                      |
| 8334  | Occupations in theology and church community work                    | highly complex male-dominated | 0.10                      | 4                      | 9                      |
| 8413  | Teachers in schools of general education                             | complex specialist female-dominated | 0.00                      | 4                      | 7                      |
| 8414  | Teachers in schools of general education                             | highly complex female-dominated | 0.00                      | 4                      | 7                      |
| 8423  | Teachers for occupation-specific subjects at vocational schools and in-company instructors in vocational training | complex specialist highly complex gender-integrated | 0.02                      | 4                      | 5                      |
| 8424  | Teachers for occupation-specific subjects at vocational schools and in-company instructors in vocational training | complex specialist gender-integrated | 0.07                      | 4                      | 5                      |
| 8434  | Teachers and researcher at universities and colleges                 | highly complex gender-integrated | 0.00                      | 3                      | 5                      |
| 8444  | Teachers and researcher at universities and colleges                 | highly complex gender-integrated | 0.01                      | 3                      | 3                      |
| 8453  | Driving, flying and sports instructors at educational institutions other than schools | complex specialist highly complex gender-integrated | 0.00                      | 4                      | 2                      |
| 8454  | Driving, flying and sports instructors at educational institutions other than schools | complex specialist gender-integrated | 0.00                      | 4                      | 2                      |
| 9114  | Occupations in the humanities                                       | highly complex gender-integrated | 0.04                      | 3                      | 4                      |
| 9212  | Occupations in public relations                                      | complex specialist highly complex gender-integrated | 0.06                      | 2                      | 6                      |
| 9213  | Occupations in public relations                                      | complex specialist gender-integrated | 0.04                      | 2                      | 6                      |
Table A1 (continued)

| Code | Name | Requirement level | Gender-specific occupation | Substitution potential | Physical work exposure | Psycho-social work exposure |
|------|------|-------------------|-----------------------------|------------------------|------------------------|-----------------------------|
| 9232 | Occupations in publishing and media management | specialist | gender-integrated | 0.31 | 2 | 2 |
| 9233 | complex specialist | gender-integrated | 0.36 | 2 | 2 |
| 9234 | highly complex | gender-integrated | 0.18 | 2 | 2 |
| 9242 | Occupations in editorial work and journalism | specialist | gender-integrated | 0.32 | 2 | 5 |
| 9243 | complex specialist | gender-integrated | 0.23 | 2 | 5 |
| 9244 | highly complex | gender-integrated | 0.00 | 2 | 5 |
| 9314 | Occupations in product and industrial design | highly complex | male-dominated | 0.05 | 4 | 5 |
| 9322 | Occupations in interior design, visual marketing, and interior decoration | specialist | gender-integrated | 0.12 | 4 | 3 |
| 9323 | complex specialist | gender-integrated | 0.17 | 4 | 3 |
| 9324 | highly complex | gender-integrated | 0.24 | 4 | 3 |
| 9333 | Occupations in artisan craftwork and fine arts | complex specialist | gender-integrated | 0.11 | 5 | 4 |
| 9352 | Artisans working with metal | specialist | gender-integrated | 0.62 | 7 | 4 |
| 9362 | Occupations in musical instrument making | specialist | male-dominated | 0.20 | 6 | 6 |
| 9414 | Musicians, singers and conductors | complex specialist | gender-integrated | 0.00 | 6 | 10 |
| 9424 | Actors, dancers, athletes and related occupations | highly complex | gender-integrated | 0.00 | 9 | 5 |
| 9423 | complex specialist | male-dominated | 0.00 | 9 | 5 |
| 9432 | Presenters and entertainers | specialist | male-dominated | 0.17 | 5 | 9 |
| 9433 | complex specialist | gender-integrated | 0.00 | 5 | 9 |
| 9443 | Occupations in theatre, film and television productions | complex specialist | gender-integrated | 0.10 | 3 | 9 |
| 9444 | highly complex | gender-integrated | 0.08 | 3 | 9 |
| 9452 | Occupations in event technology, cinematography, and sound engineering | specialist | male-dominated | 0.63 | 6 | 9 |
| 9453 | complex specialist | male-dominated | 0.67 | 6 | 9 |
| 9454 | highly complex | male-dominated | 0.66 | 6 | 9 |
| 9462 | Occupations in stage, costume and prop design, | specialist | gender-integrated | 0.22 | 6 | 7 |
| 9463 | complex specialist | gender-integrated | 0.37 | 6 | 7 |
| 9474 | Technical and management occupations in museums and exhibitions | specialist | gender-integrated | 0.43 | 3 | 5 |
| 9472 | complex specialist | gender-integrated | 0.23 | 3 | 5 |

Source: Own calculations, BeH (2012), BERUFENET (2012), BiBB-BAuA (2012).
Table A2: Regression results of substitution potential on physical and psychosocial work exposure for gender-integrated occupations

|                                      | Physical work exposure with control variables | Psychosocial work exposure with control variables |
|--------------------------------------|----------------------------------------------|--------------------------------------------------|
|                                      | without control variables                    | without control variables                        |
|                                     |                                               |                                                  |
| Substitution potential               | 2.541**                                      | -0.902                                           |
|                                      | (1.044)                                      | (1.139)                                          |
|                                      | -1.584                                       | -2.453                                           |
|                                      | (1.304)                                      | (1.784)                                          |
| Age (reference: ≥ 50 years)          |                                              |                                                  |
| 16 - <30 years                       |                                              |                                                  |
|                                      | -0.444                                       | -2.446                                           |
|                                      | (3.008)                                      | (4.116)                                          |
| ≥30 - <50 years                      |                                              |                                                  |
|                                      | 1.567                                        | -6.214                                           |
|                                      | (4.823)                                      | (6.599)                                          |
| Qualification (reference: low and missing education) |   |                                                  |
| Medium education                     | -8.895*                                      | -11.919                                          |
|                                      | (5.283)                                      | (7.229)                                          |
| High education                       | -9.256*                                      | -12.539*                                         |
|                                      | (4.877)                                      | (6.673)                                          |
| Fixed-term contract                  | -0.831                                       | -0.507                                           |
|                                      | (2.456)                                      | (3.360)                                          |
| Full-time employment                 | -1.702                                       | 7.852                                            |
|                                      | (4.040)                                      | (5.529)                                          |
| Minor employment                     | -13.609                                      | 5.136                                            |
|                                      | (8.326)                                      | (11.393)                                         |
| Foreign nationality                  | 14.573***                                    | 2.743                                            |
|                                      | (4.499)                                      | (6.156)                                          |
| East German residency                | 3.140                                        | 2.084                                            |
|                                      | (3.242)                                      | (4.436)                                          |
| Regional types (reference: core cities) |                                             |                                                  |
| Urbanised districts                  | 6.441*                                       | 3.621                                            |
|                                      | (3.717)                                      | (5.086)                                          |
| Rural districts with features of concentration | 6.894                                      | 4.235                                            |
|                                      | (6.579)                                      | (9.002)                                          |
| Rural districts-sparsely populated   | 11.715*                                      | 2.204                                            |
|                                      | (6.086)                                      | (8.328)                                          |
| Establishment size (reference: 1-49) |                                              |                                                  |
| 50-449                               | -1.172                                       | 2.713                                            |
|                                      | (1.925)                                      | (2.635)                                          |
| >500                                 | 1.393                                        | 3.673*                                           |
|                                      | (1.551)                                      | (2.122)                                          |
| Sector (reference: agriculture&manufacturing) |              |                                                  |
| Services                             | -0.117                                       | 3.176                                            |
|                                      | (1.402)                                      | (1.918)                                          |
| Constant                             | 4.097***                                     | 5.977***                                         |
|                                      | (0.374)                                      | (0.408)                                          |
| Observations                         | 123                                          | 123                                              |
| Adjusted R²                          | 0.0388                                       | 0.4646                                           |
|                                      | (1.198)                                      | (1.402)                                          |

Note: *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses.
Source: Own calculations, BeH (2012), BERUFENET (2012), BiBB-BAuA (2012).
Table A3: Relationship between work exposure and substitution potential in 2012 and employment growth between 2012 and 2016 for gender-integrated occupations

|                           | Model 1                  | Model 2                  | Model 3                  | Model 4                  |
|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                           | (substitution potential) | (work exposure)          | (substitution potential + work exposure) | (interaction term)       |
| Substitution potential    | -0.079 (0.048)           | -0.076 (0.047)           | -0.078 (0.071)           |                          |
| Work exposure             |                          |                          |                          |                          |
| Physical work exposure    |                          |                          |                          |                          |
|                           | -0.015*** (0.005)        | -0.014*** (0.005)        | -0.016** (0.007)         |                          |
| Psychosocial work exposure| 0.007** (0.003)          | 0.006* (0.003)           | 0.007 (0.005)            |                          |
| Interaction term          |                          |                          |                          |                          |
| Substitution potential*physical work exposure | 0.006 (0.016)            |                          |                          |                          |
| Substitution potential*psychosocial work exposure | -0.005 (0.014)           |                          |                          |                          |
| Age (reference: ≥ 50 years)|                          |                          |                          |                          |
| 16 - <30 years            | 0.509*** (0.121)         | 0.427*** (0.119)         | 0.455*** (0.120)         | 0.455*** (0.124)         |
| ≥30 - <50 years           | 0.109 (0.218)            | 0.032 (0.218)            | -0.020 (0.219)           | -0.025 (0.224)           |
| Qualification (reference: low and missing education) |                          |                          |                          |                          |
| Medium education          | -0.663*** (0.222)        | -0.657*** (0.219)        | -0.645*** (0.217)        | -0.645*** (0.220)        |
| High education            | -0.374** (0.205)         | -0.350* (0.202)          | -0.358* (0.201)          | -0.357* (0.203)          |
| Fixed-term contract       | -0.101 (0.094)           | -0.114 (0.092)           | -0.128 (0.092)           | -0.133 (0.099)           |
| Full-time employment      | -0.108 (0.119)           | -0.126 (0.118)           | -0.139 (0.118)           | -0.147 (0.122)           |
| Minor employment          | -0.270 (0.258)           | -0.343 (0.256)           | -0.410 (0.257)           | -0.420 (0.261)           |
| Foreign nationality       | -0.543** (0.220)         | -0.241 (0.244)           | -0.259 (0.243)           | -0.252 (0.247)           |
| East German residency     | -0.058 (0.142)           | -0.007 (0.137)           | -0.089 (0.146)           | -0.084 (0.150)           |
| Regional types (reference: core cities) |                          |                          |                          |                          |
| Urbanised districts       | 0.498*** (0.178)         | 0.537*** (0.177)         | 0.488*** (0.178)         | 0.500*** (0.189)         |
| Rural districts with features of concentration | -0.973** (0.414)         | -1.107*** (0.399)        | -0.987** (0.403)         | -1.020** (0.415)         |
| Rural districts-sparsely populated | 0.835** (0.328)         | 1.049*** (0.329)         | 1.026*** (0.327)         | 1.043*** (0.332)         |
| Establishment size (reference: 1-49) |                          |                          |                          |                          |
| 50-449                    | 0.196*** (0.066)         | 0.101 (0.071)            | 0.114 (0.071)            | 0.114 (0.072)            |
| >500                      | -0.031 (0.055)           | -0.063 (0.053)           | -0.046 (0.054)           | -0.048 (0.058)           |
| Sector (reference: agriculture&manufacturing) |                          |                          |                          |                          |
| Services                  | -0.048 (0.046)           | -0.034 (0.040)           | -0.069 (0.045)           | -0.065 (0.048)           |
| Constant                  | 0.460 (0.281)            | 0.509* (0.276)           | 0.607** (0.280)          | 0.614** (0.285)          |
| Observations              | 123 123 123 123          | 123 123 123 123          | 123 123 123 123          | 123 123 123 123          |
| Adjusted R²               | 0.4621 0.4815 0.4894 0.4802 |                          |                          |                          |

Note: *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses.
Source: Own calculations, BeH (2012), BERUFENET (2012), BiBB-BAuA (2012).