Foundation for Polish Science

Summary

Career monitoring. Report from survey of laureates of the START and VENTURES programmes and stipend holders in the TEAM, WELCOME and MPD programmes

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Career monitoring

Report from survey of laureates of the START and VENTURES programmes and stipend holders in the TEAM, WELCOME and MPD programmes

SUMMARY IN ENGLISH

In 2016 the Foundation for Polish Science (FNP) launched a study of the career paths of young scientists receiving direct or indirect funding from the Foundation. The aim of the study was to obtain information on the development of careers of researchers funded by the Foundation at the threshold of their scientific career. The fundamental question was whether the effort invested in obtaining a research education (doctorate) and early scientific successes (confirmed among other things by an FNP stipend) are a predictor of further research work at an academic institution or firm, and an attractive professional path. To this end, respondents were asked about their status on the labour market, further plans, international and intersectoral mobility, accomplishments and professional satisfaction. They were also asked to provide an assessment of the usefulness of doctoral studies.

Laureates and stipend holders from past editions of FNP programmes were invited to participate in the study, and since then winners and recruits in successive current editions have been invited to participate. Participation is voluntary and involves completion of an anonymous online questionnaire. Three measurements are planned, at three-year intervals. The subjects were invited to create an individual code, enabling results from successive waves to be linked without infringing

the subjects' anonymity. This report presents the results of the examination of the first wave of the survey of participants from the past editions of FNP programmes.

In the first wave an invitation to participate in the study was sent to (1) immediate laureates of the Foundation, i.e. laureates of the START programme (starting with the 2013–2016 editions) and laureates of the VENTURES programmes (all editions, i.e. 2008–2013) and (2) persons who received a stipend from FNP through membership in teams of the Foundation's laureates in the programmes: International Doctoral Projects (MPD) (all editions, i.e. 2008–2010), TEAM POIG (all editions, i.e. 2008–2012) and WELCOME (all editions, i.e. 2008–2010). More information about these programmes is available at https://www.fnp.org.pl/en/

A request to take part in the study was sent to the subjects three times. The subjects submitted their responses between October 2016 and March 2017. The survey was completed by 633 of the 2,043 persons to whom a request was sent (30%).

Selected conclusions

Key findings based on a review of the data from the questionnaire

Mobility and international cooperation. Among stipendees who came to Poland from other countries, one-third are currently continuing their career in Poland. At the time of completion of the questionnaire, 24.2% of the Poles taking part in the study were studying or working outside of Poland. A majority of the Polish respondents (65.8%) worked in other European countries. The second most popular destination was North America (19.0%). Eurocentricity was even more evident when we consider the countries where the Polish respondents earned their doctorate. A foreign doctorate was obtained by 16.5% of the Poles, and 85.4% of those earned the degree in another European country (most often in the UK, Germany or France). Among the persons residing outside their own country, 51.2% maintained contacts with the home country. Among all respondents, 29.0% considered moving to another country. Of this number, 15.8% were persons working outside Poland who want to return to Poland. The most frequent motivation for migration was the opportunity for career development (43.6%).

Nearly all of the respondents working in science cooperated with affiliated researchers in other countries. But this cooperation was also Eurocentric and rather focused on the northern hemisphere. Of the respondents, 88.3% had undertaken some form of cooperation with other researchers from Europe, 41.9% from North America, 17.8% from Asia, and 15.0% from other areas of the world.

Continuation of scientific career. The respondents highly rated the usefulness of a doctoral education, and believed that it had an impact on their professional life even when they were currently working outside of science. The overwhelming majority of laureates planned a career in science (95.9%), and at the time of the survey most of them indeed worked in science (94.0%), while 78.1% worked scientifically only in a scientific research institution and did not combine this work with other types of duties. Salary appeared to play a major role in laureates' decision to depart from a strictly scientific career path. In particular, those with experience working in a firm and working at a university perceived salary levels as the greatest advantage of the commercial sector. Persons who had resigned from a research career gave the level of salary as the most common reason (alongside the lack of job security).

Form of employment, professional satisfaction, and assessment of financial situation. Of the respondents, 70.0% were employed full-time, including 37.9% hired permanently and 32.5% temporarily. Obtaining a doctorate did not increase the chances for permanent employment, but obtaining a postdoctoral degree (habilitation) improved the chances markedly. The chances of obtaining permanent employment also rise with age.

The subjects highly rated their satisfaction with professional life (77.1% said very high or rather high, 19.9% so-so) and viewed their financial situation positively (63.8% very good or rather good, 29.8% mediocre). When we compare these responses to data from polling centre CBOS concerning the entire population of adult Poles, the respondents appeared very satisfied with their professional and financial situation. But when we look within the sample at the differences between respondents depending on the work they perform, those enjoying the greatest satisfaction were the respondents combining scientific work in a scientific research institution with scientific work in a firm, while those working outside science rated their financial situation the highest.

Mobility and intersector cooperation. A majority (74.0%) of laureates and stipendees had experience studying or conducting research in another country (for at least three months). Somewhat fewer of the respondents (56.0%) had changed employers. An even smaller percentage of respondents worked in the commercial sector (36.0%). About a fourth of respondents cooperated with industry or NGOs (industry 24.1%, NGOs 22.9%).

Tasks and accomplishments. The subjects devoted the most professional time to conducting research and preparing publications—about half on average. But the respondents differed in the amount of time they devoted to activity of this type. Other activities which slightly competed with research were administrative, organizational and reporting tasks, teaching, and seeking research funding. The subjects devote relatively little time to popularization of science, implementation and commercialization. Interestingly, involvement in popularization and commercialization displayed a weak positive correlation.

A surprisingly large number of respondents (88.6%) declared that they duties included mentoring or supervising the work of others. They most often reported mentorship over the work of research colleagues (57.5%) and reviewing the work of other researchers (54.3%). Informal mentoring, e.g. over master's degree students or doctoral students, was reported more often (45.3% and 41.7%) than formal advising (26.6% and 15.6%). This surprisingly large number of mentoring duties can be explained in two ways: (1) the respondents wanted to present themselves in a positive light and ascribed to themselves responsibility for some activity even when their actual involvement was small, or (2) the respondents informally assumed some of the duties of a thesis adviser.

The laureates could indicate numerous accomplishments they managed to achieve in the prior 12 months. Those reported most frequently were those that had the greatest connection with parameters for evaluation. The greatest number of people (70.3%) took part in international conferences. Being the lead author or following author of a reviewed article was declared by 62.0% of the subjects, and participation in domestic conferences 56.8%.

Advice for young researchers. At the end of the survey the subjects were requested to provide advice for a young researcher, in an open-ended question. The most important of them was "Do your doctorate at a good institution" (foreign or Polish, but world-class). Beyond this it is important to choose your boss carefully, who should be an excellent scientist but also a good person and an effective manager. Avoid sealing yourself off in a single institution, but take advantage of every

opportunity to travel abroad for fellowships, visits, conferences and the like. The final tip is, as soon as possible, to start publishing, win your own grants, and strive for independence.

Comparison of men and women. The responses of men and women to most questions did not differ in any statistically significant way, but the few places where differences did appear may suggest the conclusion that women have a tougher row to hoe when it comes to professional advancement.

Women complete their doctorate somewhat later than men. This delay was not connected with any reported career interruption. Nonetheless, we could observe a greater percentage of fathers than mothers with a doctorate, whereas in the childless group there was no observable difference between the sexes.

Career interruptions are more frequent among women and relate to having children. Career interruptions were not very frequent in the overall sample, at 15.4%. But they were more frequent among women (25.8%) than men (8.3%). The occurrence of career interruptions was very similar (low) among the childless of both sexes. But the difference was very great among parents: 62.1% of mothers had an interruption, vs. 6.4% of fathers. But it should be pointed out that 37.9% of women with children did not take a break in their career for this reason of longer than 6 months.

Women are less often than men employed at permanent, full-time positions. They more often work under fixed-term contracts and part-time. The disproportion in the percentage of women and men employed permanently and full-time grows with age (for persons below 30, the difference was 8.4 percentage points, while for those age 36 or higher the difference was 19.6 pp). This disproportion was not significant for the childless or those without a doctorate. But men with children were more than twice as often employed permanently and full-time than women with children. The difference in permanent employment between men and women with a doctorate was similar. Obtaining a doctorate and starting a family stabilize the professional life of men more than women. There was proportionality between the sexes among persons employed part-time in the group of the childless and parents, but it was suspected that part-time work could be a way to combine professional and family life. This hypothesis was not confirmed in the data, however, as the childless more often worked part-time.

Women are less mobile than men. They more rarely change employers, and have experience working or studying in a smaller number of foreign countries. Women also more rarely cooperate with affiliated persons in other countries.

Women and men differ in their assessment of their own financial situation. Women more often assessed their financial situation as rather bad, and less often as very good. Satisfaction with one's financial situation differed depending on the form of employment: the greatest disparities were among persons hired part-time, among whom men assessed their situation much better than women.

Differences in duties and accomplishments. Women more rarely than men cooperate with industry, devote less time to implementation or commercialization, and are less often responsible for transfer of technology. Among their duties, women less often than men reported that they managed their own research team and reviewed the work of other researchers, and among their accomplishments less often reported creation of new research resources or programming. Interestingly, differences in the frequency of reviewing of the work of other researchers and creation of new research resources

were greatest in the subgroup of persons involved in the natural, medical and agricultural sciences—fields with a relatively high representation of women.

Peculiarities of the humanities and social sciences. The results of the study contradict the stereotype of researchers in the field of the humanities and social sciences, closed off in a very narrow set of their own specialization and not forming contacts with the outside world. It turned out that representatives of these disciplines had relatively great experience working with commercial employers and in this respect more resembled the representatives of the technical sciences, who were more active in this regard, than the representatives of the natural, medical and agricultural sciences and the exact sciences. They also led in the number of foreign countries where they had worked or studied (although their advantage was statistically significant only in relation to representatives of the technical sciences). Nor did they fall behind representatives of other fields in the frequency of establishing cooperation with affiliated researchers in other countries.

Representatives of the humanities and social sciences entered the sample mainly as laureates of the very prestigious START competition. This is thus a narrowly selected sample of outstanding individuals who certainly do not represent the entire population of representatives of these disciplines. On the other hand, in this study they were also compared with the most outstanding representatives of other fields of science.

The study reflected the more individual (non-team) model for the work of researchers in the humanities and social sciences. They are less often than representatives of other fields responsible for overseeing the work of research colleagues and informal mentorship over master's students. They are also less often the second or subsequent author of a reviewed article, but appear as the lead author just as often as representatives of the technical sciences, and much more often than representatives of other fields of study. They also share with the technical sciences more frequent reviewing of the work of other researchers, than in the case of the other disciplines.

Representatives of the humanities and social sciences more frequently attend conferences, both domestic and international. They more frequently publish books or chapters of books, and engage in popularization of science and in public affairs. They are less often authors or co-authors of articles in academic journals. We thus observe that the academic activity of representatives of the humanities and social sciences is manifested in different accomplishments than in the other sciences.

Peculiarities of the technical sciences. In a certain sense representatives of the technical sciences also have a distinct profile. They create new research resources or programming, file for patents and register licences for products more often than representatives of other sciences. They are also the clear winners on the labour market: 73.2% of them were employed at permanent, full-time positions, while in other fields of science this figure ranged between 30% and 36%. Although this disproportion was not accompanied by differences in assessment of the researchers' own financial situation (which was similar across all fields of study), it must not be forgotten that permanent employment provides the highest job security as well as the full panoply of employee entitlements.

Differences in professional satisfaction. Representatives of specific scientific disciplines differed in their satisfaction with professional life. On average, those in the technical sciences and the humanities and social sciences rated this higher than those in the exact sciences and the natural, medical and agricultural sciences.

Comparison of laureates (persons applying directly to FNP for competitions in the START or VENTURES programme) **and stipendees** (persons hired for teams funded under the TEAM, MPD and WELCOME) programmes.

Plans and professional situation. "Laureates" and "stipendees" required a similar amount of time to obtain a doctoral degree. In the sample surveyed, laureates were on average older than stipendees, and thus in this group there were more persons holding a doctorate. Laureates were more often geared exclusively toward work in science (less often considering other options), and more often worked scientifically in scientific research institutions (not combining this work with other pursuits). Laureates pursuing science more often declared a desire to continue this career path.

Laureates reported permanent full-time employment more often than stipendees, assessed their financial situation better, and reported greater satisfaction with their professional life. They less often think of improving their financial situation by earning income outside of science.

Duties and accomplishments. More often than stipendees, laureates are responsible for tasks involving supervision of the work of others (formally advising doctoral students and master's students, managing their own team, overseeing the work of colleagues, reviewing the work of other researchers). Laureates more often than stipendees undertook cooperation with affiliated researchers in other countries (76.1% vs. 63.9%).

Laureates reported more academic accomplishments than stipendees. Most of the laureates were selected in the START programme, in which the most talented persons are recognized for their prior accomplishments. By contrast, stipendees were recruited to carry out specific projects, and thus their hiring might have been decided on grounds other than accomplishments. It is thus no surprise that laureates reported more academic accomplishments than stipendees. Significant differences were observed for presentation of work at international conferences or seminars, presentation of work at domestic conferences or seminars, authorship or co-authorship of reviewed articles, receipt of academic awards, publication of books or chapters of books, and popularization of research achievements in the mass media.