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Higher Education Systems and Institutions, Poland



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Introduction

The changes in society and economy in Poland in the last two decades have been as fundamental as the changes in higher education. The growth in the proportion of the population with completed higher education programs, as illustrated by the difference between 25–34 year olds (43% in 2015) and 55–64 year olds (14%), was the most substantial change brought about by the development of the Polish higher education system following 1989. This substantial generational difference in qualification levels shows the scale of change in tertiary educational opportunities between the communist era of the 1980s and the massification era in the post-1989 period.

In this chapter, we use a demographics-induced massification trend as the main point of reference for understanding the most important phenomena that shaped the higher education system and its institutions (governance, funding, and the academic profession). The rise and fall of student enrollments within the system is thus a background for the two fundamental dynamics (a) from

privatization to de-privatization and (b) from deinstitutionalization to reinstitutionalization of the research mission of Polish higher education.

Higher Education System Development

The Communist Period

Poland has undergone change processes typical for Central and Eastern Europe. The communist legacy in higher education funding and organization generated similar challenges across the region. After a relative boom after World War II, the Polish higher education system stagnated in the 1970s and 1980s in both quantitative and qualitative terms. The numbers of institutions, students, and academics were relatively constant for about two decades. By 1990, the system was largely elite, with merely 403,824 students and 112 institutions (11 universities). The system was state coordinated, binary in terms of university and nonuniversity sectors, publicly governed, and publicly funded (Kwiek 2017; Pinheiro and Antonowicz 2015). Before 1989, universities were conceived as major change agents designed to redress social inequality and steer and support the economic development of the regions, while at the same time, they were subject to strong political supervision and state coordination (Szczepański 1974). The main target of higher education was a change in the social composition of the educated social strata. While the system achieved limited success in the early 1960s granting peasant and

working-class-background students restricted access to higher education through affirmative action, the children of the intelligentsia were over-represented in the system and constituted the majority in the 1980s.

Centrally planned higher education was also expected to serve the centrally planned economy. The principle of full employment combined with the principle of a carefully planned supply of qualified workers to the closed, national labor market was a key factor limiting the massification of higher education. Access to higher education was heavily restricted. The entry rate for the relevant age cohort in 1990 was 11%. Higher education in Central Europe, as opposed to other industrialized nations, was as elite in 1990 as it was in decades past. According to the stated needs of the national economy, the numbers of admitted candidates for the whole country were set for every type of institution and every field of studies. Unsurprisingly, between 90% and 98% of graduates were employed in those fields which they studied and from which they had graduated.

Democratic Transition

When the democratic transition began in 1989, the higher education sector was more or less left on its own by policymakers. Subsequently, after being granted a formal academic freedom and institutional autonomy by the new Law of 1990 and with no major governmental long-term restructuring strategies and reforms, it received an important policy imperative to focus exclusively on increasing access to higher education. With the introduction of fee-based part-time programs in the formally free public sector and the growing expansion of the newly established private (nonprofit) sector, massification by privatization reached this goal by 2005, and the system entered the stage of the universal access (Antonowicz 2016; Białecki and Dąbrowa-Szeffler 2009).

Government's "policy of no policy" (Kwiek 2008) toward the sector during the expansion era resulted in the mushrooming of demand-absorbing private sector institutions, as well as in establishing various, massive, fee-based part-time programs in the public sector. In 1992, there were 14 private higher education institutions. Just

5 years later, in 1997, their number had reached 146 with a student enrollment of 226,929 (mainly in soft fields). Another 4 years later, in 2001, their number exceeded 200, reaching 221 institutions in total with 509,279 students enrolled. Finally, the private sector's expansion reached its peak in 2007 enrolling 660,467 students in 324 institutions (Antonowicz et al. 2017).

Student numbers in Poland were growing fast. In 1990, there were 403,824 students enrolled in the higher education sector, in 1995 their number had already doubled reaching 794,642 students, and by the end of the decade, in 2000, it had doubled again amounting to 1,584,804 students. The expansion period has found its peak in 2005 with 1,953,832 students enrolled in different institutions of the higher education system. This moment marks the end of continuous growth and the beginning of a demographically driven process of slow decline in student numbers.

During the expansion era of 1990–2005, institutional teaching orientation was dominating in both the private and public sectors. The larger the student numbers, the bigger the public subsidies and/or the higher the noncore, non-state income from student fees. Even the top public research universities gradually became teaching-oriented and teaching-intensive institutions, especially in their soft field faculties (law and administration, economics and management, education, social sciences, and humanities) where expanded teaching was relatively cheap to run. As higher education institutions were continuously financially struggling for their financial survival (during the 1990s) and as institutional budgets increasingly consisted of incomes from teaching activities as well as of teaching-related public subsidies, the acquisition and maintenance of the student body were becoming critically important. Tuition-based teaching quickly became a vital source of the noncore, non-state income amounting to 27% of Polish public university revenues from teaching in 2004.

From Privatization to De-privatization

During the last decade, the Polish system became dual in the sense of being public-private, highly differentiated, strongly marketized, and hugely

expanded. Following 2006, it came under pressures of declining demographics, Poland being the fastest aging society in the European Union. Total enrollments have fallen from 1.95 million in 2006 to 1.35 million in 2016, though the age group participation rate has continued to increase. The effects of this marked decline in absolute student numbers have made the Polish system more public, less differentiated, and less marketized. In the 1990s and 2000s, it was a perfect example of privatization processes, with ever more private providers, more private funding, and more fee-paying students in both sectors. In contrast, during the last decade, it has become a remarkable example of a de-privatization process, especially in financial terms (Kwiek 2016b).

De-privatization processes – in terms of funding – refer to proportionally decreasing private funding in higher education or its decreasing privateness over time; and privatization processes refer to proportionally increasing private funding or its increasing privateness over time. A proportional approach to de-privatization (i.e., percentages of public and private funding) makes it easier to identify the direction of ongoing changes at various levels of analysis. In post-communist Europe (and specifically in Poland, Romania, Bulgaria, and Estonia, once regional champions of privatization of higher education), the dynamics have clearly been changing toward more publicness and less privateness in the last decade (Kwiek 2016a).

In 2006, the Polish higher education system entered a long and still ongoing period of contraction (Kwiek 2013). As projected, by 2025, the number of the expected student population will have decreased by nearly 40%, from about 2 million to 1.2 million. During the last 10 years (2006–2016), the population of enrolled students has already declined by 30.5%. The data regarding the private institutions are even more alarming because between the peak academic year of 2007 and 2016, about 52.4% of students vanished from the sector (GUS 2017). Similarly, the number of private HE institutions declined from 330 in 2010 to 255 in 2017. In the light of demographic predictions, the general emphasis on teaching at most

public top research institutions is considered to be increasingly obsolete.

Privatization and Its Consequences for the Academic Culture

De-privatization did not stop the negative impact of the previous demand-absorbing growth of the system. The rapid expansion of the private sector had more powerful implications for the development of top research public universities than the growing level of competition for the income from student fees between the institutions. An estimated 30–40% of academics from the public sector in soft fields held parallel employment in the private sector during the expansion period (Kwiek 2012). Most academic jobs in this sector were additional to primary employment in the public sector. The Ministry of Science and Higher Education (MoSHE) data from 2008 show that in the category of full professors, 37% were full-time employed in one additional institution and 3% in two additional institutions. In total, 40% of all full professors were moonlighting (Kwiek 2012). This situation had an enormous negative impact on their research productivity and productivity of their institutions (Wolszczak-Derlacz and Parteka 2010), as well as their capability to comply with teaching responsibilities in their main workplace. This massive scale of moonlighting (or multiple employment) was concentrated in such academic fields as education, economics and management, law and administration, humanities, and social sciences which reflect the disciplinary focus of private higher education and fee-based part-time programs in the public sector.

Traditional academic rules and norms in top public universities according to which research was of vital importance to the academic enterprise were gradually weakening throughout the 1990s in the expansion-related, soft academic fields. The price of this process in soft (as opposed to hard) fields for top public universities was high, though: it was the prolonged institutional (as well as individual academic) focus on the teaching mission at the expense of the research mission and with the ensuing low research productivity (Kwiek 2017). In the postcommunist expansion period (1990–2005), prestigious public research

universities in Poland became much more teaching oriented, especially in soft disciplines, than could have ever been expected judging from their traditionally elite and Humboldtian character. The expansion period has led to internally divided top public universities: there is a gap between highly productive research-oriented faculties and departments in hard fields and teaching-oriented faculties and departments in soft fields, with low research productivity and very low international research visibility.

Waves of Reform

The expansion period from the 1990s to the mid-2000s was a period of gradual deinstitutionalization of traditional academic rules and norms in public universities, with growing uncertainty about which academic behaviors were legitimate and which were not (Olsen 2010: 128) and what the core of the academic identity was in research universities. Gradual deinstitutionalization of the research mission meant that the role of research activities in individual academic lives and institutional academic strategies was declining. The deinstitutionalization processes were concentrated mainly in soft academic fields, in particular those which were in high social demand and which provided additional multiple employment opportunities for academic staff in the expanding private sector. Conducting research in these fields was widely believed *not* to matter: it was teaching where the action was. The higher education legislation of March 2011 reinstitutionalized these temporarily suspended traditional rules and norms. It introduced new governance and funding principles, redefined the academic career ladder, and presented a new rationale for public support of both teaching and research. It finally made multiple full-time employment – so deleterious to research engagement and research productivity – hardly possible (Kwiek 2018).

From a structural perspective of funding and governance, Polish universities in the first two decades following the collapse of communism in 1989 (i.e., until 2009–2012) had remained largely unreformed. Before 2009, the higher education system was steered by two laws on higher education: the 1990 Law, granting the academic

freedom and institutional autonomy, and the 2005 Law that aimed to adapt the system as a whole to the Bologna Process requirements (with, among others, the introduction of a three-cycle model of higher education studies). However, throughout this period, the system as a whole was based on noncompetitive funding modes and all too powerful collegial governance. The more recent wave of reforms (starting in 2009 and lasting until now) aims at the reinstitutionalization of the research mission and the reorientation of Polish universities toward research activities and closer cooperation with the socioeconomic environment (Kwiek 2015a).

Higher Education Governance

Until 2009, Polish universities remained largely unreformed, following the initial changes right after the collapse of communism in 1989. Their adaptation to the new postcommunist and market realities was much slower than the adaptation of other public sector institutions, including social assistance, pension schemes, healthcare provision, and primary and secondary education. The latter were substantially reformed in the period from the mid-1990s to the mid-2000s. The core of the system, including its relatively noncompetitive funding modes, heavily collegial governance modes, and a complicated and obsolete, multilevel system of academic degrees and careers, remained largely untouched until the early 2010s (Kwiek 2014).

Collegiality

Poland strongly manifests the features of a “professionally coordinated system” (as defined by Teichler et al. 2013: 191). The Polish system is perceived by academics as a highly collegial one in a sense that an uncommonly powerful role in academic decision-making is played by collegial academic bodies. Faculty committees are still to a larger or lesser extent responsible for choosing new faculty, making decisions about promotion and tenure, determining budget priorities, determining the overall teaching load of academic staff, setting admission standards for

undergraduate students, approving new academic programs, evaluating teaching and research, and establishing international linkages. Moreover, rectors, senate, and deans are appointed through an electoral process by faculty.

Polish academics are strongly embedded in Olsen's (2010) first model of university organization ("a rule-governed community of scholars"), and the Polish policy-making community is heavily involved in implementing his second model of university organization ("an instrument for shifting national political agendas"). The general rejection of the direction of ongoing reforms by large segments of the Polish academy in 2011–2012 may have been a reflection of a fundamental incommensurability of guiding principles believed to drive Polish universities. The rejection resulted in a clash between two university models and university visions.

Most of all, though, Polish universities turn out to be institutions isolated from both the needs of society and the needs of the economy. They are closer to the ideal of the ivory tower than other European systems (along the same lines Poland was criticized by international (World Bank 2004, and OECD – see Fulton et al. 2007) reports on higher education published in the last few years). This disappointing picture is shown in institutional and national higher education and research and development statistics (through such parameters as total income from industry or the share of income from industry as a proportion of the total income, either at the national scale or at the scale of operating budgets of particular institutions).

Multilevel Governance

After 2009, within the framework of the so-called Kudrycka reforms, the Polish system was reconfigured on the basis of multilevel governance, with new intermediary coordinating institutions situated between the higher education institutions and the state. The new national bodies included two independent and publicly funded national research councils, one for fundamental research (Narodowe Centrum Nauki, NCN) and another for applied research (Narodowe Centrum Badań i Rozwoju, NCBR), the renewed Polish Accreditation Committee (Polska Komisja

Akredytacyjna, PKA), and the national Committee for the Evaluation of Scientific Units (Komitet Ewaluacji Jednostek Naukowych, KEJN). New rules of the academic game in both governance and funding were established. Financing of public higher education and academic research became more directly linked to measurable research productivity.

In the wake of the 2009–2012 reforms, major aspects of funding and organization were moved from the level of the state to the intermediary level of the new agencies (Woźnicki 2013). The two national research councils allocate funding on a competitive basis to individual academics and research teams, as well as to companies in the case of the NCBR, for research in all areas. The accreditation committee (PKA) evaluates and accredits study programs and institutions in both the public and the private sectors. The evaluation committee (KEJN) provides a large-scale, periodical assessment of the research output of all 963 basic academic units – these are usually situated at the level of faculty, in the case of higher education institutions – through sophisticated periodical "parameterization" and "categorization" exercises (Kulczycki 2017). These exercises took place in 2013 and 2017. The new bodies either directly allocate public funding (in the case of both national research councils) or provide input to the MoSHE in the form of scores for study programs and basic academic units which are then linked to public subsidy levels, as occurs with the two accreditation and evaluation committees, the PKA and KEJN.

Formed in 2010, the KEJN, the new national "research assessment exercise" body has been crucial for the implementation of these reforms. Consisting of experts elected by the academic community and nominated by the Ministry, its role is a comprehensive assessment of research activities conducted in all "basic academic units" (institutes of the Polish Academy of Sciences or PAS, research institutes, and mostly faculties in higher education institutions), with the assessment largely carried out through bibliometric tools. The assessment process is termed "parameterization" and leads to the categorization of all academic units. The final assessment is presented

on a four-point scale: A+ (national leaders), A (very good level), B (acceptable level), and C (unsatisfactory level). For a given unit assessed by KEJN, the level of state subsidy for research is directly linked to the final assessment. The Ministry publishes a list of units with their respective categorization. The successive rounds of parameterization, leading to official categorization by the Ministry, have proven to be a powerful instrument of vertical stratification of the Polish higher education sector. The assessment process also tends to be reproductive of the stratification it creates. The categorization of individual academic units does not directly lead to classifications of the institutions in which those units are located, but institutional funding and status are affected indirectly. The top higher education institutions in Poland house mostly A-category and A+ category faculties, together with varying numbers of B-category units.

Until 2011 the Polish state through the MoSHE was directly involved in coordinating higher education. In the new governance architecture, higher formal autonomy for the self-management of institutions and academics is combined with higher levels of accountability. The new intermediary agencies are, in principle, independent of the state in that they are either directly managed by academics elected by the academic community at large or indirectly influenced by academics through their governing boards. Hence, either directly or indirectly, the four new agencies are managed and/or governed by academics through their democratically elected representatives. There is, however, a substantial cost for the more autonomous institutions, in that various aspects of university functioning are subject to rigorous systems of reporting, while there is an increasing bureaucratization of the whole system. This has provided a framework for processes of corporatization parallel to those emerging in many countries. Though corporate reform is very high on the policy agenda, the traditional Polish academic collegiality has so far retarded the change process (Kwiek 2015b).

The new system of coordination is associated with new tensions within institutions and between institutions, intermediary agencies, and the state.

Managerial-type reforms, such as an increase in the power of academic leaders, both rectors and deans, as well as the increased role of the periodic research assessment exercises and performance-based research funding systems, have been introduced into a traditionally collegial system in which there is a powerful tradition of universities as communities of scholars. Links between higher education institution and the economy are weak, as are links to society (Fulton et al. 2007). The perceived “index of collegiality” for Poland is one of the highest in Europe, and the “index of academic entrepreneurialism” is one of the lowest. The majority of academics perceive themselves as very influential (and somewhat influential) in shaping key academic policies at department levels but not at all influential at institutional levels (Kwiek 2015b), with significant cross-generational differences between highly influential full professors and powerless new entrants (Kwiek 2017).

Funding

The Polish system is coordinated, funded, organized, and governed in a homogenous way. All public sector institutions are funded centrally through subsidies by the state through MoSHE. Research in public institutions is funded centrally through subsidies based on the assessments of an intermediary agency, the KEJN, as well as through grant funding as a result of national competitions for research funding available from the NCBR and the NCN. The mechanisms of coordination operate at one basic level, the state. There are national salary brackets, national teaching loads, a national student aid system, and a national system of academic titles and degrees. Full professorships are awarded centrally by the Central Committee on Academic Degrees. Titles and nominations are signed by the President of Poland. However, the state has diminishing power in the organization and management of individual institutions and in allocating public funding. The role of the four intermediary peer-run agencies is heavily increasing, as is the role of students as consumers with consumer rights

guaranteed by the state. Institutions are becoming ever more accountable to the state through the new intermediary agencies to which they report, and academics are ever more accountable to both their institutions and the research councils sponsoring their research.

Increasingly, academic outputs in both teaching and research are being assessed, benchmarked, and linked to public funding levels, at the aggregate level in the case of basic academic units and at an individual level in the case of project-based research funding. Not only have research grants been rendered competitive, public subsidies for teaching and research now depend on how academic units perform in comparison with other units. There is a quasi-market resource allocation for academic units in which they compete for a stable amount of funding available on an annual basis. Detailed bibliometric assessments of individual academics and academic units using a point system which is linked to a ranking list of academic journals increasingly determine the level of financial resources available.

Overall, Poland is gradually implementing a performance-based research funding system (Kulczycki et al. 2017). Funding levels are linked either directly to prior research outputs, through subsidies for research allocated to individual academic units rather than institutions as a whole, or indirectly in the form of grant-based competitive funding for academics. The core of the ongoing changes lies in competitive project-based funding from the two national research councils, especially the NCN for fundamental research. Amid the changing architecture of governance, the four new agencies located in the coordination system between the universities and the state are becoming ever more crucial. Putting it in simple terms, the state leaves most funding decisions to the competitive quasi-market institutionalized in new intermediary agencies. The state continues to define the global levels of public funding for both subsidies and research projects, national research priority areas, and the primary division of funds between the NCN and the NCBR. Decisions on how to allocate research funds are taken by the academics located in the research councils.

Since 2010, the gradually changing formula for the distribution of research funding has led to the “haves” receiving more competitive research funds and the “have-nots” receiving proportionately less, illustrating the workings of the mechanisms of cumulative advantage and disadvantage at an institutional level (Merton 1968; Cole and Cole 1973). In other words, the new funding mechanisms are fueling vertical stratification, gradually leading to the emergence of two opposing families of institutions: on the one hand, those that are strongly and moderately research oriented, and on the other, those with no research mission and no research funding. While the distribution of resources for research was always unequal, this can now be illustrated in detail, in terms of research funding allocated by the national research council. During its first 6 years of operation from 2011 to 2016, the NCN awarded about 10,000 research grants, with a budget totaling 3.33 billion PLN (approximately 830 million USD). The distribution of these funds indicates the new geography of knowledge production and indicates the growing stratification of the Polish higher education system, driven by competition in the quasi-market of research and the regulation of “quality” in terms of international scientific excellence.

Between 2011 and 2016, the two largest Polish universities, the Jagiellonian University in Cracow (UJ) and University of Warsaw (UW) together received about 30% of all research funding competitively available from the NCN, with 15.0% allocated to UJ and 14.8% to UW. These two institutions are well ahead of the other leading institutions in Poland. In the same period of time, the top 5 institutions were awarded 46.1% of all grants, and the top 10 received 63.0%; and the top 20 received 80.6%. In 2016, there were 410 institutions in total, but only 115 institutions were awarded NCN funding (NCN 2017).

Academic Profession

The stratification in the Polish “professionally coordinated system” is most fully expressed by

the difference in academic power between “full professors” (those holding the Presidential professorial title, the pinnacle of an academic career) and “new entrants” to the academic profession. The Polish academy is a generationally divided institution: the split between the professoriate and new entrants is powerful. Consequently, from a generational perspective, the collegiality prevalent in Poland can be viewed as “the collegiality of the seniors” to which juniors have only limited access (Kwiek 2017). In a recently changing Polish academic environment – following the large-scale higher education reforms of 2009–2012 – different academic generations have to cope with different challenges, and they have to use different academic strategies. Polish academics have been strongly divided generationally not only in terms of what they think and how they work but also in terms of what is academically expected from them following the reforms.

The Polish academy, to a larger extent than its Western European counterparts but certainly not uniquely, is torn between an old ideal of doing research at a somehow leisurely pace without tough external pressures related to promotion and funding and a new ideal in which (ever more externally funded) research is the core of the academic profession’s activities in top tiers of the system. While the former ideal also encompassed semifeudal academic relationships based on seniority and highly subjective criteria for academic advancement, the emergent ideal is that of heavily quantified, objective criteria of career assessment and research funding distribution.

Young academics are increasingly aware of a new academic order and aware that they are somehow on their own, with ever more competition between individuals and institutions around combined with ever more professional uncertainty and financial instability. They increasingly share these uncertainties and instabilities with their European (see Teichler and Höhle 2013) and international (Yudkevich et al. 2015) colleagues.

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References

- Antonowicz, D. 2016. Digital players in an analogue world: Higher education in Poland in the post-massification era. In *Access and expansion post-massification. Opportunities and barriers to further growth in higher education participation*, ed. B. Jongbloed and H. Vossensteyn, 63–81. London: Routledge.
- Antonowicz, D., M. Kwiek, and D. Westerheijden. 2017. The government response to the private sector expansion in Poland. In *Policy analysis of structural reforms in higher education*, ed. H. de Boer et al., 119–138. New York: Palgrave.
- Białecki, I., and M. Dąbrowa-Szefler. 2009. Polish higher education in transition: Between policy making and autonomy. In *Structuring mass higher education: The role of elite institutions*, ed. D. Palfreyman and D.T. Tapper. London: Routledge.
- Cole, J.R., and S. Cole. 1973. *Social stratification in science*. Chicago: The University of Chicago Press.
- Fulton, O., P. Santiago, Ch. Edquist, E. El-Khawas, and E. Hackl. 2007. *OECD reviews of tertiary education*. Poland: OECD.
- GUS. 2017. *Higher education institutions and their finances in 2016*. Warsaw: GUS (Central Statistical Office). (and previous editions).
- Kulczycki, E. 2017. Assessing publications through a bibliometric indicator: The case of comprehensive evaluation of scientific units in Poland. *Research Evaluation* 16 (1): 41–52.
- Kulczycki, E., M. Korzeń, and P. Korytkowski. 2017. Toward an excellence-based research funding system: Evidence from Poland. *Journal of Informetrics* 11 (1): 282–298.
- Kwiek, M. 2008. Accessibility and equity, market forces and entrepreneurship: Developments in higher education in central and Eastern Europe. *Higher Education Management and Policy* 20 (1): 89–111.
- Kwiek, M. 2012. Changing higher education policies: From the deinstitutionalization to the reinstitutionalization of the research mission in Polish universities. *Science and Public Policy* 35 (5): 641–654.
- Kwiek, M. 2013. From system expansion to system contraction: Access to higher education in Poland. *Comparative Education Review* 56 (3): 553–576.
- Kwiek, M. 2014. Structural changes in the Polish higher education system (1990–2010): A synthetic view. *European Journal of Higher Education* 4 (3): 266–280.
- Kwiek, M. 2015a. Academic generations and academic work: Patterns of attitudes, behaviors and research productivity of Polish academics after 1989. *Studies in Higher Education* 40 (8): 1354–1376.
- Kwiek, M. 2015b. The unfading power of collegiality? University governance in Poland in a European comparative and quantitative perspective. *International Journal of Educational Development* 43: 77–89.

- Kwiek, M. 2016a. De-privatization in higher education: A conceptual approach. *Higher Education*: 74(2): 259–281.
- Kwiek, M. 2016b. From privatization (of the expansion era) to de-privatization (of the contraction era). A national counter-trend in a global context. In *Higher education, stratification, and workforce development. Competitive advantage in Europe, the US and Canada*, ed. S. Slaughter and B.J. Taylor, 311–329. Dordrecht: Springer.
- Kwiek, M. 2017. A generational divide in the polish academic profession. A mixed quantitative and qualitative approach. *European Educational Research Journal* 16 (5): 645–669.
- Kwiek, M. 2018. High research productivity in vertically undifferentiated higher education systems: Who are the top performers? *Scientometrics*. 115(1): 415–462.
- Merton, R.K. 1968. The Matthew effect in science. *Science* 159 (3810): 56–63.
- NCN (2017). National Research Council (Narodowe Centrum Nauki) database. <https://www.ncn.gov.pl/>. Last accessed 17 May 2017.
- Olsen, J.P. 2010. *Governing through institution building. Institutional theory and recent European experiments in democratic organization*. Oxford: Oxford University Press.
- Pinheiro, R., and D. Antonowicz. 2015. Opening the gates of coping with the flow? Governing access to higher education in northern and Central Europe. *Higher Education* 70 (3): 299–313.
- Szczepański, J. 1974. *Higher education in Eastern Europe*. New York: International Council for Educational Development.
- Teichler, U., and E.E. Höhle, eds. 2013. *The work situation of the academic profession in Europe: Findings of a survey in twelve countries*. Dordrecht: Springer.
- Teichler, U., A. Arimoto, and W.K. Cummings. 2013. *The changing academic profession. Major findings of a comparative survey*. Dordrecht: Springer.
- Wolszczak-Derlacz, J., and A. Parteka. 2010. *Scientific productivity of public higher education institutions in Poland. A comparative bibliometric analysis*. Warsaw: Ernst and Young.
- World Bank. 2004. *Tertiary education in Poland*. Warsaw: World Bank/European Investment Bank.
- Woźnicki, J., ed. 2013. *Financing and deregulation in higher education*. Warsaw: Institute of Knowledge Society.
- Yudkevich, M., P.G. Altbach, and L.E. Rumbley, eds. 2015. *Young faculty in the twenty-first century. International perspectives*. Albany: SUNY Press.