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Behind Quality, there is Equality: An Analysis of Scientific Capital Accumulation in Social-democratic Welfare Regimes

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Behind Quality, There is Equality:
An Analysis of Scientific Capital Accumulation in Social Democratic Welfare Regimes
Derrière la qualité, il y a l'égalité : une analyse du capital d'accumulation scientifique dans les régimes de protection sociale de type social-démocrate

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Abstract

Trade-offs between quality and equality are at the forefront of multiple debates in higher education, and one conceptual tool to approach societies' adjustment in resolving these trade-offs is the welfare regime typology. Relying on the theory of academic capitalism and using research production as a proxy for quality in higher education, this study analyzes how social-democratic welfare regimes resolve the trade-off between comparatively high levels of academic research production, access to higher education and equal citizens' living conditions. Interviews with 56 system actors suggest that equality is perceived to contribute to academic freedom, public investments in research and the expansion of the academic workforce, those features contributing in turn to academic research production.

Résumé

Les compromis entre qualité et égalité sont au centre de nombreux débats en éducation et l'un des cadres conceptuels permettant d'appréhender les trajectoires d'ajustement des sociétés dans leur manière d'atteindre ces compromis est celui des types d'États providence. En s'appuyant sur la théorie du capitalisme universitaire et en utilisant la production de recherche comme indicateur de qualité dans l'enseignement supérieur, cette étude examine comment les États sociaux-démocrates atteignent des niveaux de production de recherche importants tout en préservant l'accessibilité à l'enseignement supérieur et l'égalité entre les citoyens. Des entretiens avec 56 acteurs-clés des systèmes d'enseignement supérieur suggèrent que l'égalité sociale contribue à la production de recherche en ce sens qu'elle protège la liberté universitaire, encourage les investissements publics en recherche et augmente le bassin de recrutement de chercheurs universitaires.

Keywords: equality; scientific capital; academic research; social democratic; welfare regimes; higher education; Nordic countries.
Mots clés : égalité; capital scientifique; recherche universitaire; social-démocratie; état providence; enseignement supérieur; pays scandinaves.

Equality has had multiple definitions and was at the core of many debates over the course of history (e.g., Gide, 1931). While in the first part of the 20th century it referred primarily to social classes, the concept of equality evolved to denote fairness and equity, distribution of resources and opportunities, differentiation of living conditions as well as rights and duties (Esping-Andersen, 1999). Education rapidly came at the forefront of the movement for wider equality, through mass education, but also through a call for a better redistribution of cultural capital and resources so all youth can have a fair chance of success in their studies.

The trade-off between equality and quality was also reflected in the debates among educational scientists. Valverde (1988) stated that "one of the major challenges facing educators today is the creation of school systems which are both equal and excellent" (p. 9). Smith and Lusthaus (1995) rejected the idea of a continuum and proposed a model in which the orthogonal

relation between the two constructs of quality and equality would create four quadrants, the upper-right quadrant representing educational systems that promote both quality and equality. An OECD (2012) report later provided evidence that equality (in terms of fairness and inclusion) could foster quality, measured by students' achievement. Taking the example of Nordic countries, Bergh (2014) suggested that, by avoiding inequitable measures, such as grade repetition, early-tracking, and school segregation, as well as by being responsive to students' needs and attracting high-quality teachers, education systems could achieve both inclusiveness and excellence.

The trade-off between quality and equality must, however, be understood within societies' specific context. Political economy—defined as the study of interrelationships between the structure of power and economic processes in various contexts (Caporaso & Levin, 1992)— might prove valuable in comparing how durable historic choices of societies affect the distribution of power and resources among citizens. Esping-Andersen (1999), for instance, developed a welfare regime typology to describe how states, families, and businesses produced welfare in a more or less equal manner, following the adjustment paths of different developed capitalist societies.

Esping-Andersen relied on three core concepts—de-commodification (protection of welfare benefits from market forces), stratification (inequality between social groups), and welfare mix (the involvement of states, households and markets in providing welfare)—to distinguish between social-democratic, liberal, and conservative welfare regimes. Liberal regimes support a notion of less eligibility, self-help, and free markets. Conservative regimes were originally inspired by monarchical statism, traditional corporatism and, in the case of Southern European countries, Catholic social teaching. These regimes provide social benefits to their citizens, but benefits are differentiated based on family status and job occupation. The social-democratic welfare regimes, found in Nordic countries, are characterized by comprehensive social policies, entitlement programs, and universal access to quality services.

The objective of this article is to analyze how the social-democratic welfare regime structure conditions the resolution of the quality-equality trade-off in higher education, and more precisely in terms of academic research production. As it will be explained below, although this definition is narrow and incomplete, the term "quality" is here solely understood in quantitative terms, that is, based on the number of publications and citations. After discussing the parameters of the quality-equality nexus in higher education, this paper provides a succinct depiction of the two theoretical frameworks that guided the analysis, namely academic capitalism (Münch, 2014) and the welfare regimes typology (Esping-Andersen, 1990, 1999). To meet its objective, this paper relies on interviews with key system actors in Denmark, Finland, Norway, and Sweden, who have been identified following a multi-level governance framework (Bleiklie & Kogan, 2007). From a thematic analysis of the 56 interview transcripts emerged five organizing themes that suggest potential indirect relations between equality and research production. We finally propose a three-dimensional model to conceptualize those indirect relations and shed a different light on the quality-equality conundrum in higher education.

Quality and equality in higher education

Trade-offs between quality and equality are at the forefront of debates in higher education (Barr 2004). Immerwhar, Johnson, and Gasbarra (2008) revealed that higher education leaders viewed cost, quality, and access as linked in an unbreakable and mutually impacting relationship they called the "iron triangle." In that model, if one wishes to expand access to higher education, one shall either increase funding or lower quality. Analyzing correspondence between welfare regimes type and higher education policies, Pechar and Andres (2011) claimed that "it is simply not possible to achieve all of the following goals at the same time: low taxation, low or no tuition fees, […]

student aid, and a high participation rate in adequately funded higher-education institutions" (p. 26).

Pechar and Andres's correspondence analysis proceeded from indicators of 16 OECD countries revealed that, in liberal regimes, large private funding, medium public funding, and low early-age tracking favoured equality of opportunity (access to higher education) at the expense of an equality of conditions (similar living standards). On the contrary, with early-tracking policies, a large vocational sector, little student aid but low student debt, and constrained public funding, conservative regimes favoured equality of condition over equality of opportunity. Finally, social-democratic regimes clustered together as having high levels of tertiary participation and high levels of funding. These regimes achieved both equality of condition and equality of opportunity by expanding access, providing student aid, charging no tuition fees, having a large vocational sector, and protecting living conditions of citizens who cannot or choose not to enrol in a higher education institution.

International statistics confirm that social-democratic regimes have reduced inequality in tertiary education participation by expanding access. From 1985 to 2010, Denmark, Finland, Norway, and Sweden have increased access by 40–45% (Thomsen, Bertilsson, Dalberg, Hedman, & Helland, 2017), and achieved the highest gender parity indexes in the world (UNESCO, 2017). There remains inequality in terms of students' choice of programs (Helland 2006), but segregation in terms of choice of institution is modest (Shavit, Arum, & Gamoran, 2007). There was a substantial decrease in inequalities based on parents' education in Finland and Norway; daughters of lower-educated parents in those countries have more than tripled their participation rates across the period. And if the decrease in inequality in graduate studies is more modest in Sweden, it is because inequality was already low in 1985 (Thomsen et al., 2017). There remain salient inequalities based on immigration status: first- and second-generation immigrants score lower in international tests than native-born students; students from immigrant background have a ten-percentage point higher dropout rate, and citizens with an immigration background are underrepresented in upper secondary schools (Olofsson & Wadensjö, 2012; Pettersen & Østby, 2013).

If equality in higher education has been relatively well assessed—and considered positively in social-democratic welfare regimes—quality has been assessed differently based on the university mission considered. Regarding the quality of *education*, Nordic governments, along with their European counterparts, implemented quality assurance frameworks, concluded development contracts with universities and included performance-related components in funding formula (Välimaa, 2005). Quality indicators typically included students' work, faculty training, graduates' employability, degree completion rates, and administrative efficiency (Gregersen & Rasmussen, 2011). One could infer that Nordic countries have ensured the quality of their higher educational programs, but international comparisons are difficult to make in that regard.

On the contrary, comparisons based on academic research production are easily found in the literature. International rankings based on academic research production are considered to have encouraged isomorphism and left aside other core academic missions such as expanding enrollment, training professionals, or promoting critical thinking (Hazelkorn, 2013; Münch, 2014). Based on case studies and quantitative comparisons, some authors have suggested that factors promoting inequality could foster performance, such as a concentration of talent and funding, including tuition fees, private institutions, and competitive rather than block funding (Aghion, Dewatripont, Hoxby, Mas-Colell, & Sapir, 2009; Salmi, 2009).

Although most performing higher education systems appear to belong to liberal welfare regimes with clear hierarchies between institutions, Benner (2011), Hazelkorn (2013) and

Marginson (2016) claimed that some "world-class systems" pursue both equality and research quality. Comparing academic research production in 16 OECD countries, Bégin-Caouette, Askvik, and Bian (2016) showed that, on a *per capita* basis, two social-democratic countries—Denmark and Sweden—counted more publications, patents, and universities in the top-100 Academic Ranking of World University than the United States and the United Kingdom. Other metrics reveal that Finland produces 25% more scientific articles than what would be expected based on its population (Välimaa, 2005), and that Denmark and Sweden are in the world top five in terms of field-weighted citation impact (Elsevier 2013). Thomson Reuters's ISI Web of Knowledge (2013) has indexed 184,252 documents (4.05% of the world) by scholars from the Nordic region; 72.19% of these documents would have been cited, that the average citation per document would be 3.52, while the world average is 1.42.

Theoretical framework

This paper relies on two theoretical frameworks from different disciplinary traditions: academic capitalism and welfare regimes. The first allows to portray the global dynamic of struggles between academics, universities, and governments for research production and the resulting prestige and reputation. The second provides an ideal type summarizing the institutionalized systemic features shaping national responses to the global struggle for excellence.

Academic capitalism

The version of "academic capitalism" used here is slightly different than the version initially articulated by Slaughter and Rhoades (2004) for whom academic capitalism was a methodological tool explaining structural and behavioural changes such as a blurred distinction between basic and applied research, commercialization, privatization, and profit-making. With a focus on material capital accumulation, this first version omitted a distinct yet intersecting logic transforming academia. As stated by Kauppinen and Kaidesoja (2014), the concept of "capital" does not have to refer solely to economic capital in the previous senses used, but also to social, cultural, and symbolic capital.

A second version of academic capitalism was developed by Münch (2014). In this version, symbolic power resulted from the accumulation of scientific capital as a specific form of cultural capital acknowledged by the academic community. Like Bourdieu, Münch (2014) described the academic field as being partly autonomous in that it is mostly concerned with the endogenous demand for the production and reproduction of knowledge, and partly heteronomous in that it is influenced by broader external social reproduction schemes. Within the field, academic power consists in membership in prestigious committees, tenure, leadership positions, and grants. It is connected to individuals' scientific capital accumulation, but also greatly influenced by other forms of capital. Although we do not fully align with Münch's overly critical tone, his framework was particularly useful in precising the research questions as follows: what is the relationship between the social-democratic regimes' equality and the capacity of their higher education systems to accumulate scientific capital?

Scientific capital in social-democratic regimes

Like Benner (2011), Kauppinen and Kaidesoja (2014), Münch (2014) called for a political-economic analysis of the global struggle for prestige in order to examine how it is mediated by national contexts. Studies have already explored a relationship between scientific capital accumulation and political economy. Olson and Slaughter (2014) have observed that, in liberal market economies, states restricted their role to ensuring the protection of private property rights,

while academic capitalism in coordinated market economies entailed a more scripted transition and channelled competition. However, following Kauppinen and Kaidesoja's (2014) description of academic capitalism in Finland, as well as Esping-Andersen's (1999) welfare regime typology, one could consider social-democratic regimes as distinct from other coordinated market economies. Nordic countries are particularly characterized by small capital cities, a Lutheran cultural heritage that fosters the ideal of equality and local governance and strong positivist beliefs in science (Derry, 1979; Pratt, 2008; Välimaa, 2005). Nordic countries are also, with the exception of Finland, constitutional monarchies and consensus-based democracies where parliaments, their standing committees, and invited experts have a great deal of influence on policy formulation (Arter, 2008). The Nordic region has also demonstrated the lowest levels of income inequality in the OECD, and this is partly a consequence of their high employment rates and high-quality childcare systems (Christiansen & Markkola, 2006; Lundberg, 2006). Considering their high democracy index, low corruption index, and low gender gap index, Blanc-Noel (2013) asserted that they form a distinct region, which has successfully combined equality and liberty.

Social engineering as well as an open and democratic approach to science has led to a specific model of scientific capital accumulation. Benner (2011) distinguished the Nordic from the liberal and Continental European models of research governance. Bégin-Caouette et al. (2016) have examined to what extent Esping-Andersen's (1990, 1999) welfare regime typology could explain a correspondence between 16 OECD countries and their academic research production. Their model showed that liberal regimes differed from social-democratic regimes, particularly on a dimension they named "academic centrality," explaining that social-democratic regimes had higher levels of R&D performed in higher education systems, a greater proportion of public research funding, and higher doctoral graduation rates. This second framework suggests that political-economic institutionalized features could influence how scientific capital is accumulated and converted. One should, however, bear in mind that a welfare regime is an ideal type and is not an exact representation of reality; suggesting that there might be significant intragroup differences and intergroup similarities. For instance, Bégin-Caouette et al.'s (2016) model only explained 67.4% of the variance between countries and that research systems in countries such as Austria, Germany, the Netherlands, and Switzerland appeared similar to those found in social-democratic regimes.

Methodology

Systems being mostly immaterial, studies at that level need to rely on proxies, and most rely on national statistics or bibliometric measures. It was, however, not possible to conduct large-scale quantitative studies based on country indicators with only four countries. On the other hand, relying on actors' perspectives could provide a holistic perspective of the different forces shaping higher education systems (e.g., Degn, 2014). The underlying assumptions here are that system actors can identify what supports research production in their country, and that convergence between levels of authority and countries reinforce statements' validity.

Data collection

The data collection method was inspired by a multi-level governance (MLG) framework (Bleiklie & Kogan, 2007). It relies on the aggregated perspectives of actors in four countries and located within three levels of authority (institutional, national, and international) and 13 strata, each representing a type of organization directly or indirectly involved in the academic research production process, such as ministries responsible for higher education and/or research, research councils, faculty unions and one research-intensive university.

Table 1
Participation to interviews across countries

Levels/Strata	Interviews	
	Contacted	Conducted
International		
Nordic cooperation organization	2	1
Nordic funding organization	2	2
National		
Ministry of Higher Education and Research	8	4
Evaluation agency	6	4
Research council	11	4
Innovation network	9	4
Association of higher education institutions	6	4
Academic staff union	20	4
Institutional		
University board member	7	3
Senior university administrator	6	4
Faculty member	31	9
Contract-researcher / Postdoc	17	4
Doctoral student / Student union	9	5
Non-(traditional) university institution	7	4
Total	141	56

Data collection took place between September 2014 and March 2015. As shown in Table 1, 141 people were contacted to conduct 56 one-hour semi-structured interviews, including 13 in Denmark, 14 in Finland, 12 in Norway and 14 in Sweden. Participants were aged between 26 and 65 years old and 22 were women. No interviewee belonged to a visible minority and only two interviewees were not born in the Nordic countries. In addition to the ethical approval obtained in Canada, we obtained ethical permission when required. After having received ethics and administrative approval, an invitation email (with an attached consent form) was sent to potential participants where it was explained that participation was voluntary, there was no compensation and that risk was minimal. If participants wrote back to the researcher and agreed to be interviewed, then a meeting was fixed at their convenience.

In each targeted organization, a senior administrator was contacted to obtain administrative approval and to refer us to a person who met the following inclusion criteria: speaking English, being knowledgeable of research production, and speaking in their professional capacity. At the international and national levels, all interviewees held leadership positions and could present the organization's perspectives. At the institutional level, some interviewees had leadership positions (at least one vice-president and one board member per country) and others were academics (at least two professors, one researcher, and one student per country). The interview protocol included four sections (background, general perspective on research production, questions regarding specific elements, and open comments) and its validity was enhanced by an expert review of the protocol, participants' review of transcripts and peer verification of findings.

Data analysis

Qualitative data were treated with a thematic analysis, which examines patterns across data sets according to specific research questions (Braun & Clarke, 2006). To search for common threads across large data sets, a thematic analysis involves codes, basic themes, organizing themes, and global themes. A comprehensive literature review suggested some *a priori* global themes (such as societal beliefs, academic traditions, academic work, governance), which structured the interview protocol. Once interviews were completed, codes were generated inductively from transcripts to identify what appeared interesting and meaningful. Codes were merged into basic themes, which then were grouped into more abstract organizing that appeared frequent and consistent with both the data and the theory. Only the organizing themes that achieved a level of saturation in the six rounds of analysis are presented below. Saturation is here understood as when no new meaningful codes were further developed, and when the codebook became stable (Guest, Brunce & Johnson, 2006).

Limitations

The methodological considerations presented above present important limitations. For example, one might wonder how this study can provide a comprehensive perspective on broad societal beliefs since it solely relies on the perceptions of system actors involved in the scientific capital accumulation process. Moreover, relying on actors' perspectives about citizens' beliefs prevents this study to assert conclusively that equality has any concrete impact on the actual level of research production. It is also worth noting that there were important differences between the four countries and three levels of authority. For instance, if the positive influence of "egalitarian values" saturated in the four countries, the theme "higher education contributes to the public good" did not saturate in Norway, possibly because of the prominence of government research institutes that produce more applied research. And if "public funding" saturated for all levels of authority, system-level actors tended to have a more positive opinion than institution-level actors of strategic funding (funding in areas decided by public authorities). Although those differences are worth mentioning, it should be reminded that the core objective of this paper is to examine the relationship between quality and equality across the four countries belonging to the social-democratic welfare regimes type and that, despite limitations, it represents a different conceptualization of how equality and quality interact in social-democratic contexts.

Findings

This section is based on a thematic analysis of 56 interviews. The organizing themes that have emerged are: higher education contributing to the public good, public funding, the expansion of doctoral education, egalitarian values, and citizens' trust.

Higher education contributes to the public good

A Swedish government representative explained that higher education was closely connected to his country's economic development:

> On the political level, all the way back from the 1950s and 1960s, research has been seen as important, both as such and as contributing to Swedish industries. Sweden has relied a lot on large export companies that have been, to a relatively large extent, research-based. It is recognized that research plays an important role.

In Norway, even if government institutes produce an important amount of applied research, the senior official of a university association confirmed that successive governments had extensively relied on university research to develop social policies:

> For instance, in social sciences, we have a very good tradition of involving researchers in developing social reforms. Social sciences are frequently used by ministries, such as on how to deal with child-care and family policies, how can the welfare state work, [how to formulate] employment policies, etc. Of course, we have a society that is working relatively well and these kinds of dialogue, participation, consensus policies in a broad sense [contribute to this]…

Public funding

For interviewees, the perceived utility of academic research has contributed to public financial support for research and expanded access to postgraduate education. As one Finnish researcher reported: "Research funding has increased dramatically; we were affected by a depression in the early 1990s, and after, there was a common consensus in Finland that higher education would be the way to rise." On a similar note, a Danish government official explained that the "high degree of trust in society towards researchers" was a "precondition … to invest a high percentage of our GDP into research."

Expansion of doctoral education

Some participants also mentioned a relationship between the perceived social contribution of higher education and governments' decision to expand PhD education. In Denmark, both a senior university administrator and the representative of the university association recalled that both private and public institutions needed more researchers, and in the mid-1990s, academia had convinced the government to double the number of PhD students to further the development of the country.

This is where the themes "contribution of higher education" and "egalitarian values" (see below) connected. Expanding access to higher education was depicted as both fair and useful. Danish, Finnish, Norwegian, and Swedish interviewees did not consider their country to be elitist. In Sweden, one senior official in an innovation network explained how egalitarian values, through access, promoted scientific capital accumulation:

> There are opportunities, which are not exclusive in any way. It is a positive thing even if perhaps we have too many researchers in our country now. It is an egalitarian system where everybody has the opportunity to make something of himself and we have a lot of good institutions in what they do, so it is positive.

Although access to some university programs was restricted, there was a general perception that higher education was accessible to all those who had enough talent. Reflecting upon equality of opportunity, a Finnish government official said:

> Everyone has the opportunity to apply to a university education. But it's hard for even those who have the motivation, as the access rate is about 10% to 20% depending on the field. However, everyone can apply to a university … If you imagine the case of individuals who have the opportunity to study without financial constraints because they receive governmental financial support, they are given the opportunity to realize their potential and will end up in research or academic career and, if they possess energy and motivation, they will produce good research and publish.

A Danish national-level actor explained as follows the situation in his country: "If a candidate is applying to multiple programs in Denmark, it is almost impossible to be denied access."

Egalitarian values

For some interviewees, the equality of condition between citizens meant that, despite legitimacy and status for university professors and researchers, salaries remained relatively similar to those of the general population. For instance, an international-level actor explained, "you get very good salary if you go directly to industry." In social-democratic regimes, it seemed important to provide equal opportunity to all citizens with regards to higher education, but also to preserve the living conditions of those who cannot or choose not to enter the higher education stream. In this context, university researchers might not receive the highest salaries, but they were aware of having chosen their career freely. They knew their position had legitimacy and carried symbolic power. One Danish professor summarized this thought as follows:

> We are one of the most socialist countries in the world, so nobody in physics is in it for money. Not in Denmark. There was an investigation some years ago showing that a lawyer and a carpenter at the age of 62 years old have earned the same amount of money. It shows the equality. You can choose quite freely your education and it does not really affect how much money you will have.

Citizens' trust

Multiple actors established a relationship between a broader equality of (living) conditions and citizens' trust in academia. The former director of a granting agency in Finland said, "citizens trust and praise researchers a lot, and there is a tradition in Finland that, in the beginning of the nation, education and knowledge creation was on the priority list." He then explained that higher education and research were considered worth of public investments because of "the regional networks of universities and the open access for all." He concluded that a university is not perceived in Finland as "a secret area or a place where people do very strange things."

A representative from a Nordic organization said, "People are very curious about research results. Maybe it has something to do with the fact that we are a small country with few natural resources." In Norway, a senior official of a university association made the same connection between the "openness" of higher education, its accessibility, and its social status, saying that "The universities were, on the one hand, very elitist … but at the same time, universities worked on problems that were accessible and understandable to people." A senior government official in Denmark said that researchers had a lot of credibility and were well appreciated by the public:

> Researchers have a high degree of credibility in the public area in Denmark. We are undertaking surveys from time to time where we ask the public about their perceptions of research, such as "How can great investments in research be a solution for society problems?" It always comes out very favourable.

In Sweden, one representative of an academic staff union explained that an indication of the status of research in Sweden was the fact that it hosts the Nobel Prize ceremonies: "The Nobel Prize is often used in the Swedish political debate on how research is important. My kids in school go to school in nice outfits when it is the day the Nobel Prize is celebrated." As a Danish professor explained, "We are a small nation and we cannot compete in those areas that need massive investments or a lot of manpower. We have to go to areas where people have a major impact."

Finally, social trust towards academia was perceived by participants as contributing to academic freedom. The potential control affected by society on academic research appeared to be taking place in a context of trust between citizens, institutions, and the government. As in Denmark and Finland, quality assurance in Norway consists of a national organization which monitors the internal quality assurance systems of institutions and, as stated by the representative of the Norwegian quality assurance agency, "It is a system rather based on trust." A representative of the

Finnish quality assurance agency recalled, "our external evaluation (conducted in 2010) stated that, in Finland, there is an unusually high level of trust between institutions and evaluation organizations." An innovation cluster representative in Denmark also explained that the process of collaboration between universities, government institutes, and private businesses was "trust-based."

In sum, the thematic analysis revealed that, in the social-democratic context of Nordic countries, scientific capital accumulation was partly explained by its relationship with social trust, public funding, and the expansion of postgraduate education. It is worth mentioning that there was no salient divergence between institutional- and national-level actors, and very few differences in participants' perspectives based on their country.

Discussion

The core objective of this article was to analyze how the social-democratic welfare conditioned the resolution of the quality-equality trade-off in higher education, and more precisely how Nordic countries could accumulate a comparatively high level of scientific capital while preserving equality of access and condition. Qualitative findings suggest a positive interaction between access to higher education, the perceived utility of higher education, public funding, and social trust towards academics. Reflecting on the literature about welfare regimes and the quality-equality conundrum, this section proposes a three-dimensional model to conceptualize those indirect relations.

Equality as academic freedom

The belief that higher education serves the public good achieved saturation in interviews. The literature already suggests that there is a long tradition of viewing education as useful in Nordic countries. Since their inception, Nordic medieval universities were useful in training the Lutheran clergy and civil servants (Välimaa, 2001). In the 19th century, they contributed to the industrialization process. Around the same time, education became the root of progressive and Nordic democratic societies.

Social-democratic regimes also entail a philosophical inclination towards positivism. Some interviewees explained that their country had a long tradition of involving scientists in developing policies. Science was described by Elam and Glimell (2004) as a "third power" in the development of social-democratic institutions between 1950 and 1990. In many Western countries, this period corresponds to rapid scientific and technological changes, as well as the emergence of the societal belief that research and science will solve countries' problems. The Nordic golden age of social democracy (Esping-Andersen, 1999) may paradoxically also be marked by the self-regulation of science perceived by citizens as an autonomous motto of progress and in close interaction with policymakers (Glimell, 2004).

The perceived utility of higher education would then contribute to academics' symbolic capital, in terms of reputation, but this reputation would then be converted into trust because of another societal belief, i.e., equality of conditions between citizens. It seemed that, on the one hand, citizens who chose to pursue an academic career would be supported by their society through publicly funded access, loans, and salaries. On the other hand, citizens who would remain outside of academia would benefit from satisfactory living conditions.

One would then wonder if this equality of condition contributes to the social support for higher education and, ultimately, academic freedom. Citizens living in a society which treats them equally to academics would be less likely to harbour envy towards them and more willing to grant the resources (material capital) and freedom (symbolic capital) to "non-elitist" academics who

contribute to their country through their research. There would consequently be less public pressure on governments to control and steer what happens within the "ivory tower." This inference was supported by quotes from governments and quality assurance agency officials who explained that monitoring and accountability in Nordic countries took place in a general context of trust, as well as by academics who asserted they have a comfortable level of academic freedom.

According to interviewees, freedom for professors would be perceived by citizens and their government as a legitimate demand for recognition to better contribute to society. Marginson (2011) has argued that social-democratic regimes placed greater value on the "public benefits" of university research than liberal regimes. Public does not mean that academic research is accessible to the common discourse, but that the pursuit of knowledge is funded by the public purse and benefits the overall society.

Equality as public investments

In their correspondence analysis between welfare regimes and academic research systems, Bégin-Caouette et al. (2016) have suggested that "academic centrality" in social-democratic contexts was partly conditioned by the socialization of risk. Social-democratic regimes would put high value on the public benefits of the pursuit of knowledge (Marginson, 2011) and would protect the academic field's autonomous pole from market logic. The prominence of the public sector in the Nordic welfare mix (Esping-Andersen, 1999) would also allow higher education systems to accumulate scientific capital despite economic downturns and consolidate their position for when the economy recovers.

According to interviewees, the prominence of public over private funding in Nordic HES contributed to the accumulation of scientific capital. The symbolic capital generated by the societal belief in the utility of higher education can then be converted into material capital by means of public investments. As it was explained by a Danish government representative, public trust in science is a precondition for the allocation of resources to academic research. Indeed, the percentage of the GDP associated with higher education expenses in R&D (HERD) was high and varied from 0.52 in Finland to 0.95 in Denmark (OECD 2017).

It is especially the public welfare mix in research funding that was perceived to "contribute to scientific capital accumulation. Kim (2013) showed that coordinated market economies reacted differently than liberal market economies during economic downturns. They tended to retain a skilled workforce and make counter-cyclical investments in research, thus consolidating their position. As was reported in the interviews, research funding in Nordic countries remained stable over the course of the early 1990s and throughout the 2008 crisis, allowing higher education institutions to have a head start in terms of knowledge production.

Equality as the expansion of the academic workforce

The societal belief in broad access to higher education and the large proportion of doctoral students are potentially conditioned by two features of the social-democratic regimes, namely de-commodification and productivism. De-commodification is a concept that represents citizens' immunity from market mechanisms in fulfilling their needs (Esping-Andersen, 1999). De-commodification of higher education resulted in a larger pool of university students who have pursued graduate studies and contributed to scientific capital accumulation. As previously stated, Denmark, Finland, Norway, and Sweden have increased access by 40–45% from 1985 and 2010 (Thomsen et al., 2017).

This juxtaposition of choice and equality appears to be a core feature of the social-democratic welfare regimes (Lundberg, 2006). Pechar and Andres (2011) observed this Nordic

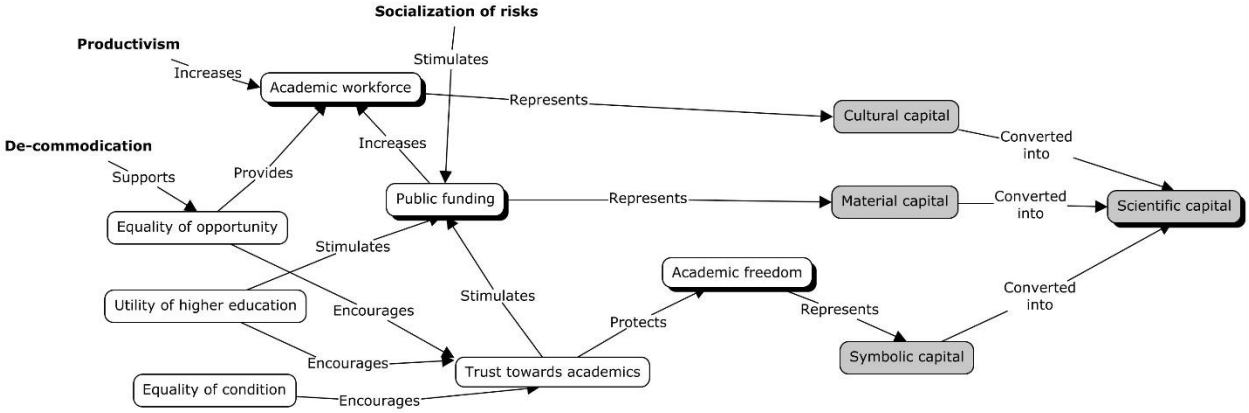
balance between equality of opportunity (choice) and equality of condition in their correspondence analysis. Interestingly, accessible higher (and postgraduate) education appeared in this study as both the cause and the indirect consequence of public support for academic research. As one Finnish interviewee explained, two of the reasons university education and research were perceived as critical activities were, on the one hand, high enrollment rates in higher education and, on the other hand, the perceived equal access to the academic research field. The field was not conceived as a secret place reserved for elite researchers conducting studies that no one understands; it was rather conceived as an open and fair milieu.

Productivism is another important concept because it is not the mere access to higher education that plays a role, but the sustained effort of governments to expand postgraduate education. Productivism was defined by Esping-Andersen (1999) as a political-economic strategy through which welfare states maximize the productive potential of citizens by providing education, work opportunities, and motivation. This obligation is stipulated in most Nordic countries' constitutions. As one Finnish interviewee commented, there is a general perception that, considering the small population in Nordic countries, it is essential to fulfill the full potential of all citizens.

In the 1990s, productivism has encouraged Denmark and Finland to increase access to doctoral education and to establish doctoral schools in order to generate sufficient cultural and scientific capital. Data showed that, between 2002 and 2011, the number of doctoral degrees conferred by Nordic universities increased by 32% (Myklebust, 2013). Norwegian PhD students, called "research scholars," form a third of all academics in the country to this day (Kyvik, 2015). Except in Finland where the situation was more complex, PhD students were university employees with high wages and public benefits (Ahola, 2007; Jensen, 2007). It appeared to be more than simply the increase in number which would matter, but doctoral students' status and working conditions. The doctoral students and postdocs interviewed argued that those comfortable conditions gave them the autonomy and security to develop as prominent scholars. The quality of their publications would also contribute to the survival of laboratory groups in many faculties (Åkerlind, 2005). And, like in many other countries, doctoral students in Nordic countries increasingly published their theses in the form of articles rather than in the traditional monograph format (SNAHE, 2006).

In sum, the perceived utility of higher education seemed to contribute to its public funding, while egalitarian values and public funding contributed to access, and utility and access in turn contributed to the status of higher education in Nordic countries. Following a public good regime rhetoric (Marginson 2011), the academic field in social-democratic regimes was perceived as accessible and contributing to the national development. The resulting public trust in academics would protect their academic freedom and encourage public investment. The concern for an equitable access to higher education combined with massive public investments and the symbolic capital associated with the academic profession would have resulted in the expansion of doctoral education, the establishment of doctoral schools, and ultimately, the accumulation of scientific capital. A tentative visual representation of how those concepts would interact is presented in Figure 1 below.

Figure 1.
Interaction between social-democratic features, organizing themes and forms of capital



In other words, equality could be conceived as promoting quality (in terms of research production) through access, academic freedom, and public investments. Reversely, quality research may contribute to societies through economic development and social innovation. In brief, equality and quality in terms of research could be conceived as mutually reinforcing.

Conclusion

The equality-quality trade-off has been at the forefront of many debates in political economy, comparative education, and higher education policies. Previous studies comparing basic education systems suggested that equality and performance were compatible goals (OECD, 2012; Smith & Lusthaus, 1995). In the realm of higher education, Pechar and Andres (2011) demonstrated how social-democratic welfare regimes avoided the trade-off between equality of opportunity and equality of condition, but it had no measure of "quality." Other studies (Gregersen & Rasmussen, 2011) suggested that the same welfare regimes also had well-functioning quality assurance frameworks and even showed comparatively high levels of academic production. The core objective of this article was to analyze how the social-democratic welfare regimes conditioned the resolution of the quality-equality trade-off in higher education, and more precisely how Nordic countries could accumulate a comparatively high level of scientific capital while preserving equality of access and condition.

To meet this objective, the study relied on a thematic analysis based on interviews with 56 system actors. Findings converged regarding the perceived positive impact of societal beliefs, the utility of higher education and access, as well as public funding and social trust. Findings also suggested that the specific context of social-democratic regimes may condition the relationship between quality and equality in three different ways. For instance, the balance between equality of opportunity (in the form of access) and equality of condition (in terms of citizens' living conditions) appeared to increase citizens' trust towards academia. Academia in social-democratic regimes was indeed perceived as both a useful and accessible field. This belief would have generated symbolic capital for academics in the form of public trust, which served to protect academic freedom.

This symbolic capital could also be converted into public investment, which corresponds to the public welfare mix traditionally associated with social-democratic welfare regimes. This public investment combined with access to higher education would have contributed to the expansion of cultural capital in the form of postgraduate education. In political-economic terms,

the de-commodification of higher education combined with a strategy of productivism (which implies to increase education opportunities for citizens) would have contributed to the growth of the academic workforce. In brief, symbolic capital (academic freedom), material capital (public investments), and cultural capital (PhD students) were then converted into scientific capital (scientific publications).

This study may contribute to a reconceptualization of the trade-off between quality and equality. Findings enter in contradiction with the continuum envisioned by Velverde (1988), and even with the quadrants developed by Smith and Lusthaus (1995). Quality and equality do not appear here as two goals to be achieved separately, but as mutually reinforcing features of higher education systems. Quality (here conceived in terms of scholarly activities) would not only be achievable *in addition* to equality, it could be achieved *through* equality. At this stage, findings must, however, be treated with caution since data does not point to a direct relationship between equality and research production, but to system actors' perception that the beliefs held by societies regarding equality has an impact on academics' capacity to conduct research. Future studies will also be needed to better understand how different Nordic HES might understand the concepts of quality and equality, and to examine in more details differences within the social-democratic ideal type. Nonetheless, in a time when policymakers are developing reforms to increase research production, this study envisions new areas to be considered, such as public trust, accessibility, equality between citizens, and public investments in research.

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