

Precariousness on the Swedish labour market: A theoretical and empirical account

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Abstract

The purpose of this article is to investigate emerging areas of precarious employment in Sweden. Based on the literature on dimensions of precariousness and neoliberalism, this article will begin with an analysis of the transitioning Swedish welfare state and the contextual environment of precarious employment in Sweden. This will serve as a point of departure for the development of an occupational classification scheme including measures of income and employment security. In an empirical analysis, the occupational classification will be applied to a population-based register material including two birth cohorts of employed Swedish residents aged 28–33, with a registered income. The development of income and employment security will be described and discussed. By applying this newly developed measure of precarious employment, this article will provide a platform for future theoretical and empirical research on precarious employment in a transitioning welfare state.

JEL Codes: J40, J82, J88, I38

Keywords

Neoliberalism, precarious employment, Sweden

Introduction

It has become difficult to conduct labour-related research without taking the growing phenomenon of precarious employment into consideration. In many parts of the world,

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the margins of the labour markets are quickly widening and the era of permanent and regulated types of employment being the indisputable norm is definitely over.

The purpose of this article is to explore the emerging areas of precarious employment in Sweden. Where do precariousness and precarisation take place and what forces drive this development? In a first step, this article aims to analyse the contextual environment of precarious employment by identifying mediating factors between contemporary societal phenomena and central features of precarious employment. In a second step, this article will develop an occupational class scheme that may be used to identify the population in precarious employment. In a third step, this scheme will be applied to two Swedish register-based birth cohorts aged 28–33 years in the years between 2000 and 2017.

Precarious employment in times of societal change

Studies on precarious employment and precarious work are navigating within a complex field of study, often characterised by confusing overlapping terminologies, and substantial uncertainty with regard to the central concepts used. Based on the distinctions made by Campbell and Price (2016), Hewison and Kalleberg (2013) and Millar (2017), it may be useful to differentiate between a number of interrelated concepts within the field.

'Precarious employment' usually refers to the properties of the employment contract and the employment relationship. A minimal definition of precarious employment may combine some dimension of economic disadvantage with a measure of insecurity (Kalleberg, 2009; Rubery et al., 2018; Vives et al., 2010). One prominent form of precarious employment is found in different forms of self-employment. Self-employed workers enable employers to cut expenses related to social costs and so-called unproductive time, whereby the self-employed worker often remains dependent on a small number of outsourcers or clients (Moore and Newsome, 2018). Recent developments on contemporary labour markets, such as deregulation of labour laws and the growth of the so-called gig economy, can be more or less regarded as institutionalised forms of widespread economic disadvantage and employment insecurity (Bonneuil and Kim, 2017; Chan, 2013; Judzik et al., 2016). Clearly overlapping with precarious employment, the concept of *'precarious work'* may be used to refer to the actual job performed and the fact that the worker bears the risks associated to this activity (Hewison and Kalleberg, 2013). Referring to the members of the precarious labour force, the concept *'precarious workers'* not only describes individual people performing precarious work, but the term is also used when pointing to the consequences of this type of work for other areas of life. This discussion is important when exploring the different implications that the same type of work may have for different individuals. The consequences of precarious work are modified by a number of social, economic and demographic factors that may cushion or exacerbate potential adversities related to precarious employment (Benach et al., 2014; Campbell and Price, 2016; Julia et al., 2017; Lozza et al., 2013). In contrast to descriptions of individual workers, *'the precariat'*, a term famously coined by Guy Standing (2011), refers to a collective or a class in the making. The term has been widely used, but also critically discussed by those questioning whether the precariat has a distinct structural position in the current economic system, as it consists of a very heterogeneous

group of people with quite dissimilar life and working conditions (Frase, 2013; Neilson and Rossiter, 2008). Finally, the concept of '*precarisation*' can be used to signify a process of reinforcing and establishing precarious employment as a central component within a given labour market. Lorey et al. (2015) describes this process as a technique of governance, in which insecurity and vulnerability are normalised, partly as a result of individual subjects' self-regulation of their own precariousness.

All of these phenomena have become a feature of labour markets throughout Europe, including the Scandinavian countries (Thörnquist and Engstrand, 2011). Notably, this development conflicts with the so-called Nordic model, which is a well-established concept in comparative political science and welfare state research. The strong political focus on socioeconomic equality, a generous and universal welfare state and a high degree of decommodification of labour are central features of the Nordic model, which has been practised in Sweden for decades. However, in many ways, the model's theoretical ideal has survived its empirical showcase. Once a beacon of hope for those believing in a third way between socialism and capitalism, Sweden has experienced a quick adaptation to Organisation for Economic Co-operation and Development (OECD) averages in terms of social equality and labour market standards. Data on labour market performance show that Sweden still performs relatively well in terms of job quantity, job quality and labour market inclusiveness compared with other OECD countries, but there are also indications of negative trends in recent years (OECD, 2018b). For example, Sweden has gone through a rapid deterioration in terms of job security, now having the highest job insecurity among the Nordic countries (OECD, 2018a). Behind this development, it is possible to identify a number of societal factors, which could be separated into three categories.

Institutional changes have led to new conditions in the labour market, educational systems and welfare programmes. This implies a broad understanding of 'institutions' as the 'rules and games of the society', including legal frameworks, but also informal institutions, such as conventions and norms (North, 1990). The past decades have witnessed a number of these changes, including privatisation of public assets, deregulation of the financial markets, austerity programmes targeting the welfare state and the implementation of programmes incentivising individual workers to reconstruct themselves as entrepreneurs for an increasingly flexible (or insecure) labour market (Collins et al., 2016).

Demographic changes in Sweden and in other European countries are mainly driven by an increase in immigration rates and an ageing population. Studies of social inequalities in the European context have long focused on socioeconomic position or class, but we are increasingly experiencing how this dimension of inequality intersects with migration status and age, where younger people are more likely to be in precarious employment (Bessant et al., 2017; Chesters and Cuervo, 2019). A central expression of the complex interaction between migration and social class is the segregated labour market in the Nordic countries. For example, it is far more common that the foreign-origin population works under precarious circumstances (Gauffin and Lyytinen, 2017).

Technological changes refer to the package of innovations that are often described as part of the fourth industrial revolution or the process of digitalisation. Breakthroughs in a number of areas, including robotics, biotechnology, the Internet of Things, three-dimensional (3D) printing, artificial intelligence and fully autonomous transport have the

potential to change manufacturing, management and governance to the core. As we are only in the beginning of this development, it is difficult to say how this will change labour markets and how it will contribute to the development of precarious work. Technological advancements have a clear potential to alleviate workers from tedious tasks, but without proper legislation, they can also create a segmented labour market with high managerial professions on the top, contrasted by increasing precariousness and unemployment in other worker groups, as a result of increasing automatisations of production, transport and routine work.

The rise of neoliberalism and central dimensions of precarious employment

The literature makes several theoretical and empirically driven assumptions about the accurate origins and actual dimensions of precarious employment. The precarisation of global labour markets are commonly associated with political, cultural and macroeconomic development that have occurred since the 1970s. Sometimes discussed in rather loose terms as ‘globalisation’ or ‘economic crises’, other studies refer more explicitly to increasing global competition, the expansion of financial capitalism, labour market deregulation and the rise of neoliberalism (Benach et al., 2014; Caldbick et al., 2014; Julia et al., 2017; Quinlan et al., 2001). Neoliberalism is a multifaceted ideological set of approaches to the relationship between individuals and the market. Modern political theory on the different interrelated dimensions of neoliberalism may provide research on precarious labour markets with a useful conceptual framework (Bernstein, 2012).

First, neoliberalism can be defined as an *economic principle* that has materialised in widespread policy packages of economic deregulative measures, leading to increasing exploitation of the working classes and massive upwards economic redistribution from the population majority to the wealthy elites. This school of neoliberalism studies is commonly associated with theorists like David Harvey, and reconnects to traditional Marxist class theory in that precarisation is understood as a process by which capital owners strengthen their position vis-à-vis the workers (Harvey, 2007). Outside the world of academic inquiry, neoliberalism as an economic principle is frequently associated with the Thatcher and Reagan administrations of the 1980s, but has also been implemented to varying degrees in other countries across the world, including Sweden (Larsson et al., 2012). Second, neoliberalism can be defined as a *mode of rationality* or as a cultural project that ordains individuals to take absolute control and responsibility for their own lives. This dimension of neoliberalism is often attributed to Foucauldian thought on governmentality and has been developed further by writers such as Wendy Brown (2015) and Nikolas Rose (1990). As a cultural project, neoliberalism includes the embodiment of market rationalities by self-regulated subjects – a thought that is illustrated by Brown’s argument on the transition of individuals from homo economicus to human capital (Brown, 2015). Whereas the homo economicus is commonly described as a rational and self-interested entrepreneur within the economic realm, the individual as human capital is forced to act according to market logic in all types of human activity and interaction. Finally, neoliberalism can be viewed as a *statecraft* in which coalitions of public and private actors join forces to survey, control, sanction, and penalise citizens for individual

and societal failures. Michel Foucault's work from the 1970s has created important foundations for other studies on the social meaning and purpose of surveillance and punishment (Foucault, 1979). Scholars such as Loïc Wacquant take some of this work and apply it to the disciplinary regulation of poverty in a state that equates economic hardship with moral turpitude (Wacquant, 2009). Studies of neoliberalism as a punitive statecraft include work on the criminalisation of poverty, the expansion of the correctional populations in publicly or privately owned prison complexes as well as labour-related research on the transition from welfare to workfare (Gustafson, 2008; Kananen, 2012; Teague et al., 2012).

These three dimensions are connected to a number of central aspects of contemporary precarious employment. Neoliberalism as an economic principle is related to the *economic and organisational disadvantage* resulting from precarious employment. Low-paid jobs require precarious workers to work for long hours and perhaps to get a second job. This also connects to the second dimension of neoliberalism as a mode of rationality. The *responsibilisation*, that is, the transfer of responsibility from higher instances, such as employers or the state, to the individual worker, as well as the *temporariness*, are two features of precarious work, which are related to neoliberalism as a mode of rationality. Availability to the market, whenever needed, and holding multiple jobs, is a necessity for precarious workers, but they will not be entitled to any regular income or security if this is not in accordance with their employers' needs. Finally, neoliberalism as a statecraft is implemented in the labour market, as the punitive measures described above are directed towards people living in poverty. The transfer from welfare to workfare, or the combined effect of reduced economic support and the disciplinary measures at time of unemployment, contributes to presenting precarious employment as a preferable option to unemployment. Other aspects of sanctions and surveillance apply to the actual work situation, in which people are increasingly monitored and punished for mistakes.

Emerging areas of precarious employment

Combining these dimensions of precarious work with the societal changes discussed above, we can develop a matrix identifying topical points of departure for studies of precarious employment. We can also think of these points of departures as potential mediators that translate societal changes into central, interwoven dimensions of precarious work (Figure 1).

Economic and organisational disadvantage of the precarious worker is primarily a result of low wages and high costs of living in combination with reduced opportunities for individual or collective organisation. The gradual *dismantling of labour unions and the welfare state* may have increased employers' opportunities to suppress costs of salaries and social benefits. In addition, the implementation of workfare measures has been shown to reduce workers' reservation wage, that is, the lowest wage rate a worker would accept for a particular kind of job (Hohmeyer and Wolff, 2018). This has occurred parallel to significant changes in the patterns of migration to Sweden. Sweden has one of the most segregated labour markets in Europe and has witnessed the formation of a *racialised underclass* (Statistics Sweden, 2017). This is a development that may continue into the future, as many immigrants face difficulties in entering the

Institutional change	▶	Dismantling of labour unions and the welfare state	Labour law reforms promoting temporary employment	Adaption of ALMP measures to workfare
Demographic change	▶	Creation of a racialized underclass	Self-employment as an integration measure	Workfare among immigrants
Technological change	▶	Digitalisation leading to income polarisation	Development of app-based gig-economy	Digital employee surveillance
		▼	▼	▼
		Economic and organisational disadvantage	Temporariness and responsabilisation	Sanctions and surveillance

Figure 1. Translation of societal changes into central dimensions of precarious work.

Swedish labour market due to high educational requirements, but also widespread and documented discrimination and institutionalised racism (Rydgren, 2004; Wolgast et al., 2018). Finally, unregulated technological change may be a third source of increasing economic disadvantage in particular income groups. The literature on *digitalisation leading to income polarisation* acknowledges the benefits of technological advancements, but also warns of the possibility for their unequal division (Degryse, 2016). According to this prognosis, the new polarised labour market would consist of winner and loser jobs. The former includes specialists and developers in software, IT, data management, robot design and computer engineering, whereas a number of highly precarious jobs, such as service workers in the gig economy and routinised work in digital management, are found at the other end of the labour market.

Temporariness and responsabilisation is in many ways connected to economic disadvantage, as temporary and on-call workers will not be able to work the hours needed to get a decent wage. Following employers’ calls for a more flexible workforce, Sweden has passed a number of *labour law reforms promoting temporary employment*. Since 1990, the proportion of employees in temporary employment has increased from around 10% to 17%, and more recent developments shows that on-demand positions have overtaken other types of temporary employment, such as parental leave replacement workers, as the most common form (Alfonsson, 2018). Self-employment by necessity and multiple job holding are other phenomena that go hand in hand with this development. In conjunction with increasing migration to Sweden, the Public Employment Agency and other government bodies have *promoted self-employment and entrepreneurship* as an integration measure. Today, there are concerns of a two-tier segmentation of self-employment that includes a large proportion of workers in precarious employment. The foreign-born population may be of particular concern in this regard, as the difficulty to find regular employment may force many immigrants into precarious self-employment, for example, through various digital platforms. Many

news articles have been written about the *development of the app-based gig economy*, but as of today, empirical research is still largely missing. Partly, this may be related to difficulties in methodology, sampling and study design – large parts of the app-based gig economy work happens in a semi-legal grey area under the radar of tax authorities, trade unions and work environment agencies. Importantly, it is not the technology as such that makes this type of work precarious, but rather the fact that the workers are not hired as employees by the app company. Instead, they serve as individual contractors, paying the app company a proportion of their income for providing them with clients. The first studies that have been made in the area approximate that up to 410,000 workers in Sweden were active in the app-based gig economy in 2016, indicating that this topic will continue to be an important area for labour market studies, in particular those concerned with potentially precarious working arrangements (Holts et al., 2018).

Sanctions and surveillance are not only the subject of philosophical and historical work, but have also been investigated by more applied research on labour markets in Europe and America. Following the gradual transition from welfare to workfare in Sweden, one form of highly monitored and controlled activity is found in government programmes for the unemployed. Designed to resemble and promote regular employment, the *adaptation of active labour market policies to workfare* in Sweden builds on a system of surveillance and sanctioning. The programmes that are designed for the population in long-term unemployment require regular and active participation, reporting, obedience and efficiency, or else financial support will be withdrawn. There are studies which have identified small but positive effects of such measures for future employment, but the programmes have also been criticised for being monotonous, pointless and designed with an intentionally deterring effect that will provoke participants to lower their reservation wage instead of staying in the programmes and qualify for a better employment (Kananen, 2012; Liljeberg et al., 2013; Rosholm and Svarer, 2004). Modified versions of these measures have also been created to promote the integration of newly arrived immigrants into the Swedish labour market. Again, while many of these measures are meaningful, the programmes are not a solution that fits all, and their effects on employment rates are quite mixed. The high unemployment rates among immigrants have led to high numbers of *immigrants experiencing the ongoing transitions from welfare to workfare*. Another dimension of sanctions and control is found in the increasing use of technology for *digital employee surveillance*. This includes relatively modest measures, such as automated systems of time and attendance, but also more far-reaching methods, including software monitoring, telephone tapping, video surveillance, body-worn cameras, global positioning system (GPS) supported location tracking and keystroke logging. In light of the exposed and low-status position of many precarious workers, these measures can form the basis for extreme micromanaging and employer harassment aimed at minor mistakes, suboptimal working speed or bathroom breaks. Digital employee surveillance is often implemented with the excuse to guarantee a good working environment through enhanced workplace safety, but clearly has the potential to create the exact opposite (Anteby and Chan, 2018; Ball, 2010).

Identifying precarious workers through an applied scheme of class

There are a vast number of occupational schemes that classify workers in relationship to each other. The following suggestion takes inspiration from the demand-control-support model by Robert Karasek (1979) and the classic class typology by Erik Olin Wright (2000). Applying a Neo-Marxist understanding of class structure, Wright divides people according to their relationship to the means of production, which creates three classes: the capitalists owning the means of production, the workers selling their labour power to buy their means of sustenance, and the petty bourgeoisie owning and using the means of production without hiring workers. In order to further differentiate between members of the large and heterogeneous working class, Wright highlights the workers' relation to authority and their possession of skills and expertise (Wright, 2000). These two dimensions are connected to the workers' privileges and rewards, which in most cases are translated into an increase of *income* or a 'rent'. A worker, who has a managerial role, that is, exercising authority over other workers as a representative of the owner, will get a 'loyalty rent', whereas the worker who possesses rare skills and expertise will be valuable to the employer due to a supply scarcity and will therefore be able to demand a 'skill rent'. Understanding authority not only as the power one worker can exercise over another worker, but also as the amount of control the worker has over their own work, there is also a connection between authority and expertise, as a skilled worker will be more difficult to control and monitor.

Acknowledging the fact that there will be exceptions in the postulated relationship between income, expertise and control, this is still a useful starting point for an applied class scheme in the study of precarious work. Differentiating between three income levels, the high-income segment is a 'contradictory location' vis-à-vis the owner and the other workers, and a 'privileged appropriation location among employees' as a result of skills, expertise and labour market demands. In other words, the authority and the expertise that these workers possess are in most cases translated into a higher income. This privileged worker location in the class structure is referred to as 'middle class' in Wright's work (Wright, 2000).

Collapsing income, control and expertise into one variable will allow us to include employment security as a second central dimension of precarious employment and still end up with a simple two-dimensional matrix. The increasing proportion of temporary employment and the promotion of entrepreneurship have increased the importance of this dimension in the past decades. Similar to income, we can differentiate between high, medium and low level of employment security. Whereas high-level security employment mainly refers to the fixed or permanent position with a positive income development, medium security employment could refer to temporary positions, whereas the low security level could include unstable on-demand work with very uncertain prospects. Again acknowledging the exceptions in the association between employment security and social benefits, especially outside the Scandinavian countries, we can also assume that high security usually comes with a larger package of benefits compared with the medium- and low-level security employments.

		Employment security		
		High	Medium	Low
Income	High	standard professionals	semi-independent professionals	entrepreneurial consultants
	Medium	employed experts	project employment	freelancers
	Low	traditional workers	agency workers	gig workers

Figure 2. Occupational classification according to income and security.

Now creating a matrix with income level on the y-axis and security level on the x-axis, we end up with a typology shown in Figure 2. These occupational labels only serve an illustrative purpose and, depending on the operationalisation, they will be more or less accurate in any empirical account of a given labour force. Nevertheless, the matrix gives us a good starting point for the identification of precarious workers. In the following section, the occupational classification will be operationalised and applied to two Swedish national cohorts with the particular aim to describe and analyse the development of the demographic profile of workers in precarious employment in terms of gender, education and migration background.

Empirical study of precarious employment using Swedish population registers

Most empirical studies on precarious work make use of survey and interview material, as many definitions of precariousness are based on subjective perceptions of stress, security and control at the workplace. An alternative approach is to operationalise precarious work using existing administrative data, such as Swedish population registers. This rich material includes a large number of social, educational and health-related indicators and provides researchers with excellent data for longitudinal population-based studies. Every Swedish resident is given a unique personal identification number (PIN) at the time of birth or immigration. The PINs enable record linking, which makes it possible to follow a person from birth to death in the population registers. For privacy reasons, the PINs are anonymised when used in research. This study has been approved by the regional ethics committee in the Stockholm region (project no. 2018/1274-31).

Measures

The demographic data include gender, educational level (no secondary education/secondary or more) and country of origin (native or foreign-born). The income variable includes earnings from regular and self-employment and differentiates between three

income levels: high, middle and low income. This study uses an index based on the Swedish base amount (*basbelopp*). This is an annually updated, inflation-adjusted sum that is used to calculate various forms of financial measures, such as benefits, pensions and fees. Based on previous studies from the Scandinavian context, this study defines 'low income' as any yearly income below 3.5 base amounts, 'high income' as any yearly income exceeding 7 base amounts and 'medium income' as any income in between. The level of 3.5 base amounts is regarded as the lowest annual income that can sustain one single person and is approximately equal to the full-time income for the lowest-paid jobs on the Swedish labour market. The level of 7 base amounts provides a single individual with a comfortable income level, which may not be considered high in the total population, but given the relatively young age of the study population still could be regarded as an indicator of an economically advantaged position (Bäckman and Franzén, 2007; Nilsson and Bäckman, 2010; Widding-Havnerås, 2016). These levels can and should be adjusted, depending on context and study population.

The employment security measure includes experiences of unemployment, social assistance payments and income decrease. Whereas the income measure refers to income in the years of follow-up, the security measure includes the experiences in the 5 years prior to year of follow-up. Recent experiences of unemployment, social assistance and income decrease (defined as an income lower than 80% of the previous year's income) are compiled in an index. The population with no such experience in the past 5 years is categorised as being in 'high-security' employment. Workers with some experience of such events (one to three instances of either unemployment, social assistance payments or income decrease in the past 5 years) are classified as 'medium-security' workers, whereas those with more frequent experience of these events (more than three) are classified as 'low-security' workers. The measures of income and employment security are shown in Figure 3. Reflecting the theoretical typology, we end up with a matrix of nine occupational groups. In this empirical analysis, the group with the combined experience of low income and low security are classified as precarious.

Study population

In order to investigate how precarious employment conditions, as defined in this study, have developed during past years, the study will investigate the employment situation in two cohorts of relatively young members of the Swedish labour force who were registered as residents of Sweden in the years of follow-up and had a registered employment. Aged 28–33, the study population can be considered as older members of the group 'young adults'. At this age, the large majority has made the transition from studying or training to working life, but are still beginning their professional careers, and as such more likely to be represented in the precarious labour force (Bessant et al., 2017).

Statistical analysis

Descriptive analyses are used to illustrate the relationship between age and occupational classification in the two different cohorts. In addition, logit models with robust standard errors were conducted in order to provide odds ratios indicating risk for precarious

		Employment security		
		High	Medium	Low
Income	High	> 7 x base amounts No experience of unemployment, social assistance payment or income decrease in the past five years	> 7 x base amounts Singular experience (1 to 3 events) of unemployment, social assistance payment or income decrease in the past five years	> 7 x base amount Frequent experience (more than 3 events) of unemployment, social assistance payment or income decrease in the past five years
	Medium	3.5 – 7 x base amounts No experience of unemployment, social assistance payment or income decrease in the past five years	3.5 – 7 x base amount Singular experience (1 to 3 events) of unemployment, social assistance payment or income decrease in the past five years	3.5 – 7 x base amount Frequent experience (more than 3 events) of unemployment, social assistance payment or income decrease in the past five years
	Low	< 3.5 base amounts No experience of unemployment, social assistance payment or income decrease in the past five years	< 3.5 base amount Singular experience (1 to 3 events) of unemployment, social assistance payment or income decrease in the past five years	< 3.5 base amount Frequent experience (more than 3 events) of unemployment, social assistance payment or income decrease in the past five years

Figure 3. Empirical measure of occupational classification according to income and security.

employment based on gender, educational level, country of origin, age group and cohort. To determine potential differential effects of the demographic variables in each cohort, an interaction term was included in the model. Stratified analyses by cohort were conducted for all significant interactions between cohort and the demographic variables. All analyses were conducted in Stata v.15.

Occupational classification of Swedish workers according to income and security

The study follows the two cohorts at a crucial age (28–33 years) and a crucial time (2000–2017). The study design allows for a number of assumptions and questions to be investigated. We can assume that this age span often includes an important transition into more stable segments of the labour force and that precarious employment will become less common with increasing age (age-effect). At the same time, for reasons discussed above, precarious work has become more common with time (period effect). The investigated time period includes the global economic recession of 2008, with a demonstrated connection to adverse labour market outcomes, particularly among young workers, immigrant workers and low-educated workers and males. This pattern reflects a general disadvantage on the labour market – the exception being men, who generally enjoy a more advantageous labour market position compared with women, but may be

Table 1. Description of the study population.

	Cohort 1	Cohort 2
Year of birth	1972–1977	1979–1984
Year of follow-up	2000–2010	2007–2017
Total N	526,329	512,748
Sex		
Men	53.0%	52.7%
Women	47.0%	47.3%
Education		
High	75.4%	85.5%
Low	24.6%	14.5%
Country of origin		
Native	90.0%	84.3%
Foreign-born	10.0%	15.7%
Annual income ^a		
Mean	257,589	276,185
Standard deviation	74.00	77.29
95 % Confidence interval	257,444–257,734	276,034–276,337

^aAdjusted for inflation, presented in 2017 SEK (Swedish Krona).

disproportionately affected by the adverse outcomes for the industrial sector in times of a recession (Hoynes et al., 2012).

Table 1 shows the study population divided by cohort at age 28. The income variable provides the average annual income for the entire age span 28–33 years presented in 2017 SEK (Swedish Krona). Figure 4 shows the income distribution in the total study population.

Tables 2 and 3 show the occupational classification by gender, educational level and country of birth at age 30. As expected, the occupational classification looks generally more favourable among male, high-educated and native workers compared with women, low-educated workers and non-natives. In all groups except the low-educated population, the situation seems slightly better in the second cohort compared with the first, which is a surprising finding in light of the expectation of a more pronounced precarisation of the labour market in more recent years. Additional descriptive analyses indicate an expected improvement of occupational position with increasing age. The age trends in occupational classifications are provided as Supplementary Material (<https://journals.sagepub.com/doi/suppl/10.1177/1035304620919206>).

Table 4 shows odds ratios indicating risk for precarious employment based on gender, educational level, country of origin, age group and cohort. Compared with males, workers with high education and natives, females, workers with low education and non-natives have around three to four times higher odds of a precarious employment, respectively. The older age group (older than 30 years) and the second cohort members show a lower risk for precarious employment compared with the younger workers and the first cohort members. Interaction analyses suggest that the disadvantage related to

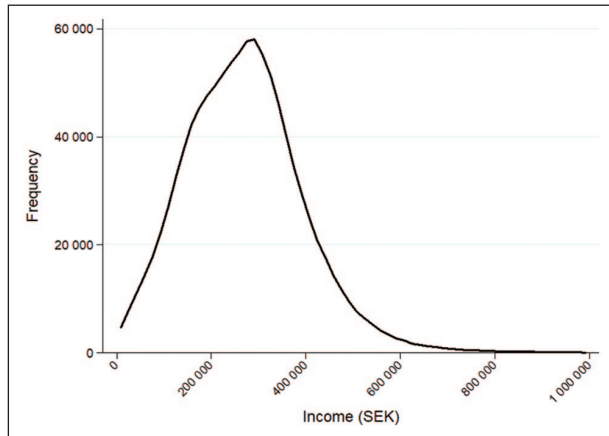


Figure 4. Income distribution in total study population.

female gender and country of origin is more pronounced in the first cohort, whereas low education has a stronger effect in the second cohort. The cohort stratified analyses, also shown in Table 4, further illustrate these interaction effects.

Opportunities and challenges of using register material in studies of precarious employment

The purpose of this article was to give a theoretical and empirical account of precarious employment in the current Swedish labour market.

The first step included an analysis of the contextual environment of precarious employment and the identification of mediating factors between contemporary societal developments and central features of precarious employment. This article discussed how institutional, demographic and technological change affected three features of precarious employment, which were derived from the academic literature on dimensions of neoliberalism: economic disadvantage, temporariness and responsabilisation, and sanctions and surveillance.

In a second step, this article developed an occupational classification scheme for identification of the population in precarious employment. Based on the previous discussion on central features of precarious employment, a nine-cell matrix was developed with three levels of income on one axis and three levels of employment security on the other. Based on the traditional class typologies of Erik Olin Wright and the demand-control-support model, the income and employment security dimensions also imply features such as control, expertise and social benefits.

In a third step, this article applied the occupational classification scheme to two register-based national cohorts of Swedish residents to assess the development of precarious employment among young adults aged 28–33 over time. The analyses suggest that precarious employment, as defined by this article, has become less common in recent years. The fact that female gender and country of origin was associated to stronger

Table 2. Occupational classification at age 30 in cohort I (1972–1977).

	Gender		Education			Country of birth	
	Men (n = 292,853) (%)	Women (n = 262,535) (%)	High (n = 413,799) (%)	Low (n = 130,874) (%)	Native (n = 491,934) (%)	Non-native (n = 63,454) (%)	
High income, high security	26.2	8.4	20.0	12.2	19.1	8.0	
High income, medium security	14.5	7.8	12.8	5.8	11.3	11.5	
High income, low security	2.0	0.8	1.5	1.3	1.4	2.1	
Medium income, high security	16.8	10.9	12.6	19.5	14.9	7.5	
Medium income, medium security	20.5	29.8	24.5	25.3	24.7	26.5	
Medium income, low security	8.2	7.5	7.1	10.8	7.3	12.7	
Low income, high security	0.4	0.5	0.3	0.6	0.4	0.5	
Low income, medium security	6.1	23.6	14.4	13.1	14.0	17.2	
Low income, low security	5.3	10.7	6.8	11.4	7.0	14.1	

Table 3. Occupational classification at age 30 in cohort 2 (1979–1984).

	Gender		Education			Country of birth	
	Men (n = 286,929) (%)	Women (n = 257,819) (%)	High (n = 449,754) (%)	Low (n = 76,490) (%)	Native (n = 445,744) (%)	Non-native (n = 99,004) (%)	
High income, high security	30.0	12.1	23.8	12.9	24.0	10.7	
High income, medium security	19.0	11.9	16.3	9.6	15.5	16.2	
High income, low security	2.0	0.7	1.3	2.4	1.2	2.5	
Medium income, high security	10.7	9.1	9.8	12.5	10.8	6.3	
Medium income, medium security	20.2	30.9	25.0	24.2	24.9	26.7	
Medium income, low security	6.4	5.4	4.9	13.3	5.0	10.4	
Low income, high security	0.4	0.5	0.4	0.7	0.4	0.6	
Low income, medium security	7.0	22.0	13.9	12.0	13.6	16.3	
Low income, low security	4.3	7.4	4.7	12.5	4.7	10.4	

Table 4. Odds ratios (95% CI) from logit models with robust standard errors for precarious employment.

	Total population			Cohort 1		Cohort 2	
	OR	95% CI	p for cohort interaction	OR	95% CI	OR	95% CI
Female	3.48	3.42–3.53	<.001	3.86	3.78–3.94	3.06	2.99–3.14
Low education	4.05	3.98–4.12	<.001	3.07	3.00–3.13	6.11	5.95–6.28
Non-native	4.13	4.06–4.21	<.001	4.30	4.18–4.41	3.76	3.66–3.86
Age over 30	0.50	0.50–0.51	<.001	0.49	0.49–0.50	0.51	0.51–0.52
Cohort 2	0.56	0.55–0.56	–				

OR: odd ratio; CI: confidence interval.

disadvantage in the first cohort may reflect the general and ongoing development of increased labour market participation among women and immigrants in Sweden. In the case of the decreasing gender gap, the results could also be a reflection of the assumption that males are more affected by the adverse effects of economic recessions compared with female workers. In contrast to gender and country of origin, low education had a more adverse effect in the second cohort, which may indicate a growing importance of educational qualifications for a good occupational position.

The observed overall decline in the proportions of precarious positions may seem surprising in light of contrasting evidence showing the increasing precarisation of the labour market. There are however potential explanations for this finding. First, there are some obvious limitations to the potential of population registers when measuring precarious employment. In particular, the security measure is crude and imperfect, as it lacks both essential information on type of employment contract as well as indications of workers' subjective perception of their situation. Second, in spite of the global recession, the economic development of the past decades has been strong in Sweden with beneficial effects for general income development. However, this general improvement is more pronounced in some population segments. Some groups, such as workers with low education, have not experienced any improvement whatsoever, comparing the second cohort to the first. This notion of inequality connects to a third potential explanation to the findings. The study population is a selected group, given the inclusion criterion of employment in the year of follow-up. In other words, the individuals in the study population have qualified for a registered employment, and the study excludes the groups that have never formally entered the Swedish labour market. This also points to the changing nature of precarious work and the fact that some of it may take place outside formal employment relations, therefore outside the scope of official labour statistics. The semi-formal character of much precarious work may perhaps be of particular relevance in the Swedish context, as the long tradition of significant labour market regulation could make it particularly attractive for some employers to use existing loopholes and find their workers in the legal grey zones of the Swedish labour market. Examples of this include dependent self-employed workers, short-term labour immigrants, workers in the gig economy, but also an unknown proportion of undocumented immigrants, which given

the high number of rejected asylum applications in recent years, will likely grow larger in the near future.

Nordic register material has many strengths, which makes it attractive for researchers of quantitative studies in social and medical sciences. Few other data sources capture entire populations with the level of detail and the possibility of longitudinal follow-up like Nordic registers, which allows for studies of rare outcomes, also in marginal populations and with minimal risk of missing data or loss to follow-up. However, in light of the development on the Swedish labour market, two main challenges for register-based studies of precarious employment become clear.

First, the currently available register information is not necessarily suited to measure central aspects of precarious employment, such as workers' lacking control or type of employment contract. Nevertheless, the rich information on income development, periods of unemployment and social welfare payments is valuable, and in combination with survey- or interview-based studies, register material can deliver important insights into the development of precarious employment in the Nordic countries. The second challenge relates to the ability of the register to cover the entire population performing precarious work. Researchers utilising Nordic register material have traditionally emphasised the unique potential of the registers to capture not only samples, but rather the total study population. However, given the trend towards a more hidden labour market that takes place outside the scope of any formal registers, this may be an increasing problem for future labour market studies in the Nordic countries.

Conclusion

While illustrating some of the strengths with register material, the study also highlighted two main challenges for register-based studies of precarious employment: limitations when it comes to measuring certain central aspects of precariousness, and possible difficulties in capturing the entire population performing precarious work that occurs outside of the formal labour market. This points to the importance of approaching the research topic of precarious employment using a multitude of data materials and methods, where register-based studies may deliver one out of many contributions.

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Supplemental Material

Supplemental material for this article is available online.

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