

Underemployment of highly qualified labour in advanced capitalism: trends and prospects

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“Employers know that they can hire worldwide now...so, there is limitless supply of people... who can do the job.... they’re all qualified, most of them are actually over-qualified.... I’m a wage slave basically, I don’t think we have very much social status.... we are replaceable workers... I mean, the employer holds all the cards really. We are salaried employees...no different from any other worker.”
(*Owen, automation engineer 2017*)ⁱ

Post-secondary graduates and professional employees in particular are widely regarded as highly qualified strategic resources in advanced capitalist ‘knowledge economies.’ However, there is mounting evidence that these ‘knowledge workers’ are experiencing increasing underemployment and diminishing involvement in continuing learning, as well as some decline in job satisfaction. Trends in these factors are documented primarily on the bases of a series of national surveys of the labour force in Canada between 1982 and 2016. Prospects for more critical attitudes to working conditions as well as employment and educational reforms to reverse current trends are considered.

Keywords: graduate underemployment; professional employee underemployment; continuing learning; attitudes to underemployment

Introduction: Underemployment in Advanced Capitalism

The concept of underemployment generically signifies constraint on the application of an agent’s abilities to achieve any given task or objective. The constraint may be externally applied or self-imposed. The consequence is a waste of recognized potential in any given activity. When applied to the labour force of advanced capitalist societies, underemployment refers to an excess of educational qualifications, skills or knowledge in relation to the requirements of available jobs. In the changing labour markets and labour processes of advanced capitalism there can be various other mismatches between workers’ abilities and job requirements, including undereducation of workers, skill shortages in labour markets and skill obsolescence related to technological change.

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But there is a growing research consensus that underemployment (a.k.a. as underutilization, overqualification, overeducation or overskilling) is the most substantial and significant of these mismatches (McGuinness, Pouliakas and Redmond 2017, 36).

The potential application of the specialized knowledge qualifications of post-secondary graduates and the actual application of the specialized knowledge of professional employeesⁱⁱ generally have been assumed to be of most strategic importance to the development of advanced capitalist 'knowledge economies.' The present study summarizes trends in dimensions of underemployment based on a unique time series of the general Canadian labour force from 1982 to 2016.ⁱⁱⁱ Particular attention is devoted to the extent to which underemployment of highly qualified workers is related to their continuing learning practices and job-related attitudes.

Basic Dimensions of Underemployment

Participation in paid work has two basic dimensions: time employed and skill and knowledge use.

Time underemployment: At the extreme, there is total unemployment which includes those who have given up looking for employment, discouraged workers who look occasionally when opportunity occurs and the officially unemployed who have actively looked for employment in the past several weeks. Virtually all of these people would take employment if it were offered to them. Then there are those with part-time employment. This includes some who prefer part-time employment in combination with other unpaid work and other commitments, as well as involuntary part-timers who want or need full-time employment but cannot get it. It is the involuntary part-time employees who are most commonly identified as underemployed in terms of time. Involuntary part-time employment is now commonly measured but has remained a

relatively small proportion of the employed labour force and varies with business cycles (e.g. Carnevale and Smith 2015; Warren 2015; ILO 2019). It will not be considered further in this analysis.

Skill and knowledge use in job: among those who have paid employment, there are wide variations in the extent to which workers are able to utilize their knowledge and skills to get jobs and perform them. Knowledge has commonly been measured in terms of formal educational qualifications while skill estimation has entailed various estimations of specific technical abilities. Overqualification and overskilling are both indicators of surplus human capital but they have been found to be weakly correlated in the few previous studies that have addressed multiple forms of educational and skill mismatch (e.g. Flisi et al. 2014). There is no necessary correspondence between formal educational qualifications and actual skills brought to and required for the job. In particular, it has been demonstrated that many workers with limited educational credentials have had deep practical skills to perform their jobs and that these skills may also be significantly underemployed (e.g. Livingstone and Sawchuk 2004). In the current study, we will focus on educational qualifications mismatches and specifically credential underemployment, the extent to which workers have at least one greater credential than required to enter their current jobs. In contrast to the cyclical nature of involuntary part-time employment, credential underemployment may now be increasing cumulatively in many advanced capitalist societies.

In addition, whatever employment time and skill and knowledge use, there is *subjective underemployment*, the extent to which workers feel they are underemployed in or overqualified for available work. Underemployment may not be of much political consequence unless workers perceive themselves to be underemployed.

There are various challenges to conceptualizing and measuring attainments, requirements and mismatches which have been scrutinized in prior literature (e.g. Desjardins and Rubenson 2011; Leuven and Oosterbeek 2011; McGuinness et al. 2017). In this paper we will concentrate on self-reports of educational attainments and credential requirements for jobs to construct a measure of credential underemployment, the extent to which highly qualified workers' educational qualifications exceed the entry requirements for their current jobs, as well as their self-reported subjective overqualification and overskilling. In addition, we will assess relations of credential underemployment with involvement in continuing learning activities and job-related attitudes. The main focus will be on those who have attained post-secondary credentials.

At least since the 1970s, analysts have been expressing concerns about underemployed post-secondary graduates (e.g. O'Toole 1975). In the 21st century era of 'mass higher education,' such concerns are becoming more pervasive (e.g. Green and Henseke 2016). One of the few recent comparative surveys of trends (CEDEKOP 2018, 42) finds that: "the prevailing trend in the data is one of recent job finders entering into jobs demanding fewer, rather than more, qualifications and skills than they have" and that post-secondary graduates are predominantly affected (p. 68). The same survey (CEDEKOP 2018, 85) concludes that: "39% of EU employees have skills that are not being fully used in their jobs and so do not have potential to develop their skills further." Another comparative study has found overqualification averaging around 25 percent on various measures for the general labour force in mostly advanced capitalist countries (McGuinness et al. 2017, 22) Still another study found the incidence of credential underemployment self-reported to range from 13 per cent of the overall workforce in Italy to 31 per cent in Japan (OECD 2013, 171). A subsequent comparative study also based on the OECD's 2013 Survey of Adult Skills (Green and Henseke 2016, 524) found levels of graduate underemployment ranging from around

10 percent in Finland to over 45 percent in Japan. It should be noted that Canada, along with the U.K and the U.S., all had relatively high levels of over 30 percent on this measure. But, as Green and Henseke (2016, 516) observe, comparative studies of the prevalence, factors behind and social effects of graduate underemployment across countries are remain scarce. This is particularly true of trend analyses.

There has also been recent increasing concern about the underemployment of professionals, those who are employed in specialized occupations requiring post-secondary qualifications but unable to use them (e.g. Skiba and O`Halloran 2013; Mitchell and Zatzick 2015; Van Hettinga 2015). It should also be noted here that younger workers and visible minorities have consistently been found to be more highly underemployed both in the general labour force and among post-secondary graduates (e.g. Livingstone 2010; McGuinness et al. 2017).

Contradictions of Paid Employment and Formal Education

In the capitalist mode of production, the owners of the means of production hold preponderant prerogative over whom they hire, what qualifications they expect from job applicants and under what conditions they require job holders to perform their labours. They are indifferent to or encouraging of surpluses of trained workers among whom they can chose. These features of paid employment may be mitigated by collective actions by workers, government regulations or general social norms. But it is sacrilege for anyone but employers ultimately to decide what goes on in the workplaces they own. Governments and labour unions now generally accept this situation and rarely raise issues touching these owner prerogatives directly. On the other hand, formal education in capitalist societies has generally been regarded as responding to more diverse demands of many learners for more organized knowledge, to various interest groups in

addition to employers, as well as to mediations by governments. So, inevitably there have been gaps or mismatches between the qualifications expected by employers and the qualifications achieved by the potential labour force at any particular moment in capitalist economies. Such gaps have historically led to adjustments in qualifications required, more advanced forms of formal education or both, as argued, for example, in Bowles and Gintis (1976) correspondence thesis. However, we may now be reaching a tipping point at which the aggregate qualifications of the labour force irreversibly exceed the qualifications required by advanced capitalist workplaces, a condition we might term chronic underemployment.

Advanced capitalist economies today are generally characterized by the following features:

- dominance by large and increasingly concentrated private corporations of increasing global reach, with large commodity market shares, large managerial hierarchies, and capacity to draw on international labour markets increasingly beyond the effective reach of nationally organized labour and elected governments (Vitali et al. 2011; Hart-Landsberg 2015);
- continued ascendancy of capitalist owners over hired labour in terms of discretion in both hiring requirements and working conditions (Estanque and Costa 2012; Panitch and Gindin 2013);
- employed and potential labour forces that are rapidly becoming more highly qualified for paid labour in terms of educational credentials and other usable knowledge available through digital technology (Livingstone 2009).

One consequence of these features is posited to be the increasing underemployment of more and more highly qualified workers in advanced capitalist economies. This paper will trace trends

in underemployment and effects on workers, with a primary focus on highly qualified workers who are widely regarded as pivotal for the sustainable development of emergent 'knowledge economies.' Much of the discussion of 'knowledge economies' has stressed the growing importance of such highly qualified workers in increasingly automated and computerized production systems (e.g. Drucker 1999). But this discussion has devoted little attention to trends in the extent to which these qualifications are effectively utilized. This preoccupation requires redress with much more attention to actual working conditions for and application of the talents of such highly qualified workers.

Data Sources

Data sources include a series of five national surveys of the entire labour force in Canada conducted in 1982, 1998, 2004, 2010 and 2016. All five national surveys have very similar design in terms of questions about occupations, production relations, working conditions, learning activities and economic attitudes. The Canadian Class Structure Survey (CCS 1982) conducted in 1982 by Clement and Myles (1994). provided a basic template for the later surveys. The later surveys began in 1998 (NALL 1998), including a larger focus on unpaid as well as paid work and formal and informal adult learning (Livingstone 1999). The following national surveys in 2004 (WALL 2004) and 2010 (WALL 2010) used the same format and permitted documentation of trends in relations between these dimensions of work and learning (Livingstone 2012). The 2016 survey was conducted as part of the SSHRC-funded Changing Workplaces in a Knowledge Economy project (CWKE 2016 Survey). The 2016 survey focuses only on the employed labour force (Livingstone and Raykov 2016). In all of these surveys, all respondents are over 18 years of age and coverage is limited to those who speak English or

French and reside in a private home in one of the 10 Canadian provinces. In all surveys, the data reported are weighted by the best available population estimates for age, sex, educational attainment, and regional distributions. Statistical differences noted in the text are all significant at least at the 95 percent level of confidence using gamma measures of association. Further information on the research design, data sources in this paper and related analyses may be found at: www.oise.utoronto.ca/clsew/research/changing_work_in_a_knowledge_economy.

Modern Canada had its origins as a white settler colony and has had a branch plant economy highly dependent on Britain, France and now the United States, with a primary basis in the harvesting and export of staple resources such as wheat and bitumen, and with relatively less priority to diversify into more knowledge-based industries compared to many other advanced countries (Laxer 1989). But Canada is now a fully developed capitalist economy with a highly trained hired labour force. This labour force has the highest level of post-secondary education completion in the world. The labour force has also retained a relatively high level of unionization compared to the declines since the 1970s in most advanced capitalist economies (Raykov and Livingstone 2014). This context should be taken into account in considering the empirical findings presented here.

General Changes in Employment Class Structure and Working Conditions

In prior publications based on these surveys, we have documented the changing employment class structure of the Canadian labour force during the 1982-2016 period (see Livingstone and Scholtz 2016; Livingstone and Watts 2018). The main employment classes include large and small employers, the self-employed, managers including top and middle managers and supervisors, as well as non-managerial employees. Non-managerial employees include service

workers involved in basic clerical, sales and service jobs, industrial workers involved in basic material goods production and professional employees who are distinguished from other non-managerial employees by advanced post-secondary training in specialized occupations.

Professional employees should also be distinguished from those in other professional classes (i.e. professional employers, self-employed professionals and professional managers) with whom they have often been conflated in much prior research (see Johnson 1977; Livingstone 2014).

There have been several significant changes in the employment class structure of employment through this period. Perhaps most significant change has been an increase in the numbers of non-managerial professional employees, roughly doubling from 1982 to more than 20 percent of the employed labour force in 2016. Conversely, the numbers of industrial workers in private material-goods-producing sectors were reduced from about 30 percent to 18 percent. Similar shifts are also the most significant recent changes in the employment class structure of most other OECD countries (ILO 2016).

In terms of general working conditions, the rapid diffusion of new information technologies has led to widespread changes in most sectors. Computerization and automation of many jobs, along with offshoring of more portable jobs, have provoked extensive organizational restructuring of the employed labour force. There has been very substantial decline of private sector unionized manufacturing jobs with long-term security and benefits (e.g., Livingstone, Smith and Smith 2011). The growth of precarious employment has been extensively documented (Vosko 2006). According to our surveys, the majority of hired employees have experienced some combination of downsizing, increases in part-time work, job rotation, and multi-skilling in their paid workplaces during the 1998-2016 period. The 2008 Great Recession was particularly destabilizing in financial terms and business cycles have continued to induce fluctuations in

specific employment indicators. Unpaid household work along with community volunteer work still make up about half of the work Canadian adults do, but discretionary volunteer work appears to be declining in relation to increasing pressure and uncertainty of paid employment. Wage levels have stagnated while household debt levels have increased significantly. The general working conditions of the employed Canadian labour force have definitely become more unstable during the first part of this century.

Growth of post-secondary completion *and* credential underemployment

In the context of rapidly changing employment conditions, the popular demand for more advanced formal education to contend for jobs has grown rapidly. As Table 1 shows, about a quarter of the labour force had completed a post-secondary credential in 1982; by 2016 around two-thirds had done so, a very rapid increase. The proportion with a credential greater than required for their job was about one-quarter in 1982 but credential underemployment increased to almost 40 percent in 2016.

(Table 1 about here)

Credential underemployment of highly qualified employees

As Table 2 summarizes, the credential underemployment level of post-secondary graduates was already higher than the general labour force in 1982 and has remained higher as the general level of credential underemployment has increased. By 2016 about 45 percent of all those with post-secondary degrees in the employed labour force were underemployed in the sense that they had attained at least one educational credential higher than their job currently required for entry. Post-secondary credential requirements for the general labour force have almost doubled since

1982 but post-secondary attainments have increased by about 270 percent. The numbers of highly qualified applicants are outracing increasing educational requirements.

(Table 2 about here)

Professional employees, those highly qualified non-managerial employees who actually have jobs that require highly specialized knowledge, have almost doubled their credential underemployment rate during this period, from 14 percent to 26 percent. More and more of those in jobs that actually require post-secondary credentials for entry are obtaining a greater credential than their job requires. Both post-secondary graduates and professional employees have grown as proportions of the labour force, while the proportions able to get commensurate jobs have decreased significantly over this period. Increasing concern about underemployment of those with post-secondary degrees appears to be occurring in most advanced capitalist countries (e.g. Green and Henseke 2016). Institutionalized training regimes surely vary in effectiveness of skill matching between countries (e.g. Saar and Liis Räs 2017) and entry credential requirements may vary to some extent in business cycles. But it does appear that, at least in Canada, a trend toward general *cumulative* increase in credential underemployment of highly qualified workers is occurring.

Computer skill requirements and skill underemployment

Computerization of jobs is probably one of the most rapidly diffusing technological changes ever experienced by the labour forces in advanced capitalism. Table 3 summarizes the rate of change in relation to job requirements in Canadian paid workplaces since the 1980s. Only a small minority at the outset used computers of any sort. With the development of personal computers and then the internet, by the end of the first decade in this century nearly all workers were

digitally engaged and used computers in their jobs, a very rapid and inclusive dissemination of a new information technology. There were undoubtedly wide variations in the level of computer skill required in these jobs. A 2014 European Union survey found that most of those in the employed labour force required use of ICT skills and estimated that around 15 percent experienced a ‘digital skills gap’ (Cedefop 2018, 59). There is widespread recognition that digitalisation and technological changes are shaping skill demands at a fast pace yet, as McGuinness et al (2017, 15) note: “the responsiveness of the supply side of the equation along with the issue of skills development and utilisation in firms is often overlooked.” A comparative set of surveys conducted in 2003 and 2012 to estimate workers’ relevant skill levels in the Canadian labour force concluded that: “Canadians are among those most equipped with the new skills demanded in the 21st century” (Programme for the International Assessment of Adult Competencies 2013).

(Table 3 about here)

The pertinent question here is the extent to which attained computer skills match those required in these rapidly computerizing workplaces. One might indeed expect significant underqualification as workers struggle to catch up with such rapid changes. However, as Table 3 shows, our 2004, 2010 and 2016 surveys that have measures for workers’ self-reported computer skill match as well as requirements, suggest that around half of employed workers have continued to have higher computer skills than they are able to use in their current jobs (only around five percent said they were underqualified). The results are very similar for both post-secondary graduates and professional employees in all three surveys, with over 50 percent indicating continuing underemployment of their computer skills and five percent or less saying they were underqualified. In all three surveys, computer skill match was strongly correlated with

general subjective skill match for the general labour force ($\gamma = .266$ to $.344$, $p = .000$), as well as for post-secondary graduates ($\gamma = .264$ to $.348$, $p = .000$) and also for professional employees ($\gamma = .256$ to $.404$, $p = .000$). In the wake of the very quick diffusion of computer literacy requirements, highly qualified workers' computer learning activities appear to be keeping them ahead of such requirements. Of course, there may be overestimation bias in self-reports. But the most likely primary explanation here is that workers' continuing job-related learning has served to fill whatever actual gaps have emerged in most workplaces.

So, what has been happening to continuing learning more generally for highly qualified workers in such rapidly changing work organizations?

Underemployment and continuing learning

For as long as records are available, those who have attained higher levels of formal schooling have also been more likely to continue to engage in further continuing adult education courses. But this relationship may now be changing. As documented above, levels of completion of post-secondary education have continued to grow rapidly in recent decades. In contrast, there is mounting evidence that both participation rates in and amount of time devoted to further education have been declining in Canada (Livingstone and Raykov 2016) as well as the UK and other western European countries (Green et al. 2015). Table 4 summarizes the diverging trends in Canada since the 1980s. Post-secondary graduates have now increased to about two-third of the employed labour force, one of the highest global levels, whereas general participation rates in further education have declined from over half to around 40 percent in the past decade.

(Table 4 about here)

As Table 5 shows, similar declines are found among both post-secondary graduates and professional employees. It may be particularly notable that participation rates in further education have declined to minorities for post-secondary graduates. There is also a significant negative correlation between credential underemployment and participation in further education in all surveys between 1998 and 2016 for post-secondary graduates (γ -.148 to -.333, $p = .000$).

We can posit that recent decline in further education is related to the increasing over-supply of post-secondary graduates who offer greater qualifications than employers need. There may be diminishing motivation for employers to provide time or material incentives for their employees to pursue further education. At the same time, highly qualified underemployed workers may have diminishing interest in pursuing courses offering little evident benefit in such jobs. The changing working conditions in this period also suggest an employed labour force increasingly preoccupied with coping with increasingly unstable job conditions, still compelled to take care of essential unpaid household work, and perhaps with decreasing opportunities to engage in more discretionary activities – including further education. It is also possible that, in workplaces increasingly immersed in computerized information networks, more continuing learning is occurring closely integrated with digitized labour processes and less visible to workers themselves – knowledge work and learning becoming increasingly fused. What we can be reasonably sure of, as Table 5 shows, is that post-secondary graduates who are underemployed have had lower reported rates of participation in further education than matched or underqualified graduates and that their participation rates have continued to decline in recent times. Aggregate increases in credential underemployment do appear to have a general depressing effect on the incidence of further education. Although lifelong learning continues to be promoted as the resolution to economic problems, there appear to be diminishing marginal

benefits for participating in its most organized forms of further education, especially for those highly qualified workers with already identified surpluses of credentialled knowledge.

(Table 5 about here)

However, two distinct dimensions of lifelong continuing adult learning have often been conflated in many surveys and should be distinguished: organized further education courses and training programs on one hand and informal learning activities that people engage in through their own individual or collective initiative on the other (Livingstone 1999). Our research and many other studies have found that most participation in further education has been job-related, that informal job-related learning has been much more extensive than formal courses, and that those who engage in courses have also been more likely to engage in informal job-related learning (Livingstone 2009). What is most notable here is the finding in this series of Canadian surveys of work and learning that the incidence of informal job-related learning also appears to be declining in this period. Informal learning is much more diffuse than further education and harder to estimate. But, self-reported participation in job-related informal learning declined from 90 percent in 2010 to 75 percent in 2016. Further, as Table 6 summarizes, the estimated volume of time that workers report spending on job-related informal learning topicsatisfactions appears to have declined since 1998 for the general labour force, from around 7 hours per week to under 4 hours. Results for post-secondary graduates and professional employees are very similar, dropping from over 6 hours to 4 hours or less. The vital importance of on-the-job skill accumulation is recognized by most analysts (e.g. McGuinness et al. 2017, 28; Cedekop 2018, 87). The ‘iceberg’ of informal job-related learning will presumably endure as the foundation of continuing renewal of the knowledge and skills of the labour force. But, if we assume that further education and informal job-related learning are both necessary for the continuing renewal of the

working knowledge and skills of the labour force and ‘knowledge workers’ in particular, apparent declines in both further education and informal job-related learning are worrying.

(Table 6 about here)

Attitudes to Underemployment

Trends toward increasing credential underemployment may not be of much political or policy consequence unless coupled with more critical attitudes toward working conditions. Here we will consider links of reported credential underemployment with subjective attitudes toward underemployment and skill use, as well as job satisfaction and some indicators of critical attitudes toward working conditions.

Credential Underemployment, Subjective Underemployment and Perceived Skill Use

In addition to increasing incidence of credential underemployment as indicated by reported surplus educational credentials over those required for job entry, there has also been increasing expression of subjective underemployment in terms of perceptions that workers are overqualified for their jobs. Subjective underemployment, the extent to which respondents perceive themselves to be overqualified for their jobs, increased from 20 percent in 1998 to 35 percent in 2016 for the general labour force, from 22 percent to 38 percent for post-secondary graduates and from 12 percent to 30 percent for professional employees. The significant correlation between credential match and subjective match increased accordingly for the general labour force ($\gamma = .260$ to $.404$, $p = .000$) and post-secondary graduates ($\gamma = .224$ to $.396$, $p = .000$) and more slightly for professional employees ($\gamma = .228$ to $.263$, $p = .000$).

One of the most relevant questions about skill use that has been asked in a number of countries in surveys over time in recent years is workers' own assessment of the extent to which their skills correspond with their own work, the basic options being: 1 I need further training to cope well with my duties; 2 My duties correspond well with my present skills; 3 I have the skills to cope with more demanding duties. Table 7 summarizes the basic findings for 2010 and 2015 in several European countries as well as 2010 and 2016 in our Canadian surveys.

(Table 7 about here)

Two things are clear from this table. First, around half of the employed labour force in all of these countries now feel that their skills are underutilized in their current jobs. Secondly, in most countries, this sentiment grew substantially between 2010 and 2015. Canada appears to be the exception in this regard. But Canadian workers already expressed the highest level of skill underutilization in 2010 (51 percent) and only slightly less (44 percent) in 2016. It is at least arguable that subjective perceptions of skill underutilization have become issues of widespread concern in the employed labour force of many advanced capitalist countries.

The Canadian surveys permit further assessment of subjective views of qualifications matching and skills matching, or what have been termed 'overeducation,' and 'overskilling.' The combination of overeducation and overskilling may be most discouraging for highly qualified workers who have invested relatively large amounts of time and effort in their intentional learning projects (see McGuinness et al. 2016). Between 2010 and 2016, the proportion of post-secondary graduates who saw themselves as *both* overqualified and unable to use their skills adequately increased from 20 percent to 35 percent; professional employees may have experienced slighter increase (from 13 to 18 percent). But we find increasingly significant associations between these measures of overeducation and overskilling from 2010 to 2016 for

the general labour force ($\gamma = .339$ to $.476$, $p = .000$), post-secondary graduates ($\gamma = .365$ to $.482$, $p = .000$) and professional employees ($\gamma = .387$ to $.461$, $p = .000$). We conclude that those in the Canadian labour force in general and highly qualified labour in particular are becoming increasingly aware of both their credential and skill underemployment.

Job Satisfaction

Green and Henseke (2016, 531-33) found that, among post-secondary graduates across many advanced capitalist countries, credentially-matched graduates report significantly less dissatisfaction with their current job than underemployed graduates while in a few countries the differences are either not or only weakly statistically significant. An extensive review (McGuinness et al. 2017, 20) observes that some studies indicate that overeducation in terms of educational qualifications leads to lower job satisfaction while others find that is only the case when overeducation is also accompanied by overskilling (i.e. having skills to cope with more demanding jobs).

Standard measures of job satisfaction are available in the Canadian surveys between 2004 and 2016. There is a consistently significant association between this variable and employment class (2004: $\gamma = .165$, $p = .000$; 2010: $\gamma = .120$, $p = .001$; 2016: $\gamma = .162$, $p = .000$). In 2016, for example, two-thirds of employers say they are *very* satisfied with their jobs compared with only one third of industrial and service workers; professional employees are closer to these other non-managerial workers at 40 percent. No significant relationships were found between credential underemployment and job satisfaction in earlier surveys for the general labour force or post-secondary graduates, but the relationship between these variables became significant in 2016 for both the general labour force ($\gamma = -.117$, $p = .000$) and for post-secondary graduates ($\gamma = -.121$, $p =$

.000). Professional employees who are credentially underemployed have not yet expressed significantly less satisfaction with their jobs than other professional employees in any of these surveys (2016 $\gamma = -.048$, $p = .424$). Further, when we examine job satisfaction for those who are both overeducated and overskilled among the general labour force, post-secondary graduates and professional employees, they all express only marginally less satisfaction than other employees.

Job satisfaction measures are at best very diffuse indicators of workers' attitudes toward their jobs. In particular, especially in conditions of scarcity of stable secure jobs, many workers typically may express some satisfaction that they have any kind of job (e.g. Rose 2003). Majorities of those in all class positions and matched or mismatched credential statuses in all these surveys have expressed at least moderate satisfaction with their jobs. In light of such mild expressions of dissatisfaction by post-secondary graduates in spite of credential underemployment, as well as their relatively high scores on indicators of social trust, civic participation, and political efficacy, some analysts point to the enduring positive effects of higher education (Green and Henseke 2016). They effectively dismiss significant prospects for underemployed post-secondary graduates' political expression of disaffection with their current working conditions. However, such conclusions have not been based on recent direct assessment of the political attitudes of highly qualified workers toward their jobs.

Political Attitudes

In addition to increasingly widespread subjective awareness of underemployment among highly qualified workers, we can at least posit that these concerns may be increasingly linked with attitudes of support for workers' rights and more progressive workplace re-organization. It should be noted that the earliest research on political attitudes of underemployed graduates found

more adherence to optimistic individualistic entitlements than collective rights (Derber 1979) and at least one more recent general survey has found similar expressions of individual optimism (Pew Research Center 2012).

One question that has been asked in our surveys from 1982 to 2016 is whether or not respondents agree that “Owners of corporations make gains at the expense of their workers.” Around two-thirds of the hired labour force, post-secondary graduates and professional employees all agreed with this proposition throughout this period, indicative of substantial disaffection with the benefits workers receive for their labour. The association between subjective underemployment and such critical views of corporate owners has become significant in the 2016 survey: for post-secondary graduates ($\gamma = .210$, $p = .000$) and professional employees ($\gamma = .146$, $p = .038$), as well as the hired labour force in general ($\gamma = .190$, $p = .000$). Once more, the highly qualified who see themselves as both overeducated and overskilled are marginally more likely to express more critical views, as are younger and visible minority workers. But further analyses in these surveys of issues such as the right to strike and workers’ ability to run things without bosses have found little evidence of general trends toward more critical attitudes toward working conditions and no significant differences between the underemployed highly qualified labour force and other workers. At least within the limits of survey analysis, an increasingly highly qualified labour force increasingly aware of its own underemployment does not yet appear to be connecting such awareness with increasingly critical political attitudes.

Concluding Remarks

This continued series of surveys of the Canadian labour force finds that credential underemployment – in terms of greater educational qualifications than required to get jobs – is

increasing significantly in its general incidence in the labour force and among highly qualified workers in particular. Subjective perceptions of both overeducation and overskilling now appear to be widespread. Conditions of underemployment also now exhibit significant relations with declining engagement in further education courses and informal job-related learning. The most comparable recent study of trends in European countries concluded that:

Overskilled employees are usually found in jobs with [relatively] limited task complexity (given their higher overall skill level) and this inhibits their further skill development on the job.... policy-makers should be greatly concerned by high overskilling rates in labour markets, as they are a sign of stagnant growth in skills and skill needs (Cedekop 2018, 14, 74).

The declines of participation in both further education and informal job-related learning found in these Canadian surveys and the increasing association with underemployment for highly qualified workers serve to further underline this concern.

It may be that underemployed post-secondary graduates and professional employees are continuing to tolerate such waste of their skills because they appear to gain some relative income benefits from their overqualifications (see Green and Henseke 2016). But the very recent substantial increases in the numbers of these highly qualified workers and the increasing connection with a sense that their qualifications and skills are being wasted in these jobs are unprecedented. New entrants into emergent 'knowledge economies' continue to pursue more advanced degrees to contend with job entry requirements but thereby increase their underemployment. Appeals from policy-makers to pursue lifelong learning as a primary response to coping with workplace change continue. The recent survey evidence suggests that such appeals are of diminishing credibility for many workers. At some point, underemployed post-secondary graduates, professional employees and non-managerial workers generally may become more receptive to economic reforms to close these skill gaps (Livingstone 2010). As the

recent Cedekop study (2018, 74) advises: “Policy-makers should seek to improve workplace innovation and job quality.”

However, there has been very little research to date that has assessed the effects of underemployment, overeducation or overskilling on macroeconomic indicators (see McGuinness 2017, 21). The most notable exception is Ramos et al. (2012) who examined the effect of overeducation on GDP growth in six European countries and found that overeducation was associated with *higher* GDP growth. The authors attribute this finding to the high productivity of overeducated workers. Labour movements concerned with wasted worker talents ignore such findings at their peril. In the absence of substantial social movements promoting more equitable workplace re-organization and mobilizing increasingly overqualified workers’ widespread sense of underemployment, corporate profitability increasingly based on these underemployed workers is likely to continue to trump prospects for more decent sustainable work in ‘knowledge economies.’

Notes

ⁱ Respondent to CWKE interview with engineers.

ⁱⁱ Professional employees are distinguished from other non-managerial employees (i.e. service workers and industrial workers) in this analysis by their advanced post-secondary training and employment in specialized occupations. Professionals in other employment class positions (i.e. professional employers, self-employed professionals and professional managers) are excluded from this analysis, as are other business owners and managers. Owners set the terms of their own employment and they delegate managers to control working conditions of other non-managerial employees. Hence, the matches between their qualifications and job requirements are not directly comparable with those of non-managerial employees and should not be confounded with the latter.

ⁱⁱⁱ The Changing Work in a Knowledge Economy (CWKE) project which conducted the 2016 national survey was funded by the Social Sciences and Humanities Research Council of Canada (SSHRC project no. 435-2015-0732). Funding has been provided between 2015 and 2019. The SSHRC also funded the previous collaborative research networks that conducted the 1998, 2004 and 2010 national surveys. The 2016 national survey was conducted by the Leger Research Intelligence Group. The CWKE project also included representative surveys and in-depth interviews with Canadian engineers and nurses. Further information on the general research design, questionnaires, data bases and other publications of the CWKE project and the prior research networks can be found at: <http://www.oise.utoronto.ca/clsew/Research>, as well as in Livingstone (2010).

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Table 1. Post-secondary completion and credential underemployment, employed labour force, Canada, 1982-2016 (%)

	1982	1998	2004	2010	2016
Post-secondary attainment	25	49	56	64	68
Credential underemployment	24	28	34	31	39

Sources: CCS 1982; NALL 1998; WALL I 2004; WALL II 2010; CWKE 2016.

Table 2. Trends in credential underemployment, employed labour force, Canada, 1982-2016 (% underemployed)

Employment class	1982	1998	2004	2010	2016
Post-secondary graduates	34	43	43	38	45
Professional employees	14	19	21	22	26
Service workers	26	30	39	39	49
Industrial workers	29	33	35	39	42
Total labour force	24	28	34	31	39

Sources: CCS 1982; NALL 1998; WALL I 2004; WALL II 2010; CWKE 2016.

Table 3. Computer skill requirements and skill underemployment, employed labour force, Canada, 1989-2016 (%)

	1989	1994	2000	2004	2010	2016
Required to use computer on job	38	51	77	85	95	97
Have greater computer skill than required by job	-	-	-	51	49	49

Sources: Statistics Canada 1989, 1994, 2000; WALL I 2004; WALL II 2010; CWKE 2016.

Table 4. Post-secondary educational attainment and annual participation in further education, employed labour force, Canada, 1982-2016 (%)

	1982	1998	2004	2010	2016
Post-secondary completion	22	49	56	61	68
Further education	24	49	55	54	42

Sources: CCS 1982; Devereaux 1985; NALL 1998; WALL I 2004; WALL II 2010; CWKE 2016.

Table 5. Credential underemployment and annual participation in further education, employed labour force with post-secondary credentials, and professional employees' participation in further education, Canada, 1998-2016 (%)

Post-secondary graduates	1998	2004	2010	2016
Underemployed	64	55	52	39
Match	76	63	66	50
Underqualified	77	74	76	49

<i>All graduates</i>	71	61	61	45
<i>N</i>	365	2885	750	1879
Professional employees	75	67	72	51

Sources: NALL 1998; WALL I 2004; WALL II 2010; CWKE 2016

Table 6. Informal job-related learning, employed labour force, Canada, 1998-2016 (average estimated hours per week)

	1998	2004	2010	2016
General labour force	6.9	5.2	5.5	3.5
Post-secondary grads	6.2	3.8	4.9	4.1
Profess. employees	6.5	5.0	4.7	2.9

Sources: NALL 1998; WALL I 2004; WALL II 2010; CWKE 2016

Table 7. Skill to cope with more demanding duties, Canada and selected European country labour forces, 2010-2015 (%)

Country	2010	2015
Italy	28	65
Norway	27	62

United Kingdom	40	58
EU	32	57
Greece	47	56
Spain	37	55
France	30	56
Sweden	34	55
Denmark	25	55
Germany	27	53
Canada	51	44

Sources: Eurofound 2018; WALL II. 2010; CWKE. 2016.

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