SPECIAL REPORT

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ARE MEDIUM-SKILLED JOBS IN CANADA EXPERIENCING A HOLLOWING OUT, U.S.-STYLE?

Highlights

- The issue of job market polarization -- or the relative decline of medium-skilled, medium-paid employment in favour of jobs at the low and high ends of the skills distribution -- has captured significant attention in the United States and Europe in recent years.
- Our examination of trends in Canada's labour market over the past decade reveals more of a uni-polar (i.e., an "L-shape") rather than the bi-polar ("U-shape") pattern recorded in the U.S. Put another way, high-skilled jobs in Canada have experienced a notable increase in relative share, whereas both medium- and low-skilled employment has lost ground.
- Another major distinction between the two countries is that Canada has registered a considerably less pronounced swing in jobs from the middle to the high end of the skills spectrum. This trend can be chalked up in part to the Canadian economy's greater weighting towards resources and more prolonged strength in construction activity since 1999 that has generated jobs for many middle-skilled Canadians.
- Despite the movement up the skills curve, there has been relatively little wage polarization in Canada. Indeed, wage growth across the major occupational groupings has been running in a surprisingly tight range of 2.5-3.5% annually over the past decade regardless of skill level.
- The fact that some of the most highly demanded occupations in the job market -- chief among them trades, technicians and many professional groups -- have not recorded above-average wage increases is at odds with the perception that there is a large-scale skills mismatch in Canada's labour market. More research in Canada is required to better understand the underlying dynamics at play between current (and future) labour supply and demand.

The issue of job-market "polarization" has captured significant attention in the U.S. and other advanced economies in recent years. This longer-term trend has been characterized by the relative decline of medium-skilled, medium-paid jobs against a backdrop of growing opportunities for both highly-skilled, highly-paid and low-skilled, low-paid employment. Indeed, a 2011 report by TD Economics entitled, "Caught in the Middle" added to the powerful evidence of polarization in the U.S. job market. Other reports have noted a similar trend taking shape in Europe. Here, we examine whether this development is being mirrored in the Canadian labour market.

How do we define middle-skilled?

The definition of what constitutes medium-skilled, medium-paid occupations is open to debate. In U.S. literature, there has been broad agreement that this segment of the job market requires some formal education – usually beyond high school – but not a 4-year undergraduate degree at a university or

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TABLE 1: EMPLOYMENT IN CANADA FROM 1999-2010									
	Total Employment ('000s)			Level Share (% of total)			% Change in Share		
	1999	2007	2010	1999	2007	2010	1999-2007	2008-2010	1999-2010
All Occupations	**14,318**	**16,721**	**16,964**	**100.0**	**100.0**	**100.0**	**-**	**-**	**-**
High Skills	**4,785**	**5,773**	**6,159**	**33.4**	**34.5**	**36.3**	**3.3**	**5.2**	**8.6**
Managers	1,281	1,413	1,448	8.9	8.4	8.5	-5.6	1.0	-4.6
Professionals	2,323	2,939	3,221	16.2	17.6	19.0	8.3	8.0	17.0
Technicians	1,181	1,421	1,489	8.2	8.5	8.8	3.1	3.3	6.5
Medium Skills	**8,197**	**9,425**	**9,254**	**57.3**	**56.4**	**54.6**	**-1.6**	**-3.2**	**-4.7**
Sales	1,142	1,500	1,501	8.0	9.0	8.8	12.4	-1.4	10.9
Office & Administration	1,829	2,199	2,216	12.8	13.2	13.1	2.9	-0.6	2.3
Production and Repair	1,788	2,055	2,084	12.5	12.3	12.3	-1.6	0.0	-1.6
Operators and Labourers	3,438	3,672	3,453	24.0	22.0	20.4	-8.5	-7.3	-15.2
Low Skills	**1,335**	**1,523**	**1,551**	**9.3**	**9.1**	**9.1**	**-2.3**	**0.4**	**-1.9**
Protective Services	114	135	143	0.8	0.8	0.8	1.6	4.0	5.7
Food Preparation and Janitorial	880	1,016	1,015	6.1	6.1	6.0	-1.1	-1.5	-2.7
Personal Services	341	372	393	2.4	2.2	2.3	-6.6	4.3	-2.7

Source: Statistics Canada, TD Economics.

college. The medium-skilled category thus includes many white-collar, administrative and sales occupations as well as blue-collar production, operator and labourer positions. In contrast, managers, professionals and technical workers – those typically armed with at least four years of post-secondary education – are deemed to be employed in highly-skilled, highly-paid jobs. At the other end of the spectrum, low-skilled, low-wage workers encompass a number of job types in the personal, food services and protective (i.e., security) services. Generally, in these areas, "on-the-job" training is usually sufficient.

The 2011 TD report goes into some detail on the main drivers of job-market polarization in the United States, most of which would appear to be global in nature. Medium-skilled, middle-wage workers tend to carry out functions that follow precise, repetitive procedures. As such, these workers have become increasingly vulnerable to computer automation or outsourcing to low-wage jurisdictions, such as China and India. In contrast, both the complex decision-making requirements of high skilled jobs and the face-to-face interactions of many low-skilled service occupations make it more difficult for technology to replace them. Case in point: while technology can enhance the efficiency of workers in many low-skilled occupations, a person is still needed to clean a home, cut hair and take care of children.

In addition to these global trends, the perception of a difficult job market for those in the middle segment has been fuelled in Canada by the relative decline of the manufacturing sector, which traditionally has been home to many middle-skilled positions that have paid decent wages and benefits. Canada has not been alone in facing a longer-term reduction in manufacturing's footprint. Nonetheless, after outperforming other G-7 countries in the 1990s, factory output and jobs in Canada have underperformed since the early 2000s. An over-reliance on a relatively slow-growing U.S. economy, a thickening of the Canada-U.S. border and a surge in the Canadian dollar have all conspired against manufacturing exports.

What is the evidence on polarization in Canada?

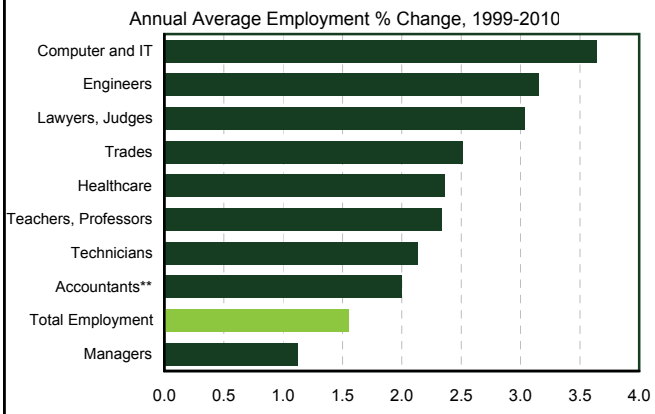
In order to test the perception of job-market polarization in Canada, we obtained custom detailed employment and wage data from Statistics Canada for 123 occupations. The data were neatly arranged into the ten occupational buckets across the three major skill levels in keeping with the U.S. analysis. Table 1 shows the changes in relative employment shares across the major occupational groupings. Key highlights of the results presented in this table include:

- Not surprisingly, the share of high-skilled workers in Canada's job market surged at the expense of the middle-

skilled component. Still, the low-skilled segment also experienced a decline in share over the period, bucking the rising trend seen the United States. It's important to stress that the figures in the chart are relative. Even Canadian medium-skilled jobs on aggregate have recorded a modest net increase in absolute terms since 1999.

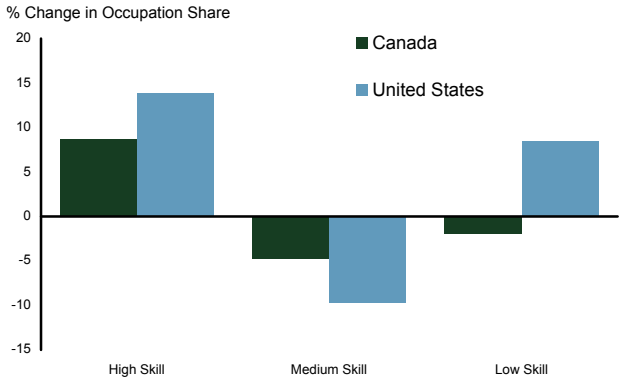
- Among **high-skilled workers**, the gain in relative share has been driven by a hefty jump in jobs in professional and technical occupations. Chart 1 shows that demand in these highly-skilled areas has been quite broad-based, supported in part by rising government spending in areas such as health and education. Employment in the government-related occupations of health and education rose by about 300,000 positions alone over the decade.
- In contrast, demand for highly-skilled, highly-paid managers has experienced a relative decline since 1999. A closer examination shows that the weakness in this category has been most predominant in two sectors – retail and communications – where efforts to boost efficiency and streamline businesses have been stepped up in recent years.
- Consistent with the prevailing view, the secular decline in manufacturing activity in Canada has left a pronounced mark on the **medium-skilled**, medium-wage part of the curve. In particular, the operators and labourers group – which comprises machinists and other factory line occupations – has seen its share of employment drop by around 4 percentage points alone over the past decade.
- While the negative impact of the decade-long decline in forestry and manufacturing activity has also spilled over into a number of occupations in the production and repair category, this area of the job market has been delivered an offsetting boost by middle-skilled jobs linked to the growing energy, mining and construction sectors. Construction-related trades in particular posted double-digit increases in their shares since the late 1990s and now account for almost 5% of total Canadian employment.

CHART 1: HIGH DEMAND OCCUPATIONS*



* All areas are considered high skill except trades, which are medium skill.
** Includes investment advisors.
Source: TD Economics, Statistics Canada.

CHART 2: CANADA JOB MARKET "UNIPOLAR", NOT "BIPOLAR" AS IN THE U.S.*



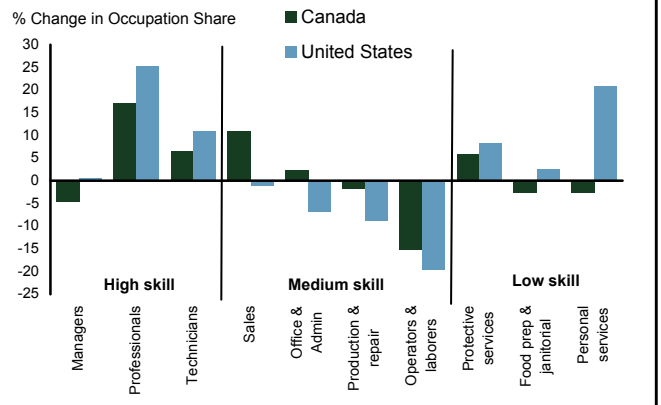
* Canada's data encompasses 1999-2010, whereas U.S. data cover 1999-2009.
Source: TD Economics, Statistics Canada, BLS, David Autor (MIT)

- The overall decline in the medium-skill, medium-paid share has been further mitigated by a sharp gain in sales-related occupations. Within that component, wholesale trade representatives as well as sales and service supervisors recorded large increases, while retail salespersons and sales clerks lost ground.
- Jobs in office and administration actually managed to maintain their job share over the past decade. While demand for clerical occupations did decline sharply, administrative positions in the financial sector as well as public administration and regulatory occupations increased.
- The share of **low-skilled** jobs in Canada slipped only modestly during the 1999-2010 period. In light of increased emphasis on security since 9/11, protective services gained employment share, while the proportion of jobs in food preparation, janitorial and personal services edged lower.

Canada uni-polar, the U.S. bi-polar

Charts 2-3 sheds light on how the change in Canada's job market distribution has followed more of an L-shape (or "uni-polar") rather than the U-shape ("bi-polar") pattern in the United States. Drilling down further, the relatively strong

CHART 3: NORTH OF THE BORDER, THE WINNERS WIN MORE, THE LOSERS LOSE MORE*



* Canada's data encompasses 1999-2010, whereas U.S. data cover 1999-2009.
Source: TD Economics, Statistics Canada, BLS, David Autor (MIT)

demand for low-end jobs in the United States reflected an outsized 20% surge in the share of personal services jobs. In Canada, this area actually recorded a modest dip.

Another major distinction between the two countries is the considerably less pronounced swing in employment from the medium- to high-skills segments in Canada. This can be chalked up in part to the Canadian economy's greater orientation towards resources and more prolonged strength in construction activity that has generated jobs for many medium-skilled Canadians. Perhaps more strikingly, the Canadian job market has managed to post rising proportions in middle-skilled areas that in theory have been most vulnerable to the impact of automation, notably administrative and clerical positions. Although a strong rebound in government spending following the 1990s era of austerity could provide a partial explanation for this strength, it also could reflect a lower investment intensity in equipment and software among Canadian businesses relative to those in the United States. Lastly, the drop in managers' share in the Canadian labour market was not replicated south of the border.

The table on page 2 includes a more up-to-date snapshot of the change in the Canadian skills distribution since the start of recession in 2008. The subsequent period has been characterized by a further intensification in the movement from middle-skilled towards higher-skilled employment. Some of this rotation is likely to prove temporary, however, as it reflects the particularly heavy toll on middle-skilled jobs in manufacturing and resources during the downturn. Since 2010, hiring in these two sectors have started to make up some lost ground, implying a reversion back towards the less dramatic decade-long trend.

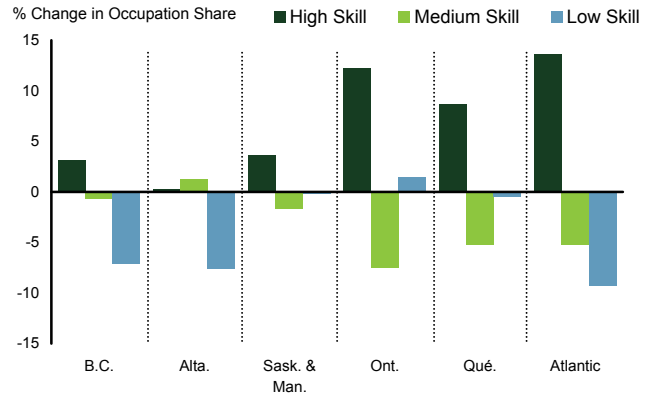
East posts largest swings to high-skilled jobs, west distributions more stable

Regional trends were also examined based on the 10 category skills classification. As shown in Chart 4, the most notable shifts from the medium- to the high-skilled segments of the employment market have taken place in the Atlantic, Ontario and Quebec. In those jurisdictions, the job growth has been concentrated among professional workers as well as – in the case of the Atlantic – technicians. Among these provinces, Ontario stood out as the only one to register an increase in its low-skilled share, although not nearly to the extent as that experienced south of the border. In that province, increases in the protective, food preparation and janitorial service occupational shares more than counter-balanced a reduction in personal services. In contrast, the west has experienced a somewhat more stable change in the job distribution over the past decade, as the impact of the commodity boom has helped to "lift all boats". Indeed, in Alberta, the medium-skilled area of the job market actually gained share, led by particularly robust growth in trades and other production and repair categories.

Are high-skilled workers enjoying a growing wage premium?

We now turn to the question of whether – and, if so, to what extent – wage polarization has taken place in the Canadian job market.[1] Given the heavy tilt in job creation towards higher-skilled occupations, declining unionization rates and growing global competitiveness, there has been a common view that wages for high-skilled workers have continued to "run away" from those in lower-skilled jobs.

CHART 4: LARGEST SWING TO HIGH SKILLED IN THE EAST



Source: TD Economics, Statistics Canada, BLS, David Autor (MIT)

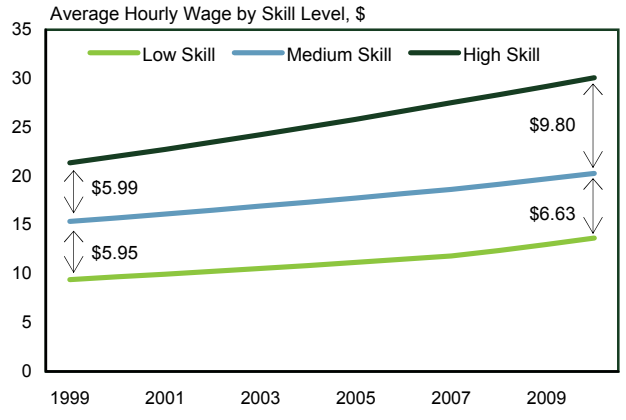
TABLE 2: EVOLUTION OF WAGES IN CANADA*	Average Wage			Annual % Wage Change			Ratio of Wage to Average Total Wage		
	1999	2007	2010	1999-2007	2008-2010	1999-2010	1999	2007	2010
All Occupations	**16.81**	**21.10**	**23.23**	**2.9**	**3.3**	**3.0**	**1.00**	**1.00**	**1.00**
High Skills	**21.36**	**27.53**	**30.07**	**3.2**	**3.0**	**3.2**	**1.27**	**1.30**	**1.29**
Managers	21.65	29.13	32.08	3.8	3.3	3.6	1.29	1.38	1.38
Professionals	23.27	29.50	32.04	3.0	2.8	2.9	1.38	1.40	1.38
Technicians	17.27	21.85	23.86	3.0	3.0	3.0	1.03	1.04	1.03
Medium Skills	**15.37**	**18.66**	**20.28**	**2.5**	**2.8**	**2.6**	**0.91**	**0.88**	**0.87**
Sales	11.60	14.44	16.43	2.8	4.4	3.2	0.69	0.68	0.71
Office & Administration	15.22	18.65	20.44	2.6	3.1	2.7	0.91	0.88	0.88
Production and Repair	15.84	19.81	21.68	2.8	3.0	2.9	0.94	0.94	0.93
Operators and Labourers	16.45	19.75	21.00	2.3	2.1	2.2	0.98	0.94	0.90
Low Skills	**9.42**	**11.82**	**13.65**	**2.9**	**4.9**	**3.4**	**0.56**	**0.56**	**0.59**
Protective Services	11.58	14.36	16.48	2.7	4.7	3.3	0.69	0.68	0.71
Food Preparation and Janitorial	8.60	10.97	12.80	3.1	5.3	3.7	0.51	0.52	0.55
Personal Services	10.79	13.23	14.82	2.6	3.8	2.9	0.64	0.63	0.64

* Wages include bonuses & commissions but do not take into account pensions and other benefits.
Source: Statistics Canada, TD Economics.

Table 2 shows the wage premium commanded for higher-skilled workers in Canada relative to those in the middle and lower ends of the scale during the 1999-2010 period. These differentials are consistent with studies that have pointed to high rates of return to higher education on average, particularly within the knowledge-intensive industries.[2]

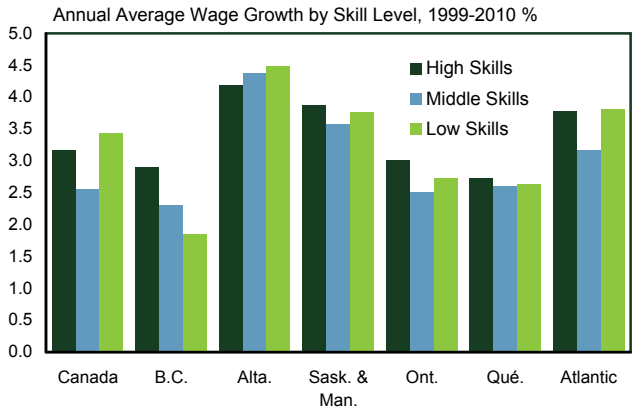
Still, the average annual growth in wages across the 10 skills groups has run in a strikingly tight range of 2.5-3.5% annually. As such, the gap in average wage levels between skilled workers and their lower-skilled counterparts has continued to increase since 1999, but not as much as one might have suspected (Chart 5). This contrasts with the picture in the U.S., where the wage differential between high-skilled and low skilled jobs has risen dramatically over the past few decades largely on the back of falling real wages for low-skilled workers.

CHART 5: HIGH SKILL WAGE PREMIUM RISES MODESTLY



Source: TD Economics, Statistics Canada.

CHART 6: REGIONAL WAGE GROWTH BY SKILL LEVEL QUITE UNIFORM



Source: TD Economics, Statistics Canada.

Chart 6 provides the regional breakdown in wage growth across skills groups, where variations in wage trends have been somewhat more apparent. Indeed, reflecting tighter labour markets, the Prairies recorded the fastest overall compensation gains. Even in the west, however, the story of relatively uniform wage growth across the major skills categories holds, save British Columbia where higher skilled workers have managed to outperform by a sizeable margin.

Some factors can be put forward to help explain why gains in lower-skill wages have managed to keep pace with that of the high-skilled workforce. Two of note surround changes in minimum wage policy and the resilience of manufacturing wages in the face of declining payrolls. As Chart 7 reveals, after keeping minimum wages quite stable in the 1990s, provincial governments implemented significant hikes in the 2000s from coast to coast, thus supporting wages in many low-skilled service and non-tradable industries. In some provinces – notably, those on the east coast – the minimum wage rate has virtually doubled since 1999 after remaining stagnant in the decade prior. And within manufacturing, employment peaked in 2002 and has declined steadily since. Yet wages in the related middle-skilled occupations, such as machine operations, grew until 2007. For the decade as a whole, wages were relatively stable.

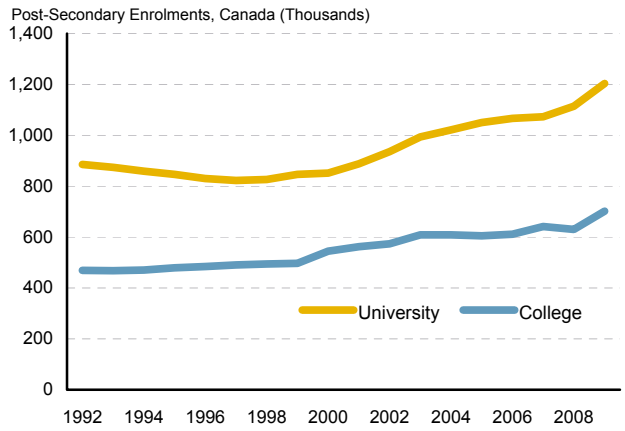
The other side of the coin is the absence of notable upward pressure on wage growth for high-skilled workers over the past decade. Some have pointed to the implosion of the IT bubble during the first half of the 2000s as a factor that dealt a severe blow to wages in areas such as computer and information systems as well as some technical occupations. However, after declining in the early 2000s, wages in IT-related professions have since sprung back over the past 5-7 years.

CHART 7: RECENT MINIMUM WAGE INCREASES BROAD BASED

* No increase in British Columbia over the 2002-2007 period

Source: Human Resources and Skills Development Canada

CHART 8: ENROLMENT NUMBERS RISING



Source: Statistics Canada, Labour Force Survey. Dates represent start of school year.

CHART 9: WAGES IN FAST-GROWING OCCUPATIONS

Source: TD Economics, Statistics Canada.

A potentially more important culprit in keeping high-skilled wage growth in check in the 2000s is linked to the rise in the enrolment rates in post-secondary education (PSE) since the late 1990s, which has led to some diminishment in returns to schooling in recent years (Chart 8). Although demand for graduates of universities and colleges has been growing, so too has supply. Indeed, PSE enrolment rates have increased, reflecting the impact of the large echo generation cohort. The resulting increase of university- and college-level entrants to the labour market since the early 2000s – at a time when most baby boomers remained attached to the labour market – could have played a role mitigating upward pressure on wages in high-skilled occupations.

These factors may have worked to compress the wage premium for higher-skilled occupations over the past decade, but they don't provide the smoking gun on what has quickly become the most-talked-about challenge facing Canada's economy and job market – a mismatch between the skills demanded by employers and those supplied by the labour force. Reports of rising unfilled jobs in trades, technicians and other high-skilled workers have abounded in recent years, particularly in the resource-based western provinces. Market pressures would presumably have led to a significant upward pull on wages. Yet, as Chart 9 reveals, wage gains in both the fastest growing demand areas and provincial economies have been rising at roughly the same moderate trend rate as seen in other occupational areas.

The wage figures are at odds with the perception that there is a large-scale mismatch in Canada's job market. There is no lack of headlines underscoring the difficulties that employers have in finding people with the right skills and in Canadians finding jobs in areas they've trained for. However, other official data – including job vacancies and the quarterly Bank of Canada survey on the per cent of firms facing a labour shortage – point to a far-less-worrisome story.

In short, research efforts in Canada need to be ramped up in order to better understand the underlying dynamics at play – both recently and going forward – between the types of jobs being created, the supply of skills available, and how employers are coping with any gaps. This research would help to better inform governments as they consider longer-term public policy prescriptions. TD Economics will do its part to crack this all-important nut in the coming months.

Bottom Line

The distribution of Canada's job market has been increasingly tilting towards higher-skilled employment in recent years – marking some divergence from trends in the U.S. job market, which has been characterized by strength at both the high and low ends of the skills spectrum. Despite the movement up the skills curve in Canada, there has been relatively little polarization in wage growth over the past decade. The absence of notable upward wage pressures in highly-demanded areas of the market raise questions as to the degree of skills mismatch that has been occurring under the surface.

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Endnotes

1. The wage figures in the table include bonuses and commissions but do not take into account differences in pension and other benefits, the length of the work-week, or non-quantifiable benefits such as degree of job security – factors that could favour workers in high skilled jobs. It remains unclear how much these non-wage factors might enhance the returns to schooling. Consider that many high-skilled occupations are self-employment in nature, meaning that non-wage benefits are not received
2 CD Howe "The Payoff: the Returns to University, College and Trades Education in Canada 1980-2005.