Centre for International Governance Innovation

FONDATION PIERRE ELLIOTT TRUDEAU FOUNDATION

Diversity Dividend

Canada's Global Advantage

APPENDIX

CANADA 150

Preface

This appendix was written to support the *Diversity Dividend: Canada's Global Advantage* report by Bessma Momani and Jillian Stirk. Kira Williams designed and implemented the quantitative methodology behind the report and wrote this appendix.

Introduction

Literature Review

Theoretical effects of cultural diversity on economic outcomes. Economic theory is ambiguous about the overall impacts of cultural diversity (Nathan and Lee 2013, 368). General theories for cultural diversity's impact include demographic, economic and sociological accounts (Blau 1977; Ozgen, Nijkamp and Poot 2011, 1; Richard, Murthi and Ismail2007, 1215). Proposed economic mechanisms for *increases* in economic outcomes include production complementarities, diffusion of knowledge, better access to international markets, higher rates of entrepeneurship and an increased variety of goods, services and skills (Bellini et al. 2008, 2; Nathan and Lee 2013, 368). Human capital-based theories posit that cultural diversity may have human capital which is relatively rare, thereby conferring special competitive advantages to the firm (Richard 2000, 165). Examples of demographic mechanisms feature greater concentration of immigrants in science and engineering occupations, self-selection of immigrants on higher education or skill levels, and matching of immigrants to firms' target population (Cox 1994; Hunt and Gauthier-Loiselle 2010, 32; Docquier and Rapoport 2011). Sociologists argue that culturally diverse firms may be better positioned to handle other changes, high levels of diversity may reduce group identities, thereby reducing conflict, and diverse firms may cause stakeholders to invest in their products and services by signalling a "diverse reputation" (Iles and Hayers 1997; Richard et al. 2004, 256; Roberson and Park 2006, 6).

A number of economists and sociologists contrastingly propose mechanisms for *decreases* in economic outcomes due to increased cultural diversity. Diverse firms may face higher transactions costs and lower trust, hindering innovation, discrimination and economic exclusion (Nathan and Lee 2013, 368). Bellini et al. (2008, 6) argue that diversity reinforces racism, prejudice and may lead to inoptimal provisions of public goods, since governments tend to spend less in more diverse societies (La Porta et al. 1999; Alesina et al. 2003). Sociologically, higher cultural diversity may be associated with decreased workforce satisfaction and cooperation, increased conflict, and generate prejudice amongst those within culturally dominant viewpoints, who feel challenged or threatened by multiculturalism (Richard et al. 2004, 256; Verkuyten 2005). A potentially unifying account to positive and negative perspectives is that enhancing cultural diversity creates initial transactions costs, but eventually overcomes barriers and generates exchange of knowledge, ultimately benefiting the firm (Richard, Murthi, and Ismail2007, 1217). Many of these theories remain largely untested and difficult to compare — issues which disciplinary differences may reinforce. Theoretical results may also remain ambiguous due to the lack of studies over a larger number of geographies and at lower spatial resolutions (Bellini et al. 2008, 5; Nathan and Lee 2013, 369). Our study approaches this problem with a novel geography and of spatial unit.

Existing evidence of cultural diversity's effects on economic outcomes. Existing studies analyse the relationship between cultural diversity and economic outcomes over a number of Western, industrialized geographies for many spatial units, including countries, regions, cities and firms. Some sources of data include business surveys, census data and administrative and economic data. Most studies support positive impacts of cultural diversity. General productivity gains have been found in studies from the Netherlands, Denmark, New Zealand, the United States, the United Kingdom and Germany (Bellini et al. 2008, 3; Ozgen et al. 2011; Parrotta, Pozzoli and Pytilkova 2011; Mare, Fabling and Stillman 2011). US data, for example, demonstrate that higher cultural diversity is associated with higher wages and productivity of natives, the former causing the latter (Bellini et al. 2008, 3). Ottaviano and Peri (2006, 33) found higher diversity associated with increased employment growth, wages and capital rents in 12 EU countries. Scholars also showed diversity to positively impact entry in foreign markets, profitability

and innovation (Hart 2010; Hunt and Gauthier-Loiselle 2010, 33; Nathan and Lee 2013, 369).

A smaller body of literature links increased cultural diversity with reduced economic outcomes. Examples of diversity's negative effects include slower economic growth, lower wages, lower employment and reduced firm performance (Borjas 1995; Easterly and Levine 1997; Angrist and Kugler 2003; Pelled 1996). A selection of papers also feature inconclusive relationships between diversity and economic outcomes (Richard 2000, 171; Ozgen, Nijkamp and Poot 2011, 2). So, while enhanced cultural diversity generally positively correlates with economic performance, notable opposing results exist, meaning that the existing literature has yet to reach a consensus on this relationship. One underexplored but relevant explanatory factor is to differentiate diversity's impact by industry. Scholars have hypothesized that knowledge-intensive, innovative or risk-taking firms would be expected to perform better than others (Richard, Murthi and Ismail 2004, 256; Nathan and Lee 2013, 382). These differences can also be summarized by proposing that service sector firms will perform better with increased cultural diversity, while manufacturing firms will not (Richard et al. 2007, 1225). This latter hypothesis is tested later this Appendix.

Measures of diversity. According to Cox (1994), "cultural diversity is taken to mean the representation, in one social system, of people with different group affiliations of cultural significance." Existing literature uses a variety of measures to operationalize diversity, including country of birth, ethnic group, firm ownership, self-categorization and home language (Extra and Yamgur 2004, 31; Nathan and Lee 2013, 370). Lee (2011, 408) points out that sociologists typically use proportions of diverse people within a population, while economists use fractionalization indices. Examples of indices are Theil's index and Blau's or Simpson's index, which explicitly measure a population's diversity as opposed to the strict number of diverse persons (Richard et al. 2004; Niebuhr 2010, 564). This is important because, for example, a workplace with only foreign-born persons may still be culturally homogeneous if workers have the same cultural background. Fractionalization indices, therefore, may be more appropriate for estimating cultural diversity's impact on economic outcomes. We make use of a Blau's index for this reason.

Relevant factors in analysis. Theoretical and empirical work identifies a variety of factors relevant to how cultural diversity may affect economic outcomes, as well as why firms might hire diverse labour. Examples include business strategy, firm size, gender diversity, firm geography, firm innovativeness, organizational structure, industry, resource scarcity and management practices (Richard et al. 2000; Richard et al. 2004; Stevens, Plaut and Sanchez-Burks 2008; Nathan and Lee 2013, 373). Scholars make use of many measures of firm performance, such as employee productivity, workplace productivity, logged revenue and expenditure, return on equity, logged book-to-market equity and Tobin's q (Richard 2000; Roberson and Park 2006; Richard, Murthi and Ismail2007, 1222). Our analysis uses as many of these measures as available in our data to enhance our analysis. We also tested and added measures of employee education and workplace job distribution based on their improvement of the match's balance.

Methodology

We extend previous approaches, which typically made use of variations of regression modelling supported by instrumental variable approaches for assessing causality (Bellini et al. 2008, 29; Nathan and Lee 2013, 374), using a nearest-neighbour matching method. We compared these results to two classes of OLS models, as well as estimate effects for all industrial classifications in the North American Industrial Classification System and the service and manufacturing sectors, using sampling weights. We used matched and unmatched data from Statistic Canada's Workplace and Employee Survey (WES) from 1999 to 2005 for approximately 7,900 unique workplaces. We completed our analysis in *R* version 3.3.1.

To conduct our analysis, we first constructed unmatched data by appending annual WES data for all years in which employee and workplace data were available: 1999 to 2005. We then merged the employee and employer data using an inner join conditioned on workplace identification and year. We use the merged data to produce measures of culturally diverse persons, defining "culturally diverse" as any respondent who was not born in Canada or spoke a language other than

the national languages (i.e., English and French) at home. We tabulated all variables, including measures of diverse persons by workplace-year, from where we generated a Blau's fractionalization index of cultural diversity. The "full data" included approximately 37,000 observations.

To generate the unmatched and matched data, we removed all missing observations for the list of selection variable in the matching method. These variables included business strategy (ds), workforce size (wk_size), gender diversity (f_blau), innovativeness (inno), manufacturing and service sector dummies (dom_ind_2 and dom_ind_3), industrial classification (dom_ind), resource scarcity (profit), access to foreign markets (wm_p), mean employee education level (educ) and dummies for six exclusive and exhaustive job categories (occ_[xx]) provided by Statistics Canada. We removed approximately 3,700 weighted observations which had at least one missing value for one of these variables, leaving a total of 33,300 weighted observations. These formed the basis of the unmatched data. Table 1 displays basic metadata for all variables used in the analysis.

We generated the matched data using the *MatchIt* package's nearest neighbour matching algorithm in *R*. This procedure matched workplaces in two treatment conditions: those with a Blau's index value of 0 (control group) and those with a value greater than 0 (treatment group). We used this dummy variable (mc_d_blau_t) as the dependent variable and all selection variables as independent variables. We used all identification variables to operationalise factors identified by existing literature as affecting a firm's choice to "diversify" their workforce.

The matched cultural diversity data featured approximately 18,000 weighted observations: 9,000 workplace-years which featured a Blau's index value of zero matched with 9,000 workplace-years (non-culturally diverse workplaces) which featured a Blau's index value greater than zero (culturally-diverse workplaces). Approximately 15,000 weighted observations were unmatched. Matching algorithms effectively work by selecting observations with similar values for selection variables; we measure the effectiveness of a match by comparing the moments of its selection variables for each treatment group. When these moments are extremely similar, then we call these matched data "balanced" (Morgan and Winship 2010).

Comparing the first two moments (mean and variance), the nearest neighbour matching algorithm reduced the absolute distance between the unmatched and matched data's selection variables by 93.5 percent. Generally, the moments of the selection variables in the matched data were more than 10 times closer to each other than the unmatched data. The data were balanced (i.e., featured means for the treatment groups which were not significantly different than each other) for all selection variables. The matched data featured approximately 6,400 unique workplaces.

We generated two classes of models: unweighted and weighted to measure the relationship between multicultural diversity, gender diversity in the workplace and four dependent measures of firm performance: worker productivity; workplace productivity; logged revenue; and logged expenditure. We also re-ran the weighted models for each industrial classification type as well as dummies for the service and manufacturing sectors. The weighted class of model featured three types: naïve treatment effect estimator; ordinary least squares estimator; and matched treatment effect estimator. The naive treatment effect estimator calculates and conducts a t-test on the difference between means the two cultural diversity groups for the unmatched data. The OLS estimator uses a multi-variate specification, with all selection variables as independent variables, and robust standard errors. The matched treatment effect estimator repeats the naive estimator's structure, except with the matched data.

The following is a summary of descriptive statistics for the matched as compared to unmatched (Table 2). Approximately 72 percent of workplaces in the unmatched data were culturally homogeneous compared to 50 percent in the matched data, with the average workplace having diversity measures of 0.12 and 0.21, respectively. Average workplace performance measures were 10.1 for worker productivity in the unmatched data (10.19 in the matched data), 11.6 for workplace productivity (11.67 matched data), 13.53 for logged expenditure (13.94) and 13.8 for logged revenue (14.22). The average workplace therefore made a profit of approximately CAD$1.19 million in the last year (1.85 million in the matched data). Similar descriptive statistics comparing the control and treatment groups in the matched data follow in Table 3.

Results

We observed cultural diversity being associated with significant, positive increases in workplace performance for all model classes and measures (Table 4). In particular, the magnitude of effect sizes was largest for naive estimators, then OLS and, last, matched estimators. Based on statistical theory and empirical results from the nearest-neighbour matching algorithm, coefficients from the matched treatment effect estimators are likely the most unbiased estimate of the true effect. Assuming this was the case, then moving from a workplace with no cultural diversity to one with diversity was associated with an average increase of 15.3% in worker productivity, 4.8 % in workplace productivity, 66% in expenditure and 62% in revenue. All of these results were significant beyond a 99.9% confidence level.

Disaggregating results by industry, moving from a workplace with no cultural diversity to one with cultural diversity was associated with an average worker productivity increase of 15.1% for service sector industries and 5.3% for manufacturing sector industries. We found the highest increases in information and cultural industries (40%), real estate, rental and leasing operations (35%), and business services (22%); smallest increases were in labour intensive tertiary manufacturing (5%), primary product manufacturing (4%) and education and health services (-2.4%).

Workplace productivity increases disaggregated into a 3.9% increase for service sector industries and a 0.4% increase in manufacturing industries. We found the highest increases in business services (30%), transportation, warehousing, wholesale (28%) and forestry, oil and mineral extraction (22%); smallest increases were in real estate and leasing services (-7%), capital intensive tertiary manufacturing (-9%) and retail trade and consumer services (-9%).

Logged expenditure increased on average by about 58% for workplaces in the service sector, and 62% for workplaces in manufacturing. Top gains were found in information and cultural industries (212%), business services (142%) and transportation, warehousing, wholesale (119%); lowest gains were in construction (29%), education and health services (18%) and primary product manufacturing (-8%).

Logged revenue increased by about57% for workplaces in the service sector, and 42% for workplaces in manufacturing. Biggest gainers included Information and cultural services (175%), business services (140%) and transportation, warehousing, wholesale (119%); smallest gainers included education and health services (27%), construction (25%) and primary product manufacturing (-15%).

Discussion

Our modelling results demonstrate that there were inductive regularities between cultural diversity in Canadian workplaces and improved performance, as measured by worker productivity, workplace productivity, logged expenditure and logged revenue, between 1999 and 2005. This result remained significant and positive for all models and measures, suggesting a relatively stable relationship. Worker productivity, as opposed to workplace productivity, mediated this relationship. These effects persisted despite effectively controlling for a large number of relevant selection factors identified in the literature, such as business strategy, gender diversity, firm size, industry, resource scarcity, employee education and occupational distribution. Assuming existing work covers the most important intervening factors, then there are few mechanisms left which might otherwise explain the observed relationship. Theoretically, while there may be few mechanisms left to alternatively test to provide alternative explanations for this relationship, available evidence limits our ability to pinpoint which ones they may be.

Outcomes were significantly different by industrial classification. Although technically significantly different, one surprising result was the lack of substantive difference in the effect sizes of performance increases between service and manufacturing sectors; in some cases, manufacturing even out performed service industries. This result fails to support the hypothesis by Richard, Murthi and Ismail (2007), among others, that the service sector will be expected to benefit while manufacturing suffers from increased cultural diversity. Following this pattern were notable substantive differences

between effect sizes for varying industries with each sector. Some manufacturing industries, such as secondary product manufacturing, performed extremely well with increasing diversity, while some service industries, such as education and health services, performed relatively poorly. What is intuitively apparent is that industries that are most likely to make use of cultural knowledge, such as information and cultural services, do clearly benefit from diverse workforces. Although it is likely the case that the particular patterns of performance change, cultural diversity may give insight into which mechanisms are at work, such an analysis lays beyond the scope of this paper.

Novel contributions of our analysis include its geography, spatial resolution, methodology and explicit examination of industry-level effects. Despite continued Canadian commitment to a policy of multiculturalism, few papers have specifically examined its effects on economic outcomes. This new evidence also serves to compare to the growing number of case studies in varying geographies, especially the United States and the European Union. No study, thus far, has conducted an analysis of diversity's effects at the spatial resolution of the workplace, as opposed to the firm. While Nathan and Lee (2013) might argue this is unnecessary, since the effects of diversity will occur at the level of the firm, we would counter argue that providing evidence to support this claim is useful. We find, in particular, that significant, substantive effects remain even at a smaller resolution, suggesting that it is possible that diversity's relationship with economic outcomes may work at even smaller scales. All existing studies have deployed regression modelling supplemented with instrumental variable approaches. Although valid, a matching design can arguably provide more robust results (Morgan and Winship 2010), or, at least, an additional method against which to compare observed relationships. Finding empirical support for a relationship between diversity and performance, then, provides even further support for existing literature with similar conclusions. Last, we make the first fuller examination of how this observed relationship varies by industrial classification. Given the importance of this topic and its frequency in existing work, we argue that it creates an initial base of evidence upon which to expand theories into the impact of diversity on economic outcomes.

There were a number of important limitations in our approach. Although we identified and operationalized a large number of relevant selection factors, a number remain, some of which, such as geography, may be especially impactful on our observed results. Even with a perfectly balanced sample, there are limitations with a matching method. While a balanced sample should ideally leave only variance in the dependent variable which is conditional on cultural diversity, our models had relatively low R-squareds: between 0.05 to 0.4. Even with this variance left, moreover, there could still be an endogeneity problem — that is, the possibility that enhanced performance tends to increase cultural diversity as opposed to vice versa. Supplementing our methodology with an instrumental variable approach would provide potential empirical support for a path diagram in which diversity *causes* increased economic outcomes. Many empirical papers use an instrumental variable approach for that reason, with the vast majority finding that the observed effect remains even after isolating the direction of effect. Last, the WES itself has limitations on the availability of measures of cultural diversity and performance. For example, the WES does not sample the population of employees at each workplace, thereby creating potential sample bias in the estimation of diversity. Employee selection was randomized, but smaller samples may have been problematic. One way we adapted to this problem was by using pooled estimates, a method which was previously used in the literature.

Works Cited

Alesina, A. and E. La Ferrara. 2005. Ethnic diversity and economic performance. *Journal of Economic Literature*, 43(3): 762–800.

Angrist, J. and A. Kugler. 2003. Protective or Counter-Productive? Labour Market Institutions and the Effect of Immigration on EU Natives. *Economic Journal*, 113: 302-331.

Bellini, E., G. Ottaviano, D. Pinelli and G. Prarolo. 2008. "Cultural diversity and economic performance: Evidence from European regions." Hamburg Institute of International Economics Research Paper*, No. 3-14.* https://ideas.repec.org/p/zbw/hwwirp/3-14.html.

Blau, P. 1977. *Inequality and Heterogeneity: A Primitive Theory of Social Structure*. The Free Press: New York.

Borjas, G. 1995. "The Economic Benefits of Immigration." *Journal of Economic Perspectives*, 9: 3–22.

Cox, T. (1994). *Cultural Diversity in Organizations: Theory, Research and Practice*. Berrett-Koehler: San Francisco.

Docquier, F. and H. Rapoport. 2011. "Globalisation, brain drain and development." IZA Discussion Paper 5990. http://ftp.iza.org/dp5590.pdf.

Easterly, W. and R. Levine. 1997. "Africa's Growth Tragedy: Policies and Ethnic Division." *Quarterly Journal of Economics*, 111(4): 1203–50.

Extra, G. and K. Yagmur (eds.). 2004. *Urban Multilingualism in Europe: Immigrant Minority Languages at Home and School*. Multilingual Matters: Clevedon.

Hart, D. 2010. "What do Foreign-born Founders Bring to Entrepreneurial Teams? An Exploration in the U.S. High-tech Sector." George Mason University School of Public Policy Working Paper. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1665358&rec=1&srcabs=1823263&alg=7&pos=4

Hunt, J. and M. Gauthier-Loiselle. 2010. "How Much Does Immigration Boost Innovation?" *American Economic Journal: Macroeconomics 2*, April 2010: 31–56.

Iles, P. and P. Hayers. 1997. "Managing Diversity in Transnational Project Teams: a Tentative Model and Case Study." *Journal of Managerial Psychology*, 12(2): 95–117.

La Porta, R., F. Lopez de Silanes, A. Shleifer and R. Vishny. 1999. "The Quality of Government." *Journal of Law, Economics and Organisation*, 15(1): 222–279.

Lee, N. 2011. "Ethnic Diversity and Employment Growth in English Cities." *Urban Studies*, 48(2): 407–425.

Mare, D., R. Fabling and S. Stillman. 2011. "Immigration and innovation." IZA Discussion Paper 5686. http://ftp.iza.org/dp5686.pdf.

Morgan, S. and C/ Winship. 2007. *Counterfactuals and Causal Inference: Methods and Principles for Social Research*. Cambridge University Press: Cambridge.

Nathan, M. and N. Lee. 2013. "Cultural Diversity, Innovation, and Entrepreneurship: Firm-level Evidence from London." *Economic Geography*, 89(4): 367–394.

Niebuhr, A. 2010. "Migration and innovation: Does cultural diversity matter for regional R&D activity?" *Papers in Regional Science*, 89(3): 563–585.

Ottaviano, G. Giovanni Peri. 2006. "The economic value of cultural diversity: evidence from US cities." *Journal of Economic Geography*, 6: 9–44.

Ozgen, C., P. Nijkamp and J. Poot. 2011. "Immigration and Innovation in European Regions." IZA Discussion Paper No. 5676. http://ftp.iza.org/dp5676.pdf.

Parrotta, P., D. Pozzoli and M. Pytlilkova. 2011. "The Nexus Between Labor Diversity and Firm's Innovation." NORFACE Discussion Paper 2011-5. http://www.norface-migration.org/publ_uploads/NDP_05_11.pdf.

Pelled, L. 1996. "Demographic Diversity, Conflict, and Work Group Outcomes: An Intervening Process Theory." *Organization Science*, 7: 615–631.

Richard, O. 2000. "Racial Diversity, Business Strategy, and Firm Performance: A Resource-based View." *Academy of Management Journal*, 43(2): 154–177.

Richard, O., T. Barnett, S. Dwyer and K. Chadwick. 2004. "Cultural Diversity in Management, Firm Performance, and the Moderating Role of Entrepreneurial Orientation Dimensions." *Academy of Management Journal*, 47(2): 255–266.

Richard, O., B. Murthi and K. Ismail. 2007. "The Impact of Racial Diversity on Intermediate and Long-Term Performance: The Moderating Role of Environmental Context." *Strategic Management Journal*, 28: 1213–33.

Roberson, Q. and H. Park. 2006. "Examining the Link Between Diversity and Firm Performance: The Effects of Diversity Reputation and Leader Racial Diversity." Center for Advanced Human Resource Studies Working Paper 4-1-2006. http://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1401&context=cahrswp.

Stevens, F., V. Plaut and J. Sanchez-Burks. 2008. "Unlocking the Benefits of Diversity: All-Inclusive Multiculturalism and Positive Organizational Change." *The Journal of Applied Behavioral Science*, 44(1): 116–133.

Verkuyten, M. 2005. "Ethnic Group Identification and Group Evaluation Among Minority and Majority Groups: Testing the Multiculturalism Hypothesis." *Journal of Personality and Social Psychology*, 88: 121–138.

Tables

Table 1: Summary of Generated Variables Included in Modelling

Name	Label	Description	Formula
mc_d_blau	Multicultural Diversity	Blau's index of multicultural diversity	1-((1-mc_d_p)^2+ (mc_d_p)^2)
mc_d_blau_t	Treatment: multicultural diversity	Treatment: true if Blau's index of multicultural diversity is greater than 0	If mc_d_blau>0, 1 If mc_d_blau==0, 0 If else, NA
f_blau	Gender Diversity	Blau's index of gender diversity	1-((1-f_p)^2+(f_p)^2)
em_count	Employee-response count	Number of total employee-responses for each workplace-year	Tabulated from employee data using "seq_no"
inc_cap_ln	Employee productivity	Natural logarithm of income per employee	log(inc/wk_size)
rev_cap_ln	Firm productivity	Natural logarithm of revenue per employee	log(rev/wk_size)
exp_ln	Logged Expenditure	Natural logarithm of expenditure	log(exp)
rev_ln	Logged Revenue	Natural logarithm of revenue	log(rev)
inno	Innovativeness	Index of innovativeness	impv_prc+impv_prd+ new_prc+new_prd
dom_ind_2	Manufacturing Industry	Dummy: true if workplace is in manufacturing sector	If dom_ind.x=={0,2,3,4,5}, 1 If else, 0
dom_ind_3	Service Industry	Dummy: true if workplace is in service sector	If dom_ind.x== {6,7,8,9,10,11,12,13,14}, 1 If else, 0
ds	Business Strategy	Dummy: true if workplace downsized employees in the last year	If orgchg3==1, 1 If orgchg==3, 0 If else, NA
profit	Resource Scarcity	Total profit, as calculated by revenue minus expenditure	rev-exp

Table 2: Weighted Count and First Four Moments for Variables in Matched and Unmatched Data*

	Unmatched Data					Matched Data				
Variable	n	Mean	sd	Skewness	Kurtosis	n	Mean	sd	Skewness	Kurtosis
mc_d_blau	33,450	0.12	0.00	0.20	-0.52	18,420	0.21	0.00	0.18	-0.48
mc_d_blau_t	33,450	0.28	0.00	0.07	-0.62	18,420	0.50	0.00	0.01	-0.56
f_blau	33,450	0.21	0.00	-0.09	-0.04	18,420	0.28	0.00	-0.13	-0.10
ds	33,450	0.08	0.00	-0.22	0.08	18,420	0.12	0.00	-0.30	-0.11
wk_size	33,450	23.09	0.01	-0.29	-0.07	18,420	32.95	0.02	-0.36	-0.01
inno	33,450	1.16	0.00	0.35	-0.33	18,420	1.43	0.00	0.15	-0.50
dom_ind	33,450	0.11	0.00	-0.06	0.13	18,420	0.15	0.00	-0.34	-0.13
dom_ind_2	33,450	0.88	0.00	0.16	0.59	18,420	0.85	0.00	0.29	-0.09
dom_ind_3	33,450	8.72	0.00	0.35	0.01	18,420	8.65	0.00	0.31	-0.12
profit (millions CAD)	33,450	1.19	52.09	0.00	0.00	18,420	1.85	144.89	0.00	0.00
wm_p	33,450	0.02	0.00	0.18	-0.50	18,420	0.03	0.00	0.10	-0.34
inc_cap_ln	33,450	10.10	0.00	-0.12	-0.59	18,420	10.19	0.00	0.00	-0.48
rev_cap_ln	33,450	11.60	0.00	-0.48	0.77	18,420	11.67	0.00	-0.20	-0.58
exp_ln	33,450	13.53	0.00	-0.04	-0.54	18,420	13.94	0.00	-0.19	-0.61
rev_ln	33,450	13.80	0.00	-0.17	-0.68	18,420	14.22	0.00	-0.27	-0.16

Table 3: Weighted Count and First Four Moments for Variables in Matched Data – Control and Treatment*

	Control Group					Treatment Group				
Variable	n	Mean	sd	Skewness	Kurtosis	n	Mean	sd	Skewness	Kurtosis
mc_d_blau	9,210	0.00	0.00	NA	NA	9,210	0.21	0.00	-0.17	-0.28
mc_d_blau_t	9,210	0.00	0.00	NA	NA	9,210	1.00	0.00	NA	NA
f_blau	9,210	0.14	0.00	-0.22	0.52	9,210	0.14	0.00	-0.19	0.80
ds	9,210	0.09	0.00	0.13	-0.28	9,210	0.09	0.00	-0.18	-0.39
wk_size	9,210	64.57	0.02	0.18	0.10	9,210	76.34	0.06	-0.29	0.16
inno	9,210	0.81	0.00	0.25	-0.19	9,210	0.80	0.00	0.10	-0.43
dom_ind	9,210	0.14	0.00	-0.07	-0.16	9,210	0.14	0.00	0.28	-0.18
dom_ind_2	9,210	0.35	0.00	0.02	-0.31	9,210	0.35	0.00	-0.32	-0.09
dom_ind_3	9,210	3.70	0.00	0.27	0.35	9,210	3.77	0.00	-0.08	0.05
profit (millions CAD)	9,210	4.73	253.79	0.00	0.00	9,210	5.38	523.74	0.00	0.00
wm_p	9,210	0.02	0.00	0.08	0.71	9,210	0.02	0.00	0.30	0.32
inc_cap_ln	9,210	5.21	0.00	0.28	-0.44	9,210	5.28	0.00	0.21	-0.24
rev_cap_ln	9,210	5.97	0.00	-0.22	-0.33	9,210	5.99	0.00	0.09	-0.39
exp_ln	9,210	7.66	0.00	0.21	-0.78	9,210	7.92	0.00	0.07	-0.42
rev_ln	9,210	7.78	0.00	0.08	-0.61	9,210	8.03	0.00	-0.19	-0.26

Table 4: Summary of Coefficients for Models: Impact of Cultural Diversity on Workplace Performance

Measure	Naive	OLS	Matched
Worker Productivity	0.2***	0.14***	0.11***
Workplace Productivity	0.09***	0.05***	0.001***
Expenditure	0.78***	0.46***	0.3***
Revenue	0.8***	0.49***	0.35***
n	33,450	33,450	18,420

Notes – statistic significant for: * - p<0.1; ** - p<0.05; *** - p<0.01.

Table 5: Summary of Coefficients for Models: Impact by Industrial Classification

Industry	Observations	Worker Productivity	Workplace Productivity	Expenditure	Revenue
Out of Scope	NA	NA	NA	NA	NA
Forestry, mining, oil and gas extraction	160	0.05***	-0.19***	0.26***	0.24***
Labour intensive tertiary manufacturing	840	0.07***	0.05***	0.22***	0.27***
Primary product manufacturing	350	0.03***	-0.05***	-0.19***	-0.12***
Secondary product manufacturing	580	0.09***	0.13***	0.64***	0.65***
Capital intensive tertiary manufacturing	900	0.07***	-0.12***	0.38***	0.7***
Construction	1,120	0.1***	0.08***	0.15***	0.09***
Transportation, warehousing, wholesale	2,310	0.11***	0.13***	0.5***	0.59***
Communication and other utilities	230	0.12***	0.14***	0.34***	0.39***
Retail trade and consumer services	5,700	0.07***	-0.14***	0.1***	0.19***
Finance and insurance	1,350	0.14***	0.06***	0.19***	0.23***
Real estate, rental and leasing operations	560	0.3***	0.04***	0.31***	0.4***
Business services	2,430	0.11***	0.23***	0.75***	0.74***
Education and health services	1,490	-0.09***	0.03***	0.12***	-0.03***
Information and cultural industries	400	0.3***	0.13***	0.98***	1.11***
Manufacturing (sector)	2,680	0.07***	-0.01***	0.29***	0.42***
Service (sector)	15,570	0.11***	0.001***	0.27***	0.3***

Notes – statistic significant for: * - p<0.1; ** - p<0.05; *** - p<0.01.

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