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The Economic Value of a B.A. Degree in Alberta

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ABSTRACT: This paper gives an economic estimate of the value of a B.A. degree in Alberta for the 2009-2013 period. Unlike previous impact studies that aim to estimate university value by breaking down the impact into direct, indirect, and dynamic components, this paper takes a more economic approach by breaking down the estimated value into three economic components: value-added, private value, and induced value. The analysis focuses on the five B.A.-granting institutions in Alberta: University of Alberta, University of Calgary, University of Lethbridge, MacEwan University, and Mount Royal University. The results of the analysis show that the economic value of a B.A. degree in Alberta has been roughly 0.2% of Alberta's value (GDP), implying that $1 out of $500 in Alberta's economy comes from the existence of a B.A. degree.

KEY WORDS: Value-Added, Private Value, Induced Value, B.A. Degree, OLS Regression, Percentile Regression

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INTRODUCTION

Estimating the economic value of a B.A. degree in Alberta is a specific and subjective analysis. Recent general reports that aim to estimate the value of a university are based on breaking down the economic impact into three parts: direct, indirect, and dynamic. The measurement of the direct, indirect, and dynamic impacts usually suffers from general bias when determining the extent to which the institution provides these benefits. This tends to overestimate the total impact. Alternatively, calculating value-added can be a simpler and more economic approach to seeing how much the existence of a B.A. degree contributes to the economy. The value-added produces a smaller measure, but more credible. Furthermore, to estimate the private monetary value of a B.A. degree, a statistical relationship (usually referred to as the Mincer equation) can predict the effect of schooling (having a B.A. degree) on earnings, while controlling for experience. Even though it focuses on the private value of a B.A degree, it should be noted that this private value is proportional to the overall value of the economy. With higher earnings of B.A. graduates comes higher ability to spend and invest in the economy, multiplying the private value into a much greater overall value. Furthermore, the private value is proportional to the economic value of a B.A. degree, and the total value which arises from its direct, indirect, and dynamic benefits. To estimate the economic value of a B.A. degree in Alberta, this paper will focus on the economic value using the value-added estimate and the private value using the Mincer relationship, complemented by induced value that comes from incomes being spent in the economy.

Recent university impact studies include: Boston Universities (Appleseed, 2003), University of California San Diego (Herman, Pash, and Bain, 2008), Massachusetts Institute of Technology (Roberts and Easley, 2009), Iowa State University (Jolly, Yu, and Orazem, 2009), University of British Columbia (Sudmant, 2009), Tsinghua University (Easley, Roberts, and Yang, 2010), Simon Fraser University (Sun and Lee, 2011), University of Ottawa (Diaz, Mercier, and Duarte, 2012), Stanford University (Easley and Miller, 2012), and University of Alberta (Briggs and Jennings, 2012). These studies follow a similar methodology when estimating the value of the university. They all aim to quantify and include the non-pecuniary benefits of the university. Alternatively, calculating the economic value allows us to look at actual figures rather than projected ones, using the available data on revenue and cost of intermediate goods. Furthermore, applying the Mincer (1974) relationship between earnings and schooling to the B.A. degree in Alberta is a unique analysis that is quite relevant to understanding the impact of a B.A. degree in Alberta.

To estimate the economic value of a B.A. degree in Alberta by breaking down the total value into three major impacts, as in the related reports that estimate the university impact, it would leave a lot of room for subjective and inflated measures. Namely,

the direct impact represents the economic activity (spending) by B.A institutions (universities) allocated towards the existence of a B.A. degree. The indirect impact measures non-B.A. economic activity (spending) that would not occur without the existence of a B.A. degree. Lastly, the dynamic impact looks at flows from B.A. education, which includes an economic premium, a research component, and a cultural benefit. These impacts can be tailored in a way to bolster the total value, given the subjectivity and the lack of data availability. To estimate the economic value of a B.A. degree, this paper estimates value-added, private value, and induced value, which modestly reflect the direct, indirect, and dynamic impacts of a B.A. degree.

METHODOLOGY

An economic approach to estimating the value to the economy from the existence of a "producer" is to calculate the value-added. The producer's value-added (VA) is the difference between the revenue (R) due to its products and the cost of intermediate goods (CIG) used for producing its products. In terms of the B.A. degree value-added (VA_{BA}), it can be formally expressed as:

$$VA_{BA} = R_{BA} - CIG_{BA} \quad (1)$$

Value-added is the value that the producer (university) brings to the economy due to its operation. In this paper, I capture the portion of the value-added produced by the B.A. institutions in Alberta that can be attributed to the existence of the B.A. The B.A. institutions included in the analysis are University of Alberta (UA), University of Calgary (UC), University of Lethbridge (UL), MacEwan University (MU), and Mount Royal University (MRU). The proportion of the value-added that can be directly attributed to the B.A. degree each year can be drawn from each institution's B.A. student enrollment (excluding B.A. Honours): UA (14%), UC (15%), UL (13%), MU (15%), and MRU (15%). Aggregating their value-added measures for each year gives the estimated annual value-added in Alberta due to the B.A. degree:

$$VA_{Alberta} = VA_{UA} - VA_{UC} - VA_{UL} - VA_{MU} - VA_{MRU} \quad (2)$$

This would provide a relatively credible economic measurement of the value of the B.A. degree to Alberta's economy. It should be noted that because value-added only includes values that are traded in the market, it excludes many of the non-pecuniary benefits of the B.A. degree (which are not traded on the market, and whose measurements are arbitrary). So value-added would capture the economic value of the B.A. degree. This allows us then to properly compare it to the Gross Domestic Product (GDP), which is the official total value-added of the economy. Hence, by capturing the value-added of the B.A. degree in Alberta, I am able to directly relate that value to Alberta's GDP.

In terms of predicting the effect of the B.A. degree on earnings, a Mincer statistical relationship can be used, which relates the earnings as a function of schooling (BA), while controlling for experience (E). I can also include a binary (dummy) variable for gender (G), which is 0 for male and 1 for female, to capture the difference between predicted male earnings and predicted female earnings, all other things constant. A simple relationship predicting the earnings of person i at year t is given by:

$$earnings_{it} = \beta_0 + \beta_1 BA_{it} + \beta_2 E_{it} + \beta_3 E_{it}^2 + \beta_4 G_{it} + u_{it} \quad (3)$$

Including the quadratic component of experience (E_{it}^2) captures the conditional effect of experience. To make the estimation more precise, I can also control for the fixed effects of the university (γ_i) and the fixed effects of time (δ_t):

$$earnings_{it} = \beta_0 + \beta_1 BA_{it} + \beta_2 E_{it} + \beta_3 E_{it}^2 + \beta_4 G_{it} + \gamma_i + \delta_t + u_{it} \quad (4)$$

Including the fixed effects reduces the bias of the estimated effects of the B.A. and experience which are correlated with the other characteristics specific to the university and the year. After running the model without the gender variable (G_{it}), the estimated effect β_1 would tell us the average predicted effect of the B.A. on earnings in Alberta. If I run the model with the gender variable, such that $G_{it} = 0$ for males, and $G_{it} = 1$ for females, then the estimated effect β_1 would give the predicted effect of the B.A. on earnings for a male in Alberta, while the estimated effect $\beta_1 + \beta_4$ would tell us the predicted effect of the B.A. on earnings for a female in Alberta. Alternatively, I can estimate the predicted effect of each university's B.A. by utilizing dummy variables for universities that are not University of Alberta (UC, UL, MU, MRU):

$$earnings_{it} = \beta_0 + \beta_1 BA_{it} + \beta_2 E_{it} + \beta_3 E_{it}^2 + \beta_4 G_{it} + \beta_5 BA_{it} UC_{it} + \beta_6 BA_{it} UL_{it} + \beta_7 BA_{it} MU_{it} + \beta_8 BA_{it} MRU_{it} + \gamma_i + \delta_t + u_{it} \quad (5)$$

Therefore, the predicted effect of the B.A. for a male from the University of Alberta is given by β_1, while the predicted effect of the B.A. for a male from the University of Calgary is given by $\beta_1 + \beta_5$, and so on. This allows us to compare the marginal effects across Alberta's major universities, and to get a better sense of the private values as they ultimately affect the total value of the B.A. degree in Alberta. If all the observations in the sample have the same schooling (B.A. graduates), then the BA_{it} variable is not necessary, since there is no differentiation among the observations with respect to the schooling. Furthermore, if all the observations in the sample are from the same university (for example, all the observations are from University of Alberta) then there is no differentiation among the different groups, and thus no university fixed effects (γ_i). Also, if the sample is available for just one year, then there is no time variation, and thus no time fixed effects (δ_t). Therefore, for one year's survey sample of University of Alberta's B.A. graduates, the relationship simply becomes:

$$\text{earnings} = \beta_0 + \beta_1 E + \beta_2 E^2 + \beta_3 G + u \quad (6)$$

Including an interaction between experience and gender (a product of experience and gender, denoted by EG) can capture the different marginal effect of experience between genders.

$$\text{earnings} = \beta_0 + \beta_1 E + \beta_2 E^2 + \beta_3 G + \beta_4 EG + u \quad (7)$$

Note that if the sample has no data on experience or gender, then β_0 simply gives the predicted average earnings of University of Alberta's B.A. graduates. The aforementioned estimations are based on ordinary least squares (OLS) regression methods, which seek to minimize the sum of squared residuals (deviations from the average). Therefore, those estimations will capture the estimated effects on the average earnings. I can estimate percentile regressions to go further in seeing the distribution of earnings and how the percentiles of earnings respond. Percentile regression (commonly referred to as quintile regression) is not sensitive to outliers, and it models the conditional percentiles (θ) by minimizing the sum of asymmetrically weighted residuals, with weights based on the percentiles, to estimate the effects of the explanatory variables on each percentile. In this paper, I focus on the 25th percentile, the 50th percentile (median), and the 75th percentile.

$$\text{earnings} = \beta_\theta + \beta_\theta E + \beta_\theta E2 + \beta_\theta G + \beta_\theta EG + u \quad (8)$$

The relevant data for the estimation of the value of the B.A. degree by the three impacts (mentioned earlier and used in related studies) would involve many overlapping and projected figures. The direct impact would involve salaries of employees working due to the existence of a B.A. degree, construction, materials, supply, services, aid for B.A. students, and other expenses related to the B.A. The indirect impact would include spending by B.A. students net of aid and residence payments (based on estimates of annual living expenses), and spending by visitors to the university due to the existence of the B.A. degree. The dynamic impact would require economic benefit and income differential (how a B.A. compares to no B.A.), productivity contribution (portion of growth in the economy that can be attributed to the B.A., which is unexplained by labour, human capital, or physical capital), and culture (contribution of the B.A. to the cultural environment).

Alternatively, the value-added approach modestly reflects the direct and indirect impacts, while being more economic in its estimation. It requires data for revenue and cost of intermediate goods, which are available from each university's official Annual Financial Statements (2009-2013). The statement entries can be identified as revenue or cost of intermediate goods or neither. Then, using student enrollment figures the proportion of the university's value-added attributed to the B.A. can be estimated. The value-added can then be compared to the GDP of Alberta, to get an estimate of B.A.'s share of Alberta's economic value. Finally, the private value estimation requires data on earnings of B.A. graduates and their experience levels.

For estimating the economic value of a B.A. degree in Alberta, relevant sources include:

- University of Alberta Annual Financial Statements
- University of Calgary Annual Financial Statements
- University of Lethbridge Annual Financial Statements
- MacEwan University Annual Financial Statements
- Mount Royal University Annual Financial Statements
- University of Alberta Data Book
- University of Calgary Fact Books
- University of Lethbridge Documents (Fact Book)
- Alberta Innovation and Advanced Education Accountability Reports
- Alberta Innovation and Advanced Education Graduate Outcomes Surveys
- Alberta Office of Statistics and Information
- Government of Alberta Open Data
- Statistics Canada

Given the availability of the Annual Financial Statements of Alberta's three major universities, I consider years 2009 to 2013 in measuring the value-added of the B.A. degree for each year, consistent with the available data for estimating the private value. Using the B.A. enrollment figures (from each university's report), the proportion of the university's value-added can be estimated. Finally, I then relate the value-added estimates to Alberta's GDP (also available from Statistics Canada).

There are many issues with the estimation of the value of a B.A. degree in Alberta:

- including student aid and other expenses (which is a common practice in the impact studies) is problematic, since they are not necessarily creating new value, so including them is inflating total value
- the spending by B.A. students relies on survey data, which may not be available
- the spending by visitors to the university, due to the existence of the B.A., is based on projections and estimations which rely more on the visitors that visit due to the Faculty of Arts (for conferences, seminars, etc.), and not directly due to the existence of the B.A.

- quantifying the dynamic impact of a B.A. degree depends heavily on the time dimension
- calculating the income differential can possibly produce negative results, since the B.A. degree does not necessarily provide higher income than someone without a B.A. degree
- when looking at the income differential, assumptions have to be made regarding B.A. degrees earned in Alberta, and B.A. degree graduates staying in Alberta
- the productivity contribution could suffer from a measurement error due to lagged effects of the B.A. on the productivity of the economy
- cultural value is extremely subjective, but it is also one of the crucial aspects of the B.A. degree, so quantifying it is not doing it justice; looking at the economic value of cultural landmarks would underestimate the cultural contribution of the B.A. degree; to overcome the economic underestimation, there would then be a tendency to overestimate its value to society, and then it would easily be prone to much criticism and dismissal
- quantifying the dynamic impact can diminish the credibility of the study, since it is heavily dependent on preferences, so without making serious assumptions about preferences, quantifying the value of non-pecuniary benefits is not very robust (for instance, there is a social benefit from a higher probability of interacting with someone who has a B.A. degree, and the dollar value of that benefit can be $1 million or $1 billion, and each can be supported with preference assumptions)
- calculating the induced effect, based on the calculation of the multiplier, would require assumptions about the B.A.-related spending in Alberta, and how it multiplies
- assuming a value for the multiplier would be problematic, especially when a large value is used, such as 1.5 (a number that is commonly used, which is generally larger than the multiplier for the overall economy)

RESULTS

The summary statistics for the main variables from the 2012 survey of University of Alberta's B.A. graduates (class of 2010) are presented in Table 1. The summary statistics show that the average Earnings (annual salary) is roughly $39,829, with a large variance. The average of the Female binary variable implies that most of the survey respondents were female, while the average of the Experience binary variable implies that most of the survey respondents were relatively experienced.

Table 1: University of Alberta B.A. Graduate Outcomes Survey Summary

VARIABLE	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Earnings	207	39,829	23,753	48	225,000
Gender (Female = 1)	346	0.673	0.470	0	1
Experience	262	2.378	0.806	1	3
NOTES: Source of data is 2012 Graduate Outcomes Survey (Innovation and Advanced Education, Government of Alberta, 2012) for University of Alberta's class of 2010; Earnings is the annual reported salary of the University of Alberta's B.A. graduates surveyed; Female is a binary variable that is 1 for female, 0 for male; Experience is a binary variable, representing length of employment at current job, such that 1 is for 6 months or less, 2 is for more than 6 months to 1 year, 3 is for more than 1 year.					

Table 2 shows the OLS estimations of the predicted average earnings of University of Alberta's B.A. graduates. Estimation [1] shows the average unconditional earnings as in Table 1, while estimation [2] shows the estimated unconditional difference of roughly $9,335 between a female and a male graduate. Therefore, the unconditional average earnings for a female and a male are estimated to be $36,537 and $45,872, respectively. The presence of the Experience binary variable in estimation [3] shows the positive effect of experience on the estimated earnings. Estimation [3] also shows that the less experienced female (Female = 1, Experience = 1) has estimated earnings of roughly $30,828, while the less experienced male (Female = 0, Experience = 1) has estimated earnings of roughly $40,227. The gender difference is relatively robust across estimations [2], [3], and [5]. The interaction between Female and Experience in estimation [4] is not significant, implying that the marginal effect of Experience on Earnings is not significantly dependent on gender. Furthermore, the marginal effect of Experience is not significantly conditional on the level of Experience, as seen in estimation [5]. Finally, estimation [6] confirms the insignificance of Experience's conditional effects. Ultimately, estimation [3] has the best estimate (lowest Root-MSE).

Table 2: University of Alberta B.A. Graduate Outcomes Survey OLS Estimations

ESTIMATION	[1]	[2]	[3]	[4]	[5]	[6]
Female		-9335*** (3402)	-9399*** (3397)	-13502 (10207)	-9562*** (3430)	-14084 (10316)
Experience			4135** (2015)	3083 (3189)	10570 (16677)	10158 (16733)
Female*Experience				1757 (4120)		1928 (4147)
$Experience^2$					-1559 (4010)	-1739 (4037)
Constant	39829*** (1651)	45872*** (2737)	36093*** (5392)	38519*** (7846)	30696** (14896)	32736** (15557)
Observations	207	207	206	206	206	206
R^2	-	0.035	0.053	0.054	0.054	0.055
Root-MSE	23753	23385	23227	23274	23276	23321

NOTES: Source of data is 2012 Graduate Outcomes Survey (Innovation and Advanced Education, Government of Alberta, 2012) for University of Alberta's class of 2010; Dependent variable is Earnings, representing the annual reported salary of the University of Alberta's B.A. graduates surveyed; Female is a binary variable that is 1 for female, 0 for male; Experience is a binary variable, representing length of employment at current job, such that 1 is for 6 months or less, 2 is for more than 6 months to 1 year, 3 is for more than 1 year; Standard errors are in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The results of the percentile regressions are displayed in Table 3. The percentile regression results show from estimation [7] that the 25th, 50th, and 75th percentile unconditional earnings are $26,000, $40,000, and $50,000, respectively. The results also show from estimation [8] that the Female binary variable effect differs across the percentiles: $11,000, $7,500, and $9,000, respectively. Therefore, the 25th, 50th, and 75th percentile unconditional earnings for males are $35,000, $44,000, and $55,000, respectively, while for females they are $24,000, $36,500, and $46,000, respectively. Note that the median earnings are thus $44,000, $36,500, and $40,000, for males, females, and overall, compared to the average earnings (from Table 2) of $45,872, $36,537, and $39,829, respectively. The results from the percentile regression in estimation [9] further reveal that the effect of Experience has the greatest effect on the 25th percentile of earnings. For median earnings, the effect of Experience is lower and less significant, while for the 75th percentile the effect of Experience is insignificant. The remaining specifications (estimations [10], [11], and [12]) are not very significant. Overall, the percentile regressions provide a closer look at the distribution of earnings, showing that gender and experience are the most pronounced in their effects on the 25th percentile of earnings.

Table 3: University of Alberta B.A. Graduate Outcomes Survey Percentile Estimations

ESTIMATION	[7]	[8]	[9]	[10]	[11]	[12]
PERCENTILE	25th					
Female		-11000** (4634)	-11128*** (3746)	-11323 (11974)	-12128*** (3558)	16156 (10968)
Experience			5564** (2290)	5564 (3641)	31300* (16015)	30524* (16446)
Female*Experience				65 (4678)		1676 (4415)
$Experience^2$					-6260 (3792)	-6240 (3879)
Constant	26000*** (2057)	35000*** (3915)	20436*** (6617)	20436*** (9890)	-432 (15206)	1716 (16369)

PERCENTILE	50th					
Female		-7500*** (2663)	-6000** (2723)	-8411 (10812)	-6000** (2764)	-9692 (11040)
Experience			3400* (2003)	3300 (3081)	9618 (13606)	11022 (14877)
Female*Experience				1004 (4227)		1231 (4327)
$Experience^2$					-1404 (3060)	-1931 (3338)
Constant	40000*** (1067)	44000*** (1984)	34800*** (4793)	35100*** (7528)	28779** (14219)	29309* (16146)
PERCENTILE	75th					
Female		-9000* (4869)	-7472 (5249)	-14500 (12471)	-7412 (4856)	-13118 (14809)
Experience			2528 (1939)	1000 (4884)	-8118 (13880)	-14864 (16747)
Female*Experience				2500 (5334)		2706 (6247)
$Experience^2$					2706 (3309)	3966 (3879)
Constant	50000*** (1652)	55000*** (4292)	47416*** (6062)	52000*** (11322)	55412*** (13256)	63898*** (18903)
Observations	207	207	206	206	206	206

NOTES: Source of data is 2012 Graduate Outcomes Survey (Innovation and Advanced Education, Government of Alberta, 2012) for University of Alberta's class of 2010; Dependent variable is Earnings, representing the annual reported salary of the University of Alberta's B.A. graduates surveyed; Female is a binary variable that is 1 for female, 0 for male; Experience is a binary variable, representing length of employment at current job, such that 1 is for 6 months or less, 2 is for more than 6 months to 1 year, 3 is for more than 1 year; Simultaneous percentile regressions were estimated with bootstrapped (500 reps) standard errors (in parentheses); * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Economic Value of a B.A. Degree in Alberta

(millions $)		2009	2010	2011	2012	2013
University of Alberta (UA)	Revenue	1,420	1,607	1,645	1,689	1,728
	Cost of Intermediate Goods	543	541	539	589	562
	Value-Added (VA)	876	1,066	1,105	1,100	1,166
	BA VA	123	149	155	154	163
University of Calgary (UC)	Revenue	954	1,034	1,066	1,130	1,191
	Cost of Intermediate Goods	323	321	344	361	385
	Value-Added (VA)	631	714	722	769	806
	BA VA	95	107	108	115	121

University of Lethbridge (UL)	Revenue	151	189	192	189	198
	Cost of Intermediate Goods	45	45	48	51	54
	Value-Added (VA)	106	144	143	138	144
	BA VA	14	19	19	18	19
MacEwan University (MU)	Revenue	197	217	223	222	229
	Cost of Intermediate Goods	70	73	73	78	85
	Value-Added (VA)	126	143	150	144	144
	BA VA	19	21	22	22	22
Mount Royal University (MRU)	Revenue	179	206	210	208	224
	Cost of Intermediate Goods	54	64	66	64	62
	Value-Added (VA)	124	141	144	144	162
	BA VA	19	21	22	22	24
Alberta (UA+UC+UL+MU+MRU)	BA VA	269	318	326	330	349
	BA Private Value	172	176	185	194	204
	BA Induced Value	44	49	51	52	55
	BA Total Value	484	543	562	577	608
	GDP	245,843	270,203	299,689	312,707	342,646
	BA Total Value / GDP	0.20%	0.20%	0.19%	0.18%	0.18%

After seeing the estimations of the private value, we can turn to the total value of a B.A. degree in Alberta. Namely, we can relate the estimated average private value to the economic value (value-added) of the B.A. to Alberta's economy. Given that roughly 78% of the surveyed University of Alberta B.A. graduates were employed, we can simply assume that 4 out of 5 of the B.A. graduates in Alberta are employed (Innovation and Advanced Education, Government of Alberta, 2012). This number may surely vary across different regions in Alberta, and the graduates may leave Alberta, while B.A. graduates from outside of Alberta may find employment in Alberta. We can assume that roughly 80% of the B.A. graduates find a job in Alberta, with average earnings (annual salary) of $40,000. Then we can use the estimated total number of B.A. graduates from Alberta's universities (based on degrees granted) to estimate the total private value (income) attributed to B.A. graduates. To estimate the induced value arising from the value-added and the private value, a simple multiplier can be applied. Rather than assuming a multiplier, it can be calculated based on Alberta's marginal propensity to consume (b), tax (t), and import (m).[1] Based on the data, this simple multiplier, calculated as $b(1 - t) - m$, is roughly a modest value of 1.1, which is smaller than the usually assumed value of 1.5 or higher (found in most studies). Table 4 shows the estimation of the economic value of a B.A. degree in Alberta. The results show that the total economic value of a B.A. degree in Alberta in 2013 was around $608 million. The total value of a B.A. in Alberta in 2013 is the sum of its three components: value-added ($349), private value ($204), and induced value ($55). Overall, the results show that the total value of a B.A. degree in Alberta has been roughly 0.2% of Alberta's total value (GDP), which implies that on average for every $500 of value created in Alberta, roughly $1 of the value is due to the existence of a B.A. degree in Alberta.

[1] Inputs were derived from Statistics Canada (2014b) Table 36-10-0222-01 and Government of Alberta (2014b) Open Data.

CONCLUSION

This paper gave an economic estimate of the value of a B.A. degree in Alberta for the 2009-2013 period. Unlike previous impact studies that aim to estimate university value by breaking down the impact into direct, indirect, and dynamic components, this report took a more economic approach by breaking down the estimated value into three economic components: value-added, private value, and induced value. The value-added estimation utilized the data from the official Annual Financial Statements of the five B.A.-granting institutions: University of Alberta, University of Calgary, University of Lethbridge, MacEwan University, and Mount Royal University. The private value estimation relied on data from the 2012 University of Alberta's Graduate Outcomes Survey (conducted by Government of Alberta's Innovation and Advanced Education), and the degrees data from the Government of Alberta's Office of Statistics and Information. Finally, the indirect value was based on the multiplier which was calculated using data from Statistics Canada and Government of Alberta's Open Data. Generally, the total value of a B.A. degree in Alberta has been roughly 0.2% of Alberta's value (GDP), implying that $1 out of $500 in Alberta's economy comes from the existence of a B.A. degree.

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