

Skills Research Initiative

Initiative de recherche sur les compétences

**The Role of Information on Return to Human Capital
Investment: Laboratory Experiment on Educational Choices**

Cathleen Johnson (CIRANO)
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Abstract

Using experimental economics, this study examines the role of labour market information (LMI) and education in explaining human capital investment by adults. LMI matters, and can be improved, but it influences education investment decisions far more for young adults than for older adults. LMI can serve to increase young people's willingness to invest in education, but is not likely to have a strong impact on the educational investment decisions of older adults.

Résumé

À l'aide de l'économie expérimentale, nous avons examiné le rôle de l'information sur le marché du travail (IMT) et de l'éducation pour expliquer l'investissement des adultes dans leur capital humain. L'IMT est importante et pourrait être améliorée, mais elle influe beaucoup plus sur les décisions des jeunes adultes d'investir dans leurs études que sur celles des adultes plus âgés. L'IMT peut servir à accroître la volonté des jeunes à investir dans leurs études, mais il est peu probable qu'elle ait une incidence marquée sur les décisions des adultes plus âgés d'investir dans leurs études.

1. Introduction and Motivation

It is known from surveys that many Canadians significantly underestimate the income gains associated with post-secondary education. They may also face significant liquidity constraints or they may be unwilling to borrow in order to acquire additional human capital. Needless to say, there are many reasons that can hinder the decision to invest in human capital that need to be simultaneously considered.

The focus of this paper is to investigate the crucial question of the impact of information on the return to human capital investment in a context of building a knowledge base economy. The study uses a unique Canadian data set obtained from a major laboratory experiment conducted across Canada.

The primary objective of the experiment originally financed by Human Resources Development Canada was to investigate what types of government assistance best serve the policy objective of increasing human capital investment among adults from different socio-economic backgrounds. The experiment was designed, implemented and analyzed by Cathleen Johnson (then at Social Research and Demonstration Corporation (SRDC)) and Claude Montmarquette (CIRANO and University of Montreal) in collaboration with Catherine Eckel (then at Virginia Polytechnic Institute and State University, now at University Texas at Dallas). The experiment has generated information on the barriers that may prevent adults from engaging in learning activities —such as access to credit, opportunity costs, time constraints, lack of information, fear of failure, loan aversion — and documents how these barriers combine with individual characteristics, attitudes, and preferences in determining one's decision to engage in further learning and education. Additionally, and most importantly for this inquiry, the experiment included a Labour Market Information intervention.

In this current paper, we want to address two specific questions: How labour market information is conditioned on all the other factors affects the decision to invest in post-secondary education and does increasing the availability of labour market information increases the likelihood of investment in human capital? There are several points distinguishing this research from the SRDC initial paper. First, we consider a new "labour

market understanding" variable aimed at measuring the capacity of the participants to link labour market information and education. We will compare the importance of this variable to explain educational choices with the "positive attitude towards education" variable that was initially used. The "positive attitude towards education" variable is a scale that indicates the participant's perception of a positive relationship between education level and labour market outcomes. Second, we use only the first 569 subjects that participated in the experimental sessions excluding those who participated too late to have had the opportunity to attend one of the Labour Market Information sessions 5 months after the initial testing. Of the 569 participants, 194 qualified for the follow-up experiment based on criteria like participants showing low understanding of the labour market and related variables and who have not won one of their educational choices. Of the 125 of the recalled participants answering positively to our invitation, 66 were randomly selected to receive LMI information. The other 59 participants formed the control group. Third we compare and test the levels of labour market understanding and positive attitude towards education variables before and after the labour market information intervention. Finally, regressions were run on educational choices using those specific samples.

2. The experimental protocol

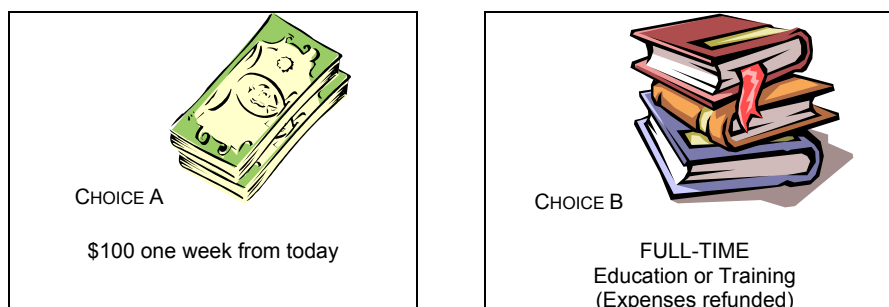
The experiment used three core instruments to collect information from participants: (1) a series of monetarily incentivized decisions (often referred to as experimental measures) that were designed to reveal underlying true preferences; (2) a survey that collected data on relevant demographic and socio-economic characteristics, as well as behavioural and attitudinal measures; and (3) a numeracy assessment that measured the everyday mathematical ability of each participant. Complete details are found in Johnson, Montmarquette and Eckel (2003). From May 2002 to March 2003 nearly 900 Canadian residents, ranging in age from 18 to 55 years, participated in 102 experimental sessions. This sample was drawn from both urban and non-urban sites across Canada and was made up mainly of people who were already engaged in the labour force. At the end of the conclusion of the experimental session, one of the incentivized tasks was randomly chosen for payment thus giving each participant the proper incentive to make choices according to their own preferences.

2.1 Preference for education financing

Participants completed a series of tasks with actual monetary payoffs that were designed to measure their preferences for education, financed by alternative means. Each decision involved a choice between a certain amount of money, paid one week from the experimental session date, and an amount of education financed by a grant, matching grant, loan, or income-guaranteed loan. Figure 1 contains as an example three decisions in the category of financing by grants. All decisions are displayed graphically to make the alternatives more intuitive to subjects of all ability levels. Note that the three choice pairs are arrayed in order; this helps the subjects make decisions that are consistent and that reflect their true preferences. For all three of the decisions in the example below, the subject must choose between \$100 paid one week from the experiment, and grants for full-time study of \$300, \$600, and \$1000 respectively. Subjects were clearly informed of the consequences of choosing the grant amount. If one of these decisions was chosen for payment, the subject would receive either the cash, or an amount earmarked for full-time schooling. They were told that in order to receive the grant amount, they would have to present a receipt for full-time tuition at an institution of higher education. They also were told explicitly that if they did not foresee full-time education over the next two years, then they should not choose the grant amount.

Figure 1: Example of Education-Preference Decisions

You must choose A or B:



Decision 1	<input type="checkbox"/> \$100	<input type="checkbox"/> \$300 GRANT
Decision 2	<input type="checkbox"/> \$100	<input type="checkbox"/> \$600 GRANT
Decision 3	<input type="checkbox"/> \$100	<input type="checkbox"/> \$1,000 GRANT

After a participant made all decisions, one decision was selected at random from his or her booklet and each respondent received the payoff that corresponded to the choice made for the selected decision. For instance, if Decision 3 was selected at random for a participant and that participant selected Choice B under Decision 3 in Figure 1, he or she would receive a \$1,000 grant for full-time education or training. Each decision in the booklet had an equal probability of being selected, making the choices independent of each other.

In Table 1, we outline the educational investment choices that each participant faced during the experiment. Subjects simply mark Choice A or Choice B for each proposed decision. These decisions indicate the required level of generosity needed by financial assistance instruments in order to induce the participant to engage in learning activities. In each case, the participant must trade off cash against enrolling in education (specified as either full-time or at least part-time) with various levels of financial assistance. The cash alternative ensures that the choice has a *cost* to the respondent. Individuals will choose to invest in education or training if they estimate the present value of the net benefit of the learning activity to be positive. For those who already perceive a positive net benefit, the financial assistance may make education more accessible. The choices when faced with these decisions also reveal the amount of financial support necessary to allow these individuals to proceed with their plans.

The original experimental design, and the data we will examine within this paper, included maximum loan and Income-Sensitive Repayment Loans amounts of \$2,000 and contribution matching grants of \$2000. To attempt to generate more variation in the decisions between the regular loan and the Income-Sensitive Repayment Loans, we included two additional decisions with a \$5000 school loan benefit to the experimental measure for the final part of the sample collected.

**Table 1: Decisions Measuring Preferences for Education
Choice A (cash) v. Choice B (educational financing)**

Decision Number	CHOICE A:	CHOICE B:			
	Cash Alternative	Grants	Loans	ISR Loans ¹	Matching Grants ²
1	\$100	\$300			
2	\$100	\$600			
3	\$100	\$1,000			
4	\$50	\$1,000			
5	\$200	\$1,000			
6	\$475	\$1,000			
7	\$100		\$1,000		
8	\$100		\$2,000		
9	\$100			\$1,000	
10	\$100			\$2,000	
11	\$100				20%
12	\$100				50%
13	\$100				100%
14	\$100				200%
15-28 ³	(same as above except part-time study funding)				

2.2. Risk and Time Preferences

Separate from educational financing, participants in the experiment completed two additional sets of choices: (1) time preference, decisions between cash to be received on a particular date and cash to be received at a later date; and (2) risk preference, decisions among cash gambles with differing levels of risk.

Table 2 summarizes the time-preference choices, which involved trading off amounts of money in an earlier period against larger amounts at a later time. The choices vary rate of return, investment time, and front-end delay. The “Sooner Payment” is \$65, paid on the date indicated. There are four sets of decisions, each having the sooner payment of \$65 being paid on (1) the day of the experiment, (2) the day following the experiment, (3) one month later,

¹ Income sensitive repayment (ISR) loans offer the same accessibility as loans. However, ISR loans reduce some of the risk associated with the uncertainty of human capital investment. Under an ISR loan scheme, borrowers are not required to make payments on the loan when their incomes fall below a certain threshold.

² Exact wording for the matching grant: “For every \$1 you save towards education, you will be granted an additional \$0.20 towards educational expenses. You could receive up to \$333 in MATCHING GRANTS when you save up \$1667 for a total of \$2000 in educational expenses.”

³ Decisions 15-28 repeat decisions 1-14 with the exception that the later set of decisions stipulated subsidies for “at least part-time study”.

and (4) one year later. “Today” and “Tomorrow” sooner payments are included to test for a possible confound, whether the experimenter is trusted by the subject to pay future amounts. If the subject doubts future payments, his choices will make him appear more impatient than he is. One month and one year start times are included to test and control for possible hyperbolic discounting (see the papers in Loewenstein, Read and Baumeister, 2003). All decisions are repeated using five annualized rates of return, as shown in the table. A broad range of rates of return is included because our previous results have suggested a great deal of variation in subject preferences (see Eckel, Johnson and Montmarquette, 2005). Finally, all sooner conditions and rates of returns are tested with both waiting periods for the later payment: short (one month) and long (one year).

Table 2: Summary of Time Preference Choices

Time of Sooner Payment (\$65)	Annualized Rates of Return	Later Payment Amount	
		One Month Investment	One Year Investment
▪ Today	10	65.27	68.25
▪ Tomorrow	20	66.08	78.00
▪ One Month from today	50	67.71	97.50
▪ One year from today	100	70.42	130.00
	200	75.83	195.00

Risk attitudes are measured by having subjects choose from among six possible gambles the one they would like to play, as shown in Table 3. If this task is chosen for payment, the subject plays the gamble chosen by rolling a die to determine his payoff. The gambles all involve a 50/50 chance of a low or high payoff. The range of gambles includes a safe alternative involving a sure payoff with zero variance. The other gambles increasing in both expected return and risk (standard deviation), except for gamble 6, which involves only an increase in variance for the same expected return as gamble 5. More risk adverse subjects would choose lower-risk, lower-return gambles; risk-neutral subjects would choose gamble 5 or 6, which have the highest rate of return; risk-seeking subjects would choose gamble 6.

Table 3: Gamble Choice Experiment
Subjects choose which gamble to play

Choice (50/50 Gamble)	<i>Low Payoff</i>	<i>High Payoff</i>	<i>Expected Return</i>	<i>Standard Deviation</i>
Gamble 1	28	28	28	0
Gamble 2	24	36	30	6
Gamble 3	20	44	32	12
Gamble 4	16	52	34	18
Gamble 5	12	60	36	24
Gamble 6	2	70	36	34

2.3. Survey

The survey included four major components. The first collected various demographic and socioeconomic factors such as age, sex, income, family characteristics that included level of schooling of parents and respondent's primary activity. These factors control for obvious differences of respondents. The second component consisted of survey measures of dispositional characteristics that parallel the experimental measures of behaviour. For instance, a temporal orientation scale was elicited as a measure of planning ability. Good planning requires future orientation, and so should be related to experimental measures of patience. A third component collected data on the participant's attitude towards investment in schooling and general perceptions of how the labour market functions with respect to education and training. The final element of the survey design focused on debt, capturing information on the types and current debt carried by the respondents and attitudes toward debt. All details about the survey are available upon request.

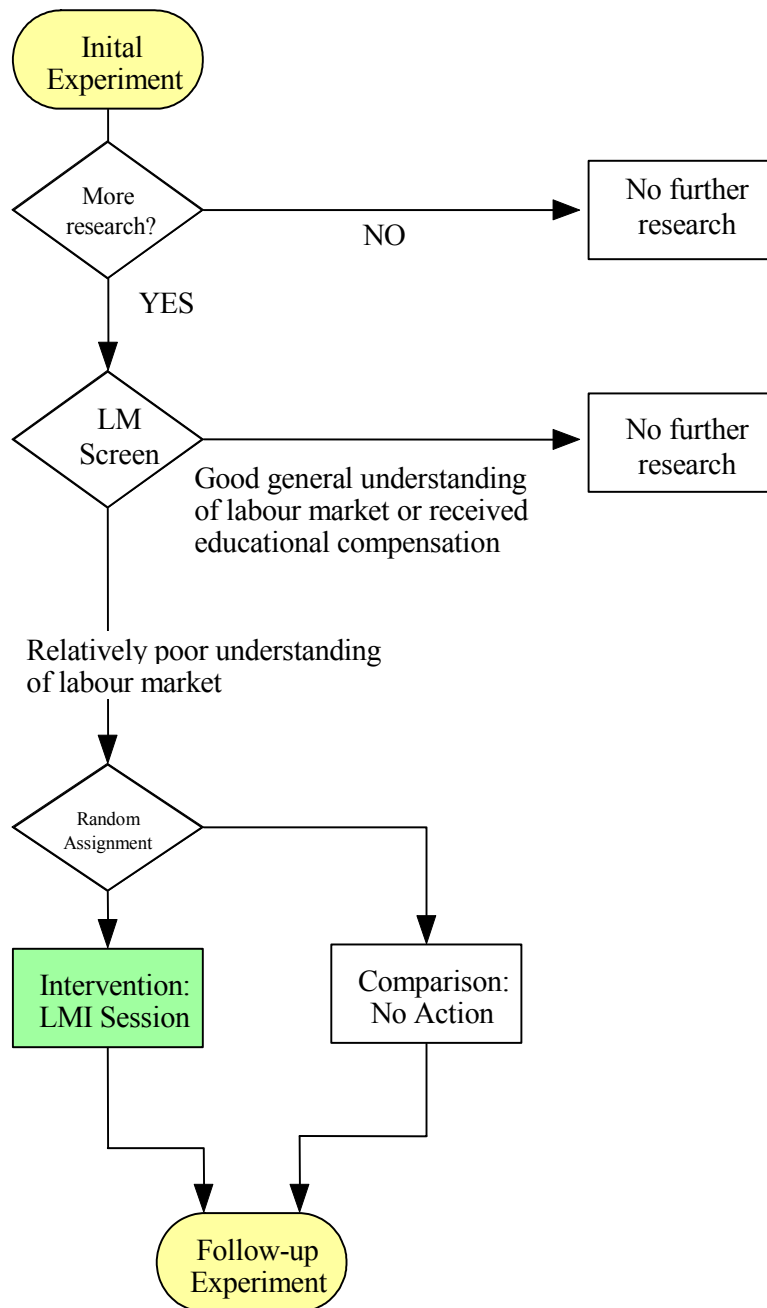
2.4. Labour Market Information Design

The survey included a number of queries as to the respondent's beliefs about the labour market and education. Three 0-1 measures from these queries were used to create a 4-point scale called Labour Market Understanding. Labour Market Understanding is a summary measure to gauge the respondents' general perception of the relationship between education and the labour market. The higher the value of Labour Market Understanding, the greater the perceived relationship between human capital and labour market outcomes. The first component of Labour Market Understanding was a pass/fail (1/0) on 15 situational questions about labour market conditions. The other two components were and two extensive queries concerning average salary ranges and unemployment rates for differing levels of education.

These were very difficult questions for most subjects to answer. For the salary range queries and unemployment rate queries, if they indicated that salaries were monotonically increasing and unemployment rates were monotonically decreasing with respect to increasing level of education (no high school education, high school education, a university education and a master degree level education), then understanding was coded as a one. If they thought salary decreased with increasing education or unemployment increased with level of education, then understanding on these two factors was coded as a zero. Summing these three 0-1 measures gives us a 4-point scale, ranging from zero to three. A low score signals that the participants are not aware of the benefits expected from increased schooling in the labour market.

Those with *relatively poor perception* about the returns to education and those who did not receive a payment linked to taking education during the initial experiment were assembled into a sub sample.⁴ This sub sample was divided randomly into two groups: intervention (treatment) and comparison (control). Those in the intervention group were invited back to an information session five months after the original experiment. (All respondents of the original experiment indicated that they agreed to be contacted for future research.) No one who was contacted for further study was informed about the nature of the continuing research. These information sessions focused on locally available courses and local employment opportunities for different trades and occupations. One month following the information session, members of intervention and comparison groups were invited back to complete a short survey and another set of decision questions. The objective of this follow-up session was to determine whether preferences for education had been affected by exposure to the labour market information intervention. The labour market information design of our study is summarized in Figure 2.

⁴ Participants were deemed to have a poor perception of labour market outcomes if they had a low overall score of three labour market perception variables: (1) the Labour Market Understanding scale as described above, (2) the Positive Attitude scale which queries participants on their agreement to general statements about the relationship of human capital and labour market outcomes and (3) a set of questions about a hypothetical individual's decision to invest in human capital.

Figure 2: Labour Market Information Design

For the current analysis, we focus our analysis to the impact of perception and new information on the choice of investment. First, we present some descriptive statistics on labour market perception variables and the potential link between these variables and educational investment choices. Next, regression results will be presented on selected educational choice variables to evaluate in a multifactor analysis the role of labour market information and education. Following those results, we will then turn to the impact of the LMI information sessions and resulting investment. Concluding remarks will close the paper.

3. The Empirical Results

3.1. Descriptive statistics on the full sample

For the purpose of the present study, we use the data generated from the first 569 subjects that participated in the experimental sessions. This sample excludes those who participated too late to have had the opportunity to attend one of the LMI sessions 5 months after the initial testing or those we could not revisit due to cost constraints. Those who are not included in this sample include the high school students and the urban residents who were in the later part of data collection. Also, all the rural sample was excluded because we could not revisit all the rural sites and some of the rural samples would be quite small after filtering and random assignment. Of the 569 participants, 194 qualified for the follow-up experiment based on the criteria discussed earlier related to their understanding of the labour market and related variables. These 194 participants were randomly assigned to the treatment and control groups. 125 of the recalled participants answered positively to our invitation and 66 of these were randomly selected to receive LMI information. The other 59 participants formed the control group. In Table 4, we report descriptive statistics comparing those with differing levels of perception of the labour market for all participants.

Table 4: Proportion of participants by subsample with no, low, medium or high Market Understanding

	Observations	No mktund=0	Low mktund=1	Medium mktund=2	High mktund=3
Full sample	569	0.0193	0.1687	0.4148	0.3972
Age 18-24	94	0.0319	0.1489	0.5000	0.3191
Age 24-44	319	0.0251	0.1599	0.4075	0.4075
Age 45 and older	156	0.0000	0.1987	0.3782	0.4231
Male	242	0.0165	0.1694	0.4050	0.4091
Female	327	0.0214	0.1682	0.4220	0.3884
Married	229	0.0131	0.1266	0.4148	0.4454
Not married	340	0.0235	0.1971	0.4147	0.3647
No children	406	0.0197	0.1724	0.4384	0.3695
Has children	163	0.0184	0.1595	0.3558	0.4663
Immigrant	31	0.0323	0.1935	0.5484	0.2258
Not immigrant	538	0.0186	0.1673	0.4071	0.4071
Has children under 5 years of age	50	0.0200	0.1800	0.3000	0.5000
No children under 5 years of age	519	0.0193	0.1676	0.4258	0.3873
Non-urban resident	82	0.0244	0.2317	0.3537	0.3902
Urban resident	487	0.0185	0.1581	0.4251	0.3984
Neither in labour market nor student	73	0.0000	0.1918	0.3973	0.4110
Unemployed	129	0.0078	0.2248	0.4496	0.3178
Post-secondary student	56	0.0357	0.1607	0.3750	0.4286
Part-time employed	123	0.0325	0.1545	0.4065	0.4065
Full-time employed	188	0.0213	0.1330	0.4149	0.4309

We note that approximately 80% of the participants have a higher score reflecting medium to high labour market understanding in relation to education. The unemployed, the non-urban residents and the immigrants are below this average, while part-time and full-time employees are above this average, in particular for the younger and married participants.

In Table 5, we present the distribution of the number and the proportion of participants choosing educational funding over cash for each education preference decision stratified by levels of labour market understanding. It is interesting to note that the proportion of participants choosing educational funding in the form of *grants* within each category of labour market understanding is broadly similar. For full-time educational loans (including, income sensitive loans), we have proportionally more participants choosing cash over education when market understanding is absent. We caution that we must be very careful when considering the small number of participants with no market understanding. Nevertheless this result holds

when we compare the no and low categories with the medium and high understanding labour market categories. Similar results are observed with part-time loans and part-time matching grants. However, for part-time matching grants, a larger proportion of better market understanding participants choose education relatively more than less knowledgeable participants.

Table 5 : Choosing education by level of labour market understanding (mktund)

	Number of observations				Proportion			
	No mktund=0	Low mktund=1	Medium mktund=2	High mktund=3	No mktund=0	Low mktund=1	Medium mktund=2	High mktund=3
N	11	96	236	226	11	96	236	226
Full-time								
D1 Grant	2	19	40	41	0.1818	0.1979	0.1695	0.1814
D2 Grant	2	26	55	54	0.1818	0.2708	0.2331	0.2389
D3 1K Grant	4	34	75	69	0.3636	0.3542	0.3178	0.3053
D4 1K Grant	4	35	81	75	0.3636	0.3646	0.3432	0.3319
D5 1K Grant	3	23	57	54	0.2727	0.2396	0.2415	0.2389
D6 1K Grant	2	17	30	41	0.1818	0.1771	0.1271	0.1814
D7 Loan	2	12	29	22	0.1818	0.1250	0.1229	0.0973
D8 Loan	3	20	38	32	0.2727	0.2083	0.1610	0.1416
D9 Inc Loan	3	16	30	26	0.2727	0.1667	0.1271	0.1150
D10 Inc Loan	3	23	46	37	0.2727	0.2396	0.1949	0.1637
D11 Match G	2	14	28	28	0.1818	0.1458	0.1186	0.1239
D12 Match G	2	19	42	40	0.1818	0.1979	0.1780	0.1770
D13 Match G	2	27	60	59	0.1818	0.2813	0.2542	0.2611
D14 Match G	3	37	65	66	0.2727	0.3854	0.2754	0.2920
Part-time								
D15 Grant	2	28	54	76	0.1818	0.2917	0.2288	0.3363
D16 Grant	3	38	87	106	0.2727	0.3958	0.3686	0.4690
D17 1K Grant	6	54	126	127	0.5455	0.5625	0.5339	0.5619
D18 1K Grant	7	53	140	126	0.6364	0.5521	0.5932	0.5575
D19 1K Grant	4	37	90	99	0.3636	0.3854	0.3814	0.4381
D20 1K Grant	2	29	51	66	0.1818	0.3021	0.2161	0.2920
D21 Loan	3	17	32	35	0.2727	0.1771	0.1356	0.1549
D22 Loan	3	22	45	47	0.2727	0.2292	0.1907	0.2080
D23 Inc Loan	3	20	34	38	0.2727	0.2083	0.1441	0.1681
D24 Inc Loan	3	22	52	49	0.2727	0.2292	0.2203	0.2168
D25 Match G	2	15	31	29	0.1818	0.1563	0.1314	0.1283
D26 Match G	2	19	51	53	0.1818	0.1979	0.2161	0.2345
D27 Match G	2	36	85	84	0.1818	0.3750	0.3602	0.3717
D28 Match G	5	41	96	99	0.4545	0.4271	0.4068	0.4381

This variable "labour market understanding" is one among different variables, which was aimed at measuring the capacity of the participants to link labour market information and

education. Another variable "positive attitude towards education" is a scale that indicates a participant's agreement with general statements about human capital investment and labour market outcomes. A higher value for Positive Attitude indicates the participant perceives a positive relationship between education level and labour market outcomes. In Tables 6 and 7, we present the same descriptive statistics as in Tables 4 and 5 for this attitude variable.

Table 6 Proportion of participants by subsample with low, medium or high positive perception about the return to human capital investment (**posatt**)

	Observations	Low posatt<=7	Medium 8<=posatt<=9	High posatt>=10
Entire sample	569	0.2373	0.4376	0.3251
Age 18-24	94	0.2979	0.4894	0.2128
Age 24-44	319	0.2602	0.4326	0.3072
Age 45 and older	156	0.1538	0.4167	0.4295
Male	242	0.1942	0.4421	0.3636
Female	327	0.2691	0.4343	0.2966
Married	229	0.2183	0.4454	0.3362
Not married	340	0.2500	0.4324	0.3176
No children	406	0.2438	0.4360	0.3202
Has children	163	0.2209	0.4417	0.3374
Immigrant	31	0.2903	0.3226	0.3871
Not immigrant	538	0.2342	0.4442	0.3216
Has children under 5 years of age	50	0.2800	0.4400	0.2800
No children under 5 years of age	519	0.2331	0.4374	0.3295
Non-urban resident	82	0.1829	0.4512	0.3659
Urban resident	487	0.2464	0.4353	0.3183
Neither in labour market nor student	73	0.2466	0.4932	0.2603
Unemployed	129	0.2946	0.4419	0.2636
Post-secondary student	56	0.1964	0.4821	0.3214
Part-time employed	123	0.2520	0.3821	0.3659
Full-time employed	188	0.1968	0.4362	0.3670

Here more than 23% of our participants have a low score reflecting poor attitude towards education and labour market information in relation to education. Younger participants, the immigrants and the unemployed have poorer attitudes than average, while older participants and non-urban resident have attitudes that are well above. These results are not contrary to the labour market understanding test that we reported earlier.

Table 7 : Choosing education by level of positive attitude towards education

	Number of observations			Proportion		
	Low posatt<=7	Medium 8<=posatt<=9	High posatt>=10	Low posatt<=7	Medium 8<=posatt<=9	High posatt>=10
N	135	249	185	135	249	185
Full-time						
D1 Grant	21	42	39	0.1556	0.1687	0.2108
D2 Grant	32	54	51	0.2370	0.2169	0.2757
D3 1K Grant	40	79	63	0.2963	0.3173	0.3405
D4 1K Grant	45	82	68	0.3333	0.3293	0.3676
D5 1K Grant	29	56	52	0.2148	0.2249	0.2811
D6 1K Grant	19	34	37	0.1407	0.1365	0.2000
D7 Loan	12	26	27	0.0889	0.1044	0.1459
D8 Loan	24	34	35	0.1778	0.1365	0.1892
D9 Inc Loan	21	26	28	0.1556	0.1044	0.1514
D10 Inc Loan	30	43	36	0.2222	0.1727	0.1946
D11 Match G	11	32	29	0.0815	0.1285	0.1568
D12 Match G	20	41	42	0.1481	0.1647	0.2270
D13 Match G	37	58	53	0.2741	0.2329	0.2865
D14 Match G	45	66	60	0.3333	0.2651	0.3243
Part-time						
D15 Grant	33	68	59	0.2444	0.2731	0.3189
D16 Grant	48	102	84	0.3556	0.4096	0.4541
D17 1K Grant	67	142	104	0.4963	0.5703	0.5622
D18 1K Grant	71	146	109	0.5259	0.5863	0.5892
D19 1K Grant	45	103	82	0.3333	0.4137	0.4432
D20 1K Grant	33	66	49	0.2444	0.2651	0.2649
D21 Loan	17	39	31	0.1259	0.1566	0.1676
D22 Loan	27	48	42	0.2000	0.1928	0.2270
D23 Inc Loan	24	36	35	0.1778	0.1446	0.1892
D24 Inc Loan	31	47	48	0.2296	0.1888	0.2595
D25 Match G	13	34	30	0.0963	0.1365	0.1622
D26 Match G	25	50	50	0.1852	0.2008	0.2703
D27 Match G	48	90	69	0.3556	0.3614	0.3730
D28 Match G	55	103	83	0.4074	0.4137	0.4486

In Table 7, we present the distribution of the number and the proportion of participants choosing education over cash for each educational preference decision stratified by levels of attitude towards education. Here contrary to the previous labour market understanding variable the proportion under each category of participants choosing education over the cash alternatives generally differ significantly with a better educational attitude favouring the educational choices.

The results presented thus far are descriptive and partial statistics. Many factors are likely to influence the choices of investing in education. Labour market understanding and attitude towards education, as most factors, could be necessary conditions but certainly not sufficient ones. Multivariate regressions are therefore necessary to account for all the factors explaining the decisions to invest in education relatively to accept a cash alternative.

3.2. Econometric models applied to full sample

In Table 1, we have presented all the educational investment and cash choices presented to each participant. Tables 5 and 7 have shown their decisions stratified by participants' levels of labour market understanding and attitude towards education. The idea behind this complex experimental protocol was to recognize that individuals are heterogeneous in their preferences and tastes. Differences in preferences can be considered in many areas, for example, with respect to risk attitudes, present versus delayed consumption, debt aversion, to name a few. They also face situational differences with their marital and family status, actual labour status, past experiences with education and work, wealth and income situations, for example.

In previous and recent papers, we have shown that the probability of choosing an educational choice increases with a decreasing relative opportunity cost: for examples, educational choices are retained by more participants for a \$1000 grant over a more costly \$1000 loans (to be reimbursed) given a specific cash alternative and when participants had to give \$50 for a \$1000 grant relatively to renounce to \$450 for the same value grant (see Johnson et al, 2003: Table A-1; Eckel, Johnson, Montmarquette and Rojas, 2005: Table 5). We have also shown that a significant number of participants will never chose education while others will always chose it over any cash alternatives. In Eckel, Johnson, Montmarquette, for example, 46% of the working poor in one experiment never choose an educational investment for themselves, while 23% always did. Note from the table below that some 65% of participants in this study never choose a \$1000 full-time educational grant. Building on these results, we examine focus our econometric analysis to the type of financing that allows the greatest variability in the sample, that would be the decisions involving \$1000 full-time and part-time grants over different cash alternatives.

In the next tables, we estimate the factors related to the intensity of preferences for full-time and part-time \$1000 educational grants over cash alternatives. We consider different

categories of investment preference for human capital from *no* preference for investment, to a *strong* preference for investment. The latent variable IE_i^* captures the preference of individual i to invest in his or her own education. An ordered probit has been estimated using numerous factors including LMI components:

$$IE_i^* = X_i\beta + \varepsilon_i$$

The preference for human capital investment is not directly observed, but whether the subjects have chosen education when faced with different trade-offs between cash and educational expenses has been observed. For example, for the full-time (and part-time) grant decisions, each subject made four choices during the experiment: \$1000 in grants versus respectively a \$50, \$100, \$200 and \$475 cash alternative. Let the observed counterpart of the latent variable IE_i^* be defined as: $IE_i = 0$ if a participant never chose education for any trade-off; $IE_i = 1$ if education was chosen when \$1000 was the grant against the \$50 alternative, $IE_i = 2$ if education was chosen by the participant when \$50 and \$100 were the cash alternatives; $IE_i = 3$ if education was chosen by the participant when \$50 and \$100 and \$200 were the cash alternatives. Finally, $IE_i = 4$ if the education was always the revealed choice of the participant, which included renouncing to the \$450 cash alternative. Assuming the error term is standard normally distributed, $\varepsilon_i \sim N(0,1)$, then the probability of participant i never choosing education is

$$\Pr(IE_i = 0) = \Pr(IE_i^* \leq \delta_0) = \Pr(\varepsilon_i \leq \delta_0 - X_i\beta) = \int_{-\infty}^{\delta_0 - X_i\beta} f(\varepsilon) d\varepsilon$$

The probability of participant i choosing education when \$50 was the grant alternative is

$$\Pr(IE_i = 1) = \Pr(\delta_0 < IE_i^* \leq \delta_1) = \Pr(-X_i\beta < \varepsilon_i \leq \delta_1 - X_i\beta) = \int_{\delta_0 - X_i\beta}^{\delta_1 - X_i\beta} f(\varepsilon) d\varepsilon$$

The probability of choosing education when \$50 and \$100 were the grant alternatives is

$$\Pr(IE_i = 2) = \Pr(\delta_1 < IE_i^* \leq \delta_2) = \Pr(\delta_1 - X_i\beta < \varepsilon_i \leq \delta_2 - X_i\beta) = \int_{\delta_1 - X_i\beta}^{\delta_2 - X_i\beta} f(\varepsilon) d\varepsilon$$

The probability of choosing education when \$50, \$100 and \$200 were the grant alternatives is

$$\Pr(IE_i = 3) = \Pr(\delta_2 < IE_i^* \leq \delta_3) = \Pr(\delta_2 - X_i\beta < \varepsilon_i \leq \delta_3 - X_i\beta) = \int_{\delta_2 - X_i\beta}^{\delta_3 - X_i\beta} f(\varepsilon) d\varepsilon$$

Similarly, the probability of participant i always choosing education is

$$\Pr(IE_i = 4) = \Pr(\delta_3 \leq IE_i^*) = \Pr(\delta_3 - X_i\beta \leq \varepsilon_i) = \int_{\delta_3 - X_i\beta}^{\infty} f(\varepsilon) d\varepsilon$$

This is an ordered probit model.⁵ The δ 's are unknown parameters to be estimated with β . The estimation results for the ordered probit for the full-time and part time educational grant decisions are reported in Table 8 and 9.

⁵The ordered probit specification is summarized in Greene's (1993) econometric text.

Table 8: Factors Related to Intensity of Preference for \$1,000 Full-Time Educational Grant Over Cash (Ordered Probit, 569 Observations)

	Coefficient t-statistic	
Basic/Control variables		
Employer pays	-0.548	-2.44
Age 18–24	<i>ref</i>	<i>ref</i>
Age 25–44	-0.516	-2.89
Age 45 and older	-1.009	-4.76
Male	0.099	0.81
Female	<i>ref</i>	<i>ref</i>
Mathematical competency low	<i>ref</i>	<i>ref</i>
Mathematical competency medium	-0.198	-1.17
Mathematical competency high	-0.257	-1.14
Dispositional variables		
Willingness to save	0.025	4.18
Risky decisions	-0.025	-0.78
Saved for post-secondary education	0.140	1.02
Planning ability	0.000	-0.08
Locus of control	0.014	0.77
Parent high school/tech	0.183	1.50
Parent university	-0.196	-1.42
<i>Labour market understanding</i>	-0.079	-0.57
Positive attitude about education and labour market	0.105	2.81
School performance	-0.162	-1.30
Peers liked school	0.049	0.36
Liked school	0.116	0.88
Situational variables		
Post-secondary education experience	-0.013	-0.07
Hold diploma	0.063	0.69
No children	0.327	1.90
Married	-0.177	-1.28
Unemployed	0.063	0.30
Post-secondary student	1.228	4.48
Part-time employed	0.017	0.08
Full-time employed	-0.370	-1.72
Neither in labour market nor student	<i>ref</i>	<i>ref</i>
Current student debt	0.106	0.73
Burdened by debt	-0.012	-0.09
Current debt	0.338	2.48
Household income low	0.047	0.32
Household income median	<i>ref</i>	<i>ref</i>
Household income high	-0.111	-0.73
Immigrant	0.104	0.42
Has children under 5 years of age	0.085	0.41
Disabled	-0.065	-0.40
Good market understanding	0.124	0.56
Leisure TV	-0.909	-1.87

Institutional variables		
High school diploma	0.145	0.62
High school equivalency	0.175	0.57
Ontario	0.046	0.34
New Foundland (1) & New Scotland	<i>ref</i>	<i>ref</i>
Alberta	-0.214	-1.32
Knows government aid	0.052	0.97
δ_0	1.274	1.59
δ_1	1.392	1.74
δ_2	1.731	2.16
δ_3	2.168	2.70
Log likelihood value	-520,835	

Notes: Values in bold text indicate coefficients that are statistically significant. “*ref*” indicates the reference alternative for interpreting the α coefficients for the related group of variables

We observe that the threshold parameters δ_1 , δ_2 , and δ_3 are statistically significant, meaning that different relative costs of the \$1000 grant induce different response rates. Overall there are few statistically significant (bold) coefficient estimates. In an ordered probit model, the sign of coefficient estimates indicates the effect of the variable on the intensity of preference for education at the two end points: no preference and a very strong preference. To assess the influence of the explanatory variables on the probabilities of being in between categories, we need to solve specifically the equations of the model shown above. In Table 8a, we have computed the predicted probability for each individual to be in each of the five categories of behaviour (Never, Once, Twice, Three times and Always Chose Educational Grant). Then, for a specific characteristic, for instance, Age 18-25, Male, Low Income, an average conditional probability for each was computed. For simplicity, we discuss the results for only those variables with coefficient estimates significantly different from zero in Table 7. Overall, it is clear that most participants (64.67%) are in the first category of no preference for education, while 15.29% favour \$1000 in education expenses at any cost (up to \$475). The rest of the distribution is respectively: 3.34%, 4.44% and 8.26%. As we would expect, when a subject has education financing through work (employer pays), 83.22% of the participants always prefer the cash alternative. Younger people prefer education relatively to participants 25 years and older. The willingness to save variable, that is participants more likely to delay consumption plays an important role in explaining the decision to invest in education. Confirming the descriptive statistics, the results for labour market understanding are insignificant but having a positive attitude towards education influences positively the probability of choosing education. For example, the probability of choosing always the full-

time \$1000 grant moves on average from 12.93% for a low scorer on that variable to 16.02% for a typical participant scoring high on that variable.

Table 8a: Calculation of the Probabilities of the Factors Related to Intensity of Preference for a \$1,000 Full-Time Educational Grant Over Cash (Ordered Probit, 569 Observations)

	Prob(IEi = 0)	Prob(IEi = 1)	Prob(IEi = 2)	Prob(IEi = 3)	Prob(IEi = 4)
	Mean	Mean	Mean	Mean	Mean
Employer pays	0.8322	0.0220	0.0509	0.0419	0.0529
Employer does not pay	0.6184	0.0343	0.0898	0.0916	0.1660
Age 18–24	0.3105	0.0316	0.0959	0.1265	0.4356
Age 25–44	0.6789	0.0351	0.0894	0.0854	0.1113
Age 45 and older	0.7720	0.0290	0.0703	0.0618	0.0668
Male	0.6430	0.0334	0.0871	0.0878	0.1487
Female	0.6439	0.0324	0.0838	0.0842	0.1556
Mathematical competency low	0.6452	0.0340	0.0882	0.0880	0.1445
Mathematical competency medium	0.6395	0.0323	0.0840	0.0851	0.1591
Mathematical competency high	0.6584	0.0338	0.0871	0.0859	0.1348
Least willing to save	0.7265	0.0292	0.0729	0.0688	0.1026
Less than average willing to save	0.6808	0.0332	0.0842	0.0808	0.1210
More than average willing to save	0.5889	0.0349	0.0927	0.0967	0.1867
Most willing to save	0.5166	0.0343	0.0943	0.1054	0.2495
Risky decisions low	0.6485	0.0322	0.0828	0.0826	0.1540
Risky decisions neutral	0.6370	0.0340	0.0888	0.0896	0.1506
Risky decisions high	0.6423	0.0325	0.0851	0.0871	0.1530
Saved for post-secondary education	0.6028	0.0334	0.0883	0.0922	0.1833
Not saved for post-secondary education	0.7262	0.0317	0.0789	0.0726	0.0906
Planning ability low	0.6126	0.0358	0.0942	0.0959	0.1615
Planning ability medium	0.6759	0.0318	0.0812	0.0793	0.1318
Planning ability high	0.6638	0.0329	0.0846	0.0836	0.1350
Planning ability very high	0.6164	0.0313	0.0823	0.0859	0.1841
Locus of control low	0.6272	0.0337	0.0881	0.0895	0.1615
Locus of control medium	0.6688	0.0332	0.0850	0.0829	0.1302
Locus of control high	0.6334	0.0341	0.0894	0.0909	0.1521
Locus of control very high	0.6448	0.0299	0.0773	0.0788	0.1693
Parent high school/tech	0.6184	0.0343	0.0897	0.0912	0.1665
No parent high school/tech	0.6835	0.0305	0.0781	0.0771	0.1308
Parent university	0.6141	0.0306	0.0809	0.0860	0.1884
No parent university	0.6557	0.0338	0.0870	0.0856	0.1380
<i>No labour market understanding</i>	<i>0.5416</i>	<i>0.0286</i>	<i>0.0785</i>	<i>0.0898</i>	<i>0.2615</i>
<i>Low Labour market understanding</i>	<i>0.6308</i>	<i>0.0345</i>	<i>0.0895</i>	<i>0.0899</i>	<i>0.1553</i>
<i>Median labour market understanding</i>	<i>0.6544</i>	<i>0.0320</i>	<i>0.0829</i>	<i>0.0834</i>	<i>0.1473</i>
<i>High labour market understanding</i>	<i>0.6426</i>	<i>0.0333</i>	<i>0.0861</i>	<i>0.0862</i>	<i>0.1519</i>
Low positive attitude about education and labour market	0.6728	0.0324	0.0834	0.0821	0.1293
Medium positive attitude about education and labour market	0.6345	0.0331	0.0859	0.0867	0.1598

High positive attitude about education and labour market	0.6344	0.0328	0.0856	0.0870	0.1602
School performance high	0.6431	0.0322	0.0837	0.0848	0.1562
School performance low	0.6441	0.0335	0.0869	0.0868	0.1487
Peers' performance high	0.6360	0.0332	0.0863	0.0872	0.1573
Peers' performance low	0.6676	0.0317	0.0817	0.0811	0.1379
Liked school	0.6182	0.0335	0.0875	0.0890	0.1717
Disliked school	0.6538	0.0326	0.0843	0.0844	0.1450
Post-secondary education experience	0.6404	0.0327	0.0850	0.0858	0.1561
No post-secondary education experience	0.6672	0.0338	0.0869	0.0849	0.1272
Diploma = 1	0.6332	0.0318	0.0828	0.0847	0.1676
Diploma = 2	0.6775	0.0357	0.0913	0.0874	0.1080
Diploma = 3	0.6457	0.0359	0.0936	0.0935	0.1313
Diploma = 4	0.7063	0.0366	0.0912	0.0824	0.0835
Diploma = 5 (1 obs.)	0.8294	0.0281	0.0630	0.0470	0.0325
No children	0.5945	0.0342	0.0907	0.0948	0.1859
Has children	0.7657	0.0295	0.0716	0.0632	0.0701
Married	0.7493	0.0303	0.0744	0.0669	0.0791
Not married	0.5723	0.0346	0.0925	0.0984	0.2022
Neither in labour market or student	0.7305	0.0330	0.0816	0.0737	0.0812
Unemployed	0.6065	0.0393	0.1039	0.1053	0.1450
Post-secondary student	0.1189	0.0214	0.0761	0.1268	0.6567
Part-time employed	0.6669	0.0365	0.0938	0.0907	0.1121
Full-time employed	0.7762	0.0294	0.0708	0.0615	0.0621
Current student debt	0.5792	0.0341	0.0915	0.0976	0.1975
No current student debt	0.6661	0.0324	0.0830	0.0816	0.1369
Burdened by debt	0.6461	0.0337	0.0873	0.0873	0.1456
Not burdened by debt	0.6414	0.0321	0.0834	0.0844	0.1586
Current debt	0.5864	0.0357	0.0949	0.0990	0.1840
No current debt	0.6661	0.0317	0.0814	0.0805	0.1403
Household income low	0.5721	0.0348	0.0931	0.0991	0.2010
Household income medium	0.6799	0.0327	0.0831	0.0797	0.1245
Household income high	0.6854	0.0305	0.0780	0.0768	0.1292
Immigrant	0.6058	0.0343	0.0910	0.0946	0.1743
Not immigrant	0.6457	0.0328	0.0849	0.0852	0.1514
Has children under 5 years of age	0.7092	0.0333	0.0838	0.0787	0.0950
No children under 5 years of age	0.6392	0.0327	0.0851	0.0860	0.1570
Disabled	0.6398	0.0325	0.0846	0.0856	0.1575
Not disabled	0.6649	0.0347	0.0889	0.0864	0.1251
Good market understanding	0.6426	0.0333	0.0861	0.0862	0.1519
Poor market understanding	0.6442	0.0326	0.0846	0.0854	0.1532
Leisure TV — Low	0.6490	0.0312	0.0806	0.0812	0.1580
Leisure TV — High	0.6388	0.0343	0.0892	0.0897	0.1480
High school diploma	0.6359	0.0329	0.0856	0.0868	0.1587
No high school diploma	0.6868	0.0326	0.0827	0.0794	0.1184
High school equivalency	0.6724	0.0343	0.0877	0.0854	0.1202
No high school equivalency or high school diploma	0.6415	0.0327	0.0850	0.0858	0.1549
Ontario	0.6133	0.0329	0.0868	0.0901	0.1769
New Foundland (1) & New Scotland	0.6624	0.0346	0.0887	0.0862	0.1282
Alberta	0.6765	0.0309	0.0789	0.0777	0.1359
Knows government aid	0.6437	0.0317	0.0815	0.0815	0.1617
Doesn't know government aid	0.6899	0.0300	0.0758	0.0733	0.1310

In Table 9 and 9a, we report the same regression and computations for the \$1,000 part-time grant decisions. The results of the ordered probit are in line with those for the full-time grant choices with the willingness to save variable playing an important role. Again labour market understanding has no effect while a positive attitude towards education favours educational choice. Relatively to full-time grant, we observe that more variables are statistically significant. Those new variables are generally related to the labour market and family status of the participants. Immigrants favour more part-time education than non-immigrants and those from the province of Alberta are less likely to invest in education. In Table 9a, we detail the computed probabilities. Here the distribution is flatter than before ranging from 39.89% of the participants always avoiding the educational choice (and taking the cash alternative) and 24.6% always choosing education (and giving up the cash alternative). The rest of the distribution is respectively 5.80%, 14.59%, and 15.11% choosing education one, two and three times out four opportunities.

Table 9: Factors Related to Intensity of Preference for \$1,000 Part-Time Educational Grant Over Cash (Ordered Probit, 569 Observations)

	Coefficient t-statistic	
Basic/Control variables		
Employer pays	-0.478	-2.73
Age 18–24	<i>ref</i>	<i>ref</i>
Age 25–44	-0.365	-2.21
Age 45 and older	-0.660	-3.49
Male	-0.093	-0.86
Female	<i>ref</i>	<i>ref</i>
Mathematical competency low	<i>ref</i>	<i>ref</i>
Mathematical competency medium	0.166	1.10
Mathematical competency high	0.013	0.07
Dispositional variables		
Willingness to save	0.030	5.73
Risky decisions	-0.041	-1.48
Saved for post-secondary education	0.013	0.12
Planning ability	-0.007	-1.76
Locus of control	0.004	0.24
Parent high school/tech	0.184	1.74
Parent university	-0.188	-1.57
<i>Laour Market undertsanding</i>	<i>-0.004</i>	<i>-0.03</i>
Positive attitude about education and labour market	0.071	2.20
School performance	-0.008	-0.07
Peers liked school	0.148	1.22
Liked school	0.072	0.62
Situational variables		

Post-secondary education experience	0.377	2.07
Hold diploma	0.068	0.87
No children	0.359	2.44
Married	-0.322	-2.65
Unemployed	0.404	2.13
Post-secondary student	0.899	3.53
Part-time employed	0.515	2.71
Full-time employed	0.247	1.30
Neither in labour market nor student	<i>ref</i>	<i>ref</i>
Current student debt	-0.041	-0.32
Burdened by debt	0.080	0.69
Current debt	0.176	1.44
Household income low	-0.013	-0.10
Household income median	<i>ref</i>	<i>ref</i>
Household income high	-0.014	-0.11
Immigrant	0.398	1.88
Has children under 5 years of age	0.421	2.31
Disabled	0.103	0.68
Good market understanding	0.039	0.20
Leisure TV	-0.590	-1.37
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Institutional variables		
High school diploma	-0.319	-1.61
High school equivalency	-0.595	-2.19
Ontario	-0.082	-0.68
New Foundland (1) & New Scotland	<i>ref</i>	<i>ref</i>
Alberta	-0.312	-2.20
Knows government aid	0.050	1.10
δ_0	0.464	0.66
δ_1	0.641	0.92
δ_2	1.078	1.54
δ_3	1.594	2.27
<hr/>		
Log likelihood value	-734.747	

Notes: Values in bold text indicate coefficients that are statistically significant. “*ref*” indicates the reference alternative for interpreting the α coefficients for the related group of variables

Table 9a: Calculation of the Probabilities of the Factors Related to Intensity of Preference for a \$1,000 Part-Time Educational Grant Over Cash (Ordered Probit, 569 Observations)

	Prob(IEi = 0)	Prob(IEi = 1)	Prob(IEi = 2)	Prob(IEi = 3)	Prob(IEi = 4)
	Mean	Mean	Mean	Mean	Mean
Employer pays	0.5566	0.0575	0.1294	0.1170	0.1394
Employer does not pay	0.3799	0.0569	0.1437	0.1555	0.2640
Age 18–24	0.1822	0.0434	0.1283	0.1744	0.4717
Age 25–44	0.4141	0.0597	0.1476	0.1535	0.2251
Age 45 and older	0.5049	0.0595	0.1388	0.1318	0.1650
Male	0.4143	0.0583	0.1443	0.1510	0.2321
Female	0.3907	0.0560	0.1403	0.1510	0.2621
Mathematical competency low	0.5272	0.0559	0.1288	0.1221	0.1660
Mathematical competency medium	0.3721	0.0570	0.1444	0.1570	0.2696
Mathematical competency high	0.3839	0.0580	0.1463	0.1571	0.2547
Least willing to save	0.5593	0.0579	0.1301	0.1172	0.1356
Less than average willing to save	0.4383	0.0608	0.1473	0.1483	0.2053
More than average willing to save	0.2941	0.0556	0.1493	0.1747	0.3263
Most willing to save	0.2447	0.0486	0.1352	0.1694	0.4021
Risky decisions low	0.4098	0.0567	0.1400	0.1473	0.2462
Risky decisions neutral	0.3718	0.0581	0.1478	0.1605	0.2617
Risky decisions high	0.4299	0.0555	0.1365	0.1434	0.2348
Saved for post-secondary education	0.3712	0.0556	0.1413	0.1551	0.2768
Not saved for post-secondary education	0.4605	0.0597	0.1434	0.1427	0.1937
Planning ability low	0.3434	0.0558	0.1453	0.1637	0.2918
Planning ability medium	0.4458	0.0561	0.1362	0.1402	0.2217
Planning ability high	0.4042	0.0590	0.1467	0.1540	0.2361
Planning ability very high	0.4004	0.0565	0.1399	0.1479	0.2554
Locus of control low	0.4093	0.0559	0.1393	0.1485	0.2470
Locus of control medium	0.4124	0.0593	0.1461	0.1510	0.2313
Locus of control high	0.3758	0.0565	0.1437	0.1572	0.2668
Locus of control very high	0.4024	0.0558	0.1386	0.1476	0.2556
Parent high school/tech	0.3689	0.0568	0.1444	0.1576	0.2722
No parent high school/tech	0.4512	0.0571	0.1381	0.1405	0.2131
Parent university	0.3919	0.0554	0.1384	0.1490	0.2652
No parent university	0.4043	0.0576	0.1435	0.1518	0.2428
<i>No labour market understanding</i>	<i>0.3090</i>	<i>0.0484</i>	<i>0.1311</i>	<i>0.1599</i>	<i>0.3516</i>
<i>Low labour market understanding</i>	<i>0.4231</i>	<i>0.0575</i>	<i>0.1408</i>	<i>0.1465</i>	<i>0.2321</i>
<i>Median labour market understanding</i>	<i>0.4170</i>	<i>0.0571</i>	<i>0.1409</i>	<i>0.1474</i>	<i>0.2376</i>
<i>High labour market understanding</i>	<i>0.3786</i>	<i>0.0570</i>	<i>0.1442</i>	<i>0.1562</i>	<i>0.2640</i>
Low positive attitude about education and labour market	0.4399	0.0565	0.1383	0.1435	0.2217
Medium positive attitude about education and labour market	0.3956	0.0566	0.1412	0.1504	0.2562
High positive attitude about education and labour market	0.3789	0.0578	0.1458	0.1572	0.2603
School performance high	0.3776	0.0571	0.1445	0.1565	0.2643
School performance low	0.4267	0.0567	0.1392	0.1448	0.2326

Peers' performance high	0.3815	0.0567	0.1431	0.1549	0.2638
Peers' performance low	0.4620	0.0577	0.1384	0.1386	0.2032
Liked school	0.3838	0.0570	0.1432	0.1538	0.2621
Disliked school	0.4075	0.0569	0.1415	0.1498	0.2442
Post-secondary education experience	0.3880	0.0572	0.1437	0.1540	0.2571
No post-secondary education experience	0.4957	0.0547	0.1295	0.1284	0.1917
Diploma = 1	0.4069	0.0555	0.1380	0.1471	0.2524
Diploma = 2	0.3829	0.0606	0.1523	0.1611	0.2430
Diploma = 3	0.3801	0.0600	0.1519	0.1627	0.2452
Diploma = 4	0.4183	0.0660	0.1616	0.1607	0.1934
Diploma = 5 (1 obs.)	0.4297	0.0703	0.1690	0.1607	0.1703
No children	0.3541	0.0563	0.1446	0.1604	0.2846
Has children	0.5168	0.0587	0.1355	0.1275	0.1615
Married	0.4958	0.0589	0.1382	0.1332	0.1739
Not married	0.3367	0.0556	0.1445	0.1630	0.3002
Neither in labour market or student	0.6075	0.0560	0.1221	0.1048	0.1096
Unemployed	0.3742	0.0594	0.1510	0.1628	0.2526
Post-secondary student	0.1299	0.0357	0.1122	0.1674	0.5548
Part-time employed	0.3568	0.0580	0.1488	0.1639	0.2726
Full-time employed	0.4480	0.0613	0.1480	0.1475	0.1953
Current student debt	0.3737	0.0566	0.1435	0.1567	0.2696
No current student debt	0.4102	0.0571	0.1415	0.1490	0.2423
Burdened by debt	0.3953	0.0579	0.1449	0.1542	0.2477
Not burdened by debt	0.4052	0.0562	0.1396	0.1483	0.2507
Current debt	0.3798	0.0564	0.1422	0.1540	0.2676
No current debt	0.4090	0.0572	0.1419	0.1498	0.2422
Household income low	0.3864	0.0549	0.1386	0.1513	0.2688
Household income medium	0.4191	0.0582	0.1429	0.1480	0.2319
Household income high	0.3943	0.0579	0.1450	0.1547	0.2481
Immigrant	0.3014	0.0567	0.1512	0.1751	0.3157
Not immigrant	0.4064	0.0570	0.1415	0.1496	0.2455
Has children under 5 years of age	0.3926	0.0581	0.1464	0.1565	0.2463
No children under 5 years of age	0.4034	0.0569	0.1416	0.1501	0.2479
Disabled	0.3847	0.0569	0.1432	0.1543	0.2610
Not disabled	0.4930	0.0574	0.1352	0.1322	0.1823
Good market understanding	0.3786	0.0570	0.1442	0.1562	0.2640
Poor market understanding	0.4153	0.0569	0.1405	0.1475	0.2397
Leisure TV — Low	0.4021	0.0566	0.1410	0.1500	0.2503
Leisure TV — High	0.3995	0.0572	0.1429	0.1518	0.2486
High school diploma	0.3906	0.0566	0.1421	0.1526	0.2580
No high school diploma	0.4582	0.0587	0.1413	0.1416	0.2001
High school equivalency	0.5670	0.0595	0.1325	0.1169	0.1242
No high school equivalency or high school diploma	0.3891	0.0568	0.1427	0.1534	0.2581
Ontario	0.3971	0.0559	0.1399	0.1503	0.2569
New Foundland (1) & New Scotland	0.3464	0.0579	0.1489	0.1643	0.2825
Alberta	0.4631	0.0579	0.1385	0.1385	0.2021
Knows government aid	0.3970	0.0557	0.1404	0.1520	0.2548
Doesn't know government aid	0.4623	0.0566	0.1355	0.1359	0.2097

3.3. Assessing the impact of LMI sessions on investing in human capital

As discussed previously, to determine if more labour market information (from credible sources) and improving the attitude towards education can have any impact on the decision to invest in learning activities, the experiment offered to a subset of participants a 90-minute information session on the actual labour market outcomes for various fields of education and training five months after our initial experimental session. These sessions focused on locally available courses and local employment opportunities for different trades and occupations. One month following the information session, participants were invited back to complete a small survey and another set of decision questions. The object was to document if preferences for education were affected following exposure to this type of labour market information. Another group of participants was invited to redo the choice-questions without the benefit of the labour market information session to serve as a comparison group.

3.3.1 Did the LMI session have improved the knowledge of participants to better link education and the labour market?

In Tables 10 and 10a, we compare by how much each participant has improved his or her level of labour market understanding following the recall of participants, in particular for those who have participated at the LMI session. Table 10 confirms that we recalled the less inclined towards human capital investment based in part on their labour market understanding. A large proportion of participants were in the no and low labour market understanding categories, and relatively few participants showed a high level of labour market understanding. However, many appeared in the medium category. Table 10a summarizes the same categories by subgroups 1 month after the intervention and 6 months after initial contact.

Table 10: Statistics on Labour Market Understanding before the LMI session and re-test

Mktund	Treatment group				Control group					
	#	No Understanding mktund=0	Low Understanding mktund=1	Medium Understanding mktund=2	High Understanding mktund=3	#	No Understanding mktund=0	Low Understanding mktund=1	Medium Understanding mktund=2	High Understanding mktund=3
Entire sample	66	0.0455	0.3030	0.5152	0.1364	59	0.0339	0.3220	0.5254	0.1186
Age 18-24	11	0.0000	0.1818	0.7273	0.0909	8	0.0000	0.3750	0.6250	0.0000
Age 24-44	34	0.0882	0.2941	0.4412	0.1765	35	0.0571	0.2571	0.5714	0.1143
Age 45 and older	21	0.0000	0.3810	0.5238	0.0952	16	0.0000	0.4375	0.3750	0.1875
Male	25	0.0400	0.2400	0.6000	0.1200	18	0.0556	0.5000	0.3333	0.1111
Female	41	0.0488	0.3415	0.4634	0.1463	41	0.0244	0.2439	0.6098	0.1220
Married	25	0.0400	0.3600	0.4800	0.1200	17	0.0588	0.1176	0.7059	0.1176
Not married	41	0.0488	0.2683	0.5366	0.1463	42	0.0238	0.4048	0.4524	0.1190
No children	52	0.0577	0.2115	0.5577	0.1731	47	0.0213	0.2979	0.5532	0.1277
Has children	14	0.0000	0.6429	0.3571	0.0000	12	0.0833	0.4167	0.4167	0.0833
Immigrant	3	0.0000	0.3333	0.6667	0.0000	5	0.0000	0.4000	0.6000	0.0000
Not immigrant	63	0.0476	0.3016	0.5079	0.1429	54	0.0370	0.3148	0.5185	0.1296
Has children under 5 years of age	4	0.0000	0.7500	0.2500	0.0000	3	0.3333	0.3333	0.3333	0.0000
No children under 5 years of age	62	0.0484	0.2742	0.5323	0.1452	56	0.0179	0.3214	0.5357	0.1250
Neither in labour market nor student	11	0.0000	0.5455	0.4545	0.0000	10	0.0000	0.3000	0.6000	0.1000
Unemployed	18	0.0556	0.2778	0.5000	0.1667	10	0.0000	0.3000	0.5000	0.2000
Post-secondary student	2	0.0000	0.0000	0.5000	0.5000	3	0.0000	0.3333	0.6667	0.0000
Part-time employed	14	0.0714	0.2143	0.5000	0.2143	19	0.0000	0.3684	0.4737	0.1579
Full-time employed	21	0.0476	0.2857	0.5714	0.0952	17	0.1176	0.2941	0.5294	0.0588

Table 10a: Statistics on Labour Market Understanding after LMI session and re-test

Xmktund	Treatment group				Control group					
	#	No Understanding mktund=0	Low Understanding mktund=1	Medium Understanding mktund=2	High Understanding mktund=3	#	No Understanding mktund=0	Low Understanding mktund=1	Medium Understanding mktund=2	High Understanding mktund=3
Entire sample	66	0.0152	0.1515	0.4091	0.4242	59	0.0000	0.2203	0.4237	0.3559
Age 18-24	11	0.0000	0.0000	0.7273	0.2727	8	0.0000	0.0000	0.6250	0.3750
Age 24-44	34	0.0294	0.0882	0.3824	0.5000	35	0.0000	0.2857	0.3429	0.3714
Age 45 and older	21	0.0000	0.3333	0.2857	0.3810	16	0.0000	0.1875	0.5000	0.3125
Male	25	0.0400	0.1200	0.4800	0.3600	18	0.0000	0.2222	0.3333	0.4444
Female	41	0.0000	0.1707	0.3659	0.4634	41	0.0000	0.2195	0.4634	0.3171
Married	25	0.0400	0.2000	0.3600	0.4000	17	0.0000	0.1176	0.4118	0.4706
Not married	41	0.0000	0.1220	0.4390	0.4390	42	0.0000	0.2619	0.4286	0.3095
No children	52	0.0192	0.1538	0.3846	0.4423	47	0.0000	0.1915	0.4255	0.3830
Has children	14	0.0000	0.1429	0.5000	0.3571	12	0.0000	0.3333	0.4167	0.2500
Immigrant	3	0.0000	0.0000	0.6667	0.3333	5	0.0000	0.2000	0.6000	0.2000
Not immigrant	63	0.0159	0.1587	0.3968	0.4286	54	0.0000	0.2222	0.4074	0.3704
Has children under 5 years of age	4	0.0000	0.0000	0.5000	0.5000	3	0.0000	0.6667	0.0000	0.3333
No children under 5 years of age	62	0.0161	0.1613	0.4032	0.4194	56	0.0000	0.1964	0.4464	0.3571
Neither in labour market nor student	11	0.0000	0.2727	0.2727	0.4545	10	0.0000	0.3000	0.4000	0.3000
Unemployed	18	0.0000	0.1111	0.3333	0.5556	10	0.0000	0.4000	0.2000	0.4000
Post-secondary student	2	0.0000	0.0000	0.5000	0.5000	3	0.0000	0.0000	0.3333	0.6667
Part-time employed	14	0.0714	0.2143	0.4286	0.2857	19	0.0000	0.1579	0.5789	0.2632
Full-time employed	21	0.0000	0.0952	0.5238	0.3810	17	0.0000	0.1765	0.4118	0.4118

We combine the first two rows of Table 10 and Table 10a to create Table 10b for easy comparison.

Table 10b: Treatment effect on Market Understanding

Market Understanding	Treatment group					Control group				
	#	No Understanding mktund=0	Low Understanding mktund=1	Medium Understanding mktund=2	High Understanding mktund=3	#	No Understanding mktund=0	Low Understanding mktund=1	Medium Understanding mktund=2	High Understanding mktund=3
Before intervention	66	0.0455	0.3030	0.5152	0.1364	59	0.0339	0.3220	0.5254	0.1186
After intervention	66	0.0152	0.1515	0.4091	0.4242	59	0.0000	0.2203	0.4237	0.3559

Before the LMI session, those with high market understanding represented only 13.64% of the treatment group. After the LMI session, they were 42.42%. Note also that the same phenomena, without the LMI intervention, is true for the control group. The mere effect of retesting has also changed the proportion of participants in that high level category from 11.86% to 35.59%! We anticipated that perhaps having participated in the decisions about educational financing may have had an awareness raising effect on subjects and it seems to be so. In both cases, a McNemar nonparametric change test confirms, at the significance level of 0.01, the positive level change in market understanding between before and after the LMI period intervention.⁶

Those improvements are generally observed when stratified by the participant characteristics (compare rows in Tables 10 and 10a).

In Tables 11 and 11a, we repeat the comparison before and after the LMI sessions and re-test for the "positive attitude toward education" variable.

⁶ The McNemar test is particularly applicable to "before and after" designs in which each subject is used as is own control. Measurements are made for this application on a ordinal scale. For details, see Siegel and Castellan (1990).

Table 11: Statistics on Positive Attitude towards Education before the LMI session and re-test

Posatt	Treatment group			Control group				
	#	Low information (posatt<=7)	Medium information (8<=posatt<=9)	High information (posatt>=10)	#	Low information (posatt<=7)	Medium information (8<=posatt<=9)	High information (posatt>=10)
Entire sample	66	0.4242	0.4545	0.1212	59	0.4237	0.4407	0.1356
Age 18-24	11	0.3636	0.6364	0.0000	8	0.5000	0.3750	0.1250
Age 24-44	34	0.5882	0.2941	0.1176	35	0.4857	0.4571	0.0571
Age 45 and older	21	0.1905	0.6190	0.1905	16	0.2500	0.4375	0.3125
Male	25	0.3200	0.5600	0.1200	18	0.3333	0.5000	0.1667
Female	41	0.4878	0.3902	0.1220	41	0.4634	0.4146	0.1220
Married	25	0.4800	0.4800	0.0400	17	0.5294	0.4118	0.0588
Not married	41	0.3902	0.4390	0.1707	42	0.3810	0.4524	0.1667
No children	52	0.3846	0.4615	0.1538	47	0.4468	0.4255	0.1277
Has children	14	0.5714	0.4286	0.0000	12	0.3333	0.5000	0.1667
Immigrant	3	0.3333	0.6667	0.0000	5	0.6000	0.2000	0.2000
Not immigrant	63	0.4286	0.4444	0.1270	54	0.4074	0.4630	0.1296
Has children under 5 years of age	4	0.7500	0.2500	0.0000	3	0.6667	0.3333	0.0000
No children under 5 years of age	62	0.4032	0.4677	0.1290	56	0.4107	0.4464	0.1429
Neither in labour market nor student	11	0.3636	0.6364	0.0000	10	0.7000	0.2000	0.1000
Unemployed	18	0.5000	0.2778	0.2222	10	0.6000	0.3000	0.1000
Post-secondary student	2	0.0000	1.0000	0.0000	3	0.3333	0.6667	0.0000
Part-time employed	14	0.5000	0.4286	0.0714	19	0.2632	0.5263	0.2105
Full-time employed	21	0.3810	0.4762	0.1429	17	0.3529	0.5294	0.1176

Again, Table 11 indicates the relative success of our selection process to recall the less qualified participants with respect to the links between education and the labour market. A large proportion of those recalled had a low positive attitude towards education and very few had a high level. However, again, many appear in the medium category.

Table 11a: Statistics on Positive Attitude towards Education after the LME session and re-test

Xposatt	Treatment group			Control group				
	#	Low information (posatt<=7)	Medium information (8<=posatt<=9)	High information (posatt>=10)	#	Low information (posatt<=7)	Medium information (8<=posatt<=9)	High information (posatt>=10)
Entire sample	66	0.2879	0.4545	0.2576	59	0.3559	0.4746	0.1695
Age 18-24	11	0.1818	0.2727	0.5455	8	0.2500	0.7500	0.0000
Age 24-44	34	0.2353	0.5294	0.2353	35	0.4286	0.4286	0.1429
Age 45 and older	21	0.4286	0.4286	0.1429	16	0.2500	0.4375	0.3125
Male	25	0.2000	0.5600	0.2400	18	0.3333	0.4444	0.2222
Female	41	0.3415	0.3902	0.2683	41	0.3659	0.4878	0.1463
Married	25	0.3600	0.4400	0.2000	17	0.2941	0.4706	0.2353
Not married	41	0.2439	0.4634	0.2927	42	0.3810	0.4762	0.1429
No children	52	0.2692	0.4423	0.2885	47	0.3617	0.4894	0.1489
Has children	14	0.3571	0.5000	0.1429	12	0.3333	0.4167	0.2500
Immigrant	3	0.0000	0.3333	0.6667	5	0.4000	0.4000	0.2000
Not immigrant	63	0.3016	0.4603	0.2381	54	0.3519	0.4815	0.1667
Has children under 5 years of age	4	0.0000	0.7500	0.2500	3	0.3333	0.3333	0.3333
No children under 5 years of age	62	0.3065	0.4355	0.2581	56	0.3571	0.4821	0.1607
Neither in labour market nor student	11	0.4545	0.5455	0.0000	10	0.3000	0.5000	0.2000
Unemployed	18	0.3333	0.5000	0.1667	10	0.6000	0.1000	0.3000
Post-secondary student	2	0.0000	0.0000	1.0000	3	0.0000	1.0000	0.0000
Part-time employed	14	0.4286	0.2143	0.3571	19	0.3684	0.5789	0.0526
Full-time employed	21	0.0952	0.5714	0.3333	17	0.2941	0.4706	0.2353

We combine the first two rows of Table 11 and Table 11a to create Table 11b for easy comparison.

Table 11b: Treatment effect on Positive Attitude Towards Education

Xposatt	Treatment group			Control group				
	#	Low information (posatt<=7)	Medium information (8<=posatt<=9)	High information (posatt>=10)	#	Low information (posatt<=7)	Medium information (8<=posatt<=9)	High information (posatt>=10)
Before Intervention	66	0.4242	0.4545	0.1212	59	0.4237	0.4407	0.1356
After intervention	66	0.2879	0.4545	0.2576	59	0.3559	0.4746	0.1695

In Table 11b, we note for the treatment group that more participants have reach a high level of positive attitude toward education. Before the LMI session, they represent overall 12.12% of that sample and after they were 25.76%, Positive changes in attitude toward education are statistically significant at significance level of 0.01 with the McNemar test. This improvement is generally observed across the characteristics of the participants, but is very strong for the younger participants (compare rows between Tables 11 and 11a).

The control group has also improved between the initial experiment and the re-test, but not significantly according to the McNemar test. Overall, for the comparison group, proportion of participants found in the highest category went from 13.56% before the re-test to only 16.95% after.

3.3.2 Does better understanding of the relationship between labour market and education increase the likelihood that more participants will invest in human capital?

The answer we prepare is in the context of this study only. We caution the reader that this study has some fundamental limits. For example, a \$1000 grant is not enough to consider full-time study. However, if someone is earnest about pursuing education, \$1000 in financing will appear very attractive. So our research gives for the first time in the literature some conservative contribution to this question.

First, let us return to the ordered probit regressions explaining the individual's choice of investing in education over the cash alternative. Here, the *labour market understanding*

variable played no role, and therefore even if participants know better, our econometric results predict no effect. However, the situation is different for the *positive attitude towards education* variable. Assuming relatively comparable individuals (this is not a trivial assumption), Table 9a shows that a participant moving from a low positive attitude to a high level will see her probability of choosing the full-time \$1000 grant over all cash alternatives moves from 12.93% to 16.02% and from 22.17% to 26.17% for the part-time \$1000 grant.

Secondly, let us confirm these results with econometric regressions on the difference in educational choices made by participants between the initial experiment and the re-test.

In Table 12, we summarize two probit models with a value of one if the participant has taken more educational choices in the re-test compared to her previous choices and zero otherwise. The explanatory variables were limited to a few variables as many personal characteristics and other variables are will not have changed or are highly unlikely to change in the six months following the initial observations. One exception is a positive or a negative change in the main activity of the participants in relation to their situation in the labour market. For example, moving from unemployed to a part-time worker or from a part-time worker to a full-time worker is recorded with a dichotomous variable as a positive change. A negative change is a change in the reverse direction. The first column of Table 12 uses all the educational choices listed in Tables 5 to create the difference in educational choice. The second column uses the \$1000 part-time grant choices only. A probit could not be run for the \$1000 full-time grant choices exclusively as they are a perfect prediction between some values of the explanatory variable and the "(LMI treatment) x (Age 18-24)" variable.

Table 12: The probability of increasing the number of educational choices for the 125 participants that have been recalled.

	All educational choices		\$1000 part-time grant	
	Coefficient	t-statistic	Coefficient	t-statistic
LMI treatment x age 18–24	0.756	1.83	0.886	2.06
LMI treatment x age 25–44	-0.050	-0.17	0.169	0.52
Main activity change positive	-0.135	-0.22	0.058	0.10
Main activity change negative	0.245	0.70	-0.248	-0.57
Constant	-0.915	-5.26	-1.189	-6.09
Log likelihood value	-61.745		-49.366	
Pseudo-R ²	0.034		0.042	

We found that the LMI session for younger participants plays a significantly positive role in increasing their investment in human capital. As the improvement in attitude towards education was found very strong for the younger participants recruited in the LMI session relatively to the control group, this variable rather than the change in the level of the labour market understanding explains the result.

4. Conclusion

What have we learned? As a society participating in the knowledge base global economy, we are interested in increasing the investment in human capital of our residents. However, people are heterogeneous in their preferences, in their needs and with the constraints they face. To identify a single public policy to fit all people is a formidable if not ineffectual exercise. Many factors influence the decision of individuals to invest in human capital, some necessary, but and it is unlikely that a sufficient factor exists. One strong constant, however, found in this study and others is that people who are willing to sacrifice current consumption for future consumption (our willingness to save variable) are likely to invest in human capital. How this characteristic of willingness to save is developed is another matter. But, we can certainly study the determinants of this variable. In previous regression analysis we have done, people with good everyday mathematical skills have a much stronger probability to show a stronger willingness to save. .

In this study, we have focus on the role of labour market information and education. It matters, and can be improved, but it may never be sufficient by itself to sustain a public program aiming at increasing the human capital of adults. In others words, if basic literacy and math literacy, in particular, give the underlying structure the preferences for investment, the time to invest in long term human capital development is with the young. We have to reinforce the preference for education among young people. Informing them about the link between education and the labour market is certainly a good strategy. To aim too high with goals for adult education may be very costly with little benefits.

There remains much work to be done on the connection between labour market understanding and human capital investment and on the general concern of improving the human capital position of adults. One contribution of this work is to show how to capture previously immeasurable evidence to inform these concerns. We believe that our work has identified a direction to study this question fruitfully.

References

Johnson. C., C. Montmarquette. and C. Eckel. 2003. "Fostering Adult Education: A Laboratory Experiment on the Efficient Use of Loans, Grants, and Saving Incentives." Social Research and Demonstration Corporation (SRDC). Report to Human Resources Development Canada (HRDC). November. http://www.srdc.org/english/publications/johnson_et_al.pdf

Johnson. C., C. Montmarquette. and C. Eckel. 2006. "Human Capital Investment by the Poor: Calibrating Policy with Laboratory Experiments", unpublished working paper.

Eckel. C., C. Johnson, C. Montmarquette and C. Rojas. 2005. "Debt Aversion and the Demand for Loans", unpublished working paper.

Eckel. C., C. Johnson. and C. Montmarquette. 2005. "Saving decisions of the working poor: short and long-term horizons." In J. Carpenter, G. Harrison, J. List, eds., *Research in Experimental Economics. Volume 10: Field Experiments in Economics*. pp. 219-260.

Loewenstein. G., D. Read and R. F. Baumeister. eds. 2003. *Time and Decision*. New York: Russell Sage Foundation.

Siegel. S, and N.J. Castellan, jr. 1990. *Nonparametric Statistics for the Behavioral Sciences*, New York: McGraw-Hill.