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ACCESS TO POST-SECONDARY EDUCATION: THE IMPORTANCE OF CULTURE

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ACCESS TO POST-SECONDARY EDUCATION: THE IMPORTANCE OF CULTURE

ABSTRACT

This paper first discusses the theoretical approaches regarding the choice of participating in post-secondary (or "higher") education, starting with a presentation of the standard neoclassical economics approach, and then adding concepts taken from the emerging behavioural economics literature to take into account "cultural" factors that affect access. The paper then presents the results of an empirical analysis based on a very rich Canadian dataset, the Youth in Transition Survey, which follows youth from age 15 through to age 25 and includes remarkably detailed information on family and other background factors as well as schooling experiences, which provides evidence which points to the importance of cultural influences on PSE choices. Policy implications are then discussed.

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I. Introduction

In the "New Knowledge Economy", ensuring access to post-secondary-education (PSE) for all those with the desire to participate and the talent to do so, without regard to family background, is of fundamental importance to every nation's future economic prosperity, to the broader development of its population, and to the equality of opportunity among all its citizens.

The importance of PSE in economic terms can be shown in a simple way, as in Figure 1, which shows age-earnings profiles by level of schooling in Canada based on the 2006 Census.[1] While average earnings are fairly clumped together up to about age 30, they then diverge sharply, with university students, in particular, pulling away from others. By age 50-54, when earnings peak, university graduates ("college" graduates in the American lexicon) earned, on average, almost 80,000 Canadian dollars.[2] Community college graduates (excluding the trades) come a distant second, in the high 40s. Trade school graduates are next, at a little over 40,000 dollars. Those with high school diplomas (but no PSE credentials) averaged a bit under 40,000 dollars, while those who did not finish high school earned just a little over 30,000 dollars.

These are obviously large differences and point to substantially unequal standards of living for the individuals represented, as well as very different contributions to the Canadian economy to the degree earnings reflect productivity, as economists typically assume. Adding in benefits such as employer contributions to pension plans and medical insurance would widen these gaps yet further. Taking into consideration the non-pecuniary aspects of the jobs held (e.g., job satisfaction), the stability of employment, and other such factors would generate even greater differences.

In the context of these apparent benefits of PSE, the dominant theoretical model for understanding who attends college and university has come from the economics

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[1] Such Census-based age-earnings profiles represent only a "snapshot" of earnings of individuals of different ages and education levels at a single point in time, and do not necessarily indicate how earnings change over time for given individuals of any given age cohort, but they are often used as a rough proxy of these, and serve our purposes here for this reason. These graphs include males and females together. Splitting the results by gender would show greater returns to PSE for females, lower returns for males.

[2] The Canadian dollar currently trades at approximately par with the American dollar, and tends to range within a 10 or 15 cent band (either way) over time.

discipline, and is fairly simple: those who go to PSE are generally those for whom it is most worthwhile to do so – that is, principally those who are able to do well in school, and who will then benefit the most from the schooling after graduating, particularly in terms of earnings and other future career opportunities.[3]

In short, those who go to PSE are those who *should* go, since the (future discounted) benefits are greater than the costs. Furthermore, what is right at the individual level is also – under certain assumptions normally made by economists – correct at the societal level as well, for similar reasons: the *social* benefits are also greater than the *social* costs.[4]

Within this paradigm, the main problem that arises is when an individual who "should" go to PSE (i.e., they *want* to) faces some sort of "barrier" that prevents them from doing so. The most obvious barrier, and the one most central to this standard model, is affordability. That is, some potential students may not be able to attend PSE even though the benefits are greater than the costs simply because they do not have the money needed to pay for the schooling and otherwise support them while in school. And as this is "suboptimal" from the individual's perspective (i.e., they can't go when they want to – and therefore "should" go), so too is it (again) from the social perspective.[5]

The primary policy remedies for such financial barriers are, therefore, similarly financially focused and are generally aimed at making the schooling affordable for those who wish to go. This typically means the control of tuition fees and the provision of student financial aid for those who need it, including – in the Canadian case – provincially-regulated tuition fees and the existence of an extensive student aid system,

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[3] Costs may also factor into these decisions, with those for whom schooling costs are lower also tending to be more likely to go to PSE. But with costs being relatively equal across individuals (and their families), the emphasis is usually on the benefits side.

[4] This relationship does not hold exactly when PSE is significantly subsidised by the state (as is usually the case in developed countries), when taxes introduce distortions, and for other reasons – but the general principle of private and social benefits being related still generally holds.

[5] Education is not like other kinds of investments in a number of important ways which make borrowing to finance the investment problematic. Most important is the lack of collateral, since the capital in which the investment is being made is embodied in the individual and cannot be seized if a loan is not repaid. Risk pooling is also an issue, due primarily to self-selection problems. These and related factors have given rise to government involvement in student loan programs in Canada and most other developed countries. The issue remains as to the adequacy of these systems and the potential affordability barriers that may persist.

grounded in the Canada Student Loan Program, its provincial counterparts, and various associated grant programs.[6]

Given the focus of this model, and this (resulting) policy orientation, researchers and policy makers alike have remained on the alert for evidence pointing to the existence of such financial barriers, and the empirical evidence has, over time, appeared to be generally consistent with this model. Research has, for example, shown for a considerable time that PSE participation rates, especially at the university level, are much lower for those from lower income families, as well as other families that may lack financial resources (e.g., Aboriginals, those living in rural communities, those from single parent families).[7]

This evidence has generally been interpreted as indicating that the standard PSE participation model described above holds and that the affordability of PSE is the principal "barrier" of concern to policy makers. As a result, the related policy levers have been manipulated over time: tuition levels have been constrained, student financial aid has been made more generous in different ways, and PSE savings plans have been enhanced.

In short, the underlying theoretical model, the empirical evidence, and the policy prescriptions aimed at equalising the opportunity of going to PSE have all had a "money" focus, and essentially reinforced each other: the model points to money factors and the affordability barrier, the empirical evidence suggests income does indeed matter, and the common policy prescriptions make sense in this perspective.

Recent empirical evidence – both in Canada and elsewhere – has, however, challenged this conventional perspective, and a new understanding that who accesses PSE is a matter of "culture" in addition to the "economic" considerations developed above has been emerging.

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[6] Other programs aimed at helping students and their families pay for PSE include PSE tax credits, the Registered Education Savings Program (RESP), the Canadian Education Savings Grant (CESG), and others, but these are not targeted specifically on students in need, which is one reason why they tend to be roundly criticised in the context of PSE "access" policies. See Finnie, Usher and Vossensteyn, 2004a, b for a general description of the Canadian student financial aid system and suggestions for reform to make it more effective at helping those who truly need the assistance.

[7] See Finnie, Childs and Wismer, 2011 on access to PSE by students from various under-represented groups, including those from low income families.

By "culture" is meant (among other things) an understanding of and appreciation for the value and broad benefits of PSE, a sense that it is something that might be possible (or even likely) for the young person in question, and the preparation for that option, perhaps from a young age. This culture may be *related to* the economic, or financial factors discussed above – but is assumed to play an independent role as well. In essence, two young people facing the same economic/financial calculations (the benefit and cost considerations mentioned above) and having the same financial means at their disposal may make different decisions regarding whether to attend PSE, and this may be driven by having different cultural orientations with respect to PSE as defined in this way.

For example, when the influences of family income and parental education on participation in PSE are compared, the education effects overwhelmingly dominate the income effects. Other evidence points to other cultural factors and the importance of early preparation for PSE. In short, it now appears that if a child is *taught to value PSE*, is *prepared for PSE* (academically and otherwise), and ultimately *wishes to attend PSE*, there is a high probability that the child will *participate in PSE* – and cost will not stand in the way.[8]

The policy implications of these developments are extremely important. If we want to increase the overall participation rate in PSE, or to level the PSE access playing field for under-represented groups, we must adjust our policy levers from their past emphasis on affordability to focus on these newly identified cultural factors.

This said, it is important to recognise that this situation holds in the context of existing PSE fee structures, a student financial aid system that essentially provides enough money to at least most of those who need it, and other policies that have

[8] For Canada, see Finnie and Mueller, 2008, for evidence on these income and education effects in particular, and Finnie, Sweetman, and Usher, 2008 for a discussion of the "cultural" argument in the face of this and other related empirical evidence. Similar and related developments have been taking place elsewhere, especially in the United States, led by the work of James Heckman and various co-authors, including Cameron and Heckman, 1998, 2001, Carneiro and Heckman, 2002, and Cunha and Heckman, 2007. This latter work emphasizes the importance of early childhood development, which represents a more restricted notion of "cultural influences" than is developed here, but similarly puts the focus on non-financial factors and the importance of what happens early in a child's life as opposed to family income, liquidity constraints, and other financial factors that may come into play at the end of high school when PSE decisions are nominally made.

undoubtedly been critical to making PSE affordable and thus opening up PSE opportunities for many who would not otherwise have had the chance to attend. In fact, it is to some degree *because* the "affordability barriers" have been successfully addressed that we can – and must – now turn to these "cultural barriers".

The goal of this paper is to discuss access to PSE in the context of the recent empirical, theoretical, and policy developments just outlined in order to place the issue of participation in PSE in the line of thinking which emphasizes "the culture of PSE" as being a fundamental determinant of who goes to college or university – and who does not.

The general policy implication of these developments is that we need to go beyond the traditional policy tools which focus on tuition fees, student aid, and other financial factors to bring "the culture of PSE" into the lives of all youth so that PSE becomes a real, viable opportunity for everyone.

The paper is laid out as follows. The next section sketches out the competing theoretical frameworks which can be employed to understand PSE choices, including both the traditional neoclassical economics approach and newer concepts that stem principally from the field of behavioural economics. The third section presents empirical evidence on access patterns in Canada which cast light on these issues based on the extraordinarily rich Youth in Transitions Survey, which has been instrumental in changing thinking in Canada on these issues. The final section then reviews and summarizes these developments, and draws out some of the general policy implications.

II. Access to Post-Secondary Education: Theoretical Framework

What are the different theoretical approaches used for thinking about the simple but critical question: who goes to PSE? Since at least the time of Gary Becker and his development of the "human capital" framework (Becker, 1964, Cameron and Heckman, 1998), the dominant construct has come from economics. But there have always been problems with this approach, and in recent years the rise of behavioural economics has provided ideas that can help modify this paradigm to allow "culture" – which is normally

absent from the conventional model – to play a central role.[9] The purpose of this section is to develop and discuss these ideas, which then leads into the presentation of some empirical evidence on these matters in the next section.

The Standard Economics Approach

In the standard ("neoclassical) economics approach, individuals face a conceptually fairly easy choice and make a straight-forward decision: whether or not they will go to PSE is based on the future benefits of the schooling versus the up-front costs.

The benefits of PSE are typically – perhaps especially among economists – thought of principally in terms of future labour market earnings, such as those seen in the age-earnings profiles presented earlier, which show how those with more schooling, PSE in particular and university especially, earn more than others, especially at higher ages. These higher earnings thus represent the returns to the human capital that is invested in and developed (through the schooling).[10]

The returns to schooling can also, however – at least conceptually – include any other benefits that accrue to the education, such as improved health outcomes, enhanced enjoyment of cultural activities, and so on. The benefits can also include the inherent pleasure associated with the educational experience itself ("the love of learning") or can be offset by any related disutility ("school is a drag"). At the social level, benefits may include reduced crime rates, a more engaged citizenry, and other positive impacts on others (i.e., externalities with respect to the individual). These other effects are, though, usually much more difficult to measure and likely vary considerably from individual to individual. In any event, they do not matter much to the basic points made here.

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[9] Some might argue that the conventional (economics-based) model *can* be elaborated to capture "cultural" influences, but this is rarely done, and variants that completely ignore cultural influences remain highly dominant.

[10] The age-earnings profiles shown likely reflect more than the "returns to education", since some of the earnings differences among those with different levels of education would likely have held even in the absence of any differences in educational attainment. That is, those with higher levels of schooling may have earned more than others without actually getting the schooling they did. But the differences by education level shown probably reflect the effects of the education obtained to at least some degree, and are sufficient to motivate the theoretical concepts discussed here. Also, the earnings patterns shown represent "earnings premia" rather than the returns to PSE directly, which need to take the costs of the associated investments into account (discussed below), but these details do not matter to the conceptual discussion here.

The costs of the schooling come in essentially two forms. First are the direct costs of the tuition and student fees, books, and other directly school-related financial outlays required. Second come the "opportunity" costs, a concept heavily emphasized by economists generally, which here take the form of the earnings foregone while the person is in school.

Individuals thus compare these (anticipated) benefits and costs and decide to attend PSE or not. Related decisions include whether to attend at the college level or the university level, the specific program to enter, the particular area or discipline of study, and all other aspects of the effectively infinite number of decisions to be made regarding PSE. Each of these decisions entails a set of up-front costs and future benefits, and a corresponding set of choices. By the standard model, the individual makes all the relevant choices that leave them the best off – or which "maximizes their lifetime utility" in economics jargon.[11]

This choice is represented in Figure 2, which is very typical of both what one finds in both basic economics texts and the essential ideas that underlie more advanced analyses, and illustrates the general points being made. This schematic simplifies the full set of choices to a simple "PSE" versus "no PSE" decision, with the earnings and (in the case of the PSE option) cost streams indicated. Those for whom the future benefits (earnings) outweigh the up-front costs will go to PSE; those for whom this is not the case will not do so. It is assumed that this simple illustrative choice scales up to whatever complexity exists in reality, including the almost infinite number of choice sets individuals actually face.

Who, then, goes to PSE? The answer is those for whom it is worthwhile to do so in these terms: the future benefits outweigh the up-front costs. More specifically, those who attend are those who are better at school and who will benefit more from the

[11] Economists typically assume costs and benefits in future years have a "discount rate" applied, which essentially assumes that a dollar held now is worth more than one that will be received in the future, if only because current dollars could be invested and earn a return, but the basic ideas being presented here do not depend on these more technical aspects of the model.

schooling in the post-schooling period (e.g., the schooling will result in relatively higher earnings and other improved career opportunities).[12]

This decision-making process not only seems reasonable in many ways, but can be demonstrated to have many desirable welfare maximising properties at the societal level. In essence, individual decisions will, at least under certain sets of assumptions, result in an optimal use of society's resources as individuals are effectively slotted where they fit best – PSE or not – reflecting the underlying benefits and costs of the schooling. Simply put, those who go to school are those who "should" go – at both the individual and societal levels. Those who do *not* go, *should* not go.

The only problems occur where individuals cannot afford the schooling. Those who "should" go *cannot* go. This is not only bad for the individual, but is also – given the optimising nature of the resulting decisions just referred to – not good for society, either.

The predominance of this analytical framework and its straight-forward policy implications has thus resulted in the focus on affordability as the principal "barrier" to PSE. For example, the typically observed correlation found between family income and PSE participation rates has usually been interpreted as evidence of the existence of financial (affordability) barriers. Policy initiatives have therefore been mostly concerned with eliminating those (financial/affordability) barriers: keeping tuition fees down, providing student financial aid, and so on, so that those who *want* to go, are *able* to go.

Yet it can be argued, and the empirical evidence now increasingly suggests, that preferences – related to the early exposure to "the culture of PSE" – are in fact important determinants of who goes on to college or university. So too is the (related) preparation for PSE, such as taking the high school courses and achieving the grades necessary to gain admittance to a PSE program of choice. Meanwhile, the affordability barrier appears to be of much lesser importance.

In short, decisions regarding access to PSE are increasingly understood to involve a complex set of influences, experiences, relationships, and developments that are rooted

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[12] If costs vary across individuals, as may be the case where some parents pay for their children's education and some do not, or the costs of financing the education otherwise differ, this can affect the decision as well, even beyond the affordability issue focused on here. See Carmichael and Finnie, 2010, and Finnie, 2005 on these considerations.

in the family and probably start quite early in an individual's life – rather than a simple well-informed calculation of the future (monetary) costs and benefits made near or at the end of high school.

Below, we will see the importance of what is referred to here to as "the culture of PSE" manifested in the empirical evidence in a number of ways. Parental education, for example, is a much better predictor of whether a child will go to PSE than is family income – and the income effects become much smaller when parental education is taken into account. The children of almost all immigrant groups go to PSE (especially university) at considerably higher rates than non-immigrant youth – some at outstandingly high rates (as much as 90 percent, versus an average of 36-38 percent in the overall population). Preparation also matters, as captured by grades and other test scores, which are in turn at least partly related to the cultural factors just enumerated. Financial barriers are cited by only a small minority of those who do not attend PSE, while being "not interested", expressed in one form or another, is the main reason given.[13] Finally, PSE decisions are in most cases in fact made early, when the child is young, and almost surely far before the sort of reasoned benefit-cost assessment that is central to the standard model will have taken place. In fact, in a substantial number of cases individuals "always" knew they were going to PSE – a concept that is difficult to square with the benefit-costs calculus model presented above.

"Culture" thus appears to matter greatly to decisions regarding PSE. If, then, we wish to expand opportunities for PSE, including among currently under-represented groups – *including the low income groups upon which many of our concerns are typically focussed* – it is important to go beyond financial considerations and turn our attention to these cultural factors. But what are the competing theoretical approaches that can provide a framework for thinking about the importance of these cultural influences?

[13] Other evidence suggests that tuition fees have relatively little influence on PSE choices (Coelli, 2009, Neill, 2009).

Competing Theoretical Approaches to the PSE Decision

The Standard Neoclassical Model Revisited

A number of critical assumptions underlie the standard economics approach just presented, at least in its purest – and arguably most commonly used – form.

First, individuals must have full and perfect information to make optimal choices, and to the degree they do not have this perfect information, their choices will be suboptimal. In the case of making PSE choices, they must, first of all, know the future benefits (earnings and other) associated with all possible schooling options. And this in a context where there are almost an infinite set of such options, including level of study, program, discipline, particular institution to attend, etc.,. And also where even the average profiles we observe in the data such as those shown above are only a starting point for knowing what any individual would themself earn under each of the schooling options available. Individuals must also know the costs of each of the schooling options, including the opportunity costs related to the time spent in study when they could be out working.

Second, individuals – these youths of age 16 or 17 or 18, or even younger when we consider that PSE decisions are often effectively made before that, and that earlier decision are important if a youth is to be prepared to get into PSE and be accepted into a program of their choice – must have a well-defined and perfectly understood set of goals regarding what they want in life: they must know their "preferences" in economics terms. How important will higher incomes be to the individual in later years? What about the other benefits that may accrue to the schooling, such as improved health, "cultural" enrichment, and so on? What kind of career will the individual find rewarding? Will they enjoy working with their heads rather than their hands? And how will any such future benefits compare to, say, the burden of the hard work and effort associated with obtaining PSE today?

Third, the individual must behave in a "rational" way – which for economists means making the decisions that will maximise their lifetime wellbeing as defined in the terms just presented. It also means they must then follow through with the behaviour required to achieve the goals they have set out. They must choose the right level of

schooling, the appropriate program, and so on, and do all that is required to get into the chosen program and succeed when they get there, such as studying for those big exams.

While assumptions – and their first cousins abstraction and generalisation – are a natural and highly useful part of any theory-forming exercise, the theory will only be as good as the underlying assumptions, abstractions, and generalisations. If these are fundamentally flawed, the model may be misleading, or worse. In what ways should we possibly be concerned about the neoclassical model concerning PSE decisions in these respects?

Three ways in which these assumptions may break down in a manner that will point us towards the potential importance of "cultural" impacts on PSE choices are now considered. All largely belong within the scope of "behavioural economics", an emerging area of economics which combines traditional economic thinking, social psychology, the neurological sciences, and even philosophy – among other influences – to provide new insights into how humans actually behave, as opposed to how economists typically assume they do.

Making PSE Choices in the Context of Imperfect Information, Complex Information, and Bounded Rationality

Economists have addressed the problems associated with *imperfect information* extensively, such as not knowing the wage or price distributions faced when wondering about whether to accept a particular job offer or to buy a good or service at a specific price.

In the context of PSE choices, young people will generally not know the full set of PSE options or the future consequences of these options, including subsequent labour market and other likely outcomes. What *does* a degree in a certain discipline actually represent? What sort of things do graduates with such degrees do? How much do these individuals earn? And this where the number of such choices available is very large set.

"*Complex information*" and "*bounded rationality*" are related concepts which have also become well entrenched in the discipline and could arguably represent some of the earliest foundations for behavioural economics, which have continued to be added to in important ways (e.g., Simon 1957, Rubenstein, 1998, Kahneman, 2003). These

concepts in a sense represent the other side of the information coin just discussed: having *too much* information (rather than not enough) or having information that is difficult to understand or use.

While (as just discussed) the information regarding PSE choices is likely to be highly incomplete, it is at the same time almost infinite and it is hard to know what each of the options may really mean. What *does* each option imply? What about combinations of PSE options, such as going first to college and then to university? Thus the information is highly complex.

Bounded rationality relates to the idea that even if individuals do have access to the relevant/required information, its extensiveness and complexity leave us in a situation where we do not generally have the brain power or other capacities required to "optimise" over the information available.

All these concepts are potentially relevant to PSE decisions on the part of youth, and can lead to important departures from the simple model shown earlier – where arriving at the right decision seems quite tractable given the two simple options portrayed. The departure is based on recognition that real world PSE decisions involve information that is at the same time both limited and almost infinite and exceedingly complex and that individuals are (therefore) likely to come up against problems of bounded rationality.

Individuals are, therefore, likely to resort to various "heuristics" (Tversky and Kahneman, 1974; Thaler and Sunstein 2009) – a term widely used in the behavioural economics literature to denote ways of arriving at decisions, in this case to make PSE choices. These heuristics are, in turn, a route by which "culture" can enter PSE decisions in an important way.

First, the information available to any individual pertaining to PSE will generally be related to the individual's "culture". For example, if a young person's parents (and others in their family) went to university, they will probably have a better idea of the true costs and benefits of higher education, and understand that what may look like high tuition fees in the short run are perhaps quite small in comparison to the long-run benefits of the schooling. That is, information pertaining to PSE is almost certainly incomplete,

and likely biased in a way that will lead those with a history of PSE in their family to see it as a more favourable investment for both monetary and non-monetary reasons.

Related information and decision-making concepts pertaining to behavioural economics include the importance of "availability bias" (Thaler and Sunstein 2009: 27-8) or "vivid experiences", whereby individuals give more weight to those things that they see and experience around them, such as their parents having gone to PSE; "anchoring" (Slovic and Lichtenstein 1971) and "framing" (Rabin, 1998), which refer to how options are presented, whereby PSE may be made to sound like rewarding and fun, or at least worthwhile, if that is the message parents send, perhaps based on their own experiences at PSE; "status quo" bias, which refers to how individuals stay with current or previous decisions rather than searching for an optimal decision (Samuleson and Zeckhaouser, 1988); and other factors that affect the information available, how that information is processed, and the actual decisions made (Thaler and Sunstein 2009: 19-21).

The upshot of all this is that two individuals who objectively face the same up-front costs and the same future benefits of going to PSE, and who should therefore make the same PSE decisions according to the standard economics model, may in fact i) have different (objective) information sets, ii) *perceive* the costs and benefits of the schooling differently, or iii) arrive at their decisions using means which will tend to favour either going to PSE or not, depending on whether or not they were raised in a "pro PSE" culture.

How Short-run Behaviour Can be Inconsistent with Long-Run Goals

A second important area where behavioural economics has made great advances is in understanding that individuals do not always make the short-run decisions that are consistent with the long-run goals they have set (Mullainathan and Thaler, 2000). We really mean to lose weight but cannot bring ourselves to do the exercise we need to do on any given day; we choose a chocolate brownie over a piece of fruit as a snack when the opportunity presents itself even though we had planned to do the opposite; and we eat too quickly and too much when we had meant to slow down and think about what we were putting in our mouth and give our stomach a chance to signal to us that it is getting full

rather than letting our eyes and almost unthinking plate-to-mouth actions lead us to overeat.

These are, in a sense, issues of self-control, but are related to other and larger issues whereby short-run self-gratification often takes "irrational" precedence over actions that would increase our well-being in the long-run. That is, short-run behaviour is not consistent with long-run decisions – which is essentially "irrational" in the economic choice paradigm, thus again pointing to a departure from the standard neoclassical model.

Research has shown that this may occur for a range of reasons, including the chemical actions of the brain to immediate rewards, such as generating drug-like dopamine when that brownie presents itself in the here and now and losing weight is off in the distance and is otherwise far less enticing in the moment (McClure et al 2004).

While self-control is the common term – and not far from the essential concept – that is relevant here, again behavioural economics has made significant contributions in this area, including introducing the terms *present value bias, myopic decision making* and *hyperbolic discounting*: that is decision-making that is essentially short-sighted and inconsistent with long-term goals (e.g., Thaler and Benartzi, 2004, O'Donoghue and Rabin 1999).

As applied to PSE decisions, these concepts imply that individuals who make the "first level" decision to go to PSE may not adopt the behaviour needed to get them there. For example, they may not take the harder math courses in high school that they really need, they may not study for exams when required, or they may skip classes and jeopardise their academic achievement. That is, they may go for short run gain that may put the long-run goals they really mean to achieve in jeopardy – and again, perhaps "irrationally" so.

And again here "culture" can matter in the context of PSE decisions for similar reasons to those discussed regarding information sets and choice mechanisms above, and again being raised in "a culture" of PSE is likely to lead individuals towards actually going on to PSE. Work spaces will be provided for the child, homework rules will be established, short-run achievements will be rewarded – all guiding the individual through the short-term steps that are required for the long-term goal of going on to and succeeding in PSE to be met.

So again, two individuals facing identical benefits and costs with respect to PSE, and even having the same information and having made the same PSE decisions might ultimately wind up on very different trajectories – one involving PSE, the other not.

Identity Economics

Finally, George Akerlof is a truly path-breaking economist who throughout his career has moved beyond the narrow individualistic approaches that typically define neoclassical economics to incorporate social forces into his analysis. His latest work, in collaboration with Rachel Kranton, has focussed on what they call "Identity Economics". This term essentially represents the notion that individuals' decisions and actions will be affected by their desire to conform to the group or ideal with which they "identify" (Akerlof and Kranton 2010).

Akerlof has focused particular attention on the application of these principals to teenagers and their school-related behaviour. If a young person's "identity group" sits at the back of the class (when they show up at school at all), expresses disdain for the classroom experience, neglects their homework, actively avoids any appearance of looking or behaving like the "nerds" and "geeks" who do well in school, then this will heavily influence that individual's behaviour – even though it may not otherwise be "rational" or "utility maximising" in the usual economic sense.

What is interesting to the issue of PSE decisions and the theme of this paper is that identity groups are to a significant degree "culturally" determined, heavily influenced by one's parents, by who lives in one's neighbourhood, with whom one (therefore) makes friends, and otherwise engages. Friends matter, family matters, cultural milieu generally matters.

The upshot is that if a young person has an "ideal" that involves PSE, which is likely to be heavily influenced by culture, then PSE will become a goal – and vice versa.

How the Competing Theoretical Approaches Line Up

This contrast of the traditional neoclassical economics PSE decision-making model to some alternative approaches stemming mostly from the emerging field of behavioural economics is not meant to debunk the former with the latter. Indeed, the

conventional model undoubtedly holds many truths and captures some important aspects of individuals' PSE decisions. Future earnings surely matter, as do schooling costs. Individuals do "optimise" to at least some degree in at least some ways.

But the traditional framework does not capture the whole story, and might not even capture the most important determinants of individuals' PSE decisions, especially when we keep in mind the relative youth of the individuals making the decisions; the incompleteness and complexity of the information on PSE options available and how individuals are therefore likely to resort to various "heuristics" for making their decisions; the discipline that is required to make it into – and successfully through – PSE and otherwise turn goals into achievements; the importance to youth of role models and "ideals", as captured by their parents, their friends, and their broader cultural milieu; and other such factors.

In short, if a person's parents went to PSE, then going to PSE might well be what is known, what is understood, what is valued, what is expected, and what is – therefore – chosen by the youth for various reasons relating to the information available, the way that information is presented, the manner in which the available information is processed (or worked around), the social ("identity") pressures on the child, and for other related reasons all related to "culture".

Conversely, if "the culture of PSE" is *not* something to which the youth is exposed, they will be less likely to themselves go to PSE. This even holds if the objective benefits and costs – which are essentially the entirety of the conventional economics model – say they should go.

All this is only meant to open up the *idea* – backed by some theoretical underpinnings – that PSE decisions may diverge from the narrow considerations and assumptions of the standard neoclassical economics paradigm that has driven thinking in this area for so long in an important way, and that "culture" may play an important role. But ultimately this is an empirical issue. In that spirit, and with that framework established, we now turn to the evidence.

III. Empirical Evidence

This section presents empirical evidence on patterns of access to PSE that first identifies the origins of the earlier focus on affordability as the predominant "barrier" to PSE – consistent with the standard theoretical framework described above – and then works through a set of additional findings that can be interpreted as steering us away from "money" and towards the importance of "culture" as being the main driver of access to PSE. Except where indicated, the evidence all comes from various studies based on the extremely rich Canadian Youth in Transition Survey, Cohort A ("YITS-A"), which is briefly discussed, followed by the empirical findings themselves.

The YITS-A Dataset, the Measurement of Access to PSE, the Presentation of the Findings

The YITS-A is ideal for this analysis since it follows a representative sample of Canadian high school students aged 15 in 1999 through their high school years and beyond, and is extremely rich in background information regarding the child's development, experiences, and attitudes while in high school, as well as detailed information on the family situation, especially as of the first survey.

The YITS-A, created by Statistics Canada in collaboration with Human Resources and Skills Development Canada, began with the completion of a written survey in early 2000 by those youth selected into the dataset (the sample was designed to be representative of all Canadian youth). In this year, interviews were also conducted with the parents of these students, and with officials of the high schools they attended. The YITS-A also contains the youths' PISA reading scores (an international standardized test in which Canada participated).[14] The students themselves (although not their parents or school administrators) were surveyed again at two-year intervals through to 2009, when they were age 25 (referred to as Cycles 1 through 6).[15]

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[14] See Motte *et al* (2009) for a general description of the YITS.

[15] The reference date for each survey was Dec. 31 of the preceding year. So, for example, all youth were age 15 as of that date in 1999, and many questions pertained to either activities leading up to and at that specific date. Subsequent interviews were carried out in the Spring of 2002 through 2010 and again

In this paper, respondents' PSE status is measured as of Cycle 4 of the YITS, when they were 21 years of age. This was considered to be the optimal compromise between the ability to identify participation in PSE (which increases with age) and sample size (which decreases over time) and any associated potential sample bias (which may increase over cycles despite the sample weights designed to counter-act any such effects which appear to be very effective in this respect).

The dependant variable employed is an indicator of whether the individual had enrolled in college or university at any point over the first four cycles of the survey, regardless of whether they continued in their studies after that. This is the standard definition of access to PSE used in the literature; continuing on to graduation and other aspects of persistence are normally thought of as being a separate process. Access to college and university is differentiated, counting the latter if the individual attended both.

The results presented below represent the marginal effects of the variables indicated generated by a multinomial logit regression model where the outcomes are either i) no PSE, ii) college, or iii) university, and only a few other basic control variables are included (e.g., province and area size of residence). These effects are expressed as the differences in the probability of attending PSE associated with each variable shown, controlling for the other variables included in the models. Only the effects on university attendance are shown here, because this is where the differences are greatest.

Empirical Findings

Family Income and Parental Education Effects[16]

Figure 3 shows university access rates by family income level in comparison to the omitted middle income category ($50,000-$75,000), for males. The first of each pair of bars shows the effects found in a model that does not include parental education, the second bars show the effects when parental education is included.

When parental education is omitted, the income effects are sizeable, with a difference in access rates of almost 30 percentage points between those from the highest

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used Dec. 31st of the preceding year as the reference point, and generally covered activities in the two-period since the preceding interview.

[16] The results in this section are largely derived from Finnie and Mueller, 2008.

and lowest income families. These are strong effects in a context where overall male university access rates are around the 34 percent mark.

This is the sort of evidence that has historically been taken as pointing to the importance of financial factors generally, and affordability in particular, in determining access to PSE. This interpretation is, of course, consistent with the conventional economic model with its focus on costs and benefits and a policy orientation focused on making PSE affordable, as discussed above.

The second set of bars, however, reveals a very different story. When parental education (i.e., the highest level of education attained by the youth's mother or father) is included in the model, the university access gap across the highest and lowest family income groups narrows to around 10 percentage points – or about a third of what it was previously. What were previously interpreted as income effects are thus seen to be omitted parental education effects that were captured by the income variable. (No previous data sets had accurate information on parental education and family income for the individuals included in their samples). Better data and a more fully specified model thus change the story greatly.

Figure 4 does the same thing for females. The story is much the same as for males except the income effects are everywhere stronger – in both the "unadjusted" (for parental education) models and where parental education is controlled for. But we see a similar decline as was observed for males in the differences in university participation rates across income groups, from almost 40 percentage points where parental education is omitted, to around 20 points when it is included – this in a context where overall university participation rates for females are about 50 percent.

Figure 5 shows the "final" income effects for males and females (i.e., with parental education included in each case). These results can be contrasted to those shown in Figure 6, which presents the parental education effects themselves (high school completed is the omitted group). The range in access rates across parental education groups is approximately 50 percentage points for both males and females, as compared to the 10-20 percentage points for income. Even if we ignore the highest education group (professional or graduate degrees), the range is in the 35-40 percentage point range for those with university degrees in comparison to less than high school completed, and still

a full 30 percentage points when the comparison is made to those whose parents had only high school completed but no PSE.

These are strong effects, and suggest that "culture" as captured by parental education, is a much more important determinant of access to PSE than is "money", as captured by family income.

Adding Additional Background Effects

Figure 7 shows the results of a model which includes an additional set of background variables. To allow for simpler summary representations of the effects of the various influences, family income is included in the form of a single linear variable, and the same is done with parental education. Also include in this model are overall high school grades at age 15 (expressed as the student's overall average in percentage terms); the student's "PISA" (Program for International Student Assessment) reading score (range of 0-600 with a standard deviation of about 100); and an indicator of whether they are a visible minority immigrant (in this case meaning they came to Canada by age 15 in order to be included in the YITS).

This model requires some careful interpretation, since grades and PISA scores may be at least partly related to the family background characteristics (thus diminishing the estimated effects of these) and at least partly endogenous to the decision to go on to PSE if that decision has already been made, but are nonetheless revealing.

First, the income effects are now quite small: a difference in family incomes of $50,000 (a very large difference) is, for example, associated with only a 2 percentage point difference in university attendance rates. This further suggests that money in general, and affordability in particular, are not very important factors in determining university access rates.

Secondly, parental education still has a strong effect, with four years of education worth around 12 percentage points, or about six times the effect of $50,000 of family income. Although these education effects are smaller than seen above, they represent those effects after controlling for grades and PISA scores, which are themselves at least partly affected by parental education (as well as income). Parental education thus has a

sizeable "direct" effect on participation, as well as a sizeable "indirect" effect through grades and PISA scores.

Third, the grade and PISA score effects themselves are strong as well. Not surprisingly, having a higher grade point average or having a higher PISA score are both associated with much higher university attendance rates, pointing to the importance of early preparations.

Finally, even after controlling for family income, parental education, high school grades and PISA scores, being a visible minority immigrant is associated with university access rates almost 20 percentage points higher, on average, than those of non-visible minority students who were born in Canada. Canada tends to be an outlier in the PSE attainment rates of its immigrant population, and in some cases these are truly staggering, such as university access rates of almost 90 percent for first generation Chinese immigrants.[17]

This immigrant-ethnicity result is interpreted here as another expression of "culture", although culture of a different type than that captured by parental education, since it is not the effect of past PSE experience on the part of the parents that is operating (parental education is controlled for in this model), but rather a drive to achieve PSE success that is somehow instilled in the children of immigrants. This is perhaps not surprising in a context where Canadian immigrants are a very highly selected group who come to this country because they see it as a land of opportunity, and where they know that PSE is the key to their children's future economic prosperity (and perhaps their own economic prosperity and social status).

Early Experiences and Cultural Capital

Figure 8 demonstrates the effects of culture by showing the results of a model which includes not only family income and parental education, but gets at cultural influences in a different way by including a range of PISA index variables which

[17] See Finnie and Mueller 2010 for a general analysis of PSE access rates by the children of immigrants.

represent the environment to which the child was exposed and the experiences they had when young (age 15 in this case).

These include the "cultural communication" the child experienced with their parents, their "social communication", the family education support they received in the form of help with their school work, a proxy for family wealth, a proxy for home educational resources available to the child, cultural activities, cultural possessions, the amount they read, and the diversity of those reading activities.

These can be thought of as representing various aspects of "culture" and family-based activities that would otherwise prepare the child for PSE, and they almost all matter – even as these variables are all included in the model together, along with parental education and family income. Parent-child communication matters, the resources available matter, activities matter – although there are a few anomalies and otherwise curious results. In particular, help with homework is negatively associated with access to university, but this could be an indicator of a child *needing* help. Also, cultural *possessions*, per se, don't matter, but cultural activities *do* matter. Reading matters, but what the child reads does not seem to matter.[18]

Perhaps most importantly, these results would also seem to point towards the sorts of policy initiatives that could be adopted in order to change/improve the child's "culture" in a way that would put them on the path to PSE, perhaps especially for those who are at a disadvantage in terms of their family environment in this respect. We cannot change individuals' families, but we can attempt to compensate for those who are disadvantaged in this respect.

Barriers to PSE and When Decisions Are Made

Two last sets of results lend further light on PSE choices. Figure 9 shows what young people who did not go to PSE say regarding the "barriers" they faced. Almost 25 percent said their educational goals simply did not include PSE, while 43 percent said they faced no barriers. These were the most prevalent responses.

[18] See Childs, Finnie and Mueller, 2010, for the full analysis from which these results are taken.

After this, 23 percent said that financial factors were at least one barrier they faced. But this does not separate i) those who could not afford to go, and ii) those who simply did not see the value in PSE and in that sense found "it costs too much". Other work undertaken (not shown here) suggests that most of those who cite financial barriers did not face financing barriers per se, presumably leaving statements like "it costs too much" to be interpreted as the youth not seeing PSE as having sufficient worth rather than their not being able to afford to go. The policy responses of these different interpretations are very different: with one, loans or grants are required; with the other, the attitude to PSE is the problem.

Figure 10 concludes the empirical results by showing when students say they made their PSE decisions.[19] Results are shown for both college and university students. Remarkably, a full 40 percent of those who went to university said they had "always known" they were going to university, and another 40 percent said they had decided by grades 9 or 10 (age 15-16). That leaves only around 20 percent who said they decided towards the end of high school or later than that.

These results suggest that PSE decisions are made early, in many cases very early. This is hard to square with the rational economics model which assumes a set of careful calculations of future costs and benefits of PSE and the alternative options, and would further point towards these decisions being culturally determined.

IV. Conclusion

This paper has argued that a new model is needed for understanding decisions regarding whether to attend PSE – a model that takes "culture" into account.

Economists, who have been the main proponents of the dominant established model, tend to be uncomfortable with notions of culture, but this paper has appealed to emerging ideas in behavioural economics to provide a theoretical foundation for going this route, while the empirical evidence presented has pointed to the apparent importance of these factors as determinants of PSE participation rates.

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[19] These results are taken from another dataset of PSE students, as described in Finnie, Childs and Wismer, 2010.

This proposition obviously suggests the existence of both an opportunity and a challenge for policy makers wanting to increase, and make more equal, opportunities for going on to higher education, especially for disadvantaged youth. The policy challenge becomes answering the question of how PSE access opportunities can be improved when cultural influences appear to be so important, and implementing policies that accomplish this.

How can we, for example, improve PSE opportunities for children whose parents did not themselves have the experience of PSE and thus may be limited (as the data indicate) in terms of providing a "pro-PSE environment" for their children with respect to the values they form, the degree to which they are prepared for PSE, and the actual choices they make as to whether to attend a college or university?

The truth is that we do not yet know very well how to do this, but at least we now understand that this is what we need to learn, so that we can then implement policies that are effective in this regard, thus getting us away from the old "financial factors" focus and onto one that has the potential of making a much greater difference. Only further research, the implementation and evaluation of trial programs, and other such initiatives will tell us what we need to do.

Perhaps, for example, programs and guidelines could be put into place whereby youth – perhaps especially disadvantaged youth – are taken for visits to college and university campuses starting early (possibly as early as primary school) so that institutions of this sort become something they know, and they may therefore consider attending one a real option in their lives. Academic support may also play a key role. Peer group/mentoring programs could possibly be initiated. Helping students prepare application forms for PSE when the time approaches may be part of a solution. Gandara, 2001 has provided a typology for classifying and ordering policies of this type, while Orders and Duquette, 2010 have provided a review of policies that have been attempted to these ends in a number of OECD countries

While we have much to learn, what we do know is that equalising PSE opportunities is central to equalising life chances for children in care, that "culture" is probably critical to this, and policy has to follow in this vein.

REFERENCES

Akerlof, George, and Rachel Kranton (2010). *Identity Economics*. Princeton Princeton: Princeton University Press.

Becker**,** Gary S. (1964, 1993, 3rd ed.). Human Capital**:** A Theoretical and Empirical Analysis, with Special Reference to Education. Chicago, University of Chicago Press.

Childs, Stephen, Ross Finnie and Richard Mueller (2010). "Family Environment, Family Habits, and Children's Cultural Experiences: Is There a Link to Participation in Post-Secondary Education?". Finnie, Ross, Marc Frenette, Richard Mueller and Arthur Sweetman (Eds.), *Pursuing Higher Education in Canada: Economic, Social and Policy Dimensions*, Montreal, Kingston: McGill-Queen's University Press, pp. 243-267.

Cameron, Stephen V., and James J. Heckman (1998). "Life Cycle Schooling and Dynamic Selection Bias: Models and Evidence for Five Cohorts of American Males," *Journal of Political Economy* 106 (2), 262-333.

Cameron, Stephen V., and James J. Heckman (20010. "The Dynamics of Educational Attainment for Black, Hispanic, and White Males, *Journal of Political Economy* 109(3), 455-99.

Carneiro, Pablo, and James J. Heckman (2002). "The Evidence on Credit Constraints in Post-Secondary Schooling," *The Economic Journal* 112 (482), 705-34.

Carmichael, Lorne and Ross Finnie (2008). "Family Income, Access to Post-Secondary Education and Student Grants: Why Equal Access Requires More than Loans". Finnie, Ross, Richard Mueller, Arthur Sweetman, and Alex Usher, *Who Goes, Who Stays, What Matters: Access to and Remaining in Post-Secondary Education in Canada*, Montreal-Kingston: McGill-Queen's University Press, 347-368.

Cunha, Flavio, and James J. Heckman (2007). "The Technology of Skill Formation," American Economic Review, Papers and Proceedings 97(2), 31-47.

Coelli, Michael (2009). "Tuition Fees and Equality of University Enrolment", *Canadian Journal of Economics*, 42 (3), 1072-1099.

Finnie, Ross, Stephen Childs and Andew Wismer (2011). "Underrepresented Groups in Postsecondary Education in Ontario: Evidence from the Youth in Transition Survey". Toronto: Higher Education Quality Council of Ontario.

Finnie, Ross (2005). "Student Financial Aid: The Roles of Loans and Grants". Iacobucci, Frank and Carolyn Tuohy, *Taking Public Universities Seriously*, Toronto: University of Toronto Press, 476-497.

Finnie, Ross and Richard Mueller (2010). "They Came, They Saw, They Enrolled: Access to Post-Secondary Education by the Children of Canadian Immigrants". Finnie, Ross, Marc Frenette, Richard Mueller and Arthur Sweetman (Eds.), *Pursuing Higher Education in Canada: Economic, Social and Policy Dimensions*, Montreal, Kingston: McGill-Queen's University Press, pp. 191-218.

Finnie, Ross, Arthur Sweetman and Alex Usher (2008). "Introduction: A Framework for Thinking about Participation in Post-Secondary Education". Finnie, Ross, Richard Mueller, Arthur Sweetman, and Alex Usher, *Who Goes, Who Stays, What Matters: Access to and Remaining in Post-Secondary Education in Canada*. Montreal-Kingston: McGill-Queen's University Press, 2008, 3-32.

Finnie, Ross, Alex Usher and Hans Vossensteyn (2004a). "Meeting the Need: A New Architecture for Canada's Financial Aid System", Montreal: Institute for Research on Public Policy, *Policy Matters*, 5 (7).

Finnie, Ross, Alex Usher and Hans Vossensteyn (2004b). "Meeting the Need: A New Architecture for Canada's Student Financial Aid System". Beach, Charles, Robin Boadway, and Marvin McInnis (eds.), *Higher Education in Canada*, Kingston: John Deutsch Institute, McGill-Queen's University Press: 495-536.

Finnie, Ross, Stephen Childs and Andrew Wismer (2010). "When Did You Decide?" L-SLIS Research Brief No. 10. Ottawa: the Education Policy Research Initiative, University of Ottawa.

Finnie, Ross and Richard Mueller (2008). "The Backgrounds of Canadian Youth and Access to Post-Secondary Education: New Evidence from the Youth in Transition Survey". Finnie, Ross, Richard Mueller, Arthur Sweetman, and Alex Usher, *Who Goes, Who Stays, What Matters: Access to and Remaining in Post-Secondary Education in Canada*. Montreal-Kingston: McGill-Queen's University Press, 78-108.

Gándara, P. (2001). "Paving the Way to Post-Secondary Education: K-12 Intervention Programs for Underrepresented Youth". Report of the National Post-Secondary Education Cooperative Working Group on Access to Post-Secondary Education. Washington, DC, National Center for Education Statistics.

Kahneman, Daniel (2003). "Maps of Bounded Rationality: Psychology for Behavioral Economics". *The American Economic Review*. 93(5): 1449-1475.

McClure, Samuel M., David I. Laibson, Georg Loewenstein, Jonathan D. Cohen (2004). "Separate Neural Systems Value Immediate and Delayed Monetary Rewards". *Science*, 306 (5695): 503-507.

Motte, Anne, Hanquin Theresa Qiu, Yan Zhang, and Patrick Bussiere (2009). "The Youth in Transition Survey: Following Canadian Youth Through Time". Finnie, Ross, Richard Mueller, Arthur Sweetman, and Alex Usher, *Who Goes, Who Stays, What Matters: Access to and Remaining in Post-Secondary Education in Canada*. Montreal-Kingston: McGill-Queen's University Press, 63-75.

Mullainthan, Sendhil, and Richard Thaler (2000). "Behavioural Economics". MIT Department of Economics Working Paper Series.

Neill, Christine (2009). "Tuition Fees and the Demand for University Places". *Economics of Education Review*: 28 561-570.

O'Donoghue, T., and M. Rabin (1999). "Doing it Now or Later". *American Economic Review*, 89 (1): 103-124.

Orders, Shari and Cheryll Duquette (2010), "Enhancing Access to Post-Secondary Education in Canada: An Exploration of Early Intervention Initiatives in Selected Countries", CPRN Research Report, Ottawa.

Rabin, M. (1998). “Psychology and Economics”. *Journal of Economic Literature*, 36(1): 11-46.

Rubinstein, Ariel (1998). *Modeling Bounded Rationality*. Cambridge: MIT Press.

Samuleson, W. and R. Zeckhaouser (1988). “Status Quo Bias in Decision Making.” *Journal of Risk and Uncertainty*, 1(1): 7-59.

Simon, Herbert (1957). "A Behavioral Model of Rational Choice", in *Models of Man, Social and Rational: Mathematical Essays on Rational Human Behavior in a Social Setting*. New York: Wiley.

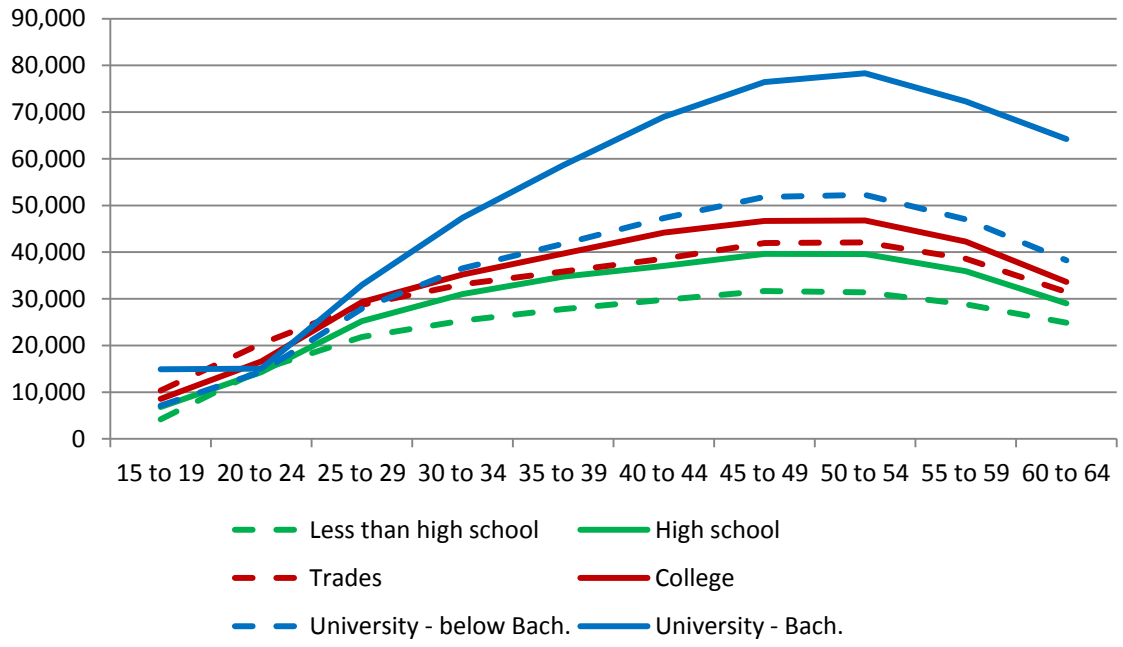
Slovic, P. and S. Lichtenstein (1971). “Comparison of Bayesian and Regression Approaches to the Study of Information Processing in Judgment”. *Organisational Behavior and Human Performance*. 6(6): 649-744.

Thaler, Richard and Cass Sunstein (2009). “Biases and Blunders”. *Nudge*. New Haven: Yale University Press: 17-39.

Thaler, R. and S. Benartzi (2004). “Save More Tomorrow”. *Journal of Political Economy*, 112(1): S164-S187.

Tversky, A., and D. Kahneman (1974). “Judgement under uncertainty: heuristics and biases.” *Science*: 185-1124.

Figure 1: Average Employment Income by Age, Canada, 2005 (1,000s $CAN)



Source: This graph was provided by Statistics Canada and was generated using information from the 2006 Census.

Figure 2: Schooling Decision

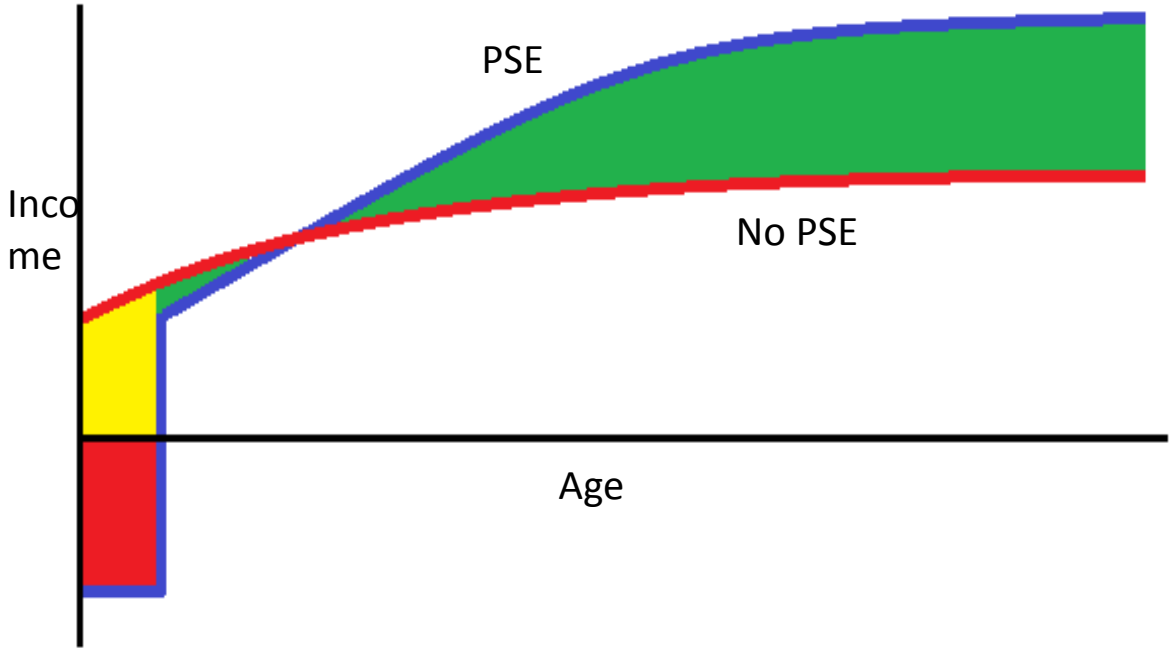
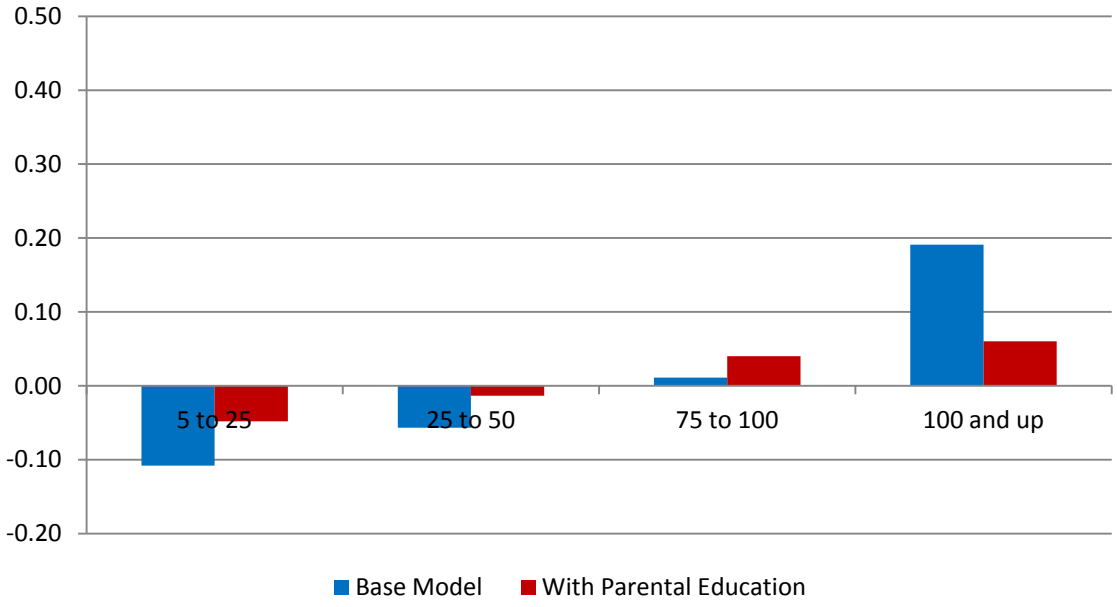
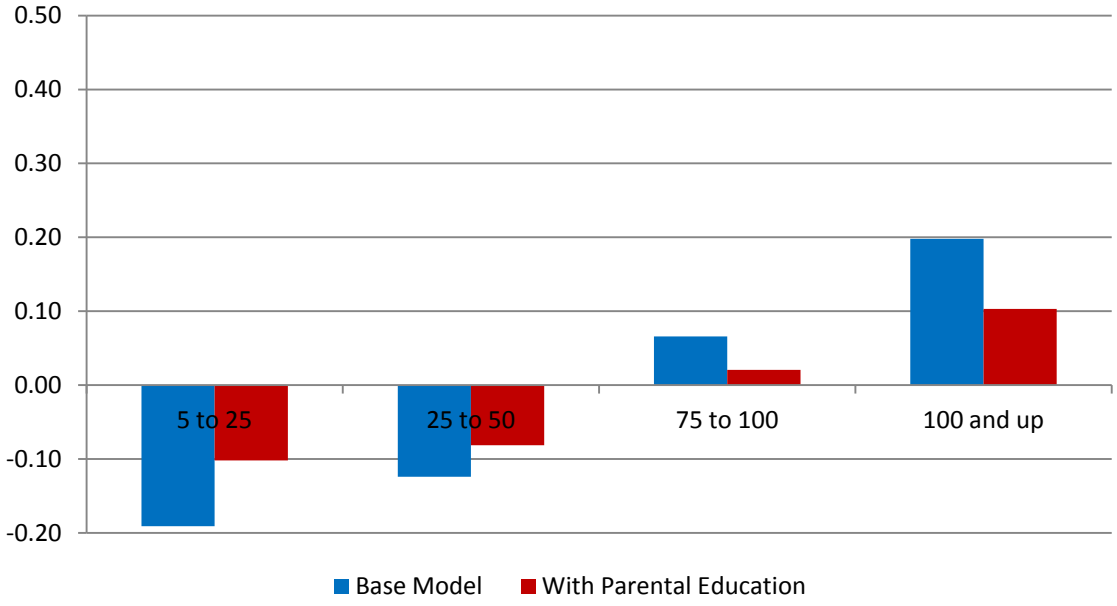


Figure 3: Marginal Effects of Family Income on Access to University, Males



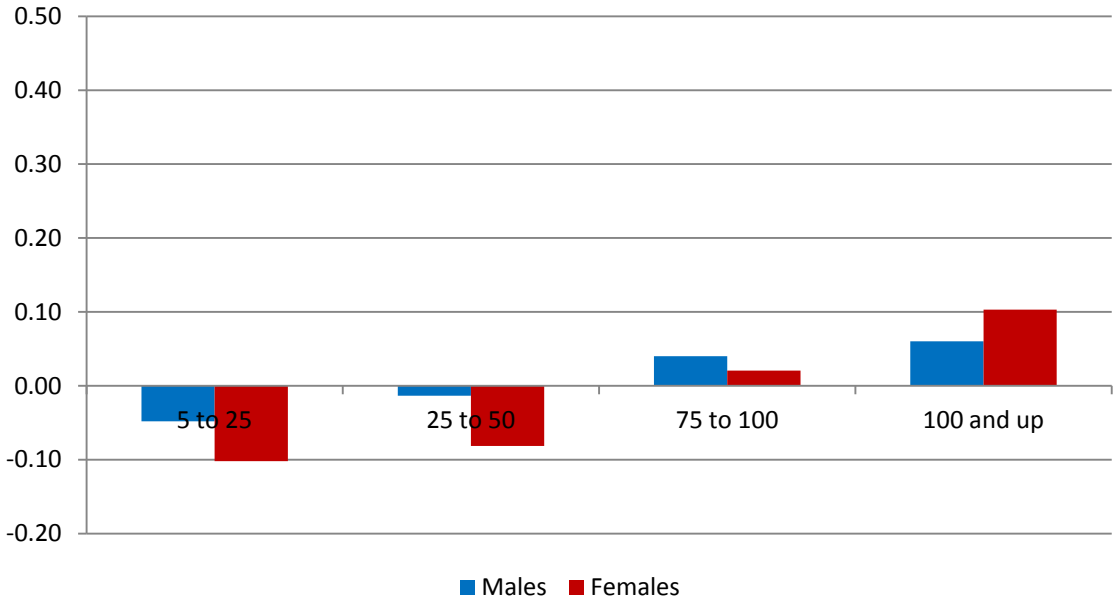
Source: Youth in Transition Survey, Cohort A.

Figure 4: Marginal Effects of Family Income on Access to University, Females



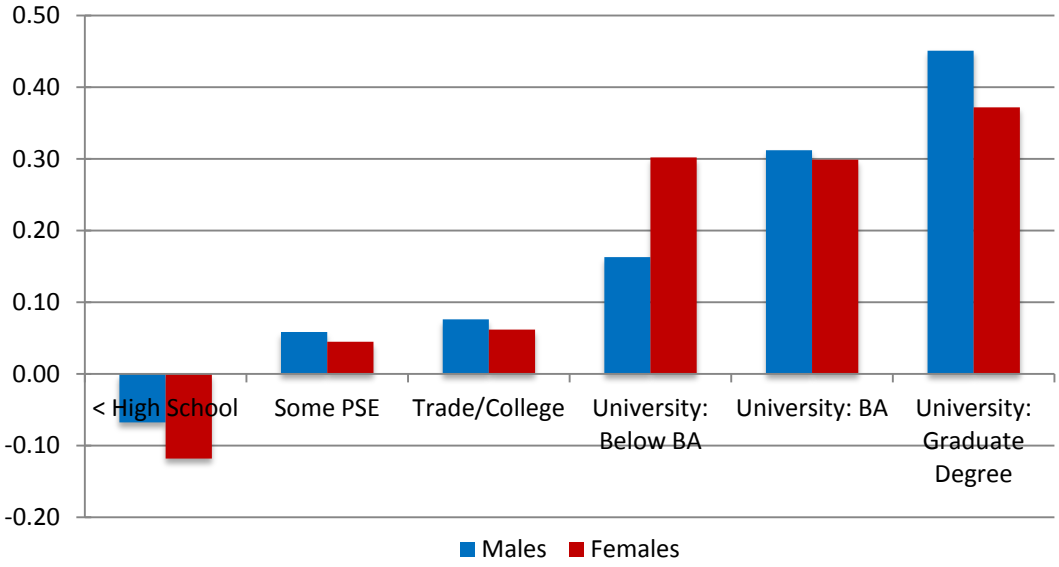
Source: Youth in Transition Survey, Cohort A

Figure 5: Marginal Effects of Family Income on Access to University, Parental Education Controlled For, by Sex



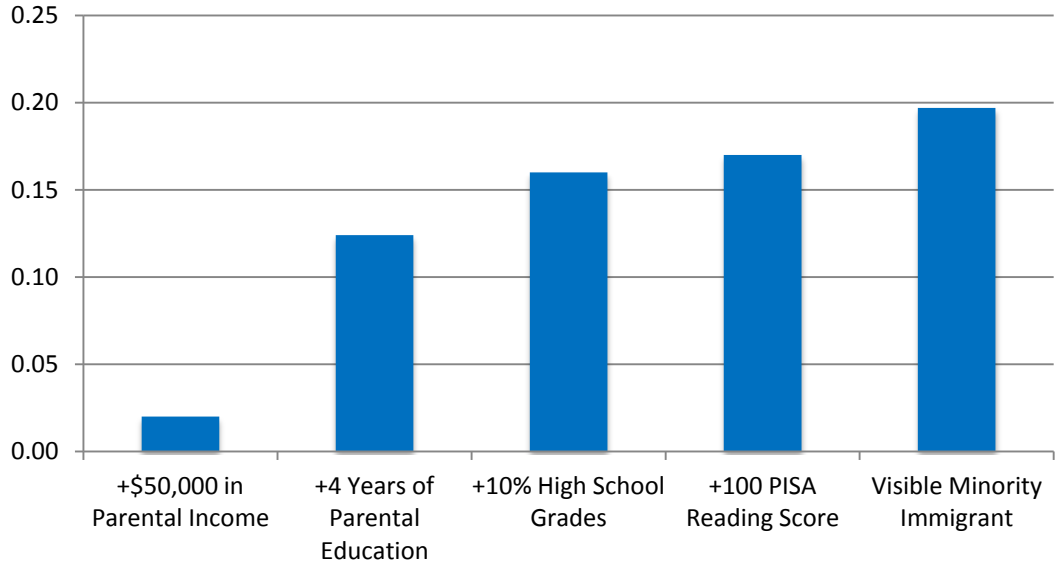
Source: Youth in Transition Survey, Cohort A.

Figure 6: Marginal Effects of Parental Education on Access to University, by Sex



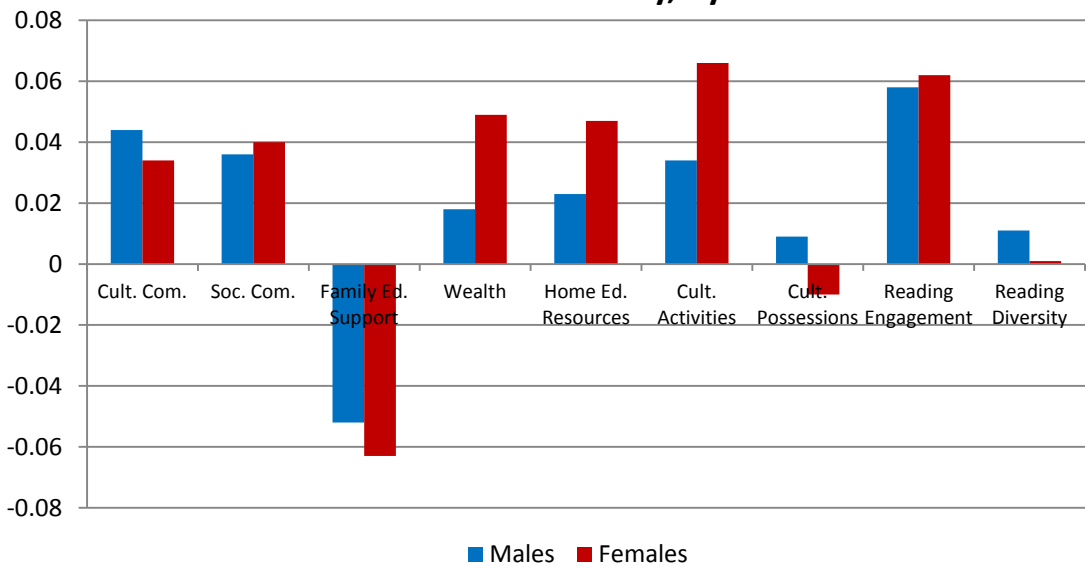
Source: Youth in Transition Survey, Cohort A.

Figure 7: Marginal Effects of Student/Family Characteristics on Access to University, Males and Females



Source: Youth in Transition Survey, Cohort A.

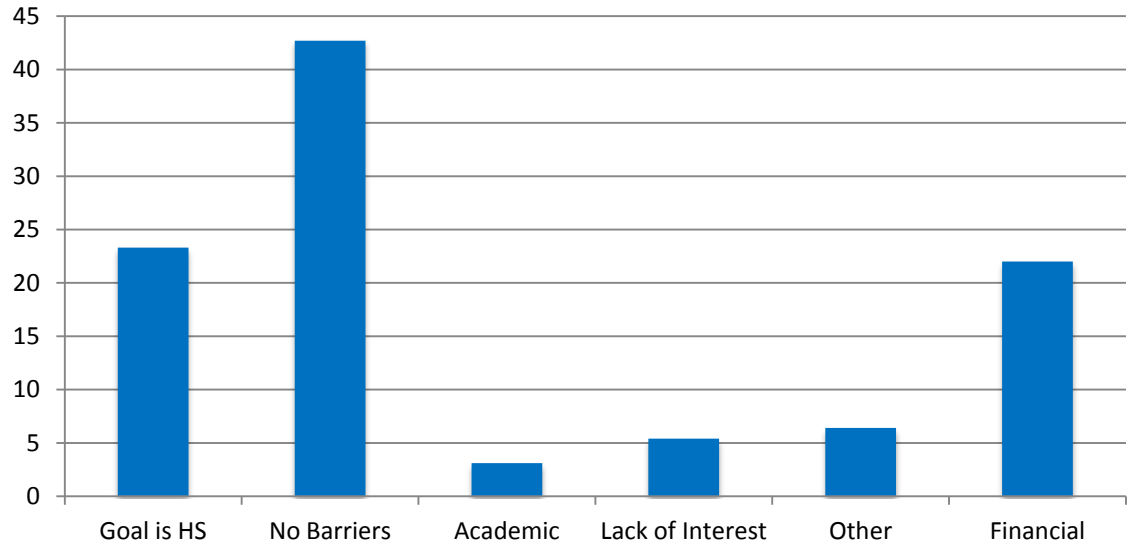
Figure 8: Marginal Effects of PISA Indices on Access to University, by Sex



Source: Youth in Transition Survey, Cohort A.

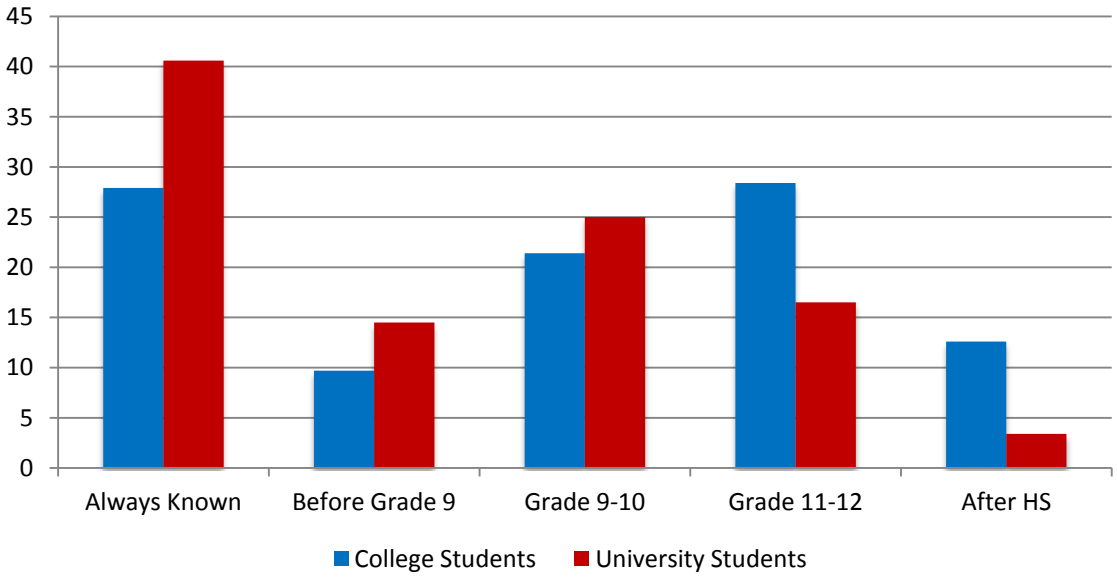
Note: Figures 7 and 8 have different scales than Figures 3-6.

Figure 9: Among Those Who do not Access, Barriers to PSE (%)



Source: Youth in Transition Survey, Cohort A.

Figure 10: When Did Students Decide They Would Like to Attend PSE? (%)



Source: Longitudinal Survey of Low-Income Students.