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Introduction: A Framework for Thinking about Participation in Post-Secondary Education

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On reconnaît de plus en plus que l'accès aux études postsecondaires (EPS) est tributaire d'un ensemble complexe de facteurs reliés entre eux et qui vont bien au-delà d'éléments de nature financière comme les frais de scolarité ou l'aide financière offerte aux étudiants. Sont également en jeu la préparation des jeunes et leur attitude face aux EPS, leurs aspirations et d'autres facteurs fortement associés au milieu familial et qui s'enracinent tôt dans la vie des individus. Ce texte d'introduction propose un cadre qui tient compte de toutes ces influences et aborde les questions de l'analyse et de l'interprétation des résultats d'études empiriques, des politiques publiques et des recherches qui seront nécessaires. Chacun des articles présentés dans cet ouvrage est réinterprété dans cette optique.

Access to post-secondary education (PSE) is the result of a complex set of relationships involving not only financial factors such as the costs of schooling and student aid but also students' attitudes to PSE, their preparation, their aspirations, and other factors rooted in family background that start early in an individual's life. This chapter develops a framework that incorporates such influences and discusses the implications for estimating the underlying relationships, interpreting the findings of empirical analyses, policy, and future research needs. The research papers that follow in the volume are reviewed in this context.

Policy-Related Research on Access and Persistence

Driven by the gains in standards of living, productivity, and global competitiveness associated with post-secondary education (PSE), governments around the world, including those in Canada, are working to increase participation in higher education (OECD 2008). Alongside this push to increase overall numbers, concerns regarding the equity of access to PSE have become more pressing. Such interests are long-standing in Canada but gained strength and a sense of immediacy in the 1990s as tuition fees rose, student debt levels increased, and various empirical studies identified important differences in PSE participation rates by certain family characteristics, including socio-economic status and the family income component of it in particular. Few would insist that everyone should attend PSE. Some individuals will simply prefer careers – and lives – that do not involve going to college or university, and others lack the ability. But it is widely accepted, at least in Canada, that access to PSE and its associated benefits should be open to all those who have the desire to participate and the talent to succeed. Access both addresses equity goals and helps drive the engine of the knowledge economy.

The policy question thus becomes one not simply of increasing overall PSE participation rates but also of providing the opportunity to obtain a post-secondary education to all interested and qualified individuals, including those from lower socio-economic backgrounds who have traditionally had lower participation rates, especially at the university level. Effectively addressing these issues from an evidence-based policy perspective requires an understanding of who gains *access* to PSE (typically defined as starting a program), as well as who *persists* (i.e., advances from one year to the next, on through graduation), and the underlying factors determining these dynamics.

The Youth in Transition Survey (YITS) enables the essays in *Who Goes, Who Stays, What Matters* to offer fresh, empirically related insights on these dynamics. Two characteristics of the YITS data contribute, in particular, to their value in this regard. First, the data longitudinally track young people from their mid-teens through late twenties as they move through the adolescent years preceding PSE, make decisions about and progress through PSE, and then enter the labour market. Second, the information contained in the files is very rich.¹

Based predominantly on analyses undertaken with the YITS, a source of policy-relevant data on education with few equals anywhere in the world, the papers in this volume provide an important contribution to the empirical basis of the public policy debate on access and persist-

ence in Canada. The book thus conforms to the fundamental purpose of the Measuring the Effectiveness of Student Aid (MESA) Project from which it stems. That is, the project brings scholars together to engage in research that provides new empirical evidence and otherwise enhances our understanding of access to PSE and persistence through to completion in a way that informs and advances the relevant policy discussions, and makes these advances accessible to a wide audience.²

The purpose of this introductory chapter is to put the volume's papers in context, summarize their contributions and draw the most important inferences. In doing so, however, it first peels back the relevant issues to their fundamentals and presents a more general model of access and persistence and the various factors that determine them. Using this framework, it then identifies some of the limitations of past approaches to analyzing access and persistence, draws a roadmap for future research, and discusses related policy issues. Especially when paired with the literature review chapter provided by Richard Mueller, the chapter thus offers a useful general starting point for thinking about access and persistence in the Canadian context.

An Extended View of Barriers to Participation in Post-Secondary Education

Many discussions of access to PSE focus on the identification of barriers that may block individuals' access to higher education or prevent them from continuing in their studies after starting. But the term "barriers" is often poorly defined and not placed in the broader context necessary for addressing the full set of relevant issues from a conceptual, empirical, or policy perspective.

We might, for example, agree that not being able to afford the required tuition fees or associated living costs represents a potential (financial) barrier to PSE, and be concerned that for this reason individuals from lower income families, in particular, might not have the same opportunities to access PSE as others. This definition of a barrier is in fact the predominant one used in public discourse regarding access to PSE. But there are also "softer" barriers, such as an individual not being sufficiently prepared for PSE, not being well informed regarding the monetary benefits and costs of higher education, or simply not being able to see the broader worth of going to university or college, all of which seem to be related to family background.

These latter barriers are a bit trickier than, for example, the question of affordability. Because they are typically related to family background,

there is no obvious and simple (though perhaps expensive) government-action-only intervention such as a cash transfer that will causally improve outcomes. To some degree these barriers follow from the interaction between an individual's environment and the *choices* he or she makes over long periods of time. But if the end result is unequal access to PSE and, in particular, if these inequalities are related to family or other background factors such as socio-economic status, surely they should be regarded as *inequities* or otherwise considered as barriers, representing different sets of PSE – and life course – opportunities. From this perspective, all-too-common discussions of barriers to PSE that focus exclusively on financial aid can be seen as narrow and limiting.

If we accept this broader perspective of “barriers,” it follows that we need to better understand *all* the myriad factors that affect access and persistence. In short, any factor that determines PSE participation should be of concern, especially if it is related to family background or other factors beyond an individual's control. Finnie, Lascelles, and Sweetman (2005) find that many early-in-life outcomes that are correlated with family background are predictors of post-secondary access. So, it is not just financial barriers in which we are interested but also “preparation barriers,” “interest barriers,” and so on. The papers presented here generally embrace this broader notion of barriers and provide new evidence informing a range of topics regarding access to PSE while also opening up new ones.

Access issues from this broader perspective are conceptually and empirically complex. In contrast to focusing on affordability, access and persistence might also relate to differences in information and perceptions (e.g., those related to the costs or benefits of attending PSE), differences in preferences (e.g., the enjoyment of school), or differences in the preparation for PSE (academic and otherwise), all of which may be correlated with socio-economic status.

Constructing access in this way is not just a matter of academic interest. It also has fundamental policy implications. If access in general, and differences in access among different socio-economic groups, are primarily a matter of money, then policy solutions would presumably lie in the realm of student financial aid or tuition fees. But if access and its relationship to family income have more to do with information, preferences, preparation, and other such factors, then our interventions need to line up along these dimensions as well. In short, if our notion of barriers is wide, then so too should be the range of policy tools under consideration.

In our opinion, research and debate about access to PSE are moving in the direction of the broader model: that is, towards recognition of

the importance of non-financial factors, even as these are often found to be correlated with family income and parental education. Yet much policy – and many public policy debates – are focused on money and on affordability in particular. The most recent measures, at least at the federal level as announced in the federal 2008 budget, are a case in point: increased grants, rather than loans, for low income students. While the specific measures to be put into place are not bad, they do nothing to address the need to go beyond such conventional initiatives.

How Barriers Interact and Related Implications for Empirical Analysis

Adopting this broader perspective of barriers can help us to better understand and investigate the range of factors that may affect participation in PSE as well as differences in participation rates among different groups in the population. However, this perspective also points to certain challenges regarding the empirical estimation of the relevant relationships. For example, various papers in this volume identify family income as an important determinant of access to PSE. But when parental education is added to the analysis, the income effect falls dramatically, and education seems to exert a much stronger independent influence than parental income.

Furthermore, when aspirations for PSE (expressed by students, their parents, and their peers) and preparations for PSE (as represented by high school grades and other measures) are included in the estimation, aspirations are also found to be significantly related to access and to play important roles in explaining differences in access rates between various groups. When the additional variables are added, it is mostly the effect of parental education that is reduced, while the remaining income effects change only slightly. Variables such as post-secondary aspirations have a much stronger relationship with parental education than with income.

From this we conclude that family income, parental education, aspirations for PSE, and the preparation for higher education are all important determinants of who goes to PSE; and parental education as well as family income operate both through their effects on the “intermediate” outcomes we use as regressors such as aspirations and preparations, and also “directly” on PSE access. However, the direct effect of parental education appears to be larger than that for family income. These findings have useful policy implications. If non-monetary factors that start relatively early in life seem to matter much more than monetary ones (at least at the margin – see below on this), we probably

need to shift access policies from the present focus on “affordability” to emphasizing these early life-course influences of educational pathways.

But we cannot stop there. The effects of the various “early influence” factors are complex. Those who aspire to go on to PSE may, for instance, tend to have this orientation because they will face fewer financial barriers (perhaps because their parents have more money or are otherwise more willing to support them), because they are already on the path to being better prepared for PSE (they might go to better schools, have advantageous extracurricular experiences or be getting higher grades), or because they have simply already decided to go to PSE. Meanwhile, overcoming any financial or other point-of-entry barriers might in turn depend on the choices individuals have already made regarding PSE, their related preparations in anticipation of that choice, and the family support they may receive in a variety of other forms, financial and otherwise.

Furthermore, any of these variables might also be related to other omitted factors not included in the analysis. Perhaps, for example, “stick-with-it-ness” is a personal attribute of significant importance in determining not only access to PSE but also grades, aspirations, and other variables included in the analysis. The observed relationships will reflect such omitted factors, further complicating any analysis.

In short, the new factors identified in these analyses – important and significant as they are – might in turn be related to each other, to the access outcome itself, or to other omitted influences, potentially biasing the estimates of their effects.³ When, therefore, a model is estimated in which access is taken to be determined not just by, say, family income and other background factors but also by high school grades and PSE aspirations, we are identifying some empirical relationships of potentially substantial importance. But we need to be cautious in the interpretation of those relationships, particularly with respect to ascribing causality (e.g., “the effect of grades on access”), and seek even better estimates that take these concerns into effect.

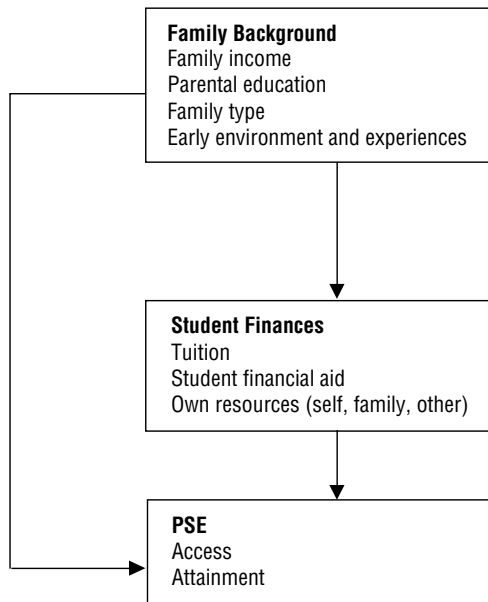
The research presented here thus contributes to our understanding of some important new relationships regarding access to PSE and persistence, including aspirations, attitudes, and preparation. It also sheds light on how these variables relate to certain key background factors such as parental education and family income. The policy implications of these findings are of immediate and great importance. At the same time, the work brings us up against a new set of questions and empirical challenges – an outcome in many cases recognized and pointed out by the authors.

A Broader Model of Access, Empirical Estimation, and the YITS

Though estimating more complex models extends our understanding of access and persistence, in Canada data limitations have previously impeded such investigations. The unprecedented richness of the YITS data has, however, opened up new opportunities. The conceptual framework discussed above will help illustrate the broader approach, point to the data needed to estimate it, and place the YITS – and the papers included in this volume – in this context.

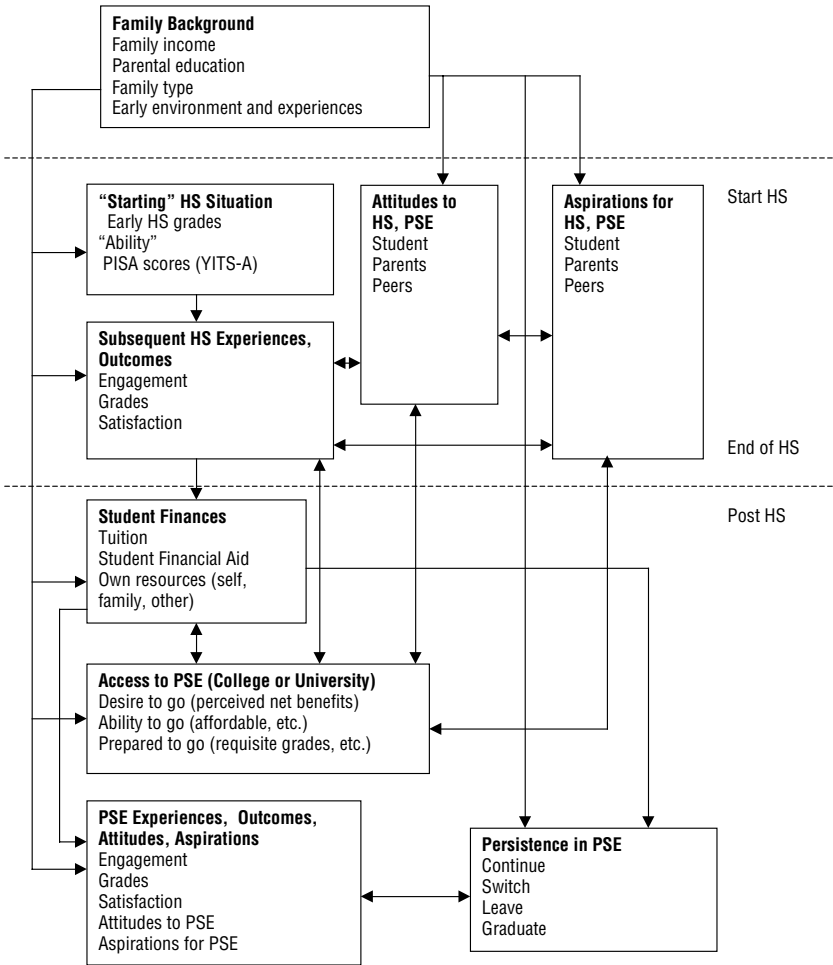
The two ways of thinking about participation in PSE and how it may be related to different sets of influences are presented in Figures 1 and 2. The first figure represents what we will term the “student aid policy model” (or just “policy model”) and shows a very simple approach that symbolizes a narrow view of access issues.

FIGURE 1
A Simple Model of PSE, Access, and Attainment



Source: Authors' compilation.

FIGURE 2
Full Model of PSE Causal Pathways



Source: Authors' compilation.

In the simple model, participation in PSE – perhaps measured as “access to PSE” or as final PSE attainment – is deemed to be related to family background, as measured by family income, parental education, or some other such relatively limited set of variables (e.g., family type), and another limited set of variables representing early environment and

experiences (e.g., province or rural-urban residence). PSE participation is also postulated to be related to student finances (i.e., tuition, student financial aid, and the student's and family's own resources), which are in turn linked to family background, including the extent of parental support and the availability of student financial aid (which depends on income). Any associated empirical analysis may identify the relationship between PSE outcomes and these variables. The interpretation of any empirical findings based on this model, as well as any policy inferences drawn from it, will likely be commensurately simple and limited. It may also be quite misleading. Such ways of thinking have, for example, caused Canadian governments and those in other countries to focus on financial factors as the most important barriers to PSE, and thus on tuition policy and student financial aid as the proposed remedies. Such a policy focus is not only inadequate but wrong-headed if the more important determinants of participation in PSE include much more than "financial factors," especially if they begin to operate long before the nominal point of decision-making with respect to participation in PSE at the end of high school.

Figure 2 represents a much more general and extended model of participation in PSE, corresponding to what we have called the (emerging) "research model" above. Family background again comes first chronologically among the myriad effects shown (see its placement at the top of the figure), since it can be assumed to be at least largely "pre-determined" and thus "exogenous" to the rest of the access process,⁴ but, beyond this, the relationships are complex, with many potential interconnections.

So, for example, PSE attitudes, aspirations, and preparations (the last represented here by the young person's performance in high school) might affect PSE outcomes. But these influences might themselves be at least partly determined by not only family background (which thus has an indirect effect on PSE outcomes as well as a direct effect) but also by PSE decisions. See the "Access to PSE" box in the bottom part of the figure, which should perhaps be depicted to extend chronologically upward into the high school region of the figure, because such access and related decisions are often made well before the end of high school and thus influence the "earlier" variables (i.e., attitudes, aspirations, preparation). These different relationships are represented in the figure by the relevant arrows going to and from the various boxes.

Other potential influences on access to PSE shown here include the student's "engagement" and "satisfaction" while in high school. Note also the potential interactions between student finances and other factors, now including not just family background but also additional

variables. And throughout, there will also be the sorts of unobserved factors (not shown here), discussed in the preceding section, which will present other complications and further challenges to estimation, whether at the student or family level, or even beyond; these may include differences across provinces in high schools, PSE systems, and anything else that can affect access.

The general upshot of this more general model is that there exists a complex set of relationships that is relevant to our theoretical view of PSE outcomes, to our strategies for the empirical estimation of these effects, to our interpretation of those findings, and to the policy implications we draw from them. Furthermore, access and persistence are shown to be two distinct processes that together represent the two main components of “participation” in PSE and, ultimately, PSE attainment.

The extended model implies vastly widened opportunities, as well as greater challenges, when used as a guide for empirical work on access or persistence. This kind of large-scale empirical work has previously been impossible in Canada due to the lack of suitable data, though the education research literature has addressed parts of it. In contrast, the YITS datasets with their wide range of information, including great depth on the various blocks of variables in Figure 2, open new opportunities for exploring the full set of factors determining participation in PSE.

We might debate the particular details of the model in Figure 2, including the specific labelling of the different blocks of variables shown, the precise elements included in each block, and the specified causal pathways. However, the major point would remain: access to and persistence through PSE are the result of a complex set of processes typically starting early in a person’s life. Understanding these processes requires a model, an empirical approach, and data that capture these. The work presented here represents a first installment of such a broad research agenda

The Papers

The papers in this volume, which in all cases but one use the YITS dataset, set the context for the questions they ask, present the principal findings, and discuss the implications for policy. Discussions of methodology are minimized, and the more technical elements are explained in intuitive terms, with the related material confined to footnotes, appendices, and especially the underlying research papers, which interested readers may consult.⁵

The first two papers provide context and lead-in material for those that follow. Richard Mueller's literature review gives a general overview of previous work on access and persistence, and underlying ways of thinking about these issues, with an emphasis on Canada. Significantly, many of the key limitations and gaps he identifies stem from a lack of better data, a problem largely resolved by the YITS. The papers in this volume thus begin to fill some of the more important of these gaps.

Bussiere et al. discuss the YITS in detail, providing a valuable cross-reference for the other papers, which refer back to this chapter instead of repeating general discussions of the YITS. These authors also discuss the unprecedented opportunities for policy-related research afforded by the two YITS cohorts, YITS-A and YITS-B. Apart from its usefulness for this volume, this discussion of the YITS should offer a valuable reference for other researchers and policy-makers thinking about where to take future explorations.

Access

According to the YITS-A cohort, 31 percent of young people from the bottom income quintile (i.e., the lowest 20 percent) had attended university by the age of 19, compared to 50 percent of those from the top quartile (see Frenette, below). While significant, this gap does not appear to have changed appreciably in the last decade or so; for example, Statistics Canada (2001) found similar patterns using data from the Survey of Labour and Income Dynamics (SLID) in the late 1990s. Identifying the size of this gap and putting it in historical context is interesting in itself, but the real strength of the YITS dataset is that it allows researchers to look well beyond such simple participation statistics to study the reasons behind this gap in ways that the SLID and other data have not previously permitted.

One of the central focuses of the papers included here is to identify how much of the access gap is related to financial factors and how much is explained by other influences (preparations, choices, etc.) with which family incomes are correlated. In short, are income differences the root cause of the associated access gaps, or are they just a marker for other factors?

Finnie and Mueller use regression techniques and the YITS-A to address these issues, focusing on university attendance, where the greatest differences are observed.⁶ Although parental income appears to be an important driver of university attendance when looked at using a

simpler model (i.e., including fewer explanatory variables), when parental education is added to the analysis, it is found to be much *more* important than family income and causes the estimated income effect to be driven sharply downward, although (significantly) family income does not disappear entirely as a factor. In extending their models further, Finnie and Mueller also find a significant relationship between success in secondary school and access to PSE; however, in contrast to Adelman's (1999) and others' results, which show the primacy of mathematics grades to access in the PSE, they find that the overall secondary school mark has the greatest impact on access.

The international PISA (Programme for International Student Assessment) reading score is also an important predictor of university attendance, while the inclusion of high school "engagement" as well as personal characteristics and attitudes indicates that the effort students make in high school counts more than their social integration, that "self efficacy" also matters, and that parental behaviour (as measured by parents' "monitoring consistency") has a small but in some cases statistically significant effect. Importantly, the parental education effect falls as these other factors are added to the models, thus pointing to at least some of the pathways by which parental education likely has its effects – stronger high school performance, better study habits and attitudes, and so on – and suggesting where we might look for other ways in which parental education matters.

The Finnie-Mueller results thus strongly suggest that the cause of the participation gap between rich and poor is less financial than "cultural." Using a different approach aimed explicitly at explaining the rich-poor participation gap, Marc Frenette picks up on this theme in the first of his two articles. Applying standard decomposition techniques to data from the YITS-A to understand the relative importance of various observable characteristics, Frenette shows that it is largely differences in academic preparation that explain the gap, with perceived financial barriers accounting for only 12 percent of the variance between high and low income students. This does not imply that money is never an issue, but it does suggest that the approximately \$6 billion currently spent on student aid is in most cases sufficient to help students pay their schooling costs (tuition, and other fees and expenses) while attending college or university. The specific implication of Frenette's paper is that moves to redress inequalities in access likely need to focus on the secondary level education system, not on financial factors.

But inequalities in access also have an important gender component, and one that may surprise readers who have not been following the relevant literature. Across the western world, the past thirty years have

seen a major shift in the patterns of post-secondary enrolment, with female enrolment catching up to and then significantly surpassing male enrolment. In Canada, the YITS-A data show that at age 19 (as captured in 2004), 60 percent of all university students were female. Frenette and Klarka Zeman use these data to again apply decomposition techniques to identify the relative importance of various observable characteristics on the gender access gap. Factors related to academic preparation (again), including grades, the international-standardized PISA test scores, and better study habits, seem to predominate, explaining well over half the gender gap in participation, while parental expectations are also important.

Parental income and education have a very small effect on the gap in access by socio-economic status; this is largely by construction, because males and females come from the same kinds of families. Indeed, for this reason we must look beyond differences in family-specific characteristics to explain the gender gap, although the possibility of different “returns” to family characteristics remains a potential subject for future research – even though the Frenette-Zeman analysis finds no important differences in this regard.

The paper also casts some doubt on the importance of differential economic rates of return from a university education as being important in explaining the gender gap in participation – unless the differences in rates of return start to influence behaviour well in advance of high school graduation (i.e., the idea that females are more likely to go to university because they receive a greater economic benefit is not supported unless that motivation starts to act very early), but it also points out that this factor is inherently difficult to quantify. In the end, in identifying the importance of good academic habits in driving the gender access gap, the findings beg the follow-up questions about where the roots of academic performance lie, how and why these differ for males and females, and what can – or should – be done about it. These are important empirical and policy issues, and will only become more so in the future.

Hoy et al. address a related question, finding that aspirations for PSE attendance significantly influence the decision to attend university, that this influence comes in addition to qualifications as reflected by grades as well as other explanatory variables such as parental education levels, and that male-female differences in aspirations seem to play an appreciable role in explaining the differences in PSE access rates between males and females.

These authors also take full advantage of the longitudinal structure of the YITS to focus on how aspirations for PSE evolve during the run-up to PSE, and find that there is a gender gap from the beginning but

that it increases over time: girls start (at age 15) with higher overall aspirations for PSE, university in particular, but are also more likely to revise their aspirations upwards by age 17. Of course a new set of questions again arises from these findings: why do females have these different aspirations, why do they evolve in this way, what are other related factors, and – again – what can or should be done about them? The research agenda has once more been pushed forward in an interesting and important way by this analysis in what it tells us and in where it points us for further work.

One ongoing question related to access issues is the effect of high school students' paid work outside of school. Does such work lessen students' ability to concentrate on their studies and thus hurt academic achievement, causing those who work longer hours to be less likely to make it into PSE and succeed when they get there? The issue is not cut and dried, since there are arguments and some existing empirical evidence suggesting that moderate amounts of work may be good for students, perhaps teaching them to handle workloads, budget their time, and so on. Jorgen Hansen addresses the issue by looking at the relationship between work during high school and students' high school grades (which are themselves strongly related to access and future PSE outcomes). Exploiting the richness of background variables and the information available on high school grades available in the YITS-A, Hansen finds that simpler models do in fact indicate an upside-down "U-shaped" relationship, where smallish amounts of work appear to have beneficial effects on high school grades but longer hours are damaging.

But when the additional controls for individual attributes available in the YITS are included in the analysis, this result is reversed. The effect of work is everywhere found to be negative: *any* amount of paid work appears to have an adverse effect on high school grades. This contrasts, interestingly, with the effects of extracurricular activities, which are uniformly positive. However, Hansen's alternative approach of attempting to come up with exogenous variation in students' work through instrumental variables methods yields less conclusive results, quite possibly because the statistical challenges characterizing this approach are inherently formidable in this context (i.e., the difficulty of finding a variable that affects work but has no direct effect on grades).

Hansen's findings naturally raise many new questions. Do the effects hold up using other methods and with other data? If the effects are correct, can the PSE opportunities of youth in lower income families be increased by providing the means by which they do not have to

work during high school – or by otherwise encouraging them to *choose* not to work? What are the effects of work *during* PSE on PSE outcomes?

Persistence

Access is, however, just one part of the PSE story. Since many of the benefits of PSE come only with obtaining a completed credential, persistence through to completion is equally important in terms of determining which individuals gain the benefits of PSE. We therefore need to better grasp the persistence dynamic and to better understand 1) the rates of persistence and depth of the persistence “problem,” 2) the factors to which persistence is related, and 3) the policies that might be adopted to help get students on the right PSE track from the beginning and to provide the assistance some students need in getting through the programs they choose.

In Canada, unfortunately, there has been an almost total lack of data on measured completion rates that include students who change from one institution to another, as well as those who leave PSE entirely and then return to their studies at their original institution (and in their original program) or another, or on other patterns related to PSE pathways and the diverse routes students take to obtain PSE credentials. PSE pathways – persistence, mobility, and, ultimately, graduation – are dynamic processes that require similarly dynamic (or longitudinal) data to be studied, and such longitudinal data on students have not previously been available. This is why the creation of the YITS and the analysis undertaken by Finnie and Qiu is so important.

Using the YITS-B, Finnie and Qiu show that while about 50 percent of all students fail to finish their *initial* programs of study within five years, only about 10-15 percent are what might be called true dropouts – that is, they have neither completed a credential nor remain in school. The difference between the two sets of numbers represents those who finished a different program from the one in which they started, sometimes at a different institution or even at a different level of study, as well as those who are still continuing in their studies, again in many cases in a different program or at a different institution from the one in which they started, sometimes after a break from their studies.

Included in these dynamics are the findings that among those who leave PSE at some point, 40 percent of college students and 54 percent of university students return to PSE within three years, and that there are relatively low rates of movement between college and university sectors, either among (direct) “switchers” or “leaver-returners.” Finnie

and Qiu's results thus suggest that the dropout problem in Canada is not nearly as large as was previously thought (based primarily on estimates derived from data restricted to single institutions) and that the PSE experience takes many different pathways. They also find that it is only rarely financial factors that cause students to leave their studies, and that family background tends to have smallish effects as well, which contrasts with the strong effect of family background on access (more for college than university students). Schooling experiences such as the perceived quality of teaching and the relevance of the schooling to future job opportunities also appear to play a relatively minor role in these dynamics, although these effects are generally more important for college students than university students.⁷

Felice Martinello adds to the Finnie-Qiu findings and focuses on the issue of students who switch programs, examining the characteristics of switchers and their prospects of success after switching. He finds, like Finnie and Qiu, that most switchers appear to change to other programs at the same level of study (i.e., they stay within either the college or university system rather than changing across) but, intriguingly, those who switch levels appear to be more likely to complete their second program than those who do not. He also finds that although parental education does not have as strong an effect on switchers as it does on access, those with high parental education seem likelier to switch than to drop out, but then have no advantage when it comes to completing a second program. Individuals' finances are also related to completion: although Martinello is not able to distinguish between need-based and merit-based aid, students with either of these appear to be more likely to complete their first program than those without financial aid, but less likely to start a second program if they did not finish their first.

What about the longer-run pathways of students and how they relate to time to completion in PSE? Lesley Andres and Maria Adamuti-Trache are the only authors to use non-YITS data, instead exploiting a 15-year panel of students in British Columbia to examine the relationship between student loans and educational and other life course outcomes (e.g., marriage). The sample, length of the follow-up, and information available in the file is unique, and some of the relationships uncovered point to avenues for future research, especially with respect to the relationship between time to graduation, student loans, and early life course events. Their findings, in this paper and related ones they cite, point to the value of looking beyond how student aid affects in-school activities. Student loans can constrain life choices beyond graduation, sometimes for many years, in very fundamental ways.

Financial Factors

David Johnson looks at student finances, in this case the effects of tuition fees on access and persistence. In the tradition of Coelli (2004), Neill (2005), and Johnson and Rahman (2005),⁸ Johnson makes use of inter-provincial differences in tuition and tax credits and changes in these over time, using a “differences-in-differences” approach (thus controlling for provincial fixed effects that may be correlated with tuition levels and PSE participation patterns) to measure the effects on enrolment of changes in tuition and “net” tuition (i.e., tuition after tax credits). Using the YITS, he finds little evidence of any effect of tuition on access or persistence, even in the case of the sharp changes in tuition of 30 percent or more that occurred in British Columbia early in this decade. (Like the other researchers discussed here, Johnson finds that “social” variables such as parental education matter a great deal for access decisions but very little for persistence decisions.)

It could be argued that access and persistence effects might operate with a lag as plans that are already in place are executed, as opposed to students changing their choices immediately when they find themselves with suddenly higher prices. This might be especially true in the case of persistence, where students have already begun to invest in their schooling.

Johnson also presents some evidence, although it is weaker, that increases in tuition might have effects on access for young persons from families whose parents have limited PSE experiences themselves. At this point these possibilities remain not much more than conjectures, with Johnson’s main findings clearly pointing to the absence of price effects – at least at the general level and in the short run, where those who argue for tuition decreases would presumably have expected to find at least some effect.

The problem of all this for policy-makers is that it does not provide much in the way of guidance for how best to provide financial aid to students. While the \$6 billion currently provided in student aid each year is probably responsible in large part for the finding that financial factors do not loom large among the barriers to access and completion at the margin, it is possible that this money could be more effective still if it were reconfigured. Martinello provides few clues on this point because need-based and merit-based aid are aggregated in his analysis. Johnson looks at the effects of tax credits but not of loans or grants; the Frenette papers, being more concerned with pre-access characteristics, do not deal with student aid at all except as it affects the financial

barriers variables they employ; and Finnie and Qiu are wary of interpreting the financial aid variables they include in some of their models due to concerns regarding omitted variable effects.

Kathleen Day tackles this issue directly by looking into the separate effects of student loans and merit-based aid. In some respects, her paper is one of the most significant recent pieces on student financial aid in Canada, not so much for the empirical evidence it provides (which is hardly definitive) as for the way it poses certain questions. Although she begins by finding some weak positive effects of student aid on persistence (the outcome on which she focuses), she then questions whether or not student financial aid can be considered an exogenous variable, which has important implications for the estimation of its effects.

What does the presence of aid really capture? Having a loan or grant is likely to be related to parental income, family size, schooling costs, the individual's willingness to take on paid work, province of residence, and other factors that determine whether a student receives aid, and how much, and these factors are likely to exert their own effects on persistence. Hence, the estimated "effects" of student financial aid are likely to be biased. Even when attempts are made to control for these other factors (as in the case of family income), the controls might not be perfect, thus leaving aid to be related to various factors not fully captured by the model. When Day re-analyses the data, adjusting for endogeneity using standard methods, she finds that the loan effect disappears or in some specifications even becomes negative.

Further compounding the problem is the issue of what effect a loan (or other form of aid) is capturing. In some cases, the presence of loans – or differences in levels of loans – might represent additional aid being given to offset higher costs. In other cases, more loans might be made available (and be taken up by the student) for a *given* level of need. We would expect "the loan effect" to be different in each of these cases, meaning that researchers who attempt to estimate a single loan effect are in reality likely to be estimating the weighted average of a number of different effects. It is not even clear what direction "the loan effect" should take in such circumstances, since in some cases the effects of loans on persistence (or access) should presumably be positive (e.g., when more generous aid is provided for a given set of costs), while in others it might be negative (e.g., when loans are replacing grants). Researchers and policy-makers alike thus need to think carefully about what "loan effect" they are interested in, what is being identified in any given research undertaking, and how the relevant estimates should be interpreted.

Although its effects are difficult to estimate, even with data as good as the YITS, financial aid is clearly important, and it is not only the *amount* but also the *type* that is relevant. These are the issues addressed by Carmichael and Finnie: what is the role of loans, and when is there a role for grants rather than loans in student financial aid packages? The theoretical model they develop posits a role for family income based on the (unconditional) financial support parents provide for their children *whether or not* they go to PSE, and thus represents an effect that will operate in addition to any that operates through the amount of (conditional) support provided should the child in fact decide to pursue PSE.

Importantly, the effect Carmichael and Finnie describe does not operate by relieving financial constraints on participating in PSE faced by the student or otherwise making the schooling more *affordable* – in which case the problem could be addressed with loans. Instead, it affects even those students who have the means of paying for their schooling but decide not to go because of the relative hardship they would experience while in school because of the lower transfers they receive from their families.

The empirical work carried out by Carmichael and Finnie with the YITS-A supports this hypothesis, as they find that family income does in fact affect whether a student goes to PSE even for those who say the reason they did not participate in PSE had nothing to do with being able to afford it. The upshot of the research is that grants, and not just loans, are needed to level the PSE playing field between young people from richer and poorer families.

Policy Implications

Identifying Barriers: Who Goes, Who Stays, What Matters?

The policy implications of the findings in these papers – and the broader view of access to PSE represented in the “research model” we are proposing (as opposed to the narrower “policy model” that still seems to be driving government actions on the issue) – are profound. Many (policy) discussions are predicated on the common empirical finding that access to PSE is related to family income and other such basic relationships. Policy then turned to solutions involving student funding largely on the assumption that the income-access relationship, in particular, must imply an affordability issue: the reason low income students weren’t going was because they didn’t have enough money to do

so. Grants, loans, and other forms of targeted student aid have therefore been duly administered and adjusted, and related tuition policies such as freezes or limited increases have been implemented, but inequalities in access have remained stubbornly fixed – in Canada as indeed in most other developed countries, even where student aid is extremely generous and tuition is in some cases free.

Meanwhile, the effects of more general forms of student financial aid not specifically targeted at lower income and other under-represented students, including education-related tax credits and family savings incentives programs, are hard to identify because it is difficult to know what the access and persistence patterns and other behaviour (e.g., how PSE is financed) would have been in their absence. That said, most experts believe that the effects of these programs have probably been largely to subsidize the PSE of middle and upper income students who would have gone anyway, thus having little effect on access or persistence rates generally, or on differences in these rates by socio-economic background, and that the money could be better spent on individuals at the margin of participating in PSE and /or not remaining to graduation.⁹

The research presented in this book offers an explanation for the relatively slow progress, especially with respect to under-represented groups such as those from low income families or those whose parents do not have PSE. For the greatest part, it appears that “culture dominates money,” where “culture” is a shorthand reference for the various non-monetary and significantly family-based influences that cause one kind of student to steer towards and prepare for PSE, often from a relatively early age, while another has no such orientation, undertakes no such preparations, and ultimately winds up making different PSE choices. If money in general and affordability in particular are not the determining barriers to PSE, it is hardly surprising that money-based policies aimed at making PSE more affordable have left wide inequities in access.

It is important to emphasize that we are talking about the effect of money *at the margin*, and that current access patterns might look quite different were the existing student financial aid system not in place. There are too many testimonies to the effect that students would not have been able to go to PSE had they not received the financial aid they did, and the limited direct empirical evidence available on the issue points to a similar effect.¹⁰ The issue, however, is not about the effects of the existing student aid system in its entirety. Instead it is to identify the access levers that operate *at the margin*: what policies can bring currently non-participating but deserving and potentially able students

into PSE? Put another way, where should the next dollars be spent, or how should current spending on student financial aid be shifted in order to effect the improvements in access patterns we seek? If it is not affordability that determines access, then what *are* the relevant factors? How, and when, do they operate to affect access outcomes? What is their relationship to family background? And what can be done in terms of policy to change access patterns in the face of these relationships?

Unfortunately, here we are stymied anew, because although we can now be relatively certain that student funding is not central to increasing access for those from low socio-economic backgrounds (at the margin), few solid answers exist regarding the next most beneficial avenue to increase access for disadvantaged groups. We are still unsure about precisely what influences parental education is capturing, how such influences operate, and what policy can do in the face of such apparently strong family-based factors to affect access patterns and reduce differences in access across different kinds of families.¹¹

We can therefore move the policy agenda to the necessary next step first of all by changing its focus (i.e., going beyond money). Although we do not yet have the answers to all the next sets of questions that have been identified, we can at least point to the research agenda that will help get us there, and consider policy approaches that could be adopted in the nearer term.

Where Research Needs to Go Now

Using the YITS: Where should research go next? We suggest a number of routes. To start, we cannot overstate how we have only just begun to take advantage of the YITS. The work carried out with it thus far has – among other things – revealed a much richer set of determinants of access to PSE and has permitted the first complete analyses of persistence in PSE ever to have been carried out in this country. These steps can be built upon in a number of ways.

One direction would be to go beyond the identification of the associations made thus far to tease out the ever more detailed nature of the relationships in question. Parental education has, for example, been identified as being key to access, but what exactly does parental education provide that leads to college or university attendance? The influences seem to be partly related to test scores, grades, high school engagement, schooling aspirations, and other such outcomes, but how exactly do these linkages work? Further research could drill into these and other related relationships, bringing into the analysis other variables

in the YITS that have not yet been investigated. What matters, when do the relevant factors begin to take effect, how do they operate? The more we know, the better.

However, causal relationships, not simple correlations, are of greatest interest. We have already discussed some of the problems related to omitted variable and endogeneity bias – and there are other estimation and interpretation problems associated with the complexity of the access and persistence dynamics. The YITS data do not represent a general panacea to such problems; no single dataset could. But the richness of the YITS data certainly allows for more extensive sets of controls to be included in any analysis and can thus help reduce various omitted bias problems. It may also help address some of the endogeneity problems if identifying “instruments” suitable for addressing those issues can be found, thus allowing researchers to better tease out some of the relevant causal effects.

As an alternative estimation strategy focused on obtaining true causal effects, “natural experiments” – typically represented by changes in policy across different jurisdictions and/or groups over time – offer interesting opportunities for studying the effects of student financial aid and tuition policies on access and persistence. If, for example, student loans were made more generous in a given province at a specific time, that “natural experiment” could provide the means of identifying the relevant effects on access and persistence. Johnson uses such methods to look at the effects of tuition fees on access and persistence, and we are confident that as researchers deepen their thinking about the related estimation problems and understand better how the YITS might be helpful for addressing them in this way, more such work will unfold.

In summary, the use of the YITS for policy related research on access and persistence should continue to be expanded. We believe this will happen as a matter of course as the YITS datasets and all their strengths continue to become better known and the number of experienced researchers working with the data grows. But this agenda could also benefit from making the YITS data – which are very complex and thus relatively difficult to work with – more accessible for researchers.

Using other datasets: Although the strengths of the YITS data are unique, other datasets are probably still worth using for research on access and persistence. The Labour Force Survey (LFS), and the related Survey of Consumer Finances (SCF), for example, while lacking in sample size and variables of interest, are long-running cross-sectional datasets with at least some information related to PSE attainment and current

enrolment that can be appropriate for addressing certain research/policy questions, even if in a limited way.

The Survey of Labour and Income Dynamics (SLID) has the benefit of being longitudinal, allowing researchers to track young people in the years leading up to, and through, PSE (like the YITS). But unlike the YITS, it is a general survey rather than youth/PSE-focused, and so again the relevant sample sizes are small and the schooling information is limited. But the SLID has already been used to some effect for addressing certain specific issues related to access (e.g., Drolet 2005), and could prove useful in other specific applications.

The Post-Secondary Education Participation Survey (PEPS), while now getting old (the information dates from 2002), is also focused on young people and their PSE experiences, and still has the best data on student financial aid, and therefore continues to be useful for looking at issues related to participation in PSE.

The National Longitudinal Survey of Children and Youth (NLSCY) has significant research potential related to PSE, since it has the richest background information available (longitudinally gathered) on a cohort of youth now beginning to arrive at the normal age for entering PSE. Sample sizes, missing information, and attrition are issues, but at the very least the NLSCY should be of some complementary use to the YITS due to the uniqueness of the information available.

The recently developed Post-Secondary Student Information System (PSIS) is an administrative file that has been constructed by Statistics Canada from data provided by participating PSE institutions. The PSIS theoretically represents a census (as opposed to sample) of students from the covered institutions, and contains a wealth of institutional and student based data that could prove complementary to the YITS, especially for issues pertaining to persistence (as individuals can be tracked from their point of entry into PSE). That said, PSIS coverage is mixed so far, ranging from essentially 100 percent for Atlantic Canada to lower rates in other provinces.

Finally, the Longitudinal Administrative Database (LAD), which is constructed from tax data, contains information related to PSE participation derivable from the related tax credits. Although the PSE information is somewhat lacking in detail and precision, careful use of the dataset would allow it to be employed for the analysis of access and persistence patterns, especially as they relate to family background – past income (longitudinal) profiles in particular. Also, the continuous time series of data available makes the LAD well suited to the “natural experiment” approach described above. In this regard, analyzing the effects of specific changes in student financial aid, tuition levels, and

related finance-based policies on access and persistence seems particularly promising.

Other data, including the wealth of more specific, administratively based files that exist across the country, could also be used in interesting, creative ways. Thus, while the YITS will probably dominate research into access and persistence in this country in the coming years, other sources may be profitably exploited as well.

Random assignment experiments: Another potentially important line of research on access and persistence is random assignment experiments. These could be done in two main areas. The first would be their use to more definitively identify the effects on access and persistence of student aid – the types of aid (loans, grants, etc.), the amounts that are required to effect changes in outcomes, and how it should be targeted.

Past research on the effects of student assistance using existing datasets – including the YITS – has been plagued by the classic estimation problems noted above, since aid is inherently related to a range of personal/family characteristics that determine eligibility for student assistance and other elements of the broader policy environment. For example, student aid is frequently linked to tuition strategies and supply-side policies, which vary by province and are difficult to isolate. Identifying the effects of aid has therefore been difficult. Random assignment experiments, however, can resolve such issues through the construction of control and treatment groups that equalize other factors across the groups. Through such methods, it is possible to identify which kinds of aid work best, and, assuming the sample size is large enough, how the effects vary according to the way in which the aid is targeted.

Why, then, are random assignment experiments not used more often? One reason is that ethical barriers can arise, since such experiments can be seen as “using students as guinea pigs” or otherwise treating individuals unequally and therefore “unfairly.” Designing experiments so that no student is made worse off, obtaining informed consent on the part of all participants, emphasizing the social benefits of the research, and following other established experiment implementation strategies can minimize these barriers but do not always overcome them. Also, such experiments are, like any policy intervention, very specific regarding the implementation details, and an experiment with one program design provides limited information about other options. So, a failure for a specific design need not imply that a different design will not succeed.

Another problem with experiments is that they can be relatively expensive. If, for example, the policy to be tested is to give students, say, \$2,000 in grants, something like a thousand individuals might have to be given the grant in order to estimate its effects with sufficient precision to make those estimates meaningful, thus costing close to \$2 million in grants alone, before other expenses have even been considered (e.g., implementation/administration costs, analysis of the findings, etc.). Each particular version of the policy being tested would drive up the numbers needed, and costs, commensurately. These costs might seem small in comparison to the hundreds of millions of dollars or even more spent on such programs in any given year, and they can be well worthwhile if such an experiment makes it possible to better identify the effects of the programs in question or to learn how to target them more effectively. Million-dollar-plus research projects, however, are rare.

One random assignment experiment worth noting is the Future to Discover project currently being implemented in New Brunswick and Manitoba in partnership with the Canada Millennium Scholarship Foundation. In this experiment a group of high school students have, starting in grade nine, been enrolled in programs that essentially orient them towards PSE by providing information on PSE options, helping them explore different careers, and so on. In some permutations of the experiment, money has also been placed in accounts in students' names, and they will be able to draw upon these funds to help pay for their PSE later on. The experiment should provide interesting and important evidence on the initiatives being tested. A number of initiatives to help disadvantaged students improve their likelihood of high school graduation and of transitioning to PSE have been attempted over the years, and serious evaluations are required to identify what works. More efforts in this area are clearly desirable, and the research in this volume suggests that much of it should be focused on the early high school, and even elementary school, years.

Conclusion

The major findings of the papers included in this book can be summarized as follows. First and foremost, access is clearly the outcome of a detailed, complex, interrelated set of factors that begins to operate early in a young person's life and depends heavily on family background and early schooling experiences.

Second, although family income has typically been seen as a key determinant, access is in fact dominated by parental education, high school

grades, test scores, schooling aspirations and other such factors, which also explain most of the differences in access across families of different income levels. We might sum up these findings by saying that “culture matters more than money” in determining who gains access to PSE.

Third, although the influence of family income is much reduced when parental education is taken into account, a modest statistically significant effect remains. For some students, financial issues have a direct effect on access.

Fourth, the substantially higher female access rates that we now observe, especially at the university level, appear to be related to male-female differences in PSE aspirations, preparations, and related factors, which increase through the high school years.

Fifth, once a fuller set of personal characteristics are controlled for, the number of hours that students work at paid jobs while in high school is found to have a uniformly negative effect on grades, which are in turn strongly related to access.

Sixth, PSE pathways are much more diverse and dropout rates much lower than previously thought. For university students, for example, five year dropout rates decline from about 50 percent when viewed at the program level to approximately 30 percent when those who finish other programs are counted (including those at other institutions and at college), and to about 10 percent when those still in PSE are included. The adjustment is almost as great for college students. The effects of family background on persistence are also found to be generally much smaller than they are for getting into PSE, although in some cases they remain statistically significant, especially for college students. Switchers show some evidence of benefit from changing programs, but the patterns are complex and require further analysis.

Seventh, there is little evidence that tuition fees affect students’ access or persistence, at least in the short run.

Eighth, the effects of receiving student financial aid – loans, grants, scholarships, etc. – on persistence must be disentangled from individual and family characteristics and other factors to which receiving aid is related, which have their own effects on access and persistence. But doing so represents a significant methodological challenge, and has led to little in the way of precisely identified effects. Further complicating the issue is that student aid in general and loans in particular are provided in various different contexts: sometimes to help students cover increased costs, sometimes to give students more money to meet a given set of needs, sometimes (in the case of loans) as substitutes for grants. Since the effects of the aid are likely to vary in these different circumstances, we need to think carefully about what having a loan (or other

form of aid) is meant to capture, and how to estimate that effect – or more properly, the associated *range* of effects associated with the different circumstances in which loans are given.

Ninth and finally, following students for a longer period of time suggests that there might be important relationships among student loans and time to graduation and early life course events, but pursuing such issues presents significant methodological challenges and requires data of a type that is difficult to come by.

Apart from reviewing the papers in the volume, this introduction emphasizes the need to look at the determinants of access and persistence using a framework that goes beyond the finance-oriented factors such as costs and student financial aid that often dominate discussions. We present such a framework, and then discuss the methods and findings of past studies, suggested directions for future research, and associated policy implications from this perspective. We conclude that government policy is highly relevant for alleviating barriers to PSE, but that it must include early interventions for disadvantaged youth, providing information and academic support and other opportunities related to the “culture” of PSE.

Notes

1. See Motte et al. (2008) for detailed discussion of the YITS data, which comprise two different datasets: the YITS-A, which tracks a sample of youth aged 15 in 2000 with subsequent interviews every two years, and the YITS-B, which follows a sample of 18 to 20 year olds in similar fashion.
2. The MESA project includes a research review committee composed of scholars in the area of post-secondary education, whose job it is to select, provide feedback on, and ultimately approve or reject specific projects, including those upon which the papers included in this volume are based. This structure has been instrumental in ensuring the focused nature (including the policy relevance) and quality of the research that has resulted. The research papers from which those in this volume are drawn and other information regarding MESA may be found at www.mesa-project.org.
3. In statistical terms, we are looking at “endogeneity” and “omitted variable bias,” meaning that some of the important factors that appear to affect participation in PSE should themselves be considered in any full treatment as outcomes themselves (rather than be assumed to be “exogenously” given) or to otherwise be capturing effects not otherwise controlled for in the analysis.
4. Even this assumption could be challenged on the grounds that family income is chosen, perhaps with an eye to the family’s children’s future PSE

- opportunities, but we make this assumption for now to keep the arguments that follow a little simpler. Relaxing this assumption would be but another step in the direction we advocate.
5. These can be found at www.mesa-project.org.
 6. College attendance rates tend to be more similar across income groups, but this pattern can be misleading. It is *not* that income does not affect college attendance; it does – children from higher income families are in fact more likely to go to college than not to go to PSE at all. It is just that among those who decide to do some PSE, higher family income is also related to going to university rather than college, and the two effects essentially cancel out, leading to increased university participation rates, relatively equal college rates, and lower rates of no PSE among those from higher income families. See the underlying Finnie-Mueller research paper for the full set of results, which includes the effects on college attendance.
 7. These insights thus contrast to some degree with those of U.S. researchers including Paulsen and St. John (2002), St. John and Starkey (1995), and the United States Government Accounting Office (1995), which generally find that finances do affect persistence, especially in the first year, while results from both Dynarski (2005) and Stinebrickner and Stinebrickner (2003) show that cultural variables such as parental education play a more important role in determining PSE completion.
 8. See also Corak, Lipps, and Zhao (2003) or Christophides et al. (2001).
 9. See, for example, Finnie, Usher, and Vossensteyn (2005) and the references therein.
 10. Finnie and Laporte (forthcoming) report, for example, that based on data taken from the Post-Secondary Education Participation Survey (PEPS), approximately 70 percent of all PSE students who held student loans said they would not have been able to go to PSE without them, these numbers applying approximately equally for college and university students.
 11. The various writings of James Heckman and co-authors (e.g., Heckman 2006a, and Heckman, Knudsen, Cameron and Shonko, 2006) in the last few years have helped to focus attention on these sorts of factors at the international level. The research reported here can be seen as lying in this new tradition.

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