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Abstract

In this article I examine the research on school-to-work transitions in developing countries, mainly from an empirical perspective. I first discuss the attempts at operationalizing the concept of school-to-work transition from a statistical point of view. Then, a review of the theoretical settings suitable for analyzing the school-to-work transition is conducted and the applicability of underlying hypotheses to developing countries is discussed. Finally, the determinants of transitions at the individual and macro level are investigated. Findings from the literature indicate that education is not always associated with shorter durations to first employment, and that this might stem from a variety of sources such as higher expectations, reservation wages or queuing. Women generally experience longer transitions in the labor market. Evidence from labor market interventions is mixed.

Keywords: School-to-work transition, Labor markets in developing countries, Youth
JEL: I20, J13, J24, J62

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Introduction

The importance of human capital in the development process has been strongly underlined in the academic and policy discourse over the last 50 years, and education for all has been made a top priority of international organizations such as the UNESCO and the World Bank in the last decades. At the World Education Forum in Dakar, held in 2000, 164 governments pledged to achieve six education related goals by 2015, recognizing education as the “key to sustainable development and peace and stability within and among countries” (UNESCO 2000). However, less has been said about what happens after education. Graduation is the end of an educational process, but also the start of another, lifetime process of providing for oneself. In many of the world’s poorest countries, youth constitute a majority of the population. It is probably not an overstatement to say that the economic, social and political development of the societies in which youth live hinges on the capacity of policy makers to provide them with decent employment prospects. Concomitantly, youth in developing countries face a different set of challenges: the concentration of skilled jobs in urban areas and sometimes in the public sector implies that rural youth may have little to gain from education unless they migrate to urban areas; the lack of wage jobs means self-employment may be the only option for some youth (lack of contractual arrangements and social protection further implies that self-employment may be as good an employment as one gets); severe financial constraints may prevent individuals from creating small-scale businesses, or limit the size and profitability of those created; ethnic or gender discrimination can prevent underprivileged youth from succeeding in the labor market; informal decision structures such as the household may assign specific roles to youth, preventing them from realizing their potential. The shaping of good employment policy therefore relies on evidence of good practice from multiple historical and geographical contexts. The keys to making the School-to-work transition (SWT) efficient can be sought in the body of evidence from various programs, policies, studies and reports that have been undertaken. Nonetheless, the school-to-work transition is a multiform and dynamic process, and the recommendations derived from any study of SWT are conditional both on the particular context in which the study was undertaken and on the methodological choices and approaches its authors settled on.

The lion’s share of the evidence from school-to-work transitions is based on data from high-income countries, essentially from Europe and North America, and while Ryan (2001) and Bradley and Nguyen (2004) have reviewed the evidence of school-to-work transitions in developed countries, to my knowledge no extended review of the evidence

from developing countries has been undertaken. This article aims to bridge this gap in the literature. While it should be recognized that developing countries in no way constitute a group of homogeneous economies with similar labor markets and educational systems, they do share a number of factors which distinguish them from developed economies (Fields 2011; Campbell and Ahmed 2012): important shares of informal labor, self-employment, agricultural labor and unpaid family work; important credit and income constraints; weak social security; important labor market segmentation [public vs. private, formal vs. informal], and altogether an urban-rural fragmentation interacting with the aforementioned. In light of this and against a backdrop of increased access to education as promoted by the Education for all initiative, an extended review of the evidence on the labor market prospects of graduates from developing countries seems warranted. Quintini and Martin (2014) compare school-to-work transitions in eight advanced and eight emerging countries¹. They find that youth in emerging countries experience longer transitions and leave education earlier, while at the same time having higher rates of inactivity.

The contours of the School-to-work transition are not narrowly defined in the literature. Reversed transitions (going back to school) as well as simultaneous presence in multiple states (working while in school, holding several jobs) are possible, such that the SWT must be considered as a lifelong process within which a number of transitions occur. This is especially important to emphasize inasmuch as these transition processes have become more complex in the last decades, with more long-term unemployment and more job shifts and mismatches (Allen and Velden 2007). What is to be deemed a successful labor market destiny might also change over the life cycle: looking at Argentina, Brazil and Mexico, Cunningham and Salvagno (2011) map out the typical transition patterns of youth and find that they tend to leave school to spend a short time in the informal sector, before moving to the formal sector, and then later in life becoming self-employed. Rather than attempting to narrow down the concept, I shall here initially consider it as an umbrella term for a number of processes all related to the capacity of educational systems to provide individuals with knowledge and capabilities that render them prone to a more successful work-life.

The structure of the paper is as follows. The first section discusses the school-to-work transition concept and the efforts made to operationalize it from a statistical point of view. Section II considers how economic theory, and in particular the job search and

¹The countries included are Argentina, Australia, Brazil, Canada, Chile, France, Germany, Indonesia, Italy, Mexico, South Africa, Spain, Turkey, United Kingdom, United States.

matching framework, has be mobilized to consider the SWT. Section III reviews the evidence regarding individual determinants of success in the labor market. Section IV extends the review to external determinants, discussing labor market policies targeting youth in developing countries. The last section concludes.

1 The imperceptible contours of the school-to-work transition

A “catch-all term for the activities of young people as they bounce around or struggle along between full-time schooling and full-time, possibly career, employment” (Ryan 2003), the school-to-work transition² is perhaps better characterized intuitively as that period of time during which an individual leaves school and finds stable employment. O’Higgins (2008) conveniently distinguishes two main features of the transition: the *success* in achieving an identified outcome, and the *ease* with which this takes place. In essence the question asked is: where are youth heading upon leaving school, and how do they get there? While surely reductive in the characterization of a complex and dynamic multi-state process, it serves as a useful separator of those elements of the transition that are of a dynamic nature (smoothness, efficiency, state dependence) from those that are static (and in general describing the state of leave in the transition).

A number of studies, mainly carried out through international organizations such as the ILO and the OECD, have attempted to approach the SWT as a statistical concept. As such, the school-to-work transition becomes a measurable length, and its blurry delineations need to be fixed. The starting point of the transition is generally taken as “permanent” school leave (“Getting started, settling in: the transition from education to the labour market”), but might be conditioned on a willingness to look for work upon school leave (Matsumoto and Elder 2010), thereby excluding those who were not destined for the labor market in the first place. One could also argue that the transition starts before graduation; work-study combinations or apprenticeships might constitute stepping stones for individuals, facilitating or even guaranteeing employment immediately upon school leave³. The ending point of the transition also requires settling on a decision of achieved transition. While full-time stable employment has been used by the OECD (“Getting started, settling in: the transition from education to the labour market”; OECD 1998), the ILO’s *Work4Youth* has adopted definitions including various qualitative

²The School-to-work transition in the U.S. more typically refers to learning experiences at an employer’s work site (Ryan 2001). This is not the definition adopted in this text.

³The ILO’s *Work4Youth* consider the transition to start upon graduation *or* from the individual’s first economic activity.

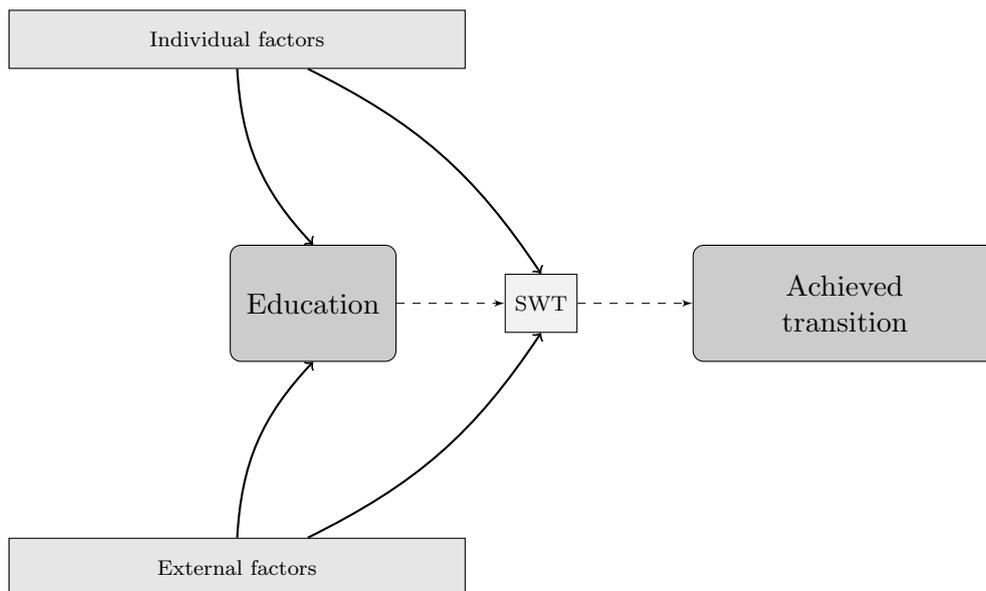
measures of the work experience, such as satisfaction and contract type (Matsumoto and Elder 2010; Elder and Koné 2014). Accordingly, a completed transition requires stable *or* satisfactory employment, even when the latter is temporary- or self-employment.

A range of indicators have been used to assess the smoothness of the transition from school to work using cross-sectional data. While settling on definitions on various aspects of transitions would alleviate some of the confusion reigning around the concept, summing up individual evidence brings about different methodological obstacles when data is, as is often the case, cross-sectional in nature. O’Higgins (2008) provides a discussion of duration indicators used in the literature. The OECD uses the age at which a certain percentage of the population has left school (50% or 75% depending on studies), and compares this with the age at which the same percentage has found a job. Essentially, this gives rise to an indicator of the average duration of transitions in the economy. O’Higgins (2008) points out several questionable assumptions in this approach (particularly in the context of developing countries), such as the (implicit) assumption that everyone goes to school, ends up in employment, does not go back to education and remains in employment upon entering it. Thus, this approach fails to account for individuals who do not enter the labor market upon school leave, who may be numerous in developing countries (in particular women). Guarcello et al. (2005), applying a similar method, condition the average school leave and work entry ages on the probabilities of ever being in school and work. The authors recognize a problem with the approach: since it is impossible from cross-sectional data to know whether or not individuals in school will later transit into employment, their average age gap can only be interpreted as such if age of school leave is uncorrelated with the probability of future employment. Another problem, linked to this one, is that the data drawn from a single point in time reflects two cohorts (the populations used to compute the average age of school leave and the average age of entry into employment are different) which only gives rise to a meaningful indicator in the case of a stationary labor market. Finally, the often large shares of informal employment in developing countries require that surveys possess the appropriate modules to qualify and quantify informal labor if meaningful SWT indicators are to be constructed.

Event history data and panel data overcome some of these problems since transitions can be computed directly for the individual. Aggregating individual transitions however still leads to a biased indicator since only those individuals whose transition is completed can be used in the computation. Thus, there is a case for the study of the microeconomic determinants of transition lengths using survival analysis, which provides identified

estimators even in the presence of *right-censored* observations. Such studies are numerous (e.g. Fallon (1983), Galiani and Hopenhayn (2003), Tansel and Taşçı (2010), Khan and Yousaf (2013), and Nordman and Pasquier-Doumer (2015)) and will be discussed below.

Figure 1: Conceptual chart of the school-work transition process



Considering the school-to-work transition process in its most intuitive form (see Figure 1)—as that of a three stage-process beginning with education and ending in an achieved transition—serves as a useful tool for structuring the outline of the following literature review. Individuals enter into educational systems that vary in quality, organizational and institutional setting. Their success in these systems can be linked to a number of internal and external factors that need not be easily distinguishable. If one’s education is—as commonly believed—a determinant of the quality and smoothness of the school-to-work transition, the determinants of “success” in education are by definition also indirect determinants of success in the SWT. These determinants (family background, institutional setting, innate ability, school inputs, extra-curricular help, etc.) have been studied in the educational literature and will not be covered here. Instead, I focus on three dimensions: the theoretical linkages between the determinants of the SWT and the labor market; the relationship between individual background variables and the SWT; and lastly, the relationship between aggregate factors and individual SWT.

2 The transition environment in theory

2.1 The search and matching literature

Most theoretical work on the transition from education to work is set in the Diamond-Mortensen-Pissarides search and matching framework (Mortensen 1970; Mortensen 1986; Mortensen and Pissarides 1999). The framework goes beyond the notion that frictionless and centralized labor markets exist, and thus permits to account for voluntarily unemployment, transition arbitrages, state dependence and other features of modern labor markets that the general equilibrium standard supply and demand framework has difficulties explaining. Concerned with flows between states in the labor market, it provides a good starting point for a theoretical approach to the school-to-work transition. In a seminal paper, Mortensen (1970) considers unemployment duration as an optimal stopping problem for an individual receiving a series of wage offers: he or she will accept a wage offer when the net lifetime utility of taking the job is above the net lifetime utility of waiting for another wage offer. Wolpin (1987) uses a similar framework to parameterize a search model using data on the school-to-work transition of high school graduates taken from the National Longitudinal Survey. In this reservation wage setting, the parameters determining the job finding rate are: cost of search, the probability of receiving an offer, and the distribution of initial wage offers. Other earlier attempts to parameterize search models in the literature include Jensen and Westergård-Nielsen (1987), who estimate a search model on the transition from higher education to work in Denmark, or Flinn and Heckman (1982), Lynch (1985), and Blau (1991). Van den Berg (1990b) estimates a structural model including the transition to inactivity. Blau and Robins (1990) develop a framework where four components determine the job-finding rate: the choice of search methods, the choice of how many firms to contact given the set of search methods, the rate at which offers are received given the contact rate, and the decision to accept an offer given the offer rate. Parameters linked to these components are derived from an empirical model.

The models cited above are essentially all optimal stopping problems, thus relying on dynamic programming techniques. Rust (1992) investigates whether agents' behavior generally conforms to the rationale of Bellman's principle of a stationary backward-inductive reasoning, used to solve dynamic programming problems. His review of the literature concludes that continuous-time dynamic programming models applied to macro

data have not fared as well as their discrete-time equivalents applied to micro data. He furthermore shows that if no restrictions are imposed on the preferences and beliefs of agents, a parameterization can always be found which rationalizes their choices. However, if restrictions are imposed on preferences from prior knowledge of reasonable behavior, the Bellman rationale can be tested from data. The study lends credibility to the aforementioned models since some of the most successful discrete-time models are restricted to binary choice problems, and particularly optimal stopping problems.

A long list of contributions to the random matching literature have integrated schooling choices. Laing, Palivos, and Wang (1995) embed this choice into an endogenous growth model featuring search frictions, showing that education and subsequently growth decrease in the amount of search frictions, represented by entry costs and an exogenous matching rate. Acemoglu (1996) and Booth and Coles (2007) also explore human capital accumulation in a matching setting, showing that a random (at least partially) search process creates a situation of incomplete contracts leading to socially suboptimal human capital investment decisions (a *hold-up* problem). Charlot and Decreuse (2005)⁴ show that self-selection into education might lead to an overeducation problem, since private agents consider unemployment and wage outcomes when making their education decision, but not the impact of this decision on job creation. In an extension to their framework (Charlot and Decreuse 2010) they consider individuals to be heterogeneous in terms of schooling costs, showing that this leads to overeducation among ‘rich’ individuals (with low schooling costs) and undereducation among the ‘poor’. Becker (2006) drops the assumption of an *ex ante* schooling decision, introducing a framework in which education is time-consuming and individuals choose between continuing education or taking up a job, thus endogenizing drop out-rates and the opportunity cost of education.

A strand of papers is explicitly concerned with job search theory and the dynamics of the transition to stable employment. Neal (1999) considers a two-stage search process to explain complex job changes (involving a change of tasks in addition to a change of employer) that simultaneously provides a setting in which young and inexperienced men and women resort to more complex moves in the labor market than their older, more experienced counterparts. The model implies that workers have an incentive to postpone search for a good worker-firm match until they have settled on a good career choice. Similarly, the idea that the number of matches is higher at labor market entry has been

⁴Mendolicchio, Paolini, and Pietra (2012) adopt a more general framework, which under fairly general assumption conforms with the composition effect identified by (Charlot and Decreuse 2005).

investigated in Kitao, Ljungqvist, and Sargent (in press) and Bucher (2010) among others. Common to these contributions is the assumption that information on productivity is revealed only upon forming a match. García-Belenguer and Moral Carcedo (2011) explore the interactions between educational systems and unemployment rates in a setting where education levels function as signals for unobservable ability and firms face firing costs.

This body of work thus sets the transition from education to employment in an environment with friction, essentially approximating the matching function and its related properties to agents' transition strategies, and inferring behavioral assumptions from model parameterizations. Although random matching models seem to rationalize a number of empirical findings, they rely on a fairly strong assumption of how graduates (recruiting firms) look for and obtain jobs (employees). Alternative assumptions have been discussed in the literature and are worth mentioning. Directed job search involves workers choosing which firms to apply to (Montgomery 1991a; Moen 1997), possibly applying at several firms simultaneously (Albrecht, Gautier, and Vroman 2006; Galenianos and Kircher 2009); the stock & flow approach (Coles 1994; Coles and Smith 1998; Gregg and Petrongolo 2005; Ebrahimi and Shimer 2010) considers that a match is not necessarily available for all agents upon their entry to the market. Subsequently, rejected agents disappear from the stock of possible matches for the agents on the other side of the market, and unmatched agents on both sides need to wait for new flows to arrive, yet remain in competition with both old unmatched agents and new ones (this framework thus gives a theoretical explanation for decreasing hazard in unemployment). Another literature extends the search or recruitment decision to multiple agents (Albrecht, Anderson, and Vroman 2010; Ek and Holmlund 2010; Guler, Guvenen, and Violante 2012).

What are then the implications of search & matching theory in the context of youth in school-to-work transitions? As Pissarides (2011) states it, “the matching function captures many features of frictions in labor markets that are not made explicit....it takes time to find a good match, the length of time it takes varies across workers in unpredictable ways, and if there were more job vacancies available, on average workers would find a good job much faster”. Empirics indeed show that individual characteristics are highly significant in the determination of transition rates across individuals (Petrongolo and Pissarides 2001). Petrongolo and Pissarides (2001) give two examples of the introduction of heterogeneity allowing for individual-specific hazard rates: by assuming that workers have different preferences over search intensity or over reservation wages, or that firms have preferences over candidates and are able to rank them. Both these are able to reconcile the

matching framework with subject-specific hazard rates for transitions in the labor market.

2.2 What is known about the matching process in developing countries?

In the context of developing countries, however, many of the research questions opened by extensions to the job search literature might intuitively seem of secondary importance. In particular, one of the most distinctive features of developing countries' labor markets is the size of the informal sector. The search and matching framework has thus recently been extended to incorporate a dualistic labor market accounting for an informal sector (Satchi and Temple 2009; Albrecht, Navarro, and Vroman 2009; Zenou 2008; Flórez 2015). Albrecht, Navarro, and Vroman (2009) include worker heterogeneity in their model, accounted for by differential productivities in the formal sector (but workers are equally productive in the informal sector). This generates varying opportunity costs of informal sector employment, implying that the workers with the highest productivity will reject informal sector work and wait for a formal-sector job⁵, while low-productivity workers will be shut out of the formal sector. If education and productivity are correlated, this environment could allow for longer transitions into work of higher educated individuals. Kerr (2011) builds a dual labor market model for Tanzania, predicting little movement between the formal and the informal sector, which is supported by the empirical analysis.

The first to estimate a job search model in the context of a developing country were Tunali and Assaad (1992), who study the construction sector in Egypt. They test their theoretical predictions, notably that human capital should increase (decrease) employment (unemployment) durations. However, coefficients do not show up as significant in their Weibull specification (they are however of the correct sign). Rama (1998) estimates a Cobb-Douglas matching function for Tunisia, showing that skilled workers have a smoother matching process than unskilled workers. The low coefficient of unemployed unskilled workers suggests that unskilled employment is almost entirely demand-driven, although it could also indicate a lower willingness to accept any job offer in this group of workers. Serneels (2007) considers unemployment in urban Ethiopia through a time-to-first job lens. Set in a dual market model, individuals choose between taking up a lifetime *bad* job or waiting for a good job, requiring skills. A worker will stay unemployed as long as the probability of finding a good job exceeds the inverse of the relative wage in the two sectors, taking into account household support available for the

⁵A further important assumption is that working in the informal sector disallows for job search in the formal sector.

unemployed. The data show that young males will remain in unemployment as long as the probability of finding a good job exceeds 10%. Using a piecewise constant hazard model, he estimates the probability of getting a civil servant job to be 18%, lending support to a queuing phenomenon in the Ethiopian public sector.

In addition to structural differences such as high shares of informality, dualities (urban/rural, public/private) or multiple job holding that are less present in developed countries, the job search process in developing countries' labor markets relies heavily on social networks rather than formal institutions (Cling et al. 2007; Campbell and Ahmed 2012). Network extensions to the matching literature include Calvó-Armengol (2004), Calvó-Armengol and Jackson (2004), and Calvó-Armengol and Zenou (2005) and aim to account for the empirical observation that individuals find their jobs not only through formal methods, but also through informal methods or a combination of them. Theoretical predictions therefrom include the fact that the probability of finding a job is increasing in the size of the social network. Wahba and Zenou (2005) look at Egypt and find that the probability of having found a job through one's social network, conditional on having a job, is increasing and concave in population density, conform to the predictions of their model. Nordman and Pasquier-Doumer (2015) look at the impact of the social network on labor market transitions in Burkina Faso, using a competing risk framework. Distinguishing between network size and strength of ties, they show that the former is not significantly related to labor market transitions. Strength of ties, however, reduces the transition hazard for self-employed and unemployed alike, while weak ties help in the transition from wage employment to self-employment.

A small but rapidly growing literature studies the nature of search frictions in developing countries. This literature, mainly experimental, collects evidence on the effects of interventions designed to modify important parameters of the job search framework, and primarily search costs. Groh et al. (2015) look at the nature of the matching process in Amman, Jordan, by means of a randomized experiment. Interestingly, in a context of high unemployment rates of high skilled youth, and where firms declare having difficulties finding good recruits, smoothing the matching process did not provide a lowering of unemployment in the treatment group. A majority of matches either rejected the interview, or rejected or quickly left a job that was proposed to them. When asked why, a majority of candidates answered that they found the job unsuitable or not right for their career paths. This suggest that reservation utilities (based on more than mere pecuniary factors) rather than informational search frictions explain high-skilled

unemployment. Informational frictions were also examined by Abebe et al. (2016a) in Ethiopia. They organized job fairs in Addis Ababa, Ethiopia, where workers and firms met at minimal search costs. They conclude on very modest returns to the intervention, with only one job created per 10 firms invited. Another study from Ethiopia shows that giving transport subsidies to workers increases their probabilities of having stable and formal employment (Abebe et al. 2016b). Jensen (2012) uses evidence from a randomized experiment in India where women in selected villages were informed about the existence of a nearby job opportunity, as well as strategic information on how to get a job. As a result of the intervention, women’s fertility and likelihood to get married was reduced, and labor market and schooling increased. Interestingly, from a SWT perspective, the intervention also modified women’s aspirations in terms of work and fertility during lifetime, showing that beliefs about career opportunities can stem from a sense of fatalism, plausibly rooted in cultural contexts.

2.3 Methodological issues

Concerned with flows, search and matching theory provides a basis for empirical specifications set in a survival analysis framework. Survival analysis relies on the survivor function $S(t)$ which designates the probability that a *failure event*—a transition between states in the labor market, for example—will not occur before t . Kaplan and Meier (1958) proposed an early but still much used non-parametric estimation of the survivor function when censoring occurs (i.e. such as in the case of labor market transitions studied using survey data). Duration models take as a dependent variable the hazard rate of individuals and as such seem more fitted to deal with transition phenomena than ‘static’ models. The hazard rate can be interpreted as the instantaneous probability of leaving a state in the labor market, conditional on not having left it thus far, and are estimated on samples of workers based on observed characteristics which can be time-varying or constant. In general, estimators of duration models fall into the parametric or the semi-parametric range. The commonly used *proportional hazards* model assumes a baseline hazard for the failure event, and lets variables affect this baseline hazard multiplicatively. Common choices for the baseline hazard include Weibull, Gompertz and Log-log distributions. Cox (1972) developed a semi-parametric estimator for the hazard rate that does not need an underlying assumption for the baseline hazard, relying on partial likelihood methods. As elsewhere, selection is an issue in duration models, and individual heterogeneity is usually modeled as a *frailty* component. The baseline hazard, which is constant across individuals, is multiplied by an individual-specific component. Since there are (in the case

of inherently cross-sectional data) as many individuals as there are duration observations, these models require an assumption for the distribution of the frailty term to be identified. Finally, survival models are no less subject to endogeneity than other econometric models. Fortunately, instrumental variable techniques can readily be introduced via a control function approach, as shown by Terza, Basu, and Rathouz (2008). All of the above mentioned models assume that all observations eventually end in failure, an assumption that might be unrealistic in some subject areas (some unemployed might drop out of the labor force and never find employment). Split-population models relax this assumption and estimate a proportion of the sample who will never experience failure; the remaining observations in the sample are used as a sample from which hazard ratios are estimated .

A sizable literature has studied state and duration dependence in labor markets and particularly in unemployment. These are related to theories of discrimination, stigma effects or scarring effects of remaining unemployed. However, duration dependence is difficult to distinguish from unobserved individual heterogeneity in the context of duration models (Lancaster and Nickell 1980). Van den Berg and Van Ours (1996) however showed that it is possible to non-parametrically estimate the two separately using aggregate time-series data. Heckman and Borjas (1980) study unemployment duration using four types of dependence. Firstly, Markovian state dependence, where transition probabilities differ solely based on the category the individual belongs to. They also test for occurrence dependence, duration dependence and lagged duration dependence, showing that identification criteria differ according to the type of dependence stipulated.

An important quality for a theoretical model is the possibility for it to be amply tested. Van den Berg (2001) examines the conditions under which duration models, and particularly mixed proportional hazard models, can be considered as reduced forms of a structural search model. Regarding a non-stationary job search model without anticipation; only under special cases requiring strong assumptions will the hazard rate implied by the theoretical model take a multiplicative structure. One such case arises if individuals' reservation wage is always lower than the lowest wage in the market. Similarly, if the wage distribution takes a Pareto form, and the non-work income (or social benefits, in the context of countries with unemployment benefit systems) is null, the hazard rate will be multiplicative in time and in the characteristics of individuals. Another strong assumption that would produce a multiplicative hazard rate is to set the discount rate at infinity, so that individuals do not care about the future⁶. When

⁶This can also be achieved in a repeated search-model

anticipation is considered, such as in Van den Berg (1990a), the assumptions become even more restrictive. Despite the mixed proportional hazards specification not being derived directly from a theoretical model, it is without a doubt the most popular specification for duration data in economics. As pointed out by Van den Berg (2001), “*In practice, the empirical application at hand does not always dictate a natural theoretical framework, and sometimes the scope of the application does not warrant a full-blown theoretical or structural analysis. In such cases, the (M)PH model is a useful framework whose properties have been well studied in the literature.*”

While survival analysis accounts for the majority of non-static analyses of the school-to-work transition processes, other methods have been used. Defloor, Van Ootegem, and Verhofstadt (*A distance function approach to school-leavers? efficiency in the school-to-work transition.*) consider the multidimensionality of the school-to-work transition. Using a distance function approach, they characterize the transition as a transformation of inputs into a multidimensional output, including job satisfaction and time spent unemployed before acquiring a first job. In this fashion, they are able to compute conversion efficiencies for individuals, relating those to socio-economic background variables of which education seems to be the most important. Another tool that has been used is sequence analysis, relying on optimal matching techniques. These have been used to obtain typologies of transitional paths for youth (McVicar and Anyadike-Danes 2002; Brzinsky-Fay 2007), on the (sound) basis that a single transition does not adequately capture the whole labor market integration process. McVicar and Anyadike-Danes (2002) also use a cluster sequence analysis to identify groups of sequences according to the distance between sequences. Criticisms of these methods include the fact that they rely on fairly *ad hoc* assumptions of the numbers of clusters to be defined (McVicar and Anyadike-Danes 2002), and on the cost matrix used for the optimal matching technique.

Summary

The DMP search and matching framework is a natural place to start the theoretical investigation of school-to-work transitions. The recent literature has provided several extensions to the theory that seemingly fit with the nature of labor markets and job search in developing countries. However, proportional hazards models, the most frequently used duration models in the literature, can only be considered as reduced forms of search and matching models under very strong assumptions. This does not, however, exclude empirical investigations into the SWT grounded in theory from being conducted in developing countries, such as in Serneels (2007) and Zenou (2008). Such studies are however scarce, something that pleads for increased development of statistical models that can be derived from a search and matching framework.

3 Individual factors and the school-to-work transition

The search and matching framework previously presented thus globally expresses the probability of a successful match as the probability of receiving a job offer (depending on age, productivity signals, search intensity, etc.) and the probability of accepting it (depending on reservation wages, queuing, etc.). In the matching environment, a key feature of the school-to-work transition process is asymmetry of information: with no previous job experience firms have to infer worker productivity from the little information they have. One important such piece of information is formal qualifications. The following subsection reviews the evidence available on the impact of various aspects of individuals' educational background on their labor market outcomes.

3.1 The importance of education in the labor market

The impact of education on subsequent labor market outcomes is one of the most researched themes in economics, with vast amounts of applied work done on developing and developed countries alike. Returns to education is perhaps the most covered area, and it is well established that education confers a wage return in the labor market (although the early conclusion of Psacharopoulos and Hinchliffe (1973), that the returns to education are decreasing in the level of education, is still debated). Unemployment durations are tightly linked to wage returns, since the evolution of the former give an indication of the evolution of the labor market tightness of particular labor market segments⁷. The multiple dimen-

⁷Cf. the “wage curve” (Blanchflower and Oswald 1994).

sions and interactions within what is generally just referred to as education however render any attempt at quick policy recommendations from research unfruitful. As Hanushek puts it: *“Some people suggest that educational policy could all be straightened out if we could just do one great study. I see no evidence that this is the case. My summary of the research is that we should learn to live with the fact that research will not be able to provide the definitive answer. Living with it to me implies finding policies that are built upon this fundamental ignorance”* (Hanushek 1995). Furthermore, educational decisions are not taken independently from other decisions in individuals’ lives. More importantly, they might often not be taken by the individual in isolation, but rather emerge as the result of a joint household decision. Likewise, the decision to leave school is endogenous, depending on perceived wages and the probability of finding a (good) job. Acknowledging the fact that most studies fail to account for these phenomena, the present subsection should be seen as indicative of correlations between various dimensions of education and subsequent transitional outcomes, refraining from causal interpretation except when warranted.

Various measures of educational qualifications are often introduced as explanatory variables in duration models applied to the transition from school-to-work, although they might not be the sole focus of the studies at hand. The results are mixed: for example, Matsumoto and Elder (2010) show that the time spent in transition⁸ is strictly decreasing in the level of education in both Egypt and Mongolia. Calvès, Kobiané, and N’Bouké (2013) also find increasing hazard rates in the level of education using data from Burkina Faso. Galiani and Hopenhayn (2003) find that the relation between level of education and unemployment duration is not monotone in Argentina. A similar result is found by Serneels (2007) for urban Ethiopia, for Ghana by Sayre and Daoud (2010) and for Turkey in Tansel and Taşçı (2010). Descriptive evidence from Latin America (Bassi et al. 2012) also shows that there are no significant correlations between levels of education and employment durations, except for Panama where post-secondary graduates spend more time before finding a job than individuals with lower educational qualifications. Looking only at university graduates in Beijing, Kong and Jiang (2011) find that graduating from a four-year rather than a three-year college program increases the probability of finding a job quickly (and all the more so when the college is in the top tier). In Egypt, Assaad, Binzel, and Gadallah (2010) do not find a significant correlation between educational attainment and duration of the transition to first job. They do, however, find a positive correlation between education level and job satisfaction. Similarly, Boutin (2014) shows

⁸Relying on the ILO concept of transitioned individuals, i.e. those who are in stable employment, or satisfactory temporary or self-employment.

that Malian youth with a higher education on average spend more time (6 years) finding a first job than primary and secondary graduates (3 years), but need less time to find a satisfactory one (9 years versus 12 years). Fallon (1983) argues that job seekers in Delhi spend longer time in search when they are more highly educated, since the value of search is higher. The duration of unemployment is also longer when individuals are educated, but this is likely explained by personal and family characteristics rather than education itself.

As posited by search theory, the intensity of search will influence the probability of receiving job offers and thus smooth the transition from school to work. Using the number of channels of search as a measure of search intensity, Nyarko, Baah-Boateng, and Nketiah-Amponsah (2014) find that years of schooling and age positively influences the plurality of channels used for job seekers in Ghana, while previous job experience tends to reduce it. Tasci (2008) shows similar findings for Turkey. Evidence from Egypt suggests education increases job search intensity for women, as does previous job experience (Abdel-Mowla 2011).

Dickens and Lang (1995) find that unemployed in Sri Lanka with completed O-levels or A-levels have a longer predicted unemployment duration than those with lower levels of schooling. Their study is indicative of a queuing phenomenon, where relatively educated youth with high expectations tend to wait for government jobs, eventually lowering their aspirations as time goes by. Kuchibhotla (2013) however explains this through an increased tendency of educated youth to engage in training, which is considered a 'non-employment' status. Queuing theory however does find support in data from urban Ethiopia (Serneels 2007). He argues that credit constraints explain why individuals don't engage in self-employment while waiting for a job opportunity in the public sector. Waiting for government sector jobs is a known feature of African labor markets, but the current generation faces a different labor market from that of their elders. Calvès and Schoumaker (2004) talk about a rupture between formal education and access to modern sector employment in Africa. While the well educated of previous generations had relatively easy access to public sector employment, the increase in their numbers coupled with economic crises and structural reforms has meant that this option is no longer efficient. Assaad, Binzel, and Gadallah (2010) however consider shorter durations to first job in Egypt as resulting from the same phenomenon: as public sector job opportunities diminish, it is no longer worthwhile to wait for such jobs, and individuals will to a higher extent take up a job in the informal sector. Another explanation for

higher unemployment rates of the well-educated is the *luxury* argument: only those with sufficient resources can afford to be unemployed. Basic survival implies that most youth in poorer regions of the world have no choice but to commit to work that they might deem to be overqualified for⁹. Kondylis and Manacorda (2008) study the Tanzanian labor market and argue that unemployment is by no means voluntary. Kingdon and Knight (2004) also reject the luxury hypothesis for unemployed in South Africa, arguing that they are worse off than the informally employed, when income, expenditure and well-being are considered.

Unemployment is often tentatively explained as resulting from skills mismatches. Several authors have investigated whether the unemployment duration is related to the major chosen at university level. This seems to be the case in China (Kong and Jiang 2011), where engineering and business degrees are associated with the shortest unemployment durations, while law and science graduates experience longer transitions. Science graduates also seem to experience relatively long transitions in Mauritius (Jaunky and Khadaroo 2007), as do social science graduates. Another explanation for complex transitions of relatively well educated youth are that their expectations are higher, both in terms of the nature of their subsequent work opportunities and the wages they can demand in the labor market. There is little evidence on reservation wages from developing and transition countries, except for South Africa where substantial unemployment rates have spurred a debate on the origins of youth unemployment. Levinsohn, McCrary, and Pugatch (2009) apply survey data to a job search model for South Africa. Applying reservation wages from survey data to the model suggests that the unemployed receive job offers relatively frequently, but that these are below their reservation wage. Natrass and Walker (2005) however conclude that reservation wages are not the cause of unemployment in Cape Town's Khayelitsa district. Distinguishing small and large firms, Rankin and Roberts (2011) find that between 70% and 80% of young South African males have higher wage expectations than what they are likely to earn by working in a small firm, suggesting that unemployment might be partly caused by young people waiting for employment in large firms.

Newhouse and Suryadarma (2011) find that male public vocational graduates are more likely to obtain a formal job than graduates from public general education, all the while being no more likely to be in unemployment. Calvès, Kobiané, and N'Bouké (2013) find that having been to a private institution during one's schooling positively influences

⁹This also implies that focusing only on unemployment in these contexts is insufficient at best, and misleading at worst.

the hazard rate of transiting to a first paid job, although not when family background variables are introduced. Chuang (1999) looks at the determinants of Taiwanese job seekers unemployment duration; he shows that graduates from public universities fare better than those from private institutions, arguing that this reflects a signaling phenomenon (higher scores are needed to enter public universities). Pugatch (2014) looks at the role of vocational education in South Africa, finding it to be an alternative for those who fail in the general system, albeit conferring similar labor market returns. Pugatch (2012) also considers an often ignored component of the school-to-work transition, namely the dynamics of dropping out and re-enrolling. Using data from South Africa, he finds support for a model of schooling choice based on dynamic updating of the relative returns to pursuit of education.

3.2 Gender and ethnic discrimination

Women generally fare less well in the labor market as compared to men. Being a woman is associated with a lower labor force participation rate, with higher shares of family work and informal employment, and with lower wages when in wage employment (United Nations 2015). It has furthermore been suggested that there is a link between a country's stage of development, and gender inequality¹⁰. Morrisson and Jütting (2005), looking at gender inequalities in participation in economic activity, show that regional differences are important and that low income countries do not always fare worse than high income ones. Several theories of why discrimination arises and its economic consequences have been formulated ¹¹: different comparative advantages, human capital, discrimination by employers and employees alike, or cultural aspects rendering certain types of work unsuitable for women could all explain differential labor market outcomes (see Altonji and Blank (1999) for a survey). Tasci (2008) finds a lower job search intensity for women in Turkey, and suggests cultural obstacles and limited economic opportunities for women as potential reasons.

First, in terms of the school-to-work transition, it matters to know if women are as often as men destined for the labor market. Behrman and Wolfe (1984) study the labor force participation in Nicaragua, arguing that the detrimental labor market effect of having small children is lower in a developing country setting, where childcare alternatives

¹⁰E.g. Boserup (1990); or Eastin and Prakash (2013) for a recent empirical investigation.

¹¹Some of the theories could also be used to explain differential outcomes between other groups, such as ethnic groups.

are more abundant. Around the world, women's labor market participation rates have remained relatively stable over the last two decades (United Nations 2015), while that of males has decreased slightly. This has meant that the gender gap has somewhat decreased, from 32% in 1980 to 28% in 2008 (Elder 2010). The latest *World's Women* report (United Nations 2015) shows that women are both prone to higher rates of unemployment and lower pay, across sectors and occupations, and that women work longer hours than men when both paid and unpaid work are taken into account.

A series of country reports¹² by the ILO, based on the School-to-Work transition surveys, show that women are generally disadvantaged in the school-to-work transition. From the lecture of these reports it seems that in virtually all countries surveyed, the share of women in transition (that is, who are out of school and who have intentions to find work, either now or later) who have found stable or satisfactory work is lower than the equivalent share for men. Women also experience longer transitions in general, whether the transition to stable employment or to satisfactory self-employment be considered. It thus seems that the gender inequalities measured by higher unemployment and lower pay, manifest in many of the world's labor markets, carry on to the length of finding a job. Longer transitions for women are also found in Boutin (2014) for Mali. Furthermore, the effect seems not to be driven by educational discrepancies; in many of the reports, women experience more complicated transitions at all levels of education. It should however be noted that the above evidence is largely descriptive. In multivariate regressions, being a woman is associated with a decreased hazard rate in Argentina (Galiani and Hopenhayn 2003) and in Palestine (Sayre and Daoud 2010).

In much of the developing world, numerous ethnic groups coexist inside countries where borders often are of little cultural and ethnical relevance, leading to conflicts and fights for resources. Knight and Sabot (1982) show that racial discrimination is more important than discrimination by gender in Tanzanian manufacturing, non-Africans (primarily Asians) being privileged with respect to Africans. Decomposing the differences in mean wages they show that wage differentials are little explained by the higher education levels of non-Africans. Banerjee and Knight (1985) find a small but significant earnings differential between scheduled castes and non-scheduled castes (untouchables) in India. No such effect is found by Deininger, Jin, and Nagarajan (2013).

¹²See for example: Matsumoto and Elder (2010), Mel, Elder, and Vansteenkiste (2013), Elder, Novkowska, and Krsteva (2013), Elder and Koné (2014), Elder (2014), Mussa (2013), Toufique (2014), Barsoum, Ramadan, and Mostafa (2014), Barucci and Mryyan (2014), Serrière (2014), and Libanova et al. (2014).

Moll (1991) decomposes discrimination into wage and job discrimination, showing that job discrimination against colored South Africans decreased between 1970 and 1980. Beyond the notion of discrimination, however, which is likely to affect individuals according to the ethnic composition of their local labor market, the terms fractionalization and polarization have been introduced into the literature. Barr and Oduro (2002) study the Ghanaean labor market and find evidence of ethnic fractionalization. There are substantial earnings differentials between ethnic groups, of which the authors attribute a large share to a strong tendency for workers to be employed by members of their own ethnic group, and to the fact that ethnic groups run different types of enterprises. Franck and Rainer (2012) look at African leaders' ethnicity and finds evidence of ethnic favoritism. When individuals share ethnicity with the leader, they are more likely to attend and complete primary education, and infant deaths are less likely to occur. If such ethnic favoritism occurs, it is likely to carry over to the school-to-work transition. While, to my knowledge, no study on ethnic penalties in the school-to-work transition exists for developing countries, studies have been carried out on migrants in high-income countries. Kalter and Kogan (2006) find evidence of ethnic penalties in Spain and Belgium: being a non-EU national is associated with longer transitions to professional, technical or managerial jobs in both countries.

3.3 Social networks

It has been established that an important share of workers find their jobs through personal contacts (Montgomery 1991b; Topa 2001; Jackson 2010). Bramoullé and Saint-Paul (2010) develop a model based on the hypothesis that a social tie between an employed and an unemployed worker increases the probability of finding a job of the latter. In their model, *inbreeding*, the probability of forming ties with persons of the same labor market status, explains why negative duration dependence occurs in the transition from unemployment to employment. Short-term unemployed have on average more employed ties, which are depleted with time. A similar result is theorized in Calvó-Armengol and Jackson (2004). Plausibly, this mechanism could also explain an increased efficiency of individuals who combined work and schooling in finding a first full-time job.

Recruitment within employees' social networks can be used to curb moral hazard problems or to try to circumvent the problem of unobservable characteristics by assuming that these are correlated inside an individual's network. Dhillon, Iversen, and Torsvik (2013) look at employee referrals in India, finding evidence for a high prevalence of

referral-based recruitment in Western Uttar Pradesh. Referral was used explicitly as a recruitment method by the British Army's Gold Coast Regiment in Ghana in the early 20th century, something explored by Fafchamps and Moradi (2015). Relying on army records, they find that rather than improving the unobserved efficiency of recruits, the referral process implied recruits that were more likely to desert or be declared as inefficient or unfit. Lassassi and Muller (2013) look at job search methods in Algeria, arguing that human capital seems to be an important factor determining the successful use of social networks to find employment. Contreras et al. (2007) reach a similar conclusion for women in Bolivia. Giuliatti et al. (2010) find that jobs found through networks amongst Chinese rural to urban migrants are associated with higher wages, suggesting that networks not only facilitate getting a job, but also may have implications on the quality of the job found. Nordman and Pasquier-Doumer (2015) look at how labor market transitions in Ouagadougou are affected by social networks, measured by several indicators such as size, strength of ties and embedded resources. They do not find any effect of network size on the transition hazard from unemployment to employment, but find effects of the fragmentation of siblings and strength of ties. Finally, social networks might not only aid in finding wage employment but also in the activities of the self-employed (Fafchamps and Minten 2002; Nordman and Vaillant 2015). The formation of social networks is sometimes conditional on ethnic affiliations. Gajigo and Foltz (2010) thus show that co-ethnicity and trade credit are related in the Gambia, arguing that denser ethnic networks enable the Serahule group to obtain credit with more ease than other groups, although facing a similar lack of formal institutions. Having ties to prominent local individuals influences success of West African traders, as shown by Kuépié, Tenikue, and Walther (2015). However, religion seems to be excluded as the authors find that ties to local religious leaders tend to decrease profits, contrary to ties to prominent administrative or political figures.

3.4 Cognitive and non-cognitive skills

Recently, and in an attempt to go beyond the traditional human capital theory framework, a lot of attention has been given to the role of cognitive and non-cognitive skills (NCS) as explanatory factors for various economic outcomes. In the labor market, cognitive skills have been associated with higher wages (Behrman, Ross, and Sabot 2008; Green and Riddell 2003), a higher incidence of employment and longer work experience (Carneiro, Crawford, and Goodman 2007) and a higher probability to leave unemployment in an individual's first unemployment spell (Wondratschek 2010). Evidence on wage returns to

cognitive skills in developing countries was summarized in Hanushek and Woessmann (2008) and includes a fairly low number of studies mostly carried out in African economies. They however in general show a positive impact of cognitive skills on wages. Gertler et al. (2013) find that an experiment consisting in giving psychosocial stimulation to disadvantaged toddlers in Jamaica produced significant wage differences between the test and the control group 20 years later (average earnings increased by 42%). Lee and Newhouse (2012) find using a large sample of developed and developing countries that higher test scores are associated with lower levels of unemployment, and suggest that these may also increase job quality in the medium term, an indicator of better school-to-work transitions.

Alongside of cognitive skills, non-cognitive skills or *personality traits* have been emphasized as important determinants of a range of socioeconomic outcomes (Heckman, Stixrud, and Urzúa 2006). The most commonly used classification is the so called Big Five-model, including five personality traits that are supposed to adequately resume personality differences in humans¹³. To understand the role of cognitive and non-cognitive skills it is important to investigate their evolution over time. While some studies argue that personality traits are rather stable by the onset of early adulthood, others suggest that personality traits continue to evolve over the life cycle (Almlund et al. 2011). Roberts, Walton, and Viechtbauer (2006) show in a meta-analysis that individuals become more socially dominant, conscientious and emotionally stable in young adulthood (from ages 20 to 40). The question of whether environmental variables influence non-cognitive skills is important in terms of the school-to-work transition. If major life events such as finding a job influence personality traits, the time at which these are measured has implications on the possibility of inference from a regression analysis. Furthermore, schooling in itself might influence both cognitive and non-cognitive development, as shown by Heckman, Stixrud, and Urzúa (2006). Looking at the determinants of cognitive skill acquisition, Glick, Randrianarisoa, and Sahn (2011) find that mothers' education influences the learning process of Malagasy children more than fathers' education, suggesting that mothers spend more time with children's schoolwork than fathers. Finally, carrying out complex work also contributes to the development of cognitive skills through the life course (Schooler, Mulatu, and Oates 1999).

¹³These personality traits are Openness to experience, conscientiousness, extraversion, agreeableness and neuroticism. Another personality trait that has been showed to significantly influence labor market outcomes is *grit*, capturing perseverance of effort toward long-term goals (Duckworth and Quinn 2009).

Studies on non-cognitive skills' influence on labor market outcomes in developing countries are scarce, although a recent survey run by the World Bank specifically focused on cognitive and non-cognitive skills and employability in a set of developing countries¹⁴. Acosta, Muller, and Sarzosa (2015) find no influence of non-cognitive skills on wages or job quality in Colombia, but find a positive association between NCS and labor market participation and educational outcomes. In urban Peru, Cunningham, Torrado, and Sarzosa (2016) find that grit is linked to several labor market outcomes among which wages, employment and probability of being a wage worker. Hilger, Nordman, and Sarr (2015) find positive effects of non-cognitive skills on several labor market outcomes in Bangladesh. Furthermore, they show that the effects differ depending on the hiring channel used, and that non-cognitive skills are associated with different probabilities of having obtained one's job through formal or informal channels.

3.5 Family background, household wealth and composition

The socio-economic context individuals are brought up within shapes their beliefs about present and future possibilities offered to them. As early as 1970, Backman carried out a longitudinal study on U.S. adolescents, showing that an indicator of socio-economic status¹⁵ was a good predictor of both intelligence and knowledge of job opportunities (Backman 1970). A sizable interdisciplinary literature has highlighted the importance of family background on individual success (e.g. Bynner (1998) and Staff and Mortimer (2008)), linked to the literature on inter-generational mobility. Behrman, Gaviria, and Székely (2001) show that intergenerational mobility in education and occupation in Latin America is much lower than in the US, and argue that mobility is tightly linked to school expansion. However, educational mobility may not be the only cause for the correlation between childhood and adult status. Parental occupations may shape the transition to employment if knowledge about opportunities is scarce and there are returns to parental experience in an occupation. Pasquier-Doumer (2013) partially confirms this, showing that while in general second generation self-employed in West Africa do not fare better than their parents, those who take up a trade in the family tradition do. Additional evidence from Cameroon (Mboutchouang et al. 2013) suggests that second generation entrepreneurs do better than first generation ones, and confirms the finding

¹⁴STEP, or Skills Toward better Employment and Productivity (Pierre et al. 2014).

¹⁵Comprised of 6 equally weighted dimensions: father's occupational status, father's and mother's educational attainment, number of books in the home, number of rooms per person in the home, and a checklist of other possessions.

of Pasquier-Doumer (2013) that returns are higher when the entrepreneur is engaged in the same branch of activity. In an interesting paper, Lambert, Ravallion, and Walle (2014) study the determinants of educational mobility in Senegal. They find, perhaps contrary to intuition, that inheritance of land and assets does not account for much of the intergenerational correlations in consumption. Instead, parental occupation and education, and investment in children's education, play more important roles. Furthermore, these are significant determinants of the probability of transiting from farm to non-farm activities for men. No economic studies of the effects of parental characteristics on the subsequent transition to work have been carried out in developing countries, although such studies would be of high interest in determining to what extent the family network helps and/or restrains youth to take on specific career paths.

Family size and birth order effects have been shown to affect educational outcomes (Glick and Sahn 2000), with inequalities likely to persist in the labor market. In one of the earliest models Becker and Lewis (1973) famously suggested a quantity-quality trade-off in children, implying that larger families should have on average less educated children. This is partially confirmed in the literature from developing countries: Li, Zhang, and Zhu (2008), using twins as a source of exogenous variation in family size in China, find that children from larger families have worse educational outcomes. Also relying on twin births, Ponczek and Souza (2012) find negative impacts on education for both boys and girls in Brazil. Evidence from India (Kugler and Kumar 2015), using gender of the first child as an instrument for family size, and the Philippines (Dumas and Lefranc 2013), using the Manila ban on contraceptives, also confirm Becker's quantity - quality trade-off hypothesis in a developing country setting. The last paper uses grade repetition as an outcome, and thus provides evidence that the quality of the schooling experience (conditioned by inputs from the household level) decreases when youth come from larger families. If family size impacts learning, then this is likely to affect the transition to employment, both in terms of its nature (high achievers having access to better jobs), and the length of the transition (conditional on work destination, high achievers are likely to match faster with an employer). Birth order effects on schooling and other socio-economic outcomes have also been amply tested in the literature. The *confluence* model, by which the child's intellectual environment is decreasing in quality with each sibling born, predicts lower educational attainment of the latter born. Behrman and Taubman (1986) and Black, Devereux, and Salvanes (2005) have found negative birth order effects pointing in this direction. When the household is considered as a production unit, siblings may also enter into direct competition with one another. In the

framework set by Emerson and Souza (2008), older siblings may command higher wages in the market for child labor, and thus relax the household budget constraint and make it possible for younger siblings to attend school. Their work is thus a reminder of the importance of distinguishing economies with child labor from economies without child labor. To a larger extent, using the nuclear family as a basis for theoretical developments on the intra-household allocation of resources fails to account for a large number of family structures that characterize much of the developing world. In a polygamous society, for example, responsibilities of members often extend to children of other parents (Lloyd and Blanc 1996). More generally, extensive family networks imply that responsibilities extend to individuals not living under the same roof, such that the household as nucleus of decision-making loses in relevance. The fact that family background variables are important in the labor market has been argued based on the fact that their introduction lowers the coefficients of returns to education (as in Heckman and Hotz (1986), for Panama). Krishnan (1996) investigate this in the case of Ethiopia, accounting for a selection effect into the public sector. Their findings suggest that at least half of the family background effect on the estimated return to education in the public sector is due to selection bias. Lillard and Kilburn (1995) study inter-generational earnings mobility in Malaysia and find evidence of relatively strong earnings linkages between fathers and offspring. The effects appear to be both direct and indirect (through investment in education).

Summary

Education generally improves labor market prospects, but evidence from developing countries shows that the relationship may not be monotonic. Dual labor markets and queuing for high quality job can explain why tertiary education graduates stay long in unemployment. Men are generally favored in the transition to work, and ethnic relations and polarization may constitute barriers for minorities in accessing work. While social networks, cognitive and non-cognitive skills and family background have all been proven important determinants of labor market success in developing countries, studies linking them to the duration and shape of the school-to-work transitions are lacking.

4 Environmental factors and the School-to-work transition

The present section intends to review the evidence on the role played by environmental factors on the school-to-work transition. Using the term environmental factors is motivated by a willingness to change scales. While previously concerned with individual or family-level characteristics and their impact on individuals' transitions, this section aims to evaluate how labor market policies and other features of the economic and social environment in which individuals live influence the average individual's transition.

4.1 The macroeconomic environment

The law of supply and demand remains an optimal starting point for the analysis of the time it takes for the labor market to absorb new graduates. In the canonical neo-classical model, the wage adjusts to achieve clearance in the labor market. In real life, the wage is not the only thing that might adjust to modifications of supply and demand of workers, and excess supply of workers might provoke anything from unemployment and unwanted part-time labor to lower quality jobs. This is illustrated in Banerjee et al. (2008), who examine the South African labor market since the end of apartheid. At the time, the country faced institutional constraints¹⁶ preventing real wages from declining to adjust to the increased supply of labor (of black women, especially). This, in combination with a structural change implying an increased relative demand for more qualified labor, meant that unemployment soared, especially amongst lower educated South Africans.

Minimum wages are a good example of institutional (legislative) constraints that could theoretically impede labor market adjustments and reduce employment in the context of excess supply of labor. Margolis (2014) reflects on the conditions under which the introduction of minimum wages in developing countries can promote growth and reduce poverty. He argues that market frictions and monopsony conditions seem particularly important in developing countries, ensuring that minimum wages come with positive employment effects. However, there are inherent risks of increasing the formal sector, and *in fine* the success of minimum wages hinges on the capacity of countries to enforce legislation, collect relevant data and ensure coverage. Empirical evidence from the introduction of minimum wages in Latin America suggests that the negative employment effect is all but uncertain. In a panel data study of Mexican and Colombian manufacture, Bell (1997) concludes on a negative effect in Colombia, but no effect in Mexico. She argues that this is because the minimum wage is not binding in Mexico, while it is in

¹⁶Related to, among other things, scrutiny from international institutions.

Colombia. Maloney and Mendez (2004) point out that minimum wages distort labor markets differently in the presence of large shares of informal labor. Imposing a (binding) minimum wage in the formal sector might push workers into the informal segment of the labor market, where wages decrease, which results in some workers being worse off than before the introduction of the minimum wage. This mechanism does not seem to be operating in Latin America, however. The authors instead show that in virtually all countries, a *lighthouse effect* can be observed, *i.e.* the minimum wage in the formal sector acts as a signal of what constitutes a fair wage in the labor market. Thus, rather than decreasing, wages in the informal segment of the labor market actually increase. Lemos (2009) also finds evidence of a wage compression effect in both the formal and informal sector in Brazil, but concludes on no adverse employment effects. Gindling and Terrell (2007) on the contrary find an adverse employment effect on the covered sector in Costa Rica, but no change in the uncovered sector. Dinkelman and Ranchhod (2012) find no evidence of employment effects of the minimum wage introduced in South Africa. Lustig and McLeod (1996) explore a set of developing countries which have introduced minimum wages, and find that increases in the minimum wage has on average led to decreases in poverty rates. In a review of the literature, Betcherman (2015) states that the majority of the evidence from developing countries concludes on negative, but small adverse employment effects from the introduction of minimum wages. Studies further suggest that relatively vulnerable individuals such as youth, women, less skilled and more generally those on the lower end of the pay scale tend to be the ones suffering the worst employment effects. Focusing on the School-to-work transition specifically, but outside a developing country context, Neumark and Wascher (1995) look at the impact of minimum wages on youth transitions in the US. Their results suggest that while on the aggregate, the minimum wage might have low employment effects, transitions to and from enrollment and employment can be significant and “*should be of concern to policymakers.*”.

The shape of technical change also influences demand for labor, both aggregate labor and labor at various skill levels. Capital-augmenting productivity growth for example, will induce firms to substitute capital for labor, thereby creating downward pressure on wages and upward pressure on unemployment. Similarly, if technological change is labor-augmenting but skill-biased, such that the productivity increase is relatively stronger for skilled labor, firms are likely to substitute skilled labor for unskilled labor as labor inputs. In general, structural change, whether it be the result of terms of trade variations or productivity shocks, will through adjusting the overall capital intensity have repercussions on the demand for labor and thus the transition patterns of young workers.

Berman and Machin (2000) show evidence of pervasive skill-biased technological change in developing countries, something that would worsen prospects for relatively uneducated workers in these countries. The linkages between technical change and the labor market have been studied in Bolivia (De Franco and Godoy 1993), South Africa (Naudé and Coetzee 2004), in Sub-Saharan Africa (Ehui and Delgado 1999; De Janvry and Sadoulet 2002), in Latin America (De Janvry and Sadoulet 2002; Schady and Sánchez-Páramo 2003), in Asia (De Janvry and Sadoulet 2002; Marouani and Nilsson 2016).

On the supply side, demographics play an important role in the supply of labor and thus in the labor market equilibrium, something that has been taken into account by scholars working on youth employment. At constant labor demand, the arrival of a relatively large cohort in the labor market is doomed to be accompanied by increasing unemployment (so called *cohort crowding*). Korenman and Neumark (1997) estimate the elasticity of youth unemployment to the share of youth in the population, and find this to be around 0.5 in a set of 11 European economies. Similar figures for developing countries are found by O'Higgins (2003). From this angle it makes sense to be optimistic about world demographic trends from a labor market perspective: Lam (2007) shows that although the number of youth in the world has never been bigger, the share of youth to adult population has already peaked and is declining in most developing countries, implying more opportunities in the future for the world's youth.

In Africa, Garcia and Farès (2008) show substantial heterogeneity in transition times of youth, ranging from one year of inactivity in Côte d'Ivoire to seven years in Mozambique. Guarcello et al. (2005), using the same data, find no evidence of correlations between the time spent in transition and a number of macroeconomic factors such as GDP growth, the share of industry or openness to trade. This might suggest that unobserved institutional factors, at the country, regional or local level, strongly affect transition patterns in individuals. For example, population density and infrastructures of one's locality play a role in the amount of viably accessible economic activities for individuals, as well as the potential size of their social networks and the possibility of extending the latter. Population density was linked to the probability of finding a job through one's social network in Egypt (Wahba and Zenou 2005), and to the job search intensity in Turkey (Tasci 2008) and Russia (Smirnova 2003).

4.2 Labor market policies

Facing difficulties of some groups in the labor market, industrialized countries have implemented various labor market policies in order to address market failure and improve outcomes of workers risking to lose touch with the labor market (so called Active Labor Market Policies, or ALMPs). Escudero (2015) lists four objectives of ALMPs: 1) acting as a tool smoothing the matching process 2) keeping long-term unemployed and other outsiders close to the labor market 3) increasing the demand for labor 4) stimulate productivity of the labor force. International organizations such as the World Bank and the ILO have in recent years recognized the need to adequately evaluate active labor market programs in developing countries, since initial evidence suggested some of the programs (successfully) run in industrialized countries might not be suited for developing countries' labor markets (Kyloh 2004). Godfrey (2003) assesses a series of ALMPs carried out in transition and developing countries, arguing that a double criterion should exist for programs: a (favorable) cost-benefit analysis, and a high private rate of return for the disadvantaged youth that are the target populations of these programs. The World Bank's support in the area of youth employment was evaluated in 2012 (Independent Evaluation Group 2012). Regarding the school-to-work transition, improving information on the labor market is a feature of 70% of the Bank projects studied, although very little is known about its efficiency. The fact that the SWT is minimally covered whilst the education system is extensively covered is pointed out as a gap in the report. Some impact evaluations were carried out on other programs run by the World Bank. Seven are listed in the report, and a summary of their conclusions is provided. They indicate that entrepreneurship training might be efficient in rural areas in Uganda and Colombia (but negligible effect in Tunisia), that short-term training with internships seems to function in Colombia but not in the Dominican Republic (Card et al. 2011), and that men are more positively impacted by entrepreneurship training than women, who do better in skills training. A meta-analysis conducted by Card, Kluve, and Weber (2010) showed that interventions targeted at youth less often showed significant impacts. More recent and extensive evidence on ALMPs targeting youth comes from Kluve et al. (2016). Covering 113 reports, their aggregate analysis shows that employment services and subsidized employment perform worse than interventions in skills training or entrepreneurship promotion.

Blattman and Ralston (2015) survey labor market and entrepreneurship programs in poor and fragile states. The evidence surveyed shows a small effect on employment and

earnings of training in business skills, technical and vocational skills. Furthermore, the relatively high costs of these interventions casts doubt on the returns. These conclusions echo those of more systematic reviews: McKenzie and Woodruff (2014) evaluate 16 randomized experiments providing business training, concluding on modest impacts in the adoption of business practices and henceforth on sales or profitability. They however find stronger effects on business creation. Tripney and Hombrados (2013) review 26 studies on the provision of technical and vocational education (TVET) to youth in low- and middle-income countries. Their overall finding is that of a statistically significant impact of TVET provision on paid employment and earnings, but they suggest caution in drawing any firm conclusion due to the quantity of the evidence as well as the quality of some studies. Also interested in employment, Grimm and Paffhausen (2015) systematically review 53 studies of interventions targeting micro-entrepreneurs or small- or medium-sized firms. They find modest effects, especially when job creation in pre-existing firms is considered. Interestingly, they also find a difference according to the methodology used for the evaluation, randomized controlled trials finding smaller effects than quasi-experimental ones. They also point out the lack of focus on the cost-effectiveness of these interventions. A similar concern was raised by Blattman and Ralston (2015), who affirm that even a rather successful example of an adolescent girls employment program in Liberia (Adoho et al. 2014) would necessitate steady benefits for 3-4 years for benefits to outweigh costs. The lack of evidence on the medium- and long-term effects of interventions was also highlighted in the literature. Many evaluations lack a follow-up, focusing only on the immediate effects at program closure. Exceptions showing positive medium-term impacts do however exist. McKenzie, Assaf, and Cusolito (2016) evaluate an interesting scheme in Yemen, where firms interested in hiring interns were matched randomly to candidates fulfilling a certain number of criteria, and were given subsidies covering 50% of the internship cost. The authors find large and positive employment and earnings effects, still present 5 months after the program, suggesting that internships can work as springboards for youth at the start of their transition to working life. In India, Maitra and Mani (2017) find sustained positive employment effects of vocational training on poor women, 18 months after the end of the intervention. In Latin America, a series of evaluations of the *Jovenes* programs, providing job training in seven Latin American countries suggests positive employment impacts of active labor market programs in all seven countries, ranging from a 0 - 5% increase in employment. The target groups were youth, out of school and unemployed or underemployed individuals, and training was given for a few weeks, followed by an internship with a firm of the same length (Ibarrarán and Rosas Shady 2009). Among the programs evaluated, the

PROCAJOVEN in Panama is of particular interest, since it distinguished first-time job seekers from merely unemployed youth, focusing on longer internships and less training for the former. Interestingly, the estimated impacts were lower for first-time job seekers (and negative for men), but since this group is different from the second one, not much can be inferred about the relative efficiency of job readiness training versus internships. In a larger evaluation of job training programs, Urzúa and Puentes (2010) cite 34 evaluations from Latin America of varying scope and quality. Their summary casts doubt on the generalizability of the positive results from the Jóvenes programs, since about half of the evaluations show no positive labor market impacts.

In their survey, Blattman and Ralston (2015) also summarize the (scarce) evidence on workforce programs, such as the NREG program in India, which provided 3.3 person-days of public employment per rural individual for three years. The efficiency of the program remains doubtful, but results from evaluations are inconclusive, partly due to the lack of an appropriate research design. The most researched type of intervention is most likely individual or household transfers. This is also the strand of the literature that has shown the most promising effects. Evidence from Uganda (Blattman, Fiala, and Martinez 2014; Blattman et al. 2016) shows that transferring cash and business skill training to the poor leads them to take up self-employment and increases earnings and work hours. In Bangladesh, Bandiera et al. (2013) show that transfers of assets and skills to poor women enable them to shift out of casual labor into self-employment. More generally, the take-away message of the survey of Blattman and Ralston (2015) is that interventions equipping individuals with capital (physical or cash) have the best record in the literature and provide long-lasting positive impacts. The success of these programs suggests that there may be synergies between program components, and that the provision of skills or cash alone is an imperfect way of putting the poorest on a path to stable employment. However, since local contexts vary, and the possibilities for promoting employment targeting disadvantaged youth are numerous, a solid body of evidence has yet to be constituted, in particular with regards to skills formation interventions and workforce programs. In this regard, with more and more randomized control trials emerging, learning by doing in the policy community might (hopefully) imply improved transitions for vulnerable categories of youth in the future.

Summary

Sparse evidence from Africa suggests the macroeconomic environment plays little role in explaining individual transition times. However, macroeconomic studies of the long-term determinants of average transition rates are lacking and would be a welcome addition to the literature.

Active Labor Market Programs have had mitigated results on labor market entry. Systematic reviews tend to find evidence that entrepreneurship promotion and skills training work better than employment services or subsidies. However, employment creation in pre-existing firms may be more difficult to achieve. It is acknowledged that there is scope for more evidence on the long-term effects as well as the cost-effectiveness of interventions. Among intervention methods, cash or capital injections are the ones with the most successful track record.

5 Concluding remarks

In this article, I have attempted to paint a picture of the research on school-to-work transitions in developing countries, including theoretical foundations, methodological issues and empirical evidence. Concerned with flows between states in the labor market, search and matching theory constitutes a natural starting block for inquiry into labor market transitions. This literature has in recent years been extended to take into account some of the most salient features of developing countries' labor markets, such as a formal-informal segmentation. Producing theoretical hazard rates, search and matching theory also lays the ground for empirical analysis of transition that takes the shape of duration analysis. Among the estimators used in the literature, the proportional hazards model is by far the most commonly used tool. Despite it not being able to nest many structural models, its relative simplicity and incorporation into common statistical software makes it a good basis for extensive empirical study of the school-to-work transitions.

Empirical results suggest that many of the results found in static analyses concerning labor market status in developing countries are confirmed when transitions are the subject of investigation. Being a woman, for example, not only carries a penalty in terms of wages or unemployment, but also in terms of transition lengths. Education mostly shortens transition times, although this is not always the case. Queuing for good [public sector] jobs arises as a plausible explanation for the phenomenon. Social networks, cognitive skills and family background are all tied to employment outcomes, but specific studies on transitions in developing countries are lacking. This pleads for the

systematic inclusion of work and education history modules in future labor market surveys.

The macroeconomic environment seems to be of relatively little importance in individual school-to-work transition in developing countries. Rather, the institutional setting and the nature of the local labor market are potential drivers of durations to first job. Public interventions have proven successful, in particular those who focus on cash or capital injections. Furthermore, skills training and entrepreneurship promotion has proved more successful than interventions focusing on employment services or subsidies to employment. Some evidence also suggests that interventions targeting youth are less efficient than untargeted interventions. Overall, the evidence points to a lot of heterogeneity, plausibly due to differences in the local settings in which programs were implemented. This suggest a need to continue studying the determinants of successful interventions.

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