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# **DOES AGE-AT-MIGRATION IN CHILDHOOD AFFECT MIGRANT SOCIOECONOMIC ACHIEVEMENTS IN ADULTHOOD?**

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## **ABSTRACT**

Migrant populations consist of individuals who migrated at different stages in the development of their human capabilities. Age-at-migration refers to the age at which an individual migrates. This paper reviews some theoretical arguments and empirical evidence on whether a child's age-at-migration alters the impact of migration on income, employment and other socioeconomic indicators in the adult phase of the child's life. Most research looks at the contemporaneous impact of migration on children, whereas this paper considers the longitudinal impact of childhood migration on well-being throughout life. Age-at-migration might affect human capital and economic productivity, integration at destinations, and attachments to origins.

Studies show that children migrating at older ages ultimately achieve less total education (origin education plus destination education), weaker destination-language acquisition and lower earnings than those arriving as younger children; but they have higher adult earnings compared to those arriving as adults. There appears to be little difference between those arriving before age 5 years and those born at destination, which is surprising given considerable literature on the human development significance of early child ages (although this could be due to the limited availability of relevant empirical literature). Variations in the effects of age-at-migration are noted across migrant populations in different destination societies, which underline the possibility of public policy to influence such human development mechanisms.

## **JEL classification numbers and keywords:**

D31 Personal Income, Wealth, and their Distributions

F22 International Migration

J61 Geographic Labor Mobility; Immigrant Workers

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## 1 INTRODUCTION

People migrate at different ages. This means that a given stock of migrant adults may be composed of people who migrated at markedly different points in the development of their individual human capabilities. This could have implications for how migration affects socioeconomic development in destination societies (in origin societies, a parallel inverse issue has been termed as ‘brain drain’). Whilst the age-composition of a migrant population affects its human capital, so might its composition in terms of age-at-migration. It would seem to matter whether a given stock of migrant adults is composed of those who migrated as infants, for example, or those who migrated as adults.

At first sight, it might be tempting to reduce age-at-migration to simply duration effects from the amount of time a migrant spends at destination, but that would miss fundamental aspects of how humans develop. Human capabilities do not develop linearly over the lifecourse, and also, aspects of the under-development or mal-development of human capabilities at certain points in the lifecourse may be irreversible. This would mean the significance of a given duration at destination might not be equivalent in all phases in the lifecourse. In particular it may ignore some interesting processes arising from differences in age-at-migration in childhood that may have fundamental effects on adult migrant achievements.

Age-at-migration could affect human capabilities in its narrow sense of human capital, such as education or job-skills. But also, by affecting the degree of integration at destination through work, marriage, religio-cultural adoption, etc., it could affect human capabilities in the wider senses of opportunities and freedoms (as discussed, for example, by Sen 1998). Furthermore, age-at-migration might alter the ties migrants have to their destination societies, and might ‘untie’ some migrants from their origin societies, thereby potentially affecting remittances, return-migration and cultural practices at both destinations and origins.

This paper reviews the longitudinal implications for individuals of their age when they migrate, in terms of their achievements in incomes, employment, healthiness, social participation and other aspects of well-being in adulthood (referred to here collectively as socioeconomic achievements). In doing so, the paper is motivated by two ideas that seem causally connected, but have not been connected substantially in migration studies so far. First is the idea central throughout social sciences that human capital – a range of beneficial cognitive, physical and psychological attributes – is important for explaining variations across individuals in their socioeconomic achievements, whilst controlling for differences in their socioeconomic opportunities (due to public policies, legal frameworks, social networks, global factors, etc.). Second is the idea, explored further below, and drawing particularly on combined biological and social sciences, that humans develop capabilities differently at different ages. This paper considers the empirical basis for arguing that the impact of migration depends on when the migration occurs in the lifecourse because of age-determined effects on human development.

Age-at-migration is a relatively less considered explanatory factor in migration studies. Age (as distinct from age-at-migration) is regularly included in multivariate models of migrant socioeconomic attainments, but its inclusion is often as a ‘control variable’ to isolate other determinants that are of more explicit interest. If considered

more closely, there is a general assumption that older migrants have had more time at destination to gather social-economic capital, such as labour market experiences. Undoubtedly this research limitation is related to data limitations because so few surveys collect age-at-migration information.

But also, some of the research limitation would seem to be related to a generally weak conceptualisation in migration studies of children's migration. Children's migration is predominantly viewed in narrow terms of the protection needs of an often vulnerable group. However the focus on protection has led to an over-looking of possible long-run, societal-level implications of children's migration, due to the unique human development potential of childhood within each individual's lifecourse. Childhood can have strong foundational influences on an individual's lifetime capabilities and achievements.

Outside of migration research, the analytical approach of tracing the lifecourse has led to great explanatory insights on the aetiology of a wide range of socioeconomic attainments amongst adults, such as earnings, diseases, cognition, crime and poverty (Bynner 2001; Benson 2001; Yaqub 2004). Three ideas relevant to the present discussion can be drawn from lifecourse research. First, dynamic biological and socioeconomic processes (commonly termed as growing-up and getting older) mean that an individual's human capabilities constantly and non-linearly evolve throughout his/her lifecourse. Notably this applies to adulthood too, although focus here is on childhood. Second, the effect on an individual of new socioeconomic contexts, stimuli and change, such as might occur through migration, can depend on the timing of such factors within his/her lifecourse. How various human capabilities evolve is sensitive to the individual's age at which socioeconomic opportunities and risks arise. Third, there is a temporal ordering of effects, and socioeconomic opportunities and risks at a particular time can go on to have longitudinal implications. As reviewed later, research has begun to uncover some reversible and irreversible biological and socioeconomic pathways for why what happens earlier in somebody's life, can have lasting effects.

The paper explores these issues by reviewing evidence on whether an individual's age-at-migration in childhood influences that individual's subsequent income, employment and other socioeconomic indicators in adulthood. Section 2 substantiates the role of childhood in adult achievements, drawing on evidence from lifecourse research. Section 3 reviews empirical evidence on the adult implications of children's age-at-migration, mainly in OECD countries where longitudinal research is most available. Second generation migrants born at destination are viewed here as having zero age-at-migration. Section 3, in conclusion, situates the evidence presented within broader concerns and policy debates on migration, and in particular children's migration.

## **2 LIFECOURSE EFFECTS IN MIGRATION**

Most explanations of socioeconomic variation amongst adults understand it largely in terms of contemporaneous and/or adult factors. This applies also to research on migrant attainments. The approach could be stylised as follows: the adult characteristic of interest (income, employment, etc.) is modelled at time  $t$  against explanatory variables at or around time  $t$ , plus possibly, a few variables before time  $t$ ,

also drawn from adulthood. Occasionally schooling in childhood might be included, but mainly ultimate educational attainment is used as a convenient summary variable of entire educational careers. This approach has provided many important insights into why some adults achieve better socioeconomic outcomes than others. However its major shortcoming is that it is ahistorical, effectively treating everybody as having had the same childhood.

Lifecourse research, some initiated nearly a century ago, view lives as highly diverse trajectories, or serially linked states, which operate in several interconnected domains of human development, from womb to grave (Elder and Johnson 2000). Longitudinal studies tracking individuals over decades show that success in childhood is a strong marker for success in adulthood. Mounting evidence across the biological and social sciences has identified specific pathways, in terms of positive attainments in cognition, physical vitality and personality (Yaqub 2002). Such characteristics have long been seen as significant in human capital models that explain incomes, household formation, social inclusion and other indicators of adult achievement. This raises the possibility that migration at child-ages could influence long-term dynamics, in terms of the socioeconomic achievements of migrant populations.

Although longitudinal and cohort datasets have matured now to such extent that lifecourse research encompass the whole lifespan, much of its starting point remains in childhood. Changes in human capabilities are highly dynamic in childhood, and to capture this, childhood can be subdivided into shorter phases, such as foetal, infant, early childhood, middle-childhood and adolescent.

Lifecourse research incorporates four principles (Elder 1998): 1/ that the lifecourse of individuals is embedded in and shaped by the historical times and places that they experience over their lifetime, 2/ the development impact of a succession of life transitions or events is contingent on when they occur in the person's life, 3/ lives are lived interdependently, and social and historical influences are expressed through this network of shared relationships, 4/ individuals construct their own lifecourse through the choices and actions they take within the opportunities and constraints of history and social circumstances.

Some of these ideas are identifiable, at least in general terms, in certain elements of existing migration studies, especially with regards to the importance of 'time' and 'place'; the roles of migrants' social networks and interdependence; and migrants' agency and choice. But a key strength of the lifecourse approach is that it has increasingly integrated the biological sciences and the social sciences. This has helped the understanding of causality by uncovering the determinants of human achievements from the "macroeconomic to the molecular" (Ben-Shlomo and Kuh 2002). Lifecourse perspectives anchor development back to the individuals that do the developing, by showing how individual development, a partly biological process, is intricately linked to societal development, as one reinforces the other.

A strand of this literature identifies particular ages when various human functionings are sensitive to development (Bornstein 1989). For example, language acquisition – a well-recognized factor in migrant labour market success – is believed to be strongly age-dependent. Also adult height is sensitive to growth spurts during certain ages in childhood, and this might affect physical labour capacity (Payne and Lipton 1994).

Even at age 'zero', longitudinal studies show low birthweight is negatively associated with adult attainments in cognition, earnings and employment (Bartley et al. 1994; Ivanovic et al. 2000). More broadly, advances in neurology have revealed how early-age protein-energy malnutrition, particularly in developing countries, can cause lasting cognitive and psychological deficits (Scrimshaw 1998).

Confounding the issue of developmental sensitivity are two other potential age-related effects: resilience to harm and reversibility of damage. Knowledge of these effects comes from children that have been traumatized in some way. For example, recovery patterns from brain lesions suggest that reversibility of damage to motor functions declines rapidly in the first months after birth, whereas reversibility of damage to language centres lasts well into childhood (Huttenlocher 1994). Even in cases of extreme deprivation, full reversal of harm has been achieved among infants, but less so at older ages (Perry 2002). Another example relates to iron deficiency: after age 5, iron supplementation can reverse deficits in learning ability and memory, but not in attention spans (Pollitt et al. 1986). Moreover, reversal is impossible if iron deficiency occurs in infancy, because at that age iron assists in permanent structural changes in the brain (Rao and Georgieff 2000). In emotion and behaviour, post-trauma recovery tends to be greater in older children (Fuemmeler et al. 2002). Resilience to morbidity may depend on immunocompetence developed at the foetal stage and in infancy (Prentice 1998).

Research on age-effects in child development is still incomplete. What is clear is that the huge multidimensional expansion of capabilities that children experience occurs at different rates and at different points in childhood. Migration could, in principle, alter these dynamic processes, such as by changing the level of resources available to the child, shifting intrahousehold allocations of resources and care across ages and sexes (e.g. by altering household structures), and opening new socio-economic opportunities (e.g. by modifying the child's membership of community or country). These will partly depend on the characteristics of migration because children migrate under highly varied circumstances (some favourable and others harmful). The impact may also depend on whether migration coincides with aforementioned age-effects in terms of developmental sensitivity, resilience to harm, and reversibility of damage.

### **3 LONGITUDINAL EVIDENCE ON AGE-AT-MIGRATION**

One analytical approach to lifecourse effects in migration is to assess the correlation of an individual's age-at-migration in childhood to the same individual's subsequent socioeconomic outcomes in adulthood. Age-related effects in childhood, such as sensitivity, reversibility and resilience in human development, might be detectable in age-at-migration effects in adult outcomes. If a particular characteristic, such as destination-language acquisition, is highly sensitive to development before a certain age in childhood, then adults who migrated after that age may on average have lower achievements than those who migrated before. This is, of course, detection in 'reduced form', in the sense that sensitivity, reversibility and resilience work in different directions and so age-at-migration captures their net effects; and also, in the sense that a given indicator of adult achievement may be influenced by many dimensions of child development.

Several studies show that children migrating at older ages ultimately achieve less education (origin education plus destination education). For example, migrants arriving in the USA aged 15-18 years achieve 3 years less education than those arriving before age 4 years (Chiswick and DebBurman 2003; Gonzalez 2003). In Canada the difference is roughly 1.6 years (Schaafsma and Sweetman 2001). Educational attainments of migrants arriving before age 4 years resemble that of second-generation migrants (a similar result at age 6 years was found in Holland by Van Ours and Veenman 2003).

The strongest adverse effect of being older-at-migration appears after age 10 or 11 years, which coincides with the end of the sensitive period for language acquisition (Bleakley 2003). For possibly similar reasons, in Sweden, children migrating at older ages catch-up maths more easily than other subjects (Bohlmark 2005). Khan (1997) analyses determinants of post-migration education investments in the USA, and finds that for those older-at-migration, there is a trade-off with origin and destination schooling; but at younger-age-migration, schooling at origins complements schooling at destinations due to greater transferability of skills. Nijenhuis et al. (2004) conclude from their review showing second-generation migrant catch-up on cognitive scores in Holland: “educational and biological factors probably impede the first generation, born and raised in developing countries, more than the second generation, growing up in post-industrial societies” (p.429).

Extra education at the destination, gained from migrating early, translates into increased earnings as adults (controlling for other characteristics). In Canada the earnings of a migrant arriving after age 45 years is 32% less than a migrant arriving before age 4 years (Schaafsma and Sweetman 2001). Migrants speaking an official Canadian language have 11-13% higher earnings, but this gain is less for migrants arriving after age 18 years suggesting the importance of ‘native language acquisition’ (Chiswick and Miller 2003). Australian data shows that earnings growth after entering work is higher for migrants arriving before age 15 years, rather than at older ages (Wilkins 2003). In the USA second-generation migrants and migrants arriving before age 12 years have similar earnings profiles, and have substantial earnings advantages over older arrivals (equivalent to half the earnings advantage of a university degree, or 10 years of work experience) (Allensworth 1997).

Van de Vijver et al. (1999) found that amongst 7-12 year old migrant children in Holland, the younger ones seemed more likely to adopt integration (high regard for both original and host cultures), rather than other strategies of assimilation (high regard for host, low for original) or separation (low regard for host, high for original); even by this age, second-generation migrant children tended towards assimilation more than first-generation. Compared to non-Latino whites, Mexicans are over seven times more likely to drop-out of school if their age-at-migration was 13-17 years, 2.5 times if age-at-migration was 6-12 years, twice as likely if age-at-migration was under 5 years, and 1.3 times if second generation born in the USA, with much of the effects shown to be mediated by factors known to influence child development (Landale et al. 1998).

Clearly duration-at-destination and age-at-migration may interact; and the sizes of their effects may differ. Chiswick and Lee (2006) observe this in terms of destination language acquisition. Efficiency refers to the extent to which a given amount of

destination-language exposure produces language proficiency (enhanced by greater level of education and migration while young). The positive effect of a younger age-at-migration on English-language proficiency in Australia increases with duration at destination, i.e. interaction between duration and age-at-migration. The positive effect of education on proficiency does not appear to vary with duration. Age-at-migration effect is small amongst those who migrated after age 15 years: one extra years of schooling is equivalent to about 12 fewer years of age-at-migration, but this is after the sensitive period on language has passed. Kinra (2004) draws similar conclusions about different effects of duration-at-destination and age-at-migration. The same analytical problems have been encountered in lifecourse research in terms of understanding how later life can continue to exert influence, and that life is not completely determined by childhood.

Bleakley and Chin (2004) estimate that the positive effect of language proficiency on migrant earnings in the USA is mostly due to gains in education, rather than gains in labour productivity. In other words, language proficiency that is achieved after the passage of schooling ages and sensitive periods in cognition, have lesser effects on migrant earnings. This is important in showing how the age-structure of migrant populations is not the same as age-at-migration for understanding dynamics and rigidity amongst migrant populations. Bleakley and Chin argue “that timing of migration and its effect on English-language skills are critical to a variety of important outcomes, and policymakers should be cognizant of this. Because much of the effect of English-language skills is through increased years of schooling, adult English-language classes may be insufficient to help these immigrants’ wages to converge to those of natives. Instead programs aimed at children may be more effective” (p. 493).

In health outcomes, Schooling et al. (2004) found that migrants from southern China to Hong Kong (i.e. having similar ethnicity and genes) had greater risks as adults of type II diabetes, hypertension, hyperlipidaemia and ischaemic heart disease, if their age-at-migration was in childhood and not adulthood. This was compared to the population born in Hong Kong, and controlled for duration at destination, family medical history, and other confounding factors (detailed age-at-migration effects were reported in the paper). Earlier migration to the more affluent environment of Hong Kong is associated with chronic diseases, and this is thought to be connected to biological and growth processes during childhood.<sup>2</sup>

Across 17 developing countries, Brockerhoff (1994) found that the chances of infant mortality increased sharply as a result of accompanying their mothers or being left behind, to levels well above the mortality of rural and urban non-migrant infants. However infants born after migrants settled in urban areas had better survival chances than rural non-migrants. This raises the possibility that any benefits of migration at young ages might be outweighed by additional mortality risks, but being born into the urban context in the second-generation might be advantageous.

Variations in the effect of age-at-migration exist across time periods, ethnic groups and destinations, thus highlighting the potential remedial role of policies and contextual factors. For example, Mexicans in the USA show the strongest decline in education with age-at-migration, and this may reflect their distinctive migration

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<sup>2</sup> See, for example, also Wannamethee et al. (2002) on migration and cardiovascular disease .



pattern with greater circular migration, and a high propensity for teenagers to leave school in Mexico to work in the USA (McKenzie and Rapoport 2006). Second-generation Turkish migrants have varied outcomes across European destinations, with better schooling in France, Belgium and the Netherlands as compared to Germany, Austria and Switzerland. Migrant children in the USA have worse health and nutrition if one or both parents are undocumented, underlining the importance of legal status (Kanaiaupuni 2000). Undocumented children who are repatriated at sensitive development ages, and who might also re-migrate, might be especially vulnerable. Entorf and Minoiu (2005) show that whilst parental education, and the language spoken at home, affect children's school performance, the relationships vary by destination-country; it is weaker in Scandinavian countries and in Canada, and stronger in Germany, the UK and US. The structure of labour markets and labour policies affect immigrant earnings and employment (Kahn 2003).

#### **4 CONCLUSION**

The paper examines connections between age-at-migration and adult migrant outcomes. It highlights a broad body of evidence on the sensitivity and reversibility of child development/harm, because this suggests the possibility that age-at-migration in childhood can have long-term implications.

The paper focuses on age-at-migration, whilst other age-related effects have been addressed in other research. For example, Borjas (1995) and Schoeni (1997) report on effects due to duration at destination and effects linked to age-cohorts that are common to migrants in the same period (e.g. immigration policies). Also Paping (2004) and Jan (2005), for example, report on lifecycle effects (due to individual paths in employment careers, parenting and household-formation). Commonly studies consider variations in socioeconomic achievements across stocks of migrants differentiated by ethnicity or countries of origins – but as stocks, these categories pool different ages-at-migration. Also common is to consider socioeconomic achievements across cohorts differentiated by year of migration, which controls for socioeconomic opportunities varying over time, but not age-at-migration. In contrast, this paper focuses on longitudinal effects, meaning those effects of age-at-migration in childhood with implications for subsequent phases of the lifecycle.

Studies show that children migrating at older ages ultimately achieve less total education (origin education plus destination education), weaker native language acquisition and lower earnings than those arriving as younger children; but they have higher adult earnings than those arriving as adults. There appears to be little difference between those arriving before age 5 years and those born at destination, which is surprising given considerable literature on the human development significance of early child ages (although this could be due to the limited literature availability). Variations across migrant populations in different destinations are noted, and underline the possibility of public policy to influence such human development processes.

Age-at-migration deserves further study, for several reasons. First, if age-at-migration effects are strong, it may be worthwhile for a destination country to invest in the human capital of migrant children to raise their adult productivity. For example, Gonzalez (2003) estimates that the benefits to the USA of providing 12 years of

schooling outweighs the costs of lost productivity by nearly \$30,000 per migrant. This costing can be understood in the context of transitions across biologically and socially determined 'life-stages' that condition the sequencing of various life events. This means that sometimes events or interventions to influence adult capabilities, such as anti-poverty programmes for immigrant communities, might be made when they are least likely to influence – or even, in some dimensions, when they are impossible to influence – as developmental impacts of events and interventions are contingent on their timing in life.

Second, longitudinal trade-offs over the lifecourse may affect migration decisions that families take in communities of origin. Large numbers of older children migrate for work to support family members left behind. Much of this involves migration into middle-income countries from poorer bordering countries, but significant numbers migrate into high-income countries, particularly the USA and Mediterranean countries (Yaquib 2009). The longitudinal trade-off exists not just in terms of the development of the individual migrant child, but also in terms of the development of his/her family. Some anthropological literature has indicated that parents may sometimes explicitly calculate such choices across their offspring, by accepting one child into labour migration in order to protect the survival of the rest of the family, or to finance the schooling of another offspring (Hashim 2006; Thorsen 2007).

A third reason relates to child protection. The particular evidence cited in this paper is not directly applicable, but nonetheless, the following general point can be made: age-related effects probably exist in child trafficking and other harmful effects of migration. Studies on abused children highlight age-related effects on resilience to physical and psychological harm, and the reversibility of such damage. Some studies suggest greater reversibility at younger ages, and this might be applicable to trafficked children. On the other hand, older trafficked children might be more resilient due to their greater physical, psychological and economic independence. Research on the effect of age-at-trafficking might lead to improved rehabilitation services for trafficked children.

Methodologically this paper has made an initial attempt to integrate lifecourse perspectives into an explanation of adult migrant socioeconomic achievements. The paper outlined some selected principles from lifecourse research – a massive body of literature and evidence – and attempted to integrate this into empirical literature from migration studies. The further deployment of lifecourse perspectives could offer lots of advantages for migration studies. The paper focused on age-at-migration in childhood, but the intention was not to posit a deterministic role for childhood. Similar principles and effects could be applied, for example, to age-at-migration in early adulthood (say under 35 years), a highly dynamic lifecourse phase when many events occur, sometimes with major lifetime implications for work careers, household formation, parenting and social networks; and also again in late adulthood (say over 45 years), with rising parental care demands (some of whom may have remained in countries of origin), changing health and physical vitality, and preparation for retirement.

Finally, some limitations are worth noting in the current inclusion of children in migration debates. Intrahousehold diversity in migrant households tends to be framed mainly in terms of gender, often overlooking the diversity that exists because of

children. When children are considered, it is usually as extra categories in age-breakdowns; or adolescents are lumped together with young adults as “youth”; or children are modelled as attachments to adult migration, with no independent influence or impact. But this fails to capture that childhood is a distinct and highly differentiated experience for biological and social reasons. Child migration literature is growing, but its concern is largely on contemporaneous effects with a view to child protection, leaving open the question of whether these contemporaneous effects persist, or whether they diminish as children grow up.

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