Life-Course Transitions and the Age Profile of Internal Migration

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Migration is an age-selective process, with young adults being the most mobile group. The propensity to migrate typically peaks at young adult ages, then steadily declines with increasing age, rising again among young children and sometimes around the age of retirement. Rogers and Castro (1981) demonstrated that this broad age profile is replicated, with some variations, in a variety of countries and at various spatial scales. Despite these persistent regularities, recent cross-national studies have revealed systematic variations in the age profile of migration, particularly at young adult ages.

Previous studies have sought to explain variations in migration age profiles within a country by linking migration ages to factors such as education participation (Warnes 1992a), demographic cycles (Milne 1993; Pandit 1997b), and economic conditions (Pandit 1997a; Plane and Rogerson 1991). Another line of inquiry has relied on self-reported reasons for moving to explore variations in migration ages (Bogue, Liegel, and Kozloski 2009; Rogers and Castro 1979). There is also a growing literature on the connection between migration and particular transitions in the life course, commonly using event-history analysis (Mulder, Clark, and Wagner 2002).While this work has delivered valuable insights into the factors that trigger migration, it has not established how these forces interact to shape migration age profiles. Also missing is any compelling evidence about which factors are common across countries and which ones are country-specific. A distinctive line of research examines the age variation in migration streams between regions within individual countries, but our focus here is on the aggregate propensity to move within a country.

To address these gaps, we propose a conceptual framework, adapted from Bongaarts's model of fertility (1978), that links contextual factors to the age structure of internal migration through intermediate variables, or proximate determinants, that directly affect the ages at which migration occurs. We suggest that the wider socioeconomic context has an indirect effect on migration age profiles by shaping the structure and timing of life-course transitions, which in turn determine migration behavior. We argue, therefore, that cross-national differences in migration age profiles are likely to reflect variations in the age structure of life-course transitions. These transitions represent the proximate determinants of migration.

We test this proposition by establishing the association between migration age profiles and the age structure of four key life-course transitions—education completion, labor force entry, union formation, and first childbearing—across a global sample of countries. This work forms part of the IMAGE project (Internal Migration Around the Globe—http://www.gpem.uq.edu.au/image), which aims to develop and apply statistical indicators of internal migration that can be used to make comparisons between countries across several dimensions, including age, and explain cross-national variations (Bell et al. 2014).

To establish the association between the age profiles of migration and the age profiles of life-course transitions, we select two sets of indicators. We use age at peak migration and migration intensity at the peak to summarize the age profile of migration (Bernard, Bell, and Charles-Edwards 2014), and we use the prevalence, timing, and spread of transitions to adulthood to gauge the structure of the life course (Modell, Furstenberg, and Hershberg 1976; Hogan 1981; Billari and Wilson 2001). We compute the selected metrics for 27 countries and use scatter plots and correlation analysis to identify the extent of global and regional variations. We then use factor analysis to gauge the joint impact of the four life-course transitions on migration by creating indexes of timing and spread. We implement the proposed metrics to identify countries where migration age profiles are strongly associated with the age structure of the life course.

In the following sections we propose the conceptual framework linking migration age profiles to life-course transitions and contextual factors; present evidence on cross-national variations in the age structure of life-course transitions; define a suite of metrics that gauge the age profiles of life-course transitions and migration; and apply these summary measures to 27 countries to identify the extent of cross-national variations in the age structure of the life course and establish its association with migration age profiles. We conclude with recommendations for cross-national comparisons of migration age profiles and directions for future work.

The proximate determinants of migration age profiles

Migration follows a highly regular age profile (Rogers and Castro 1981). Irrespective of aggregate levels of mobility, the propensity to migrate typically peaks at young adult ages, then steadily declines with increasing age, rising again among young children and sometimes around the age of retirement. Underlying these regularities is a collection of life-course transitions (Warnes 1992b), many of which occur at young adult ages, making those years "demographically dense" (Rindfuss 1991). As Figure 1 illustrates, status changes that arise during the transition to adulthood often trigger a change of residence. In particular, these life-course transitions include exit from education and entry into the labor force (Kulu and Billari 2004; Venhorst, Van Dijk, and Van Wissen 2011), union formation (Courgeau 1985; Mulder and Wagner 1993), and childbirth (Baccaïni and Courgeau 1996; Kulu 2008), leading in turn to a concentration of migration at young adult ages.

Despite these commonalities, there is increasing evidence of cross-national differences in the ages at which migration occurs, particularly among young adults, as shown in Figure 2. Bell and Muhidin (2009) demonstrated that migration within Asian countries is strongly concentrated in the early 20s, whereas in Europe and North America migration peaks at older ages and is more widely dispersed across the age range. Bernard, Bell, and Charles-Edwards (2014) elaborated the extent of these variations in the age structure of internal migration among 25 countries around the world and confirmed distinctive regional profiles. Their study also revealed differences among countries within the same region, particularly in Latin America, which appears bifurcated into distinctive clusters oriented around age at peak migration, possibly reflecting differences in culture or levels of human development. At the same time, it is clear that there is significant variation among countries at similar levels of development (Ishikawa 2001).

While it is widely recognized that social, economic, and cultural factors shape migration age profiles, no attempt has been made to identify the mechanisms through which the socioeconomic context influences the age

FIGURE 1 Typical age profile of migration and key life-course transitions

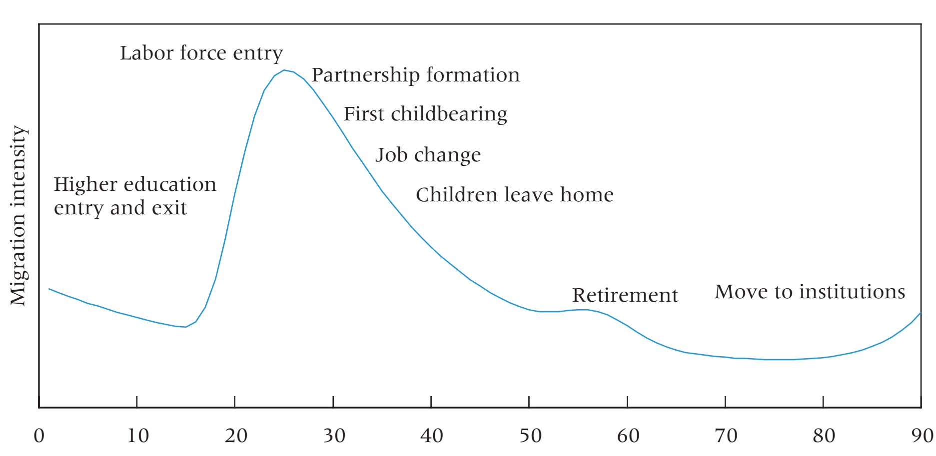
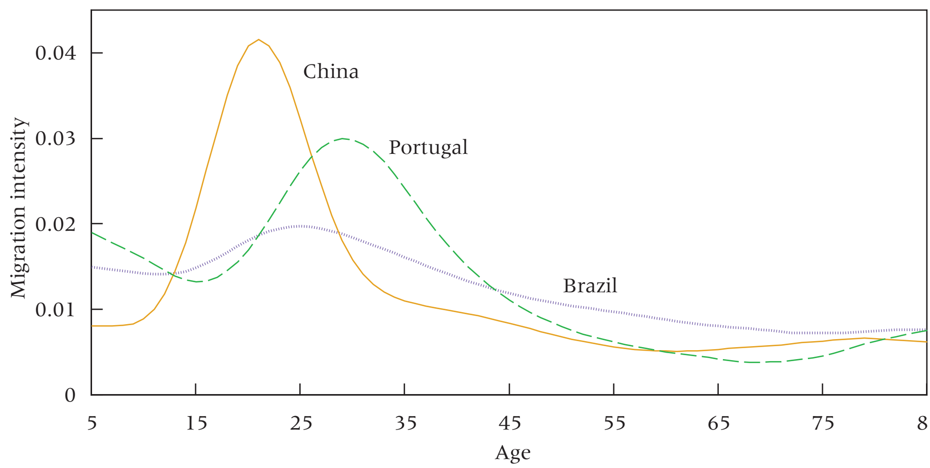


FIGURE 2 Cross-national variations in migration age profiles

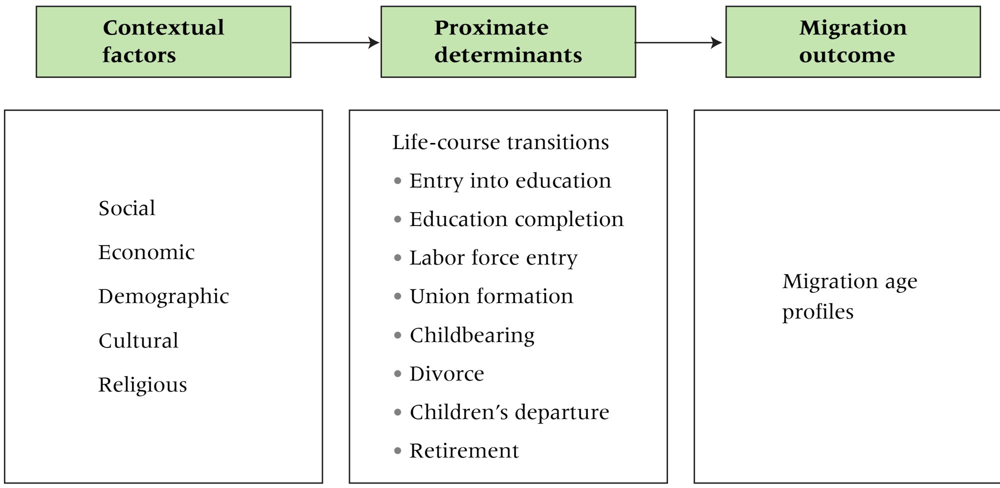


SOURCE: Authors' calculations based on five-year-interval migration data reported by single-year age groups. Migration data were normalized to sum to unity and smoothed using kernel regression (Bernard and Bell 2012).

structure of migration. Evidence suggests that economic slowdowns reduce the propensity to move (Pandit 1997a), but such changes are related to migration ages through multiple pathways. For example, recessionary periods can directly affect migration behavior by draining resources and increasing the relative cost of moving (Saks and Wozniak 2007), but they may also act indirectly by postponing entry into the labor force (Easterlin, Wachter, and Wachter 1978) and delaying new household formation (Sobotka, Skirbekk, and Philipov 2011). These demographic transitions represent proximate determinants of migration as moves are delayed to older ages. Other contextual factors, such as shifts in relative cohort size and increases in education participation, exert similar indirect effects on migration ages by altering the timing of various life-course transitions that are linked to migration. For instance, the establishment of compulsory education and the progressive extension of education to older ages during the twentieth century restructured the transition to adulthood in Europe by extending childhood dependency and labor force entry to later in life, leading to a shift in the age profile of migration to older ages (Warnes 1992a). In a similar manner, mobility among young adults is delayed and its intensity diminished for larger cohorts (Milne 1993; Pandit 1997b), because of increased competition for employment and housing opportunities among young adults, which in turn delays labor force entry and family formation (Jeon and Shields 2005).

These examples suggest that contextual factors, such as economic cycles and cohort size, shape the structure and timing of the life course, which in

FIGURE 3 Proximate determinants of migration age profiles



turn determine migration age profiles. Since life-course transitions act as an intermediary between contextual factors and migration outcomes, we refer to them as proximate determinants. This framework, stylized in Figure 3 and adapted from Bongaarts's model of fertility (1978), permits comparative analysis of the drivers of age-related migration across space and time. We focus on the life-course transitions that directly affect the migration choices of young adults—entry into higher education, labor market entry, union formation, and childbearing—because it is migration at those ages that distinguishes age profiles between countries (Bell and Muhidin 2009; Bernard, Bell, and Charles-Edwards 2014).

According to our framework, cross-national differences in migration age profiles reflect variations in the structure of the life course, particularly at the young adult ages where migration activity is concentrated. Of course, not all moves are triggered by life-course transitions.[1] Young adults, like others, move in response to opportunities, aspirations, and constraints (Borjas 1994; Sjaastad 1962). Thus, on occasion, the forces we identify as contextual may trigger migration directly, as in the case of changes in economic conditions (Saks and Wozniak 2007), rather than through a distinct life-course transition. Nevertheless, there is compelling evidence that certain transitions in the life course are instrumental in generating residential moves, and strong evidence can also be found that the timing of transitions differs between countries. In this article, we focus on establishing the strength of this link and leave the connection between contextual factors and proximate determinants for separate consideration.

Cross-national variations in the structure of the life course

While young adults face more demographic choices than individuals at other stages in the life course (Rindfuss 1991), there is great diversity among countries in the structure of the life course (Shanahan 2000). The proportion of a population experiencing certain transitions varies significantly from one country to another. Marriage, for instance, remains nearly universal in South Asia and to a lesser extent in South East Asia (Jones 2010), but is no longer the social norm in Europe, North America, or most of Latin America, regions where a significant proportion of individuals choose never to marry (Sobotka and Toulemon 2008). Differences in higher education enrollment also remain substantial across countries. In 2009, tertiary education enrollment rates varied from 65 percent in Australia to 25 percent in the Philippines and 9 percent in Ghana (UNESCO 2011).

The ages at which life-course transitions occur also vary between countries. Average age at first marriage in the European Union has reached 27.4 years for women and 29.8 for men (Eurostat 2008), and stands in clear contrast to countries such as China, with an average age at first marriage of 23.6 for women and 25.7 for men (Jones 2010). Delayed union formation in industrialized countries is commonly attributed to the expansion of mass education and its extension to older ages. The increased time spent on education altered the transition to adulthood by postponing labor market entry, union formation, and family formation. The ages at which transitions occur are also affected by economic conditions, which exert strong period effects on entry into the labor force, marriage, and first birth. Changes in the age profiles of life-course transitions also emanate from regulations and practices of governments, such as extension of compulsory education or the minimum legal age at marriage.

Differences in mean ages may disguise wide variations in the age distribution of life-course transitions. While in some countries transitions are highly age-graded and concentrated within a narrow age range, other countries display large variation in the ages at which transitions occur. For instance, Southern European countries exhibit transitions to union, household, and family formation that are spread over a wide age range, whereas in Northern Europe these status changes are more age-homogeneous (Billari and Wilson 2001). The age spread of life-course transitions to some extent reflects the degree of variability in pathways to adult roles. Increasing diversity in the sequencing of life-course transitions has become routine in most industrialized countries (Shanahan 2000), whereas other regions remain characterized by more tightly scheduled transitions to adulthood. In Mexico, for instance, the process of becoming an adult remains guided by social structures and norms that support an early and rapid transition into adult statuses (Fussell 2005).

By influencing the structure of the life course, the prevalence, timing, and spread of events that accompany the transition to adulthood are also likely to shape the age profile of migration. In particular, in countries where life-course transitions take place at young ages, migration is likely to occur early in life, whereas life-course transitions at older ages will delay migration to later in life. Similarly, brief transitions are likely to be associated with a concentration of migration activity in a narrow age range, while protracted transitions will be linked to less concentrated migration age profiles.

Most comparative studies on the transition to adulthood focus on countries within a single region, typically Europe, or on countries at similar levels of development (Billari and Wilson 2001). Studies offering broader geographic coverage are usually limited to a few countries (Fussell, Gauthier, and Evans 2007) or to one type of transition, such as first marriage (Dixon 1971). As a result, cross-national differences in the transition to adulthood have not been established and systematically quantified. To establish the association between age profiles of migration and life-course transitions, we must first determine the extent of variation in the structure of the life course across a global sample of countries. To that end, we propose a suite of comparative metrics that identify key dimensions of the life-course transitions involved in reaching adulthood.

Methods and data

Life-course transition metrics

We focus on the four transitions shown to be key determinants in the transition to adulthood and important triggers of spatial mobility (Mulder 1993): education completion, labor force entry, union formation, and first childbearing. We summarize each transition using three metrics that have been shown to provide an effective framework with which to compare the structure of the life course across countries and over time: prevalence, timing, and spread (Billari 2001; Hogan 1981). Prevalence recognizes that not all transitions are universal, timing establishes the modal occurrence of each transition, and spread captures the age concentration of transitions. Following Modell, Furstenberg, and Hershberg (1976), we define prevalence as the proportion of a population that has undergone a transition by age 35. As a measure of timing, we use the singulate mean age defined by Hajnal (1953). First proposed to gauge the timing of marriage,[2] this measure has since been applied to other transitions, including departure from the parental home (Guinnane 1992). Finally, we use the interquartile range to gauge the spread of life-course transitions, measured as the difference between the ages at which 25 percent and 75 percent of the population have completed a particular transition (Modell, Furstenberg, and Hershberg 1976). Because not all individuals experience a transition, we normalize to 100 percent the proportion of a population that has reached a particular status by age 35. By doing so, we obtain a measure of spread that is independent of the prevalence of a transition. The proposed metrics are computed for ages 15–35. This age range corresponds both to the period of the life course in which key status changes occur (Shanahan 2000) and to the ages at which the majority of moves take place (Rogers and Castro 1981) and at which cross-national differences occur (Bell and Muhidin 2009; Bernard, Bell, and Charles-Edwards 2014).

For the analysis reported here, prevalence, timing, and spread are derived from census microdata, which provide the age distribution of statuses occupied by individuals within a population, such as educational, employment, marital, and parental statuses. From those data, the ages at which members of a population make a given transition can be inferred assuming that the age distribution of statuses has not been affected by rapid changes in the ages at which these transitions occur (Hajnal 1953). Restricting the analysis to the 15–35 age range limits the chance that the age distribution of statuses has been distorted by changes over time or differences between cohorts.

We define as students individuals enrolled in an educational institution. We consider as economically active individuals who are employed or looking for employment and who are no longer enrolled in an educational institution. By doing so, we aim to identify the transition to full-time employment upon completion of education rather than casual employment during the course of studies. In some countries, a significant proportion of women remain economically inactive. If we derived the mean age of labor market entry from the proportion of women who are economically inactive, we might artificially inflate the timing of this transition because many women are inactive at age 35. So for women, we confine attention to overall prevalence measured as labor market participation and ignore timing and spread of labor force entry. Individuals in a legal or de facto union are defined as being in unions, and women with at least one ever-born child are defined as parents. We do not consider departure from the parental home since it is difficult to measure through population censuses and is commonly associated with other transitions such as labor market entry and union formation. To account for potentially different age-specific profiles of transitions to adulthood, we compute life-course transitions separately for males and females, with the exception of parental status which is collected only for women.

Migration age profile metrics

While the model migration schedules developed by Rogers and Castro (1981) are useful for exploring the relationship between migration and age, a number of limitations hinder their use for cross-national comparison

(Bernard, Bell, and Charles-Edwards 2014). Subsequent work has identified six principal metrics that have been applied in comparative research to characterize migration age profiles: the age at peak, the intensity at peak, the rate of ascent, the rate of descent, the degree of asymmetry between the rates of ascent and descent, and the breadth of the peak. Bernard et al. (ibid.) demonstrate that this complexity can be adequately summarized by two discrete indicators—the age at which migration peaks and the intensity of migration at the peak—each of which is closely associated with other features of the age profile. In addition to providing a standardized measure of the level of migration, intensity at the peak indicates the degree of concentration of migration around the peak. It shapes the slopes that demarcate the labor force curve: as intensity increases, the upward and downward slopes progressively steepen. At the same time, age at peak migration identifies the point in life at which migration occurs and governs the symmetry of the labor force curve, which increases steadily as the age at peak rises. Computed across a sample of 25 countries, Bernard et al. (ibid.) show that these two metrics account for two-thirds of inter-country variance in the age profiles of migration.

To compute these two metrics, we derive indicators of migration age profiles from five-year-interval data disaggregated by single-year age groups and use migration between minor administrative units, as specified in Appendix A. Five years is the most common observation period among countries collecting fixed-interval migration data, and thus allows for the best available international coverage and comparability. With regard to spatial scale, few countries collect data covering all changes of address, and spatial frameworks used to capture moves vary widely from one country to another. However, the age profile of migration appears to be largely scale-independent. Rogers and Castro (1981) and Plane and Heins (2003) found that the shape of the age profile of local mobility in the United States closely matched that of long-distance migration. Bell and Muhidin (2009) reported a similar finding by comparing the age profiles of migration between minor administrative units in 19 countries with those of migration between major administrative units in the same countries. To identify the largest number of moves and minimize bias, we use migration between minor administrative units to compare countries. Migration intensities are normalized to unity across all ages in order to compare migration age profiles independently of overall intensities. Observed age profiles are smoothed using kernel regressions (Bernard and Bell 2012), and age profile metrics are computed separately for males and females. Table 1 summarizes the migration age profile and life-course transition metrics.

Our sample of 27 countries encompasses all major world regions: Africa (Ghana, Senegal, and South Africa), Asia (China, Indonesia, Malaysia, Nepal, Philippines, Turkey, and Vietnam), Latin America (Argentina, Bo-

TABLE 1 Life-course transition and migration age profile metrics

Metric	Definition	Measure	Interpretation	References
Life-course transitions				
Prevalence	Proportion of a population that experiences a transition	Proportion of a population that has experienced a transition by age 35	Transition may be almost universal or less common	Modell, Furstenberg, and Hershberg (1976)
Timing	Typical ages at which a transition occurs	Singulate mean age computed between ages 15 and 35	Transition may occur early or late in life	Hajnal (1953)
Spread	Period of time required for a fixed proportion of a population to undergo a transition	Duration (interquartile range)	Transition may be brief or protracted	Carter and Glick (1970); Modell, Furstenberg, and Hershberg (1976)
Migration				
Age at peak migration	Age at which most moves occur	Age at which migration intensity peaks	Migration can occur early or late in life	Bernard, Bell, and Charles-Edwards (2014)
Intensity at peak migration	Degree of concentration of migration over a narrow age range	Intensity at which migration peaks	Migration can be concentrated or dispersed	Bernard, Bell, and Charles-Edwards (2014)

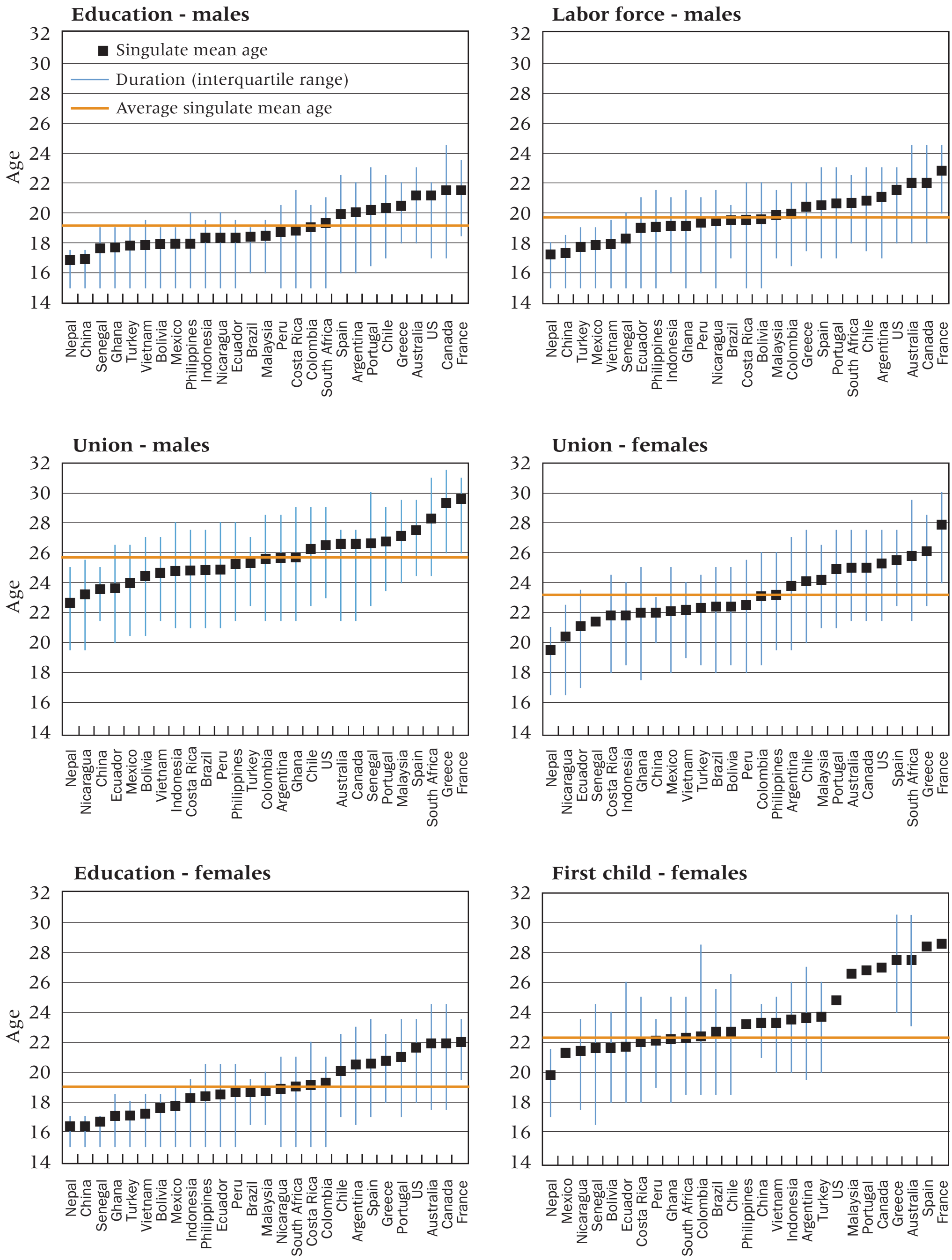
livia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Nicaragua, and Peru), North America (Canada, Mexico, and the United States), Europe (France, Greece, Portugal, and Spain), and Oceania (Australia). We use census and survey data drawn primarily from the Integrated Public Use Microdata Series (IPUMS) maintained by the Minnesota Population Center (2011). For countries that do not collect parental status in their census, we use secondary data sources to obtain mean ages at first birth. However, the prevalence and spread of the transition to parenthood could not be computed for these countries.[3]

Empirical results

Variations in the age structure of the life course

The timing and spread of each life-course transition are reported by country and sex in Figure 4. The estimated prevalence of each transition is given in Appendix B. Figure 4 reveals significant cross-national variations in the struc-

FIGURE 4 Timing and spread of life-course transitions



NOTES: Countries are ordered by ascending singulate mean age at transition. Malaysia, Philippines, Canada, Mexico, United States, France, Portugal, and Spain do not collect parenthood status in their census. Education attainment in Bolivia and Peru did not reflect low tertiary education enrollment rates and were not reported.

ture of the life course, in particular with regard to the timing of transitions. While the mean age at exit from education for men is below 17 in China and Nepal, it is around 19 in Colombia and Malaysia and above 21 in Canada, France, and the United States. Differences in the age profiles of exit from education are paralleled by the timing of labor force entry, with a mean age for men around 17 in China and Nepal, 20 in Colombia and Malaysia, and around 22 in Canada, France, and the United States. Variations in the timing of education completion and labor market entry correlate with differences in levels of educational attainment reported in Appendix B. Tertiary education completion rates at age 35 are around 15 percent for males and females in Colombia and Malaysia, and stand in clear contrast to Canada and the United States where more than 40 percent of 35-year-olds have completed tertiary education.

Cross-national differences in female labor force participation are even more pronounced. Although we cannot compute the timing and spread of labor force entry for females, establishing their employment profiles is integral to understanding the structure of women's life courses. Despite completion rates of tertiary education between 15 and 20 percent, the majority of women in Latin America remain economically inactive. In Costa Rica, Ecuador, Nicaragua, Chile, Colombia, and Mexico, the female labor force participation rate between ages 15 and 35 remains below 50 percent. In high-income countries, by contrast, female participation rates are consistently high, exceeding 70 percent in Canada, France, and Portugal. China, Ghana, and Vietnam also exhibit high proportions of economically active women between ages 15 and 35.

Transitions to union formation and parenthood display even greater diversity among countries. The mean age at union formation ranges from 19.5 to 27.9 years for females and from 22.7 to 29.6 years for males. Similarly, the age at first birth varies from 19.8 to 28.6 for females.

Using correlation analysis to examine the association between the prevalence, timing, and spread of life-course transitions, we observe a close relation between the timing of different transitions. The correlation matrix (Appendix C) reveals a strong association between the timing of education completion and labor market entry for men (r=0.94) and between the timing of union formation and the transition to parenthood for women (r=0.84). We also find a strong correlation between the timing of education completion and union formation for both men (r=0.74) and women (r=0.81). The correlation between the timing of education completion and first childbearing is equally high for women (r= 0.74). The strength of this relationship, however, is weaker in Chile, Costa Rica, South Africa, and to a lesser extent Argentina, where the transition to parenthood occurs at early ages in comparison to exit from education. The decoupling of economic- and family-related transitions has become a salient feature of Latin America (Esteve, López-Ruiz, and Spijker 2013) that differentiates it from other regions. Unlike the situation in most developed countries, educational expansion in Latin America did not lead women to form unions and families at older ages. This distinctive feature of Latin America may be linked to the low participation of women in the labor force compared to other countries with similar levels of educational attainment. Finally, the age profiles of transitions are broadly similar for men and women, particularly with regard to the timing of education (r=0.98) and partnership formation (r=0.92).

We also find cross-national variations in the spread of transitions. The transition out of education for both men and women is concentrated within just three years in China, Nepal, and Brazil, whereas it is spread over more than six years in Australia, Canada, Costa Rica, Portugal, and Spain. Similarly, the age spread for partnership formation can be concentrated (below 5 years in China, Peru, and Nepal) or protracted (above 7.5 years in Chile, Colombia, Ecuador, and Senegal). The age spread of transitions tends to be similar for men and women, with a correlation coefficient of r=0.93 for completion of education and r= 0.81 for union formation.

Except for education, the timing of particular life-course transitions is unrelated to their spread. The level of association between the timing and spread of education completion is moderate for both males (r=0.70) and females (r=0.69). The level of association between the spread of education completion and the timing of labor market entry is also moderate (r=0.68). There is, however, no association between the timing and spread of other transitions. In countries where individuals make the transition to adult roles early in life, status changes can take place over a narrow age range (Nepal, China, and Vietnam) or be spread across the age spectrum (Senegal, Ghana, and Nicaragua). Late transitions can equally be associated with brief (France, Greece, and Spain) or protracted durations (Australia, Portugal, and South Africa).

Finally, the correlation matrix also shows a close relation between the timing and prevalence of life-course transitions. As one would expect, high levels of higher education completion are associated with older mean age at education completion (r=0.77 for males and r=0.81 for females) and older mean ages at labor force entry (r=0.66 for males). Similarly, in countries where the proportion of individuals in a union is lower, union formation occurs at older ages (r=0.78 for males and r=0.70 for females); and where the proportion of females with a child is lower, the timing of family formation tends to occur later in life (r=0.70). This review confirms the diversity of trajectories to adult roles across the world. At the same time, it is clear that variations occur within regions, particularly in Latin America, with early transitions in Peru, Colombia, and Nicaragua and later transitions in Argentina and Chile.

Association between life-course transitions and migration

How do these variations relate to the age profile of migration? In particular, what is the association between (1) the timing of life-course transitions and the ages at which migration occurs, and (2) the spread of life-course transitions and the degree of concentration of migration? We first use correlation analysis to explore the relationship between the age structure of migration and the age structure of life-course transitions. As we noted above, migration age profiles can be reduced to two principal characteristics—the age at which migration peaks and the intensity of migration at the peak—each of which is closely associated with other features of the age profile. The intensity at peak migration describes the degree of concentration of migration around the peak. It shapes the slopes that demarcate the labor force curve: as intensity increases, the upward and downward slopes progressively steepen. Hence, a positive association between the spread of life-course transitions and the intensity at peak migration indicates that brief transitions are associated with a concentration of migration in a narrow age range around the peak, while protracted transitions are associated with dispersed migration age profiles. At the same time, age at peak migration indicates how early or late in life migration occurs. Thus, a positive association with the timing of life-course transitions implies that where life-course transitions take place at young ages, migration also tends to occur early in life, whereas life-course transitions at older ages trigger migration later in life.

Table 2A reveals a positive association between the timing of life-course transitions and ages at migration. Transitions at younger ages tend to be associated with early migration peaks and transitions at older ages with late migration peaks. The association is stronger for females, with correlation coefficients ranging from 0.61 to 0.67, compared to 0.45 to 0.52 for men. Women's roles in private spheres of life are more strongly age-graded than those of men—in particular forming a union (Rossi 1985). Despite a reduction in the gap between the educational and occupational statuses of men and women in recent decades, women's experiences in the spheres of education and work remain heavily conditioned by family roles and responsibilities (Moen 2001), and as a result continue to be strongly age-structured. This more rigid structure may explain the stronger association between the timing of life-course transitions and migration ages.

The strength of the association between the age concentration of transitions to adulthood and the age concentration of migration, shown in Table 2B, reveals greater variation across transitions. The age spread of union and family formation and the degree of concentration of migration are strongly related, with correlation coefficients above 0.70 for both men and women. While the more public spheres of education and work are heavily regulated by social

TABLE 2A Pearson correlation coefficients between life-course timing and age at migration peak by transition and sex

Transition	Male	Female
Education completion	0.52*	0.67*
Labor force entry	0.47**	—
Union formation	0.45**	0.66*
Parenthood	—	0.61*

*Significant at $p \leq 0.01$; ** $p \leq 0.05$.

TABLE 2B Pearson correlation coefficients between life-course spread and intensity at migration peak by transition and sex

Transition	Male	Female
Education completion	0.01	0.34
Labor force entry	0.31	—
Union formation	0.72*	0.76*
Parenthood	—	0.75*

*Significant at $p \leq 0.01$; ** $p \leq 0.05$.

policies, the structuring of family spheres is not as strongly age-differentiated in some countries. In societies where family matters are considered private, family forms and trajectories seem especially diverse (Mason, Skolnick, and Sugarman 1998), and the timing of events in the family domain is more contingent and less predictable than in other spheres of life (Daly 1996). By contrast, in societies where the life course is more structured by tradition, social roles and activities are often allocated on the basis of age or life stage, and the process of becoming an adult remains guided by social structures and norms that support a rapid transition into adult statuses. Hence, highly age-homogeneous transitions are associated with concentrated migration age profiles, whereas transitions with greater age variability are characterized by a dispersion of migration across the age spectrum.

Conversely, low correlation coefficients, below 0.35, point to a weak association of education completion and labor force entry with migration activity, for both males and females. Primary and secondary education, and to a lesser extent tertiary education, are strictly age-graded institutions in all countries (Settersten 2003). Courses must be completed at a specific pace and in a specific sequence, and time limits are set to obtain degrees. Cross-national differences in the number of years a cohort takes to complete education are therefore more likely linked to variations in educational attainment than to differences in the age structuring of education. This interpretation is consistent with the association between the timing and spread of education completion(r=0.70 for males and r=0.69 for females) identified in the previous section. Similarly, the lack of association between the age spread of labor force entry and that of migration stems from a tightly scheduled entry into the labor force shaped by the strongly age-graded structure of education completion.

We now ask whether these associations between life-course transitions and migration have a regional dimension. We use factor analysis to reduce the timing and spread of the four transitions to the key underlying dimensions capturing the transition to adulthood. The results, displayed in Table 3 for men and women separately, illustrate how each life-course transition metric bears upon the selected factors. Factor 1 gauges how early or late transitions occur, as reflected in the high factor loadings on the timing of each transition. It also encompasses the prevalence of life-course transitions and explains 51 percent of the total variance among countries for males and 58 percent for females. Factor 2 captures the spread of transitions across the age range and accounts for 23 percent of the variance for men and 22 percent for women. The two factors provide summary measures of the overall age structure of the transition to adulthood while taking into account the prevalence of each transition, effectively reducing the life-course data from

TABLE 3 Factor loading against timing and spread of life-course transitions

	Males		Females	
	Factor 1: Transition timing index	**Factor 2: Transition spread index**	**Factor 1: Transition timing index**	**Factor 2: Transition spread index**
Prevalence				
Higher education	**0.82**	0.14	**0.86**	0.09
Labor force	**–0.54**	**–0.54**	—	—
Union formation	**–0.88**	–0.15	**–0.70**	–0.46
Timing				
Education completion	**0.94**	0.12	**0.94**	0.15
Labor force entry	**0.90**	0.28	—	—
Union formation	**0.85**	–0.16	**0.92**	–0.01
Parenthood	—	—	**0.85**	–0.36
Spread				
Education completion	**0.63**	**0.56**	**0.58**	**0.55**
Labor force entry	0.18	**0.86**	—	—
Union formation	–0.12	**0.76**	–0.10	**0.91**
Share of total variance	0.51	0.23	0.58	0.22

NOTES: Factor loadings of 0.50 and greater and factor loadings of –0.50 and lower are indicated in boldface. An orthogonal rotation was used to ensure that the resulting factors are not correlated (Basilevsky 2008). Two factors were retained based on the Kaiser criterion (eigenvalues greater than one). Prevalence and spread of the transition to parenthood were excluded for females since they are available for only 19 of the 27 countries.

ten to just two summary measures that can be readily compared against the age at migration peak and migration intensity at the peak. In the following discussion we refer to factor 1 as the "transition timing index" and factor 2 as the "transition spread index."

Figures 5A and 5B plot, for men and women separately, age at migration peak against the transition timing index, both being normalized so that the mean is zero and the standard deviation is equal to one. We define four quadrants delineated by mean values. With this normalization, a unit on the graph represents one standard deviation, which reveals the degree of spread around the mean and pinpoints outliers (Anselin 1995). The upper right quadrant gathers countries where transitions at older ages are associated with late migration age, such as Australia, Canada, and Portugal. The lower left quadrant groups countries where early life-course transitions are paralleled by young migration peaks, such as China, Nepal, Bolivia, and Ecuador. These two quadrants encompass 18 of the 27 countries for men and 23 of the 27 countries for women, confirming a strong association between the timing of life-course transitions and migration ages. The two remaining quadrants are characterized by a misalignment between the timing of life-course transitions and ages at migration, pointing to countries where migration occurs later than life-course transitions (upper left) or to countries where migration happens early relative to life-course transitions (lower right). Both quadrants contain four outliers for women (Costa Rica, Ghana, Philippines, and Mexico) and nine for men (Brazil, Canada, Costa Rica, Ghana, Philippines, Mexico, Nicaragua, South Africa, and Turkey). Only two countries, Mexico and Canada for men, display values greater than one standard deviation from the mean. Canada is characterized by an average age at migration peak and late life-course transition timing. The decoupling is greater for Mexico, which combines very early transition timing with one of the oldest ages at peak migration. Only Ghana displays extreme outlying values for women, being characterized by an average age at migration peak and early life-course transition timing. This result confirms a stronger coupling between the timing of life-course transitions and migration ages among women, as suggested by correlation analysis (Table 2A).

We map the association between the age concentration of migration and the age concentration of the transition to adulthood in a similar fashion, using four quadrant scatter plots in Figures 6A and 6B. Results reveal that the age concentration of life-course transitions is closely linked to the age concentration of migration in most countries. In China, transitions to adulthood are highly age-homogeneous, and migration is likewise strongly concentrated in a narrow age range (upper right quadrant), whereas family transitions in Ghana and Senegal are spread over ten years and migration age profiles are similarly dispersed across the age spectrum (lower left quadrant). These two quadrants encompass 19 out of 27 countries for men and 23 out of 27

FIGURE 5A Age at migration peak versus transition timing index, males

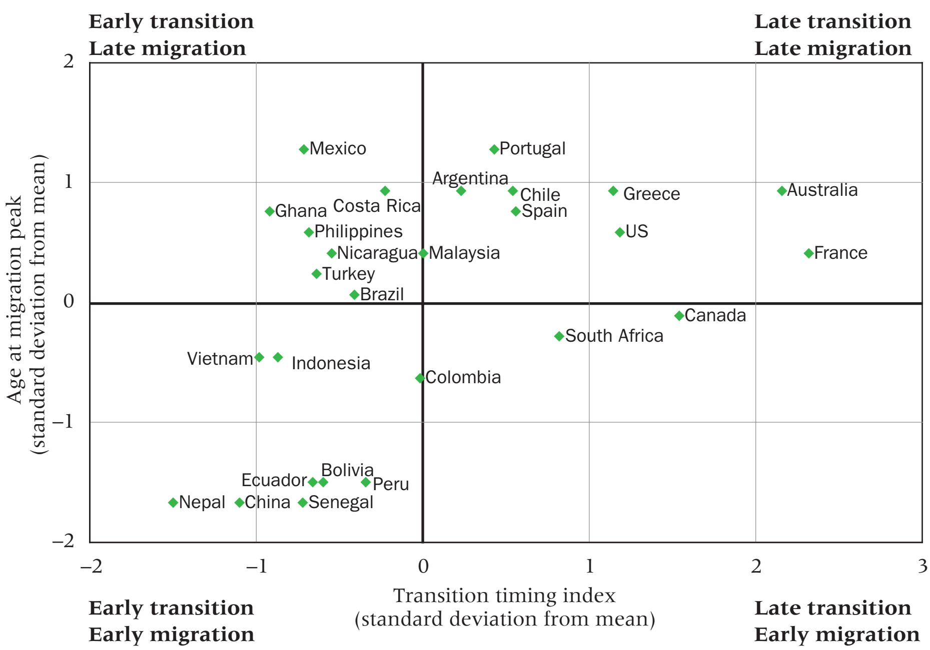


FIGURE 5B Age at migration peak versus transition timing index, females

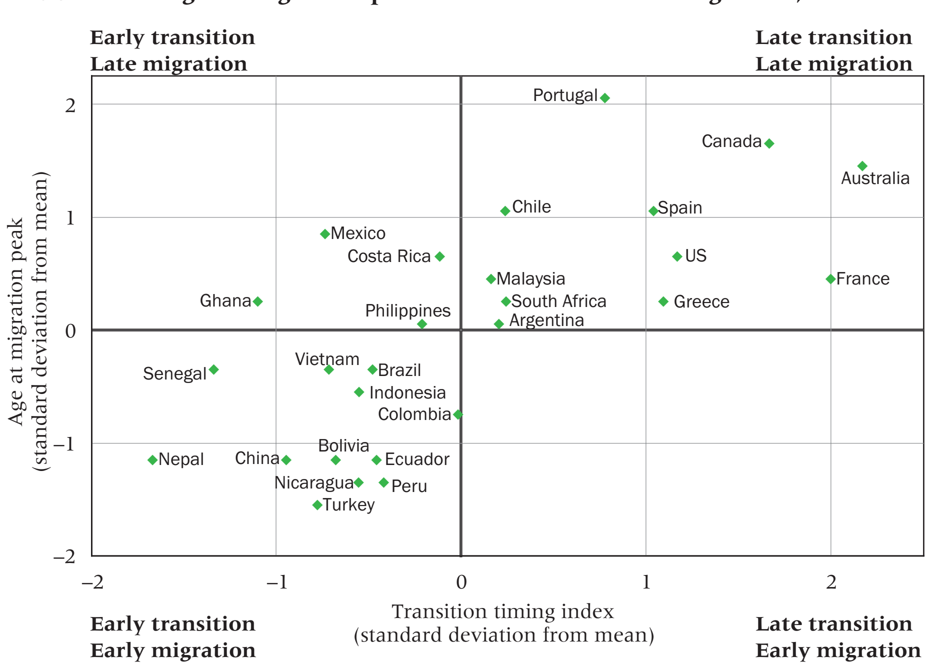


FIGURE 6A Migration intensity at peak versus transition spread index, males

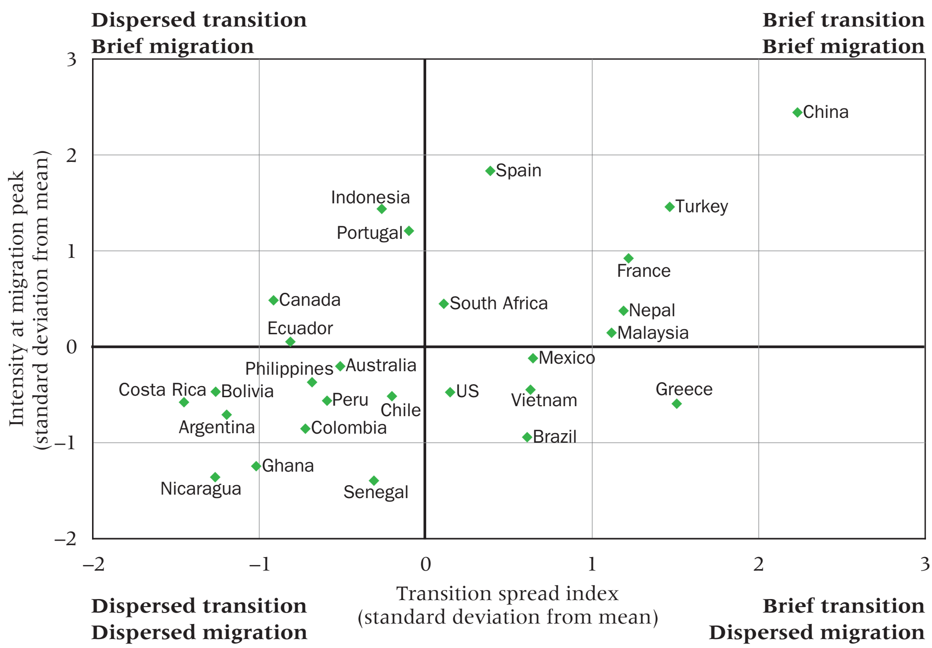
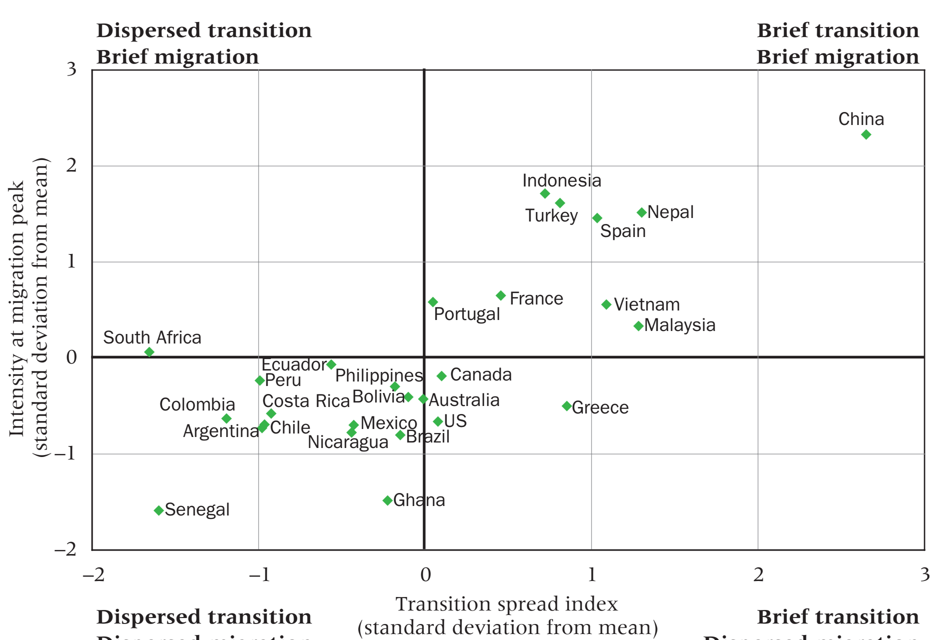


FIGURE 6B Migration intensity at peak versus transition spread index, females



countries for women. For men, only three countries fall in the two remaining quadrants and display values greater than one standard deviation from the mean: Indonesia, Portugal, and Greece; for women, only South Africa. These cases in which marked deviations are found between life-course transitions and migration probably reflect social and economic forces that act directly on migration rather than through the mechanism of life-course transitions.

Conclusions

We proposed a framework that links contextual factors to the age structure of migration through proximate determinants that directly affect migration ages: the prevalence, timing, and spread of life-course transitions. We focused on four key transitions that are concentrated at young adult ages and mark the passage to adulthood—exit from education, entry to the labor force, union formation, and childbirth—and sought to link these to the early-to-mid-20s peak commonly found in the age profile of migration. The proposed framework enabled us to identify the determinants of cross-national differences in the age structure of migration and to quantify their relative importance across a global sample of 27 countries.

We showed through correlation analysis that migration age profiles broadly mirror the age structure of key life-course transitions, especially among women. In countries such as China and Nepal, where life-course transitions take place at young ages, migration tends to occur early in life; alternatively, where life-course transitions happen at older ages, as in Europe and North America, migration takes place later in life. The more rigid structure of women's lives (Rossi 1985) may explain the closer association between the timing of life-course transitions and migration ages than is found among men. The analysis also revealed that brief transitions, such as in China and Nepal, are more likely to be associated with a concentration of migration within a narrow age range, while protracted transitions, such as in Senegal and Ghana, are associated with dispersed migration age profiles, in particular for union and family formation.

Our analysis revealed that migration age profiles closely mirror the age structure of the life course for more than two-thirds of the countries in the sample. These results support our framework linking proximate determinants to migration age profiles and suggest that life-course metrics could be used to predict national migration age profiles. Greater attention to the relation between migration and the life-course events that accompany the transition to adulthood would help identify differences in the extent to which particular life-course transitions are connected with migration. Event-history analysis allows such an endeavor by quantitatively linking events in one life domain to changes in other domains for the same individual. Applications of event-history analysis to cross-national research (Mulder, Clark, and Wagner 2002) offer a promising way to establish how the mix of life-course transitions driving migration at young adult ages may vary from one country to another and in turn shape cross-national variations in migration age profiles.

We focused here on ages 15–35 because young adults primarily distinguish migration age profiles between countries, but our approach could be extended to cross-national variations in migration at other stages of the life course, in particular around retirement. The age and intensity at which migration peaks late in life are likely to reflect the age structure of the transition from the labor market to retirement, which in turn is influenced by national factors such as pension systems and economic opportunities.

Not all migrations, of course, are triggered by life-course transitions. In those countries where the transitions appear less closely tied to migration, contextual factors such as economic development, social inequalities, degree of gender equity, cultural norms, and value systems may shape the structure of the life course and influence its interaction with migration. Period effects may also disrupt migration norms, but available evidence suggests that migration age profiles remain relatively stable over time, or experience a gradual aging of the migration peak (Brown et al. 2006; Ishikawa 2001; Raymer, Bonaguidi, and Valentini 2006). Assessment of the extent to which long-term changes in the age structure of migration within individual countries are associated with alterations in the life course—for example, the progressive extension of education to older ages and the delay in union and family formation—would also help establish the significance of life-course transitions in shaping migration. The evidence assembled here underlines the widespread differences that exist in migration age profiles, but it remains to be established whether migration age profiles will converge as countries experience higher levels of educational attainment and delayed transitions to adult roles, or whether cultural and socioeconomic differences will preserve cross-national variations in migration age profiles.

APPENDIX A Data Sources

	Data source	Collection year	Minor administrative unit (number)	Sample (percent)	Source
Africa					
Ghana	Census	2000	District (110)	10	IPUMS
Senegal	Census	2002	Department (45)	10	IPUMS
South Africa	Census	2001	Municipality (52)	10	IPUMS
Asia					
China	Census	1990	Prefecture (347)	1	IPUMS
Indonesia	Census	2000	Regency (180)	5	IPUMS
Malaysia	Census	2000	District (136)	2	IPUMS
Nepal	Census	2001	District (75)	11.35	IPUMS
Philippines	Census	2000	Municipality (1,610)	10	IPUMS
Turkey	Survey	2003	District (923)	0.6	Measure DHS
Vietnam	Census	1999	District (663)	3	IPUMS
Latin America					
Argentina	Census	2001	Department (324)	10	IPUMS
Bolivia	Census	2001	Province (112)	10	IPUMS
Brazil	Census	2000	Municipality (1,540)	1	IPUMS
Chile	Census	2002	Municipality (178)	10	IPUMS
Colombia	Census	2005	Municipality (1,104)	10	IPUMS
Costa Rica	Census	2000	Canton (81)	10	IPUMS
Ecuador	Census	2001	Canton (128)	10	IPUMS
Nicaragua	Census	2005	Municipality (153)	10	IPUMS
Peru	Census	2007	Province (195)	10	IPUMS
North America					
Canada	Census	2001	Census District (280)	2.7	IPUMS
Mexico	Census	1995	Municipality (2,456)	0.4	IPUMS
United States	Census	2000	County (3,143)	5	IPUMS
Europe					
France	Census	2006	Department (101)	10	IPUMS
Greece	Census	2001	Municipality (1,033)	10	IPUMS
Portugal	Census	2001	Municipality (308)	2.7	IPUMS
Spain	Census	1991	Municipality (366)	5	IPUMS
Oceania					
Australia	Census	2006	Statistical Division (61)	100	ABS

NOTE: For Canada, Mexico, United States, France, Portugal, and Spain, the singulate mean age at first birth was computed from the OECD Family Database. For Malaysia, it was obtained from Mahari (2011), and for the Philippines from the 2008 Demographic and Health Survey.

APPENDIX B Prevalence of life-course transitions, defined as the proportion of a population that has undergone a transition by age 35, by sex and country

	Males			Females			
	Higher education	Labor force	Union	Higher education	Labor force	Union	First child
Africa							
Ghana	0.07	0.96	0.86	0.04	0.96	0.95	0.95
Senegal	0.04	0.95	0.79	0.01	0.38	0.89	0.94
South Africa	0.11	0.89	0.66	0.10	0.77	0.68	0.91
Asia							
China	0.02	0.99	0.94	0.01	0.91	1.00	0.99
Indonesia	0.08	0.98	0.92	0.08	0.62	0.96	0.90
Malaysia	0.15	0.97	0.85	0.13	0.61	0.91	—
Nepal	0.05	0.95	0.97	0.01	0.60	0.98	0.90
Philippines	0.12	0.97	0.86	0.15	0.52	0.89	—
Turkey	0.11	0.97	0.94	0.06	0.54	0.94	0.89
Vietnam	0.03	0.98	0.95	0.03	0.85	0.92	0.91
Latin America							
Argentina	0.14	0.86	0.82	0.13	0.57	0.85	0.86
Bolivia	—	0.86	0.82	—	0.54	0.84	0.93
Brazil	0.10	0.91	0.82	0.12	0.60	0.83	0.85
Chile	0.25	0.94	0.77	0.24	0.47	0.81	0.89
Colombia	0.17	0.91	0.77	0.19	0.48	0.79	0.86
Costa Rica	0.19	0.89	0.82	0.20	0.35	0.82	0.90
Ecuador	0.20	0.90	0.83	0.20	0.39	0.85	0.89
Nicaragua	0.12	0.82	0.83	0.14	0.39	0.87	0.91
Peru	—	0.92	0.79	—	0.50	0.84	0.92
North America							
Canada	0.53	0.85	0.76	0.58	0.71	0.84	—
Mexico	0.22	0.97	0.87	0.15	0.49	0.87	—
United States	0.38	0.87	0.75	0.43	0.67	0.81	—
Europe							
France	0.32	0.86	0.55	0.37	0.73	0.62	—
Greece	0.28	0.98	0.72	0.31	0.70	0.87	0.80
Portugal	0.10	0.94	0.83	0.15	0.82	0.88	—
Spain	0.15	0.98	0.83	0.13	0.59	0.88	—
Oceania							
Australia	0.63	0.79	0.57	0.56	0.60	0.61	0.75
Mean	0.18	0.92	0.81	0.19	0.61	0.85	0.89
Minimum	0.02	0.79	0.55	0.01	0.35	0.61	0.75
Maximum	0.63	0.99	0.97	0.58	0.96	1.00	0.99

NOTE: Ghana collects both formal and informal employment, which leads to high labor force participation rates. Malaysia, Philippines, Canada, Mexico, United States, France, Portugal, and Spain do not collect parenthood status in their census. Education attainment in Bolivia and Peru did not reflect low tertiary education enrollment rates and was not reported.

APPENDIX C Pearson correlation matrix between prevalence, timing, and spread of life-course transitions by sex

	Prevalence							Timing						Spread					
	Males			Females				Males			Females			Males			Females		
	Educ.	Labor	Union	Educ.	Labor	Union	Child	Educ.	Labor	Union	Educ.	Labor	Union	Educ.	Labor	Union	Educ.	Labor	Union
Prevalence																			
Males																			
Education	1.00																		
Labor	**–0.60**	1.00																	
Union	**–0.69**	**0.64**	1.00																
Females																			
Education	**0.97**	**–0.62**	**–0.71**	1.00															
Labor	–0.05	0.24	0.02	–0.02	1.00														
Union	**–0.64**	**0.71**	**0.93**	**–0.65**	0.12	1.00													
Child	**–0.83**	0.42	**0.61**	**–0.84**	0.20	**0.61**	1.00												
Timing																			
Males																			
Education	**0.77**	–0.50	**–0.75**	**0.86**	0.00	**–0.66**	**–0.76**	1.00											
Labor	**0.66**	**–0.59**	**–0.80**	**0.75**	0.09	**–0.72**	**–0.58**	**0.94**	1.00										
Union	0.53	–0.17	**–0.78**	0.54	0.27	**–0.63**	**–0.59**	**0.74**	**0.72**	1.00									
Females																			
Education	**0.73**	–0.50	**–0.71**	**0.81**	0.04	**–0.63**	**–0.78**	**0.98**	**0.93**	**0.67**	1.00								
Union	**0.65**	–0.29	**–0.79**	**0.68**	0.33	**–0.70**	**–0.65**	**0.85**	**0.81**	**0.92**	**0.81**	1.00							
Child	**0.56**	–0.09	–0.50	**0.59**	**0.67**	–0.35	**–0.70**	**0.73**	**0.65**	**0.79**	**0.74**	**0.84**	1.00						
Spread																			
Males																			
Education	**0.56**	–0.51	–0.52	**0.59**	–0.11	**–0.55**	–0.44	**0.70**	**0.68**	0.45	**0.71**	0.53	0.43	1.00					
Labor	0.25	–0.44	–0.21	0.30	–0.25	–0.20	–0.05	0.28	0.40	0.07	0.33	0.09	0.09	**0.65**	1.00				
Union	–0.05	–0.23	–0.15	–0.04	–0.37	–0.15	–0.07	0.10	0.25	0.07	0.08	–0.05	–0.26	0.32	0.54	1.00			
Females																			
Education	0.49	–0.50	–0.47	0.53	–0.30	–0.48	–0.42	**0.64**	**0.64**	0.33	**0.69**	0.40	0.29	**0.93**	**0.70**	0.44	1.00		
Union	–0.01	–0.18	–0.32	–0.05	–0.38	–0.30	–0.03	0.10	0.20	0.18	0.04	–0.01	–0.30	0.23	0.27	**0.81**	0.31	1.00	
Child	0.40	–0.33	–0.51	0.43	–0.44	–0.50	–0.43	0.51	**0.58**	0.38	0.50	0.29	0.10	0.47	0.45	**0.64**	**0.56**	**0.65**	1.00

NOTE: Correlation coefficients of 0.55 or greater and correlation coefficients of –0.55 or lower are indicated in boldface.

Notes

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1 In this respect, the use of proximate determinants differs from that in the fertility literature, where the identified determinants make up a complete set; fertility can change only through a change in one or more of these determinants.

2 The singulate mean age at union (SMAU) is calculated from the proportion of individuals who are single at each age as shown by the equation below. It is the mean age of those who are in a union before the age of 35:

$$\frac{(15+\sum_{a=15}^{35} s_a)-35\times s_{35}}{1-s_{35}},$$

where s_a is the proportion of individuals single at age a.

3 See Appendix A for further details on data sources and data collection years and on additional sources used to compute singulate mean ages at first birth.

References

Anselin, Luc. 1995. "Local indicators of spatial association—LISA," *Geographical Analysis* 27(2): 93–115.

Baccaïni, Brigitte and Daniel Courgeau. 1996. "The spatial mobility of two generations of young adults in Norway," *International Journal of Population Geography* 2(4): 333–359.

Basilevsky, Alexander. 2008. *Statistical Factor Analysis and Related Methods: Theory and Applications*. Hoboken, NJ: John Wiley and Sons.

Bell, Martin and Salut Muhidin. 2009. "Cross-national comparisons of internal migration," *Human Development Research Paper 2009/30*. New York: United Nations.

Bell, Martin et al. 2014. "Internal migration data around the world: Assessing contemporary practice," *Population, Space and Place*. doi: 10.1002/psp.1848.

Bernard, Aude and Martin Bell. 2012. "A comparison of smoothing internal migration age profile methods," *QCPR Working Paper 2012/01*. Brisbane: The University of Queensland.

Bernard, Aude, Martin Bell, and Elin Charles-Edwards. 2014. "Improved measures for the cross-national comparison of age profiles of internal migration," *Population Studies* doi: 10.1080/00324728.2014.890243.

Billari, Francesco. 2001. "The analysis of early life courses: Complex descriptions of the transition to adulthood," *Journal of Population Research* 18(2): 119–142.

Billari, Francesco and Chris Wilson. 2001. "Convergence towards diversity? Cohort dynamics in the transition to adulthood in contemporary Western Europe," Max Planck Institute for Demographic Research, Working Paper WP2001-039.

Bogue, Donald , Gregory Liegel, and Michael Kozloski. 2009. *Immigration, Internal Migration, and Local Mobility in the US*. Edward Elgar Publishing.

Bongaarts, John. 1978. "A framework for analyzing the proximate determinants of fertility," *Population and Development Review* 4(1): 105–132.

Borjas, George. 1994. "The economics of immigration," *Journal of Economic Literature* 32(4): 1667–1717.

Brown, Dominique, Salut Muhidin, Martin Bell, and Tom Wilson. 2006. "The structure of internal migration in Australia," *European Population Conference*. Liverpool, United Kingdom.

Carter, Hugh and Paul C. Glick. 1970. *Marriage and Divorce: A Social and Economic Study*. Cambridge, MA: Harvard University Press.

Courgeau, Daniel. 1985. "Interaction between spatial mobility, family and career life-cycle: A French survey," *European Sociological Review* 1(2): 139–162.

Daly, Kerry J. 1996. *Families and Time: Keeping Pace in a Hurried Culture.* London: Sage.

Dixon, Ruth B. 1971. "Explaining cross-cultural variations in age at marriage and proportions never marrying," *Population Studies,* 25(2): 215–33.

Easterlin, Richard A., Michael L. Wachter, and Susan M. Wachter. 1978. "Demographic influences on economic stability: The United States experience," *Population and Development Review* 4(1): 1–22.

Esteve, Albert, Luis Ángel López-Ruiz, and Jeroen Spijker. 2013. "Disentangling how educational expansion did not increase women's age at union formation in Latin America from 1970 to 2000," *Demographic Research* 28(3): 63–76.

Eurostat. 2008. *The Life of Women and Men in Europe: A Statistical Portrait*. Luxembourg: Office for Official Publications of the European Communities.

Fussell, Elizabeth. 2005. "Measuring the early adult life course in Mexico: An application of the entropy index," in R. Macmillan (ed.), *Advances in Life Course Research*. Oxford: Elsevier, pp. 91–122.

Fussell, Elizabeth, Anne Gauthier, and Ann Evans. 2007. "Heterogeneity in the transition to adulthood: The cases of Australia, Canada, and the United States," *European Journal of Population/Revue Européenne de Démographie* 23(3): 389–414.

Guinnane, Timothy W. 1992. "Age at leaving home in rural Ireland, 1901–1911," *The Journal of Economic History* 52(3): 651–174.

Hajnal, John. 1953. "Age at marriage and proportions marrying," *Population Studies* 7(2): 111–136.

Hogan, Dennis P. 1981. *Transitions and Social Change: The Early Lives of American Men*. New York: Academic Press.

Ishikawa, Yoshitaka. 2001. "Migration turnarounds and schedule changes in Japan, Sweden and Canada," *Review of Urban & Regional Development Studies* 13(1): 20–33.

Jeon, Yongil and Micheale Shields. 2005. "The Easterlin hypothesis in the recent experience of higher-income OECD countries: A panel-data approach," *Journal of Population Economics* 18(1): 1–13.

Jones, Gavin. 2010. "Changing marriage patterns in Asia," Asia Research Institute Working Paper 131. Singapore: NUS.

Kulu, Hill. 2008. "Fertility and spatial mobility in the life course: evidence from Austria," *Environment and Planning A* 40(3): 632–652.

Kulu, Hill and Francesco Billari. 2004. "Multilevel analysis of internal migration in a transitional country: The case of Estonia," *Regional Studies* 38(6): 679–696.

Mahari, Zarinah. 2011, "Demographic transition in Malaysia: The changing roles of women," *15th Conference of Commonwealth Statisticians*. New Delhi, India.

Mason, Mary Ann, Arlene Skolnick, and Stephen Sugarman. 1998. *All our Families: New Policies for a New Century*. New York: Oxford University Press.

Milne, William. 1993. "Macroeconomic influences on migration," *Regional Studies* 27(4): 365–373.

Minnesota Population Center. 2011. *Integrated Public Use Microdata Series, International: Versions 6.1 [Machine-readable database].*Minneapolis: University of Minnesota.

Modell, John, Frank Furstenberg, and Theodore Hershberg. 1976. "Social change and transitions to adulthood in historical perspective," *Journal of Family History,* 1(1): 7–32.

Moen, Phyllis. 2001. "The gendered life course," in R. Binstock and L. Georges (eds.), *Handbook of Aging and the Social Sciences*. San Diego: Academic Press.

Mulder, Clara H. 1993. "Migration dynamics: A life course approach." Amsterdam: Thesis Publisher. http://trove.nla.gov.au/version/26141071.

Mulder, Clara H., William Clark, and Michael Wagner. 2002. "A comparative analysis of leaving home in the United States, the Netherlands and West Germany," *Demographic Research* 7: 565–592.

Mulder, Clara H. and Michael Wagner. 1993. "Migration and marriage in the life course: A method for studying synchronized events," *European Journal of Population/Revue Européenne de Démographie* 9(1): 55–76.

Pandit, Kavita. 1997a."Cohort and period effects in US migration: How demographic and economic cycles influence the migration schedule," *Annals of the Association of American Geographers* 87(3): 439–450.

———. 1997b. "Demographic cycle effects on migration timing and the delayed mobility phenomenon," *Geographical Analysis* 29(3): 187–199.

Plane, David A. and Frank Heins. 2003, "Age articulation of US inter-metropolitan migration flows," *The Annals of Regional Science* 37(1): 107–130.

Plane, David A. and Peter A. Rogerson. 1991. "Tracking the baby boom, the baby bust, and the echo generations: How age composition regulated US migration," *The Professional Geographer* 43(4): 416–430.

Raymer, James, Alberto Bonaguidi, and Alessandro Valentini. 2006. "Describing and projecting the age and spatial structures of interregional migration in Italy," *Population, Space and Place* 12(5): 371–388.

Rindfuss, Ronald R. 1991. "The young adult years: Diversity, structural change, and fertility," *Demography* 28(4): 493–512.

Rogers, Andrei and Luis J. Castro. 1979. "Age patterns of migration: cause-specific profiles," *Research Report RR-79-065*/. Laxenburg, Austria: International Institute for Applied Systems Analysis.

———. 1981. "Model migration schedules," *Research Report RR-81-30*. Laxenburg, Austria: International Institute for Applied Systems Analysis.

Rossi, Alice S. 1985. *Gender and the Life Course*. Hawthorne, NY: Aldine de Gruyter.

Saks, Raven E. and Abigail Wozniak. 2007. "Labor reallocation over the business cycle: New evidence from internal migration," *IZA Discussion Paper No. 2766*. Bonn: IZA.

Settersten, Richard A. 2003. "Age structuring and the rhythm of the life course," in J.T. Mortimer and M.J. Shanahan (eds.), *Handbook of the Life Course*. New York: Kluwer Academic/Plenum Publishers, pp. 81–98.

Shanahan, Michael J. 2000. "Pathways to adulthood in changing societies: Variability and mechanisms in life course perspective," *Annual Review of Sociology* 26(1): 667–692.

Sjaastad, Larry A. 1962. "The costs and returns of human migration," *The Journal of Political Economy* 70(5): 80–93.

Sobotka, Tomáš, Vegard Skirbekk, and Dimiter Philipov. 2011. "Economic recession and fertility in the developed world," *Population and Development Review,* 37(2): 267–306.

Sobotka, Tomáš and Laurent Toulemon. 2008. "Changing family and partnership behaviour: Common trends and persistent diversity across Europe," *Demographic Research, Special Collection* 19(6): 85–138.

UNESCO. 2011. *Global Education Digest 2001: Comparing Education Statistics Across the World*. Montreal: UNESCO Institute for Statistics.

Venhorst, Viktor A., Jouke Van Dijk, and Leo Van Wissen. 2011. "An analysis of trends in spatial mobility of Dutch graduates," *Spatial Economic Analysis* 6(1): 57–82.

Warnes, Anthony M. 1992a. "Migration and the life course," in T. Champion and T. Fielding (eds.), *Migration Processes and Patterns: Research Progress and Prospects*. London: Belhaven Press, pp. 175–187.

———. 1992b. "Age-related variation and temporal change in elderly migration," in A. Rogers (ed.), *Elderly Migration and Population Redistribution*. London: Belhaven, pp. 35–57.