

LONG-LASTING EFFECTS OF SEDENTARIZATION-INDUCED INCREASE OF FERTILITY ON LABOR FORCE PROPORTION AND RURAL DEVELOPMENT IN AN ARAB SOCIETY: A CASE STUDY IN SOUTH JORDAN

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Based on the authors' genealogical-demographic data of a Bedouin-origin clan in south Jordan which settled down in 1948, this paper aimed to report the long-lasting effects of increase in fertility induced by sedentarization on the labor force proportion, defined as percent of persons aged 15–64 years. The results highlighted that this proportion had an inverse relation with the total fertility rate and tended to fluctuate up to the present time with an interval of several decades, suggesting that a Bedouin-origin sedentarized group met alternately with the phase of high fertility and low proportion of labor force and the other phase of an opposite pattern. At present, unemployment of males who have been engaged in subsistence and cash-earning work was high especially in younger groups basically due to the narrow land of the clan (only 35 hectares for 456 people in 2005) for agriculture and the limited opportunities for cash-earning jobs. Taking into consideration that Bedouin-origin people sedentarized according to the government policy, it is needed for the government to support rural development plans of sedentarized Bedouin peoples.

Key words: labor force proportion; fertility; Bedouin; Arab community; south Jordan

INTRODUCTION

Arab people, who have inhabited vast arid areas of the Middle East, were originally nomadic pastoralists, called Bedouin, and most of them have changed their lifestyle from nomadism to sedentarism due to several reasons such as droughts in pasture lands, overpopulation and the governmental policy for promoting their settlement (Lewis, 1987; Bocco, 2000). In Jordan, a typical Arab country, the proportion of Bedouins (which refer to only nomadic Bedouins in the governmental documents of Jordan) to the total population has decreased from 46% in the 1920s to 35% in the 1940s and then only 10% in the early 1990s (Yousef, 1992; Massad, 2001). It has been reported that sedentarized Bedouins are impoverished and socioeconomically destitute (Bocco, 2000). Grigg (1980a, 1980b) pointed out that major causes of their disadvantageous status were subdivision and fragmentation of farmlands, landlessness, overgrazing and soil erosion as well as decline of wages. Despite that these causes were related to population increase and/or labor intensification of agriculture, no historical demographic studies for sedentarized Bedouins in relation to work conditions have been conducted.

Since Bedouins do not have their own characters, their demographic events in the past were seldom recorded. It is thus needed to collect historical information through fieldwork and to estimate demographic indicators (Birdsall and Sinding, 2001), among which fertility plays the most significant role in determining age composition as well as the pace of population increase (Coale, 1957). The authors conducted genealogical-demographic research (Ohtsuka, 1986) to reconstruct the records of births and deaths among the people of a sedentarized Bedouin clan in south Jordan from the time at sedentarization in 1948 (Sueyoshi and Ohtsuka, 2007).

Using the authors' genealogical-demographic data of the same Bedouin-origin clan, this paper aims to report change in the proportion of labor force, defined as percent of persons aged 15–64 years (Pressat and Wilson, 1985), for a duration of 55 years after sedentarization. Discussion focuses on the long-term effects of sedentarization-induced increase of fertility on the proportion of labor force and the present and future problems in utilization of labor force in Bedouin-origin societies in Jordan and the adjacent Arab countries, paying attention to rural development of these societies.

SUBJECTS AND METHODS

The study population

The target village of this study, called Al-Safi, is located in the southern end of the agricultural band in Jordan valley, where sedentarized Bedouins predominantly reside and nomadic Bedouins are scattered to live. Of the 12 sedentarized Bedouin clans in this village, Al-Shabat was selected as the subject of this study because its rudimentary genealogical charts existed (Al-Akash, 2002). The Al-Shabat clan settled in the present place in 1948, around which many other clans of Al-Safi village also settled down, and this clan did not markedly differ in natural and cultural environmental settings from other clans.

In the study area, the village functions as a basic unit of the governmental administration. The clan is not an administrative unit but Arab people's strong social ties are manifestly associated with the clan because it has maintained the traditional patrilineal kin system, involving many related and nonrelated agnatic lines, and has respected its social solidarity through an idiom of descents (Hourani, 1990; Lancaster and Lancaster, 1992; Nabulsi, 1995). It is thus judged that the clan is a suitable unit for analysis of work force in Arab societies, although the units targeted by most previous studies about work force were the households on one hand and, on the other, the nations (Chayanov, 1966; Cook, 1999; Williamson, 2001).

When Al-Shabat people settled down in 1948, the land of 35 hectare was allocated by the government. Since then, people of this clan have survived in the same territory and the whole duration up to the authors' survey in 2005 is broadly categorized into three periods: the early period from 1950 to 1969, the middle period from 1970 to 1989 and the late period from 1990 to 2005 (Sueyoshi and Ohtsuka, 2007). In the early period, the people promptly began cultivation of wheat and barley, although they still depended largely on husbandry of sheep and goat. In the middle period, they became dependent on agriculture, although socioeconomic development in the area was left behind owing to the government neglect (Tall, 2000). In the early stage of the late period, many development projects were implemented in this village, including the constructions of a vehicle road that links to Amman (national capital), a hospital, a maternal and child health center, primary and secondary schools, and a large-sized private chemical factory, and the establishment of an irrigation system for agriculture. Then, the people started cash cropping of fruit vegetables such as tomato, cucumber and eggplant and also had opportunities of obtaining some jobs in public and private sectors.

Data collection

An interview survey, on which the data of the present paper are based, was conducted for more than 30 members of Al-Shabat clan for six weeks from August to September 2005; a male interviewer, one of the authors (SS), asked mostly male members due to difficulties of a male's talk with local females in their traditional norm but sometimes female members accompanied by their husbands or other males. For each living or dead member of this clan, his/her full name, consisting of the first (own) name, the second (father's) name, the third (grandfather's) name and the last (tribe's) name, was obtained to verify the relationships with his/her kin group members, up to six generations back. Then, each person's dates (in years) of birth and death and, if any, marriage(s), in-migration(s) and out-migration(s) were also grasped. The interview for the above matters was repeatedly conducted until any information, including the dates of events, became consistent. Since there were high possi-

bilities that past childbirths accompanied by early deaths might not be remembered by the current members, however, the authors did not treat any individuals who had died before marriage (Sueyoshi and Ohtsuka, 2007). In addition, the authors' interview identified the current occupation of each male member aged from 15 to 64 years.

The protocol of this study was explained in detail to, and approved by, a religious leader of the Al-Shabat clan, who had great authority over any matters of this group, and informed consent was obtained from each participant.

Indicators analyzed

The proportion of males and females in each age in each year was the basic data in this study. In analysis, all persons were divided into three: child (0–14 years), working-age (15–64 years) and elderly (65+ years) groups. For proportion of labor force, a widely used indicator, i.e., the proportion of working-age (15–64 years) persons, was applied, although there have been a number of critical debates about measurement of proportion of labor force or labor force participation rate (Pressat and Wilson, 1985; Bongaarts, 2001). In the subject group, females have not been accustomed to work outside the home due to Islamic teachings (Peters, 1990; Miles, 2002; Moghadam, 2005), and thus the proportion of labor force was analyzed separately for males and females; in fact, women's proportion of labor force in Arab region has been the lowest in the world (Population Reference Bureau, 2003; Sidani, 2005).

In relation to the change of age structure of the subject group, their total fertility rate (TFR) is used in this paper owing to its advantages of representing the fertility level, independently from the age and sex structure. It is needed to briefly explain the method of calculating TFR, which was reported in detail elsewhere (Sueyoshi and Ohtsuka, 2007). Due to a small sample size, the calculation was done as follows. First, the person-years of females of each 5-year (15–19, 20–24...45–49 years) age group in a 20-year duration for the early or middle period (1950–1969 or 1970–1989) or a 15-year duration for the late period (1990–2005) and all births from these females were counted. Second, the latter (all births) was divided by the former (person-years of females); the quotient was age-specific fertility rate or ASFR by 5-year interval. Finally, the quotients (ASFRs) of all age groups were added and multiplied by 5; the product was TFR used in this study.

RESULTS

In 1950, there were 30 Al-Shabat members, consisting of four married males, six married females (three of whom were polygynous wives), one widow and 19 unmarried children (13 boys and six girls). Since then, no Al-Shabat member has migrated to urban areas, while females (rarely males) moved their residence from the Al-Shabat land to the adjacent clan land (or village land), or vice versa, in cases of marriage of spouses from different clans (or villages). Thus, the change of population of Al-Shabat clan primarily depended on the numbers of births and deaths. Figure 1 illustrates the number of persons in each year from 1950 to 2005, broken down into three age groups. There are four major observations. First, the total population increased from only 30 in 1950 to 456 in 2005; the mean annual population increase rate was calculated at 4.9%. Second, there were very few elderly persons, indicating that the proportion of labor force was determined largely by the relative numbers of children and working-age groups. Third, child population increased almost constantly except a short period from the late 1980s to the middle 1990s. Finally, working-age males rapidly increased from the middle 1970s to the late 1980s and then scarcely changed while working-age females had the similar pattern as the males but their numbers continuously increased to the 1990s. Figure 2 shows the age-sex structure in 1950, 1970, 1990 and 2005, indicating that a typical pyramidal shape was observed in the last year.

Figure 3 shows the proportion of labor force of males and females in each year from 1950 to 2005. The plots fitted the polynomial equation ($R^2=0.87$ for males, $R^2=0.91$ for females), showing

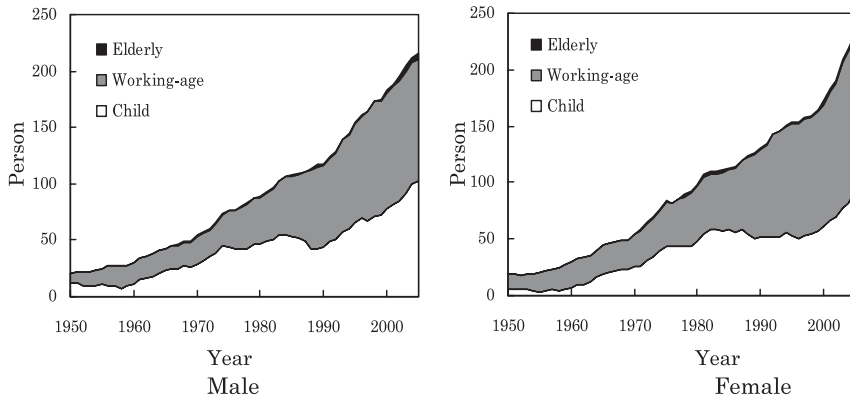


Figure 1. Number of persons in each year from 1950 to 2005, broken down into three age groups.

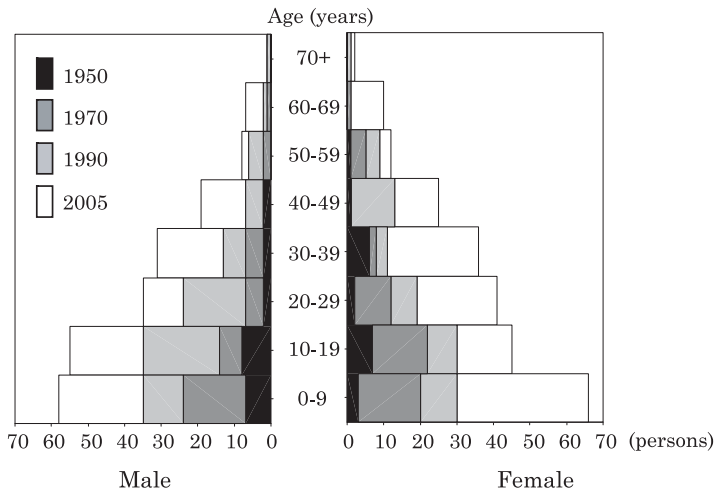


Figure 2. Age-sex structure of Al-Shabat clan in 1950, 1970, 1990 and 2005.

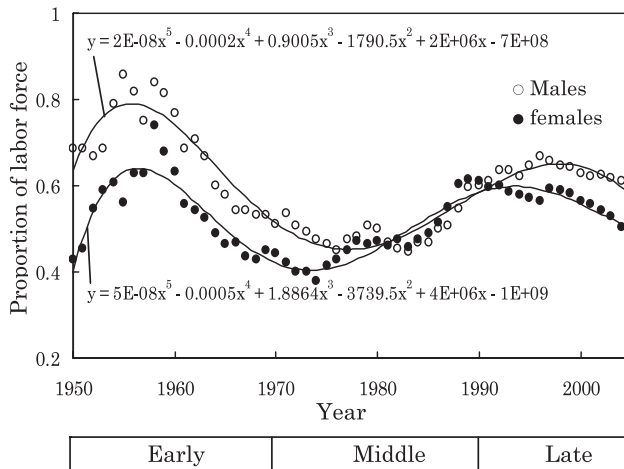


Figure 3. Proportion of labor force of males and females in each year from 1950 to 2005. The lines show the fitted polynomial equation.

cyclic changes with high values in the middle 1950s and the late 1990s and a low value in the middle 1970s.

The occupations of 109 male inhabitants aged 15-64 years, who lived in the survey period in 2005, were grasped. Table 1 shows the distribution of these males, broken down into five (15–19, 20–29, 30–39, 40–49 and 50–64) age groups, by marital and job statuses. The unemployment rate was high in young age groups, regardless of marital status. Table 2 shows breakdown of the 71 males, who had jobs, by occupation categories. There are three observations. First, farming was done by only 11 males, nine of whom exceeded 50 years of age, indicating that farming has not been a major occupation in this community. Second, civil servants (workplaces located in the village) and employment in army (workplaces located outside the village) were the largest in number, respectively, for 40–49 and 30–39 years age groups for the former, and 20–29 and 30–39 years age groups for the latter. Third, employees in a private company and self-employees (for instance, drivers and shopkeepers) were found in any age groups except 50–64 years age group.

Table 1. Distribution of the male subjects aged 15-64 years, by age groups and marital and job statuses

Age group (years)	n	Married		Unmarried	
		Employed	Unemployed	Employed	Unemployed
15–19	11	0	0	0	11 (6)
20–29	35	8	15	7	5 (3)
30–39	31	28	0	0	3
40–49	19	18	1	0	0
50–64	13	10	3	0	0
Total	109	64	19	7	19 (9)

Note: The numbers of students are shown in parentheses.

Table 2. The number and percent of the 71 males, who had jobs, by occupation categories

Age group (years)	n	Occupation categories				
		Farming	Civil servant	Army	Private company	Self employee
20–29	15	0 (0.0)	0 (0.0)	8 (53.3)	3 (20.0)	4 (26.7)
30–39	28	1 (3.6)	7 (25.0)	12 (42.9)	4 (14.3)	4 (14.3)
40–49	18	1 (5.6)	9 (50.0)	2 (11.1)	4 (22.2)	2 (11.1)
50–64	10	9 (90.0)	1 (10.0)	0 (0.0)	0 (0.0)	0 (0.0)
Total	71	11 (15.5)	17 (23.9)	22 (31.0)	11 (15.5)	10 (14.1)

DISCUSSION

Effects of elevated fertility on proportion of labor force

As mentioned elsewhere (Sueyoshi and Ohtsuka, 2007), TFR of the Al-Shabat clan in the early (1950–1969), middle (1970–1989) and late (1990–2005) periods was, respectively, 3.59, 7.21 and 5.19. Although the direct causes for sharp increase from the early to the middle period have not been identified, any plausible reasons mentioned below should have been associated with sedentarization: improvement in nutritional status, release from the traditional norm of cessation of women's child-birth in high ages, and increased demand of children as labor force for agriculture. On the other hand,

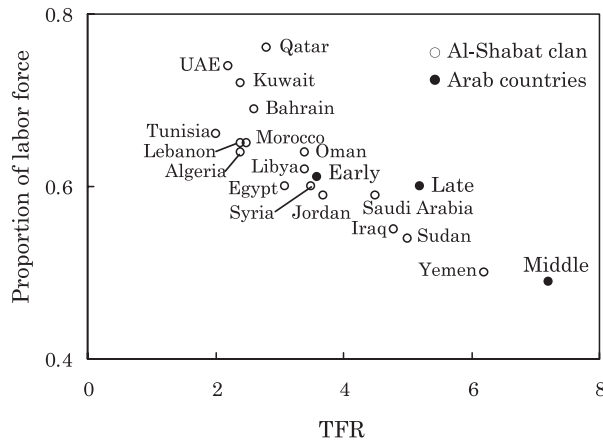


Figure 4. Scatter plots between total fertility rate (TFR) and the proportion of labor force among Al-Shabat clan in three periods and 17 Arab countries in 2006.

Sources: Population Reference Bureau (2006) for the country data and Sueyoshi and Ohtsuka (2007) for Al-Shabat clan.

the decline from the middle to the late period largely owed to elongated education periods of females, delay of their age at marriage and increase of their contraceptive use. Whatever the reasons were, the drastic change of TFR should have played a determining role in the proportion of labor force; it has been empirically known that fertility (in terms of TFR) and proportion of working-age population are inversely related (Bongaarts, 2001). As shown in Fig. 4, this inverse correlation was ascertained for the data of Al-Shabat clan's early, middle and late periods and those of 17 Arab countries in 2006; Pearson's correlation coefficient was -0.85 ($p < 0.01$).

More interesting was that TFR and the proportion of labor force tended to fluctuate with an interval of several decades, even though its magnitude of fluctuation might be reduced. Consequently, it is hypothesized that each Bedouin-origin sedentarized group meets alternately with the phase of high fertility and low proportion of labor force and the other phase of opposite pattern; it is noted that such cyclic fluctuation might be masked when the data for many groups were pooled simply because the timing of fluctuation might differ from group to group.

The present and future problems

Historically speaking, Al-Shabat clan people changed their subsistence activities from animal husbandry to agriculture when they settled in 1948. According to the information collected, they had gradually adapted to agricultural work until the 1980s, although, due to undeveloped infrastructure such as road system, their agriculture had been under the subsistence level. From around 1990, various development projects were launched in the area. In particular, establishment of irrigation system and construction of a road linking with Amman affected considerably the people's work and life. Agricultural work was shifted to gaining cash income by growing vegetables to be transported to big cities. To obtain adequate amounts of cash income, however, the absolute land area of Al-Shabat clan, i.e., 35 hectares, was too narrow. Qasem (1986) states that an irrigated land of 2 to 4 hectares per household is needed to meet with adequate income in Jordan. This study's finding that only 11 males were engaged in farming in 2005 was thus judged reasonable.

Among other jobs, civil service and employment in army began in association with the government program for sedentarization of Bedouins, to ensure sociopolitical allegiance with them (Tall, 2000). On the other hand, about 10 Al-Shabat males have been employed in a chemical factory, which is the sole large-sized enterprise in the Al-Safi village land. Nonetheless, the total job opportu-

nities in this area have still been very limited, causing a high unemployment rate, especially among younger groups.

In the Jordan Poverty Assessment Report, the Ministry of Planning of Jordan and the World Bank (2004) recognized 20 administrative areas, including the study village of Al-Safi, as extremely poor in Jordan as a whole. From the results of this study, the high unemployment rate was the most relevant sign of poverty (Ohtsuka et al., 2002). There are, in general, two possible ways of reducing the unemployment rate. One is out-migration of working-age people, usually to urban areas. Many studies for poor areas in developing countries suggested that a large amount of out-migration of males of such age groups seldom resulted in a favorable situation for rural development (Ramin, 1988; Todaro, 1996; Keller, 2004). The other way is to make rural development projects by the local people themselves with support from outside (Ohtsuka, 2004). Taking into consideration that Bedouin-origin people sedentarized according to the government policy, it is needed for the government to support rural development plans of sedentarized Bedouins.

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REFERENCES

- Al-Akash, NM (2002) Jordanian Tribes in the Past and the Present. Saker Kohaish Printing Press-East, London (in Arabic).
- Birdsall, N and Sinding, SW (2001) How and why population matters: New findings, new issues. *In: Population Matters*, ed. by Birdsall, N, Kelley, AC, and Sinding, SW, Oxford University Press, Oxford: pp. 3-23.
- Bocco, R (2000) International organisations and the settlement of nomads in the Arab Middle East, 1950-1990. *In: The Transformation of Nomadic Society in the Arab East*, ed. by Mundy, M and Musallam, B, Cambridge University Press, Cambridge: pp. 197-217.
- Bongaarts, J (2001) Dependency burdens in the developing world. *In: Population Matters*, ed. by Birdsall, N, Kelley, AC, and Sinding, SW, Oxford University Press, Oxford: pp. 55-64.
- Chayanov, A (1966) *Theory of Peasant Economy*. ed. and introd. by Thorner, D, Kerblay, B, and Smith, REF, Homewood, Illinois.
- Coale, AJ (1957) How the age distribution of a human population is determined. *Cold Spring Harb. Symp. Quant. Biol.*, **22**: 83-89.
- Cook, S (1999) Surplus labour and productivity in Chinese agriculture: Evidence from household survey data. *J. Dev. Stud.*, **35**: 16-44.
- Grigg, D (1980a) *Population Growth and Agriculture: An Historical Perspective*. Cambridge University Press, Cambridge.
- Grigg, D (1980b) Migration and overpopulation. *In: The Geographical Impact of Migration*, ed. by White, P and Woods, R, Longman, London: pp. 60-83.
- Hournai, A (1990) Conclusion: tribes and states in Islamic history. *In: Tribe and State Formation in the Middle East*, ed. by Khoury, PS and Kostiner, J, University of California Press, Berkeley: pp. 303-311.
- Keller, S (2004) Household formation, poverty and unemployment –the case of rural households in South Africa. *S. Afr. J. Econ.*, **72**: 437-483.
- Lancaster, W and Lancaster, F (1992) Tribal formations in the Arabian Peninsula. *Arabian Archeological Epigraphy*, **3**: 145-172.
- Lewis, NN (1987) *Nomads and Settlers in Syria and Jordan, 1800-1980*. Cambridge University Press, Cambridge.
- Massad, JA (2001) *Colonial Effects: The Making of National Identity in Jordan*. Columbia University Press, New York.
- Miles, R (2002) Employment and unemployment in Jordan: the importance of the gender system. *World Dev.*, **30**: 413-427.
- Ministry of Planning Jordan and the World Bank (2004) *The Jordan Poverty Assessment Report*. Amman.
- Moghadam, VM (2005) Women's economic participation in the Middle East: What difference has the neoliberal policy turn made? *Journal of Middle East Women's Studies*, **1**: 110-146.
- Nabulsi, A (1995) Mating patterns of the Abbad tribe in Jordan. *Soc. Biol.*, **42**: 162-174.

- Ohtsuka, R (1986) Low rate of population increase of the Gidra Papuans in the past: A genealogical-demographic analysis. *Am. J. Phys. Anthropol.*, **71**: 12-23.
- Ohtsuka, R (2004) Environmental preservation and community welfare under rural development projects: a comparative ethnoecological study in Asia and Oceania. *In: Nature and Human Communities*, ed. by Sasaki, T, Springer, Tokyo: pp. 45-65.
- Ohtsuka, R, Inaoka, T, Moji, K, Karim, E, and Yoshinaga, M (2002) Environmental, health and economic conditions perceived by 50 rural communities in Bangladesh. *J. Hum. Ergol.*, **31**: 13-21.
- Petters, EL (1990) *The Bedouin of Cyrenaica: Studies in Personal and Corporate Power*. Cambridge University Press, Cambridge.
- Pressat, R and Wilson, G (1985) Labour force. *In: The Dictionary of Demography*, ed. by Wilson, C, Blackwell, Oxford: pp. 120-121.
- Qasem, S (1986) The size of agricultural land holdings. *In: Agricultural Policy in Jordan*, ed. by Burrell, A, Ithaca Press, London: pp. 21-29.
- Population Reference Bureau (2003) *Empowering women, developing society: Female education in the Middle East and North Africa*. PRB MENA Policy Brief.
- Population Reference Bureau (2006) PRB 2006 World Population Data Sheet.
- Ramin, T (1988) A regression analysis of migration to urban areas of a less-developed country: The case of Iran. *Am. Econ.*, **32**: 26-34.
- Sidani, Y (2005) Women, work, and Islam in Arab societies. *Women in Management Review*, **20**: 498-512.
- Sueyoshi, S and Ohtsuka, R (2007) Extremely high fertility of a sedentarized Bedouin clan in south Jordan: A genealogical-demographic approach to the long-term changes. *Anthropol. Sci.*, published online in J-STAGE (www.jstage.jst.go.jp).
- Tall, T (2000) The politics of rural policy in East Jordan, 1920-1989. *In: The Transformation of Nomadic Society in the Arab East*, ed. by Mundy, M and Musallam, B, Cambridge University Press, Cambridge: pp. 90-98.
- Todaro, MP (1996) Income expectations, rural-urban migration and employment in Africa. *Int. Labour Rev.*, **135**: 421-444.
- Williamson, JG (2001) Demographic change, economic growth and inequality. *In: Population Matters*, ed. by Birdsall, N, Kelley, AC, and Sinding, SW, Oxford University Press, Oxford: pp. 106-136.
- Yousef, S (1992) The Bedouin tent, an early version of the long house type in the Jordanian village. *Ektistics*, **59**: 235-238.