Migration Decisions, Remittances, and Altruism

Akira Shimada[*]
Faculty of Economics, Nagasaki University

Abstract

We can easily infer that remittances by the migrant will be large if he is very altruistic. However, remittances that an individual household expects to receive, i.e. expected remittances, will not be necessarily large even if the migrant is very altruistic since they depend not only on remittances by the migrant, who has already moved to the host county, but also on how likely it is that a household member, a potential migrant, actually migrates, and such a probability can be affected by altruism. Previous studies focused mainly on the effects of altruism on remittances by the migrant. However, what actually matter to the household are not remittances by the migrant, but expected remittances, because a potential migrant does not necessarily migrate to the host country. In this study, we investigate the effects of altruism on migration decisions by the potential migrant, as well as on remittances by the migrant, to make clear the effects of altruism on expected remittances. We show that if there are no migration costs, the potential migrant always migrates, and expected remittances, that are equal to remittances by the migrant in this case, are positively related to altruism. However, if migration incurs costs, the potential migrant does not necessarily migrate, and the potential migrant who is very altruistic is less likely to migrate. Accordingly, expected remittances do not necessarily increase with the degree of altruism. In particular, altruism may have negative impacts on expected remittances.

---

[*] Email address for correspondence: shimada@nagasaki-u.ac.jp

1 Introduction

In this study, we discuss how altruism affects migration decisions of the potential migrant and remittances by the migrant, and try to make clear the effects of altruism on remittances that an individual household expects to receive.

Remittances have been increasing very rapidly, and they are contributing to many developing countries by alleviating poverty and developing their economies (World Bank 2006; Chami et al. 2008). Accordingly, these countries are trying to increase remittances.[1]

Various hypotheses, including altruism, self-interest, co-insurance between migrants and households, and repayment of a loan from the family, have been put forward to explain why migrants send remittances (Lucas and Stark 1985; Stark 1995; Rapoport and Docquier 2006; Ruiz and Vargas-Silva 2009). Most of these are not mutually exclusive.

Among them, altruism is considered a major incentive, especially in countries where family ties are strong (Cai 2003), although there are a lot of controversies on the role of altruism, and any single motive cannot explain why migrants send remittances. We can easily understand that if a household member who has already migrated to the host country and is working there is more altruistic, remittances sent to other household members will be larger.

However, even if a potential migrant who is a household member is altruistic, other household members will receive no remittances if he does not migrate. This suggests that remittances that an individual household expects to receive from its member in abroad, i.e. expected remittances, do

---

[1] Reducing the remittance fees seems to be most effective for this purpose. However, it is not so easy to manipulate them. Shimada (2010) discussed how the remittance-receiving countries can increase its amount without manipulating the sending and receiving fees, and without affecting the interests of agents involved in sending and receiving remittances.

matter to other household members and that expected remittances depend not only on remittances that will be made by the migrant, who is already in the host country, but also on how likely a household member still in the home country is to move to the host country.

Previous studies on altruism and remittances focused mainly on the effects of altruism on remittances by the migrant who has already moved to and is working in the host country. Results are mixed; however, a large number of studies attempted to show how altruism affects the amount of migrants' remittances (Secondi 1997; Agarwal and Horowitz 2002; Cai 2003).

On the other hand, studies on the effects of altruism on migration decisions, more precisely, the migration probability of the potential migrant, have been relatively neglected. However, Tcha (1995a) showed that strong altruism of the parent towards her children makes household migration more likely. Similarly, Tcha (1995b) derived that the more altruistic the parent is towards her children, the more likely the family is to migrate to the higher income area. Tcha (1996) tested the effects of altruism on migration decisions by using aggregated data from the United States and Korea. These studies suggest that altruism can also have effects on migration decisions.

Accordingly, we can infer that altruism affects expected remittances, which is defined to be the migration probability of the potential migrant × remittances by the migrant, both through its effects on remittances and through its effects on migration decisions.

Therefore, we explicitly take the effects of altruism on remittances by the migrant and on migration decisions by the potential migrant into account in order to make clear how altruism changes expected remittances to an individual household. No major attempt seems to have yet been made to examine the effects of altruism on migration decisions by the potential migrant and on remittances by the migrant simultaneously in the same model.

We find that if there are no migration costs, the potential migrant always decides to migrate

whatever the degree of his altruism. Moreover, as the potential migrant becomes more altruistic or as the income difference between the host and home countries becomes larger, he sends larger remittances to other household members after migration. In this sense, with no migration costs, altruism has positive effects on expected remittances. On the other hand, if there are migration costs, the potential migrant does not necessarily decide to migrate, and a very altruistic potential migrant is less likely to migrate. Due to these effects, expected remittances do not necessarily increase with the degree of altruism. In particular, when the income difference is sufficiently large, other household members receive smaller remittances if the potential migrant is very altruistic. Therefore, with migration costs, altruism does not necessarily have positive impacts on expected remittances. It may have negative effects on expected remittances.

The remainder of this paper is organized as follows. Section 2 first models a representative household that includes a potential migrant and assumes that migration can be done without costs. We then discuss how altruism affects remittances by the migrant, migration decisions by the potential migrant, and thereby expected remittances. Section 3 assumes that migration requires costs and investigates the effects of altruism. Section 4 presents concluding remarks.

2 Migration Decisions and Remittances with No Migration Costs

In this section we assume no migration costs and determine the amount of remittances the potential migrant would send to his household in the home country after he migrated to the host country. We also discuss whether the potential migrant will have an incentive for migration to the host county or not, i.e. migration decisions (migration probabilities) when migration does not require any costs. Combining these results, we calculate expected remittances, and try to find how they are related to altruism when there are no migration costs.

We focus on a representative household whose members are assumed to be altruistic with each

4

other. We first consider the case where a member of the household, who is the only potential migrant, has already chosen to migrate to the host country, and is now working in that country. A representative migrant earns income by $\overline{W}_M$ in the host country, and he may send part of his income as remittances to his household in the home country altruistically by R, $0 \le R < \overline{W}_M$. Migrant's income $\overline{W}_M$ is exogenously given and assumed to be a constant. The migrant determines the amount of remittances to maximize his utility. The migrant spends the rest of his earned income $\overline{W}_M - R$ in the host country, and his direct utility is $\ln(\overline{W}_M - R)$. Following Poirine (2006), we specify utility functions to obtain practical solutions. A representative household, except the migrant, earns income by $\overline{W}_H$ in the home country, and receives remittances from the migrant. The household's earned income is exogenously given and assumed to be a constant. The household in the home country spends their earned income and remittances, and their direct utility is $\ln(\overline{W}_H + R)$.

The utility of the migrant U_M depends not only on his own direct utility but also on the utility of other household members U_H. Similarly, the utility of the household except the migrant depends not only on their own direct utility but also on the utility of the migrant. We assume that the degree of altruism does not differ between the migrant and other household members. This is a simplifying assumption. In the first chapter of Stark (1995), each individual has different degrees of altruism towards the other individual.

$$U_M = (1-\beta)\ln(\overline{W}_M - R) + \beta U_H ,$$

$$U_H = (1-\beta)\ln(\overline{W}_H + R) + \beta U_M ,$$

where β, $0 < \beta < 1$, measures the degree of altruism of all household members.

These equations can be solved as,

$$U_M = (1-\alpha)\ln(\overline{W}_M - R) + \alpha \ln(\overline{W}_H + R)(\equiv U_M^{migration}) , \qquad (1)$$

$$U_H = (1-\alpha)\ln(\overline{W}_H + R) + \alpha \ln(\overline{W}_M - R) ,$$

5

where $\alpha \equiv \beta/(1+\beta)$. The larger β is, the larger α is. In other words, the more altruistic the migrant is, the larger weight is put on the direct utility of other household members.

Assuming that $\overline{W}_M = k\overline{W}_H$, where k is a constant and $k > 1$, i.e. income that can be earned in the host country is k times as large as income that can be earned in the home country, we differentiate the migrant's utility with respect to remittances in order to determine their optimal amount.

$$\frac{dU_M^{migration}}{dR} = \frac{1}{(k\overline{W}_H - R)(\overline{W}_H + R)}\left\{-R + \frac{1}{1+\beta}(\beta k - 1)\overline{W}_H\right\}.$$

Accordingly, if $\beta \leq 1/k$, then $dU_M^{migration}/dR \leq 0$. In this case, the migrant's utility can be maximized by not sending any remittances. In other words, the optimal amount of remittances by the migrant is,

$$R|_{\beta \leq 1/k} = 0. \tag{2a}$$

On the other hand, if $\beta > 1/k$, then the migrant sends remittances to maximize his utility. In particular, the optimal amount of remittances by the migrant is,

$$R|_{\beta > 1/k} = (1+\beta)^{-1}(\beta k - 1)\overline{W}_H. \tag{2b}$$

These results suggest that even if the potential migrant moved to the host country, he would not necessarily send remittances. Whether he will send remittances or not, and how much he will send depend on the degree of altruism and the income difference. In particular, the more altruistic the potential migrant is or the larger the income difference is, the more likely the potential migrant is to send remittances after migration, since $\beta > 1/k$ is more likely to happen. Remittances, if he sends the positive amount, are larger as he is more altruistic or as the income difference is larger, i.e. $dR|_{\beta > 1/k}/d\beta > 0$, $dR|_{\beta > 1/k}/dk > 0$.

By substituting Equation (2a) into Equation (1), the migrant's utility in the case of $\beta \leq 1/k$ is derived as,

6

$$U_M^{migration}\Big|_{\beta \le 1/k} = \ln \overline{W}_H + \frac{1}{1+\beta}\ln k. \tag{3a}$$

Similarly, by substituting Equation (2b) into Equation (1), the migrant's utility in the case of $\beta > 1/k$ is derived as,

$$U_M^{migration}\Big|_{\beta > 1/k} = \frac{1}{1+\beta}\ln\frac{1+k}{1+\beta}\overline{W}_H + \frac{\beta}{1+\beta}\ln\frac{1+k}{1+\beta}\beta\overline{W}_H. \tag{3b}$$

We next deal with the case where the potential migrant has already chosen not to migrate, and is now working in the home country. In this case, we assume that the potential migrant earns the same income as the rest of his household, i.e. $\overline{W}_H$. Since he does not send remittances, his direct utility is $\ln \overline{W}_H$. Other household members do not receive remittances, so that their direct utility is also $\ln \overline{W}_H$.

Accordingly, the utility of the potential migrant and the utility of other household members can be represented as,

$$U_M = (1-\beta)\ln \overline{W}_H + \beta U_H,$$

$$U_H = (1-\beta)\ln \overline{W}_H + \beta U_M.$$

From these equations we find that the potential migrant and other household members have the same utility.

$$U_M = \ln \overline{W}_M\ (\equiv U_M^{non-migration}). \tag{4}$$

$$U_H = \ln \overline{W}_H.$$

The potential migrant determines whether to migrate by comparing the utility attainable by migration and working in the host country with that attainable by remaining and working in the home country. If $\beta \le 1/k$, then from Equations (3a) and (4), the gain for the potential migrant by migrating to the host country $U_M^{migration} - U_M^{non-migration}$ is,

$$U_M^{migration} - U_M^{non-migration} = \frac{1}{1+\beta} \ln k (\equiv \hat{U}_M\big|_{\beta \leq 1/k}),\tag{5a}$$

where $\ln k > \hat{U}_M\big|_{\beta \leq 1/k} \geq k(1+k)^{-1} \ln k$. Since $\hat{U}_M\big|_{\beta \leq 1/k} > 0$, the potential migrant with any degree

of altruism $(\beta \leq 1/k)$ attains the higher utility by migrating to the host country if migration does

not incur any costs. Moreover, the gain for the potential migrant due to migration is larger, the less

altruistic the migrant is and the larger the income difference is ($d\hat{U}_M\big|_{\beta \leq 1/k}/d\beta < 0$,

$d\hat{U}_M\big|_{\beta \leq 1/k}/dk > 0$). In a similar manner, if $\beta > 1/k$, then from Equations (3b) and (4), the gain

for the potential migrant is,

$$U_M^{migration} - U_M^{non-migration} = \frac{1}{1+\beta} \ln \frac{1}{1+\beta} + \frac{\beta}{1+\beta} \ln \frac{\beta}{1+\beta} + \ln(1+k)(\equiv \hat{U}_M\big|_{\beta > 1/k}),\tag{5b}$$

where $k(1+k)^{-1} \ln k > \hat{U}_M\big|_{\beta > 1/k} \geq \ln(1+k) - \ln 2$. Since $d\hat{U}_M\big|_{\beta > 1/k}/d\beta < 0$ and $\lim_{\beta \to 1} \hat{U}_M\big|_{\beta > 1/k} > 0$,

$\hat{U}_M\big|_{\beta > 1/k} > 0$. Accordingly, in this case as well, if there are no migration costs, the potential

migrant with any degree of altruism $(\beta > 1/k)$ attains the higher utility by migration, and the

gain is larger, the less altruistic the migrant is and the larger the income difference is

($d\hat{U}_M\big|_{\beta > 1/k}/d\beta < 0$, $d\hat{U}_M\big|_{\beta > 1/k}/dk > 0$).

The gain for the potential migrant described by Equations (5a) and (5b) can be shown as Fig. 1.

All curves are downward-sloping and above the horizontal axis for the different values of k,

suggesting that the gain arising from migration decreases with the degree of altruism, but is

always positive. The curve with the large k lies above the curve with the small k.

Therefore, with no migration costs, the potential migrant with any degree of altruism has an

incentive for migration and decides to migrate.[2] Moreover, the less altruistic potential migrant has

---

[2] Being different from the assumption made in the text, if the host country's income is smaller

than the home country's income, i.e. $k < 1$, then the gain is always negative, i.e. $\hat{U}_M\big|_{\beta \leq 1/k}$,

a stronger incentive since the gain is larger. This is contrasted with the effects of altruism on remittances made by the migrant (see Equations 2a and 2b). To explain the reason intuitively, an altruistic potential migrant sends larger remittances after migration. This lowers the utility derived from migration, and thereby reduces the gain from migration.

Accordingly, if there are no migration costs, the migration probability is one for any potential migrant, and thereby, expected remittances are always equal to remittances by the migrant. This suggests that the household expects to receive no remittances if $\beta \leq 1/k$ and that expected remittances are larger as the potential migrant is more altruistic if $\beta > 1/k$. Accordingly, we conclude that expected remittances are monotonically increasing with the degree of altruism.

Fig. 2 shows how expected remittances, which can be described by Equations (2a) and (2b) when there are no migration costs, are related to the degree of altruism and income differences. Until β reaches $1/k$, all curves are on the horizontal axis. After that, they become upward-sloping. The curve with the large k lies above the curve with the small k.

To summarize results derived in this section, if there are no migration costs, the potential migrant with any degree of altruism always decides to migrate. However, the migrant does not necessarily send remittances. In particular, he does not send any remittances if he is less altruistic. Remittances, if any positive amount is sent, are larger as the migrant is more altruistic. With no migration costs, since the migration probability is one for any potential migrant, expected remittances are always equal to remittances. This suggests that if the potential migrant is altruistic,

---

$\hat{U}_M\big|_{\beta>1/k} < 0$. Accordingly, if the host country's income is smaller than the home country's income, no potential migrant has an incentive for migration, and no one decides to migrate. Although this appears to be rather trivial, this is not an assumption on the migration decision of the potential migrant, but the result derived from the utility maximization of the potential migrant.

expected remittances are larger. Therefore, without migration costs, altruism has positive effects on expected remittances.

3 Migration Decisions and Remittances with Migration Costs

This section turns to the case where there are migration costs, and examines the effects of altruism on migration decisions and remittances in that situation to find how altruism affects expected remittances.

If migration incurs costs, the potential migrant will decide whether to migrate by comparing the gain due to migration and its costs.

We denote the migration cost by C and assume that C is distributed uniformly between $\ln k \ (= \lim_{\beta \to 0} \hat{U}_M \big|_{\beta \leq 1/k})$ and $\ln(1+k) - \ln 2 \ (= \lim_{\beta \to 1} \hat{U}_M \big|_{\beta > 1/k})$. This assumption is to exclude trivial cases. If the migration cost is larger than $\ln k$, then the potential migrant never decides to migrate, and thereby expected remittances are zero. If it is smaller than $\ln(1+k) - \ln 2$, then the potential migrant always decides to migrate, and thereby expected remittances are equal to remittances, being the same as in the case where there are no migration costs.

When $\beta \leq 1/k$, the potential migrant will migrate to the host country if,

$$C \leq \frac{1}{1+\beta} \ln k (\equiv \hat{U}_M \big|_{\beta \leq 1/k}).$$

Accordingly, the migration probability $MP\big|_{\beta \leq 1/k}$ is expressed as follows:

$$MP\big|_{\beta \leq 1/k} = \left\{ \frac{1}{1+\beta} \ln k - \ln(1+k) + \ln 2 \right\} \{ \ln k - \ln(1+k) + \ln 2 \}^{-1}. \tag{6a}$$

Equation (6a) suggests that a less altruistic potential migrant is more likely to migrate ($dMP\big|_{\beta \leq 1/k} / d\beta < 0$). This occurs because the net gain for the potential migrant due to migration $\hat{U}_M \big|_{\beta \leq 1/k} - C$ is more likely to be positive if he is less altruistic. Accordingly, altruism seems to

have negative impacts on expected remittances through decreases in the migration probability. However, as Equation (2a) shows, when $\beta \le 1/k$, even if the potential migrant moved to the host country, he would not send any remittances. Accordingly, when $\beta \le 1/k$, the household cannot expect to receive any remittances. In other words, expected remittances are,

$$MP\big|_{\beta \le 1/k} \times R\big|_{\beta \le 1/k} = 0 . \tag{7a}$$

Therefore, in this case, altruism does not have any effects on expected remittances.

When $\beta > 1/k$, the potential migrant will migrate to the host country if,

$$C \le \frac{1}{1+\beta}\ln\frac{1}{1+\beta} + \frac{\beta}{1+\beta}\ln\frac{\beta}{1+\beta} + \ln(1+k)(\equiv \hat{U}_M\big|_{\beta > 1/k}),$$

and the migration probability $MP\big|_{\beta > 1/k}$ is expressed as follows:

$$MP\big|_{\beta > 1/k} = \left(\frac{1}{1+\beta}\ln\frac{1}{1+\beta} + \frac{\beta}{1+\beta}\ln\frac{\beta}{1+\beta} + \ln 2\right)\{\ln k - \ln(1+k) + \ln 2\}^{-1} . \tag{6b}$$

Equation (6b) also suggests that a less altruistic potential migrant is more likely to migrate ($dMP\big|_{\beta > 1/k}/d\beta < 0$). Moreover, as Equation (2b) indicates, remittances are positive when $\beta > 1/k$. Accordingly, the household expects to receive the positive amount of remittances. In particular, expected remittances are,

$$MP\big|_{\beta > 1/k} \times R\big|_{\beta > 1/k} = \left(\frac{1}{1+\beta}\ln\frac{1}{1+\beta} + \frac{\beta}{1+\beta}\ln\frac{\beta}{1+\beta} + \ln 2\right)\{\ln k - \ln(1+k) + \ln 2\}^{-1}$$

$$\times (1+\beta)^{-1}(\beta k - 1)\overline{W}_H . \tag{7b}$$

Therefore, in this case, altruism will have some effects on expected remittances.

Fig. 3 shows the migration probability described by Equations (6a) and (6b) for the different values of k. All curves are downward-sloping. The curve with the large k lies below the curve with the small k, suggesting that the potential migrant is less likely to migrate as the host country's income becomes larger. Accordingly, the effects of the income difference on the

migration probability when there are migration costs are opposite to the effects of the income difference on an incentive for migration when there are no migration costs (see Equations 5a and 5b).

Fig. 4 shows how expected remittances described by Equations (7a) and (7b) change with the degree of altruism. For any income difference, expected remittances are zero at the lower degree of altruism. After β exceeded $1/k$, they first increase with the degree of altruism, and then take the maximum value at a certain degree of altruism. After that, they decrease.

The relationship between expected remittances and altruism depends on the income difference. According to Fig. 4, expected remittances are the same or larger for any degree of altruism if the income difference is larger. However, if the income difference is large, expected remittances are likely to be positive for most of the degree of altruism, and take the largest value at the lower degree of altruism. On the other hand, if the income difference is small, expected remittances are likely to zero for most of the degree of altruism, and take the largest value at the higher degree of altruism. In Fig. 4 expected remittances take the largest values at $\beta \approx 0.3$ if $k = 10$, $\beta \approx 0.4$ if $k = 5$, and $\beta \approx 0.65$ if $k = 2$.

These facts suggest that even if the potential migrant is very altruistic, the household cannot necessarily expect to receive larger remittances. When the income difference is very small, expected remittances are likely to remain to be zero even if the potential migrant is very altruistic. For example, if the host country's income is only 1.1 times as large as the home country's income, expected remittances are zero until the degree of altruism exceeds about 0.9, indicating that expected remittances can be the same for most of the degree of altruism. In other words, altruism has no effects on expected remittances. On the other hand, when the income difference is very large, expected remittances are likely to decrease as the potential migrant becomes more altruistic. For example, if the host country's income is 100 times as large as the home country's income,

expected remittances decrease as the potential migrant becomes more altruistic if the degree of altruism is larger than only about 0.19. This suggests that given the large income difference, expected remittances to the household with the higher degree of altruism can be smaller than those to the household with the lower degree of altruism. In other words, altruism has negative effects on expected remittances.

Therefore, if we take into account of the effects of altruism on migration decisions of the potential migrant as well as on remittances by the migrant when migration incurs costs, altruism does not necessarily increase the amount of remittances that the household expects to receive. It may not change expected remittances, or it may decrease expected remittances.

To summarize the results derived in this section, if there are migration costs, the potential migrant does not necessarily decide to migrate, and altruism is not always effective for the household in the home country to receive larger remittances.

4 Concluding Remarks

We found that altruism has positive impacts on expected remittances through increases in remittances by the migrant working in the host country. We also found that altruism has negative impacts on expected remittances through decreases in migration probabilities of the potential migrant who is considering whether to migrate to the home country when there are migration costs. Combining these effects, we derived the result that expected remittances to an individual household do not increase monotonically with the degree of altruism. Altruism may have negative impacts on expected remittances when migration requires costs.

Our results suggest that an individual household cannot necessarily expect to receive large (small) remittances because household members are very (less) altruistic with each other. Many studies found that altruism alone cannot explain remittances by the migrant. On the other hand,

according to our results, altruism alone affects remittances that the household expects to receive in various manners.

Acknowledgements

References

Agarwal, R. and A. W. Horowitz. (2002). "Are International Remittances Altruism or Insurance? Evidence from Guyana Using Multiple-Migrant Households." *World Development* 30: 2033-2044.

Cai, Q. (2003). "Migrant Remittances and Family Ties: A Case Study in China." *International Journal of Population Geography* 9: 471-483.

Chami, R., A. Barajas, T. Cosimano, C. Fullenkamp, M. Gapen, and P. Montiel. (2008). *Macroeconomic Consequences of Remittances*. Occasional Paper (International Monetary Fund) No. 259.

Lucas, R. E. B. and O. Stark. (1985). "Motivations to Remit: Evidence from Botswana." *Journal of Political Economy* 93: 901-918.

Poirine, B. (2006). "Remittances Sent by a Growing Altruistic Diaspora: How Do They Grow Over Time?" *Asia Pacific Viewpoint* 47: 93-108.

Rapoport, H. and F. Docquier. (2006). The Economics of Migrants' Remittances. In *Handbook of the Economics of Giving, Altruism and Reciprocity: Applications*, ed. S.-C. Kolm and J. M. Ythier, 1135-1198, Amsterdam: Elsevier Science B. V.

Ruiz, I. and C. Vargas-Silva. (2009). "To Send, or Not to Send: That is the Question. A Review of the Literature on Workers' Remittances." *Journal of Business Strategies* 26: 65-90.

Secondi, G. (1997). "Private Monetary Transfers in Rural China: Are Families Altruistic?" *Journal of Development Studies* 33: 487-511.

Shimada, A. (2010). "The Transfer of the Remittance Fee from the Migrant to the Household." *Journal of Economic Integration* 25: 613-625.

Stark, O. (1995). *Altruism and Beyond*. Cambridge: Cambridge University Press.

Tcha, M. (1995a). "Altruism, Household Size and Migration." *Economics Letters* 49: 441-445.

Tcha, M. (1995b). "Altruism, Conflict, and the Migration Decision." *International Regional Science Review* 18: 289-312.

Tcha, M. (1996). "Altruism and Migration: Evidence from Korea and the United States." *Economic Development and Cultural Change* 44: 858-878.

World Bank. (2006). *Global Economic Prospects: Economic Implications of Remittances and Migration*. Washington, DC: World Bank.
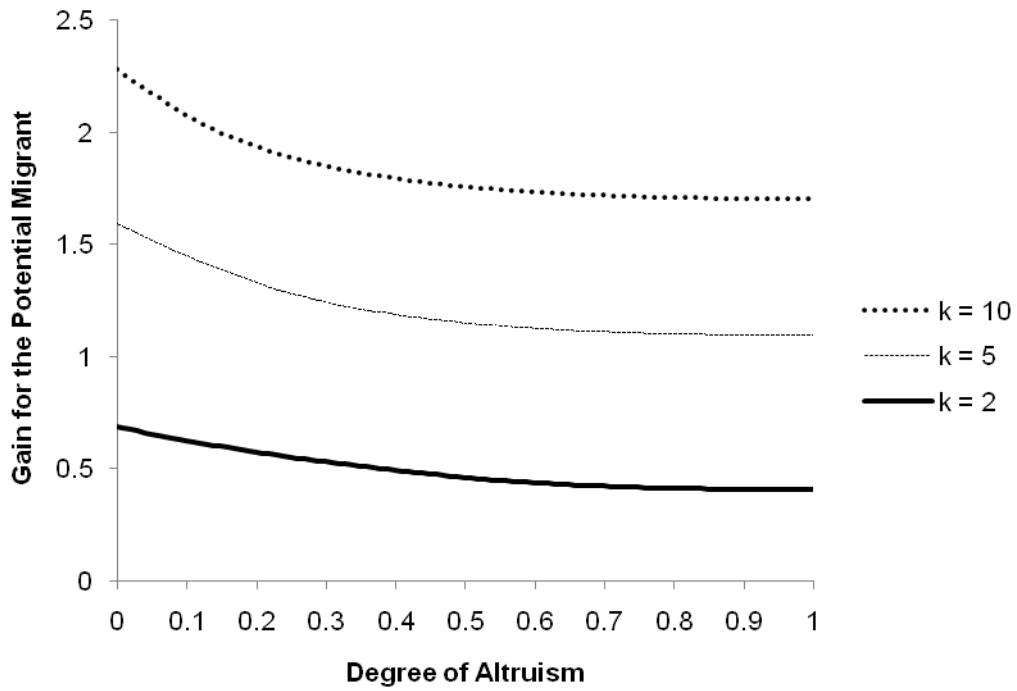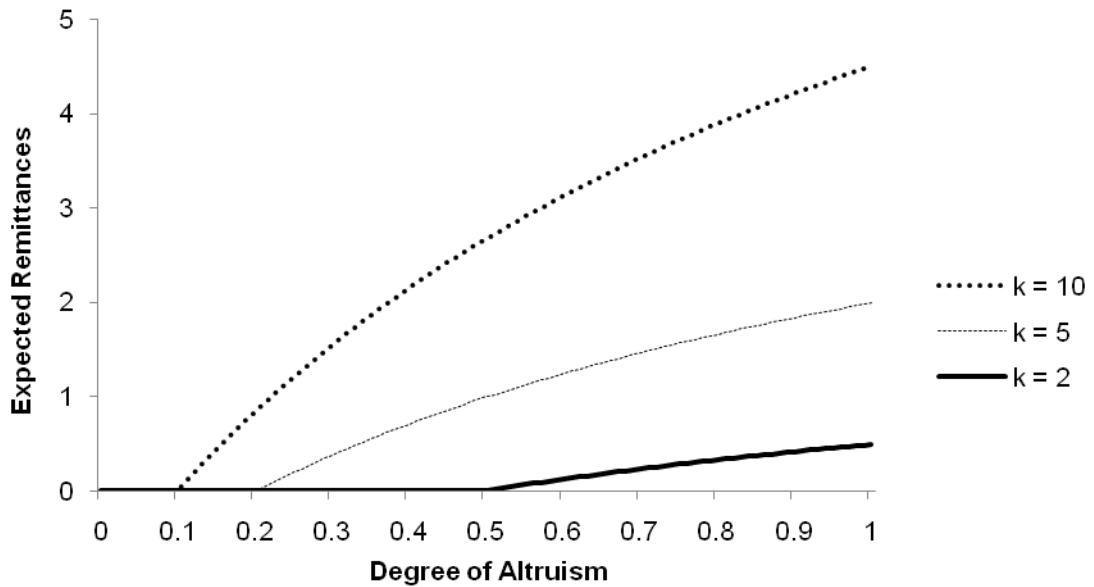
Fig. 1 Gain for the Potential Migrant

Fig. 2 Expected Remittances with No Migration Costs

Note: The home country's income is assumed to be one.

Fig. 3 Migration Probability with Migration Costs

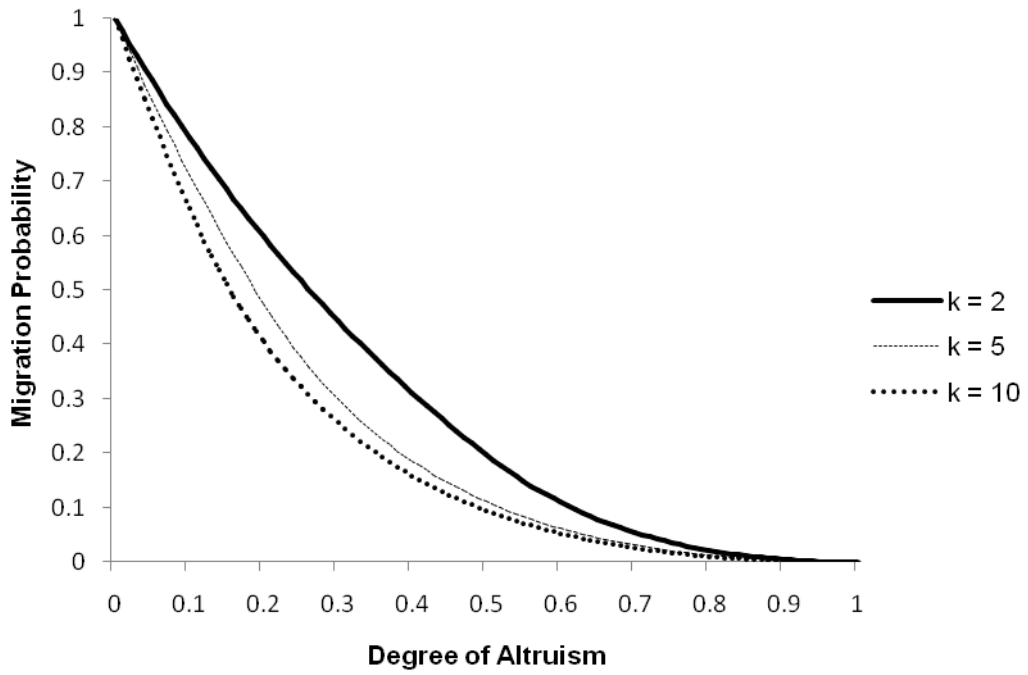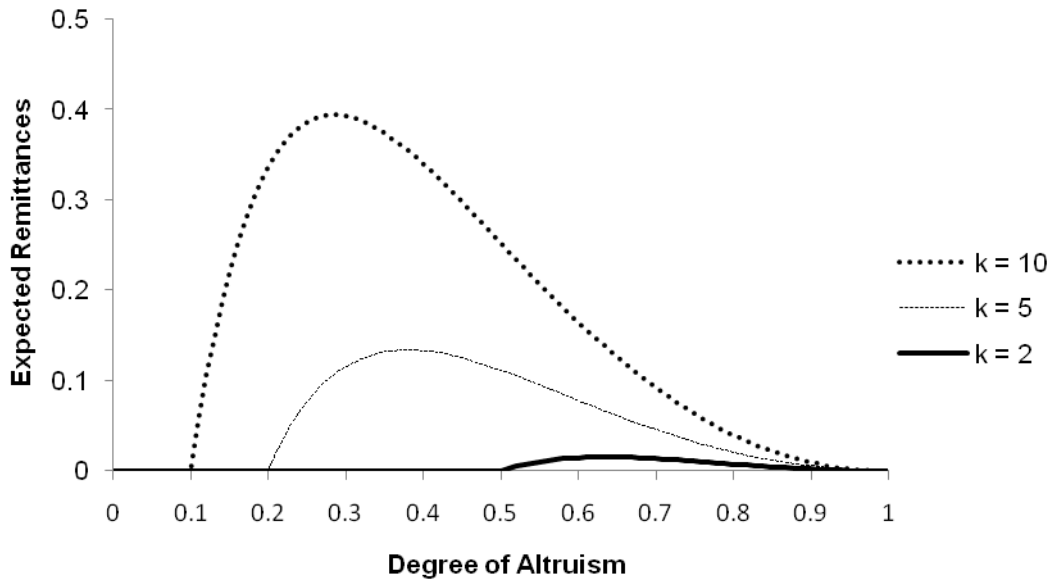**Fig. 4** Expected Remittances with Migration Costs

Note: The home country's income is assumed to be one.