

The Economics of Long-Distance Relationships

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Introduction

Couples may geographically separate because of job decisions, war, human capital decisions, imprisonment, and for many other reasons. However, separation does not necessarily mean the end of a relationship. For many couples, long-distance relationships are a reality. These relationships challenge the basic economic assumption that a marriage and a single household are synonymous; two-household marriages are an undeniable reality. This paper starts by exploring some of the statistical and qualitative evidence on long-distance relationships, and then examines a few economic models of households split due to migration. Finally, I develop an economic model of long-distance relationships in college students, and conclude by discussing my findings. By investigating the economics of long-distance relationships, this paper attempts to illustrate some of the limitations and weaknesses of accepted marriage decision-making models.

Previous studies have looked at how commonplace long-distance relationships are. Rindfuss and Stephen (1990) used U.S. census data to estimate the percentage of men and women who are married but not cohabitating with their spouse (see Figure 1). One of the interesting patterns they found was a large difference between white and black Americans; in some cases, married blacks were three times more likely than their white counterparts to be living apart. The likelihood of noncohabitation in marriage also decreased with age. The authors suggested this may be the result of incarceration and military service affecting a disproportionate percentage of young people. They also argued that noncohabitation leads to separation, which would eliminate couples from samples in the later age ranges. Rindfuss and Stephen noted that this means there were more than a million married Americans not living with their spouses in 1980. They concluded that “cohabitation ought to be considered a variable in marriage rather than

part of the definition of it” (p. 261). This very finding challenges the previous marriage models accepted in new home economics.

Figure 1: Percentage of married Americans who lived apart from their spouse (for reasons other than marital discord)

	WHITE		BLACK	
Age and year	Male	Female	Male	Female
<i>Age 18-24</i>				
1960	7	5	14	12
1970	7	6	16	13
1980	6	4	20	13
<i>Age 25-34</i>				
1960	3	2	9	7
1970	2	2	7	6
1980	2	1	8	5
<i>Age 35-44</i>				
1960	2	2	7	5
1970	2	2	5	5
1980	1	1	4	4

Source: Rindfuss and Stephen (1990)

Rindfuss’s and Stephen’s findings appear to be on the low end of estimates about the prevalence of long-distance relationships. The Center for the Study of Long Distance Relationships (n.d.) estimated seven million American couples (married and unmarried) are in a long-distance relationships. Karp (2006) cited an estimate from Pistole, a professor at Purdue University, that approximately one-third of undergraduate American college students are in long-distance relationships. The Center for the Study of Long Distance Relationships estimated a quarter of American college students, and half of first-year college students, are in a long-distance relationship. They estimated that more than three-quarters of college students were once in a long-distance relationship. Looking outside of North America, Agesa (2004) found that one-

third of all Kenyan families consist of the husband and wife living separately. Clearly, long-distance relationships are prevalent across demographics.

Qualitative Research

There are many explanations as to why long-distance relationships might be increasing in occurrence. Levin (2004) suggested three explanations. First, longer life expectancies mean an increased chance of experiencing divorce, widowhood or separation from a partner, which Levin in turn empirically showed increases the chance that a person enters a long-distance relationship. Second, an increasing demand for higher-educated and more specialized workers means that it is harder for people to relocate and find acceptable jobs, increasing the chance that couples will become long-distance for labour market reasons. Third, Levin argues that increased travel and use of the Internet increase the likelihood that two people who live in different locations will fall in love.

Gross (1980) looked at marriages of “relatively affluent” couples where both the husband and wife worked but lived separately. She found that these long-distance relationships had their advantages and disadvantages, noting that “those couples who live this way, can, and do, list its advantages, but they do so thoughtfully, without conveying a sense of zest for the lifestyle” (p. 569). Couples noted that benefits of living apart allowed them to pursue their career freely, without having to coordinate with each other for leisure, meals, and bedtimes.

Karp (2006) noted findings of Pistole that long-distance relationships are stronger than normal relationships over six-month periods, as well as over two-year periods. Pistole suggested this is because of lower infidelity rates in long distance relationships, and that when long-distance couples are able to spend time together, they devote more attention to their relationship than standard couples.

International Migration and Long-Distance Relationships

Despite the importance of long-distance relationships, economic studies examining two-household families have largely focussed on remittance payments from migrants to their original household. There is relatively little literature looking at the reasons couples *choose* to live apart; the majority of literature on remittances tends to take the two-household situation as given, not as a choice variable.

Van Dalen, Groenwald, & Fokkema (2005) examined theories of remittances in an attempt to determine whether remittance payments from migrants to their original household were made out of altruism or self-interest.¹ As altruistic reasons for remitting are more intuitive, my paper explores the authors' explanation of why self-interested migrants may remit. The authors developed a model which predicts the likelihood that a migrant pays remittances, and another equation which determines the likelihood that another family member will migrate given the household has already sent one migrant abroad; however, much of the value of the paper comes from its elaborate discussion.

Van Dalen et al. argued that one reason a family will maintain households in two different countries is because of missing insurance markets. By spreading out, families are diversifying risk and insuring themselves against a bad event occurring in one of the countries where they maintain a household. If a bad event affects the home country, it is not likely to also affect the country of migration, so the family will be able to generate more utility in the bad state if they have two households than if they have one. Interestingly, the authors noted that remittance payments from the migrant to the original household would be made even in the absence of

¹ Using empirical data of emigration from Egypt, Morocco and Turkey to Italy and Spain to test altruistic and self-interest models, the authors were unable to determine which theory was more applicable.

altruism, as the migrant will want to insure himself against bad events happening in his new country. The authors assume there is some sort of implicit insurance “contract” between the migrant and family where regular payments must be made for a predetermined amount of time, after which the contract expires and no remittance payments are necessary.

One weakness with the model, however, is that it assumes both parties will stick to their “contract” despite an absence of altruism. The authors noted that strong family ties at the migrant’s destination may help reinforce the contract, and that the family could impose “sanctions” on the migrant such as denying the right of the migrant to return home, deny the migrant an inheritance, or not cooperate in the marriage. This creates the somewhat counterintuitive result that migrants will pay higher remittances to wealthier families than they will if their family desperately needs the money, as a wealthier family has stronger threat points against the migrant. Despite the threats mentioned by the authors, it is still unclear whether in reality they would be enough to enforce the insurance “contract” of a self-interested migrant, given the distance between their households.

Van Dalen et al. also tackled the question of whether higher remittance payments would induce family members to join the migrant at their destination. The authors prepared a chart,

Figure 2: Average emigration intentions by households receiving remittances

	EMIGRATION INTENTIONS IN (NO = 0, YES = 1):		
INDIVIDUALS LIVING IN MIGRANT-SENDING HOUSEHOLDS WHO:	Egypt	Morocco	Turkey
Received remittances	0.14 (+/- 0.01)	0.14 (+/- 0.02)	0.36 (+/- 0.03)
Did not receive remittances	0.12 (+/- 0.01)	0.07 (+/- 0.02)	0.24 (+/- 0.02)

Source: van Dalen, Groenwald and Fokkema (2005)

shown as Figure 2 above. The chart indicates a positive correlation between remittances and having a long-distance couple rejoin each other, especially in Morocco. The authors argued that in the case of Morocco, remittances serve as a signalling device which gives information to the family member at home that the foreign country provides strong income opportunities. However, the authors argued that for Egypt and Turkey, where the correlation was very weak, couples are more likely to reunite because of preferences and family ties than because of signalling devices.

An even more counterintuitive interpretation of remittance payments is outlined by Stark (1995), who argued that remittance payments are made by self-interested individuals in the absence of altruism in order to entice their family to stay at home. His model assumes two types of workers in a household: highly-skilled workers and low-skilled workers². Stark assumed both types of workers can earn a higher wage by migrating, but there is a cost of migrating such that, assuming employers have perfect information about the skills of migrants, the cost of migrating is prohibitive for low-skilled workers but not for highly-skilled workers. However, Stark assumed that employers cannot tell the difference between a highly-skilled and low-skilled migrant until after they start work. This means employers initially consider all workers from a given country to be of equal calibre. This missing information drives down wages for the highly-skilled migrants, and drives up wages for low-skilled migrants such that it entices low-skilled workers to emigrate. However, once migrants start work and the employer can sort migrants, then the wage for the highly-skilled migrants will rise, and the costs of immigration will force the low-skilled workers to return home. Thus, Stark argued there is an incentive for highly-skilled migrants to entice their low-skilled countrymen to stay at home in order to guarantee a higher wage from the start. To

² The model assumes that low-skilled workers are still employable, as there would be no advantage to emigration for low-skilled workers if they could not earn a wage at their destination

accomplish this, Stark's model assumes that highly-skilled migrants will work cooperatively with each other to pay off low-skilled workers with remittances. The value of each remittance would be less than the difference between the wages highly-skilled workers would make if they emigrated alone and the wage rate they earn when emigrating with low-skilled workers. However, it would be greater than the difference between the wages that the low-skilled workers would get initially if they migrated with the high-skilled workers, and the wages they would get by staying home. Thus, both parties will be made better off by remittances, resulting in the low-skilled workers staying home and the highly-skilled migrants earning higher wages. However, under the model remittances are only temporary because once highly-skilled workers are identified by their employers there is no incentive for them to continue remitting.

One of the pleasant implications of this model is that it increases allocative efficiency in light of asymmetric information. However, I believe there are three significant problems with Stark's model. First, it is unlikely that all highly-skilled workers will collude to pay off the low-skilled workers. The Coase theorem states that markets can reach their own Pareto-optimal outcome without outside intervention, but only applies if bargaining costs are negligible. Surely there would be significant bargaining costs if all highly-skilled workers from a given country or region were to reach an agreement about remittances (there would also be a significant free-rider problem of some highly-skilled workers not paying remittances because they believe other highly-skilled workers will still pay off the low-skilled workers). Stark's assumption that the highly-skilled workers can organize efficient remittance payments at no cost is therefore unreasonable.

The second problem with Stark's model is that it does not factor in any benefits from marriage. To be fair, Stark did not claim that his model should be applied to a married couple, but nonetheless his model can be examined from this perspective. One can hypothesize that Stark's

model implies that while there may be some sort of inherent value to being married or being in love, this value is not dependent on cohabitation. If one is to assume that cohabitation with a significant other carries benefits, then this needs to be factored into a highly-skilled migrant's decision on whether they are better off having their low-skilled partner stay at home.

The final problem with the model is that migration is assumed to be costly, yet returning home is free. Stark does not explain this counterintuitive assumption using empirical evidence, which is necessary given that the assumption is essential to explaining the model's behaviour. It may be that most migration costs are associated with things like job search and visa applications, which would support Stark's assumption. However, if transportation costs are significant, then the assumption of free counter-migration would be false.

There are other models of two-household migration where the inherent value of cohabiting with a loved one is incorporated, such as in the model developed by Agesa and Kim (2001). The authors included a "psychic cost" incurred by a household when it is split up. Their model focused on Kenyan families who choose to migrate from rural to urban areas in order to achieve better wages, and is highly grounded in empirical data. The model assumes one utility function for the family, based on consumption goods, household goods, subsistence costs and psychic costs. Consumption goods are purchased with wages, which are assumed to be earned exclusively by the husband and to be the family's only source of income. Wages are assumed to be higher in urban than in rural Kenya; however, jobs in rural areas are guaranteed due to scarce labour, while there is some probability p that a worker will obtain a job in urban Kenya.³ The price of consumption goods is assumed to be the same in rural and urban Kenya. Household

³ p increases with time spent in the urban area, as the authors argued that as the husband spends more time in the urban area, he gains a larger social network and is thus more likely of landing a job

goods are assumed to be produced exclusively by the wife, and it is assumed that household production is greater in rural areas as the wife has more labour to do on a farm than she does in a smaller urban household. Subsistence costs are assumed to be α if the household stays in the rural area, $\alpha + \gamma$ if the family maintains a rural and an urban household, and β if the family moves to the urban area. β is assumed to be greater than α for all families, and greater than $\alpha + \gamma$ for large families. The psychic cost is assumed to be 0 if the family stays together and some value δ when the family maintains two households.⁴

The model has an initial period where the family starts in the rural area, and a first and second period where the husband, or the entire family, can choose to move to the urban area. The authors identify four possible strategies. First, the family could stay in the rural area for all three periods. Second, the family could move to the urban area in the first period. Third, the family could move to the urban area in the second period. Fourth, the husband could move to the urban area in the first period, and the family could follow in the second period. The authors derive utility functions for each strategy in search of a dominant strategy. In the model, if β is high, p is low, or the difference between urban and rural wages small, the first strategy will be dominant. Otherwise, the first strategy will be inferior, as the family will choose to migrate sooner rather than later; this also means the third strategy is inferior to the second. Thus, the authors compare the second strategy with the fourth strategy to see which is dominant given that migration is desirable. If the psychic cost of separation is high, the second strategy is more likely. The second strategy is also more likely as p increases, as the couple will likely choose the second strategy when the expected wage gain from the husband's move is greater than the wife's loss of

⁴ The authors used data from the 1986 Urban Labor Force Survey to hypothesize what δ might be based on. The authors claimed that δ increases with number of children in a household, as well as with the age of the husband and wife, possibly due to increased interdependency with age.

household production from the move. A higher value of β , lower value of p , and higher difference in household production between rural and urban households increase the likelihood of the fourth strategy.

The strength of the Agesa-Kim model lies in its thoroughness, but its biggest weakness lies in the single household production function. Unlike the previous models discussed in this paper, the single household production function does not allow for examination of remittances, nor is it clear that both the husband and wife would prefer the same outcomes if given individual utility functions. Furthermore, while the wife in the long-distance relationship may be able to enjoy consumption goods through remittance payments, it is unclear how the husband would be able to enjoy household consumption, given that it is assumed all household goods are produced by the wife. If the husband does no housework this may reflect on his quality of living when living apart; who does his cooking and cleaning? The assumption that an urban job is not a certain outcome for the husband is also problematic; the wife can provide subsistence for the family through her household production, which includes agricultural duties on the farm, but the husband presumably must pay rent in urban Kenya. How he does so if he is unemployed is left to the imagination. A further problem is that the model does not examine the possible strategy of the husband migrating in period one, with his family staying in the rural area for all periods.

Agesa (2004) attempted to address some of these problems. He examined the possibility of a “permanent” long-distance relationship.⁵ He stressed that permanent migration by the husband does not necessarily mean the end of his marriage, as husbands often return home upon retirement, illness, or unemployment. The 2004 model explicitly includes a remittance payment, equal to the husband’s urban wages minus his cost of living alone in urban Kenya, all divided by

⁵ Agesa finds that the average time of separation in this circumstance is 23 years.

the rural price level. Agesa also improves on the 2001 model by explicitly assuming the family is risk-neutral, removing the possibility that a risk-averse family may tend to stay in rural Kenya and that a risk-loving family may tend to migrate to urban Kenya. The 2004 model is very similar to the 2001 model, but has a different set of strategies. First, the family could stay in rural Kenya. Second, the husband could move to urban Kenya in the first period and the family could join him in the second. Third, the husband could move in the first period with his family staying in rural Kenya permanently. If the benefits of migration are high enough, the first strategy will be ruled out. Because of the type of utility function Agesa used,⁶ he found that the second strategy is preferable to the third as psychic costs increase, leading to the assumption that psychic costs have a greater impact on utility in the second scenario than in the third. Agesa does not try to explain this qualitatively, but it may make sense that if the family knows that separation will be permanent, they will learn to cope with the separation rather than constantly anticipating being reunited.

The larger the family size, the more likely it is that the third strategy is chosen. The larger the difference between the wife's rural and urban household production, the more likely it is that the third strategy is chosen. Also, the larger the remittance payment, the more likely it is that the third strategy is chosen. This is similar to Stark's findings, but reached through maximizing a household utility function, rather than the husband acting in his own self-interest. Agesa also partially addressed the problem of the unemployed husband with no wife to cook and clean, arguing that the second strategy is likely if the cost of living for the husband in urban Kenya is small; this is often the case if the husband has extended family he can live with in urban Kenya. Agesa also expanded on the psychic cost, noting that it not only increased with the number of

⁶ Agesa used a Von Neumann-Morgenstern expected-utility function discounted at a rate ρ between 0 and 1

children, but that children born before their father's departure contribute more to the cost than children born after.⁷ In Figure 3, Agesa uses data from the 1986 Urban Labor Force Survey to examine whether different factors are more likely to lead to an entire family migrating (negative coefficients) or just the husband migrating (positive coefficients). These figures are helpful in further understanding motivations behind long-distance relationships.

Figure 3: Estimates for determinants of two-household migration

Independent variable	Mean	Estimated coefficient	T-statistic
Constant	1	2.2443	2.1237
Husband's age at migration	26	- 0.0296	1.6332
Wife's age at husband's migration	20	- 0.0563	- 1.8367
Husband's high school education	0.456	0.8935	3.3951
Husband's college education	0.139	- 1.2873	- 4.7529
Wife's high school education	0.408	0.0764	0.3233
Presence of children at migration	0.754	- 0.7395	- 2.986
Number of dependents	2	0.8735	3.9175
Destination city population	398,000	0.6239	4.7844
Previous urban residence	0.226	- 0.3479	- 2.4577
Remittance	150	0.1356	2.3471

Source: Agesa (2004)

Modelling Long-Distance Relationships in University Students

While the economic models relating to migration can be very useful in studying long-distance relationships, my research did not uncover any economic models of long-distance relationships among university students. There are two reasons why this would be worthwhile to model. First, long-distance relationships are commonplace among college students, so a proper model could help explain why this reality exists. Second, the existing models of long-distance

⁷ Agesa does not explain how children are born after the father migrates; it could be that these children affect the psychic cost less because they are more likely to be fathered by another man

relationships compare long-distance marriages to marriages where couples cohabit, but cohabitation among college students in standard relationships is less common. Thus, comparing long-distance relationships among college students to normal college relationships where couples live in close proximity but do not cohabit can better illustrate the distinct qualities of a long-distance relationship.

This paper will construct a simple model of a university student choosing whether to enter a long-distance relationship or not. My model is centred around a male university student M . There is a local female university student F_L living in the same city, and a female F_D located in some distant city.⁸ For simplicity's sake, I assume that both females are indifferent to dating or not dating M . The model uses findings from van Horn et al. (1997) which found that intimacy was the biggest factor in a romantic relationship. Consistent with their findings, I assume that M gains an intimacy benefit i_L if he enters a relationship with F_L , while he gains an intimacy benefit i_D if he enters a long-distance relationship with F_D . Note that $i_L > i_D$ because van Horne et al. look at nine different types of intimacy, finding long-distance and normal relationships to be equal on six levels and long-distance relationships to be inferior on three levels. This assumption is essential to the functioning of my model, and has been disputed by other researchers.⁹ However, I use van Horne et al.'s findings because their data set consists entirely of college students. I assume that all relationships involve noncohabitation, and thus there is no benefit of shared public goods in the relationship. I assume that M has some income Y , which he divides in some

⁸ I assume heterosexuality and male-centred model for simplicity; the model could be adjusted to incorporate homosexuality, bisexuality, or a female- or intersex-centred model.

⁹ Guldner and Swensen (1995) found no difference between intimacy quality of long-distance relationships and normal relationships.

proportion C spent on consumption goods, and some proportion D spent on dates with F_L .¹⁰ My model assumes that M incurs the costs of dates based on Belk and Coon's (1993) economic exchange model of gift giving derived from data collected from college students, who found that males traditionally pay for dates. Given that it is impossible for M and F_D to go on dates, even if in a relationship, it is assumed that $D = 0$ for a relationship between M and F_D (for simplicity, I assume away the communications costs of such a relationship¹¹). I assume that dating itself does not affect M 's utility; this is accounted for by i_L . I also assume that given that D is a significant proportion of Y , as students generally have limited income and dating can be expensive.¹² There is one more variable—the leisure time of M . I assume that leisure time, L , is a normal good and thus desirable. I further assume that M 's leisure time is negligible should he date F_L , while he has some leisure time L_D should he date F_D , consistent with the findings of Guldner and Swensen (1995) that people in long-distance relationships spent less time on their relationship than those in normal relationships. However, by remaining single M can achieve full leisure time L_F .

Thus, M has three possible strategies. M can remain single, enter a relationship with F_L , or enter a relationship with F_D . We can define his three utility equations:

¹⁰In other words, $C + D = 1$

¹¹ The validity of this assumption could be contested, but I believe communication costs are significantly less than the cost of dating. For example, the Center for the Study of Long Distance Relationships (n.d.) estimated the average long-distance couple talks on the phone for 338 minutes per month. At 5 ¢ per minute (offered by many phone cards), this amounts to \$16.90 per month, which is probably significantly less than dating costs.

¹² Recent estimates cited by Lester (2004) found that dating costs in the U.S. ranged from a coffee date at average cost \$7.37, to a romantic date at average cost \$314.68.

$$U_{\text{single}} = Y + L_F$$

$$U_L = (Y - D)C + i_L$$

$$U_D = Y + L_D + i_D$$

I now solve for the dominant strategy given different hypothetical situations, similar to the presentation of the two Agesa models. First, I will compare being single to dating locally. M will be more likely to date as the cost of dating decreases, his level of intimacy with the local female increases, his income decreases, and his enjoyment of leisure decreases. Second, I will compare being single to dating long-distance. M will choose to date if $L_D + i_D > L_F$. That is, the less time that is required to pursue a long-distance relationship, and the higher the level of intimacy in the long-distance relationship, the more likely M is to date. Interestingly, his decision is independent of income.¹³ Finally, we can compare dating locally to dating long-distance. Pitting the two utility functions against each other, we get:

$$YC - DC > Y + L_D - x, \text{ where } x \text{ is the difference between } i_L \text{ and } i_D$$

if M is to choose a local relationship over a long-distance relationship. Thus, M is more likely to date locally as income decreases, as the cost of dating decreases, as the value of leisure time decreases and as the difference between local and long-distance intimacy increases.

Thus, I find that male university students who have strong preferences toward consumption, and those with higher incomes, tend to prefer long-distance relationships to normal relationships. This is because dating costs function like a tax on local relationships; as income rises, the opportunity cost of dating locally (as opposed to dating long distance) increases. The

¹³ This is because I assume costs of a long-distance relationship are negligible. If they are significant, this decreases the likelihood of long-distance dating.

male university student will prefer long-distance relationships to being single if they can gain a significant level of intimacy benefits without having to sacrifice much leisure time.

Discussion

It is clear from statistical evidence that long-distance relationships are prevalent in a variety of forms and settings. There are some strong economic models of split-household migration, which challenge the assumption of traditional marriage models that cohabitation is a given in marriage. These models force us to reconsider what marriage is, and consider alternative benefits from marriage, such as a form of insurance to replace missing markets. Furthermore, simple economic models like the one I produced for university students can help explain why long-distance relationships occur. My finding that long-distance relationships tend to increase with income and preferences favouring consumption are consistent with the findings of the majority of split-household migration models, which find money is the underlying reason for a long-distance relationship occurring. When the potential financial gains from a long-distance relationship exceed the cost to the relationship (Agesa's psychic cost or my intimacy benefit), a couple will enter a long-distance relationship. The existence of a cost on a long-distance relationship is disputed by the unusual findings of Stark, who argued that self-interested individuals may prefer some sort of long-distance relationship over living together. Stark's model indicates that the value of a relationship is entirely independent of cohabitation, consistent with the findings of Guldner and Swensen but contrary to the findings of van Horn used in my model. However, there are elements of Stark's model in my model, in that the male may find a long-distance relationship preferable to a local relationship, and may be willing to pay his girlfriend to stay away with some sort of remittance in order to avoid the costs of dating and decreased leisure time. Further research could be done into the preferences of the females in my model, in order to generate their utility functions for a more complete model.

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