Multi-Generational Exchanges in Taiwan and the Philippines:  
A Social Network Approach

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Hopkins Population Center Papers on Population  

WP 99-06  

1999

An earlier version of this paper was presented at 1999 Annual Meeting of the Population Association of America,  
March 25-27, 1999, New York, NY. This research was funded in part by the American Sociological Association’s  
Fund for the Advancement of the Discipline Award supported by the National Science Foundation.

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Introduction

A large research literature has emerged on resource transfers between adult children and their aging parents, and the potential effects of declining fertility rates, increasing migration and female labor force participation rates, and rising affluence on the nature and direction of these flows (Caldwell, 1982; Mason 1992; O’Rand and Agree 1993). The parent-child relationship is certainly unique among kin ties, and carries with it particularly strong normative obligations for mutual support. However, resource transfers in families occur in a wide range of circumstances, and can involve a variety of other kin (e.g., Cox and Jimenez 1998). Motivations for the involvement of a broader network in family transfers are especially strong in environments where state or market based alternatives for economic support (e.g., social security systems, private pensions, or formal credit markets) or social and health support (e.g., child care providers or home health care agencies) are not available or accessible. This study focuses on these larger kin networks in order to better understand the nature of family exchange.

In this paper we examine the resource transfers among multiple generations, using social network analysis tools. Our goal is to develop a set of standardized, parsimonious measures useful for understanding family exchange networks and making cross-cultural comparisons. We make use of rich, comparable data from Taiwan and the Philippines to examine the direction and intensity of transfers among multiple generations in families, thus expanding the existing literature on aging and family transfers by examining exchanges with other kin apart from parent-child dyads.

This approach adds to the current body of knowledge on family exchange in at least three ways. First, data on intergenerational transfers are often difficult to present and interpret. Transfers involve multiple actors, multiple currencies and multiple directions. Social network measures are designed to capture connections among multiple actors and can efficiently characterize the directionality of resource flows and the multiple currencies being transferred. A second benefit is that this approach strengthens a currently weak empirical knowledge base of how the extended family functions. A focus
on dyadic transfers cannot answer questions about how and when the extended family acts as a “safety net.” Finally, broadening the scope of analysis beyond parent-child dyads sheds light on the role that older parents play in the family economy. Older family members may assume a far greater role than can be assessed in studies that focus only on the degree to which older persons are supported by their adult children.

**Background**

The literature on family exchange predominantly consists of studies of parent-child transfers to the detriment of understanding transfers with other kin. This focus may have developed because, after the conjugal relationship, the parent-child bond is the primary source of support within families, as well as one of the most stable and enduring. The rules and actions that represent other family obligations tend to show more variation across cultures. For example, a review of sibling relationships across a number of countries finds that in many nonindustrialized countries there is a great deal of interdependence among adult siblings both in terms of expectations for support and actual resource exchanges (Cicirelli 1994). In contrast, in industrialized countries sibling relationships tend to be discretionary, varying by “the closeness of the relationship between a particular pair as well as their proximity and competing commitments and responsibilities” (Cicirelli 1994: 11; see also Wenger 1997). Within industrialized societies the roles of extended kin can be important for certain subgroups, such as racial and ethnic minority groups, though the evidence is often contradictory (see Groger and Kunkel 1995 for a review), single mothers of young children (Marks and McLanahan 1993), and older persons without living children (Wenger 1997).

The Philippines and Taiwan serve as interesting cases to examine exchange patterns in kin networks. Formal institutional sources of support, such as social security or private pension plans are not available to the majority of the older population in these countries though the structure of pension receipt differs. In Taiwan, those with pension income are increasingly likely to be in annuitized pension programs, while in the
Philippines pensions are mostly lump-sum payments received upon retirement, most of which dissipates in a very short time, leaving older persons with no outside sources of income.

Further, both countries are characterized by strong norms of filial support (Domingo 1995; Lopez 1991; Thornton and Lin 1994) that are expressed in a variety of forms from intergenerational coresidence to expectations for old-age support. Few older persons live alone in these countries, with proportions ranging from 6 percent in the Philippines in 1996 to 10 percent in Taiwan in 1989, and a majority of older parents (69 percent) in both countries coreside with at least one child (Hermalin, et al. 1990; Natividad and Cruz 1997).

However, the ways in which filial obligations are carried out also differ between the two countries. Normative responsibility for parental support favors the eldest married son in Taiwan, though there is evidence that this norm most strongly influences coresidence, and that financial and material transfers are more gender-neutral (Lee, Parish and Willis 1994; Ofstedal and Chayovan, 1999). In contrast, norms about transfers in the Philippines are gender-neutral (Mason 1992; Natividad and Cruz 1997). The process by which parent-child coresidence is determined also differs between the two countries. In the Taiwanese family, the eldest married son is still expected to take in an older parent while in the Philippines, older parents often rotate between their children’s households and coresidence appears to be more of a negotiated commodity, where parents support their children through coresidence as much as children support older parents in this manner (Asis and Domingo 1995; Lopez 1991; Thornton and Lin 1994).

What unites much of the published literature on family exchange in the Philippines and Taiwan is a focus on parent-child transfers, with few studies available on other kin. In addition to the findings on grandparenting above, there also have been two! in-depth community studies in the Philippines that indicate that adult siblings often provide concrete aid to each other, usually through parents rather than directly (Cicirelli 1994; Peterson 1990).
Findings from the authors’ prior work applying social network analysis to parent-child exchanges show that most older Taiwanese (82 percent) are involved in exchanges with their children, yet in only a small number of cases are more than half of the ties with children activated (Agree, Biddlecom, Valente, and Chang, 1998). In both the Philippines and Taiwan, older persons are often involved with caring for grandchildren (93 percent of Filipinos with a grandchild are regularly caring for a grandchild), and more than half of older persons are coresiding with grandchildren (Hermalin, Roan and Perez, 1998; Natividad and Cruz 1997).

A weak base of empirical evidence about transfers also is characteristic of the social network literature, where research has concentrated on the provision of social support to older persons without examining the contributions that they in turn make to their families and social networks. This research also is limited because studies have been conducted primarily in more developed countries, specifically, North America, Western Europe and Australia. This paper is aimed at redressing both imbalances by describing exchanges with kin beyond parents and children in two Asian countries.

Generalized exchange

Numerous perspectives on exchange relations point out that transfers are predicated upon the expectation of reciprocity—those who receive are obligated to give (Douglas 1990; Bearman, 1997). The nature of this reciprocity may either be direct (to the individual who initiated the transfer) or indirect (through norms that dictate giving within a social group). The latter form of reciprocity characterizes a system of generalized exchange and is governed by normative obligations among ‘classes’ of actors, such as children to parents or siblings and neighbors to each other (Ekeh 1974).

Generalized exchange may be represented by an open unidirectional chain in which A gives to B who gives in turn to C (A → B → C) (see Gillmore 1987). Although we refer to these as open chains, it is possible that the chain could be closed by a transfer from C directly to A. In this study, however, we have no information about transfers
among family members that do not involve the respondent, and therefore do not know whether these chains are in fact ultimately closed by a transfer among other kin. The concept of generalized exchange enables us to identify the degree to which older parents assume an active role in the family economy; participating in resource transfers from one family member to another, or one generation to another, rather than simply being passive recipients of support.

**Organization of the Paper**

This paper examines resource exchanges among generations using social network analysis, with a particular focus on cases in which older persons are at the center of pathways that connect resource flows with more than one generation. Three areas of family exchange activity will be explored: First, the overall level of transfer activity between older persons and four family generations (children, grandchildren, siblings, and parents) is examined by estimating the total volume of transfer flows and the proportion of all possible exchange activity that occurs. Second, to summarize more complex transfer patterns within the family network, we will estimate the number of two-step flows in a network (i.e., the pattern constituting generalized exchange) and the extent to which all possible generalized exchange activity occurs. Finally, we report the specific generational pathways of generalized exchange and make comparisons across the two countries.

**Data**

Data are from two surveys that provide extraordinarily rich information on transfers in family networks: the 1996 Philippine Survey of the Near Elderly and Elderly, conducted by the Population Institute of the University of the Philippines (UPPI), and the 1989 Taiwan Survey of Health and Living Status of the Elderly, conducted by the Taiwan Provincial Institute of Family Planning. The instruments for both surveys provide quite comparable information on personal networks and flows of support both to and from the older person, as well as broad information on characteristics of the respondents and their
family members. Both data sets constitute nationally representative samples with over 2,000 observations. These data are an important resource given that only one-fifth of studies of social networks of the elderly in the last decade have utilized data of 1,000 or more respondents (Litwin 1996). The analytic samples used for this paper are restricted to persons aged 60 and older. Sample sizes are 4,049 for Taiwan and 1,311 for the Philippines.

Like most survey data, these data are "ego-centric," meaning that all transfer information is collected with respect to the older person (ego). However, these data bridge standard ego-centric and sociometric methods of gathering information about social network structure because we have a complete enumeration of family members and how they are related to each other, even though information about resource transfers was obtained only for exchanges involving the respondent.

Survey questions were asked about transfers made within the past year. Since we cannot examine transfers over the full family life course, this definition will yield a conservative estimate of the extent of generalized exchange within families. Information on transfers was collected for all individuals with whom the respondent has exchanged resources in the last year. Detailed individual characteristics are available for children, parents, and parents-in-law. The data do not provide individual characteristics for grandchildren, siblings, other family, or non-relatives, but give total counts of grandchildren and siblings by sex, and information on others if they are actively engaged in providing or receiving transfers with the respondent. Information was elicited for three transfer currencies: money, material goods, and services (physical care, help with daily activities, and child care). For transfers of money and material goods, broad estimates of the total value of transfers over the course of the year were obtained. For transfers of services, a measure of frequency was provided.
Results

The size and structure of the family defines the number and type of connections along which resources may flow.\textsuperscript{3} Table 1 shows the availability of family generations by number and relationship for the Philippines and Taiwan. In both countries, the modal category is 3 living generations and the majority of older persons have between 2 and 3 generations in their kin networks (90 percent in the Philippines and 86 percent in Taiwan). Older persons in Taiwan are slightly more likely to be in families with only 1 generation than is the case in the Philippines (7 versus 4 percent, respectively).

The availability of and coresidence with specific types of family generations appear to be quite similar in both countries. Virtually everyone has at least one living child (about 95 percent), and almost three-quarters are living with an adult child. The majority of older persons also have living siblings (87 percent in the Philippines and 78 percent in Taiwan), yet a very small proportion have a sibling in their household (2.6 and 0.6 percent respectively). Not surprisingly, few of the older persons in these countries have living parents (6 percent) and an even smaller proportion coreside with their parents. Interestingly, there is a difference in the availability of grandchildren. In the Philippines, 93 percent have one or more living grandchildren available, compared with only 82 percent in Taiwan. Despite this difference, the overall proportion living with at least one grandchild is similar in both Taiwan and the Philippines.

Differences in grandparenthood between the two countries are partly due to the fact that Taiwanese Mainlanders (i.e., those who left Mainland China shortly after World War II and who constitute about one-fifth of all older Taiwanese) have a higher proportion of unmarried children, thus a lower proportion have grandchildren (Hermalin, Ofstedal and Chi 1992). Country differences also are due to differences in measurement of grandchild availability that particularly affect the estimation of kin availability for Mainlanders. We are able to measure the availability of grandchildren in Taiwan only for grandchildren living in the country. While less than one-tenth of one percent of native-
born Taiwanese parents report that they have no children living in Taiwan, about eight percent of Mainlanders have children only outside of the country (authors’ tabulations, not shown). Any grandchildren living with these children are not reported in the survey and we therefore slightly underestimate the total proportion of Taiwanese with grandchildren.

More pronounced are differences between Mainlanders and native born Taiwanese in availability and location of older generation kin, such as parents and siblings. For example, about 63 percent of Mainlanders have siblings compared to 82 percent of native born Taiwanese, and only 16 percent of Mainlanders have any siblings living within Taiwan versus 79 percent of native Taiwanese. Overall, less than one-third of Mainlanders have 3 or more family generations available compared with more than three-quarters of native Taiwanese. As will be discussed later, such differences within and across countries make it advisable to adjust the network measures for kin availability.

The numbers presented above indicate that in general the structure of family networks in terms of available generations and living arrangements is quite similar in the Philippines and Taiwan. The following sections will examine patterns of exchange activity that take place in these kin networks.

A social network approach considers transfer activity not only in terms of the persons involved, but in terms of ties, links, and pathways of resource flows. Ties, which are the smallest unit, represent a one way flow of resources between two people or generations. Links represent the presence of a tie in either or both directions. Pathways describe a two-step flow of resources from one person (or generation) to another through a third person (or generation), as is seen in generalized exchange. Each of these measures represents a different way of understanding exchange activity, and can be used to develop summary measures of exchange activity, such as the following measures:

Number of active ties among generations

The extent to which a given kin network is actively engaged in exchanges of support among its members may be quantified using counts and indices based on the
number of possible ties, links or pathways among network members that are activated. This can be done first as a simple count of active ties.

Figure 1 about here

The Number of Active Ties is computed by taking the sum of all in- and out-degree ties through which resources are currently being given and received:

$$\sum_{k=1}^{n} \left[ T^{-}(i,k) + T^{+}(i,k) \right]$$

where $T^{-}(i,k)$ represents an outflow of resources from the older person $(i)$ to generation $(k)$; and $T^{+}(i,k)$ represents an inflow from $(k)$ to $(i)$.

Figure 1 shows the univariate distribution of this count variable. Over 80 percent of Taiwanese and 95 percent of Filipinos have one or more ties with other generations activated, showing that some activation in both countries is quite common. In Taiwan, however, the distribution is positively skewed, with most of the exchange activity at the lower end of the distribution. In fact, over 50 percent of the respondents are engaged in only one transfer flow, and none of the sample is involved in the maximum possible number of flows (8). The Philippines, on the other hand, shows a much higher level of activity, with a more normal, flatter, and a less skewed distribution. The mean number of active ties is 4, and about one-third of the sample is engaged in this number of resource flows. Although the distribution of generations is similar in both countries, it is still useful to standardize the absolute counts by the number of available generations.

Exchange activation among generations

The Exchange Activation score provides an indicator of how fully engaged the respondent’s family exchange network is relative to the size and structure of the kin network. This score is a measure of personal network density. However, it is different from traditional density measures that (as a rule) exclude all ego-alter ties because these are the ties that define the network (Scott, 1991; Wasserman and Faust 1994). In the
present case we are not under such restrictions because the boundaries of our network are defined not by ego-alter exchanges, but by family relationships. Therefore, we can estimate a density measure that is akin to a sociometric density measure and that represents the proportion of all possible types of exchanges involving the respondent that are active in the network.

Figure 2 about here

The exchange activation score is obtained by dividing the number of active ties by the total possible in-and out-degree ties in ego's kin network:

$$\sum_{k=1}^{g} \left[ T^{-}(i,k) + T^{+}(i,k) \right]$$

$$2N$$

where the numerator is the count of active ties described above and the denominator is 2N, or twice the number of generations in the kin network (to allow for all bi-directional transfer flows along the link with each generation).

The exchange activation score is, by definition, bounded by 0 and 1. Even according to this standardized measure, the Philippine data shows greater activity, with an average of 64 percent of possible exchange activity taking place in the Philippines, compared with only 24 percent in Taiwan. Interestingly, only 2 percent of kin networks are fully activated in Taiwan and almost one-fifth (18 percent) are involved in no exchanges with family members. In the Philippines, the reverse is true--almost 15 percent of Philippine extended families have all possible ties activated and only 2 percent are completely inactive.

Exchange activation is based on a summary of the ties between older persons and family generations, and therefore is basically an aggregation of dyadic activity. We now move to a more distinctly network-based approach by looking at the pathways of resources that involve multiple family generations.

Number of open chains among generations
As described previously, generalized exchange is an open, unidirectional chain via which resources flow from one generation (A) to another generation (C) through the older person (B). Like the exchange activation variables, the intensity of generalized exchange can be estimated as a count or standardized according to the size of the kin network. The count is the number of paths along which resources flow from one generation of the network to another through ego.

The number of open chains is calculated by taking the sum of all paths through ego from one generation of the kin network (k) to other generations of the kin network (∇k), as shown in the formula below.

\[ \sum_{k=1}^{n} [T^+_k(i) \cdot T^-_{\nabla k}] \]  \hspace{1cm} (3)

where \( T^+_k(i) \) are flows to the older person (i) from generation k and \( T^-_{\nabla k} \) are flows out from the older person to other generations of the kin network (∇k). All paths that include both in- and out-degree flows to the same generation of the kin network are excluded, as these would be reciprocal, rather than generalized exchange flows.

Figure 3 shows the distribution of the number of open chains. Here there is an even greater difference between the two countries in the amount of activity. The average number of open chains is more than 2 in the Philippines, but a miniscule 0.09 in Taiwan. Much of this difference is because about 90 percent of older Taiwanese are involved in no generalized exchange, and the maximum number of pathways in which any family is engaged is only 3. In contrast, about 85 percent of Filipinos are at the center of one or more open chains, with a maximum of 12, though numbers above 4 are relatively uncommon.
Generalized exchange activation among generations

To standardize the measure by the size of the kin network, it is divided by the maximum number of possible pathways by which ego can connect alters in the kin network (in this case, generations) to each other.

\[
\text{Generalized Exchange Activation} = \frac{\sum_{k=1}^{N} [T^+_k(i) \cdot T^-_{rk}]}{(N \cdot (N - 1))}
\]

Again, Figure 4 shows that levels of generalized exchange activation are much higher in the Philippines than in Taiwan, though in neither country is more than half of the possible generalized exchange activity taking place. On average about 40 percent of the possible activity is going on in the Philippines, versus only 2 percent in Taiwan. In addition, almost 10 percent of Philippine extended families are fully activated, while virtually none of the Taiwanese sample shows these high levels of activation.

Patterns of generalized exchange by specific pathways

Given the dramatic differences between these two countries in the levels of activity and the amount of generalized exchange taking place, it is useful to examine resource transfers according to flows among specific relations.

Figures 5a and 5b provide further evidence of differences in nature of generalized exchange in Taiwan and the Philippines. These figures show the percentage distribution
of generalized exchange among generation types. Although the older respondent is always at the center of these pathways, for the sake of simplicity, flows are shown by the types of kin with whom they originate and end. Figure 5a indicates that generalized exchange in Taiwan is quite concentrated. Most generalized exchange originates from adult children with the major recipients being grandchildren (84 percent). The second most common pattern in Taiwan is the exact reverse: 8 percent of resources move from grandchildren to the older person to adult children. An additional 4 percent of flows connect adult children to the older person’s parents, and another 3 percent to the older person’s siblings.

Figure 5b shows a stark contrast in the Philippines, with broader activity and a more even distribution of resource flows. Overall, 57 percent of these multiple flows move upward among generations and 43 percent move downward through generations. The most common patterns of generalized exchange are from adult children to the older person’s siblings (34 percent) or from adult children through the older person to grandchildren (27 percent). Three of the four remaining patterns involve siblings; for example, 11 percent of open chains are from grandchildren to the older person’s siblings. Grandchildren are also involved in many pathways, not only as recipients from the older respondent (their grandparent) but also in providing resources. In fact, one-fifth of all generalized exchange begins with a transfer from the grandchild to the older person.

Discussion

The goal of this study was to expand the existing literature on aging and family transfers by examining exchanges with other kin apart from parent-child dyads. Drawing on measures from social network analysis, we examined exchanges among multiple generations in an older person’s kin network in three areas: 1) the overall level of transfer activity between older persons and family generations; 2) the level of two-step transfer patterns (e.g., from adult child to parent to sibling), also referred to as generalized exchange; and 3) the specific directions of generalized exchange patterns.
Findings show that although the availability of and coresidence with specific types of family generations appear to be quite similar in both countries, there are substantial differences in the amount and nature of family exchanges. On most measures, older persons in the Philippines are more likely to be engaged in transfer activity, and to be exchanging resources with a greater number of family members across a wider variety of relations.

Over 80 percent of Taiwanese and 95 percent of Filipinos have one or more ties with other generations activated, showing that the exchange of familial support in both countries is quite common. This is in contrast to studies in the United States that have shown that the proportion of older adults involved in transfers is fairly low. Most older persons have reported that they are not engaged in the exchange of time or money help with their children (Hill, et al., 1993), and relations with adult siblings and more distant relatives are even more limited (Cicerelli, 1994). However, the level of activity differs between the two countries. In Taiwan, over 50 percent of the respondents are engaged in only one transfer flow, while in the Philippines there is a much higher level of activity, with an average of 4 ties activated. When this measure is standardized by the availability of generations within the family, the Philippines also shows greater activity. An average of 64 percent of all possible exchange activity occurs and almost 15 percent of Filipino families report that every generation is involved in both giving and receiving resources with the older respondent. In Taiwan, an average of only 24 percent of exchange activity is taking place and almost one-fifth (18 percent) are involved in no exchanges with family members.

The lower intensity of exchange activity in Taiwan may in part be due to greater levels of alternative support available in that country. The availability of independent sources of wealth among older persons in Taiwan such as pension or wage income has been shown to be indirectly related to involvement in exchanges with children and is likely to affect exchanges with other kin as well (Agree, Biddlecom, Valente, and Chang, 1998).
Involvement in generalized exchange shows an even greater difference between the two countries in the amount of activity. While over 90 percent of Taiwanese are involved in no generalized exchange, about 85 percent of Filipinos are at the center of one or more generalized exchange pathways. Standardizing this measure for the potential activity in the kin network shows that, although in neither country is more than half of the possible generalized exchange activity taking place, on average about 40 percent of all possible activity occurs in Philippine families versus only 2 percent in Taiwan.

When we examine the specific kin involved in these flows, we understand some of these differences more fully. Generalized exchange in Taiwan is quite concentrated within the kin network, with almost all of the pathways connecting adult children to the grandchildren in the family. Eighty-four percent of these pathways are downward, connecting transfers received from adult children to resources given to grandchildren, while only 8 percent are upward, from grandchildren to adult children. In contrast, the Philippines shows much more broadly distributed exchange activity, with greater involvement of other generations, most importantly siblings. Although most generalized exchange originates also with children, the most common pathway is from adult children to the older person’s siblings (34 percent) and secondarily from adult children through the older person to grandchildren (27 percent). Grandchildren are involved in many pathways, not only as recipients from the older respondent (their grandparent) but also in providing resources.

The concentration of generalized exchange in Taiwan into parent-child pathways confirms the tenacity of filial piety among Chinese families and their strong vertically defined system of obligations. This becomes particularly clear when compared with the broader distribution of generalized exchange among Filipino families, a pattern consistent with the more symmetrical obligations that characterize the Philippine family system (Ofstedal and Chayovan, 1999). In particular, our findings show that the strong bonds among siblings reported for younger ages in the Philippines (Peterson, 1990) appear to endure over time and provide an important connection for the provision of support even at older ages.
Some of the differences in family exchange activity between the Philippines and Taiwan could be due to the influence of the more restricted kin availability among Mainlanders on Taiwanese patterns of exchange. It is true that older Mainlanders have fewer family generations, and fewer living in Taiwan, compared to native Taiwanese. Mainlanders also have much less exchange activity in absolute terms: for example, 43 percent of Mainlanders have no Active Ties compared to only 10 percent of native-born Taiwanese and a slightly higher proportion have no Open Chains (96 versus 91 percent, respectively) (authors’ tabulations, not shown). However, differences between Mainlanders and other Taiwanese diminish significantly once measures have been standardized by number of family generations. The majority of both Mainlanders and native Taiwanese have similar patterns of both Exchange Activation and Generalized Exchange Activation, and the majority of generalized exchange activity is concentrated among children and grandchildren, regardless of migration history. Thus, the distinctive family exchange patterns that distinguish Taiwan and the Philippines remain even when the influence of historically unique subgroups, such as the immigrants from the Mainland, is taken into account.

Conclusion

Standardized measures of family exchange provide an effective way to make cross-national comparisons of the operation of the family as an institution for resource exchanges. Generalized exchange may be more common in societies with higher poverty levels or where the lack of stable market alternatives make family and friends the main means by which social and economic support is provided. In this case, a focus solely on dyadic transfers between isolated pairs of parents and children cannot answer larger questions about what the family “safety net” actually looks like, the social changes or economic shocks that may weaken it, and the role the older persons play in the distribution of family resources.
Two additional areas of future research deserve consideration. First, further empirical evidence of family exchange is needed for a larger number of societies in order to examine critically the assumption that the extended family always functions as a support network for older persons in developing countries (see Cain’s (1982) criticism of this assumption for South Asian families). The research literature still lacks a strong empirical base documenting the variability within ideal-type family system models (such as strong norms of filial obligation within Asian families). More cross-national comparisons would certainly be a fruitful approach, and network measures can provide the needed standardization of exchange activity for analysis. The very nature of network measures ensures a uniform manner of empirical description for comparison of family exchange across countries.

Another goal for future research is to use these standardized measures of family network activity as explanatory variables for such important outcomes as physical or mental health status. The literature on the effects of social support on health is vast, especially for Western countries, and social support has consistently been found to be a buffer against morbidity and mortality (see House, et al. 1988 and Silverstein and Bengtson 1991, among many others). Network measures of resource flows would further clarify the relationship between social support and individual well-being. In addition, characteristics of an older person’s familial exchange network and their position in that network could serve as independent predictors of other important life course events such as retirement timing or migration (see Wenger 1997) or the adoption of formal care services (long-term and acute) and assistive technologies.

Measures such as those described in this study also can be adapted and used to examine exchange patterns among other family members at various stages of the family and individual life course. With the increasing number of nationally-representative data sets that include information on family exchange activity, the research community is afforded new opportunities to understand how family exchange systems are constituted, and how the resources they make available might be connected to individual outcomes.
End Notes

1. The choice of these specific categories was made after estimating measures with a "residual" category for other relatives and non-relatives. It became rapidly clear that restricting the estimation to clearly defined categories of kin would facilitate interpretation and presentation of results. These estimates showed, however, that when other, more distant relatives are included, the same general patterns appear, with the differences in exchange activity even more pronounced between the two countries. In further work, we intend to test the sensitivity of our results to the addition of specific categories of other relatives and non-relatives, to understand the relative importance of each specific relationship.

2. One could argue that any differences between the Philippines and Taiwan in level of exchange activity are a result of reporting differences in the two countries. Though the questions on transfers are similar in both surveys, respondents in Taiwan may be more likely to engage in face-saving responses about transfers since there is such a strong norm of adult children, especially sons, supporting parents in old age. While this argument is persuasive with respect to transfers between children and parents—that is, parents would be more likely to say that their children give them money, material items, or care even when the children do not—the argument is less persuasive when it comes to exchanges with other generations. Furthermore, one study found that face-saving is, in fact, in the opposite direction than one would expect: where there were discrepant reports of transfers between parents and children in Taiwan (one-third or less of cases), the pattern tended to be children "over-reporting" transfers to or from parents rather than the other way around (Roan, Hermalin and Ofstedal 1996).

3. Coresidence may play an important role with regard to exchange activity, but it does not appear to determine exchange activity. In earlier network analyses of the 1989 Taiwan data, we observed that a higher proportion of parents living with children have no exchanges with their non-coreresident children (38 compared with 29 percent) (Agree, Biddlecom, Valente and Chang 1998). However, the household is not the sole location of parent-child transfers. Among those with both coresident and non-coreresident children, fully two-thirds of all generalized exchange pathways cross household boundaries, with most probably being transfers from children outside the household to those living with the older parent. The remaining pathways are evenly split between pathways solely within or outside the household. Thus, while coresidence plays a role in exchange activity, at least as far as exchange among parents and children is concerned, it does not explain all exchange activity.
References


Roan, Carol L., Albert I. Hermalin and Mary Beth Ofstedal. 1996. Intergenerational Contact and Support in Taiwan: A Comparison of Elderly Parents and Children’s Reports. Elderly in Asia Research Report No. 96-36, University of Michigan, Ann Arbor, MI.


Table 1. Number of family generations by availability and coresidence: Persons 60 years and older

<table>
<thead>
<tr>
<th>Number of family generations available:</th>
<th>Philippines</th>
<th>Taiwan</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.3 %</td>
<td>2.3 %</td>
</tr>
<tr>
<td>1</td>
<td>3.6</td>
<td>7.0</td>
</tr>
<tr>
<td>2</td>
<td>16.2</td>
<td>23.8</td>
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<tr>
<td>3</td>
<td>74.2</td>
<td>62.0</td>
</tr>
<tr>
<td>4</td>
<td>5.7</td>
<td>4.8</td>
</tr>
</tbody>
</table>

Proportion with each type of kin*:

<table>
<thead>
<tr>
<th>Type of kin</th>
<th>Philippines</th>
<th>Taiwan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children</td>
<td>95.6</td>
<td>94.6</td>
</tr>
<tr>
<td>Parents</td>
<td>6.3</td>
<td>6.3</td>
</tr>
<tr>
<td>Siblings</td>
<td>87.1</td>
<td>78.0</td>
</tr>
<tr>
<td>Grandchildren</td>
<td>92.5</td>
<td>82.0</td>
</tr>
</tbody>
</table>

Proportion coresiding with each type of kin*:

<table>
<thead>
<tr>
<th>Type of kin</th>
<th>Philippines</th>
<th>Taiwan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children</td>
<td>70.4</td>
<td>71.0</td>
</tr>
<tr>
<td>Parents</td>
<td>0.6</td>
<td>1.4</td>
</tr>
<tr>
<td>Siblings</td>
<td>2.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Grandchildren</td>
<td>57.5</td>
<td>51.5</td>
</tr>
</tbody>
</table>

Sample size 1,311 4,049

* Categories are not mutually exclusive

Sources: 1996 Philippine Survey of the Elderly and Near Elderly and 1989 Taiwan Survey of Health and Living Status of the Elderly
Figure 1

\[ \sum_{k=1}^{n} [T_{k}^{-}(i,k) + T_{k}^{+}(i,k)] \]

<table>
<thead>
<tr>
<th></th>
<th>Taiwan</th>
<th>Philippines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1.11</td>
<td>3.59</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.77</td>
<td>1.29</td>
</tr>
<tr>
<td>Minimum</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Maximum</td>
<td>4</td>
<td>8</td>
</tr>
</tbody>
</table>

Number of Active Ties: Generational

Graph showing the distribution of active ties for Taiwan and the Philippines.
\[ \sum_{k=1}^{n} \left[ T^{-}(i,k) + T^{+}(i,k) \right] / 2N \]

<table>
<thead>
<tr>
<th></th>
<th>Taiwan</th>
<th>Philippines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.22</td>
<td>0.64</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.16</td>
<td>0.21</td>
</tr>
<tr>
<td>Minimum</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Maximum</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Exchange Activation: Generational
\[
\sum_{k=1}^{n} \left[ T_k^+ (i) \ast T_k^- \right]
\]

<table>
<thead>
<tr>
<th></th>
<th>Taiwan</th>
<th>Philippines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.09</td>
<td>2.14</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.30</td>
<td>1.67</td>
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<tr>
<td>Minimum</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Maximum</td>
<td>3</td>
<td>12</td>
</tr>
</tbody>
</table>

Number of Open Chains: Generational
Figure 4

$$\sum_{k=1}^{n} \left[ T_k^+ (i) * T_k^- \right] / (N * (N - 1))$$

<table>
<thead>
<tr>
<th></th>
<th>Taiwan</th>
<th>Philippines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>.02</td>
<td>.39</td>
</tr>
<tr>
<td>S.D.</td>
<td>.08</td>
<td>.28</td>
</tr>
<tr>
<td>Minimum</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Maximum</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Generalized Exchange Activation: Generational
Figure 5a

Patterns of Generalized Exchange: Taiwan, 1989

- Parents
- Siblings: 4% → 3%
- Children: 3% → .8%
- Grandchildren: 8% → 84%
Figure 5b

Patterns of Generalized Exchange: Philippines, 1996

Parents

1%

.4%

Siblings

2%

34%

8%

.4%

.3%

Children

11%

9%

7%

27%

Grandchildren