Migration, Remittances and Poverty in KwaZulu-Natal: A Structural Equation Model approach

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Migration and remittances are individual and household strategies aimed at alleviating poverty, although these strategies are not always available to the poor. This paper aims to determine the links between migration, remittances and poverty and investigates how migration and remittances may be employed to alleviate poverty and how poverty may hinder these strategies. The KwaZulu-Natal Income Dynamics Study (KIDS) data, which surveyed a panel of African households from the KwaZulu-Natal province in 1993, 1998 and 2004, are used to investigate these factors and relationships. Preliminary analysis of the KIDS data revealed that core households are significantly less mobile than their dynasty households, therefore increasing the probability that dynasties receive remittances, which in return may affect poverty. The link between migration, remittances and poverty is complex due to their reciprocal inter-dependence. Structural equation modelling (SEM) is a statistical technique for testing and estimating causal relations using a combination of statistical data and qualitative causal assumptions. This paper uses SEM to investigate the interplay between these factors and to shed light on the complexity of the relationships between migration, remittances and poverty.

Keywords: Migration, Poverty, Remittances, Structural equation model
JEL: J61, O15, 012

1. LITERATURE REVIEW

Poverty alleviation and eradication is central in many government strategies (Millennium Development Goals, New Partnership for Africa's Development, The Regional Indicator Strategic Development Plan, Accelerated and Shared Growth Initiative of South Africa and the new National Development Plan). Despite these strategies, the existence of Inter-Generational Transmission of Poverty hinders poverty alleviation strategies taken by policy

makers, individuals or households. Individual or household strategies aimed at alleviating the prevalence of poverty is via migration and remittances. In general, internal migration involves the movement of a person or household across defined boundaries for a specified period of time, while remittance flows represent any monetary and/or in-kind transfers that migrants send home to family members or other beneficiaries, be it via formal or informal channels (World Bank, 2005).

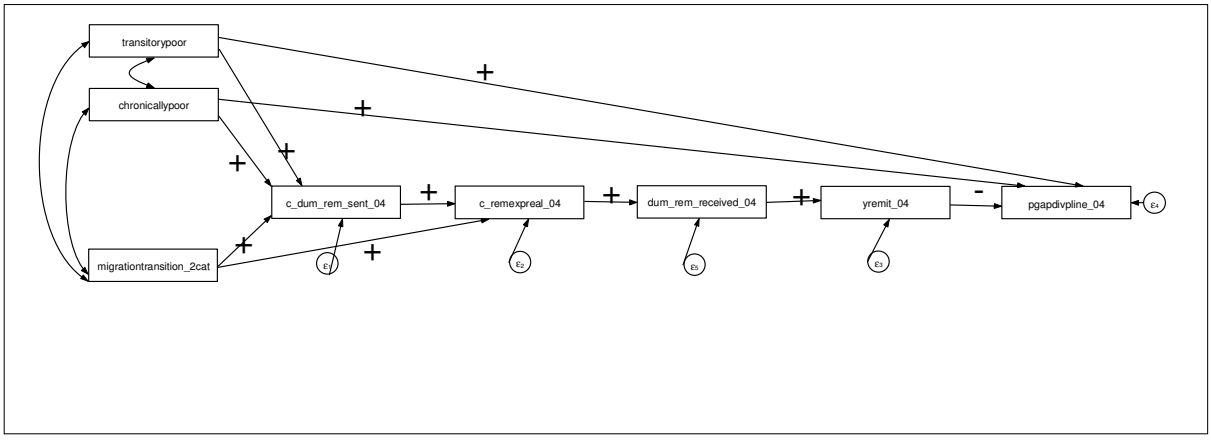
Although by definition these seem fairly simple, the links between poverty, migration and remittances are extremely complex. The "*New Economics of Migration"* theory recognises migration as a household rather than an individual decision, which forms part of a risk management strategy aimed at income diversification (Greenwoodt, 1985; Bilsborrow et al., 1987; Lauby and Stark, 1988; Junming, 1997; Avango, 2000; Kok et al., 2003). Household income is also diversified through the flow of remittances. Both migration and remittances are therefore used as poverty alleviation strategies. Despite the possibility of decreasing poverty, the level of remittances and the number of remittance receiving households in South Africa decreased markedly since 2000. The proportion of households receiving remittances decreased from 24.2% in 1993 (36.4% in 2000) to only 14% in 2008. The contribution of remittances to household income also decreased substantially, especially for the poorest households. For the poorest ten percent of households, remittances contributed 52.2% to household income in 1993, which declined to 33.5% in 2000 and to 8.1% only in 2008. (OECD, 2010: 34, 79). A possible explanation for this significant decrease in remittances, especially for lower deciles, may be the replacement of remittances by increasing government grants (OECD, 2010: 26).

Poverty (and vulnerability), migration and remittances have conflicting effects on each other: poverty creates an incentive to migrate, but also decrease the ability to migrate (Waddington, 2003: 4), while poverty may also increase the probability of receiving remittances, but also decrease the ability to send remittances. Research is therefore necessary to disentangle the links between migration, remittances and poverty. Structural equation modelling (SEM) is a method that can be used to better understand these conflicting relationships among these interdependent factors.

SEM is a multivariate technique combining aspects of multiple regression and factor analysis to simultaneously estimate a series of interrelated dependent relationships. SEM is a powerful statistical approach in that it combines the measurement model and the structural equation model into a simultaneous statistical analysis. SEM provides parameter estimates of the direct and indirect association between observed variables and tests how well a model explains covariance in the data (Kanji & Chopra, 2007). The purpose of this approach is to estimate the strength of the causal connections among the variables and to test the goodness of fit of the hypothesized model. This paper uses a measured variable path analysis (MVPA) model, where hypothesized structural/causal relations among directly measured variables are estimated (Mueller & Hancock, 2007). The causal hypotheses tested in this paper are shown in figure 1. One-headed arrows signify direct structural/causal effects hypothesized from one variable to another, while two-headed arrows denote hypothesized covariation and variation without structural specificity (Mueller & Hancock, 2007). The hypothesis path analyses tested in this paper is:

> A chronically poor background has a direct and -indirect positive influence on poverty in dynasty households. The indirect causal effect is via the influence on the decision to migrate and the decision and value of remittances sent by core households.

Figure 1: Theoretically hypothesized causal model



2. DATA & METHOD

This study uses the KwaZulu-Natal Income Dynamics Study (KIDS) data. KIDS is a longitudinal study that follows a random sample of individuals who lived in KwaZulu-Natal (KZN) in 1993 (KIDS overview, 2005). Those individuals interviewed in the 1993 wave of the study (known as the Project for Statistics on Living Standards and Development) (PSLSD) were re-interviewed in 1998 and again in 2004. In 1998 all the "core members" of the African- and Indian households interviewed in 1993, were re-interviewed. Due to aging and the effect of HIV/AIDS on these "core members", the 2004 wave also re-interviewed the "next generation" households (new households formed by the sons and daughters of the 1993 "core members") as well as "foster children" households of the 1993 "core" household members. This study combines both these newly formed next-generation- and foster headed households in a group called "dynasty" households. Although these dynasty households were only interviewed in the 2004 wave of the KIDS survey, it enables this study to link dynasty households to their original 1993 core household. By linking these households to their core counterparts, the influence of poverty dynamics and migration in the core households on their split-off dynasty households' poverty status can be examined.

The theoretical hypothesized model is presented in Figure 1 above. The total sample consists of 512 dynasty households. In those cases where a dynasty household originated from multiple cores, the dynasty household were duplicated to investigate the effect of both cores' backgrounds on the probability that the dynasty household will be poor. This resulted in the sample size of 512 dynasty households increasing to 576 observations. In those cases where one core household had multiple dynasties (for instance where two or three next-generation or foster children households that split-off from the same core and created their own households), the core household characteristics were duplicated and linked to each dynasty household. The maximum likelihood with missing values (mlmv) SEM estimation method in Stata 13 were preferred for the study since all the available observations that have observed values on at least some of the variables are used in the analysis. The hypothesised model includes both binary and categorical variables, and therefore the multivariate normality assumption in maximum likelihood models is violated. Given the binary and categorical variables, the normal maximum likelihood method must be

combined with robust standard errors (vce(robust)) (Kupek, 2006) to ensure SEM performs quasi maximum likelihood estimation where the standard errors are estimated in a manner that does not assume normality. Because the hypothesized model includes variables that are not normally distributed, this method may be a good option to use. A drawback of this method is that it uses listwise deletion, therefore the estimation loses many observations (Acock, 2013).

The goodness of fit of a normal SEM model without binary or categorical variables can be tested by using post-estimation indices available in Stata. The chi-square test and its associated probability are used as an absolute index to evaluate the overall discrepancy between observed and implied covariance matrices. An insignificant probability associated with the chi-square test therefore indicates a good model fit. The root mean square error of approximation (RMSEA) with its associated confidence interval was also used as a goodness of fit diagnostic. The RMSEA is a parsimonious index to evaluate the overall discrepancy between observed and implied covariance matrices, while taking into account a model's complexity. Incremental indices, which asses the absolute or parsimonious fit relative to a baseline model, can also be used to determine the goodness of fit. An example of such index is Bentler's (1993) comparative fit index (CFI). As indicated above, the inclusion of binary or categorical variables in a SEM model violates the normality assumption. The use of robust standard errors results in the above mentioned goodness of fit measures not being available for evaluating a SEM model using Stata13. Only the standardized root mean squared residual (SRMR), which measures how close the model comes to reproducing each correlation, on average, is used as a measure of the goodness of fit. Since non-normal and categorical variables results in an inflated chi-square value (Gao, Mokhtarian, & Johnston, 2008) ; (Newsom, 2012), it usually leads to the unnecessary rejection of models. Despite this, the goodness of fit measures based on the normal maximum likelihood estimation is reported for reference purposes. Table 1 summarizes available goodness of fit measures and their required values for a good model.

Table 1: Goodness of fit measures

Goodness of fit measure	**Expected value**
chi-square	Must be insignificant
Comparative fit index (CFI)	> 0.95
Root mean squared error of approximation (RMSEA)	< 0.05
Standardized root mean squared residual (SRMR)	< 0.08

Poverty, migration and remittances and their dynamics/transitions were measured as follows:

POVERTY

To establish the levels of poverty, this paper uses poverty lines based on adult equivalent household sizes. Household expenditure is regarded as more stable over time than household income and a better indicator to use for poverty line comparisons (Ravallion, 1994: 15 & 81). This study therefore uses household expenditure as determinant of stable household income. The poverty line used is an amount of R250 per person per month (2000 prices). Van der Berg and Louw (2004) also used this poverty line in a study that focuses on the 1995 and 2000 Income and Expenditure Surveys (IES) of South Africa.

The monthly poverty line of R250 per person per month was inflated by using an annual consumer price index (CPI) published by Statistics South Africa (StatsSA). The paper also uses adult equivalent household sizes in conjunction with the individual poverty lines to calculate the household poverty lines which were then compared to household expenditure to identify the headcount, depth and severity of poverty in each household.

Poverty dynamics were examined by dividing core households in one of three categories: *never poor*, *transitory poor*, and *chronically poor*. *Never poor households* include core households that were non-poor in each of the three years under consideration (1993, 1998 and 2004). *Transitory poor households* are households that either moved into or out of poverty between the specific survey years here under consideration. These transitory poor cores were also subdivided into those transitory poor cores that either moved out of poverty or into poverty during two subsequent survey years. A Chronically poor household

refers to an extended duration in the incidence of household poverty. Chronically poor households experienced poverty in each of the three survey years (1993, 1998 and 2004).

MIGRATION

For the purpose of this study, a household was identified as a migratory household if that household moved out of the community they lived in any time during the five year period preceding the survey round: 1993-98 or 1998-2004. This migration question was only asked in the 1998 and 2004 questionnaires and not in the original 1993 PSLSD questionnaire. As a result, two migration observations were observed for core households, and one for dynasty households.

These migration observations were added to the panel data set to investigate migration transitions in core households and the effect thereof on the migration probability of a dynasty household. The fact that only two migration observations were measured for core households, the core household transitions were combined into two categories only: cores that *never migrated* between 1993 and 2004, and cores that *ever migrated* during the two different time periods.

REMITTANCES

The questionnaires of all three survey years asked whether there are "*any people who are not resident household members who send money, food, or any other kind of contribution to this household".* The value of both monetary and/or in-kind transfers received was recorded in all three survey years: 1993, 1998 and 2004. These are regarded as inward remittances. Households may also send remittances to family members, relatives or other beneficiaries not living in the household. Again, all three questionnaires asked whether there are "*any people who are not resident household members who receive money, food, or any other kind of contribution from this household"* and recorded the value of both money and/or in-kind sent transfers in all three of the survey years: 1993, 1998 and 2004. These transfers on the other hand are regarded as outward remittances. Dummy variables for both sending and receiving of remittances were coded.

The values of inward, outward and net remittances are calculated on a monthly basis for those households that sent or received remittances. For comparison purposes, the 1993 and 1998 values of inward, outward and net-remittances were inflated by using an annual consumer price index (CPI) published by Statistics South Africa (StatsSA). Due to the limited number of observations in the remittance transitions observed in the study, the transitions in core outward remittances were combined into only two categories: those who *ever sent* outward remittances and cores that *never sent* outward remittances.

3. RESULTS

Table 2 summarizes the summary statistics of the variables used in the hypothesized model. As shown in Table 2, there are a couple of variables, Never poor cores, Transitory poor cores, Chronically poor cores, Cores never/ever migrated, remittance sending (receiving) dummies and dynasty headcount poverty.

Table 2: Summary statistics of variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Never poor cores	446	0.386	0.487	0	1
Transitory poor cores	446	0.522	0.500	0	1
Chronically poor cores	446	0.092	0.289	0	1
Core never/ever migrated	446	0.173	0.378	0	1
2004 Cores sent remittances dummy	446	0.218	0.413	0	1
2004 Cores sent remittances value	446	80.147	217.808	0	1600
Dynasty received remittances dummy	576	0.248	0.432	0	1
Dynasty received remittances value	576	119.041	412.012	0	8000
Dynasty headcount poverty	576	0.231	0.422	0	1
Dynasty depth of poverty	576	0.083	0.183	0	0.873
Dynasty severity of poverty	576	0.040	0.109	0	0.763

The poverty measures indicate whether the core household is characterized as a non-poor, transitory poor or chronically poor core household. The never/ever migrated variable measures the migration transitions of core households over the 1993-2004 period, indicating whether the core household ever migrated during this period or not. The remittance dummies therefore identify the 2004 core households that ever sent remittances, while the remittance receiving dummy indicates which dynasties received

remittances in 2004. Lastly, the dynasty headcount variable indicates dynasties falling below the monthly poverty line. The remittance values summarizes the value of monthly remittances sent by core households (2004 Cores sent remittances value) and the monthly value of remittances received by dynasty households (Dynasty received remittances value). Both are measured in real South African Rand values. The last two variables reflect the depth and severity of poverty in the dynasty households.

Table 3 summarizes the correlation matrix of the variables used in the theoretical hypothesized causal model. As expected, given the intergenerational transfer of household poverty, there is a negative correlation between non-poor cores and poverty in dynasty households, and positive correlations between transitory- and chronically poor cores and poverty in dynasty households (bolded in Table 3). There is a negative correlation (although relatively low) between the migratory background of a dynasty household and the poverty experienced in the household. There is also a negative correlation between the probability that a dynasty household receive remittances (and the value of remittances received by the dynasty household) and poverty in the dynasty household (headcount, depth and severity). This paper therefore tries to estimate these causal relationships using structural equation modeling.

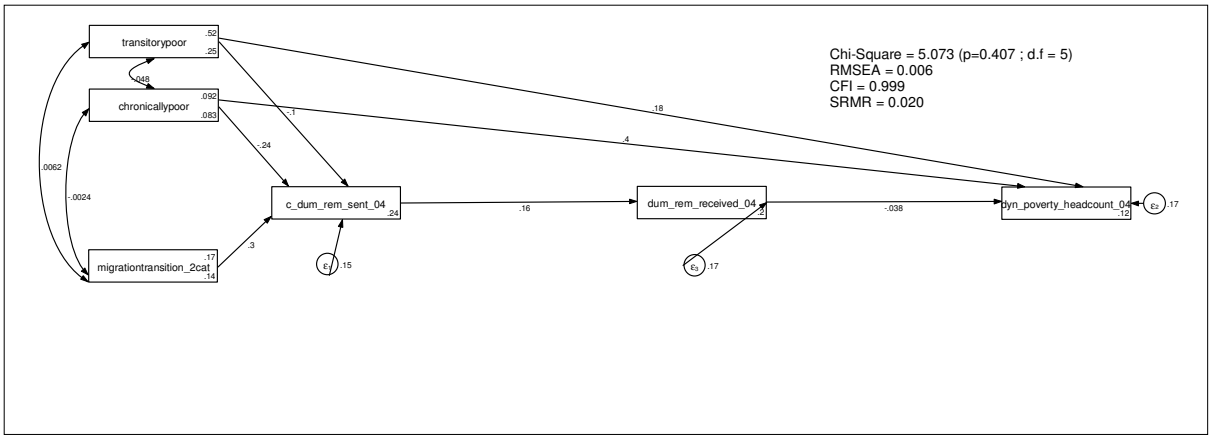
Table 3: Correlation matrix of the variables used in the SEM estimation

	A	B	C	D	E	F	G	H	I	J	K
A. Never poor cores	1										
B. Transitory poor cores	-0.8287	1									
C. Chronically poor cores	-0.2521	-0.3328	1								
D. Core never/ever migrated	-0.0207	0.0329	-0.0221	1							
E. 2004 Cores sent remittances dummy	0.1406	-0.0617	-0.1301	0.2769	1						
F. 2004 Cores sent remittances value	0.1210	-0.0510	-0.1156	0.3401	0.6988	1					
G. Dynasty received remittances dummy	-0.0339	0.0283	0.0081	0.1269	0.1591	0.0973	1				
H. Dynasty Received remittances value	-0.0396	0.0398	-0.0020	0.0358	0.0456	0.0373	0.4839	1			
I. Dynasty headcount poverty	**-0.2362**	**0.1155**	**0.1983**	**-0.0251**	**-0.0722**	**-0.0854**	-0.0298	-0.0367	1		
J. Dynasty depth of poverty	**-0.2486**	**0.1313**	**0.1918**	**-0.0242**	**-0.0927**	**-0.0863**	-0.0159	-0.0316	0.8287	1	
K. Dynasty severity of poverty	**-0.2319**	**0.1308**	**0.1645**	**-0.0148**	**-0.0788**	**-0.0722**	-0.0210	-0.0318	0.6822	0.9594	1

➔ Insert bivariate graphs here!

Table 4 and Figure 2 summarize the hypothesized causal model based on the binary migration variables using robust maximum likelihood estimation. Both the unstandardised and standardised parameter estimates are shown in Table 4. Since robust standard errors are used to adjust for non-normality, only the standardized root mean squared residual (SRMR) gives an indication of the goodness of fit of the hypothesised model. The SRMR of 0.02 is below the accepted value of 0.08 for a good model (Acock, 2013) therefore indicating a relative closeness in reproducing each correlation (i.e. good fit of the model). With an R^2 of 0.17, the model explains 17% of the variation in our dependent variable. The goodness of fit measures, assuming normality, usually results in an inflated chi-square value, which leads to an easier rejection of the hypothesized causal model. Despite this inflated chi-square value, this goodness of fit measures still indicates that the model may be accepted.

Figure 2: Standardized SEM on hypothesized model 1: Only binary dummies



The migratory background of a core household has a significant positive effect on the probability that a 2004 core household sent remittances. As expected, both a transitory- and chronically poor background have a significantly negative effect on the probability that the 2004 cores send remittances compared to cores from a non-poor background. The hypothesis that remittance sending cores results in their split-off dynasties receiving remittances is confirmed by the fact that the sending of remittances by the 2004 core households has a significant and positive effect on the probability that a dynasty household will receive remittances. The intergenerational transfer of household poverty from one generation to the next is also confirmed by this model. Both a transitory- or chronically poor background has a significantly positive effect on the headcount poverty experienced in

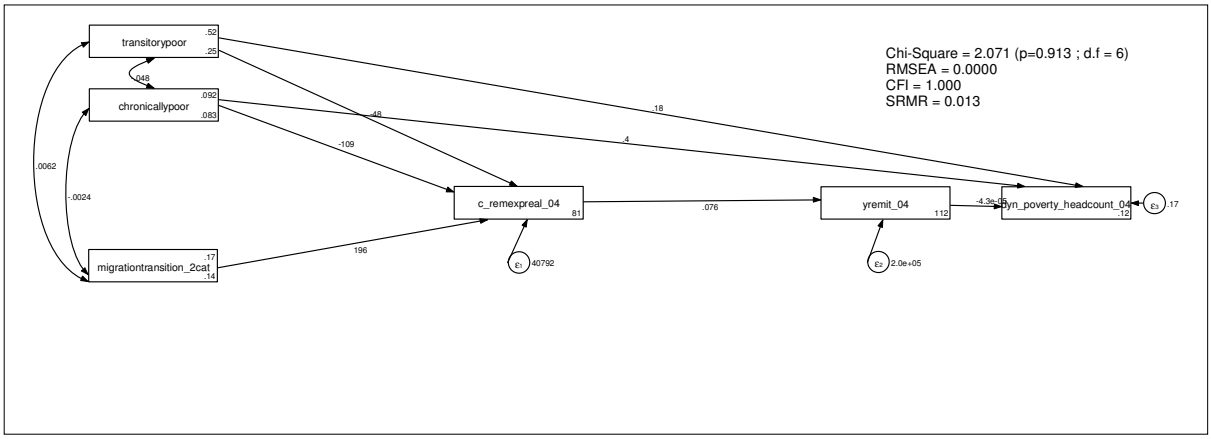
dynasty households. It is expected that remittance receiving dynasty households will have a negative effect on the headcount poverty in dynasty households. Although Model 1 confirms the expected negative effect, the influence was not statistically significant.

Table 4: SEM results on hypothesized model 1: Only binary dummies

Effect on	Effect of	Coefficient	Standardized	R^2
A: Coefficients on variables				
2004 Cores sent dummy	Core ever/never migrated	0.3027***	0.2774***	0.11
	Transitory poor cores	-0.1042**	-0.1261**	
	Chronically poor cores	-0.2369***	-0.1659***	
	Constant	0.2414***	0.5852***	
Dynasty received dummy	2004 Cores sent dummy	0.1631***	0.1591***	0.03
	Constant	0.1977***	0.4676***	
B:Coefficients on Poverty measures				
Dynasty headcount poverty	Dynasty received dummy	-0.0384	-0.0378	0.08
	Transitory poor cores	0.1767***	0.2052***	
	Chronically poor cores	0.3970***	0.2668***	
	Constant	0.1245***	0.2895***	
Dynasty depth of poverty				
Dynasty severity of poverty				
COVARIANCE				
Core ever/never migrated: transitory poor		0.0062	0.0329	
Core ever/never migrated: chronically poor		-0.0024	-0.0221	
Transitory poor: Chronically poor		-0.0480***	-0.3328***	
SRMR		0.020	0.020	
CD		0.173	0.173	0.17

Table 5 and Figure 3 hypothesize the effect of poverty dynamics and migration on poverty in dynasty households via the value of remittances sent by the 2004 core households and the value of remittances received by the dynasty households. The model has a relative good fit given the SRMR of 0.013 and an R^2 of 0.20. Again, the goodness of fit estimates, assuming normality, still indicate a good fit, despite a possible inflation of the chi-square values due to the violation of the normality assumption.

Figure 3: SEM on hypothesized model 1: Only remittances values



The results are similar to Table 4 above: an ever migrating core background has a significantly positive effect on the value of remittances sent by the 2004 core households. Both a transitory and chronically poor background have a significantly negative causal effect on the value of remittances sent by the 2004 core households compared to cores with a non-poor background. This supports the hypothesis that poverty negatively affects the ability to send remittances.

One expects the value of remittances sent by the 2004 core households to have a positive effect on the value of remittances received by dynasty households. Although the results show this positive causal effect, it was not statistically significant at the 10% level. As a dynasty receives remittances, one also expects the probability to be poor to decrease, therefore a negative causal effect. The results show that the remittance income in dynasty households causes this negative effect on household poverty, although the results are negligibly small and not statistically significant. A possible explanation may be the relative low contribution remittance income make to total household income (compared to earlier).

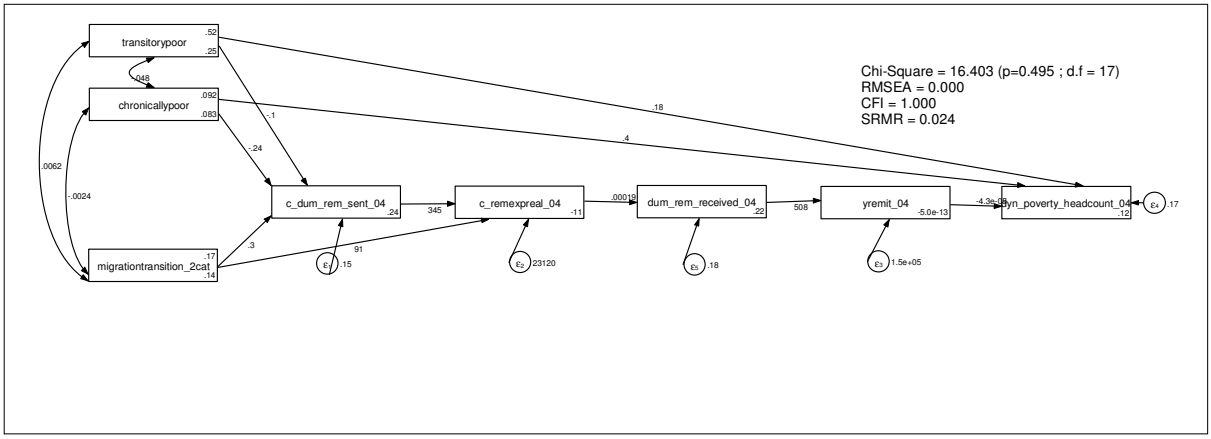
Table 5: SEM results on hypothesized model 1 (Headcount poverty): Only remittance values

Effect on	Effect of	Coefficient	Standardized	R^2
A: Coefficients on variables				
2004 Cores sent value	Core ever/never migrated	196***	0.3405***	0.13
	Transitory poor cores	-48**	-0.1104**	
	Chronically poor cores	-109***	-0.1448***	
	Constant	81***	0.3744***	
Dynasty received value	2004 Cores sent value	0.0760	0.0373	0.001
	Constant	112***	0.2531***	
B: Coefficients on Poverty measures				

Dynasty headcount poverty	Dynasty remittance income	-0.0000	-0.0443	0.08
	Transitory poor cores	0.1772***	0.2059***	
	Chronically poor cores	0.3967***	0.2666***	
	Constant	0.1204***	0.2801***	
Dynasty depth of poverty				
Dynasty severity of poverty				
COVARIANCE				
Core ever/never migrated: transitory poor		0.0062		
Core ever/never migrated: chronically poor		-0.0024		
Transitory poor: Chronically poor		-0.0480***		
SRMR		0.013	0.013	0.20
CD		0.203	0.203	

Table 6 and Figure 4 summarize the full hypothesized model including both the probability of remittance sending (receiving) and the value of remittances sent (received) and their effect on poverty in dynasty households. The overall model fit the data relatively good with a SRMR of 0.024 and an overall R^2 of 0.21. (refer to Figure 4 for the goodness of fit measures assuming normality).

Figure 4: SEM on full hypothesized model 1 (Headcount poverty)



The probability that a core household send remittances causes a positive and significant influence on the value of remittances sent by the 2004 core households. As expected, the value of remittances sent by the 2004 core households causes the dynasty households to receive remittances, although this positive effect is only statistically significant at the 10% level. Again unexpected, the remittance income received by dynasty households does not

cause a significant decrease in household poverty in dynasty households. As indicated above, one explanation for this may be the decreasing contribution remittances make to total household income.

Table 6: SEM results on full hypothesized model (Headcount poverty)

Effect on	Effect of	Coefficient	Standardized	R^2
A: Coefficients on variables				
2004 Cores sent dummy	Core ever/never migrated	0.3027***	0.2774***	0.11
	Transitory poor cores	-0.1042**	-0.1261**	
	Chronically poor cores	-0.2369***	-0.1659***	
	Constant	0.2414***	0.5852***	
2004 Cores sent value	2004 Cores sent dummy	345***	0.6548***	0.51
	Core ever/never migrated	91**	0.1588***	
	Constant	-11***	-0.0493***	
Dynasty received dummy	2004 Cores sent value	0.0002*	0.0973*	0.01
	Constant	0.2180***	0.5156***	
Dynasty received value	Dynasty received dummy	508***	0.4839***	0.23
	Constant	<0.0001	<0.0001***	
B: Coefficients on Poverty measures*				
Dynasty headcount poverty	Dynasty remittance income	-0.0000	-0.0443	0.08
	Transitory poor cores	0.1772***	0.2059***	
	Chronically poor cores	0.3967***	0.2666***	
	Constant	0.1204***	0.2801***	
Dynasty depth of poverty	Dynasty remittance income	-0.0000*	-0.0398	0.08
	Transitory poor cores	0.0822***	0.2211***	
	Chronically poor cores	0.1706***	0.2652***	
	Constant	0.0309***	0.1661***	
Dynasty severity of poverty	Dynasty remittance income	0.0000*	-0.0396*	0.07
	Transitory poor cores	0.0458***	0.2103***	
	Chronically poor cores	0.0882***	0.2343***	
	Constant	0.0113***	0.1039***	
COVARIANCE				
Core ever/never migrated: transitory poor		0.0062	0.0329	
Core ever/never migrated: chronically poor		-0.0024	-0.0221	
Transitory poor: Chronically poor		-0.0480***	-0.3328***	
SRMR - Headcount		0.024	0.024	
SRMR - Depth		0.025	0.025	
SRMR - Severity		0.024	0.024	
CD - Headcount		0.211	0.211	
CD - Depth		0.214	0.214	
CD - Severity		0.202	0.202	

* Note: Three separate models were estimated. Only the coefficients on poverty are shown since the rest of the model is similar for all three models.

The direct-, indirect- and total standardized effects of poverty, migration and remittances on poverty in dynasty households are shown in Table 7 below. Although there is no direct path from 2004 cores sending remittances, there is a negative and significant path

coefficient between cores sending remittances and poverty in dynasty households, implying the sending of remittances by the 2004 core households causes a decrease in household poverty in dynasty households. Although the value of remittances received by dynasty households shows no significant (direct or total) effect on poverty in dynasty households, the receiving of remittances by dynasties shows a significantly decrease in poverty in dynasty households (both the indirect and total effect is significant at a 1% level of significance). Although the hypothesis tested believed a migratory core household will have a significant negative indirect effect on poverty in dynasty households. This indirect effect, although negative, was negligibly small and insignificant. The intergenerational transfer of household poverty is confirmed by the significant positive direct effect of both transitory- and chronically poor cores on poverty in dynasties compared to dynasties from a non-poor background. Although the indirect effect of both poverty backgrounds was insignificant, the total effects are still positive and highly significant.

Table 7: Standardized direct-, indirect and total effects of hypothesized model

Effect on	Effect of	Direct	Indirect	Total
A: Coefficients on variables				
2004 Cores sent dummy	Core ever/never migrated	0.3027***	no path	0.3027***
	Transitory poor cores	-0.1042**	no path	-0.1042**
	Chronically poor cores	-0.2369***	no path	-0.2369***
2004 Cores sent value	2004 Cores sent dummy	345.3191***	no path	345.3191***
	Core ever/never migrated	91.4246***	104.5433***	195.9679***
	Transitory poor cores	no path	-35.9657**	-35.9657**
	Chronically poor cores	no path	-81.8190***	-81.8190***
Dynasty received dummy	2004 Cores sent dummy	no path	0.0653***	0.0653***
	2004 Cores sent value	0.0002*	no path	0.0002*
	Core ever/never migrated	no path	0.0371*	0.0371*
	Transitory poor cores	no path	-0.0068	-0.0068
	Chronically poor cores	no path	-0.0155*	-0.0155*
Dynasty received value	2004 Cores sent dummy	no path	33.1743***	33.1743***
	2004 Cores sent value	no path	0.0960*	0.0960*
	Dynasty received dummy	507.7412***	no path	507.7412***
	Core ever/never migrated	no path	18.8263*	18.8263*
	Transitory poor cores	no path	-3.4551	-3.4551
	Chronically poor cores	no path	-7.8602*	-7.8602*
B: Coefficients on Poverty measures*				
Dynasty headcount poverty	2004 Cores sent dummy	no path	-0.0014***	-0.0014***
	2004 Cores sent value	no path	0.0000*	0.0000*
	Dynasty received dummy	no path	-0.0218***	-0.0218***

	Dynasty remittance income	-0.000	no path	-0.000
	Core ever/never migrated	no path	-0.0008	-0.0008
	Transitory poor cores	0.1772***	0.0002	0.1774***
	Chronically poor cores	0.3967***	0.0003	0.3970***
Dynasty depth of poverty	2004 Cores sent dummy	no path	-0.0006***	-0.0006***
	2004 Cores sent value	no path	-0.0000*	-0.0000*
	Dynasty received dummy	no path	-0.0085***	-0.0085***
	Dynasty remittance income	-0.0000*	no path	-0.0000*
	Core ever/never migrated	no path	-0.0003	-0.0003
	Transitory poor cores	0.0822***	0.0001	0.0823***
	Chronically poor cores	0.1706***	0.0001	0.1707***
Dynasty severity of poverty	2004 Cores sent dummy	no path	-0.0003***	-0.0003***
	2004 Cores sent value	no path	-0.0000*	-0.0000*
	Dynasty received dummy	no path	-0.0049***	-0.0049***
	Dynasty remittance income	-0.0000*	no path	-0.000*
	Core ever/never migrated	no path	-0.0002	-0.0002
	Transitory poor cores	0.0458***	<0.0001	0.0458***
	Chronically poor cores	0.0882***	<0.0001	0.0882***

* Note: Three separate models were estimated. Only the coefficients on poverty are shown since the rest of the model is similar for all three models.

Although one expects the sending of remittances as well as the amount sent by core households to have a negative effect on poverty in dynasty households, both effects were negligibly small. A one standard deviation increase in the amount of remittances sent decreases the headcount, depth and severity of poverty by less than 0.0001 standard deviations. Also the value of remittances received by dynasty households has no significant decreasing effect on the headcount, depth or severity of poverty in dynasty households. The most significant effect on dynasty poverty is the direct effects of poverty dynamics in cores on their split off dynasty households.

3. SUMMARY & CONCLUSION

1. Migration by core households does not have a significant indirect causal effect on poverty in dynasty households.

2. Although the probability of sending remittances by the 2004 core households has a significant negative causal effect on poverty in dynasty households, the value of remittances sent by these cores does not have a significant causal effect on poverty in dynasty households.

3. The probability of receiving remittances has a significant negative causal effect on poverty in dynasty households, although the value of remittances received by dynasties does not have a significant negative effect on poverty (as was expected).

4. The hypothesis was not confirmed:

   A transitory / chronically poor background has a positive and significant direct causal effect on poverty in dynasty households compared to a non-poor background *(direct effect)*.

   But, neither a transitory poor, nor a chronically poor background has a significant *indirect effect* on poverty in dynasty households neither via migration or remittance sending by the cores, nor via the receiving of remittances by dynasty households.

5. Migration and remittances are therefore not always available as poverty alleviation strategies to the poor.