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Gender inequalities among adults and children in collective households

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Abstract: This paper studies the distribution of resources within Albanian families in 2012 using a collective consumption model with two alternative specifications: the first enables the estimation of intrahousehold distribution of resources among male adults, female adults and children; the second extends the analysis to girls and boys. To improve the identification in the context of extended families we implement a strategy to identify the main decision making couple within the household. In line with previous evidence on gender discrimination in Albania, the results show that the female shares of resources are substantially lower with respect to a fair distribution, and that sons receive a larger share of resources than daughters. We further explore whether the migration experience of the husband of the main couple influences the distribution of resources within the family and find evidence that the time spent abroad by the male migrant increases gender inequality (by increasing the share of men more than that of women) and worsen children's position, both when the family was left behind and when also women and children joined the migrant in the destination country.

Keywords: gender inequalities, intrahousehold distribution, collective consumption models, international migration, Albania
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1 Introduction

In the unitary model of the family, household decisions are analysed under the hypothesis that the household is a single decision unit that maximizes the welfare of its members and implicitly ensures an even distribution of household resources. In this framework, the head of the household makes all the relevant decisions, including child, spouse consumption and children's human capital investments, as if decisions were optimal for the welfare of all household members. However, such behaviour cannot be guaranteed *a priori* and the welfare consequences caused by unfair intrahousehold distribution or discriminatory decisions against female household members may be serious and motivate policy interventions. Rosenzweig (1986) and several recent empirical tests (Kusago and Barham, 2001; Mangyo, 2008; Fafchamps et al., 2009; Alam, 2012; de Brauw et al., 2014; Vijaya et al., 2014; Wang, 2014; Dunbar et al., 2013; Bargain et al., 2014) have consistently rejected the hypothesis of a single decision unit household in developing and transition countries, where highly variable socio-economic conditions and culture may favour the rise of considerable intrahousehold inequality issues.

Albania is a country where studying the governance of household resources is specially relevant. After the Second World War, Albania was a rural society characterized by patriarchal family values. In vast rural areas, socio-economic activities were governed by the *Kanun*, a set of traditional laws inherited from the Middle Ages (Gjonca et al., 2008; Vullnetari, 2012). The *kanun* gave males unquestioned authority within the household, implying for example that daughters could not inherit unless there were no sons. The communist regime enforced women educational policies that partially mitigated the patriarchal structure of Albanian households, but the family maintained a central role and patriarchal values resurfaced after the fall of the regime in the 1990s, with the risk of exposing women –and indirectly children[1]– to vulnerable situations such as severe poverty and malnutrition. In addition, massive international migration outflows represented an additional concern for the Albanian family model that emerged after 1990. In the Albanian tradition, especially at times of historical and political upheaval, migration was a normal practice. For example, the pre-communist migration was a consequence of the Ottoman occupation and gave rise to stable small Albanian communities in the South of Italy. Although Albanians have migrated to several countries around the world, the biggest two recipients of Albanians have been by far Greece and Italy. Estimates suggest that Greece and Italy together account for approximately 80% of the migrants (Vullnetari, 2012). Return migration in Albania is a relatively recent phenomenon. According to Piracha and Vadean (2010), over 70% of the returnees came back to Albania after 2001, when the socio-economic and political situation started to improve and one third of the individuals who migrated after 1990 returned by 2005. A recent survey on return migration from INSTAT (2013) found that returning flow increased after the global financial crisis.[2]

Migration in Albania had relevant consequences for the family structure, the decision-making process within the household and intrahousehold inequality. The massive migration that took place after 1990 was dominated by young males leaving a socially relevant portion of female spouses and children behind with documented negative consequences for both (Giannelli and Mangiavacchi, 2010; Mendola and Carletto, 2012; Mangiavacchi et al., 2014; Mastrorillo and Fagiolo, 2015). The returning process of young males implied a natural change in the family structure; most of the Albanians before migrating used to live in extended families with nuclear families accounted for 31.4% of the total households before migration.

[1] The fall of the communist regime implied the collapse of kindergartens and nurseries system that was put in place to favour women labour force participation (Palomba and Vodopivec, 2001).

[2] A total of 133.544 Albanian migrants of the age group 18 years old and above have returned to Albania in the period 2009-2013 with most of the returns (53.4 per cent) taking place during 2012 and 2013 (INSTAT, 2013).

This percentage increased to 37.1% in the host country and after return it reached 45.9% (INSTAT, 2013). Several empirical works on the consequences of young male migration on children and women show consistent findings. Giannelli and Mangiavacchi (2010) investigates the long-term effects of parental migration abroad on the schooling of children left behind in 2005 and finds that parental migration has a negative effect on school attendance in the long term, with higher hazards of school drop-outs for children left behind and an higher impact for girls than for boys at secondary school age. These findings are confirmed by Mastrorillo and Fagiolo (2015), who performed a similar test for 2012. Mendola and Carletto (2012) examine the role of migration in affecting the labour market opportunities of female household members left behind in 2005; they find that females in families with a migrant abroad do less paid work and more unpaid work. Mangiavacchi et al. (2014) estimate a complete collective demand system for male and female adults and children, and the respective share of resources focusing on migrant-sending families in 2002, their findings suggest that female share of resources is substantially lower with respect to a fair distribution and not improved with husband's migration. Mendola and Carletto (2012) explore also the consequences of male's return on women labour supply suggesting a positive impact of men's past migration experience on women's empowerment: women with past family migration experience are significantly more likely to engage in self-employment and less likely to supply unpaid work. This findings are in line with recent literature on the adjustment of family norms, such as fertility choices, to those that prevail in their previous countries of destination (Bertoli and Marchetta, 2015; Lerch, 2015).

Using the most recent World Bank Living Standard Measurement Survey collected in Albania in 2012 we estimate the intrahousehold distribution of resources among female and male adults and children, and then among adults and children of different gender within a collective Engel curves system.[3] The main objective of the paper is to verify whether the worryingly high intrahousehold gender inequality found in 2002 (Mangiavacchi et al., 2014) is reduced, and to what extent, in 2012 after a period of growth and poverty reduction. Moreover, the study is enriched with the analysis of gender inequality among children. The paper also aim at testing if past migration experience of the husband has an impact on traditional patriarchal family norms estimating if past migration experience has an impact on the distribution of household resources. Instead of testing the impact of any household member's migration as in Mendola and Carletto (2012) and Mastrorillo and Fagiolo (2015), to improve the identification of the bargaining process in extended families we focus on the case in which the returned migrant is the husband of the main couple. We also extent the concept of intrahousehold inequality to educational opportunities and test how past migration influences the propensity to send both male and female children to school. The identification strategy for the effect of migration relies on the information on the distance from the main port and on the district share of population speaking Italian in 1990 as exclusion restrictions.

We contribute to the literature on collective household models estimating for the first time how resources are distributed between male and female children and to the literature on the impact of past migration experience on family norms using the intrahousehold distribution of resources as outcome of interest.

The results suggest that women's share of resources is substantially lower than an equal distribution, with a small but significant improvement respect to 2002 (Mangiavacchi et al., 2014). There is somewhat weaker evidence of intrahousehold gender discrimination also among children. Husband's migration has in general a positive impact on both males' and females' resources share, with a larger impact on males, thus increasing gender inequality within the household. A more egalitarian increase is observed when the

[3] A similar exercise has been performed in Betti et al. (2017) with the aim of analysing the importance of intrahousehold inequality for poverty analysis.

husband migrated with the spouse and their children. In both cases, children lose a significant share of resources. When analysing school attendance by gender and age, a past migration experience of the father significantly reduces female enrolment at preschool and secondary school, while for the compulsory primary school no effect is observed.

The rest of the paper is organized as follows. Section 2 describes the empirical strategy, data and sample selection. Section 3 discuss results and Section 4 concludes.

2 Estimation Methods

The present study aims at addressing two different research questions: i) whether intrahousehold gender inequality persists in Albania after a period of sustained growth, and ii) whether a past international migration experience could change the family decision process.

The two question are clearly correlated but need to be addressed using different methodologies. In particular, for problem i) we apply a collective consumption model as detailed in Section 2.1, while for problem ii) we apply and endogenous binary variable model as described in Section 2.2.

2.1 Intrahousehold distribution of resources

The estimation of intrahousehold distribution of resources relies on the collective framework (Chiappori, 1988, 1992), in which individual members' preferences are explicitly accounted for in the household decision process. The interaction between household members is summarized by a rule governing the distribution of resources within the household, the so called "sharing rule." The collective framework permits identifying the sharing rule together with the structure of preferences and welfare functions of each household member, which are then used to analyse intrahousehold inequality issues.

In particular, the reference framework is that of collective consumption models, as proposed by Arias et al. (2004), Menon et al. (2017) and Caiumi and Perali (2014), but extended also to children as in Dunbar et al. (2013) and Mangiavacchi et al. (2014).

The estimation of collective models requires assumptions for the identification sharing rule. The intrahousehold allocation of resources is not (fully) observable, but it can be recovered using observable household consumption of exclusive or assignable commodities, such as men's, women's and children's clothing (Browning et al., 1994; Menon and Perali, 2012; Chiappori and Meghir, 2014). The identification strategy is based on this individual-specific consumption information and the observation of suitable distribution factors, exogenous variables that modify the intrahousehold distribution of resources but do not affect consumption choices.

In order to analyse gender discrimination both from an adult's and a child's perspectives two alternative household specifications are used: one with a man, a woman and a child, and another with an adult, a boy and a girl. In both cases the same theoretical model applies.[4]

The household is composed of three members indexed as $k = 1, 2, 3$, who decide via a bargaining process their optimal consumption levels of non-assignable and assignable goods, $\mathbf{c}_k$ and $\mathbf{q}_k$, respectively, given household income y. This decision problem can be represented by a two stage process. In the first stage family members agree on the division of household resources, such that each member is assigned the

[4]Only a sketch of the theoretical framework is presented below, while a detailed description of the model for a complete collective demand system can be found in Menon et al. (2017) and Mangiavacchi et al. (2014). As in the present work, also Betti et al. (2017) simplifies the framework to a system of collective Engel curves.

amount ϕ_k, and $y = \phi_1 + \phi_2 + \phi_3$. In the second stage each member maximizes her own utility subject to her private budget constraint

$$V = \max_{\mathbf{c}_k, \mathbf{q}_k} \quad u_k(\mathbf{c}_k, \mathbf{q}_k) \;\; s.t. \;\; \mathbf{p}'_{\mathbf{c}}\mathbf{c}_k + \mathbf{p}'_{\mathbf{q}_k}\mathbf{q}_k = \phi_k. \tag{1}$$

The solution of the individual problem produces a system of individual demand function that sum up to the household demand as

$$\begin{aligned}
\hat{\mathbf{q}}\left(\mathbf{p}_{\mathbf{c}}, \mathbf{p}_{\mathbf{q}_1}, \mathbf{p}_{\mathbf{q}_2}, \mathbf{p}_{\mathbf{q}_3}, y\right) &= \mathbf{q}_1\left(\mathbf{p}_{\mathbf{c}}, \mathbf{p}_{\mathbf{q}_1}, \phi_1\right) + \mathbf{q}_2\left(\mathbf{p}_{\mathbf{c}}, \mathbf{p}_{\mathbf{q}_2}, \phi_2\right) + \mathbf{q}_3\left(\mathbf{p}_{\mathbf{c}}, \mathbf{p}_{\mathbf{q}_3}, \phi_3\right), \\
\hat{\mathbf{c}}\left(\mathbf{p}_{\mathbf{c}}, \mathbf{p}_{\mathbf{q}_1}, \mathbf{p}_{\mathbf{q}_2}, \mathbf{p}_{\mathbf{q}_3}, y\right) &= \mathbf{c}_1\left(\mathbf{p}_{\mathbf{c}}, \mathbf{p}_{\mathbf{q}_1}, \phi_1\right) + \mathbf{c}_2\left(\mathbf{p}_{\mathbf{c}}, \mathbf{p}_{\mathbf{q}_2}, \phi_2\right) + \mathbf{c}_3\left(\mathbf{p}_{\mathbf{c}}, \mathbf{p}_{\mathbf{q}_3}, \phi_3\right).
\end{aligned}$$

In Mangiavacchi et al. (2014) this system is specified as a QUAIDS (Banks et al., 1997), identifying the individual income effects and the sharing rules. Because unit-values are not available for all commodities in the 2012 ALSMS, the estimation of a complete demand system would require a somewhat tedious procedure to estimate pseudo unit-values (Lewbel, 1989). Instead, we propose an alternative procedure based on the estimation of a collective Engel curves system with individual income effects, similar to Mangiavacchi et al. (2014) but without prices and part of the structure of the QUAIDS. For each commodity a household level Engel curve is defined as[5]

$$w = \alpha + \beta_1 \left(\ln \phi_1\right) + \lambda_1 \left(\ln \phi_1\right)^2 + \beta_2 \left(\ln \phi_2\right) + \lambda_2 \left(\ln \phi_2\right)^2 + \beta_3 \left(\ln \phi_3\right) + \lambda_3 \left(\ln \phi_3\right)^2 . \tag{2}$$

Clearly, in this specification the sharing rules ϕ_k are not fully observed. Instead, it is possible to use assignable commodities expenditure to define the observed share of household income $\sigma_k = \left(\mathbf{p}'_{\mathbf{q}_k}\mathbf{q}^k + \frac{1}{3}\mathbf{p}'_{\mathbf{c}}\mathbf{c}\right)/y$, and scale the observed individual expenditure by a correction term $m_k(\mathbf{z})$ that is a function of a set of variables $\mathbf{z}$ called "distribution factors", which are assumed to alter the bargaining power of household member but not consumption preferences

$$\begin{aligned}
\phi_k &= \sigma_k \cdot y \cdot m_k(\mathbf{z}) \text{ , or in logs} \\
\ln \phi_k &= \ln \sigma_k + \ln y + \ln m_k(\mathbf{z}) .
\end{aligned} \tag{3}$$

In order to ensure that the sharing rules sum up to household income, i.e. $\sum_k \phi_k = y$, the correction terms must respect $\sum_k \sigma_k m_k(\mathbf{z}) = 1$, which in the case of a 3-members household reads

$$m_3(\mathbf{z}) = \frac{1 - \sigma_1 m_1(\mathbf{z}) - \sigma_2 m_2(\mathbf{z})}{\sigma_3} . \tag{4}$$

By specifying the $m_k(\mathbf{z})$ function as a Cobb-Douglas, its logarithm becomes linear in $\mathbf{z}$, and the collective Engel curves system is define by the following equation

$$w = \alpha + \sum_{k=1}^{3} \left[\beta_k \left(\ln \sigma_k + \ln y + \ln m_k(\mathbf{z})\right) + \lambda_k \left(\ln \sigma_k + \ln y + \ln m_k(\mathbf{z})\right)^2\right], \tag{5}$$

where coefficients α, β_k and λ_k are commodity specific, and the $m_k(\mathbf{z})$ correction terms are the same for

[5] To save on notation, we omit indexing observations and budget shares categories. Thus, for instance, w instead of w_{ji} is the budget share of the j-th commodity for the i-th household, and α instead of α_i is the constant term estimated for commodity j. The same holds for individual incomes ϕ_k and the β_k and λ_k coefficients.

all commodities. The system of equations defined by (5) is estimated by a non-linear seemingly unrelated regression allowing for correlation of the error terms, and is used to predict the relative sharing rules as

$$\widehat{r_k} = \frac{\widehat{\phi_k}}{y} = \sigma_k \cdot \widehat{m_k(\mathbf{z})} \; . \tag{6}$$

An analysis of the distribution of the predicted relative sharing rules is then used to reveal whether there exists gender discrimination within the household, both for adults and children.

2.2 Testing the impact of migration experience on intrahousehold inequalities

The empirical strategy used to analyse the impact of migration experience on intrahousehold inequality is based on a post-estimation analysis. Ideally, the most appropriate strategy would be to include a variable indicating past international migration experience among the distribution factors $\mathbf{z}$. However, this would lead to biased result because such a variable should be a) exogenous and b) a proper distribution factor. Past migration experience clearly violates both assumptions because a) some unobservable factors are likely to influence both consumption choices and the decision to migrate, and b) because a past migration experience is likely to influence both consumption preferences and the intrahousehold bargaining process. An alternative possible strategy would be to use an instrumental variable estimator, but to the best of our knowledge the identification of a collective consumption model with an endogenous distribution factor has not yet been proved. Moreover, the quest for a good instrument would be harder than usual because the instrument would need to be also a proper distribution factor.

An alternative feasible strategy is to conduct the analysis using an endogenous binary variable model on the predicted relative sharing rules $\widehat{r_k}$ (Cameron and Trivedi, 2005; Wooldridge, 2010). Compared to treatment effects models, this model is robust to violations of the unconfoundedness assumption (or conditional independence assumption) where some unobservable factors may influence both the treatment and the outcome. The model is also more flexible than the linear IV models in the specification of the outcome equation, because the set of regressors in the selection equation can be different from the explanatory variables of the outcome equation. Still, to help identification, the explanatory variables for the treatment equation should include at least one exclusion restriction where an exogenous variable is significantly correlated with the endogenous variable but not with the outcome.

The model can be specified as

$$\begin{aligned} o_j &= \mathbf{v}_j \vartheta + \delta t_j + \nu_j, \\ t_j &= \begin{cases} 1 & \text{if } \mathbf{k}_j \kappa + \mu_j > 0 \\ 0 & \text{otherwise} \end{cases} \end{aligned} \tag{7}$$

where o_j is the outcome variable for the j-th observation (the predicted share of resources assigned to each household member), $\mathbf{v}_\mathrm{j}$ are the exogenous covariates used to model outcome, t_j is the endogenous binary variable –the treatment, having a past migration experience– and $\mathbf{k}_j$ are the exogenous covariates used to model the endogenous binary variable. ν_j and μ_j are bi-variate normal error terms. It is assumed that at least one component in $\mathbf{k}_j$ is an independent source of variation in t_j, uncorrelated with the outcome. The parameter δ corresponds to the Average Treatment Effect (ATE) and to the Average Treatment Effect on the Treated (ATET).

In addition to the analysis of intrahousehold inequality in the resource distribution, to analyse in more depth child gender discrimination issues also education opportunities are considered. Thus, the endogenous binary variable model is also applied to the proportion of female children attending pre-school, primary school and secondary school.

2.3 Data and sample selection

The data used for the analysis is the Albania 2012 Living Standard Measurement Survey by INSTAT. The survey includes a sample of 6,671 households (substantially larger than previous surveys, which interviewed 3,600 households), randomly chosen on the basis of the 2011 Population and Housing Census via a two stage procedure: first 834 Primary Selection Units were randomly chosen to be representative of the whole territory, and second in each PSU 8 households were randomly chosen (with an additional 4 in case of no response or no contact). The increase in the sample size had the main objective or having data representative at the prefecture level (12 prefectures divided into urban and rural areas), rather than region level (4 regions divided into urban and rural areas). It is a rich dataset containing information on household consumption, socio-economic conditions and income sources. The survey records detailed individual information on education, labour market participation, health and migration history.

As pointed out in Section 2, intrahousehold gender inequality is analysed both for adults and children, with two different family models: i) one composed by a man, a woman and a child, and ii) one composed by an adult, a boy and a girl. To estimate the sharing rule for both models slightly different samples are needed. In particular model i) needs at least a man, a woman and a child, while model ii) needs at least an adult, a boy and a girl. In both cases children are defined as being younger than 15.[6]

For model i) 3,790 households are dropped because of household composition, plus another 1,023 because of zero expenditure recorded for at least one household member. A few missing values in the explanatory variables further reduce the sample to 1,832 households. For model ii) 5,646 households are dropped because of household composition, 383 observation have missing observation for individual expenditure of either the boy or the girl, and 176 households have zero expenditure for at least one household member. Few missing values in other variables reduce the sample to 437 households.

The collective Engel curves system is defined over 5 categories of consumption: food, clothing, housing, alcohol and tobacco, and other goods. On average, for the whole sample, Albanian households spent 67.5% of their budget on food, 5.5% on clothing, 22.1% on housing (including utilities, domestic services, small appliances, but not rent), 0.5% on alcohol and tobacco and 4.3% on other goods (including personal care, services, leisure and education expenditure). The average household expenditure is 381,330 Lek per month (almost 273 euros).

The observed individual expenditure share (σ_k) is computed starting from assignable expenditures. For model i) man and woman expenditures are composed by clothing and footwear expenditure for men and women, while child expenditure is composed by clothing, footwear and education expenditure. Non-assignable expenditure is computed as a residual from total household expenditure. In order to account for possibly different household compositions, per-capita expenditures are computed for each household member category. For instance man expenditure is divided by the number of men. Non assignable expenditure is divided by the household size. Finally total household expenditure is recalculated summing per capita assignable expenditures and three per-capita non-assignable expenditures.

[6]This choice is needed because expenditure on children's clothing and footwear is used for computing σ_k in equation (3) and the variable is recorded only for children under 15.

This is a way of scaling households with complex compositions to a three-members households in such a way that they are comparable. Finally, the shares of individual expenditures (σ_k) are computed as the sum of per-capita assignable and non-assignable expenditure divided by the recalculated total expenditure.

The same is done for model ii) where adult expenditure is the sum of clothing and footwear for men and women, while children, both boys and girls equally split clothing and footwear for children, but have individual educational expenditures.

Table 1: Distribution of individual expenditures by model type

Model i)					Model ii)				
	Mean	std. Dev.	Min.	Max.		Mean	std. Dev.	Min.	Max.
σ_{man}	0.318	0.034	0.065	0.431	σ_{adult}	0.297	0.035	0.094	0.393
σ_{woman}	0.316	0.034	0.079	0.430	σ_{boy}	0.354	0.022	0.283	0.513
σ_{child}	0.365	0.064	0.233	0.856	σ_{girl}	0.349	0.023	0.280	0.524
n.obs.		1,832			n.obs.		466		

The summary statistics of the individual shares are presented in Table 1. A first inspection reveals that for model i) the distribution seems rather equal, with a slightly larger share for the child. Model ii) confirms a larger share for children and a substantial equity between boys and girls.

The distribution factors ($\mathbf{z}$) used in the estimation were the age difference and the years of education difference of the main couple[7] (woman minus man), the proportion of female children in the household, the average age of children, the prefecture level divorce ratio (n. of divorced per 1000 inhabitants) and the prefecture level population share of fertile age women.

The descriptive statistics of the budget shares, log of total expenditure, and distribution factors are presented in the first part of Table 2 both for model i) and model ii).

As to the post-estimation analysis described in Section 2.2, for modelling the outcome equation a number of additional variables are included along with the distribution factors, the most important of which is the treatment, that is whether the husband in the main couple had a past migration experience and whether the spouse and children joined him in the destination country. At variance with previous studies that focus on any household member migration, the analysis focuses on the male migrant from the household couple that is more likely to be responsible for household decisions. The main couple in multi-nuclear households is identified starting from the main husband: he has to be older than 25, younger than 70 and married or cohabiting. In those households with more than one male with these characteristics, the household head or, alternatively the older, is set to be the main husband. The main wife is identified by the spouse identification code of the main husband.

The additional explanatory variables include: an asset ownership index, regional dummies, the proportion of dependants in the household, whether there are more females than males in the household, the age of the husband of the main couple, whether the husband of the main couple has a university degree, the average years of education of the adults living in the household, the share of employees among the working age members within the household, whether both male and female partners of the main couple are employed (bi-active family) and the quantile of declared household income. The second part of Table 2 presents the summary statistics of these variables both for model i) and for model ii).

[7] The main couple is defined as the oldest working age couple in the household.

Table 2: Descriptive statistics by model type

	Model i)		Model ii)	
Variable	Mean	Std. Dev.	Mean	Std. Dev.
Budget shares				
Share of food	0.645	0.129	0.653	0.117
Share of clothing	0.086	0.057	0.081	0.054
Share of housing	0.208	0.080	0.206	0.079
Share of alcohol and tobacco	0.006	0.010	0.005	0.011
Share of other goods	0.055	0.073	0.054	0.050
Log of total expenditure	12.943	0.333	12.925	0.317
Distribution factors (z)				
Age difference in the main couple	-0.052	0.042	-	-
Education years difference in the main couple	-0.001	0.029	-0.004	0.030
Proportion of female children	0.481	0.386	0.493	0.125
Average children age	8.552	4.445	-	-
Divorce ratio (prefecture)	7.338	3.509	7.099	3.487
Relative average age of girls respect to boys	-	-	0.998	0.487
Outcome equation				
Household asset index 2012	30.921	12.639	28.886	11.372
Central region	0.428	0.495	0.407	0.492
Coastal region	0.233	0.423	0.208	0.407
Mountains region	0.263	0.441	0.314	0.464
Proportion of dependents in the household	0.476	0.152	0.575	0.092
More females than males in the hh	0.378	0.485	0.318	0.466
Age of main husband	45.009	9.695	43.943	7.720
Main husband has university education	0.178	0.383	0.140	0.347
Average level of education (years) of adults	10.324	2.816	9.735	2.657
Share of hh members employed	0.402	0.327	0.399	0.329
Main couple is biactive	0.244	0.430	0.227	0.419
Quintile of declared household income	2.967	1.408	2.851	1.419
Distance from Valona (minutes)	166.912	68.447	176.744	68.282
District's share of population speaking Italian in 1990	0.033	0.048	0.032	0.048
Number of observations	1,832		437	

The identification strategy requires to have at least one exclusion restriction for having had a past migration experience, and we follow those studies considering that distance has a strong negative effect on migration by raising transaction costs and reduced information (Sahota, 1968; Schwartz, 1973) and the literature instrumenting migration making use of distances from border or ports (see, for example Kilic et al., 2009; Demirgüç-Kunt et al., 2011; Alcaraz et al., 2012). We tested several distance measurements and the one that worked best for our study was the distance from the main port (Valona) in minutes by car. Controlling for regions and urban location of households, the only impact of port proximity on household's decision-making process should be via the instrument's influence on past migration. In addition, following Kilic et al. (2009) an additional instrument is the district share of population speaking Italian[8] in 1990. This variable is constructed using the 2005 Albanian Living Standard Measurement Survey, which is characterized by a particularly detailed information set about present and past international migration episodes.

The last analysis uses different outcomes to test gender discrimination among children, namely the proportion of females attending pre-primary, primary and secondary schools. In these regressions distribution factors are replaced by the distance from school and the average age of children. In addition the samples sizes are different because the discriminant is the presence of children of specific school ages. The statistics for these variables are presented in Table 3.

[8]We also tested other languages, but they resulted non significant.

Table 3: Descriptive statistics of schooling outputs

	Pre-primary		Primary		Secondary	
	Mean	std. Dev.	Mean	std. Dev.	Mean	std. Dev.
Proportion of female childern attending	0.540	0.450	0.503	0.183	0.499	0.161
Average age of children	4.538	2.895	8.739	2.586	11.550	2.631
Distance from the nearest primary school	15.503	12.700	15.707	13.071	16.009	13.483
Household asset index 2012	29.330	12.740	28.854	12.345	28.674	11.707
Central region	0.436	0.496	0.416	0.493	0.414	0.493
Coastal region	0.263	0.441	0.279	0.449	0.271	0.444
Mountains region	0.210	0.407	0.231	0.421	0.248	0.432
Proportion of dependents in the household	0.505	0.147	0.538	0.124	0.476	0.154
More females than males in the hh	0.409	0.492	0.399	0.490	0.382	0.486
Age of main husband	42.622	11.571	43.866	8.633	46.820	7.105
Main husband has university education	0.145	0.353	0.147	0.354	0.153	0.360
Average level of education (years) of adults	9.964	2.862	9.839	2.816	10.068	2.673
Share of hh members employed	0.365	0.323	0.380	0.332	0.383	0.322
Main couple is biactive	0.196	0.397	0.223	0.416	0.237	0.426
Quintile of declared household income	2.822	1.407	2.779	1.386	2.781	1.371
Distance from Valona (minutes)	160.421	64.027	164.295	67.738	167.244	68.375
District's share of population speaking Italian in 1990	0.037	0.050	0.033	0.047	0.032	0.047
n.obs.	1,093		1422		1592	

3 Results

This study has several sets of results that for convenience are presented in the following subsections: first, the results on adult and child gender discrimination; and second, the impact of return migration on female discrimination, both for adults and children.

3.1 Intrahousehold resources distribution in 2012

Table 4 present the results of the estimation of the system of Engel curves (5) for model i), where a family is composed by a man, a woman and a child. As for the estimation of demand systems, one of the budget shares has to be left out to avoid multi-collinearity (Alcohol and tobacco). The coefficients of the individual income effects are in general precisely estimated, with several significant quadratic coefficients, revealing that a linear specification of the Engel curves would have been inappropriate.

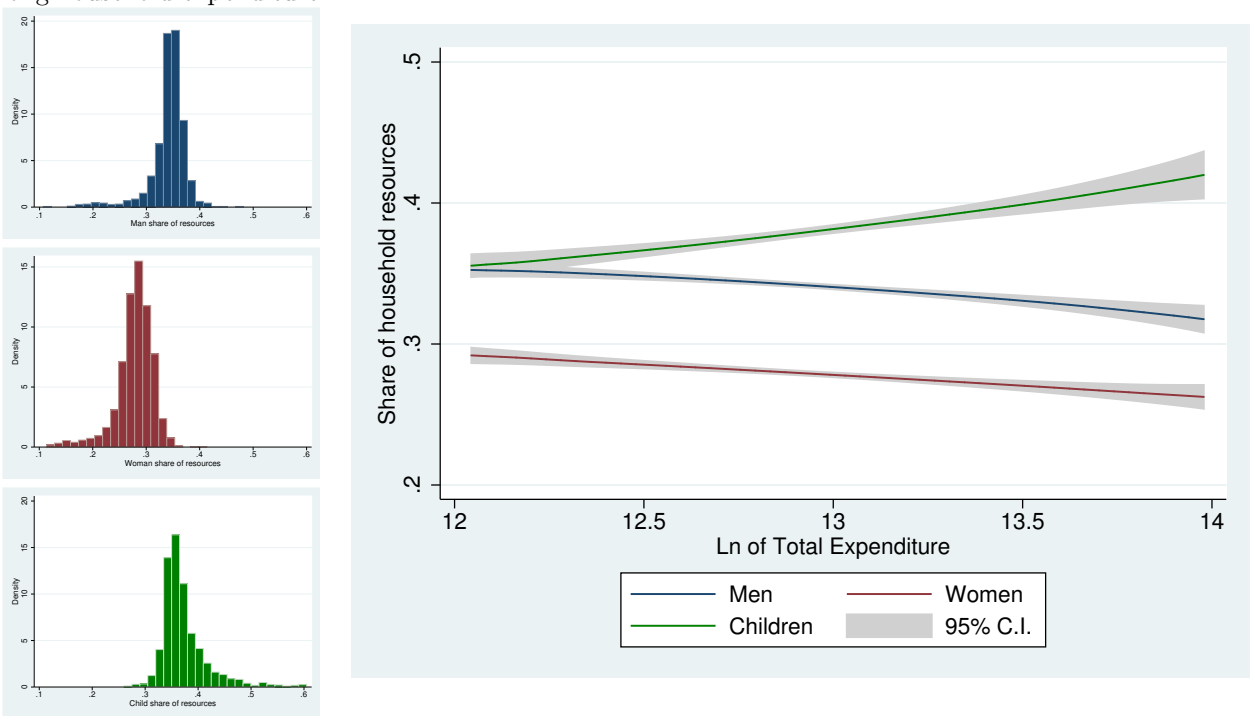
As to the identification of the distribution factors, for the man correction term ($m_m(\mathbf{z})$), the only significant parameters are the divorce ratio, which reduces males' bargaining power, and the share of fertile age women, which on the contrary increase their bargaining power. This is as expected and in line with most previous collective model estimates. For the women correction term ($m_w(\mathbf{z})$), more distribution factors are relevant. In particular, the older the woman with respect to the man, the larger her bargaining power, the larger the proportion of female children and the older the children are, the lower her bargaining power and, symmetrically to the man the larger the proportion of fertile age women in the prefecture the lower her bargaining power.

The distribution of the predicted relative share of resources ($\widehat{r}_k$) are presented in Figure 1. The left panel of the Figure presents the density functions of man, woman and child, and the right panel depict how distribution of resources varies with the log of total household expenditure. The analysis reveals that women's share of resources is substantially smaller than that of men and children. Children's share tends to improve with household expenditure, but the difference between men and women is constant all along the expenditure distribution. Table 5 shows that on average men receive 34% of household resources, while

Table 4: Collective Engel curves system estimation
- Man, Woman and Child -

	Food		Clothing		Housing		Other	
	coef	se	coef	se	coef	se	coef	se
Engel curve parameters								
constant	-0.5278	(1.7124)	1.8894**	(0.8346)	-1.1991	(1.1472)	0.8104	(0.5257)
β_m	-1.6776*	(0.8794)	0.3537	(0.4242)	-0.8396	(0.5823)	2.2343***	(0.3659)
λ_m	0.0780**	(0.0385)	-0.0157	(0.0185)	0.0357	(0.0254)	-0.1008***	(0.0163)
β_f	1.4911*	(0.7842)	-0.9665**	(0.3767)	0.7409	(0.5165)	-1.3450***	(0.3549)
λ_f	-0.0617*	(0.0350)	0.0432**	(0.0168)	-0.0331	(0.0230)	0.0549***	(0.0159)
β_c	0.3908	(0.2994)	0.2711*	(0.1458)	0.4014**	(0.2005)	-1.0538***	(0.0939)
λ_c	-0.0248**	(0.0126)	-0.0114*	(0.0062)	-0.0183**	(0.0085)	0.0542***	(0.0040)
Distribution factors	$m_{men}(\mathbf{z})$			$m_{women}(\mathbf{z})$				
Age diff. (spouse - housband)	0.1137	(0.1442)		-0.0348	(0.1394)			
Education diff. (spouse - housband)	0.4706**	(0.2138)		-0.4750**	(0.2192)			
Proportion of female children	0.0120	(0.0161)		-0.0344**	(0.0171)			
Average children age	0.0074***	(0.0021)		-0.0105***	(0.0022)			
Divorce ratio	0.0009	(0.0018)		-0.0037**	(0.0018)			
Number of observations	1,832							

Figure 1: Densities of the predicted distribution of resources for men, women and children, and their trends along household expenditure



women only less than 28%. Overall children are in a better position. Comparing with the observed shares (σ_k) in Table 1, which shows a substantial gender parity in assignable expenditure, the proposed model is able to identify strong levels of gender inequality within the household. The results are also consistent with estimates for 2002, which were obtained using a different model (see Mangiavacchi et al., 2014). The t-statistics reveal that there has been a significant reduction in adult gender discrimination in the decade, but the country is still far from a gender equal distribution.

The attempt of analysing gender inequality among children has been only partially successful. Table 6 presents the results of the estimation of the system of Engel curves for model ii). Because of the much smaller sample size, coefficient's estimates are much less precise, with few significant coefficients, including those of the $m_k(\mathbf{z})$ functions.

Although less robustly, the analysis of the predicted share of resources (Figure 2) reveal that girls are somewhat discriminated, although the difference is not as large as between men and women, and the confidence intervals are much wider. On average boys get 37.7% of household resources, girls 32.7% and adults 29.5%. The difference between boys and girls seems to moderately diverge with household expenditure.

Comparisons with previous results for Albania (Mangiavacchi et al., 2014) cannot be made because the 2002 survey did not allow to estimate boys and girls shares of resources.

3.2 Female discrimination and migration in Albania

This Section analyses the impact that the return of the husband migrated abroad has on intrahousehold gender inequality. The previous literature suggests that an international migration experience might change family related behaviours like fertility choices or the decision to marry (Bertoli and Marchetta, 2015; Lerch, 2015), in the same line it could change the migrant's perception of gender role, possibly resulting in a different behaviour once back home. For instance if the migrant spent time in a Western European society where gender norms are more egalitarian, his view on household decision-making process could be more favourable to women.

This issue is investigated by means of an Endogenous Binary Model as described in section 2, where the outcomes –i.e. the predicted share of resources of man, woman and child– are regressed on a set of explanatory variables that include the past migration experience of the husband in the main couple or the past migration experience of the husband with spouse and children, instrumented using the distance from the main port (Valona) and the district share of population speaking Italian in 1990. Discrimination of girls in school attendance is analysed with the same method. The advantages of such a method are various and include the possibility of explaining the variability of the predicted share of household resources not only through the distribution factors, but also through an additional set of variables that would not be suitable as distribution factor. In addition, it is possible to analyse which factors influence the predicted share of resources of the third household member, which in the collective Engel curves system enters as a residual component.

Table 7 presents the results of the estimation with the treatment set as the past migration experience of the husband of the main couple in the household. Here the exclusion restrictions, the distance from Valona and the District share of population speaking Italian in 1990, are significant at 5 and 1% respectively, with

Table 5: Intrahousehold distribution of resources in 2012 and 2002

	2012		2002*		t-test of the diff.	
	Mean	std. Dev.	Min.	Max.	t-score	p value
$\widehat{r}_{man}$	0.341	0.036	0.373	0.046	-17.527	0.000
$\widehat{r}_{woman}$	0.279	0.036	0.267	0.045	8.474	0.000
$\widehat{r}_{child}$	0.381	0.063	0.360	0.056	10.275	0.000
n.obs.	1,832		1,560			

* Source: Mangiavacchi et al. (2014)

Table 6: Collective Engel curves system estimation
- Adult, Boy and Girl -

	Food		Clothing		Housing		Other	
	coef	se	coef	se	coef	se	coef	se
Engel curve parameters								
constant	1.5487	(3.2578)	-0.6039	(1.6290)	-2.5920	(2.3390)	2.4185***	(0.7938)
β_m	-1.2998	(0.7918)	-0.2655	(0.3963)	0.3241	(0.5688)	1.1206***	(0.1932)
λ_m	0.0684*	(0.0353)	0.0106	(0.0177)	-0.0150	(0.0253)	-0.0587***	(0.0086)
β_f	-0.0896	(1.0195)	0.6469	(0.5159)	0.8476	(0.7487)	-1.1406***	(0.2758)
λ_f	0.0018	(0.0452)	-0.0293	(0.0229)	-0.0391	(0.0332)	0.0546***	(0.0121)
β_c	1.1640	(0.9807)	-0.2522	(0.4971)	-0.6195	(0.7234)	-0.4003	(0.2716)
λ_c	-0.0569	(0.0428)	0.0126	(0.0217)	0.0271	(0.0316)	0.0224*	(0.0118)
Distribution factors	$m_{adults}(\mathbf{z})$			$m_{boys}(\mathbf{z})$				
Age diff. (spouse - housband)	-0.0776	(0.1046)		0.0233	(0.4824)			
Education diff. (spouse - housband)	0.1515	(0.3147)		-2.6347**	(1.0498)			
Divorce ratio	-0.0007	(0.0014)		-0.0040	(0.0063)			
Relative average age of girls with respect to boys	-0.0056	(0.0094)		-0.0481	(0.0428)			
Number of observations	437							

Figure 2: Densities of the predicted distribution of resources for adults, boys and girls, and their trends along household expenditure

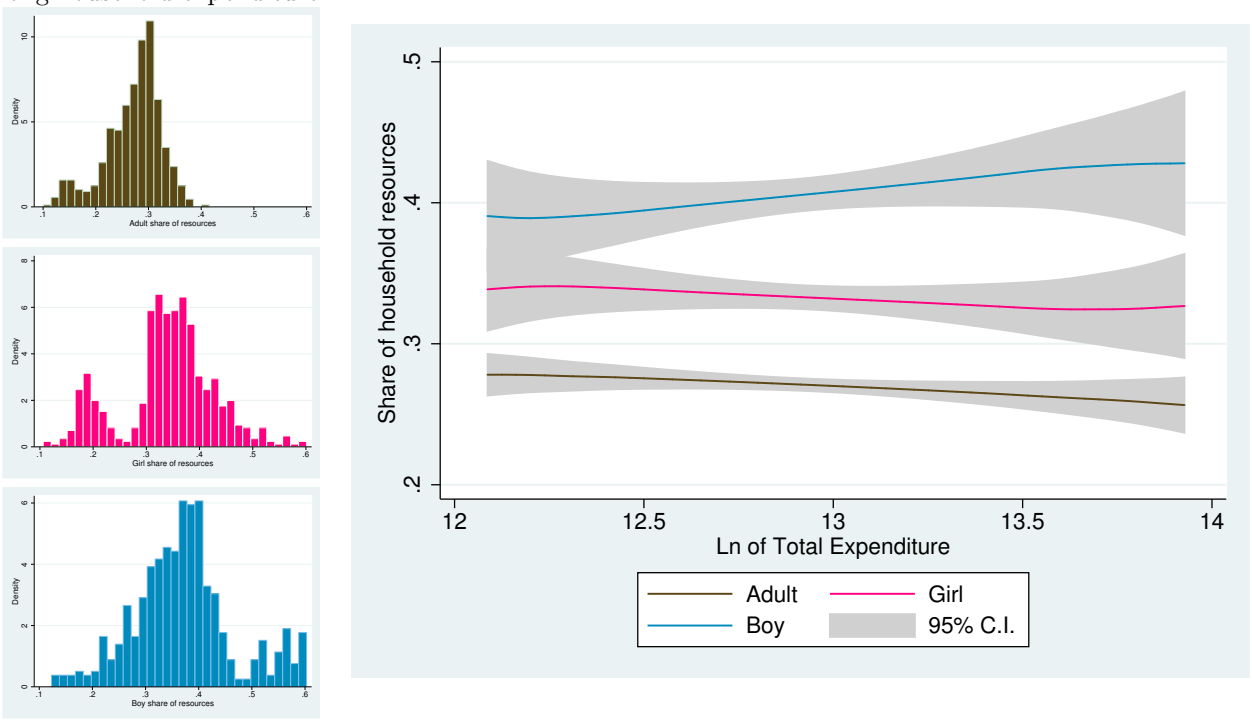


Table 7: Endogenous binary variable model: Distribution of household resources between men, women and children, and past husband's migration

	Husbands's migration		$\widehat{r}_{men}$		$\widehat{r}_{women}$		$\widehat{r}_{children}$	
Main husband and wife age difference			0.039**	(0.017)	-0.014	(0.013)	-0.025	(0.028)
Main husband and wife education (years) difference			0.163***	(0.030)	-0.133***	(0.024)	-0.030	(0.050)
Proportion of female children			-0.003	(0.004)	-0.008***	(0.003)	0.011*	(0.006)
Average age of children in the hh			0.001***	(0.000)	-0.005***	(0.000)	0.004***	(0.000)
Prefecture divorce ratio (divorces per 1000 inhabitants)			-0.000	(0.000)	-0.001***	(0.000)	0.001***	(0.001)
Household asset index 2012	0.010***	(0.004)	-0.000	(0.000)	-0.000	(0.000)	0.000	(0.000)
region==Central	0.671***	(0.213)	-0.002	(0.003)	0.000	(0.003)	0.002	(0.006)
region==Coastal	0.663***	(0.200)	-0.011***	(0.004)	-0.005*	(0.003)	0.016**	(0.006)
region==Mountains	0.100	(0.245)	-0.006*	(0.004)	-0.005*	(0.003)	0.012*	(0.006)
Proportion of dependents in the household	0.130	(0.278)	0.055***	(0.006)	0.040***	(0.005)	-0.096***	(0.011)
More females than males in the hh	0.018	(0.076)	0.005*	(0.003)	-0.006***	(0.002)	0.001	(0.005)
Age of main husband	-0.038***	(0.004)	-0.000**	(0.000)	-0.000***	(0.000)	0.000***	(0.000)
Main husband has university education	-0.087	(0.133)	0.004	(0.003)	0.001	(0.002)	-0.005	(0.005)
Average level of education (years) of adults living in the hh	-0.057***	(0.017)	-0.002***	(0.000)	-0.001**	(0.000)	0.003***	(0.001)
Share of hh members employed	-0.372*	(0.198)	0.023***	(0.004)	0.020***	(0.003)	-0.043***	(0.007)
Main couple is biactive	0.111	(0.137)	-0.008***	(0.003)	-0.007***	(0.002)	0.016***	(0.005)
Quintile of declared household income	0.023	(0.037)	-0.002**	(0.001)	-0.002***	(0.001)	0.004***	(0.001)
Husband's migration			0.016***	(0.005)	0.007*	(0.004)	-0.020***	(0.007)
Distance from Valona (minutes)	-0.002**	(0.001)						
District's share of population speaking Italian in 1990	3.466***	(1.178)						
Constant	0.445	(0.398)	0.342***	(0.007)	0.331***	(0.006)	0.326***	(0.012)
Observations	1,832		1,832		1,832		1,832	

Robust standard errors in parentheses
*** p¡0.01, ** p¡0.05, * p¡0.1

the expected negative sign for the distance from Valona and positive for the share of Italian speakers. As to the outcome equation, when the husband of the main couple has a past migration experience men and women shares of resources are significantly larger (by 1.6 and 0.7 percentage points respectively) while children share is significantly lower (by 2.0 percentage points).

These results are in line with Mangiavacchi et al. (2014) finding that, even conditioning on receiving remittances, women do not improve their relative position (respect to men) during husband's absence, and strengthen the idea that, even if the migration strategy is often seen as a means for economic growth, the welfare improvements for the left behind family members are doubtful (Giannelli and Mangiavacchi, 2010; Gibson et al., 2011; Mendola and Carletto, 2012; Antman, 2015). Similar results have been found for the case in which the past migration experience involved all the family Table (8).

As to child gender discrimination within the family, the small sample size and the inaccurate estimates of the collective Engel system for model ii) prevented us from performing an analysis of the impact of fathers migration on the distribution of resources among boys and girls. Instead, we turned our attention to school enrolment. Table 9 analyses the impact of the past migration experience of the main husband on the proportion of girls attending schooling by grade. The results suggest that a past migration experience of the main husband have a negative and significant impact of female enrolment in preschool and secondary school. As expected, compulsory schooling is not affected by the migration experience. These results confirm our findings of girls discrimination in the distribution of resources within the household. They also confirm and extend previous findings from Giannelli and Mangiavacchi (2010) using 2005 data, where girls were more likely to drop out of schooling than boys when left behind by their fathers.

Table 8: Endogenous binary variable model: Distribution of household resources between men, women and children, and family's past migration

	Family's migration		$\widehat{r}_{men}$		$\widehat{r}_{women}$		$\widehat{r}_{children}$	
Main husband and wife age difference			0.038**	(0.017)	-0.013	(0.013)	-0.025	(0.028)
Main husband and wife education (years) difference			0.161***	(0.030)	-0.134***	(0.024)	-0.027	(0.050)
Proportion of female children			-0.003	(0.004)	-0.008***	(0.003)	0.011*	(0.006)
Average age of children in the hh			0.001***	(0.000)	-0.005***	(0.000)	0.004***	(0.000)
Prefecture divorce ratio (divorces per 1000 inhabitants)			-0.000	(0.000)	-0.001***	(0.000)	0.001***	(0.001)
Household asset index 2012	0.019***	(0.005)	-0.000	(0.000)	-0.000	(0.000)	0.000	(0.000)
region==Central	0.614**	(0.242)	-0.001	(0.003)	0.000	(0.003)	0.001	(0.006)
region==Coastal	0.717***	(0.224)	-0.010***	(0.004)	-0.005*	(0.003)	0.015**	(0.006)
region==Mountains	0.283	(0.284)	-0.007*	(0.004)	-0.005*	(0.003)	0.012**	(0.006)
Proportion of dependents in the household	-0.005	(0.422)	0.056***	(0.006)	0.041***	(0.005)	-0.097***	(0.011)
More females than males in the hh	0.018	(0.103)	0.005*	(0.003)	-0.006***	(0.002)	0.001	(0.005)
Age of main husband	-0.046***	(0.006)	-0.000***	(0.000)	-0.000***	(0.000)	0.000***	(0.000)
Main husband has university education	0.107	(0.179)	0.004	(0.003)	0.000	(0.002)	-0.005	(0.005)
Average level of education (years) of adults living in the hh	-0.058***	(0.022)	-0.002***	(0.000)	-0.001**	(0.000)	0.003***	(0.001)
Share of hh members employed	0.257	(0.260)	0.022***	(0.004)	0.020***	(0.003)	-0.041***	(0.007)
Main couple is biactive	-0.302*	(0.175)	-0.008**	(0.003)	-0.007***	(0.002)	0.015***	(0.005)
Quintile of declared household income	0.024	(0.046)	-0.002**	(0.001)	-0.002***	(0.001)	0.003***	(0.001)
Family's migration			0.017***	(0.005)	0.011***	(0.004)	-0.026***	(0.008)
Distance from Valona (minutes)	-0.001	(0.001)						
District's share of individuals speaking Italian in 1990	4.664***	(1.329)						
Constant	-0.413	(0.515)	0.345***	(0.007)	0.332***	(0.006)	0.322***	(0.011)
Observations	1,832		1,832		1,832		1,832	

Robust standard errors in parentheses
*** p¡0.01, ** p¡0.05, * p¡0.1

4 Concluding Remarks

This study analyses the distribution of resources within Albanian households and whether it is influenced by a past migration experience of the husband of the main couple. The main objective of the paper is to verify whether gender discrimination is an issue in Albania both among adults and children, and its relation with the massive past migration flows experienced by the country. In addition, it analyses the relation between gender school enrolment and father's past migration.

To this end, the analysis is based on the collective household framework, a theoretical and empirical setting that allows the researcher to analyse the distribution of resources within the household. This aspect is typically neglected by the standard poverty and inequality analysis because the household is seen as a black-box whose decision processes are treated as if they were taken by the household head alone.

The results reveal that women are severely discriminated in the distribution of resources within the household, both when adult and to a lesser extent when children. In equivalised households composed by a man, a woman and a child, women have as low as 27.9% of household resources, well below the fair share of 33.3%. On the other hand, men control more than 34% of household resources, while children are in an even better position (38%). A decade of growth and poverty reduction have produced a small but significant improvement in terms of gender equality from 2002 (Mangiavacchi et al., 2014), suggesting the idea that cultural traits and family norms are more persistent than policies and do not depend much on the economic cycle.

On top of that, a past international migration experience of the husband increases more men (1.6%) than women (0.7%) share, thus increasing the gender gap, and introduce a significant loss for children

Table 9: Endogenous binary variable model - Proportion of female children attending pre-primary, primary and secondary school

Outcomes	Pre-primary		Primary		Secondary	
Average age of children in the hh	-0.004	(0.004)	0.003	(0.003)	0.008***	(0.002)
Distance from the nearest primary school	-0.001	(0.001)	-0.000	(0.000)	0.000	(0.000)
Household asset index 2012	-0.001	(0.001)	-0.000	(0.002)	0.000	(0.000)
region==Central	-0.008	(0.046)	0.004	(0.018)	-0.009	(0.010)
region==Coastal	0.058	(0.048)	0.005	(0.029)	0.015	(0.011)
region==Mountains	-0.032	(0.051)	0.001	(0.043)	-0.009	(0.013)
Proportion of dependents in the household	0.229**	(0.090)	0.037	(0.055)	0.047	(0.033)
More females than males in the hh	-0.522***	(0.023)	-0.059***	(0.011)	-0.044***	(0.008)
Age of main husband	-0.002	(0.002)	-0.000	(0.003)	-0.002***	(0.001)
Main husband has university education	-0.023	(0.040)	0.014	(0.035)	-0.002	(0.011)
Average level of education (years) of adults living in the hh	0.000	(0.006)	0.001	(0.005)	-0.002	(0.002)
Share of hh members employed	-0.102	(0.065)	-0.028	(0.029)	0.024	(0.020)
Main couple is biactive	0.058	(0.042)	0.026*	(0.015)	-0.003	(0.014)
Quintile of declared household income	0.007	(0.011)	0.001	(0.006)	-0.000	(0.003)
Past migration experience of the main husband	-0.321*	(0.188)	0.045	(0.465)	-0.126***	(0.042)
Constant	0.824***	(0.132)	0.474*	(0.263)	0.550***	(0.065)
Exclusion restrictions						
Distance from Valona (minutes)	-0.001	(0.001)	-0.002**	(0.001)	-0.002*	(0.001)
District's share of population speaking Italian in 1990	3.229**	(1.266)	2.847	(2.935)	2.966**	(1.183)
Observations	1,093		1,422		1,989	

(-2%). A similar pattern, with slightly larger figures, is found when the migration episode involved also the wife and children (when present).

This finding supports the growing literature on the negative side effects of international migration when the family is left behind in the country of origin. For example, Mangiavacchi et al. (2014) found that in 2002 –a year characterized by a particularly large number of families with a migrant– family resources were redistributed in favour of men and children during the left behind period. Our results show a different pattern, with women benefiting from husband's migration at the expenses of children. In addition, similar findings hold after the return of the husband.

When analysing an equivalized household composed by an adult, a boy and a girl, the situation is less dramatic but the evidence is also less robust because of the small sample size. Girls share of resources is significantly lower than that of boys, with 32.7% versus 37.7%. In addition, the past migration experience of the main husband significantly reduces female school enrolment into pre-primary and secondary school.

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