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## **Women in Agriculture: Some Results of Household Surveys Data Analysis<sup>1</sup>**

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**November, 2006**

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<sup>1</sup> This document is part of a series of contributions by Rimisp-Latin American Center for Rural Development ([www.rimisp.org/wdr2008](http://www.rimisp.org/wdr2008)) to the preparation of the World Development Report 2008 "Agriculture for Development". This work was carried out with the aid of a grant from the International Development Research Centre, Ottawa, Canada ([www.idrc.ca](http://www.idrc.ca)). The contents of this document are the exclusive responsibility of the authors.

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### **Brief methodological explanation**

Data was obtained from Living Standards Measurement Surveys. Databases were previously standardized at the World Bank. Calculations consider rural population only.

For this analysis we compare different variables for female and male headed households for a limited set of countries for which there are comparable data and at least two observations for the 90's and 2000's.

A strong warning should be posted regarding these data. The household and census based data have traditionally misrepresented and under calculated women's contribution to agriculture and even though there has been progress, regarding sensitizing statistics bureaus there are still limitations.

A study for 18 Latin American undertaken by IICA at the beginning of the 1990's showed considerable under calculations regarding women participation in agriculture. They established that there were in between 50% and 300% more women than those reported by official census and household surveys. (B. Kleysen: 1996)

Population estimates of socio-demographic characteristics and some welfare outcomes were obtained for each group at two points in time (beginning of the 90's and 2000's), and the difference for each group in time ( $D_{(t1-t0)}$ ), the differences respect to the control group at each point in time or gap ( $D_{t0}$ ,  $D_{t1}$ ), and the double difference or difference of gaps in time ( $DD_{(t1,t0)}$ ), were calculated.

*Results for some key variables*

**Table 1.** Proportion of female headed rural households in developing countries (percent).

Africa			Latin America			Asia		
Country	Year	Prop female head (%)	Country	Year	Prop female head (%)	Country	Year	Prop female head (%)
Burkina Faso	1994	7,8	Brazil	1995	12,9	Cambodia	1997	22,5
	2003	6,4		2001	13,5		2004	21,2
	D	-1,5		D	0,6		D	-1,3
Ghana	1991	28,9	Chile	1990	13,8	India	1993	9,9
	1998	27,0			18,4		1999	10,2
	D	-1,9		D	4,6		D	0,3
Madagascar	1993	18,8	Colombia	1995	19,7	Indonesia	1993	12,7
	2001	18,8		2000	19,6		2002	12,1
	D	0,0		D	0,0		D	-0,6
Malawi	1997	26,0	Costa Rica	1995	16,8	Nepal	1995	12,9
	2005	24,0		2001	20,0		2003	19,7
	D	-2,0		D	3,3		D	6,9
Tanzania	1991	16,7	Guatemala	1989	21,9	Pakistan	1991	2,1
	2000	22,1		2002	15,0		2001	8,7
	D	5,4		D	-6,8		D	6,6
Uganda	1992	23,6	Honduras	1995	21,4	Thailand	1990	19,2
	2002	24,0		2003	20,6		2002	26,3
	D	0,5		D	-0,8		D	7,1
			Mexico	1994	10,3	Vietnam	1992	22,6
				2002	14,8		2001	20,8
				D	4,4		D	-1,9
			Paraguay	1995	17,1			
				2001	19,6			
				D	2,5			
			Peru	1994	11,2			
				2002	17,3			
				D	6,1			

Source: Rimisp calculations based on household survey data provided by the World Bank.

Some remarks:

- A significant proportion of rural households are female headed: in average 18, 6% of RHH for countries with available information, even though this figures could hide a number of female headed households. In countries such as Thailand and Ghana percentages are even higher, with over 25% of total rural households being headed by women. Regarding female headed small farming RHH they represent on average 10,3% of total small farming RHH, which seems to indicate that women tend to head more frequently non farming HH and that probably they have more restrictions regarding access to land. HIV/AIDS, wars and conflict and male migration have been mentioned as causes related to loss of land rights by rural women (International Land Coalition: 2006)
- A general trend can be observed towards decreases in the number of female headed households in Africa, with the strong exception of Tanzania and in a much lesser proportion in Uganda. De-feminization seems to happen in all types of rural households, but stronger trends can be observed in Ghana, Malawi and Madagascar regarding small farming RHH, which points to women losing access to land.
- In the case of Latin America most of the countries show an increase in women headed rural households. The only relevant exception is Guatemala and to a lesser extent Colombia. In this last country as in Paraguay there is a stronger decreasing trend in small farming rural households, while in Guatemala the number of small farming HH increases, contrary to what happens to all RHH. Small farms seem to loose women broadly which signals a trend towards migration of women, searching alternative employment opportunities.
- In Asian countries an increase in the number of female headed RHH can be observed in most countries, with the exceptions of Vietnam, Indonesia and Cambodia. In some cases de-feminization is stronger in small farming RHH as in Cambodia.

**Table 2.** Socio demographic characteristics of women header RHH in developing countries (percent).

Country	Relative differences in the household head age on rural HH (%)						Relative difference in the HH size on rural HH (%)					
	FEMALE			MALE			FEMALE			MALE		
	YEAR 90'S	YEAR 2000'S	DIFFERENCE YEARS 90's - 2000's	YEAR 90'S	YEAR 2000'S	DIFFERENCE YEARS 90's - 2000's	YEAR 90'S	YEAR 2000'S	DIFFERENCE YEARS 90's - 2000's	YEAR 90'S	YEAR 2000'S	DIFFERENCE YEARS 90's - 2000's
Burkina Faso	100,0	94,8	-5,2	90,8	85,1	-5,6	100,0	116,5	16,5	242,2	198,1	-44,1
Ghana	100,0	105,3	5,3	98,2	97,3	-0,9	100,0	103,6	3,6	128,4	134,9	6,5
Madagascar	100,0	59,8	-40,2	85,4	49,6	-35,8	100,0	97,1	-2,9	142,1	138,2	-3,9
Malawi	100,0	97,7	-2,3	97,6	95,9	-1,7	100,0	101,0	1,0	172,1	164,0	-8,1
Tanzania	100,0	99,6	-0,4	92,7	90,2	-2,5	100,0	94,6	-5,4	137,1	120,5	-16,6
Uganda	100,0	91,6	-8,4	88,1	84,5	-3,6						
Brazil	100,0	99,8	-0,2	78,8	80,5	1,7	100,0	97,1	-2,9	136,3	125,7	-10,6
Chile	100,0	101,3	1,3	79,5	86,1	6,6	100,0	92,6	-7,4	119,8	110,6	-9,2
Colombia	100,0	101,1	1,1	86,6	87,9	1,3	100,0	99,2	-0,8	126,9	120,9	-5,9
Costa Rica	100,0	97,2	-2,8	86,5	88,7	2,2	100,0	98,7	-1,3	119,4	114,1	-5,3
Guatemala	100,0	99,2	-0,8	88,1	85,8	-2,4	100,0	90,3	-9,7	113,2	115,9	2,7
Honduras	100,0	99,5	-0,5	88,6	88,9	0,3	100,0	99,7	-0,3	123,3	118,8	-4,5
Mexico	100,0	99,0	-1,0	78,7	83,9	5,2	100,0	86,0	-14,0	142,1	122,7	-19,4
Nicaragua	100,0	103,5	3,5	84,0	88,2	4,2	100,0	104,7	4,7	114,0	110,1	-3,9
Paraguay	100,0	98,0	-2,0	84,3	85,4	1,2	100,0	116,0	16,0	134,3	130,6	-3,7
Peru	100,0	100,9	0,9	84,1	85,6	1,4	100,0	82,3	-17,7	144,5	124,5	-19,9
Cambodia	100,0	101,3	1,3	83,8	85,6	1,8	100,0	100,5	0,5	138,0	138,7	0,7
India	100,0	130,4	30,4	140,8	140,7	0,0	100,0	262,5	162,5	168,1	179,0	10,9
Indonesia	100,0	99,3	-0,7	121,1	124,6	3,6	100,0	87,4	-12,6	54,2	50,0	-4,1
Nepal	100,0	100,8	0,8	98,1	95,3	-2,7	100,0	146,7	46,7	92,7	94,0	1,3
Pakistan							100,0	66,8	-33,2	92,1	89,1	-3,0
Thailand	100,0	96,5	-3,5	86,3	91,4	5,1	100,0	88,2	-11,8	122,6	108,7	-13,9
Vietnam	100,0	105,5	5,5	86,6	92,8	6,2	100,0	116,1	16,1	133,8	134,1	0,3

Source: Rimisp calculations based on household survey data provided by the World Bank.

Some remarks:

- Regarding age of head of households there are differences between developing regions. In Africa average age of heads of RHH is older for female RHH than for male, possibly related to VIH/SIDA, wars and male migration. Heads of RHH age has decreased between the 90's and 2000's, female headed diminishing faster than male headed in countries such as Uganda, Madagascar and Malawi, while male headed diminished faster in Burkina Faso, Tanzania and Ghana. Nonetheless female headed remain older. Female headed RHH tend to have fewer members than male headed.
- In countries analyzed in Asia female heads of RHH tend to be older than male headed, with the exception of India and Indonesia, reflecting migration patterns and mortality rates. Older male heads in India and Indonesia are probably linked to higher life expectancy. Male headed RHH tend to have more members, than female headed and these have a larger female composition. In Nepal and India female headed RHH have grown in average number of members. In India Pakistan and Thailand the average number of family members for RHH has diminished.
- In Latin American countries average age of female heads of RHH are significantly older than male headed for the two years considered for each country. Regarding number of household members female headed RHH have lesser members than male headed, but both show a clear trend to become smaller in time, as fertility rates fall.
- Male headed households tend to have more members in all developing regions, but numbers differ. African and Asian RHH (with the exception of Indonesia and Pakistan) tend to be smaller than RHH in Latin America. But in almost all countries number of members is diminishing. Female headed RHH have a larger proportion of female members than male headed.

**Table 3.** Average Schooling of RHH members female and male

Country	FEMALE			MALE		
	years 90's	years 2000's	DIFFERENCE YEARS 90's - 2000's	years 90's	years 2000's	DIFFERENCE YEARS 90's - 2000's
Burkina Faso	100	103,9	3,9	48,1	45,8	-2,2
Ghana	100		-100,0	97,1		
Tanzania	100	154,7	54,7	110,3	154,3	44,0
Brazil	100	120,0	20,0	108,6	126,5	17,9
Chile	100	108,4	8,4	107,8	122,9	15,1
Colombia	100	110,8	10,8	95,8	107,4	11,6
Costa Rica	100	100,8	0,8	106,0	105,9	-0,2
Guatemala	100	19,8	-80,2	97,8	42,6	-55,2
Honduras	100	125,7	25,7	92,3	116,2	23,8
Mexico	100	119,5	19,5	104,8	130,9	26,1
Nicaragua	100	172,8	72,8	137,8	174,1	36,3
Paraguay	100	118,9	18,9	108,7	121,3	12,6
Peru	100	86,3	-13,7	89,2	88,0	-1,2
Indonesia	100	116,4	16,4	122,2	145,1	22,8
Nepal	100	100,0	0,0	138,0	138,0	0,0
Pakistan	100	131,1	31,1	95,2	113,7	18,4
Thailand	100	121,4	21,4	101,9	121,1	19,2

Source: Rimisp calculations based on household survey data provided by the World Bank.

Some remarks:

- Regarding average number of school years of RHH members there is a general trend by which people stay longer in schools. There are two exceptions for countries listed Guatemala and Peru. The number of schooling years increases for both female and male headed RHH.
- In a number of countries schooling increases when female headed. This is the case for Pakistan, Burkina Faso, Tanzania, Nicaragua, Honduras, Paraguay, Costa Rica and Brazil, which seems to indicate greater commitment to education.

**Table 4.** Changes in income or consumption and access to electricity services.

Country	Relative difference in Consumption per adult equivalent (%)						Relative differences in access to electricity in rural HH %					
	FEMALE			MALE			FEMALE			MALE		
	YEAR 90'S	YEAR 2000's	DIFFERENCE YEARS 90's - 2000's	YEAR 90'S	YEAR 2000's	DIFFERENCE YEARS 90's - 2000's	YEAR 90'S	YEAR 2000's	DIFFERENCE YEARS 90's - 2000's	YEAR 90'S	YEAR 2000's	DIFFERENCE YEARS 90's - 2000's
Burkina Faso	100,0	176,4	76,4	75,8	147,9	72,0	100,0	116,9	16,9	37,7	54,3	16,6
Ghana	100,0	99,4	-0,6	88,3	86,5	-1,8	100,0	269,1	169,1	67,4	199,7	132,3
Tanzania	100,0	142,4	42,4	111,6	133,5	21,9						
Uganda	100,0	146,9	46,9	91,2	182,6	91,4						
Peru	100,0	97,1	-2,9	73,5	85,3	11,8	100,0	148,2	48,2	83,3	134,7	51,4
Paraguay	100,0	91,3	-8,7	114,9	101,4	-13,5	100,0	150,1	50,1	93,7	138,8	45,2
Nicaragua							100,0	82,8	-17,2	67,0	77,5	10,5
Mexico	100,0	92,5	-7,5	103,0	116,9	13,9	100,0	108,1	8,1	97,2	110,1	12,9
Honduras	100,0	154,6	54,6	115,6	124,5	8,9	100,0	80,8	-19,2	86,1	61,2	-24,9
Guatemala							100,0	112,4	12,4	96,9	112,4	15,5
Colombia	100,0	88,9	-11,1	100,3	91,6	-8,7	100,0	103,6	3,6	99,9	99,1	-0,7
Chile	100,0	148,8	48,8	136,4	182,4	46,0	100,0	146,8	46,8	100,6	148,7	48,1
Brazil	100,0	104,5	4,5	95,6	95,8	0,2	100,0	134,9	34,9	108,4	132,4	24,0
Cambodia							100,0	152,0	52,0	178,6	167,8	-10,8
India	100,0	92,3	-7,7	92,4	86,7	-5,7						
Indonesia	100,0	136,4	36,4	100,9	136,0	35,1						
Pakistan	100,0	87,6	-12,4	104,9	76,3	-28,5	100,0	233,6	133,6	171,5	196,8	25,3
Thailand	100,0	125,0	25,0	96,7	112,4	15,7	100,0	112,7	12,7	98,2	112,4	14,2

Source: Rimisp calculations based on household survey data provided by the World Bank.



## Some Remarks

- Regarding consumption per adult equivalent there is no clear pattern: While there are countries such as Burkina Faso, Tanzania, Uganda, Brazil, Honduras, Indonesia and Thailand where RHH independently of sex of heads, bear better in the 2000's, there are other countries, where income and consumption falls such Ghana, Paraguay, Colombia, India and Pakistan. In some countries such as Mexico and Colombia, female headed RHH are worst hit by diminishing consumption or income. Generally though female headed RHH seem better off, than male headed ones, when consumption or income diminishes.
- Regarding access to electricity African Rural households and more so when female headed, increase their access to this service, although their starting points are very low. Starting at higher percentages access to electricity also increases in Latin American countries (with the exception of Honduras). In Asia, access increases to all RHH, with the exception of male headed in Cambodia.

**Table 5.** Comparative Unemployment of Rural Household members

Country	FEMALE			MALE		
	years 90's	years 2000's	DIFFERENCE YEARS 90's - 2000's	years 90's	years 2000's	DIFFERENCE YEARS 90's - 2000's
Burkina Faso	100	103,9	3,9	48,1	45,8	-2,2
Ghana	100		-100,0	97,1		
Tanzania	100	154,7	54,7	110,3	154,3	44,0
Brazil	100	120,0	20,0	108,6	126,5	17,9
Chile	100	108,4	8,4	107,8	122,9	15,1
Colombia	100	110,8	10,8	95,8	107,4	11,6
Costa Rica	100	100,8	0,8	106,0	105,9	-0,2
Guatemala	100	19,8	-80,2	97,8	42,6	-55,2
Honduras	100	125,7	25,7	92,3	116,2	23,8
Mexico	100	119,5	19,5	104,8	130,9	26,1
Nicaragua	100	172,8	72,8	137,8	174,1	36,3
Paraguay	100	118,9	18,9	108,7	121,3	12,6
Peru	100	86,3	-13,7	89,2	88,0	-1,2
Indonesia	100	116,4	16,4	122,2	145,1	22,8
Nepal	100	100,0	0,0	138,0	138,0	0,0
Pakistan	100	131,1	31,1	95,2	113,7	18,4
Thailand	100	121,4	21,4	101,9	121,1	19,2

Source: Rimisp calculations based on household survey data provided by the World Bank.

## Some Remarks

- Increases in unemployment for female headed RHH show important differences between regions. While in Asia they increase in all countries, for all household and at higher rates for female headed RHH, in Africa, only Ghana exhibits increased unemployment rates, while it diminishes in female headed RHH in Madagascar and

for all RHH in Malawi. In Latin America unemployment rates are higher for female headed RHH and it increases for the second year, with the exception of Guatemala, Honduras and Nicaragua.

**Table 6. Poverty and Income inequality among rural Households**

Country	Head count of poverty based on 1 US\$ per day (%)						Relative differences in income inequality among rural HH (GINI) %					
	FEMALE			MALE			FEMALE			MALE		
	YEAR 90'S	YEAR 2000's	DIFFERENCE YEARS 90's - 2000's	YEAR 90'S	YEAR 2000's	DIFFERENCE YEARS 90's - 2000's	YEAR 90'S	YEAR 2000's	DIFFERENCE YEARS 90's - 2000's	YEAR 90'S	YEAR 2000's	DIFFERENCE YEARS 90's - 2000's
Burkina Faso	100,0	116,9	16,9	37,7	54,3	16,6	0,45	0,48	0,03	0,38	0,39	0,01
Ghana	100,0	100,2	0,2	196,1	156,7	-39,5	0,34	0,38	0,04	0,34	0,39	0,05
Tanzania	100,0	77,8	-22,2	95,9	83,9	-12,1	0,34	0,33	-0,01	0,31	0,33	0,02
Uganda	100,0	76,7	-23,3	105,0	55,1	-49,9	0,37	0,45	0,08	0,35	0,41	0,06
Brazil	100,0	80,2	-19,8	139,4	117,8	-21,6	0,48	0,47	-0,01	0,53	0,52	-0,01
Chile	100,0	0,9	-99,1	75,5	1,1	-74,4	0,57	0,43	-0,14	0,58	0,50	-0,08
Colombia	100,0	169,1	69,1	89,2	155,7	66,5	0,43	0,56	0,13	0,43	0,54	0,11
Honduras	100,0	42,7	-57,3	90,4	47,1	-43,3	0,52	0,51	-0,01	0,54	0,50	-0,04
Mexico	100,0	102,2	2,2	88,9	76,2	-12,7	0,46	0,51	0,05	0,48	0,55	0,07
Paraguay	100,0	57,9	-42,1	105,1	111,1	6,1	0,46	0,45	-0,01	0,57	0,57	0,00
Peru	100,0	41,1	-58,9	117,7	63,8	-53,9	0,54	0,42	-0,12	0,49	0,44	-0,05
India	100,0	43,6	-56,4	102,4	51,4	-51,0	0,31	0,26	-0,05	0,28	0,25	-0,03
Indonesia	100,0	42,3	-57,7	94,5	39,5	-55,0	0,26	0,25	-0,01	0,25	0,24	-0,01
Thailand	100,0	0,9	-99,1	93,3	6,5	-86,8	0,40	0,35	-0,05	0,39	0,34	-0,05
Pakistan							0,28	0,23	-0,05	0,35	0,23	-0,12

Source: Rimisp calculations based on household survey data provided by the World Bank.

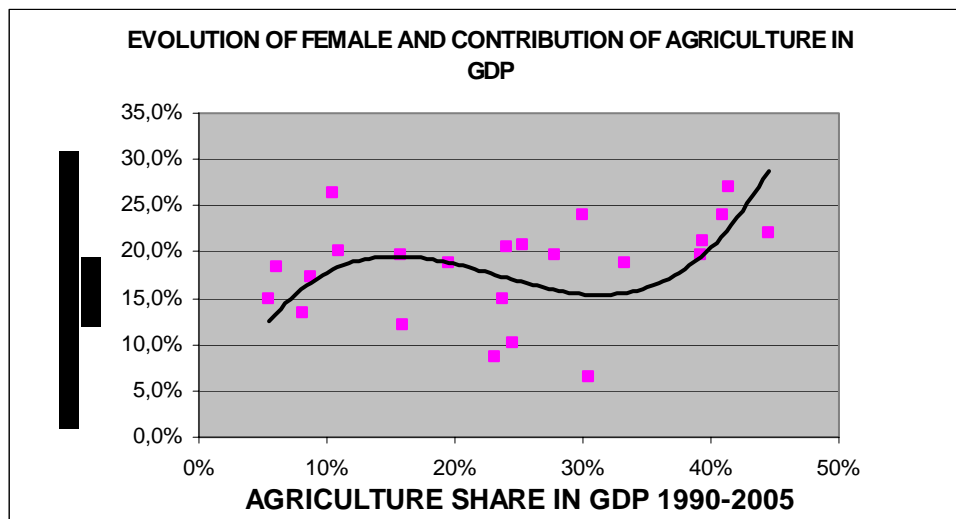
## Some Remarks

- For all regions and countries, with few exceptions, a reduction of poverty can be observed between the 1990's and the 2000's., all though poverty still continues to burden significant numbers of RHH. Exceptions include Burkina Faso, Colombia and Paraguay where RHH poverty increases, while significant reductions of poverty took place in Chile and Thailand. There are no significant differences gender wise, all though generally in Asia and Latin American listed countries reductions are on average stronger in female headed RHH, while in Africa reduction is more significant on male headed RHH.
- As expected income or consumption concentration for RHH is higher in Latin America, than in Asia and Africa, but the Gini indicator is increasing faster in Africa. Male headed RHH show higher concentration indexes in Latin America, than in Africa or Asia, where percentages are similar. Considering individual countries higher Gini can be observed amongst Paraguayan, Brazilian, Mexican, Chilean and Honduran male headed RHH. Ugandan and Colombian Gini indicator are higher for female headed RHH than for male ones.

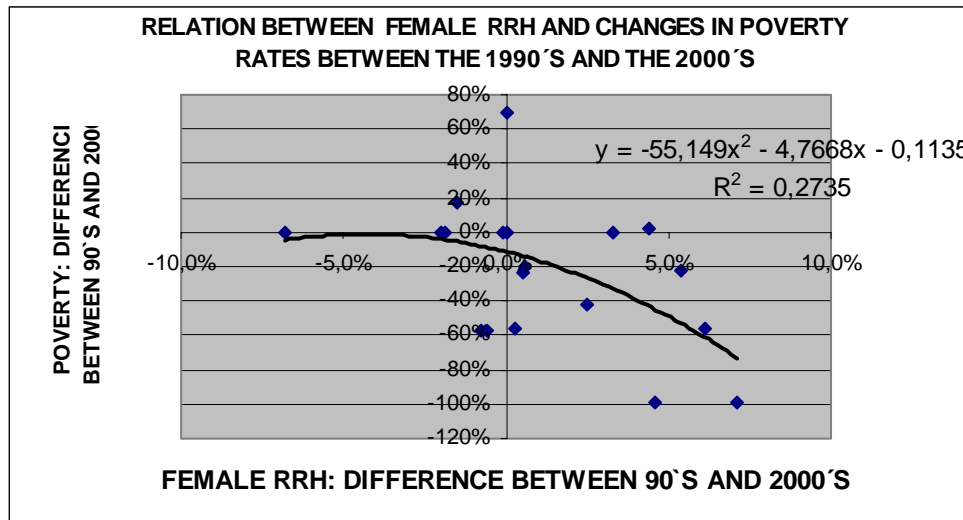
## Some General Trends

A more thorough analysis of the available household data helps establish at least some general relations between the main variables under consideration and more general data regarding importance of agriculture, rural poverty, employment. These should be seen only as preliminary conclusions subject to additional studies.

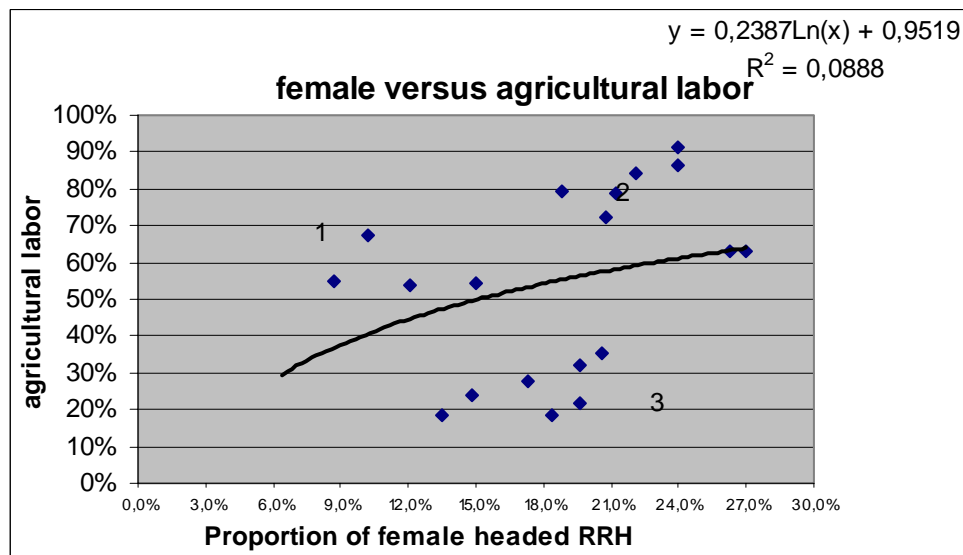
- Bigger the participation of agriculture in the national product normally bigger the number of female headed RHH. Of agriculture share of GDP Female headed RHH represent only about 9% of the explanation



- Increased importance of female headed RHH a reduction in poverty can be observed, all though female RHH only explain about 27% of changes in poverty. This relation is stronger for low and low middle income countries, than for higher income countries.



- When the number of female headed RHH increases so thus employment in agriculture, albeit it explains only about 8% of change.



- Guatemala, Indonesia, India, Pakistan
- Ghana, Thailand, Malawi, Uganda, Tanzania, Cambodia, Vietnam, Madagascar
- Honduras, Colombia, Paraguay, Chile, Perú, México, Brazil

- Female headed RHH represent a significant proportion of all rural households. Within such households they play a considerable role in agriculture and non agricultural production. They also play a significant role regarding the well being of family members. A positive relation can be established between female headed rural households and schooling years of family members.
- There seems to be also a positive relation between Female headed RHH and access to basic services such as electricity. Probably this is also de case for running water and fuel.
- Female headed RHH tend to be associated with lesser degrees of inequality, than male headed rural households.