

Mary Grigsby, Eloi Español, David J. O'Brien

The Influence of Farm Size on Gendered Involvement in Crop Cultivation and Decision-making Responsibility of Moldovan Farmers

Abstract

This research describes the influence that farm size has on gendered involvement in crop cultivation and decision making about what crops to grow where, irrigation and marketing among small and medium-sized farmers in Moldova. Findings reveal that overall crop cultivation is characterized by gendered patterns that vary according to farm size. Overall men have much more input into decision making than do women but women on small farms have more input in decisions than do the women on medium-sized farms. However, women on medium-sized farms are more involved in the diverse range of cultivation activities in terms of labour.

Keywords: Moldova, gendered division of labour, post-socialist economies.

Introduction

In recent years a growing body of research has accumulated on how the transition from Communist to market-driven economic systems has affected the status and roles of men and women in the former Soviet Union and Central and Eastern Europe (Ashwin 2000, 2006; Ashwin and Lytkina 2004; Bridger 1996; Wegren et al. 2010). Much less attention, however, has been given to the question: how have differences in the *size* of farms in post-communist agricultural economies affected the gendered division of labour? Researchers have focused on the relationship between the scale of new farms and economic output and efficiency, but have not dealt directly with the question, how does larger or smaller farm size affect the tasks that men and women engage in as well as their relative input into decision making?

Feminist social science approaches to the study of agriculture have revealed a historic bias that has largely left out or made invisible the significant contributions of women to agriculture through labour and decision making (Boserup 1970, Bossen 1989, Bryceson 1995, Davison 1988, Dixon 1985, Guyer 1986, Heyzer 1986). Studies of farming that include both men and women farmers have followed yet there are geographic regions for which little research and knowledge exists of the contributions and varied roles of women and men farmers on different sized farms. This research contributes to extending knowledge of the varied patterns in contributions of men and women in farming in post-communist countries, by providing data analysis of the authors' survey data on gendered patterns in crop cultivation and decision making on small and medium-sized farms.

Literature addressing the gender division of labour in agriculture reveals that tasks or physical activities are often assigned based on gender (Burton and White 1977, 1984, Dixon Mueller 1985, Huvio 1998, Norem 1988, Sachs 1996, Stone et al. 1995). Men and women have been found to have patterned and varied involvement in production activities, crops they assume responsibility for, involvement in marketing, knowledge of farming and technology related to farming, and control over decision making. In many cases women are excluded from control over land and property and experience an unbalanced gender division of labour in which they do much of the manual work and work longer hours than men (Bridger 1996, Holzner 2008, Wegren et al. 2010, Rahman 2008).

The analysis presented in this paper attempts to answer the question posed above by examining reported agricultural tasks and input into decision-making by respondents in a stratified sample of small (< 10 ha) and medium-sized (10-100 ha) Moldovan farms.

Previous Findings on Gender, Division of Labour and Decision Making in Agriculture

Gender, Division of Labour and Decision Making in Agriculture in Africa, Asia, Western Europe and North America

Research findings on women's involvement in farm production and input into decision making in parts of the world outside of Central/Eastern Europe and the former Soviet Union have been somewhat conflicting. Rahman (2008)

found in Kaduna State, Nigeria that women on smaller farms had more input into decision making and had higher levels of satisfaction than women on larger farms. Trinh et al. (2003) found that the greater women's involvement in marketing the greater their input into decision making on the farm. Trinh et al. (2003) found that in Vietnam men had higher levels of decision making regarding home garden crops that were being marketed while women make more of the decisions about crops aimed at subsistence.

Alternatively, Safiliou-Rotschild et al. (2007) found that significantly more small-holder Greek women farmers participate in agricultural work than women on larger farms but without having a greater share of decision making. The combined effect of farm size and type of crops on women's ability to make agricultural decisions and to manage farms (p. 414) was significant. In cases where crops are high-value commercial crops she found a positive relationship between farm size and feminization of agricultural decision making. Her data do not support the hypothesis of a positive relationship between men's work off farm and feminization of agriculture, instead finding women's access to land independently of their husbands is key to the feminization of decision making. There is also a higher "survival" probability in Greek farming if women share farm tasks and decisions (Rossier 2005; Safiliou-Rotschild 2003)

Hall and Mogyorody (2007) found that variations in gender participation in farm production and decision making on organic farms in Ontario, Canada were linked to types of farming, size of farms and production orientations such as conventional field crop production shifted to organic where traditional gender relations prevail or organic farmers with social justice concerns where more gender egalitarianism may be present. They found that female farmers on vegetable farms and mixed livestock/cash crop farms were more likely to be involved in farm production and management whereas women on field crop farms where mechanization and capital intensive production is higher were less likely to be involved.

A growing body of literature reveals that households are not necessarily homogeneous units with unified interests and that to understand the significance of gender in farming and in development a more complex understanding of intra-household dynamics is needed (Bossen 1989, Bridger 1996, Crewe and Harrison 1998, Dixon 1985, Guyer 1986, Henderson 1995, Heyzer 1986, Holzner 2008, Jha 2004, MacPhail and Bowles 1989, Morell 2007, Pine 1996, Poats et al. 1988, Quisimbing et al. 1995, van Koppen 2000, Shortall 2002).

Gender, Division of Labour and Decision Making in Post-Communist Countries

The term “post-communist” is obviously a simplification insofar as there was considerable variability in Eastern Bloc countries during the Soviet period, as well as considerable differences in the economies, politics and success in adjusting to market reforms in the post-cold war period (see, e.g., Turnock 1998), including differences in the impact of these transitions on men and women (see, e.g., Hann 2001; Kovacs 2008). Some research in post-communist countries has found that the transition to the market economy has disadvantaged rural women (Bridger 1996, Pine 1996) because of discrimination and patriarchal culture that burdens women with work and responsibility for most reproductive work as well as increased farm labour to provide subsistence and agricultural commodities for the market. Other research, focusing on issues encountered by men (Burowoy et al. 1999, 2000, Kiblitkaya 2000, Rotkirch 2000) finds that poor men have been marginalized as economic activity has come to be located in the household where women’s role is central. The working class man’s contribution to survival that previously derived from the public economy is now absent. Ashwin (2006) brings these two threads together and concludes both findings to be accurate. The key to understanding the dynamic is found by understanding the gender division of labour within the household.

The Soviet legacy, according to Ashwin (2000, 2006), derives from efforts by the communist state to make work central for both men and women. Women were encouraged to assume identities as ‘worker-mothers’ while men were to serve as leaders, managers, soldiers and workers. Their role in the household was minimized. Mothers were glorified but men were not encouraged to adopt identities as father figures; the latter role as assigned party leaders. Men were to emphasize identities associated with the public sphere where their dominance was seen as legitimate.

The collapse of the Soviet state removed the institutional and ideological underpinnings of Soviet-approved gender relations and identities. First, work is no longer a state-imposed duty... Now, rather than emphasizing women’s duty to work, members of the political elite are more likely to argue that in an era of unemployment women should leave the jobs for the boys. Second, motherhood has been redefined as a private responsibility. While in the Soviet era motherhood was portrayed as a service to the

state, and recognized as such through a social policy which supported the mother and child unit as an indivisible whole, now the state has reneged on its paternal role as the protector of mother and child (Issoupova 2000). This, of course, implies greater pressure on men to perform the role of providers. These changes in state policy might appear to be conducive to a return to the so-called traditional family consisting of a male breadwinner and non-working wife, but the fact that they have occurred in a period of economic collapse has dramatically limited the potential of most ordinary men to provide for their families. (Ashwin 2006: 34)

Ashwin (2006) holds that Russian women are preserving their presence in the post-soviet labour force and assuming the main responsibility for childcare and household reproduction. She found that her respondents continued to support the Soviet model of gender relations after the collapse of the Soviet political and economic system that supported them.

Despite women's commitment to work, the expectations of both women and men remained that men would be the primary breadwinners. The breadwinner role for men was preserved during the Soviet era because men were generally paid more than women and the breadwinner was considered to be the one who made more money. *Being the primary earner is very important to men. Not only is it a duty, it also defines men's status within the household* (Ashwin and Lytkina 2004: 35).

Ashwin concludes that Soviet gender norms are being reproduced in post-soviet Russia. Women continue to work for lower wages than men and occupy lower positions, assume primary responsibility for household reproduction, and expect men to be the primary breadwinners. Men continue to want to be the primary breadwinners but are often unable to do so and unwilling to assume greater responsibilities in the household.

Overall, the literature on rural women in post-communist countries [Russia (Bridger 1996, Holzner 2008), Poland (Pine 1996, Repassy 1991), Croatia (Šikić-Mićanović 2009), Bulgaria (Debrava 1994), Hungary (Morrell 2007), Albania, Armenia, Latvia, Lithuania, Estonia, Czech Republic, Georgia, Belarus, Ukraine, Slovakia (Holzner 2008)] has found similar cultural conceptions about gender roles and patterns of behaviour as those identified by Ashwin in Russia.

The literature on post-soviet countries generally indicates that women are performing a disproportionately high amount of the farm and household labour (Bridger 1996, Wegren et al. 2010). Women are reported to have little sense of

empowerment resulting from their increased responsibilities for agriculture, childcare, household work, and often marketing of surplus or other kinds of part-time work to support their families. This is generally explained by the prevalence of a patriarchal culture that supports men in control over decision making. These women are described as reluctant to consider expanding farming operations because they are already working at breaking point, with men reluctant to engage in what has historically been defined as women's work in the form of subsistence agriculture activities.

Bridger (1996) described the stress of Russian farm wives caused by alcoholic, violent men, having to balance using their children as farm labour or allowing them to attend school, doing work formerly done with machinery, and taking on the greater burdens of household reproduction assigned to them by the new gendered division of labour on family farms.

Pine (1996) found that in rural Poland female labour accounts for a large proportion of total agricultural production that is hidden within the family production unit of the peasant household economy and notes that 'The agricultural work of women is viewed primarily as an extension of their domestic, marital and family responsibilities, and that this fact adds to its undervalued status and even its invisibility' (p. 71). Pine found that women's work had increased as they took over more of the farm labour with little increase in prestige or economic reward and continued to do most of the childcare, household work, and in many cases to engage in marketing surplus eggs, cheese and crafts.

Much research on Western industrialized and post-soviet countries has found a growing 'masculinization' of agriculture (Brandth 2002, Almas and Haugen 1991, Holzner 2008, Rooij 1994, Shortall 1999, Watson 1996). Holzner (2008) and Watson (1996) maintain that in Eastern Europe (...) *the family farm fits into the general post-socialist transition experience of a 'rise of masculinism'* (Watson 1996) (Holzner 2008: 437). The process is linked to the intersections of patriarchal culture, institutional arrangements that privilege men in day-to-day transactions in the public sphere, and commercialization of agriculture that includes the use of new technology, machinery and skills that men gain access to and use (Almas and Haugen 1991, Shortall 1999, Watson 1996, Holzner 2008). Women simultaneously are said to be pulled into off-farm work because it is available and brings added income to the household.

Holzner (2008), writing about post-soviet Eastern Europe, suggests that the choice of the family farm as the model for post-soviet agricultural

production is problematic despite the features that made it an attractive policy model to decision makers. A number of studies provide insights into family farming in Eastern European countries and often reveal the social costs associated with the transformation even as they note the importance of agriculture as an economic development activity is increasingly important (Hudečková and Lošták 1995; Alanan 1995; Rotariu and Roth 1995; Csillag, Elek and Németh 2002). Women farmers in Eastern Europe are found to be an underutilized resource for rural development and the extension of family farming (Šikić-Mičanović 2009). In a qualitative study of women in Croatia Šikić-Mičanović (2009) found that women's contributions to development are often made invisible and that rural women's aspirations are often constrained by the socio-cultural context that offers limited opportunities for them to assist in economic development in agriculture. She advocates policies that support women in pursuit of development opportunities commensurate with men.

The family farm (2008) was seen as being highly efficient (Schmitt 1991, Strange 1990, Hagedorn 1994) because labour is seen as being *flexible, elastic and is unpaid, relying on all family members* (Holzner 2008: 432). Land is privately owned and she maintains land titles are mostly issued to men as heads of households and land ownership will be invested with emotional value due to inheritance customs and accumulated knowledge about cultivation. Capital for agricultural production to purchase inputs and technology must often be borrowed. Intensification possibilities to be derived from technology rather than added labour are dependent on credit. If men hold title it is they who have access to credit. In Moldova women are legally able to own and inherit land. This literature, however, points out that formal legal access does not necessarily result in equal access to or control over resources for women.

While the reluctance to farm by both women and men in post-soviet countries has been attributed to resistance to economic risks, lack of skills and problems of access to land and marketing, and a reluctance to become entrepreneurial and self responsible (Hudečková and Lošták 1992, Majerova 1993), Holzner suggests bringing production and reproduction functions into the household creates new conflicts between wives and husbands as business partners (Kovacs and Varadi 1999).

Another dimension that contributes to the functioning of the family farm identified by Holzner is commitment to the family household and farming profession. Holzner (2008) maintains that men are often considered the primary decision makers but decisions are often made jointly. Management

of farms involves decision making knowledge about investment, choice of crops, inputs and cultivation, harvesting time, labour requirements, weather conditions, innovation or conservation options and market dynamics.

Also at work, according to Holzner, are patriarchal traditions that are hierarchical and privilege men with land ownership, preference in inheritance customs and in the division of labour. Within this patriarchal culture women are assigned mainly the reproductive functions of having and tending to children to insure that labour is available, feeding the family, and cleaning the house, stables, caring for small animals and tending gardens (Bridger 1996, Pine 1996, Whatmore 1991).

In post-soviet countries Holzner maintains "The difficulties of private farms in gaining access to credit, machinery and agricultural inputs requires the continuous use of home gardens as important sources of subsistence and cash income. The dominant role of women in this peripheral yet significant form of agriculture which relies on manual labour (Nemenyi 1999) emphasizes their role in providing economic "safety nets" (Holzner 2008: 438).

Research Questions

The preceding discussion has noted that there is a good deal of confusion in general about the role of gender in the division of labour in farming as well as uncertainty about the role of women in production and decision making in agriculture. Additional uncertainty is found in the specific case of agriculture in post-communist countries which have experienced substantial shocks to existing formal and informal institutions within a very short period of time.

In our view, one of the most important ways to untangle some of the confusion about the relationship between gender and agriculture in post-communist societies is to generate research questions with a much higher level of specificity than has often been the case in the past. With this in mind, the analysis to be presented below focuses on four specific questions: First, to what extent does the type of crop grown affect the participation of men and women in its cultivation? Second, to what extent does the size of farm operated by the household affect the participation of men and women in different types of cultivation? Third, are men and women involved similarly or differently in various areas of the total household enterprise, including which crops to grow, how to use agricultural technologies and when and where to sell agricultural products? Fourth, to what extent does the size of the

household farm affect the input of men and women in these different types of areas of decision making?

The unique features of land reform in Moldova provide a setting with which these four questions can be addressed.

Moldovan Land Reform

Moldova is a small, relatively poor, landlocked country located between Ukraine and Romania, which was incorporated into the Soviet Union at the end of World War II (World Bank 2011). Moldova proclaimed its independence from the Soviet Union on 27th August, 1991. In contrast to Russia, post-soviet Moldovan land privatization was very swift. Members of collective farms were issued certificates of ownership of plots of land from which they could either farm themselves or lease to other citizens. Although there may have been the hope, especially among Western economists, that many Moldovans would sell their land and thus provide a land market that would result in the creation of middle-sized family farms, the vast majority of new land holders chose to retain ownership of their property and lease their land to large enterprises.

Over 1,500,000 hectares of agricultural land had been transferred to 1,100,000 new owners by the end of 2000, with an average holding of 1.3 hectare per landowner, often in several non-contiguous parcels. In other cases, landowners either left the land fallow, farmed it directly, leased or sold it to other small farmers thereby forming small 'individual' farms averaging just 2 hectares. In 2003, individual (or "peasant") farms constituted 40% of total agricultural land. In 2003 nearly 40% of households surveyed leased out land to large farm enterprises. At present, the general consensus is that there are approximately 1,500 corporate farms, farming an average of 400-800 hectares, constituting from 33-42% of total agricultural land use.

As a result, Moldova's agricultural production is bifurcated between large corporate farms (primarily producing grain) and smaller/individual farms (primarily producing fruit and vegetables). The range for the reported number of small, "peasant" farms is from 300,000 to 558,000 with average size ranging from 1.9 to 1.3 ha depending on source/report. The World Bank reports that approx 82% of total owner operated farms are less than 50 ha and about 80% are less than 10 hectares. A recently published study, however, indicates that the smaller independent farms are more productive than the large corporate ones

(Lerman and Cimpoies 2006; Lerman and Sutton 2008, Ministerul Economiei și Comerțului 2007; USAID 2006; World Bank, 2005, 2006).

Nonetheless, a small number of households have managed, mainly through renting land and/or joining with other households, to create medium-sized farms of 10 to 100 hectares. The presence of these farms, along with a comparable group of small farms of < 10 hectares makes possible a quasi-experimental design to measure the effect of farm size on a gendered division of labour and the amount of input that women have in farm decision making.

Moreover, the favourable soil and climate, as well as access to irrigation means that Moldovan farms have the opportunity to produce and sell a wide variety of crops including grain/cereals, tree nuts, grapes, fruit, berries and vegetables. The variety of crops, with their different requirements of labour and skills, provides an additional parameter with which to measure the relationship between gender, division of labour and decision making.

Research Design

The data for this analysis is drawn from a survey of different sized farms in Moldova. The purpose of the survey was to assess how different farm households would be affected by a planned rehabilitation of a large-scale Soviet-era irrigation system that was jointly sponsored by the Millennium Challenge Corporation USA and MCA Moldova. The survey was conducted by the University of Missouri, under contract with the United States Department of Agriculture (USDA). The subcontractor in Moldova, which had responsibility for actual data collection, was ACSA, the National Agency for Rural Development (see O'Brien et al. 2009 for details on the research design of the survey).

A stratified sampling strategy was employed to compare the organization of different sized farms and, of particular interest to this analysis, how farm size affected the position of women in farm management decisions. The population of farms from which the sample was drawn was located within 16 Central Irrigation Systems (CISs) along the two major river basins in the country – the Dniester and the Prut – as well as a sub-sample of farms located next to lakes and ponds. The sampling frame covered a large swath of rural Moldova in which irrigation was at least potentially possible. It did not include any farms on the east side of the Dniester, the region which has become a de facto separate country, separated from the rest of Moldova by the river and the Russian army (see BBCNEWS 2011).

Three strata of farms were sampled: small – < 10 ha; medium – 10-100 ha; and large – > 100 ha. The large > 100 ha enterprises are essentially corporate farms and are not included in the analysis reported in this paper. Although 10 ha of high quality irrigated “black earth zone” land is a size for profitable production of high value crops, such as vineyards and plums, the medium-sized farms, between 10 and 100 ha introduce a significant increase in potential production and sales. Our primary concern here is to compare the effects of this increase in land size on the distribution of roles by gender.

Because of the large number of small farms, a sample of that stratum was drawn, but the smaller number of medium-sized farms permitted a survey of all of them. Within each farm household selected for the sample, both a male and a female “head of household” were interviewed if both were present. The interviewers were trained ACSA Extension personnel, with considerable experience in rural/agricultural surveys that are conducted in Moldova on a regular basis. Men and women in each household were interviewed separately in different rooms in the house. Women were interviewed by female interviewers and men by male interviewers. Only a very small fraction of the households contained a single male or single female adult. The sample used in the analysis reported in Table 1 includes only those farms in which both male and female heads of household were interviewed.

Table 1. Gender of respondents in the sample by size of farm (599 farms; N=1198 respondents)

Gender	Farm size		Total
	Small (<10 ha)	Medium (10-100 ha)	
Men	479	120	599
Women	479	120	599
Total	958	240	1198

Source: Authors' own research.

Findings

Overall Sample Findings – Types of Crops Grown by Gender

Table 2 shows how men and women in the total sample view primary responsibility for cultivation of various crops. There is no statistically significant difference between the assessments of responsibility by male or female respondents.

Table 2. Type of crops primarily grown by men or women or jointly reported by the total sample in per cent (ns in parentheses)

Type of crop	Men	Women	Jointly
Grain/cereals	8.1 (41)	4.6 (22)	35.0 (287)
Tree nuts	1.4 (7)	1.1 (5)	1.0 (8)
Vineyards	65.7 (334)	5.7 (27)	11.2 (92)
Fruit and berries	16.1 (82)	13.2 (63)	7.1 (58)
Vegetables	8.7 (54)	75.4 (359)	45.7 (375)
Total	100.0 (518)	100.0 (476)	100.0 (820)

Source: Authors' own research.

Three quarters (75.4%) of the women compared to only 8.7% of the men view vegetable gardening as their primary responsibility. Alternatively, vineyards are seen as a primary responsibility by almost two-thirds (65.7%) of the men but only 5.7% of the women.

Interestingly, close to half (45.7%) of the total sample (men and women) report that some vegetable cultivation is shared. The crop with the next highest level of shared responsibility is grain/cereals (35.0%).

The Mediating Effect of Farm Size on Gender Participation in Crop Cultivation

There are statistically significant differences in the frequencies with which male and female respondents report primary responsibility for crop cultivation in different sized farms, although the strength of the relationships vary from weak to moderate. These differences, reported in percentages as well as frequencies, are shown in Table 3.

Women on small farms are more likely to see themselves as being primarily responsible for growing vegetables on small than medium-sized farms; 78.2% compared to 66.7% (the phi value indicates a statistically significant and moderate relationship). The involvement of women in joint cultivation of grain and cereals is higher on small (36.5%) than on medium (26.9%) farms (the phi value in this case indicates a weak size relationship). Men see themselves as having more involvement in vineyard cultivation on small farms (68.9%) than on medium (55.5%) sized farms. Men and women see joint cultivation of vineyards as higher on medium-sized farms, than on smaller ones, 18.5% compared to 9.9%, but the phi value indicates a weak relationship.

Table 3. Male and female respondents' report of primary crop cultivation responsibility of men, women and jointly by farm size in per cent (ns in parentheses)

Type of crop	Small farms (< 10 ha)			Medium farms (10-100 ha)		
	Primarily Men	Primarily Women	Jointly	Primarily Men	Primarily Women	Jointly
Grain/cereals	9.0 (35)	5.8 (21)	36.5 (252)	5.0 (6)	0.9 (1)	26.9 (35)
Tree nuts	1.3 (5)	0.8 (3)	0.6 (4)	1.7 (2)	1.8 (2)	3.1 (4)
Vineyards	68.9 (268)	6.4 (23)	9.9 (68)	55.5 (66)	3.5 (4)	18.5 (24)
Fruit and berries	13.6 (53)	8.8 (32)	6.2 (43)	24.4 (29)	27.2 (31)	11.5 (15)
Vegetables	7.2 (28)	78.2 (283)	46.8 (323)	13.4 (16)	66.7 (76)	40.0 (52)
Total	100 (389)	100 (362)	100 (690)	100 (119)	100 (114)	100 (130)

Primary Crop Cultivation by Men by farm size: χ^2 (4, N=508) = 14.995, $p < .01$; $\phi = .172$.

Primary Crop Cultivation by Women by farm size: χ^2 = (4, N=476) = 30.080, $p < .001$; $\phi = .251$.

Joint (Men and Women) crop cultivation by farm size: χ^2 (4, N=820) = 22.559, $p < .001$; $\phi = .166$.

Source: Authors' own research.

Work done jointly by men and women on small farms is mainly focused on grain and cereals as well as vegetable cultivation. Together joint cultivation of grain, cereals and vegetables on small farms represents 83.3% of joint effort reported by men and women. In comparison, the joint cultivation of grain, cereals and vegetables on medium farms comprises only 66.9% of reported joint male and female activity.

The most striking example of a highly gendered division of labour in crop cultivation on small farms is that 78.2% of the women cultivate vegetables by themselves and 68.9% of the men cultivate vineyards by themselves. On medium-sized farms the gender division of cultivation in vegetables and vineyards is present but joint cultivation is somewhat more spread out across a wider range of crop types.

Overall Sample Findings – Decision Making by Gender

The total sample's report of the role of men and women in decision making is shown in Table 4. Again, there are no statistically significant differences between the assessments by men and women.

Respondents reported that men generally have a greater influence on decision making than women, either solely (40.1%) or jointly (55%) in 95.1%

Table 4. Primary decision making by husband, wife or jointly in the total sample in per cent (ns in parentheses)

Person who usually decides	What crops to grow where	How much irrigation water to use	When and where to sell crops
Husband	40.1 (479)	71.9 (732)	25.3 (292)
Wife	4.7 (56)	5.0 (51)	21.4 (247)
Both husband and wife	55.0 (658)	22.3 (227)	52.6 (606)
Other person	0.2 (3)	0.8 (8)	0.7 (8)
Total	100 (1196)	100 (1018)	100 (1153)

Source: Authors' own research.

of decisions about what crops to grow and where, 94.2% (71.9% + 22.3%) in how much irrigation water to use, and 77.9% (25.3% + 52.6%) in when and where to sell crops. The degree of influence of men and women varies considerably, however from one area to another. The majority of decision making with respect to what crops to grow and when and where to sell crops are made jointly by men and women, 55.0% and 52.6%, respectively, but only 22.3% of the respondents report joint decision making with respect to how much irrigation water to use. Almost 72% of the respondents report that men are the sole decision makers in this area.

Regarding when and where to sell crops, however decision making responsibility is almost equally divided between men and women; 25.3% of the respondents report that men are the sole decision makers, compared to 21.4% who report that women are the sole decision makers, and 52.6% report that decisions in this area are made jointly.

The Mediating Effect of Farm Size on Gender Participation in Decision Making by Gender

Table 5 shows the mediating effects of farm size on the participation of men and women in decision making. There are statistically significant differences in how respondents in small versus medium farms view responsibilities of men and women in decision making in three key areas, although the impact of farm size on decision making is much greater on what crops to grow and where and when and where to sell crops than it is on the question of how much irrigation water to use.

Table 5. Primary decision making by husband, wife or jointly by farm size in per cent (ns in parentheses)

Person who usually decides	What crops to grow where		How much irrigation water to use		When and where to sell crops	
	Small (< 10 ha)	Medium (10–100 ha)	Small (<10 ha)	Medium (10–100 ha)	Small (<10 ha)	Medium (10–100 ha)
Husband	34.3 (328)	63.2 (151)	70.1 (564)	78.5 (168)	19.8 (181)	46.8 (111)
Wife	4.5 (43)	5.4 (13)	4.9 (39)	5.6 (12)	23.6 (216)	13.1 (31)
Both husband and wife	61.1 (585)	30.5 (73)	24.3 (195)	15.0 (32)	55.9 (512)	39.7 (94)
Other person	0.1 (1)	0.8 (2)	0.7 (6)	0.9 (2)	0.8 (7)	0.4 (1)
Total	100 (957)	100 (239)	100 (804)	100 (214)	100 (916)	100 (237)

What crops to grow where by farm size: $\chi^2 = (2, N=1196) = 73.092, p < .001; \phi = .254$.

How much irrigation water to use by farm size: $\chi^2 = (2, N=1018) = 8.997, p < .05; \phi = .091$.

When and where to sell crops by farm size: $\chi^2 = (2, N=1153) = 73.482, p < .001; \phi = .253$.

Source: Authors' own research.

Small-sized farms show a higher level of participation of women in decision making than do medium-sized farms in all three areas. Men on medium-sized farms are almost twice as likely as men on small farms to be the sole decision makers with respect to which crops to grow and where (63.2% compared to 34.3%) and more than twice as likely to be the sole decision makers with respect to when and where to sell crops (46.8% compared to 19.8%). The phi values indicate moderate relationships between farm size and gender influence on decision making on these two dimensions. Men are overwhelmingly the sole decision makers with respect to how much irrigation water to use on both small and medium farms, but even here men on medium-sized farms are slightly more influential (78.5% compared to 70.1%), indicating a statistically significant but weak relationship between farm size and gendered involvement in decision making. Finally, women on small farms are more likely than men (23.6% compared to 19.8%), to be the primary decision makers with respect to when and where to sell crops, compared to medium-sized farms where men are the primary decision makers in 46.8% of the cases compared to only 13.1% for women.

Husbands and wives on small farms are twice as likely as their medium farm counterparts (61.1% compared to 30.5%) to make joint decisions about what crops to grow and where. There is also substantially more joint husband-wife involvement in decision making about when and where to sell crops on small than medium farms (55.9% compared to 39.7%).

In summary, men show significantly higher levels of control over decision making on medium-sized farms. Even the decisions about when and where to sell crops (which seemed to be equally distributed when observing the overall sample) become gendered when analyzing small and medium-sized farms separately.

Discussion

Our findings show that the gender division of labour in agriculture in emerging and transitional economies is more nuanced than suggested by previous research. The high level of engagement in vegetable cultivation by women in the Moldovan sample is consistent with literature on other post-soviet countries where women assume a high degree of responsibility for garden cultivation (Holzner 2008, Pine 1996) aimed at subsistence and marketing of surplus. But it is interesting that the most frequent form of joint cultivation found in the sample is vegetable cultivation. This is not consistent with other research findings that men are reluctant to engage in gardening vegetables, viewing it as women's work (Pine 1996, Bridger 1996). A possible explanation for the relatively high level of joint cultivation of vegetables may be that vegetable cultivation on Moldovan farms, especially when irrigation is involved, produces high value crops making men more willing to engage in the activity because it can be linked to their role that Ashwin (2006) identifies as a central feature of soviet era culture that persists in the post-soviet era. Trinh et al. (2003) found that among farmers in Vietnam men were far more involved in garden crops to be marketed than they were in crops aimed at subsistence. Regardless of the cause, joint cultivation of vegetables among Moldovan farmers studied is noteworthy, as is a high overall level of joint cultivation of cereals and grain.

The most important findings of the Moldovan survey, however, relate to the mediating effect of farm size on gendered roles in participation and decision making. The higher involvement of women in vegetable gardening is even more pronounced on small farms, and joint cultivation activities are very

pronounced in grain/cereals and vegetables on small farms. Although most joint activity on medium-sized farms continues to be in grain/cereals and vegetables joint cultivation is more spread across types of cultivation including tree nuts, vineyards, as well as fruit/berries. More time is spent by both men and women on the cultivation of fruit and berries on medium-sized farms and women's work is significantly drawn into joint cultivation of vineyards in which men continue to play the major role, with joint cultivation of vegetables declining though not significantly.

Overall, we see a more pronounced gender division of cultivation responsibilities on smaller farms than on medium-sized ones and a shift toward a more generalized sharing of these types of responsibility on medium-sized farms.

The pattern of somewhat more generalized sharing across crops on medium-sized farms does not, however, result in a more generalized sharing of *decision making* about cultivation and marketing of those crops. *On the contrary, women on small farms have consistently more input into decision making than do women on medium-sized farms.* On small farms a higher percentage of the decisions made about types of crops to grow and their location are made jointly. Shared decisions about how much irrigation water to use are higher on small farms than medium-sized ones. Moreover, women actually have more influence than men in decisions about marketing farm products on small farms (23.6% versus 19.8% in primary decision making and 55.9% participation in joint decisions). Men on medium-sized farms dominate decision making in this area, with 46.8% reporting primary responsibility for decision making compared to 13.1% reporting women as primary decision makers.

Holzner's (2008) analysis of the impacts of the adoption of the family farm model in post-soviet agricultural production may help explain the varied patterns found in gendered crop cultivation and decision making between small and medium-sized farms in Moldova. Men on medium-sized farms appear to be assuming the role of farm managers, a role Holzner described as an intended outcome of policy makers when adopting the family farm model. As Holzner (2008) pointed out the family farm model was attractive to decision makers in part because it provides flexible, elastic and unpaid labour in the form of family members. Presumably as with any profession, the managers, in this case the farm managers who are also the male heads of farm households, would oversee the work of farm labour including the labour of their wives.

Additionally the farm manager would have the primary linkages to access credit, ability to invest in technology, hold title to land and be legitimated in control over resources as head of the household. This would be consistent with other studies that have shown that individuals who had positions of authority on collective farms and other state enterprises, who were mostly men, were also the most likely to gain access to resources to start new enterprises in the post-socialist period (Rona-Tas 1994). This role may also be supported by the patriarchal culture and gender role expectations of breadwinner men and homemaker/mother women described by Ashwin (2006) as prevalent even in the face of very different economic and social realities (Pine 1996).

Therefore, a masculinization of agriculture consistent with that theorized by Watson (1996) and Holzner (2008) is evident on the medium-sized Moldovan farms in our survey. Presumably these farms are producing more to be marketed than are the smaller farms, have higher incomes from crop cultivation, and have better access to credit with which to buy inputs and technology associated with farming as a profession. The professionalization of farming is further supported in Moldova by the efficient and effective land reform described earlier.

The masculinization thesis is less clearly supported by the data on small farms. Small farmers display a less masculinized form of agricultural production than appears among farmers on medium-sized farms in that women have higher, though limited, input into decision making. This may be because these small farms are less tightly connected to surplus sales in the market place, have less access to capital, inputs and technology, and operate more like small holder peasant farming enterprises than manager run market oriented enterprises (Scott 1976, Netting 1993, Chayanov 1966; O'Brien et al. 2008).

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