Land Reform Impact on Socioeconomic Factors: The Jordan River Valley

Hussein Falah Al-Qudah[1]

ABSTRACT

The purpose of this research is to investigate the market assisted land reform effects over a range of socioeconomic factors of farms in the Jordan River Valley. These factors include: age, education, total factor productivity, net farm income and gross output per farm and per dunum. The outcomes of this investigation indicated that the buyer group farmers are similar in terms of age and education to other identified groups in the region. However, they were found to be more efficient and more productive over the above-mentioned economic performance criteria. Thus, legislation to speed up the mobility of resources could be justified in the ground of enhancing economic resource use in the Valley. Credit facilities could be in tool on this process.

INTRODUCTION

Historically, land reform has been implemented by governments, confiscating land, with or without compensation, and then allocating it to the landless (Swaminathan et al., 1995a).

Land reform measures were enacted in the Jordan River Valley since the early sixties of the past century. The land redistribution program was initiated in 1962 dividing the land into farm units that could be efficiently irrigated by the new canal and allowing more people to own and operate farms. The state policy aimed at imposing an upper ceiling on holdings for narrowing inequalities in the land ownership pattern (Khouri, 1981). Moreover, the state policy permitted the beneficiaries to rent or sharecrop their land in the area, but it prevented them from selling it (except for reallocated lands to the Jordan Valley Authority) or buying another's share.

In practice, the redistribution program reduced the average land holding from 43 dunums to 21.3 dunums in the project area, while only 3.5% of the owned farms were larger than 150 dunums after redistribution. More than 60% of the farmers owned less than one unit (30 dunums) after redistribution, indicating the flexibility of Jordanian officials in implementing the law's unambiguous specification of 30 dunums as the minimum size for a single farm unit (Khouri, 1981). Moreover, the farmers are not allowed to sell their land directly to others, the only buyer is the JRV Authority.

However, after 40 years of the implementation of the land reform program, high levels of fragmentation resulted, caused by successive sub-division in the course of inheritance or by other means such as land

distribution.

The disappointing results of the past redistributive program and the desire to make a change in the character of agriculture towards economic farming caused policy makers to reconsider their policy and to search for alternatives.

By the year 2003, the government adopted a new land reform program. The new land reform permitted beneficiaries to sell or buy other holdings without returning to the JRV Authority. Market-assisted land reform aimed at encouraging willing buyers to negotiate deals with willing sellers. The objective is to release land from inefficient farms to more efficient farmers to purchase. Thus, consolidation of holdings with a view to make holding viable was the main vehicle of land reform measures, where fragmented holdings were aimed to be brought about for consolidation.

This paper intended to estimate the on-farm effects of market-assisted land reform over a range of socio-economic factors in the Jordan River Valley. Permanent transfer of land ownership through market mechanisms is likely to improve the economic efficiency and profitability.

The Jordan Valley is considered an important area from the agricultural and economic points of view. It produces about 40% of the total agricultural production and 70% of the total agricultural gross revenue.

LITERATURE REVIEW

High levels of fragmentation, caused by consecutive sub-division in the course of inheritance or by any other way such as land distribution, are more likely to lead to inefficiencies in agricultural production. This provided the good reason for the government to adopt programs to complement market mechanisms in an effort to facilitate more rapid consolidation of holdings at lower costs (World Bank, 2003).

Market-assisted land reform is more efficient than government agencies in implementing land reform. Land reform that has been implemented by governments was typically undermined by disputes, delays and inefficiencies (Swaminathan et al., 1995a). This type of land reform is more efficient than government agencies in dealing with the problem of farm debt crisis, where land ownership is very unequally distributed. It can convert it into an opportunity for promoting equity, raising productivity and increasing employment and overall growth in farming (Swaminathan et al., 1995b).

The farmers' demand for land to increase their farming operations in the USA continued to be the number one purchasers of farmland, (Clark, 1978). Janssen and Pfueger (2003) found farm enlargement as the main reason for purchasing farmland of South Dakota. Positive economic conditions and retirement from farming were the main reasons for selling farmland. However, low interest rates, interest by investors in farmland and subsidies programs by the federal state are considered the main positive factors influencing farmland market value.

In the UK, farmers and developers have become net buyers of farmland from financial institutions, and land sales have enabled many of them to make financial investments which have made it possible either to continue farming or to retire (Johnson, 1990).

The pattern of sale and lease of agricultural lands by some socio-economic class characters in the western region of Uttar Pradesh has been investigated by Mani and Pandy (1997). They found that small and large farmers got benefits from land market transactions. This

was attributed to the fact that farmers are now becoming conscious about viable farming and resource use optimization. The use of available family workforce at small farmers' level and owned tractor-machinery at large farmers' level may be optimized through the acquisition of more farm land, especially through purchase. Both these processes can be expected to lead to recourse use efficiency in agriculture.

Vogelgesang (1998) indicated that the level of market activity in Chile was high in areas where the land was most fertile and land market transaction allocated the resources according to their productive potentials, thus promoting the emergence of modern, successful agriculture. Although, land market transaction in Ecuador led to the modernization of agriculture in many cases, a considerable number of rural poor found themselves in a crisis situation. In contrast, land market in Colombia illustrates the difficulties in changing ownership pattern through market transactions. Transactions are usually carried out only among the members of the group. The existing market mechanisms are not able to shift land from one economic group to another. However, (Deininger et al., 2004), based on a large survey, found that rental and sales markets were more effective in transferring land to poor-but productive producers- than administrative land reform was.

Land rental markets and administrative reallocation redistributed land to those with lower endowments in China. However, land rental markets have been more effective in doing so and have had a larger productive enhancing effect than administrative reallocation (Deininger and Jin, 2002).

Land reform and farm restructuring in Ukraine resulted in reduced share of state-owned land from 100% in 1991 to only 35% in 1994, but most of the land remained in collective tenure. Continued restructuring of farm enterprises into smaller autonomous units based on private ownership of land and assets, clear formulation of procedures that allow the exit of individuals and small groups with shares of land and assets and the development of land markets are required to improve the efficiency of Ukraine's agriculture (Lerman et al., 1994).

Land reform in Central and Eastern Europe took the form of re-privatization of land and its transfer to the management of former owners or current users. The private farmers got relatively small plots (2-10 ha), and they were not operating as commercial farmers. The transition did not bring a noticeable change in efficiency. Market-assisted land reform for the creation of form of optimal size is severely affected by restrictions and by limits on size of individual holdings (Euroconsult, 1995).

Land reform has been the most successful of Kazakhstan reform package. The private sector became dominant in the agro- industrial complex of Kazakhstan agriculture. However, the reform turned many efficient functioning large public faming enterprises into numerous small farms, most of which are not viable. This was due to the lack of machinery and working capital, and non-adaptation to market conditions. Also, agricultural production following land reform in Turkmenistan faced many difficulties, due to low yield, inefficient water use and high water mineralization (Baydildina et al., 2000).

To investigate whether the institutional factors associated with the Mexican land reform (ejido) sector constrain agricultural growth, Heath (1990) found no conclusive evidence that individual ejido are significantly less productive than private farms. Thus, privatization of ejido seems unlikely to greatly improve agricultural growth.

Finally, the foregoing review of literature indicated that market-assisted land reform was more effective in enhancing equity and efficiency in agriculture. Thus, the new policy adapted by the Jordanian Government is more likely to solve the old problem that had been created by the administrative reallocation of land in the investigated area. Moreover, (Al-Qudah and El-Karki, 2002), on their investigation of the economic performance of land tenure systems in the Jordan Valley Area, found that rented farms performed better than owner occupied farms over a wide range of criteria, thus suggesting a legislation facilitating tenancy and therefore mobility of resources among farmers.

METHODOLOGY

This section describes the procedure that has been followed by this investigation to collect and analyze data from the Jordan River Valley farmers.

Sampling and Data Collection

The Jordan River Valley is located in the northwest of Jordan. It constitutes of the east bank of the Jordan River, which lies 200 to 400 meters below sea level. The area is divided into three main sub-regions: North Shuneh, Dair Alla in the middle and South Shuneh. Each sub-region constitutes of a number of basins, which are further divided into farm units. Each farm unit may constitute a part of or the whole holding of the farmer.

The Department of Statistics in Jordan provided a list of Jordan Valley irrigated farm units. This list constituted the sampling frame of this investigation. Whenever, the selected units made up a part of the farm holding in the same area, the collected data were extended to cover all the activities of the farm holding.

Because of financial resource restrictions, a decision was taken to collect data from a maximum of 140 farmers and from Dair Alla sub-region. Dair Alla sub-region constitutes nine basins and 2447 farm units. Each farm unit in each basin is given a number. Using random numbers generated by Excel Software, the number of investigated farm units and their locations in the basins were easily determined. For example, basin 27 and 28 constitute 342 and 706 farm units, respectively. If the generated numbers were 342 and 343, then farm unit numbered 342 from basin 27 and farm unit numbered 1 from basin 28 were investigated.

The field work was carried out in the middle of 2006 with full co-operation of the Jordan Valley Authority. The Jordan Valley Authority directed the interviewer to the addresses of the sample members to be interviewed. Before collecting data, the questionnaire was developed and pre-tested in the field.

Finally, after the data were collected they had been edited and adequately coded. The computer software SAS was used to analyze data.

DATA ANALYSIS

Having the objective of this investigation in mind, the sampled farmers were divided into three categories. Category one' the inheriting group[*] constituted the farmers who obtained access to land by administrative or official reallocation. Those are the farmers or their inhabitants who obtained access to land by the program which was initiated by the Government of Jordan in 1962. Category two' the buyers group' constituted the

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[*] Farms were considered totally inherited if the inherited area consisted of 90% or more of the total area.

farmers who obtained access to land through market by buying it. Those are the farmers who have bought either a part of or the total area of their holdings. The third category constituted the farmers who obtained access to land again through market but here by renting[**] it. This research has compared the buyer group to those who inherited totally or rented totally their holdings. Mixed tenure farms were excluded because they are less represented on the sampled farms. On this basis, the distribution of farms is given inTable1.

Table 1: Distribution of farms in the sample by source of ownership –control in the Jordan River Valley.

Group	Number of farmers	%
Buyers	31	22.79
Inherited totally	28	20.58
Rented totally	77	56.61
Total	136	100.0

Source: Field Survey, 2006.

The three groups of farmers were compared over a range of socio-economic factors, and under different sizes of holdings. Factors such as age, education, total factor productivity, net farm income, gross output and gross output per dunum were investigated. Total factor productivity is defined as the value of total (gross) output per 100 JD (Jordanian Dinar) of the total input, including farmer labor and imputed rent charges for owner occupied land. Net farm income is calculated as the gross output minus variable and annual fixed costs. Depreciation is calculated at historic cost. Total output

per farm and output per dunum were based on gross output. Three classes of size holdings were considered to represent small size (under 30 dunums), medium size (30-60 dunums) and large size (above 60 dunums). Table (2) indicates how the sample was distributed among the three groups of farm size. Farms less than 30 dunums represent about 9%, while those with sixty or more dunums represent about 43% of the farms.

Table 2: Distribution of farms in the sample by farm size group.

Size of holding (dunum)	Description	Number of farms	%
Under 30	small	12	8.82
30-60	medium	66	48.53
More than 60	large	58	42.65
Total		136	100.00

Source: Field Survey, 2006.

Table (3) shows how the sample was distributed by farm size and type of ownership-control in the Jordan River Valley. Rented farms are the most represented ones in the sample, especially of medium and large sizes of holdings. Rented farms constitute about 56 % of the whole sample. It can also be seen that fewer than five farms in the cell are under inherited and buyer group farms within the small class of holding. Where there were fewer than five farms in the cell, inter-comparison between groups was eliminated.

[**]Farms were considered totally rented if the rented area consisted of 90% or more of the total area.

Table 3: Distribution of farms by source of ownership-control and size of farm in the Jordan River Valley.

Farm size	Rented totally	Inherited totally	Buyer group	Total
Less than 30	5	3	4	12
30-60	37	16	13	66
>60	35	9	14	58
Total	77	28	31	136

Source: Field Survey, 2006.

RESULTS

Education

Education improves the ability of farmers to identify, appreciate economically and respond to new events in the context of risk. It strengthens the entrepreneurial ability of farmers (Schultz, 1980). More educated farmers are more able to receive higher prices for their production and pay lower prices for their inputs (Jamison and Lau, 1982).

Table 4 shows the distribution of farmers by source of ownership-control and level of education. Although farmers who can read and write or are less educated account for 25% of the farmers, the general trend of farmers improved as we move towards higher levels of education. It can be seen that 50% of the farmers either completed their secondary education or obtained university education. Moreover, those who obtained university degrees are relatively more apparent among the buyer group (28%) compared with both rented and inherited farm groups.

Table 4 : Distribution of farmers by source of ownership-control and level of education in the Jordan River Valley.

Education level	Rented totally		Inherited totally		Buyer group		Total	
	No.	%	No.	%	No.	%	No.	%
Illiterate	12	18.2	3	12.0	5	20.0	20	17.2
Read & write	6	9.1	2	8.0	1	4.0	9	7.8
Elementary	8	12.1	5	20.0	3	12.0	16	13.8
Primary	9	13.6	2	8.0	1	4.0	12	10.3
Secondary	16	24.2	7	28.0	8	32.0	31	26.7
College	1	1.5	1	4.0	na	na	2	1.7
University	14	21.2	5	20.0	7	28.0	26	22.4
Total	66	100.0	25	100.0	25	100.0	116	100.0
Missing	11		3		6		20	

Source: Field Survey, 2006.

An attempt has been made to explore if there are statistical differences in the levels of education among farmers between buyer group farmers and the other group farmers for different farm sizes (Table 5).

Table 5:Significance of differences between means of education level by ownership-control group and farm size.

Farm size	Buyer group compared to rented totally group	Buyer group compared to inherited totally group
Less than 30	na	na
30 -60	ns	ns
>60	ns	ns

Source: Field Survey, 2006.

*** significant at 0.01.

** significant at 0.05.

* significant at 0.10.

na: not available.

ns: not significant.

The two-tailed t-test was used to test for significant differences between buyer group farmers and the other identified groups. On the contrary to our expectations, the test shows no statistical differences between buyer group and the other groups in term of education level. Thus, the buyer group farmers are not better educated in the Jordan River Valley (Table 5).

Age

The age of a farmer may have an effect on his capability and on the efficiency of his administration and mainly on his response to changes in economic conditions.

The average age of farmers was found to be about 52.1 years. Buyer group farmers were found to be elder than farmers in rented group farms but were in the same age as farmers in inherited group farms.

Table 6 displays the distribution of farmers by source of ownership-control and age in the Jordan Valley. It is clear that most of the farmers are concentrated in the range of 40 to 69 years (64%). This is more profound in the buyer group farmers where 81% of them are in this age range.

It seems likely that the more aged farmers are the more affordable farmers and the more land appreciating ones in the study area. Here again, the test for statistical differences between buyer group and the other groups in term of age reveals the same pattern as for the education level. The only statistical difference was found to be between buyer group farmers and rented group farmers within the medium class of holding (Table 7).

Total Factor Productivity

Total factor productivity is computed as the value of gross output per 100 JD (Jordanian Dinar) of total inputs (JD1=1.41US$). Table 8 summarizes the mean total factor productivity scores by source of ownership-control and size of holding. Buyer group farmers achieved the highest total factor productivity in the medium size and large size of holdings. Their superiority was most profound in the large size of holding (Table 8).

Table 6: Distribution of farmers by source of ownership-control and age in the Jordan River Valley.

Age	Rented totally		Inherited totally		Buyer group			
(Years)	No	%	No	%	No	%	Total	%
25-39	21	28.8	3	12.0	3	10.7	27	21.4
40-54	20	27.4	10	40.0	11	39.3	41	32.5
55-69	22	30.1	8	32.0	10	35.7	40	31.7
> 70	10	13.7	4	16.0	4	14.3	18	14.3
Total	73	100.0	25	100.0	28	100.0	126	100.0
Mean	50.26		54.32		54.857		52.1	
Missing	4		3		3		10	

Source: Field Survey, 2006.

Table 7:Significance of differences among age group by ownership-control group and farm size.

Farm size	Buyer group compared to rented totally	Buyer group compared to inherited totally
Less than 30	na	na
30 -60	*	ns
>60	ns	ns

Source: Field Survey, 2006.

na: not available.

ns: not significant.

Table 8: Average total factor productivity scores by source of ownership-control and size of farm in the Jordan River Valley.

Farm size	Rented totally	Inherited totally	Buyer group	Mean (all farms)
Less than 30	na	na	na	na
30-60	153.85	152.03	228.47	178.12
>60	139.94	147.16	233.45	173.52

Source: Field Survey, 2006.

Table 9:Significance of differences between mean total factor productivity scores by ownership-control group and farm size.

Farm size	Buyer group compared to rented totally	Buyer group compared to inherited totally
Less than 30	na	na
30 -60	***	***
>60	***	***

Source: Field Survey, 2006.

Test of significance was carried out on the differences between mean total factor productivity scores for the three categories with farm size controlled (Table 9).

Buyer group farmers achieved the highest total factor productivity scores in all occasions with statistical significance at one percent level.

However, a misleading conclusion might be drawn, if the average sizes of holding within a size group differs markedly from one category to another. Average farm sizes of buyer group farmers are more than twice those of inherited group farmers and four times those of rented group farmers (Table 10).

Table 10: Average farm size in dunum by source of ownership-control and size of farm in the Jordan River Valley.

Farm size	Rented totally	Inherited totally	Buyer group	Mean (all farms)
Less than 30	na	na	na	na
30-60	32.203	41.88	56.615	39.34
>60	89.457	129.89	355.07	159.84

Source: Field Survey, 2006.

Table 11:Significance of differences between average farm sizes by ownership-control group and farm size group.

Farm size	Buyer group compared to rented totally	Buyer group compared to inherited totally
Less than 30	na	na
30 -60	***	***
>60	***	***

Source: Field Survey, 2006.

Table 12: Average net farm income per farm by source of ownership-control and size of farm in the Jordan River Valley (Jordanian Dinar).

Farm size	Rented totally	Inherited totally	buyer group	Mean (all farms)
Less than 30	na	na	na	na
30-60	12918.00	16113.00	65713.00	31581.00
>60	47357.00	35743.00	459792.00	180964.00

Source: Field Survey, 2006.

This is further verified by the t-test. Average farm sizes of buyer group farmers were found to be statistically significant compared to those of inherited and rented group farmers (Table 11).

Net Farm Income

Net farm income is the return for the farmer and his

family for their capital, management and labor inputs to the farm business. Comparison using net farm income as a criterion of performance showed a similar pattern to that of total factor productivity. Table 12 illustrates the range of mean net farm income by source of ownership-control and farm size. The buyer group net farm income was always greater than the mean net farm income of all the farms.

The statistical test for significant differences between the studied groups showed highly significant differences, except in one case; in the large class of holding. No significant differences were found between the buyer group farms and the inherited group farms in the large scale of holding (Table 13).

Table 13:Significance of differences between net farm incomes by ownership-control group and farm size.

Farm size	Buyer group compared to rented totally	Buyer group compared to inherited totally
Less than 30	na	na
30 -60	***	***
>60	***	ns

Source: Field Survey, 2006.

Table 14: Average gross output per farm by source of ownership-control and size of farm in the Jordan River Valley (Jordanian Dinar).

Farm size	Rented totally	Inherited totally	Buyer group	Mean (all farms)
Less than 30	na	na	na	na
30-60	40904.0	43091.00	115172.00	66389.00
>60	161594.0	88387.00	722561.00	324181.00

Source: Field Survey, 2006.

Table 15:Significance of differences between gross outputs by ownership-control group and farm size.

Farm size	Buyer group compared to rented totally	Buyer group compared to inherited totally
Less than 30	na	na
30 -60	***	***
>60	***	***

Source: Field Survey, 2006.

Total Output

Total output consists of the value of production of a farm producing many products. Table 14 summarizes the average gross output obtained by each farm group. In the present study, the buyer group farmers produced more output in all size groups (Table 15).

Output per Dunum

The value of output per dunum was the final criterion of farm performance. It is computed by dividing the total gross output per farm by the size of holding. It sheds light on the intensity of crops grown and the high value of crop production. Table 16 summarizes the range and variation of this measure by farm size. It is the buyer group that achieved the highest mean output per dunum in each case (Table 17).

Table 16: Average gross output per dunum by source of ownership-control and size of farm in the Jordan River Valley(Jordanian Dinar).

Farm size	Rented totally	Inherited totally	Buyer group	Mean (all farms)
Less than 30	na	na	na	na
30-60	1097.60	1115.40	2859.82	1690.94
>60	1104.98	614.13	3877.97	1865.69

Source: Field Survey, 2006.

Table 17:Significance of differences between values of gross output per dunum by ownership-control group and farm size.

Farm size	Buyer group compared to rented totally	Buyer group compared to inherited totally
Less than 30	na	na
30 -60	***	***
>60	***	***

Source: Field Survey, 2006.

Summary of Findings, Conclusion and Recommendations

This research investigated the socioeconomic impact of market- assisted land reform on agriculture in the Jordan River Valley. Several measures were used, among these are: age, education, total factor productivity, net farm income and gross output per farm and per dunum.

The study compared the socioeconomic factors of buyer group farmers with the factors of those who inherited or rented their farms totally.

The results obtained showed that the buyer group farmers were similar to those in the other groups in terms of education and age. However, their economic performance is much better. The achieved total factor productivity, net farm income and gross output per farm and per dunum were higher.

Since large farms proved more efficiency in production, consolidate farms through one or more actions (for example: cooperatives, buying lands or renting more lands) are recommended.

In conclusion, the outcomes of this policy resulted in

a more efficient allocation of resources and a greater level of income and output. Therefore, legislations to speed up the mobility of resources is justified on the ground of enhancing the economic efficiency of resource use in the Jordan River Valley Region. Credit facilities could be one tool in the process. This facilitating policy may in turn enhance the equity issue by enabling poor farmers, landless and other interesting groups to enlarge their holdings or to start farming in the area.

Equity implication of market- assisted land reform is an important issue and needs to be investigated to study the policy impact on the distribution of income between farmers in the area.

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تأثير الإصلاح الزراعي على العوامل الاقتصادية والاجتماعية في وادي الأردن

حسين فلاح القضاة*

ملخص

يهدف هذا البحث إلى دراسة أثر الإصلاح الزراعي على العوامل الاقتصادية والاجتماعية في وادي الأردن كالعمر، والتعليم، وقيمة الإنتاج الزراعي الإجمالي لكل 100 دينار مستثمر في الزراعة، وصافي الدخل الزراعي وقيمة الإنتاج الزراعي الإجمالي للمزرعة والدونم. دلت نتائج الدراسة على أن فئة المزارعين الذين اشتروا أراضي زراعية لهم مستوى العمر والتعليم نفسه مقارنة بالفئات الأخرى في المنطقة ذاتها. لكنهم اعلى كفاءة وأكبر إنتاجية. توصي الدراسة بتسهيل الإجراءات القانونية والاقراضية لنقل ملكية الأراضي من فئة إلى أخرى لزيادة كفاءة الموارد المستخدمة في الزراعة.

الكلمات الدالة: الإصلاح الزراعي، السوق، كفاءة، إنتاجية، الدخل الزراعي، وادي الأردن.

* استاذ مساعد، قسم الاقتصاد الزراعي والأعمال الزراعية، كلية الزراعة، الجامعة الأردنية، عمان، الأردن. .