האוניברסיטה העברית בירושלים
The Hebrew University of Jerusalem

המחלקה לכלכלה חקלאית ומנהל
The Department of Agricultural Economics and Management

המרכז למחקר בכלכלה חקלאית
The Center for Agricultural Economic Research

Discussion Paper No. 3.09

Entrepreneurship and Income Inequality in Southern Ethiopia

by

Ayal Kimhi

Papers by members of the Department can be found in their home sites:

מאמרים של חברי המחלקה נמצאים גם באתרי הבית שלהם:

http://departments.agri.huji.ac.il/economics/indexe.html

P.O. Box 12, Rehovot 76100

ת.ד. 12, רחובות 76100

Entrepreneurship and Income Inequality in Southern Ethiopia

by

Ayal Kimhi*

Department of Agricultural Economics and Management
and
Center for Agricultural Economic Research
The Hebrew University
P.O. Box 12
Rehovot 76100
Israel

February 2009

Abstract

This paper uses inequality decomposition techniques in order to analyze the consequences of entrepreneurial activities to household income inequality in Southern Ethiopia. A uniform increase in entrepreneurial income reduces per-capita household income inequality. This implies that encouraging rural entrepreneurship may be favorable for both income growth and income distribution. Such policies could be particularly successful if directed at the low-income, low-wealth, and relatively uneducated segments of the society.

* Ayal Kimhi is associate professor at the Department of Agricultural Economics and Management of the Hebrew University. Contact details: P.O. Box 12, Rehovot 76100, Israel (Kimhi@agri.huji.ac.il). The research was supported by NIRP, the Netherlands-Israel Development Research Programme, and by the Center for Agricultural Economic Research. This paper benefited from valuable suggestions by Tony Shorrocks, Wim Naude, two anonymous referees, and participants of the UNU-WIDER Workshop on Entrepreneurship and Economic Development: Concepts, Measurements, and Impacts, held 21–23 August 2008 in Helsinki. The paper is reprinted here with the kind permission of UNU-WIDER.

1. Introduction

There is a wide-spread agreement among economists that income inequality rises during early stages of economic growth. This is worrisome for two main reasons. First and foremost, a rise in inequality almost always leads to a rise in poverty, and poverty in developing countries implies hunger and malnutrition. Second, inequality may be harmful for the growth process itself, creating a vicious cycle of underdevelopment and poverty (Galor and Zeira, 1993; Deininger and Squire, 1998; Aghion et al., 1999). As a result, a wide body of literature was devoted in the last few decades to the analysis of the link between development and inequality (Kimhi, 2004). These include theoretical modeling (e.g., Galor, 2000; Aghion, 2002; Benhabib, 2003), as well as empirical studies, the majority of which aiming at supporting or refuting the Kuznets (1955) inverted-U hypothesis that inequality is rising during early stages of development and is declining in later stages (Barro, 2000; Lundberg and Squire, 2003; Banerjee and Duflo, 2003). In particular, Deutsch and Silber (2004) have shown, using a cross-country data set, that the composition of income by sources affects the association between development and inequality. Specifically, they found that the rising section of the Kuznets curve is mainly caused by an increase in the importance of wage labor income, while the declining section is caused, among other things, by a decrease in the importance of entrepreneurship income. This implies that entrepreneurship is associated with higher income inequality.

Theoretically, the association between entrepreneurship and inequality is not straightforward to predict. While the "conventional wisdom" has been to associate entrepreneurship with higher inequality, because of the risk embodied in it, Kanbur (1982) has shown that this is not necessarily true, and depends, among other things, on the progressivity of the tax regime. Alao, Meh (2005) has found that eliminating progressive taxation has a negligible effect on wealth inequality when entrepreneurship is considered but has a large effect when entrepreneurship is omitted. Empirical evidence of U.S. data suggests that entrepreneurship leads to wealth concentration, mostly due to the higher saving rates of entrepreneurs (Quadrini, 1999). This has been supported by the theoretical models of Meh (2005) and Cagetti and De Nardi (2006), among others. Several researchers (e.g., Rapoport, 2002; Naude, 2008) claimed that inequality could encourage entrepreneurship in developing countries, but the opposite direction has not been much explored. The purpose of this paper is to analyze the consequences of entrepreneurship to household income inequality in a

predominantly subsistence economy in Southern Ethiopia, using inequality decomposition techniques applied to household survey data. These techniques have been found particularly useful in the case of multiple income sources, which is a common characteristic of agricultural societies (e.g., Arayama et al., 2006; Kimhi, 2007; Morduch and Sicular, 2002).

In the higher altitudes of Southern Ethiopia, subsistence agriculture is based on the cultivation of Ensete (false banana), which is used mostly for self consumption. Labor markets are fairly thin. As a result, entrepreneurial activities are an important source of cash income for the local population. In other parts of Ethiopia, cash crops were found to be important for household welfare (Bigsten et al., 2003). In these densely-populated areas, land is the most limiting factor of production. The allocation of land among households reflects social norms that were followed over the years, enforced by tradition, by the socialist administration that was in power until 1991, and by the leadership of village chiefs throughout recent history (Kebede, 2004). As a result, landholdings, cultivation techniques, and agricultural production are relatively homogeneous across the population. Despite that, income inequality is surprisingly high (Jayne et al., 2003; van der Berg and Kumbi, 2006).

It has been found that elsewhere in Ethiopia, members of farm households engage in low-wage off-farm employment as a response to surplus labor in farming, whereas they engage in self-employment activities in order to earn an attractive return to their qualifications (Woldenhannaa and Oskam, 2001). This, coupled with entry barriers into self-employment activities (Dercon and Krishnan, 1996), could lead to a positive association between income inequality and entrepreneurship. Therefore, while entrepreneurship should be promoted as a welfare-enhancing household strategy in Southern Ethiopia (Carswell, 2002), it could also have adverse inequality implications. The policy implications of this argument are clear: while supporting and promoting entrepreneurship in rural areas of developing countries is likely to increase average welfare, it should by no means be considered as a policy that supports the poor (Barrett et al., 2001). For Ethiopia, van der Berg and Kumbi (2006) found that entrepreneurial income is equalizing, but also reported that contradicting results have been obtained for different parts of the country. While the inequality decomposition results from Southern Ethiopia may not be directly generalized to developing countries as a whole, studying such a specific case study has its advantages. In particular, entrepreneurial activities are well-specified, and the simplicity of the

economy allows one to make direct associations between the results and the basic properties of the economy.

Section 2 of this paper presents the inequality decomposition techniques. The population and the data are described in section 3. The decomposition results are presented in section 4, and in section 5, the effects of income sources on inequality are differentiated by population sub-groups. Section 6 provides a brief summary and some concluding remarks and caveats.

2. Empirical methodology

The empirical analysis in this paper is based on the method for decomposing income inequality by income sources developed by Shorrocks (1982). He suggested focusing on inequality measures that can be written as a weighted sum of incomes:

$$(1) \qquad I(\mathbf{y}) = \Sigma_i a_i(\mathbf{y}) y_i,$$

where a_i are the weights (as functions of the entire income distribution), y_i is the income of household i, and $\mathbf{y}$ is the vector of household incomes. If income is observed as the sum of incomes from k different sources, $y_i=\Sigma_k y_i^k$, the inequality measure (1) can be written as the sum of source-specific components S^k:

$$(2) \qquad I(\mathbf{y}) = \Sigma_i a_i(\mathbf{y}) \Sigma_k y_i^k = \Sigma_k [\Sigma_i a_i(\mathbf{y}) y_i^k] \equiv \Sigma_k S^k.$$

Dividing (2) through by $I(\mathbf{y})$, one obtains the proportional contribution of income source k to overall inequality as:

$$(3) \qquad s^k = \Sigma_i a_i(\mathbf{y}) y_i^k / I(\mathbf{y}).$$

Shorrocks (1982) noted that the decomposition procedure (3) yields an infinite number of potential decomposition rules for each inequality index, because in principle, the weights $a_i(\mathbf{y})$ can be chosen in numerous ways, so that the proportional contribution assigned to any income source can be made to take any value between minus and plus infinity. In particular, three measures of inequality that are commonly used in empirical applications are: (a) the Gini index, with $a_i(\mathbf{y})=2(i-(n+1)/2)/(\mu n^2)$, where i is the index of observation after sorting the observations from lowest to

highest income, n is the number of observations and μ is mean income; (b) the squared coefficient of variation with $a_i(\mathbf{y})=(y_i-\mu)/(n\mu^2)$; and (c) Theil's T index with $a_i(\mathbf{y})=\ln(y_i/\mu)/n$. Shorrocks (1982) further showed that additional restrictions on the choice of weights can reduce the number of potential decomposition rules, and even obtain a unique decomposition rule, which turns out to be based on the weights related to the squared coefficient of variation inequality index. Fields (2003) reached the same conclusion in a different way. However, Shorrocks (1983) still suggested not to rely solely on this decomposition rule in empirical analyses. Kimhi (2007) has shown that using the weights related to Theil's T inequality index could produce counter-intuitive results. Hence in this paper we decompose income inequality using the Gini and squared CV decomposition rules.

The existing literature often confuses proportional contributions to inequality and marginal effects, but these are not equivalent terms: the contribution to inequality of an income source reflects its variability and its correlation with total income, and does not inform us what happens to inequality if income from this source increases. In fact, Shorrocks (1983) has noted that comparing s^k, the proportional contribution to inequality of income source k, and α^k, the share of income from source k in total income, is useful for knowing whether the k^{th} income source is equalizing or disequalizing. Lerman and Yitzhaki (1985) have shown that the relative change in the Gini inequality index following a uniform percentage change in $\mathbf{y}^k$ is $(s^k-\alpha^k)G(\mathbf{y})$. This is essentially a marginal effect. For other inequality decomposition rules, marginal effects can be obtained by simulating changes in $\mathbf{y}^k$. We use bootstrapping to obtain standard errors for both proportional contributions to inequality and marginal effects.

The shortcoming of the analysis of marginal effects of income sources on inequality is due to the fact that most households do not have income from all sources. For example, only 53% of the households in our sample have income from entrepreneurial activities. The marginal effects refer to a uniform increase in entrepreneurial income, but only for households with positive entrepreneurial income. However, an increase in entrepreneurial income can be a result of increasing the number of entrepreneurs as well. The effect of such an increase on inequality will be denoted as "extensive marginal effect." Computing the extensive marginal effects by simulations is complicated by the fact that income from each and every source is likely to change when a household changes status from non-entrepreneur to entrepreneur. Accounting for these changes requires a full set of counterfactual

income distributions, which is beyond the scope of this paper. Alternatively, we use a simpler simulation exercise in which we turn an average non-entrepreneur into an average entrepreneur. The simulation exercise is based on the fact that increasing the number of households who have positive income from source *k* by one percent is equivalent to increasing total income of households who have positive income from source *k* by one percent. In addition, the income of households who have zero income from source *k* can be decreased by a certain percentage that is equivalent to the percentage by which the number of households who have zero income from source *k* has to be decreased so as to keep the total number of households constant.

Specifically, the extensive marginal effects are computed in the following way. First, we partition the level of inequality in equation 1 into two subsamples, those who have income from a particular source (+) and those who do not (-):

$$(4) \qquad I(\mathbf{y}) = \Sigma_{i+} a_i(\mathbf{y}) y_i + \Sigma_{i-} a_i(\mathbf{y}) y_i$$

Then, we simulate a shift of one percent of households from the (-) subsample to the (+) subsample, assuming that once a household moves from (-) to (+), its per-capita income also changes by the same percentage in which the mean income of (+) is larger than the mean income of (-). Technically, the simulated level of inequality is

$$(5) \qquad I^*(\mathbf{y}) = I(\mathbf{y}) + 0.01\Sigma_{i+} a_i(\mathbf{y}) y_i - x\Sigma_{i-} a_i(\mathbf{y}) y_i,$$

where $x = 0.01\Sigma_{i+} y_i / \Sigma_{i-} y_i$.

This is equivalent to proportionately reducing the inequality weights $a_i(\mathbf{y})$ for all non-entrepreneurs and increasing the weights on entrepreneurs, holding the sum of the weights fixed.

3. The population and the data

The data used in this research was collected through a household survey, which was conducted during January-March of 1995 in the Ejana-Wolene, one of the sub-districts of the Guragie administrative zone, in the Southern region of Ethiopia. Ejana Wolene (marked on the map as "Agena") is a rural area located 240 km South of Addis Ababa, the capital of Ethiopia (figure 1). According to 1995 district

administration records, total population was estimated to be 217,840. Ensete (false banana) is the major crop and food source in the region, and is grown by most households on small plots around the house. The cultivation of Ensete is highly labor-intensive, with men responsible for transplanting and harvesting, and women responsible for further processing and preparation.

Nineteen peasant associations out of the sixty-five peasant associations in the district were selected for the survey. The selection was based on accessibility and on an attempt to represent the diverse agro-economical conditions of the district. A total of 583 households were surveyed, about 31 in each of the 19 peasant associations (an average peasant association in Guragie includes around 400 households). In each peasant association the households were chosen at random with the assistance of the local chief. An enumerator recorded food intakes of all household members during three consecutive days, and also administered a questionnaire, which included questions about personal and family characteristics, food production and expenditures, income and assets, health, and time allocation. The survey was conducted by a team of researchers from the Hebrew university in Israel, from Tilburg University in The Netherlands, and from The Ethiopian Nutrition Institute. The questionnaire followed closely similar questionnaires that were administered earlier in rural Ethiopia by researchers from The University of Oxford, from IFPRI, and from Addis Ababa University (Dercon and Krishnan, 2000; Block and Webb, 2001), with some adjustments to the specific nature of Ensete-cultivating households. The data was typed into SPSS files by the staff of the Ethiopian Nutrition Institute, and these files were subsequently modified, by adding variables constructed from the raw data, by researchers from The Hebrew University and Tilburg University. The data were used in previous research, mostly on health and nutrition, by Kimhi and Sosner (2000) and Kimhi (2006). 571 observations (98%) had complete income records and were used in this analysis.

The main income-generating activity of the surveyed population was agricultural production. Each and every household was engaged in the cultivation of Ensete, and sometimes other secondary crops. Some households were also engaged in raising livestock. These are all traditional activities, and most of their resulting output is intended for self consumption. Entrepreneurial activities, on the other hand, require access to markets and changes in the traditional patterns of time allocation within farming households, and are therefore different in nature from agricultural activities. These include handicrafts, trade and transport (by animals), and are dominated by

women, although men who are engaged in these activities have much higher incomes than women (table 1). It is likely than men spend more time than women on entrepreneurial activities. Men are also considerably more educated than women (Kimhi 2006), and education considerably enhances income from self-employment activities (van der Sluis et al., 2004). Note that Quisumbing and Yohannes (2004) reported equal participation rates of men and women in self-employment activities in rural Ethiopia.

4. Inequality decomposition results and marginal effects

Table 2 shows that agricultural income comprises 51% of per-capita household income in the sample, whereas it is responsible for 57% and 38% of total income inequality, using the Gini and squared CV decomposition rules, respectively. Hence, it is reasonable that the marginal effects of agricultural income will be positive and negative, respectively, on these two decomposition rules. The choice of the decomposition rule matters, then, for the evaluation of a uniform increases in agricultural income. The same is true for hired labor income, which is 11% of total household income, but in this case neither of the marginal effects is statistically significant. Entrepreneurial income, on the other hand, which consists of 17% of household income on average, accounts for only 10% and 8% of income inequality, using the Gini and squared CV decomposition rules, respectively. Consequently, the marginal effects of entrepreneurial income on household income inequality are negative and statistically significant in both cases. Remittances, which comprise 21% of household income on average, have positive but insignificant marginal effects on inequality.

The bottom part of table 2 shows the extensive marginal effects, i.e., the change in inequality of increasing the number of households that obtain income from labor/entrepreneurship/remittances by 1%. The extensive marginal effects of labor income and remittances are negative and positive, respectively, and are close to being significant. The extensive marginal effects of entrepreneurship are positive but far from being statistically significant. Increasing the number of entrepreneurs, therefore, is not likely to change income inequality in Southern Ethiopia. This is at least in part due to the fact that the average incomes of entrepreneurs and non-entrepreneurs are not very different.

To summarize the results thus far, entrepreneurial income is the only income source with marginal effects that are both statistically significant and consistent in sign across the two inequality indices. A uniform increase in entrepreneurial income is expected, therefore, to reduce household income inequality. A direct policy implication is that creating favorable conditions for entrepreneurship in Southern Ethiopia (e.g., extending credit to small businesses) could at the same time increase average household income and reduce household income inequality. The question is what would be the effect on inequality if the increase in entrepreneurial income is not uniform. The positive inequality contribution of entrepreneurial income implies that a mean-preserving increase in variability of entrepreneurial income is likely to increase inequality. Hence, an increase in entrepreneurial income that also reduces its variability unambiguously reduces household income inequality. However, in the case of an increase in entrepreneurial income that also increases its variability, the two effects go in opposite directions, and the result is ambiguous.

5. Differentiating by population sub-groups

One shortcoming of the definition of marginal effects is that a uniform increase in income from a certain source is not likely to be observed in reality. With the exception of certain government tax and transfer policies, household income can only be affected indirectly by policies that affect the determinants of income. These policies are not likely to be uniform across the population. For example, labor income may be increased through educational programs, but the impact of educational programs is likely to vary by education levels.

To examine whether the sensitivity of inequality to entrepreneurial income varies by population sub-groups, the marginal effects of entrepreneurial income were computed again by simulations in which each population sub-group is treated separately. For example, in order to compare marginal effects of female-headed households and male-headed households, we should increase entrepreneurial income of female-headed household by one percent and compute the marginal effect, and then increase entrepreneurial income of male-headed households by one percent and compute the marginal effect. Similar simulation exercises can be conducted for population subgroups defined according to other demographic and socio-economic household characteristics. The simulation results are in table 3. The second column shows the number of observations in each population sub-group, and the third column

shows the mean level of entrepreneurial income in each sub-group. The next two columns give the marginal effects on the Gini and squared CV inequality indices, respectively. All the differences in marginal effects of entrepreneurial income between population sub-groups were statistically significant. The results of the relevant tests are in appendix 2.

Recall that the overall marginal effects of entrepreneurial income were negative (table 2). We observe that virtually all sub-group-specific marginal effects are negative, with a few exceptions that are mostly not statistically significant. Differentiating by income quintiles, we find that increasing entrepreneurial income of the lowest 80% of the households is likely to reduce inequality. The marginal effect of entrepreneurial income of the highest income quintile is positive, but statistically significant only in the case of the Gini inequality index. The results in table 3 further point to several population sub-groups in which the marginal effects are larger in absolute value. However, there is no clear association between the size of the marginal effect and the level of entrepreneurial income. For example, marginal effects are smaller in absolute value among single-headed households and among Muslim households, that have lower levels of entrepreneurial income, but also among wealthier households and among more educated households, that have higher levels of entrepreneurial income. Marginal effects of entrepreneurial income are also larger in absolute value among households with fewer children (and lower levels of entrepreneurial income). However, the absolute value of the marginal effect seems to be associated with the size of the population sub-group: single-parent households, Muslim households, more educated households and wealthier households are all smaller than the complementary population sub-groups, while households with fewer children are the majority. Overall, despite the fact that the marginal effects of different population sub-groups are different in magnitude, they are almost always negative. This leads one to conclude that the overall marginal effects reflect changes in inequality within the population sub-groups more than between them.

It should be noted that regression-based inequality decomposition techniques, suggested by Fields (2003) and by Morduch and Sicular (2002), are preferred for examining the impact of population characteristics on inequality. However, estimating the income-generating equations turned out to be highly unsatisfactory (in particular, household wealth explained almost all of the explained variation in per-capita income) in our case, and therefore we do not present these results.

6. Summary and conclusions

In this paper, inequality decomposition techniques were used in order to analyze the consequences of entrepreneurial activities to household income inequality in Southern Ethiopia. Household income inequality was first decomposed by income sources, and marginal effects of each income source on inequality were derived. Then we differentiated the marginal effects of income sources on inequality by population sub-groups. We found that a uniform increase in entrepreneurial income reduces per-capita household income inequality. This implies that encouraging rural entrepreneurship may be favorable for both income growth and income distribution. However, increasing the number of entrepreneurs does not affect inequality. By differentiation the marginal effects by population sub-groups, we found that entrepreneurship-supporting policies could be particularly successful in reducing inequality if directed at the low-income, low-wealth, and relatively uneducated segments of the society.

Several caveats are worth mentioning. First, computing income from agriculture involved some imputations, and the sensitivity checks reported in appendix 1 showed that the decomposition results are somewhat sensitive to the imputation methods. Second, the Gini and squared CV decomposition rules gave contradictory results in several cases. However, in all cases the qualitative result that entrepreneurial activities reduce inequality has not changed, and therefore one can be quite confident about it. Whether this result can be generalized is not clear, because of the specificity of our research population. However, studies in other countries, e.g., Vietnam (Oostendorp et al., 2009) have reached similar conclusions. Still, this study should be replicated in other countries or regions in order to assess this issue.

References

Aghion, Philippe (2002). "Schumpeterian Growth Theory and the Dynamics of Income Inequality." *Econometrica* 70, 855-882.

Aghion, Philippe, Eve Caroli, and Cecilia Garcia-Penalosa (1999). "Inequality and Economic Growth: The Perspective of the New Growth Theories." *Journal of Economic Literature* 37, 1615-60.

Arayama, Yuko, Jong Moo Kim, and Ayal Kimhi. *Determinants of Income Inequality among Korean Farm Households*. Center for Economic Research Discussion Paper No. 161, School of Economics, Nagoya University. November 2006.

Banerjee, Abhijit V., and Esther Duflo (2003). "Inequality and growth: What can the data say?" *Journal of Economic Growth* 8, 267-299.

Barrett, Christopher B, Thomas Reardon, and Patrick Webb (2001). "Nonfarm Income Diversification and Household Livelihood Strategies in Rural Africa: Concepts, Dynamics, and Policy Implications." *Food Policy* 26, 315-331.

Barro, Robert J. (2000). "Inequality and Growth in a Panel of Countries." *Journal of Economic Growth* 5, 5-32.

Benhabib, Jess (2003). "The Tradeoff Between Inequality and Growth." *Annals of Economics and Finance* 4, 329-345.

Bigsten, Arne, Bereket Kebede, Abebe Shimeles, and Mekonnen Taddesse (2003). "Growth and Poverty Reduction in Ethiopia: Evidence from Household Panel Surveys," *World Development* 31, 87-106.

Block, Steven A., and Patrick Webb (2001). "The dynamics of livelihood diversification in post-famine Ethiopia." *Food Policy* 26, 333-350.

Cagetti, Marco, and Mariacristina De Nardi (2006). "Entrepreneurship, Frictions, and Wealth." *Journal of Political Economy* 114, 835-870.

Carswell, Grace (2002). "Livelihood Diversification: Increasing in Importance or Increasingly Recognized? Evidence from Southern Ethiopia." *Journal of International Development* 14, 789-804.

Deininger, Klaus, and Lyn Squire (1998). "New Ways of Looking at Old Issues: Inequality and Growth." *Journal of Development Economics* 57, 259-287.

Dercon, Stefan, and Pramila Krishnan (1996). "Income Portfolios in Rural Ethiopia and Tanzania: Choices and Constraints." *Journal of Development Studies* 32, 850-875.

Dercon, Stefan, and Pramila Krishnan (2000). "In Sickness and in Health: Risk Sharing within Households in Rural Ethiopia." *Journal of Political Economy* 108, 688-727.

Deutsch, Joseph, and Jacques Silber (2004). "Measuring the Impact of Various Income Sources on the Link between Inequality and Development: Implications for the Kuznets Curve." *Review of Development Economics* 8, 110-127.

Fields, Gary (2003). "Accounting for Income Inequality and Its Change: A New Method, with Application to the Distribution of Earnings in the United States." *Research in Labor Economics* 22, 1-38.

Galor, Oded (2000). "Income Distribution and the Process of Development." *European Economic Review* 44, 706-712.

Galor, Oded, and Joseph Zeira (1993). "Income Distribution and Macroeconomics." *Review of Economic Studies* 60, 35-52.

Jayne, T.S., Takashi Yamano, Michael T. Weber, David Tschirley, Rui Benfica, Antony Chapoto and Ballard Zulu (2003). "Smallholder Income and Land Distribution in Africa: Implications for Poverty Reduction Strategies." *Food Policy* 28, 253-275.

Kanbur, S.M. Ravi (1982). "Entrepreneurial Risk Taking, Inequality, and Public Policy: An Application of Inequality Decomposition Analysis to the General Equilibrium Effects of Progressive Taxation." *Journal of Political Economy* 90, 1-21.

Kebede, Bereket (2004). *Administrative Allocation, Lease Markets and Inequality in Land in Rural Ethiopia: 1995-97*. WeD Working Paper 07, ESRC Research Group on Wellbeing in Developing Countries, University of Bath, UK.

Kimhi, Ayal (2004). *Growth, Inequality and Labor Markets in LDCs: A Survey*. CESifo Working Paper No. 1281. Available at SSRN: http://ssrn.com/abstract=608902**.**

Kimhi, Ayal (2006). "Gender Differences in Health and Nutrition in Southern Ethiopia." In Premananda Bharati and Manoranjan Pal (eds.), *Gender Disparity: Manifestations, Causes and Implications*, New Delhi: India, Amnol Publications, pp. 198-213.

Kimhi, Ayal (2007). *Regression-Based Inequality Decomposition: A Critical Review and Application to Farm-Household Income Data*. Discussion Paper No. 16.07, The Center for Agricultural Economic Research, Rehovot, Israel.

Kimhi, Ayal, and Nathan Sosner (2000). *Intrahousehold Allocation of Food in Southern Ethiopia*. Working Paper No. 20002, The Center for Agricultural Economic Research, Rehovot, Israel.

Kuznets, Simon (1955). "Economic Growth and Income Inequality." *The American Economic Review* 45, 1-28.

Lerman, Robert I., and Shlomo Yitzhaki (1985). "Income Inequality Effects by Income Source: A New Approach and Applications to the United States." *Review of Economics and Statistics* 67, 151-156.

Lundberg, Mattias, and Lyn Squire (2003). “The Simultaneous Evolution of Growth and Inequality.” *The Economic Journal* 113, 326-344.

Meh, Cesaire A. (2005). "Entrepreneurship, Wealth Inequality, and Taxation." *Review of Economic Dynamics* 8, 688-719.

Morduch, Jonathan, and Terry Sicular (2002). "Rethinking Inequality Decomposition, with Evidence from Rural China." *The Economic Journal* 112, 93-106.

Naude, Wim (2008). *Entrepreneurship in Economic Development*, Research Paper No. 2008/20, UNU-WIDER.

Oostendorp, Remco H., Tran Quoc Trung and Nguyen Thanh Tung (2009). "The Changing Role of Non-Farm Household Enterprises in Vietnam." *World Development* 37, 632-644.

Quadrini, Vincenzo (1999). "The Importance of Entrepreneurship for Wealth Concentration and Mobility." *Review of Income and Wealth* 45, 1-19.

Quisumbing, Agnes R., and Yisehac Yohannes (2004). "How Fair is Workfare? Gender, Public Works, and Employment in Rural Ethiopia". World Bank Policy Research Working Paper No. 3492.

Rapoport, Hillel (2002). "Migration, Credit Constraints and Self-Employment: A Simple Model of Occupational Choice, Inequality and Growth." *Economics Bulletin* 15, 1-5.

Shorrocks, Anthony F. (1982). "Inequality Decomposition by Factor Components." *Econometrica* 50, 193-211.

Shorrocks, Anthony F. (1983). "The Impact of Income Components on the Distribution of Family Incomes." *Quarterly Journal of Economics* 98, 311-326.

van den Berg, Marrit, and Girma Earo Kumbi. (2006). "Poverty and the Rural Nonfarm Economy in Oromia, Ethiopia." *Agricultural Economics* 35, 469-475.

van der Sluis, Justin, Mirjam Van Praag, and Wim P.M. Vijverberg (2004). *Entrepreneurship Selection and Performance: A Meta-analysis of the Impact of Education in Less Developed Countries*. Tinbergen Discussion Paper No. TI 03-036/3, University of Amsterdam.

Woldenhannaa, T, and A. Oskam (2001). "Income Diversification and Entry Barriers: Evidence from the Tigray Region of Northern Ethiopia." *Food Policy* 26, 351-365.

Appendix 1: sensitivity analysis

Computing household income from agricultural activities was complicated by two main issues. First, most of the agricultural output was used for household consumption, and hence the value of output had to be imputed. This is further complicated by the fact that the quantity of output is reported in many different local units of weight, volume, etc. Second, labor is the dominant factor of production, and in most cases hired workers are either paid in kind or work as part of a labor sharing arrangement, without explicit compensation.

To deal with the computation of output, we used three different methods. First, we converted all units of output to kilograms and then used price per kilogram of each type of output, derived as a village-level median of all available price data. Second, we used similarly-derived prices per each unit of measurement for each type of output, and then aggregated the values. Third, we used prices obtained from administrative officials, which were available for about half of the agricultural activities reported. For the other cases, we used prices derived by the first method. The results show that income inequality is higher when using the second imputation method, while the first and the third methods yield roughly similar inequality results. In addition, the contribution of agricultural income to inequality is lower when using the second imputation method, while the marginal effect of entrepreneurial income is larger in absolute value.

To deal with the computation of labor input, we used four different methods. First, we used median levels of wages in each village. To check the sensitivity of the results to this method, we also imputed wages that are one birr above and below the median. Finally, we used the actual wages when those were reported, and imputed wages that were not reported using the median. The results show that using wages above (below) the median results in higher (lower) income inequality. Using actual wages (fourth method) also results in lower inequality. The changes in the decomposition results are relatively small. The changes in the marginal effects are somewhat larger, with marginal effects of the second and third methods generally larger and smaller in absolute value, respectively.

As a final sensitivity check, we excluded the costs of the three labor activities that involve mostly labor sharing arrangements. This resulted in higher agricultural income and lower income inequality, but the inequality decomposition results changed only slightly. Marginal effects did change considerably, though. For example, marginal affects of agricultural income on the Gini inequality index changed from positive and mostly significant to negative but insignificant. Marginal effects of entrepreneurial income on the Gini (squared CV) inequality index became larger (smaller) in absolute value, while marginal effects of remittance income became larger for both inequality indices.

Regardless of the sensitivity of the results to the computation of agricultural income, it should be emphasized that the marginal effects of entrepreneurial income on inequality remained negative regardless of the method chosen for imputing prices or wages.

Appendix table 1: Sensitivity analysis of entrepreneurial income inequality contributions and intensive marginal effects

	Gini					Squared CV				
Price/wage	Index	Contr.	t-val	Marg.	t-val	Index	Contr.	t-val	Marg.	t-val
A/1	0.5340	0.1036	4.23	-0.0655	-4.97	1.5817	0.0830	1.82	-0.1720	-2.09
A/2	0.5774	0.0988	4.09	-0.0829	-6.35	1.8352	0.0769	1.89	-0.2101	-2.93
A/3	0.4982	0.1044	4.12	-0.0537	-4.11	1.3826	0.0865	1.85	-0.1450	-1.75
A/4	0.5186	0.1029	4.17	-0.0616	-4.44	1.4989	0.0842	1.86	-0.1628	-1.97
B/1	0.6875	0.1673	4.85	-0.1076	-7.40	3.3639	0.1105	2.01	-0.3282	-3.02
B/2	0.7895	0.1632	4.75	-0.1487	-8.14	4.3334	0.1138	1.74	-0.3895	-2.73
B/3	0.6097	0.1701	4.85	-0.0770	-5.03	2.6926	0.1081	1.92	-0.2770	-2.62
B/4	0.6557	0.1666	5.03	-0.0961	-6.68	3.0932	0.1064	1.88	-0.3112	-2.77
C/1	0.5261	0.1096	4.17	-0.0597	-4.18	1.5970	0.0846	1.99	-0.1708	-2.13
C/2	0.5696	0.1071	4.91	-0.0740	-6.64	1.8573	0.0823	2.07	-0.2001	-2.56
C/3	0.4902	0.1139	4.70	-0.0464	-3.61	1.3932	0.0892	2.22	-0.1426	-2.03
C/4	0.5106	0.1154	3.82	-0.0531	-3.69	1.5121	0.0892	1.84	-0.1582	-1.97

Note: the price index A,B,C refer to the three methods of output price imputation; the wage index 1,2,3,4 refer to the four methods of hired labor wage imputation.

Appendix 2: tests of different marginal effects of entrepreneurial income by population sub-groups

	Gini		Squared CV	
Sub-group definition	statistic	significance	statistic	significance
Income quintile	4468.75	0.00	497.63	0.00
Marital status of household head	42.52	0.00	21.34	0.00
Number of children up to 6	-28.88	0.00	-21.62	0.00
Number of children 7-17	-52.73	0.00	-46.78	0.00
Number of adults	19.97	0.00	6.53	0.00
Religion	58.69	0.00	26.38	0.00
Household wealth	-66.65	0.00	-45.33	0.00
Age of household head	2.54	0.01	6.44	0.00
Educated adult in the household	37.47	0.00	39.89	0.00

Note: F statistics are reported for the case of income quintiles, t statistics in all other cases.

Source: Kimhi (2006).

Figure 1. Map of Ethiopia and survey area

Table 1. Entrepreneurship activities and income

	males	females	total
Number of entrepreneurs[a]			
handicrafts	13	89	102
trade	27	52	79
transport	17	129	146
other	9	9	18
total	66	279	345
Mean annual income per entrepreneur (birr)			
handicrafts	456	193	226
trade	584	213	340
transport	788	134	210
other	322	162	242
total	576	168	246
Percent of total entrepreneurship income			
handicrafts			27.44
trade			31.96
transport			36.01
other			4.60
total			100.00

a. the number of entrepreneurs is larger than the number of entrepreneurial activities because there are cases in which more than one household member is engaged in an entrepreneurial activity.

Table 2. Inequality decomposition by income source

	Share of source-specific per-capita income	Inequality measures	
		Gini	Squared CV
Inequality index		0.5340	1.5817
Inequality contributions			
Agricultural income	51%	0.5683 (12.1)	0.3807 (3.87)
Hired labor income	11%	0.0999 (3.04)	0.1279 (1.82)
Entrepreneurial income	17%	0.1036 (4.23)	0.0830 (1.82)
Remittances	21%	0.2282 (4.39)	0.4084 (2.78)
Total	*100%*	*1.00*	*1.00*
Marginal effects			
Agricultural income		0.0594% (2.28)	-0.2693% (-1.46)
Hired labor income		-0.0113% (-0.71)	0.0280% (0.27)
Entrepreneurial income		-0.0655% (-4.97)	-0.1720% (-2.09)
Remittances		0.0180% (0.75)	0.4213% (1.47)
Extensive marginal effects			
Hired labor income		-0.1434% (-1.47)	-0.2138% (-1.58)
Entrepreneurial income		0.0081% (0.36)	0.1333% (0.83)
Remittances		0.0572% (2.15)	0.2623% (1.38)

Note: bootstrapped t-statistics in parentheses.

Table 3. Marginal effects of entrepreneurial income by population sub-groups

Population sub-group	Sample size	Mean income (birr)	Marginal effects (%)	
			Gini	Squared CV
Income quintile				
Lowest	114	49.0	-0.025 (-5.82)	-0.033 (-4.92)
Second	113	96.6	-0.036 (-6.77)	-0.058 (-5.04)
Third	113	147.0	-0.032 (-6.65)	-0.076 (-5.29)
Fourth	114	151.7	-0.008 (-2.87)	-0.060 (-4.04)
Highest	114	341.3	0.038 (3.57)	0.059 (0.95)
Marital status of household head				
Single	63	123.2	-0.0130 (-3.15)	-0.0333 (-3.40)
Not single	508	161.7	-0.0504 (-3.72)	-0.1322 (-1.60)
Number of children up to 6				
Up to one	388	153.3	-0.0465 (-4.61)	-0.1386 (-2.35)
More than one	183	166.2	-0.0168 (-1.78)	-0.0269 (-0.55)
Number of children 7-17				
Up to three	405	131.0	-0.0597 (-6.78)	-0.1864 (-4.77)
More than three	166	221.9	-0.0036 (-0.32)	0.0210 (0.32)
Number of adults				
Up to three	380	166.2	-0.0406 (-3.16)	-0.0945 (-1.24)
More than three	191	140.1	-0.0228 (-4.36)	-0.0710 (-3.81)

Continued on next page

Table 3 (continued)

Population sub-group	Sample size	Mean income (birr)	Marginal effects (%)	
			Gini	Squared CV
Religion				
Muslim	59	94.3	-0.0059 (-2.62)	-0.0186 (-2.93)
Not Muslim	512	164.7	-0.0575 (-4.21)	-0.1469 (-1.76)
Household wealth				
Up to 1800 birr/person	353	148.1	-0.0671 (-8.01)	-0.1795 (-4.96)
Over 1800 birr/person	215	173.1	0.0038 (0.34)	0.0141 (0.21)
Age of household head				
Up to 48	324	180	-0.0303 (-2.42)	-0.0657 (-0.90)
More than 48	247	127.4	-0.0331 (-5.39)	-0.0998 (-4.24)
Educated adult in the household				
Yes	184	198.2	-0.0117 (-0.98)	0.0070 (0.11)
No	387	138.1	-0.0516 (-6.40)	-0.1724 (-4.67)
Total marginal effect of entrepreneurial income	571	157.4	-0.0655 (-4.97)	-0.1720 (-2.09)

Note: bootstrapped t-statistics in parentheses.

PREVIOUS DISCUSSION PAPERS

1.01 Yoav Kislev - Water Markets (Hebrew).

2.01 Or Goldfarb and Yoav Kislev - Incorporating Uncertainty in Water Management (Hebrew).

3.01 Zvi Lerman, Yoav Kislev, Alon Kriss and David Biton - Agricultural Output and Productivity in the Former Soviet Republics.

4.01 Jonathan Lipow & Yakir Plessner - The Identification of Enemy Intentions through Observation of Long Lead-Time Military Preparations.

5.01 Csaba Csaki & Zvi Lerman - Land Reform and Farm Restructuring in Moldova: A Real Breakthrough?

6.01 Zvi Lerman - Perspectives on Future Research in Central and Eastern European Transition Agriculture.

7.01 Zvi Lerman - A Decade of Land Reform and Farm Restructuring: What Russia Can Learn from the World Experience.

8.01 Zvi Lerman - Institutions and Technologies for Subsistence Agriculture: How to Increase Commercialization.

9.01 Yoav Kislev & Evgeniya Vaksin - The Water Economy of Israel--An Illustrated Review. (Hebrew).

10.01 Csaba Csaki & Zvi Lerman - Land and Farm Structure in Poland.

11.01 Yoav Kislev - The Water Economy of Israel.

12.01 Or Goldfarb and Yoav Kislev - Water Management in Israel: Rules vs. Discretion.

1.02 Or Goldfarb and Yoav Kislev - A Sustainable Salt Regime in the Coastal Aquifer (Hebrew).

2.02 Aliza Fleischer and Yacov Tsur - Measuring the Recreational Value of Open Spaces.

3.02 Yair Mundlak, Donald F. Larson and Rita Butzer - Determinants of Agricultural Growth in Thailand, Indonesia and The Philippines.

4.02 Yacov Tsur and Amos Zemel - Growth, Scarcity and R&D.

5.02 Ayal Kimhi - Socio-Economic Determinants of Health and Physical Fitness in Southern Ethiopia.

6.02 Yoav Kislev - Urban Water in Israel.

7.02 Yoav Kislev - A Lecture: Prices of Water in the Time of Desalination. (Hebrew).

8.02 Yacov Tsur and Amos Zemel - On Knowledge-Based Economic Growth.

9.02 Yacov Tsur and Amos Zemel - Endangered aquifers: Groundwater management under threats of catastrophic events.

10.02 Uri Shani, Yacov Tsur and Amos Zemel - Optimal Dynamic Irrigation Schemes.

1.03 Yoav Kislev - The Reform in the Prices of Water for Agriculture (Hebrew).

2.03 Yair Mundlak - Economic growth: Lessons from two centuries of American Agriculture.

3.03 Yoav Kislev - Sub-Optimal Allocation of Fresh Water. (Hebrew).

4.03 Dirk J. Bezemer & Zvi Lerman - Rural Livelihoods in Armenia.

5.03 Catherine Benjamin and Ayal Kimhi - Farm Work, Off-Farm Work, and Hired Farm Labor: Estimating a Discrete-Choice Model of French Farm Couples' Labor Decisions.

6.03 Eli Feinerman, Israel Finkelshtain and Iddo Kan - On a Political Solution to the Nimby Conflict.

7.03 Arthur Fishman and Avi Simhon - Can Income Equality Increase Competitiveness?

8.03 Zvika Neeman, Daniele Paserman and Avi Simhon - Corruption and Openness.

9.03 Eric D. Gould, Omer Moav and Avi Simhon - The Mystery of Monogamy.

10.03 Ayal Kimhi - Plot Size and Maize Productivity in Zambia: The Inverse Relationship Re-examined.

11.03 Zvi Lerman and Ivan Stanchin - New Contract Arrangements in Turkmen Agriculture: Impacts on Productivity and Rural Incomes.

12.03 Yoav Kislev and Evgeniya Vaksin - Statistical Atlas of Agriculture in Israel - 2003-Update (Hebrew).

1.04 Sanjaya DeSilva, Robert E. Evenson, Ayal Kimhi - Labor Supervision and Transaction Costs: Evidence from Bicol Rice Farms.

2.04 Ayal Kimhi - Economic Well-Being in Rural Communities in Israel.

3.04 Ayal Kimhi - The Role of Agriculture in Rural Well-Being in Israel.

4.04 Ayal Kimhi - Gender Differences in Health and Nutrition in Southern Ethiopia.

5.04 Aliza Fleischer and Yacov Tsur - The Amenity Value of Agricultural Landscape and Rural-Urban Land Allocation.

6.04 Yacov Tsur and Amos Zemel – Resource Exploitation, Biodiversity and Ecological Events.

7.04 Yacov Tsur and Amos Zemel – Knowledge Spillover, Learning Incentives And Economic Growth.

8.04 Ayal Kimhi – Growth, Inequality and Labor Markets in LDCs: A Survey.

9.04 Ayal Kimhi – Gender and Intrahousehold Food Allocation in Southern Ethiopia

10.04 Yael Kachel, Yoav Kislev & Israel Finkelshtain – Equilibrium Contracts in The Israeli Citrus Industry.

11.04 Zvi Lerman, Csaba Csaki & Gershon Feder – Evolving Farm Structures and Land Use Patterns in Former Socialist Countries.

12.04 Margarita Grazhdaninova and Zvi Lerman – Allocative and Technical Efficiency of Corporate Farms.

13.04 Ruerd Ruben and Zvi Lerman – Why Nicaraguan Peasants Stay in Agricultural Production Cooperatives.

14.04 William M. Liefert, Zvi Lerman, Bruce Gardner and Eugenia Serova - Agricultural Labor in Russia: Efficiency and Profitability.

1.05 Yacov Tsur and Amos Zemel – Resource Exploitation, Biodiversity Loss and Ecological Events.

2.05 Zvi Lerman and Natalya Shagaida – Land Reform and Development of Agricultural Land Markets in Russia.

3.05 Ziv Bar-Shira, Israel Finkelshtain and Avi Simhon – Regulating Irrigation via Block-Rate Pricing: An Econometric Analysis.

4.05 Yacov Tsur and Amos Zemel – Welfare Measurement under Threats of Environmental Catastrophes.

5.05 Avner Ahituv and Ayal Kimhi – The Joint Dynamics of Off-Farm Employment and the Level of Farm Activity.

6.05 Aliza Fleischer and Marcelo Sternberg – The Economic Impact of Global Climate Change on Mediterranean Rangeland Ecosystems: A Space-for-Time Approach.

7.05 Yael Kachel and Israel Finkelshtain – Antitrust in the Agricultural Sector: A Comparative Review of Legislation in Israel, the United States and the European Union.

8.05 Zvi Lerman – Farm Fragmentation and Productivity Evidence from Georgia.

9.05 Zvi Lerman – The Impact of Land Reform on Rural Household Incomes in Transcaucasia and Central Asia.

10.05 Zvi Lerman and Dragos Cimpoies – Land Consolidation as a Factor for Successful Development of Agriculture in Moldova.

11.05 Rimma Glukhikh, Zvi Lerman and Moshe Schwartz – Vulnerability and Risk Management among Turkmen Leaseholders.

12.05 R.Glukhikh, M. Schwartz, and Z. Lerman – Turkmenistan's New Private Farmers: The Effect of Human Capital on Performance.

13.05 Ayal Kimhi and Hila Rekah – The Simultaneous Evolution of Farm Size and Specialization: Dynamic Panel Data Evidence from Israeli Farm Communities.

14.05 Jonathan Lipow and Yakir Plessner - Death (Machines) and Taxes.

1.06 Yacov Tsur and Amos Zemel – Regulating Environmental Threats.

2.06 Yacov Tsur and Amos Zemel - Endogenous Recombinant Growth.

3.06 Yuval Dolev and Ayal Kimhi – Survival and Growth of Family Farms in Israel: 1971-1995.

4.06 Saul Lach, Yaacov Ritov and Avi Simhon – Longevity across Generations.

5.06 Anat Tchetchik, Aliza Fleischer and Israel Finkelshtain – Differentiation & Synergies in Rural Tourism: Evidence from Israel.

6.06 Israel Finkelshtain and Yael Kachel – The Organization of Agricultural Exports: Lessons from Reforms in Israel.

7.06 Zvi Lerman, David Sedik, Nikolai Pugachev and Aleksandr Goncharuk – Ukraine after 2000: A Fundamental Change in Land and Farm Policy?

8.06 Zvi Lerman and William R. Sutton – Productivity and Efficiency of Small and Large Farms in Moldova.

9.06 Bruce Gardner and Zvi Lerman – Agricultural Cooperative Enterprise in the Transition from Socialist Collective Farming.

10.06 Zvi Lerman and Dragos Cimpoies - Duality of Farm Structure in Transition Agriculture: The Case of Moldova.

11.06 Yael Kachel and Israel Finkelshtain – Economic Analysis of Cooperation In Fish Marketing. (Hebrew)

12.06 Anat Tchetchik, Aliza Fleischer and Israel Finkelshtain – Rural Tourism: Developmelnt, Public Intervention and Lessons from the Israeli Experience.

13.06 Gregory Brock, Margarita Grazhdaninova, Zvi Lerman, and Vasilii Uzun - Technical Efficiency in Russian Agriculture.

14.06 Amir Heiman and Oded Lowengart - Ostrich or a Leopard – Communication Response Strategies to Post-Exposure of Negative Information about Health Hazards in Foods

15.06 Ayal Kimhi and Ofir D. Rubin – Assessing the Response of Farm Households to Dairy Policy Reform in Israel.

16.06 Iddo Kan, Ayal Kimhi and Zvi Lerman – Farm Output, Non-Farm Income, and Commercialization in Rural Georgia.

17.06 Aliza Fleishcer and Judith Rivlin – Quality, Quantity and Time Issues in Demand for Vacations.

1.07 Joseph Gogodze, Iddo Kan and Ayal Kimhi – Land Reform and Rural Well Being in the Republic of Georgia: 1996-2003.

2.07 Uri Shani, Yacov Tsur, Amos Zemel & David Zilberman – Irrigation Production Functions with Water-Capital Substitution.

3.07 Masahiko Gemma and Yacov Tsur – The Stabilization Value of Groundwater and Conjunctive Water Management under Uncertainty.

4.07 Ayal Kimhi – Does Land Reform in Transition Countries Increase Child Labor? Evidence from the Republic of Georgia.

5.07 Larry Karp and Yacov Tsur – Climate Policy When the Distant Future Matters: Catastrophic Events with Hyperbolic Discounting.

6.07 Gilad Axelrad and Eli Feinerman – Regional Planning of Wastewater Reuse for Irrigation and River Rehabilitation.

7.07 Zvi Lerman – Land Reform, Farm Structure, and Agricultural Performance in CIS Countries.

8.07 Ivan Stanchin and Zvi Lerman – Water in Turkmenistan.

9.07 Larry Karp and Yacov Tsur – Discounting and Climate Change Policy.

10.07 Xinshen Diao, Ariel Dinar, Terry Roe and Yacov Tsur – A General Equilibrium Analysis of Conjunctive Ground and Surface Water Use with an Application To Morocco.

11.07 Barry K. Goodwin, Ashok K. Mishra and Ayal Kimhi – Household Time Allocation and Endogenous Farm Structure: Implications for the Design of Agricultural Policies.

12.07 Iddo Kan, Arie Leizarowitz and Yacov Tsur - Dynamic-spatial management of coastal aquifers.

13.07 Yacov Tsur and Amos Zemel – Climate change policy in a growing economy under catastrophic risks.

14.07 Zvi Lerman and David J. Sedik – Productivity and Efficiency of Corporate and Individual Farms in Ukraine.

15.07 Zvi Lerman and David J. Sedik – The Role of Land Markets in Improving Rural Incomes.

16.07 Ayal Kimhi – Regression-Based Inequality Decomposition: A Critical Review And Application to Farm-Household Income Data.

17.07 Ayal Kimhi and Hila Rekah – Are Changes in Farm Size and Labor Allocation Structurally Related? Dynamic Panel Evidence from Israel.

18.07 Larry Karp and Yacov Tsur – Time Perspective, Discounting and Climate Change Policy.

1.08 Yair Mundlak, Rita Butzer and Donald F. Larson – Heterogeneous Technology and Panel Data: The Case of the Agricultural Production Function.

2.08 Zvi Lerman – Tajikistan: An Overview of Land and Farm Structure Reforms.

3.08 Dmitry Zvyagintsev, Olga Shick, Eugenia Serova and Zvi Lerman – Diversification of Rural Incomes and Non-Farm Rural Employment: Evidence from Russia.

4.08 Dragos Cimpoies and Zvi Lerman – Land Policy and Farm Efficiency: The Lessons of Moldova.

5.08 Ayal Kimhi – Has Debt Restructuring Facilitated Structural Transformation on Israeli Family Farms?.

6.08 Yacov Tsur and Amos Zemel – Endogenous Discounting and Climate Policy.

7.08 Zvi Lerman – Agricultural Development in Uzbekistan: The Effect of Ongoing Reforms.

8.08 Iddo Kan, Ofira Ayalon and Roy Federman – Economic Efficiency of Compost Production: The Case of Israel.

9.08 Iddo Kan, David Haim, Mickey Rapoport-Rom and Mordechai Shechter – Environmental Amenities and Optimal Agricultural Land Use: The Case of Israel.

10.08 Goetz, Linde, von Cramon-Taubadel, Stephan and Kachel, Yael - Measuring Price Transmission in the International Fresh Fruit and Vegetable Supply Chain: The Case of Israeli Grapefruit Exports to the EU.

11.08 Yuval Dolev and Ayal Kimhi – Does Farm Size Really Converge? The Role Of Unobserved Farm Efficiency.

12.08 Jonathan Kaminski – Changing Incentives to Sow Cotton for African Farmers: Evidence from the Burkina Faso Reform.

13.08 Jonathan Kaminski – Wealth, Living Standards and Perceptions in a Cotton Economy: Evidence from the Cotton Reform in Burkina Faso.

14.08 Arthur Fishman, Israel Finkelshtain, Avi Simhon & Nira Yacouel – The Economics of Collective Brands.

15.08 Zvi Lerman - Farm Debt in Transition: The Problem and Possible Solutions.

16.08 Zvi Lerman and David Sedik – The Economic Effects of Land Reform in Central Asia: The Case of Tajikistan.

17.08 Ayal Kimhi – Male Income, Female Income, and Household Income Inequality in Israel: A Decomposition Analysis

1.09 Yacov Tsur – On the Theory and Practice of Water Regulation.

2.09 Yacov Tsur and Amos Zemel – Market Structure and the Penetration of Alternative Energy Technologies.

3.09 Ayal Kimhi – Entrepreneurship and Income Inequality in Southern Ethiopia.