Transformational Agricultural – Implications of Kuznets and the Dual Economy Model

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Abstract

One of the goals of the Feed the Future initiative is to increase the profitability of smallholder agriculture. The SPREAD/PEARL initiative in Rwanda attempted to accomplish this by enhancing the value chain for coffee. This paper develops a theoretical model of the impact of this value chain enhancement on income equality. The results indicate that a general investment in value chains could actually accentuate income inequality. However, targeted investment in value chains coupled with other growth policies may provide a reduction in income inequality.

Key words: income growth, income inequality, value chain

JEL classification: C10,O12,Q12

Introduction

Feed the Future is U.S. Government's Global Hunger an Food Security Initiative to reduce hunger. In the words of President Barack Obama "[T]o the people of poor nations, we pledge to work alongside you to make your farms flourish and let clean waters flow, to nourish starved bodies and feed hungry minds" (Feed the Future 2014b). Feed the Future cooperates with partner countries to develop long-run solutions by

- Supporting the food security priorities of our partner countries and helping build their capacity for sustainable development

- Promoting collaboration at the U.S. and international levels
- Empowering women, who are vital to driving agricultural growth
- Embracing innovative partnerships with the private sector, civil society and the research community
- Fostering policy environments that enable private investment
- Advancing big ideas and climate-smart agriculture through research and innovation
- Integrating agriculture and nutrition, with a particular focus on mothers and children
- Maximizing cost-effective results that create the conditions where our assistance is no longer needed Feed the Future (2014a).

While these long-run solutions can be characterized in several ways, we hypothesize that Feed the Future is a call for agriculture to become transformational. That is fostering policy environments that enable private investments and advance big ideas through research and innovations will ”[I]ncrease agricultural productivity and generate opportunities for economic growth and trade in developing countries” (Feed the Future 2014a).

One important model of the role of agriculture in economic development was proposed by Kuznets (1955). Kuznets hypothesized a dualistic economy – an economy dominated by two major sectors. In his original model he hypothesized a low income sector – agriculture – and a high income sector – non-agriculture. In this basic model aggregate income increased as labor moved from agriculture to the non-farm sector. His primary focus within this formulation was the effect of this transition on two characteristics of the economy – average income and income inequality. By assuming different levels Kuznets demonstrates how this development may lead to a ”U”-shaped curve where income inequality first increases increases in aggregate income. Eventually, as employment in the non-agricultural sector begins to dominate the economy, increases in aggregate income are then associated with a declining income inequality.

Several studies have attempted to empirically validate the "U"-shaped relationship between income inequality and income growth. These studies estimate income inequality (typically measured as the Gini-Coefficient) as a function of aggregate income using either cross-sectional country level or panel data for a set of countries over time. As presented in Anand and Kanbur (1993), these studies estimate a variety of structural forms which will allow for a nonlinear relationship between income inequality and aggregate income (i.e., the quadratic or the exponential of a quadratic). In general, the efforts have provided weak support for Kuznets' hypothesis. Several alternative hypothesis for this less than stellar support are possible. First, Kuznets (1955) original formulation compares two sectors with the same overall structure of income inequality. Changes in the distribution of income are the result of increases in the level of income (i.e., Kuznets' table assumes the same decile structure of average income for each industry). One possibility is that the income inequality in the new industry (non-agriculture) is relatively larger than than for the original industry (agriculture). Another possibility is that the non-agricultural or industrial sectors in many developing countries have yielded relatively less income growth. Specifically, agricultural development in the United States appears to validate Kuznets' hypothesis. Advances in agricultural technology freed labor from the farm sector which was then employed in the burgeoning industrial sector. As labor moved from the farm to manufacturing, incomes increased resulting initially in increased income inequality. The reduction in the number of farmers through time implied a reduction in the overall income inequality.

Theoretical Model

To examine the potential role for agricultural transformation in meeting the Feed the Future goals we will modify Kuznets (1955) formulation slightly. Specifically, without loss of generality, we hypothesize that four income levels - Y_1, Y_2, $\cdots$, Y_5. Initially we assume follow Kuznets' formulation be focusing on two industries (A for agriculture and B for industrial). Associated with each industry there is a set of probabilities that a participant in that industry will earn income $i = 1, 2, \cdots 5$ (denoted π_{ij} $j = 1, 2$ where $j = 1$ denotes an individual employed in agriculture and $j = 2$ denotes an individual employed in the industrial sector). The average income in each sector can then be derived as

$$(1) \quad \bar{Y}_j = \sum_{i=1}^{5} \pi_{ij} Y_i \;\; j = 1, 2.$$

Following Kuznets' formulation we are interested in the scenario where $\bar{Y}_1 \ll \bar{Y}_2$. In addition to the average income for each industry, the values of π_{ij} can be used to determine the variance and higher moments the income distribution

$$(2) \quad \bar{Y}_j^{(k)} = \sum_{i=1}^{5} \pi_{ij} \left(Y_i - \bar{Y}_j\right)^k \;\; j = 1, 2$$

where k denotes the central moment of the income distribution (Moss 2014, pp.96-97).

Notice this system is linear in probabilities. Specifically, the probabilities can be determined by solving the system of equations

$$(3) \quad \begin{bmatrix} 1 & 1 & 1 & 1 & 1 \\ Y_1 & Y_2 & Y_3 & Y_4 & Y_5 \\ (Y_1 - \bar{Y}_j)^2 & (Y_2 - \bar{Y}_j)^2 & (Y_3 - \bar{Y}_j)^2 & (Y_4 - \bar{Y}_j)^2 & (Y_5 - \bar{Y}_j)^2 \\ (Y_1 - \bar{Y}_j)^3 & (Y_2 - \bar{Y}_j)^3 & (Y_3 - \bar{Y}_j)^3 & (Y_4 - \bar{Y}_j)^3 & (Y_5 - \bar{Y}_j)^3 \\ (Y_1 - \bar{Y}_j)^4 & (Y_2 - \bar{Y}_j)^4 & (Y_3 - \bar{Y}_j)^4 & (Y_4 - \bar{Y}_j)^4 & (Y_5 - \bar{Y}_j)^4 \end{bmatrix} \begin{bmatrix} \pi_{1j} \\ \pi_{2j} \\ \pi_{3j} \\ \pi_{4j} \\ \pi_{5j} \end{bmatrix} = \begin{bmatrix} 1 \\ \bar{Y}_j \\ \bar{Y}_j^{(2)} \\ \bar{Y}_j^{(3)} \\ \bar{Y}_j^{(4)} \end{bmatrix}$$

(see Moss 2014, pp. 161-164). In this case we can construct a set of probabilities that yield combinations of means and the first four central moments of the distribution. The probabilities that yield the moments presented in Table 1 are presented in Table 2.

Given that we can generate the probabilities that yield a specified set of moments for the income distribution, the Kuznets' model then involves the effect of a structural change that moves individuals from employment in one industry to the other. Specifically, assume that the everyone in the economy is employed in either agriculture or non-agriculture. Given that the total working population is N we can derive the shares of individuals in each industry as

$$(4) \quad N = N_A + N_B \Rightarrow \frac{N_A}{N} + \frac{N_B}{N} = n_A + n_B = 1$$

so that n_A is the share of individuals working in agriculture and n_B is the share of individuals employed by non-agricultural concerns. Making the assumption of independence we can then define the distribution of individuals into income groups as

$$(5) \quad \tilde{\pi} = \begin{bmatrix} \tilde{\pi}_1 \\ \tilde{\pi}_2 \\ \tilde{\pi}_3 \\ \tilde{\pi}_4 \\ \tilde{\pi}_5 \end{bmatrix} = \begin{bmatrix} \pi_{11} & \pi_{12} \\ \pi_{21} & \pi_{22} \\ \pi_{31} & \pi_{32} \\ \pi_{41} & \pi_{42} \\ \pi_{51} & \pi_{52} \end{bmatrix} \begin{bmatrix} n_A \\ n_B \end{bmatrix}.$$

Taken together the probabilities of income for each industry and the share of employment for each industry implies a probability distribution for incomes and, hence, both average levels of income and income inequality measures.

Next, if we hold the distributional characteristics for each industry constant and vary the level of employment in each industry, Equation 5 becomes

$$(6) \quad \tilde{\pi}_t = \begin{bmatrix} \tilde{\pi}_{1t} \\ \tilde{\pi}_{2t} \\ \tilde{\pi}_{3t} \\ \tilde{\pi}_{4t} \\ \tilde{\pi}_{5t} \end{bmatrix} = \begin{bmatrix} \pi_{11} & \pi_{12} \\ \pi_{21} & \pi_{22} \\ \pi_{31} & \pi_{32} \\ \pi_{41} & \pi_{42} \\ \pi_{51} & \pi_{52} \end{bmatrix} \begin{bmatrix} n_{At} \\ n_{Bt} \end{bmatrix}.$$

The measurement of a policy intervention on average income can then be written as

$$\Delta\bar{Y}_t = \sum_{i=1}^{5} \left(\tilde{\pi}_{i,t+1} - \tilde{\pi}_{i,t}\right) Y_i. \tag{7}$$

In this formulation, Theil's measure of income inequality becomes

$$\begin{aligned} I &= \sum_{i=1}^{5} \tilde{s}_{it} \ln\left(\frac{\tilde{s}_{it}\tilde{Y}_{it}}{\tilde{\pi}_{it}}\right) \\ s_{it} &= \frac{\tilde{\pi}_{it} Y_i}{\sum_{i=1}^{5} \tilde{\pi}_{it} Y_i} \end{aligned} . \tag{8}$$

where s_{it} denotes the share of income at time t. Kuznets (1955) hypothesizes the conditions such that moving from $n_{A,t} = 0.80$ to $n_{A,t+1} = 0.70$ implies specific relationships between changes in income and changes in income inequality. Most generally, Kuznets' inverted U is the scenario where moving from agricultural to non-agricultural employment first increases income inequality (i.e., development first increases income inequality) up to some point where additional employment in non-agriculture leads to a decline in income inequality.

Table 3 presents distributional statistics for aggregate income as employment shifts from the traditional industry (i.e., agriculture) to the higher income industry. Consistent with our expectations, both average income and the standard deviation of income increase linearly as employment shifts from the traditional industry to the higher income industry. In addition, the skewness increases slightly while the distribution becomes slightly more platokurtic (i.e., the tails of the distribution are thinner). Turning to Theil's measure of income inequality – the results conform with Kuznet's concept. Income inequality first increases as individuals move from agriculture into the non-agricultural sector. The income inequality reaches a maximum of 0.1128 at 0.60 employment in the agricultural sector (and 0.40

employment in the industrial sector). After this point, the income inequality declines to 0.1054.

Development Intervention in Marketing Channels

Next, we develop the basic concept of enhancing marketing channels. Building on Moss, Mbaye, and Oehmke (2014) we focus only on the high-valued output. Specifically, we consider the scenario where an input (such as fertilizer) not only increases output, but also increases the probability that the output will be higher-valued

$$\begin{aligned}
&\max_{x}\left(\left[p_H-\tau_1\left(z_2\right)\right]\phi\left(x,\beta\right)+p_L\left[1-\phi\left(x,\beta\right)\right]\right)f\left(x,z_1\right)-wx \\
&\phi\left(x,\beta\right)=\frac{\exp\left(\beta_0+\beta_1 x\right)}{1+\exp\left(\beta_0+\beta_1 x\right)}\ni:\beta_1\gg 0\Rightarrow\frac{\partial\phi\left(x,\beta\right)}{\partial x}\geq 0
\end{aligned}\tag{9}$$

where p_H is price of high-valued output, p_L is the price of low valued (i.e., class-C or commodity coffee), z_1 is the production capital controlled by the firm, z_2 is the capital in the market channel (this investment can be used to model the impact of SPREAD/PEARL investment in coffee washing stations), x is a variable production input, and β is the vector of parameters for the Logit function. Moss, Mbaye, and Oehmke (2014) demonstrate that increasing z_2 increases the inputs used in production and the profits accruing to lower resource farmers. To focus on the effect of output quality on input choice we differentiate Equation 9 with respect to x yields

$$\begin{aligned}
\frac{\partial\pi}{\partial x}&=\frac{\partial\phi\left(x,\beta\right)}{\partial x}\left(\left[p_H-\tau_1\left(z_2\right)\right]-p_L\right)f\left(x,z_1\right) \\
&+\left(\left[p_H-\tau_1\left(z_2\right)\right]\phi\left(x,\beta\right)+p_L\left[1-\phi\left(x,\beta\right)\right]\right)\frac{\partial f\left(x,z_1\right)}{\partial x}-w
\end{aligned}\tag{10}$$

the effect of increased quality signals is apparent in the first term of Equation 10. Specifically, we would conjecture that

$$(11)\quad [p_H - \tau_1(z_2)] \gg p_L \Rightarrow \frac{\partial \phi(x,\beta)}{\partial x}\left([p_H - \tau_1(z_2)] - p_L\right) \gg 0$$

so that the optimal level of input increases as the marketing channel narrows.

In order to develop this concept, we start with Zellner's (1951) production function

$$(12)\quad f(x,z_1) = \frac{ax^3}{\exp\left[b\frac{x}{z_1}\right] - 1}$$

where we set $a = 0.25$ and $b = 0.075$. Given this specification, the input and qausi-fixed input level (z_1) in Table 4 return the levels of income in Table 2 assuming an output price of \$ 10 and input price of \$ 0.28. Table 5 presents the effect of quality endogeneity on input levels and profit. The columns of Table 5 denotes the level of quasi-fixed investment in the market channel for high quality output (i.e, z_2 in Equation 9). In the first section of Table 5 we see that that as the level of investment in the market channel increases, the profit for each income group increases. At the lowest level, income increase from \$ 2,500 where $z_2 = 0$ to \$ 2,542 when $z_2 = 5$. Turning to the last five columns in Table 5, this difference in investment implies a 1.65 percent increase in income. The results in Table 5 indicate that the effect of the quality multiplier increases as the initial level of income increases. Specifically, for the highest income group (i.e., an initial income of \$ 12,500), the income increases 21.28 percent with the increased expenditure on the marketing margin.

The quality effect can be broken down into two components – a pure price effect and a shift in input use. The second set of results in Table 5 presents the change in input use where the farmer recognizes the effect of increased output quality. The relative increase in input level mirrors the changes in profit level. The low income group increases the level of the variable input 3.46 percent (i.e., from 25.088 to 25.972) while the high income group increases their use of variable inputs 11.71 percent from 42.906 to 48.236. To divide this effect, Table 5 presents the choice of variable input when the farmer does not recognize the effect of inputs on the quality of outputs. As depicted in Table 5, the increased input level is trivial for all producers. However, the increased input level is smaller for lower income farmers. Low income farmers increase their optimal variable input level from 25.088 to 25.089 while the higher income farmers increase their income from 42.906 to 42.907. Table 6 presents the share of each change attributed to the recognition of the effect of input choice on the quality of output. These results indicate that the change in profit resulting from the change in the quality of outputs increases from 1.43 percent (assuming $z_2 = 1$) for the smallest income group to 92.62 percent for the highest income group. Most of this change in due to the effect of input choice on the average price received for output (i.e., Equation 11). Again, at the lowest level of investment in the marketing channel, the effect of input choice on the average output price increases from practically zero at the lowest level of income to 4.06 percent at the highest level of income.

The question then becomes – what is the effect of increased investment in marketing channels on the distribution of income to farmers. Table 7 presents the distributional statistics for agricultural income as the quasi-fixed input in the marketing channel. As expected, increases investment in the marketing channel increases the average income. At the same time, these investments increase the income inequality measured by either the coefficient of variation or Theil's measure of income inequality.

The results presented in Table 8 provide a comparison of the two strategies for development. The results in the table assume that the economy starts from the position of 80 percent agriculture and then presents the shift to 70 percent agriculture with no investment in the marketing channel and 70 percent agriculture with an investment in the marketing channel (note that the results for no investment in the marketing channel are the same as those presented in Table 3). Focusing on the Logarithmic change in each statistic, we see that the a shift to more non-traditional industry increases the average income by 3.95 percent while the combined shift increases the average income by 5.06 percent. Hence, the average income is 1.11 percent higher under the combined development focus. The effect of the coupled program emphasis on income inequality is dependent on your measure of income inequality. Taking the coefficient of variation as a measure of income inequality – the coupled approach reduces income inequality. However, using the Theil measure of income inequality suggests that the joint approach leads to a slightly higher level of income inequality.

Synthesis and Discussion

Feed the Future is the current U.S. initiative to reduce hunger. A portion of this initiative focuses on increasing the productivity of smallholder agriculture. Intuitively, this increased productivity could result form increased yield, but another avenue involves increasing the value of smallholder output. One such effort was SPREAD/PEARL in Rwanda that focused on decreasing the margin for high-quality coffee through human capital and investment in infrastructure. Our analysis develops the theoretical impact of efforts such as SPREAD/PEARL focusing on the effects of these investments on income inequality within the Kuznets' inverted "U".

The results generally support the concept Kuznets' concept of the inverted "U" growing out of the dual economy. That is development from a traditional to a non-traditional economy results in income inequality that first increases and then declines.

Given this accepted structure, we then hypothesize a structural change in the traditional economy – we hypothesize a scenario where investments in marketing channels producers higher average prices for outputs and incentives for quality enhancing inputs. Unlike Kuznets' formulation, global investments in marketing infrastructure increases income equality throughout the entire range of analysis. However, the results also indicate that a combined policy of growth in the non-traditional industry and investment in value chains reduces the magnitude of the induced inequality.

As a final consideration, we have implicitly assumed that the level of value chain investment constant across income groups. Given the policy focus on reducing food insecurity by improving the productivity of smallholders, we could envision increasing the investment in value added for each income group. Specifically, by subsidizing the marketing channels for small holders, it is possible that to reduce the level of income inequality. A similar approach would be to choose agricultural output for intervention with either diseconomies of scale of smaller economies of scale.

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Tables

Table 1. Moments for Agriculture and Non-Agricultural Sectors in $ 1,000

Moment	Agriculture	Non-Agriculture
Mean (First Moment)	5.5	8.0
Variance (Second Central Moment)	5.5	11.0
Skewness (Third Central Moment)	0.0	0.0
Kurtosis (Fourth Central Moment)	60.0	242.0

Table 2. Probabilities to Generate Specified Moments

State	Agriculture	Non-Agriculture
1 - ($ Income = 2.5)	0.3105	0.1223
2 - ($ Income = 5.0)	0.2219	0.1989
3 - ($ Income = 7.5)	0.4312	0.3096
4 - ($ Income = 10.0)	0.0299	0.0949
5 - ($ Income = 12.5)	0.0065	0.2543

Table 3. Effect of Development on Income Inequality

Statistic	Percent of Economy in Traditional Industry (Agriculture)						
	0.8	0.7	0.6	0.5	0.4	0.3	0.2
Mean	5.9816	6.2224	6.4633	6.7041	6.9449	7.1857	7.4265
Std. Dev.	2.7549	2.9088	3.0359	3.1395	3.2218	3.2844	3.3285
Skewness	0.3973	0.4212	0.4021	0.3596	0.3039	0.2407	0.1731
Kurtosis	2.7239	2.6343	2.4909	2.3417	2.2053	2.0884	1.9929
Coef. of Var.	0.4606	0.4675	0.4697	0.4683	0.4639	0.4571	0.4482
Theil's Ineq.	0.1085	0.1115	0.1128	0.1126	0.1113	0.1088	0.1054

Table 4. Zellner Production Results

Income	Variable Input x	Quasi-Fixed Input z
2,500	25.0885	0.6677
5,000	31.6118	0.8409
7,500	36.1876	0.9625
10,000	39.8303	1.0593
12,500	42.9063	1.1410

Table 5. Effect of Quality Selection

Income Group	Quasi-Fixed Expenditure on Market Margin 0	1	2	3	4	5	Logarithmic Change from Fixed Price 1	2	3	4	5
	Change in Profits with Quality Effect										
1	2,500.00	2,507.81	2,515.86	2,524.16	2,532.76	2,541.67	0.0031	0.0063	0.0096	0.0130	0.0165
2	5,000.00	5,053.12	5,114.04	5,186.10	5,274.16	5,382.59	0.0106	0.0226	0.0365	0.0534	0.0737
3	7,500.00	7,666.52	7,869.24	8,107.74	8,374.35	8,660.79	0.0220	0.0481	0.0779	0.1103	0.1439
4	10,000.00	10,337.40	10,725.00	11,147.07	11,591.59	12,051.12	0.0332	0.0700	0.1086	0.1477	0.1866
5	12,500.00	13,030.89	13,607.24	14,210.83	14,831.61	15,463.91	0.0416	0.0849	0.1283	0.1710	0.2128
	Change in Input Level with Quality Effect										
1	25.088	25.242	25.406	25.580	25.768	25.972	0.006105	0.012561	0.019418	0.026740	0.034608
2	31.612	32.367	33.326	34.579	36.169	37.857	0.023618	0.052800	0.089723	0.134681	0.180288
3	36.188	37.775	39.511	41.066	42.294	43.243	0.042926	0.087865	0.126452	0.155934	0.178115
4	39.830	41.745	43.317	44.499	45.393	46.089	0.046956	0.083909	0.110830	0.130722	0.145946
5	42.906	44.713	46.008	46.952	47.670	48.236	0.041252	0.069803	0.090115	0.105282	0.117087
	Change in Average Output Price with Quality Effect										
1	10.000	10.032	10.065	10.101	10.140	10.181	0.0032	0.0065	0.0101	0.0139	0.0180
2	10.000	10.113	10.264	10.479	10.800	11.239	0.0112	0.0260	0.0468	0.0769	0.1168
3	10.000	10.245	10.596	11.036	11.527	12.042	0.0242	0.0579	0.0986	0.1421	0.1858
4	10.000	10.366	10.821	11.324	11.850	12.390	0.0359	0.0789	0.1243	0.1698	0.2143
5	10.000	10.447	10.952	11.486	12.034	12.590	0.0437	0.0910	0.1385	0.1851	0.2303
	Change in Profit without Quality Effect										
1	2,500.00	2,507.70	2,515.39	2,523.09	2,530.79	2,538.49	0.0031	0.0061	0.0092	0.0122	0.0153
2	5,000.00	5,015.38	5,030.76	5,046.14	5,061.51	5,076.89	0.0031	0.0061	0.0092	0.0122	0.0153
3	7,500.00	7,523.06	7,546.12	7,569.18	7,592.23	7,615.29	0.0031	0.0061	0.0092	0.0122	0.0153
4	10,000.00	10,030.74	10,061.47	10,092.21	10,122.95	10,153.69	0.0031	0.0061	0.0092	0.0122	0.0153
5	12,500.00	12,538.42	12,576.83	12,615.25	12,653.66	12,692.08	0.0031	0.0061	0.0092	0.0122	0.0152
	Change in Input Level without Quality Effect										
1	25.088	25.089	25.089	25.089	25.089	25.089	0.000003	0.000007	0.000010	0.000014	0.000017
2	31.612	31.612	31.612	31.612	31.612	31.612	0.000002	0.000004	0.000007	0.000009	0.000011
3	36.188	36.188	36.188	36.188	36.188	36.188	0.000002	0.000003	0.000005	0.000007	0.000008
4	39.830	39.830	39.830	39.830	39.830	39.831	0.000001	0.000003	0.000004	0.000005	0.000007
5	42.906	42.906	42.906	42.906	42.907	42.907	0.000001	0.000002	0.000004	0.000005	0.000006

Table 6. Decomposition of Increase in Variable Inputs

Income Group	Quasi-Fixed Expenditure on Market Margin				
	1	2	3	4	5
	Change in Profit From Quality Choice				
1	0.014344	0.029052	0.044166	0.059740	0.075837
2	0.709389	0.728072	0.748656	0.770932	0.793010
3	0.860209	0.872444	0.882167	0.889156	0.893989
4	0.907514	0.912438	0.915473	0.917262	0.918253
5	0.926226	0.927802	0.928455	0.928563	0.928333
	Change in Input Level From Quality Choice				
1	0.999429	0.999447	0.999465	0.999484	0.999503
2	0.999908	0.999917	0.999927	0.999935	0.999940
3	0.999961	0.999962	0.999961	0.999957	0.999954
4	0.999971	0.999967	0.999963	0.999958	0.999953
5	0.999971	0.999966	0.999961	0.999955	0.999950
	Change in Output Price From Quality Choice				
1	0.000091	0.000378	0.000891	0.001665	0.002746
2	0.008177	0.019901	0.037604	0.064724	0.101567
3	0.021175	0.051737	0.089413	0.129899	0.170601
4	0.032850	0.072775	0.115152	0.157563	0.199031
5	0.040621	0.084850	0.129373	0.172934	0.215085

Table 7. Effect of Quasi-Fixed Input on Income Distribution

	Quasi-Fixed Input for Marketing Channel					
Moment	0	1	2	3	4	5
Mean	5.50	5.60	5.72	5.86	6.01	6.18
Std. Dev	2.34	2.43	2.53	2.65	2.78	2.91
Skewness	-0.0006	0.0308	0.0608	0.0852	0.1025	0.1129
Kurtosis	1.9821	2.0394	2.0873	2.1183	2.1349	2.1426
Coef. Of Var.	0.4264	0.4340	0.4429	0.4525	0.4623	0.4717
Theil's Ineq.	0.0965	0.0998	0.1038	0.1083	0.1130	0.1178

Table 8. Comparison Between Industrial Policy and Market Channel Intervention

	Share of Agriculture			Logarithmic Change		
		0.70		Industrial	Investment in	Net
Statistics	0.80	$z_2 = 0$	$z_2 = 1$	Structure	Marketing Channel	Change
Mean	5.9816	6.2224	6.2921	0.0395	0.0506	0.0111
Std.Dev.	2.7549	2.9088	2.9408	0.0544	0.0653	0.0109
Skewness	0.3973	0.4212	0.3769	0.0584	-0.0527	-0.1111
Kurtosis	2.7239	2.6343	2.5434	-0.0334	-0.0686	-0.0352
Coef. Of Var.	0.4606	0.4675	0.4674	0.0149	0.0147	-0.0002
Theil's Ineq.	0.1085	0.1115	0.1121	0.0273	0.0326	0.0053