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INFRASTRUCTURE, OUTPUT SUPPLY AND INPUT DEMAND IN PHILIPPINE AGRICULTURE: PROVISIONAL ESTIMATES

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Investments in rural infrastructure (roads, rural electrification) and technology are designed to change the behavior of farmers. Land reform is similarly directed toward a change in the outcomes of the farming sector. Most of these programs are intended to cause farmers to change the quantities of the products that they produce or supply and to change the quantities of factors that they utilize in production. New technology developed by research programs, for example, when adopted by farmers will cause them to produce more of some products or outputs and possibly less of other products. Similarly, it may cause them to use more of one or more factors of production or inputs and less of others. It is also expected to increase productivity, which is the ratio of outputs to input.[1]

In this paper, I utilize the duality-based "profits function" methodology to obtain provisional estimates of the effect of several public program investments on output supply, and "variable" input demand in Philippine agriculture. The data for such estimation should ideally be farm level data. However, most farm level data sets are observed under conditions of little variability in the program investment variables and are hence limited in their scope for identification of program effects. I have instead opted to construct from regional data an "average" farm data set for purposes of estimation. This data set is less well suited to the identification of many of the price parameters of the model, but better suited to program impact estimation than farm level data sets with little program investment variability.[2]

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1. See Sardido and Evenson in this issue for a discussion of productivity measures.

2. The data set is described in the Appendix to the paper by Sardido and Evenson (this issue).

The program variables analyzed include high-yielding varietal technology, Philippine agricultural research and extension programs, investment in rural road systems, rural electrification and agrarian reform programs.[3] The time period of investigation is 1948 to 1984. The system estimated includes four variable input demand functions (labor, tractors, fertilizers and animal labor) and an aggregate output supply function.

Part I of the paper presents a brief discussion of the profits function methodology. Part II discusses the data. Part III reports estimates for the system and discusses their implications. Part IV discusses further research.

I. Duality-Based Profits Function Methods

Theoretical work in the past 15 years or so established the duality relationship between a production or transformation function and a maximized profits function. This has enabled major advances in production related empirical work. (Diewert 1973, Lau 1969 and others contributed to this field.) It enabled empiricists to shift their attention directly to the maximized profits function and its derivative system of output supply and input demand equations. This is possible because theorists have established the conditions which must hold for the dual system (the profits function) to be certain that the primal function (the transformation function) is "well-behaved" (in the sense that profit maximization is possible).

Specify the transformation function as:

$$(1) \quad G\,(Y_1, Y_2, Y_3, X_1, X_2, X_3, L, T, I) = 0$$

This relates three variable outputs (Y_1, Y_2, Y_3) to three variable inputs (X_1, X_2, X_3), land variables, L, technology variables, T, and infrastructure variables, I. Maximizing variable profits subject to (1) yields first order conditions where Y_1---X_3 can be expressed as functions of P_{y1}, P_{y2}---P_{y3}, $L, T,$ and I. Substituting these expressions into the profits definition yields the maximized profits function:

3. Note that while the basic production variables are expressed as "per farm" variables, the variables characterizing the program, infrastructure and technology environments typically are not since they measure characteristics of these environments that are independent of the number of farms in the environment. Extension services are an exception because the real supply of extension services does depend to some extent on the number of farms served.

(2) $\pi^* = \pi(P_{Y1}, P_{Y2}, P_{Y3}, P_{X1}, P_{X_2}, P_{X_3}, L, T, I)$

The Shephard-Hotelling Lemma applied to (2) (the dual function) yields the output supply and input demand system.

$$(3) \quad \frac{\partial \pi^*}{\partial P_{Y_i}} = Y_i = Y_i\ (P_{Y1}, P_{Y2}, P_{Y3}, P_{X1}, P_{X2}, P_{X3}, L, T, I)$$

$$\frac{\partial \pi^*}{\partial P_{Xo}} = X_j = X_j\ (P_{Y1}, P_{Y2}, P_{Y3}, P_{X1}, P_{X2}, P_{X3}, L, T, I)$$

The conditions that (2) must satisfy in order that the primal transformation function may be well behaved are:

a) π^* is monotonically increasing in output prices and decreasing in input prices.

b) π^* is symmetric, $\pi^*_{ij} = \pi^*_{ij}$, $\pi_{ij} = \dfrac{\partial 2\pi^*}{\partial Y_i\ \partial P_j}$

c) π^* is convex, the matrix π^*_{ij} is positive semidefinite

d) π^* is homogenous of degree one and its derivatives are homogenous of degree zero in prices.

Several "flexible.. functional forms have been used for (2) or (3) in empirical work. They are flexible in that they can be regarded as "second order" (Taylor Series) approximations to any arbitrary underlying function. The merit of flexible forms is that they do not impose strong conditions on the "curvature" of the primal function (1). Their disadvantage is that they are not globally convex (one of the "self-dual" functions, the Cobb-Douglas, is globally convex (provided all exponents are positive) but is restrictive in imposing elasticities of substitution to be equal to one).[4]

The functional form used in this paper is derived from the Normalized Quadratic profit function. (For a discussion of normalized profit functions, see Binswanger 1975.) A normalized profit function is derived by stating the initial profit maximizing problem in terms of normalized prices $g_i = P_i/P_n$ where all prices and profits are divided by the price of the nth commodity. Normalized profits then

4. See Bantilan (this issue) for a discussion of flexible functional forms.

are written as (let inputs be defined as negative quantities)

$$(4)\quad \pi^n = \frac{\pi^*}{P_n} = \sum_{i=1}^{n-1} Y_i q_i + Y_n \qquad \partial \pi^n = Y_i$$

Shephard's Lemma then reads that $\frac{\partial \pi^n}{\partial q_i} = Y_i$. The quadratic normalized profit function is written as

$$(5)\quad \pi^n = a_o + \sum_{i=1}^{n-1} a_i q_i + \frac{1}{2} \sum_{i=1}^{n-1} \sum_{j=1}^{n-1} b_{ij} q_i q_j + \sum_{i=1}^{n-1} \sum_{k} b_{ik} q_i Z_k$$

where Z_k is a vector of L, T and I variables. The output supply and factor demand curves for the first n-1 outputs and factors are

$$(6)\quad Y_i = a_i + \sum^{n-1} b_{ij} \frac{P_i}{P} + \sum b_{ck} Z_k$$

Symmetry implies

$$(7)\quad b_{ij} = b_{ji} \qquad i \neq j \quad i \neq n$$

Elasticities are defined as:

$$(8)\quad \eta_{ij} = b_{ij} \frac{P_i}{Y_i} \quad i \neq n$$

$$\eta_{nj} = \frac{-P_i}{P_n^2} Y_n \sum_{i=1}^{n-1} b_{ij} P_i$$

Note that in this sytem we do not have the nth commodity equation which has to be derived from equation (5) and the commodity equations. From equation (4) we can compute

$$(9)\quad Y_n^* = \pi^* - \sum_{i=1}^{n-1} Y_i^* g_i$$

and substituting into this equation (5) and the commodity equations we have

$$(10)\quad Y_n = a_o - \frac{1}{2} \sum_{i=1}^{n-1} \sum_{j=k}^{n-1} b_{ij} q_i q_j + \sum_k b_{ik} Z_k$$

The derivatives of this equation with respect to individual prices $j < n$ an

$$(11)\quad \frac{\partial Y_n}{\partial P_j} = - \sum_{i=1}^{n-1} b_{ij} \frac{P_i}{P_n^2}$$

from which we can compute the elasticities for the n th equation as

$$(12)\quad \eta_{n_j} = \frac{-P_j}{P^2{}_n Y_n} \sum_{i=1}^{n-1} b_{ij} P_i$$

Finally, n_{nn} can be determined residually as $\eta_{nn} = -\sum_j \eta_{nj}$. Note that one could include the nth equation in the estimation process or leave it out and estimate the elasticities of the nth equation residually.

All equations reported in this study are estimated jointly by Generalized Least Squares; taking account of error interdependence across equations (Zellner 1963) cross symmetry restrictions are imposed.

II. The Data

The data for this study were collected from several sources. The unit of measurement is the region for a given calendar year. The estimates reported here are based on data for nine agricultural regions in the Philippines for the 1948 to 1984 period. Table 1 provides a list of the variables used in this study with a short description and the means and standard deviations of the variables. Details of construction are covered in the Appendix to Sardido and Evenson (this issue). The variables in Table 1 are grouped into three classes: (1) quantities of variable outputs and inputs; (2) prices of variable outputs and inputs; and (3) variables characterizing land, technology, infrastructure and programs. Since prices and quantities are indexes, their means are not very meaningful except to reflect average changes over the period of the data set. (From these, it can be seen that product prices generally rose at a slower rate than factor prices.)

TABLE 1
STUDY VARIABLES AND MEANS

Output Quantities	
Output:	
Index of aggregate output per farm	3.305
Input Quantities	
Labor: Index per farm	2.488
Fertilizer: Index per farm	.3987
Tractors: Index per farm	1.1711
Animal labor: Index per farm	1.550
Price indexes (equal to 1 in base year 1950)	
Output	1.178
Labor	1.461
Fertilizer	1.381
Tractors	1.711
Animal labor	1.329
Land, Technology, Infrastructure Variables	
Roads, Mileage of rural roads per 000 ha. of arable land	.041
Rural electrification: Percent of rural barrios with electricity	59.7
Land transfers: Number of farmers receiving land transfer in agrarian reform program	1190
National research: National investment stock	8226
Regional Research: Regional investment stock	(n.a.)
Extension: Expenditures on agricultural extension — a stock variable per farm	7.585
Land: Area planted once to crops	943.3
Farm size: Cultivated area/number of farms	3.572
HYV's: Percent total cropped area planted to HYV's	.0735

Two land variables are included. Average farm size is land per farm. It is designed to measure the effect of changing farm size. Total land area in the region is also included to pick up area expansion effects, i.e., the effect of expanding cultivation to new areas.

Infrastructure variables include roads, rural electrification and general rural development expenditures. Policy variables include land transfers under the agrarian reform program.

Variables characterizing technology include a variable measuring changes in high-yielding rice varieties and two research stock variables, one constructed for region specific research, the second based on national (i.e., Manila–Los Baños based) research. This variable is weighted by a region's commodity orientation (see Appendex 1 for details)[5] Extension expenditures per farm were also included in this analysis. The stock construction implies a particular time relationship between expenditure on research and extension and impact:

$$\text{(13)} \quad \text{Reg.Res}_t = .2R_{t-2} + .4R_{t-3} + .6T_{t-4} + .8BR_{t-5} + \sum_{i=6}^{1948} R_{t-i}$$

$$\text{(14)} \quad \text{Nat.Res}_t = \sum_i S_{it} \quad (.2NR'_{it-2} + .4NR_{it-3} + .6NR_{it-4} + .8NR_{it-5} + \sum_{j=6}^{1948} NR_{it-j})$$

$$\text{(15)} \quad ES_t = (.5E_t + .25E_{t-1} + .25E_{t-2})/\text{Farm}$$

Note that the extension variable has a short time lag specification and that it is expressed on a per farm basis. The research variables have a long time period from spending to full impact (6 years) and modern research (after 1946) is specified to have a permanent or non-diminishing impact of output supply and factor demand after reaching its full impact. The regional and national research variables are not deflated by numbers of farms. This implicitly assumes that regional research impacts are realized uniformly in the regions where the research is conducted and do not"spill over" into other regions. The national research variable is implicitly deflated by the commodity mix of the

5. Note that, of the infrastructure variables, I have considered only extension services to be dependent on the number of farms in the region.

regions, and the "interaction" specification of national and regional research implies that national research spills into regions through the regional research activity and in proportion to the commodity mix.[6]

III. The Estimates

Table 2 reports the estimates of the systems in elasticity form. Appendix 2 reports the estimated equations and standard errors. The discussion of the estimates is best carried out in terms of elasticities, but before turning to this discussion two points regarding the actual estimates should be made. The first is that the estimated equations included dummy variables for regions plus dummy variables for the early period 1948-74 interacted with the regional dummy variables. This procedure is intended to correct for cross-section and time series bias. The 1948-74 period data are based on the nine regions used in this study. The 1975-84 data are collected on the current 12-region basis and converted to the original 9-region basis using provincial production weights.

The second item with regard to the actual estimates is that interaction terms between national research and regional research, regional research and HYV's and between regional research and extension were included in the regressions. The signs of these interaction terms are reported in Table 2 because they have policy importance. Elasticities based on these interaction terms are evaluated at the mean of the relevant interacted variable.

Consider first the price elasticities. We expect the own price elasticities of demand for inputs to be negative and the output supply elasticity to be positive. These expectations are borne out by the estimates although the tractor demand elasticity is very low and not statistically significant. Actually all own price elasticities are relatively low but this result has been obtained in a number of other studies. In particular, low labor demand elasticities have been identified in a number of similar studies. (See papers by Quizon, Evenson, and Setboonsarng and Evenson in Evenson, Pray and Quizon 1986.)

The cross price elasticities are also relatively low. Philippine substitution elasticities between inputs are very low. Output prices generally do stimulate input use except for tractors where nonprice policies may have a substantial role to play (especially credit).

6. See Appendix 1.

TABLE 2

PHILIPPINE REGIONAL DATA – ONE OUTPUT SYSTEM

Elasticity with respect to:	Labor	Fertilizer	Tractors	Animal Labor	Output	Net Profit
Wage	–.1160	.0083	–.0643	.0028	–.0930	
	(2.20)	(.06)	(.34)	(.05)	(.82)	
Fertilizer price	.0013	–.1916	.1647	–.0106	.0973	
	(.05)	(1.69)	(1.36)	(.40)	(1.22)	
Tractor price	–.0059	.1003	–.0311	.0098	.1662	
	(.33)	(1.3)	(.15)	(.54)	(1.21)	
Animal wage	.0016	–.0394	.0601	–.1675	–.3345	
	(.05)	(.40)	(.54)	(2.89)	(5.16)	
Output price	.1191	.1225	–.1294	.1654	.1640	
	(2.19)	(.99)	(.92)	(2.2)	(2.17)	
Regional research	–.1919	1.0306	.2806	.0456	.1794	.2135
Interaction regional research x HYV's	Neg	Pos	Neg	Neg	Neg	
	(.50)	(4.7)	(4.67)	(.67)	(1.63)	
National research	–.0086	.3527	.0068	.0402	.1299	.1189
Interaction national research x regional	Neg	Pos	Neg	Neg	Neg	
	(4.41)	(10.16)	(.95)	(.48)	(1.12)	
Extension	.1571	.2178	.3472	–.0157	.0950	.0158
Interaction extension	Pos	Neg	Neg	Neg	Pos	
	(1.36)	(1.53)	(2.27)	(.13)	(1.17)	
Land	–.7469	–.1088	.9852	–.0441	.0891	
	(8.25)	(.54)	(4.47)	(.37)	(.74)	
Farm size	.3416	.2552	–.2530	–.0110	.0459	
	(7.62)	(2.56)	(2.32)	(.19)	(.77)	
Land transfers	–.0049	.0011	–.0012	.0238	.0382	
	(.55)	(.05)	(.06)	(2.00)	(3.38)	
Roads	.1432	.4446	.3268	.0232	.3171	
	(2.89)	(3.99)	(2.71)	(.35)	(4.89)	
Rural electrification	.4163	.2089	.0837	–.30	–.1861	
	(5.47)	(1.23)	(.45)	(2.9979)	(1.8327)	
HYV's	.0478	.2877	.1357	.12	.0467	.0078

As noted earlier, regional data are not ideally suited to the estimates of price terms. We consider these price estimates to be reasonable and in accord with a priori expectations. However, our real interest is in the policy variables. Of these variables, consider first the land variables. Note that there are two land variables -- total land in the region and farm size. The farm size elasticities indicate that, holding total land area constant, an expansion in farm size is accompanied by increases in labor and fertilizer use per farm, decreases in tractor and animal labor use per farm, and a small increase in output per farm. This indicates that Philippine agriculture is characterized by diseconomies of scale, i.e., that simply changing farm size, holding total land constant, produces a small increase in output per farm. (If constant returns to scale hold, a 10 percent increase in farm size should result in a 10 percent increase in all inputs and outputs.)

The land variable itself measures the effect of expansion of cultivated area (not of multiple cropping) at the extensive margin. The coefficients show that such expansion is taking place predominately through mechanization and that it has a relatively large output impact. When land cultivated is expanded, output per farm actually increases (though the coefficient is not significant). Note that such an expansion is accompanied by a large bias in favor of tractor use and against labor.

Next consider the variables characterizing technology. There are four of these: national research, regional research, extension and HYV's (rice HYV's primarily from IRRI). These estimates indicate that HYV's had a positive impact on all input demands and on output. They induced a significant expansion of both fertilizer and tractor demand and they complemented regional research programs in stimulating fertilizer and tractor demand. HYV's and regional research, however, were not complements in increasing total output. As a consequence the net profit impact of HYV's was small. (Note that land is being held constant, so that even though total variable costs are increased by more than the output by HYV's, total costs are increased by less.)[7]

Regional research programs are biased against labor demand and are strongly biased in favor of fertilizer demand and tractor demand. They have a very substantial output effect. Regional research is complemented by HYV's, but not by national research. It does have a weak complementary relationship with extension. The lack of complementarity with the national research program is a cause for concern regarding the institutional design of the Philippine agricultural technology system. We would expect an optimal institutional design to show strong complementarity between national research and regional research and between regional research, extension and HYV's. In spite of the lack of complementarity, however, it is clear from the estimates that both regional and national research programs have had very high payoffs because they have had large impacts on output. The net impacts on profits for regional research are very high. The net impact

7. The increase in total costs is approximately $(1 - S_v)$ times the increase in variable costs where S_v is the share of variable costs in total costs.

of national research is also high. In each case internal rates of return in excess of 70 percent are implied.

Extension impacts, in contrast to research impacts, increase the demand for labor. They also increase the demand for fertilizer and tractors but not animal labor. As with HYV's, their net impact on farm profits is small because they stimulate almost as much added costs as benefits.

In summary, then, the technology components all act to stimulate fertilizer and tractor demand. Only extension is strongly biased in favor of labor demand (i.e., the labor demand elasticity is greater than the output demand elasticity). HYV's do stimulate some labor demand but the research system itself is labor saving, particularly the regional research system. The payoff (in terms of net farm profits) to regional and national research is very high while the payoff to extension and HYV research is low. These data suggest that the HYV impacts *per se* have been far less than implied in previous studies based on yields alone. HYV adoption requires sufficient added input usage that the net effect is quite small. (See Sardido and Evenson in this issue for a further discussion of the green revolution and total factor productivity change.)

Now consider the two infrastructure variables – roads and rural electrification. Roads appear to have a significant impact on both inputs and outputs and a substantial net profits effect. They favor mechanization and fertilizer usage. Recall that the land variable is held constant for the elasticity calculations in Table 1. If we were to consider the experiment in which land, roads and rural electrification were expanded together, we would observe quite significant increases in output per farm. Rural electrification is the one variable with a measured impact strongly inconsistent with a priori reasoning. It appears to be associated with lower output per farm. This probably reflects some reverse causality in the sense that rural electrification may be responding to farm productivity levels.

Finally, the land reform variable shows that land reform does have a small but significant output effect and a net productivity effect. This finding has considerable policy relevance since there is limited evidence in Philippine agriculture as to a productivity gain associated with land reform.

IV. Conclusion

This paper follows an earlier study by Quizon (Evenson et al. 1986) in applying the profits function system methodology to Philippine agriculture. It extends the Quizon study by utilizing more recent data and by incorporating more technology and infrastructure variables. The study found price elasticities similar to those reported in the earlier study by Quizon and by several other similar studies in other countries. The elasticities of labor demand with respect to prices are as expected, but have generally low values. This is also true for other inputs and for output.

All technological variables show a strong factor bias in favor of fertilizer use and tractor use. Research shows a bias againt labor use while extension and HYV's use labor. All technology variables show positive impacts on net profits but regional research and national research clearly show the highest impact and hence the highest rates of return to investment. HYV impacts are small because HYV's induce significant increases in input costs as well as in outputs.

Roads are estimated to have a substantial impact on input use and output. Rural electrification appears to induce input use but does not have a positive output impact. Finally, the data indicate a small but significant land reform impact on farm productivity and net profits.

APPENDIX I
CONSTRUCTION OF NATIONAL RESEARCH VARIABLES AT THE REGIONAL LEVEL

For research undertaken in the Manila-Los Baños region, a commodity breakdown of investment in constant pesos was obtained. For each commodity, e.g. rice, corn, etc., a cumulated "stock" was obtained using the weights reported in the text. This was then converted to a "research intensity" by dividing it by the average national value of the commodity in 1975. For each region the national research variable was the region's share-weighted average commodity intensity. Thus, a region with a high proportion of high national research intensity commodities would have a high region-relevant national research stock.

Appendix Table 1
THIRD STAGE ESTIMATES

Dependent Variables	Labor-Demand Equation	Fertilizer Demand Equation	Tractor Demand Equation	Animal-Labor Demand Equation	Output-Supply Equation
	(Values in Parentheses are Standard Errors)				
Intercept	–5.4866	2.0986	0.3729	–1.7628	4.7831
	(0.7246)	(0.2589)	(0.1475)	(0.6078)	(1.3711)
Wage/Output Price	0.2332	–0.0027	0.0102	–0.0035	–0.2458
	(0.1106)	(0.0475)	(0.0317)	(0.0712)	(0.31250)
Fertilizer Price/ Output Price	–0.0027	0.0654	–0.0276	0.0140	0.2722
	(0.0475)	(0.0405)	(0.0213)	(0.0369)	(0.2329)
Tractor Price/Output Price	0.0102	–0.0276	0.0042	–0.0105	0.3753
	(0.0317)	(0.0276)	(0.0290)	(0.0202)	(0.3251)
Animal Power/ Output Price	–0.0035	0.0140	–0.0105	0.2296	–0.9730
	(0.0712)	(0.0369)	(0.0202)	(0.0831)	(0.1971)
Regional Research	0.000054	–0.00007	–0.00001	–0.00001	0.0001
	(0.000024)	(0.000008)	(0.000005)	(0.00002)	(0.00004)
National Research	0.000007	–0.00003	–7.66 E-07	–.000009	0.00006
	(0.000011)	(0.000004)	(.000002)	(.000009)	(.00002)
Reg. X National Res.	–6.81821 E-10	1.80 E-09	9.11 E-11	(4.19 E-10)	(8.54 E-10)
	(5.01185 E-10)	(1.77 E-10)	(9.57 E-11)	(4.19 E-10)	(8.54 E-10)
Extension per farm	–0.0707	–0.0138	–0.0109	0.0028	0.0328
	(0.0071)	(0.0026)	(0.0014)	(0.0060)	(0.01240)
Reg. Res. X Extension	0.000003	3.56 E-07	2.81 E-07	6.90 E-08	0.000001
	(6.49878 E-07)	(2.31 E-07)	(5.43 E-07)		(0.000001)
Land Cultivated	0.0020	0.00005	0.0002	0.00007	0.0003
	(0.002)	(0.00009)	(.00005)	(0.0002)	(0.0004)
Farm Size	–0.2379	–0.0285	0.0140	0.0048	0.0425
	(0.0312)	(0.0111)	(0.0061)	(0.0257)	(0.0549)
Land Transfer	0.00001	–3.59 E-07	2.03 E-07	–0.00004	0.0001
	(0.00002)	(0.000007)	(.000004)	(0.00002)	(0.00003)

DEMAND EQUATIONS

Dependent Variable	Labor	Fertilizer	Tractor	Animal Labor	Output-Supply Eqn.
Roads	−0.8879	−0.4417	−0.1614	−0.0896	2.6115
	(0.3074)	(0.1106)	(0.0597)	(0.2551)	(0.5342)
Electricity	−0.0174	−0.0014	−0.0003	0.0079	−0.0103
	(0.0032)	(0.0011)	(0.0006)	(0.0026)	(0.0056)
HYV Percentage	−1.7852	−1.0053	−0.6635	−2.7945	2.5759
	(0.8002)	(0.2857)	(0.1528)	(0.6569)	(1.3920)
HYV X Reg. Research	0.00003	−0.00008	0.00004	.00003	−0.0001
	(0.00005)	(0.00002)	(0.00001)	(.00004)	(0.00009)
Dummy Variables					
Regions 1, 2	4.3876	−1.2447	−0.0902	−0.7436	−2.2646
	(0.5958)	(0.2122)	(0.1189)	(0.4963)	(1.0934)
3	2.3409	−0.2545	−0.8869	−0.2430	0.5962
	(0.5391)	(0.1914)	(0.1033)	(0.4517)	(0.9256)
5	3.6164	−0.9876	0.0495	0.3037	−2.8401
	(0.5927)	(0.211)	(0.1191)	(0.4942)	(1.0955)
6, 7	2.6431	−0.9728	−0.0701	0.1143	−0.3670
	(0.4993)	(0.1779)	(0.1006)	(0.4174)	(0.9305)
8, 9	0.9583	−1.1060	−0.0356	0.2012	0.7033
	(0.4350)	(0.1545)	(0.0856)	(0.3635)	(0.7824)
Early years (50-74) (DE)	2.6014	−1.9037	−0.0209	−0.1231	−4.7899
	(0.4906)	(0.1744)	(0.0977)	(0.4100)	(0.8978)
Regions 1, 2 x Early	−2.9981	1.3054	−0.1425	0.4220	2.5580
	(0.4462)	(0.1583)	(0.0861)	(0.3725)	(0.7764)
3	0.3937	0.3336	0.6592	−0.6855	0.3479
	(0.4841)	(0.1738)	(0.0932)	(0.4103)	(0.8298)
5	−2.4097	1.2216	−0.1528	−0.1216	2.4768
	(0.4774)	(0.1693)	(0.0918)	(0.3988)	(0.8266)
6, 7	−2.1464	0.9842	−0.1055	−0.2069	0.7004
	(0.3976)	(0.1427)	(0.0771)	(0.3325)	(0.6963)
8, 9	−0.5255	1.2413	−0.1302	−0.2167	−0.1183
	(0.3963)	(0.1414)	(0.0758)	(0.3314)	(0.6768)

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