

Economics 642
Poverty, Human Resources and Economic Development

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This course is concerned with microeconomic issues in developing countries. We will be concerned with the household as the major unit of analysis, although families and individuals will be explored as well. Human capital accumulation and its effects are stressed. Most, but not all, of the models and analyses covered in 642 will be static.

The readings begin with a section on the concepts and measurement of poverty. We will not cover this in class, this is for your use if needed. The course will start with an introduction to the basic, static model of household production and work into applications on labor supply and human capital investments in health, education and fertility. We will conclude by discussing issues of allocation decisions within households. Throughout we will then examine issues related to program evaluation and social experiments.

I will presume a general knowledge of development economics and of what the major policy issues are, such as is taught in EC 340. An important goal of the course is to help students build their empirical skills. Critical evaluation of empirical studies will be an integral part of the course, consequently a good working knowledge of graduate-level microeconomic theory and of econometrics (hopefully including micro-econometrics) will be important. Good reviews with a micro-development focus are provided by Angrist and Pischke (2009), Deaton (1995,1997), Heckman (2001) and Wooldridge (2010). The recent book by Imbens and Rubin is excellent.

The course reading list is designed as a set of references. We will only be covering a small number of readings, starred ones. I will let you the week before which readings we will cover in the following week. Readings you can download from the web, either JSTOR or from the author's site. Some unpublished papers hard to get I will load to Blackboard.

There will be a take home midterm which concentrates on an understanding of the basic household production model (50%) and a review of some papers, and a home final exam in which you will be asked to evaluate a series of scientific papers which we will not yet have read (50%).

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to a TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30AM-5PM, Monday-Friday. The phone number for DSP is (213)740-0776.

Background readings in development economics:

Schaffner, J. (2014). *Development Economics*, John Wiley.

Banerjee, A. and E. Duflo. (2011). *Poor Economics*, Public Affairs. (and the 2 reviews in March 2012 *Journal of Economic Literature* by M. Ravallion and M.R. Rosenzweig).

World Bank, various years (each year focuses on a different topic). *World Development Report*, Oxford: Oxford University Press.

0. Background econometrics

- * Deaton, A., 1997. *The Analysis of Household Surveys: Microeconomic Analysis for Development Policy*, Johns Hopkins Press, chapters 1 and 2, pp.7-131.
- Angrist, J. and J-S. Pischke, 2009. *Mostly Harmless Econometrics*, Princeton: Princeton University Press.
- Imbens, G. and D. Rubin. 2015. *Causal Inference in Statistics, Social, and Biomedical Sciences: An Introduction*, Cambridge University Press.
- Deaton, A., 1995. Data and econometric tools for development economics, in T.N. Srinivasan and J. Behrman (eds.), *Handbook of Development Economics, Volume 3A*, Amsterdam: North Holland Press.
- Heckman, J. 2001. Micro Data, Heterogeneity and the Evaluation of Public Policy: Nobel Lecture, *Journal of Political Economy*, 109:673-748.
- Wooldridge, J. 2010. *Econometric Analysis of Cross Section and Panel Data, 2nd Edition*, MIT Press especially chapters 5, 9, 10, and 15-18.
- Imbens, G. and Wooldridge, J. 2008. Lectures in Microeconometrics, IRP, University of Wisconsin.
- Imbens, Guido and Jeffrey Wooldridge. 2009. "Recent developments in the econometrics of program evaluation", *Journal of Economic Literature*, 47(1):5-86.
- Angrist, J. and J-S Pischke. 2009. *Mostly Harmless Econometrics*, chapters 4,5,6
- M. Ravallion. 2008. Evaluating anti-poverty programs, in T.P. Schultz and J. Strauss (eds.), *Handbook of Development Economics, Volume 4*, Amsterdam: North Holland Press.
- Todd, P. 2008. Evaluating social programs with endogenous program placement and selection of the treated, in T.P. Schultz and J. Strauss (eds.), *Handbook of Development Economics, Volume 4*, Amsterdam: North Holland Press.
- Duflo, E., R. Glennerster and M. Kremer. 2008. Using randomization in development economics research: A toolkit, in T.P. Schultz and J. Strauss (eds.), *Handbook of Development Economics, Volume 4*, Amsterdam: North Holland Press.
- Moffitt, R. (1991). Program evaluation with nonexperimental data, *Evaluation Review*, 15.3:291-314.
- Blundell, R. and M. Costa Dias. (2009). Alternative approaches to evaluation in empirical microeconomics, *Journal of Human Resources*, 44(3):565-640.
- Deaton, Angus. 2010. Instruments, randomization and learning about development, *Journal of Economic Literature*, 48(2):424-455.
- Heckman, James J. 2010. Building bridges between structural and program evaluation approaches to evaluating policy, *Journal of Economic Literature*, 48(2):356-398.

- Imbens, Guido. 2010. Better LATE than nothing: Some comments on Deaton (2009) and Heckman and Urzua (2009), *Journal of Economic Literature*, 48(2):399-423.
- Imbens, Guido and Thomas Lemieux. 2008. "Regression discontinuity designs: A guide to practice", *Journal of Econometrics*, 142(2):615-635.
- Bertrand, Marianne, Esther Duflo and S. Mullainathan. 2004. "How much should we trust difference-in-difference estimates?" *Quarterly Journal of Economics*, 119:249-275.
- Rosenzweig, M. and K. Wolpin. 2000. Natural "Natural Experiments" in Economics, *Journal of Economic Literature*, 38:827-74.
- Heckman, J. (1997). Instrumental Variables: A Study of Implicit Behavioral Assumptions in One Widely Used Estimator, *Journal of Human Resources*, 32:441-62.
- Dehejia, R. and S. Wahba. 2002. Propensity Score-Matching Methods for Nonexperimental Causal Studies, *Review of Economics and Statistics*, 84:151-61.
- Smith, Jeffrey and Petra Todd. 2008. "Does matching overcome LaLonde's critique of non-experimental estimators", *Journal of Econometrics*, 125(1-2):305-353.
- Van der Klaauw, Wilbert. 1996. "A regression-discontinuity evaluation of the effect of financial aid offers on college enrollment", *International Economic Review*,

I. Poverty, inequality and its measurement (Good readings, but we will not cover it in class)

A. Theory of Poverty and Inequality Measurement

Duclos, J-Y and A-K Araar (2005). *Poverty and Equity: Measurement, Policy and Estimation with DAD*, manuscript, chapters 1-6, 9-11

Ravallion, M. (2015). *The Economics of Poverty*, Oxford University press

Fields, G. (2001). *Distribution and Development*, Cambridge: MIT Press, chapters 1, 2, 4, 6, 8

Deaton, A. (1997). *The Analysis of Household Surveys*, chapter 3.1.

Ravallion, M. (1994). *Poverty Comparisons*, Harwood Academic Publishers.

Atkinson, A.B. (1987). On the Measurement of Poverty, *Econometrica*, 55.4:749-764.

B. Empirical studies

Chen, S. and M. Ravallion. 2010. The developing world is poorer than we thought but no less successful in the fight against poverty, *Quarterly Journal of Economics*, 125(4):1577-1625.

Ravallion, M. 2012. Why don't we see poverty convergence?, *American Economic Review*, 102(1):504-523.

Ravallion, M. and B. Bidani (1994). How robust is a poverty profile, *World Bank Economic Review*,

8.1:75-102.

Deaton, A. and A. Tarozzi, (2000). Prices and Poverty in India, manuscript

Hentschel, J.; J.O. Lanjouw; P. Lanjouw; and J. Poggi. 2000. "Combining census and survey data to trace the spatial dimension of poverty: A case study of Ecuador", *World Bank Economic Review*, 14(1):147-165.

Deaton, Angus and Alessandro Tarozzi. 2008. "Using census and survey data to estimate poverty and inequality for small areas", *Review of Economics and Statistics*,

Duclos, J.Y.; D. Sahn and S. Younger. (2006). "Robust multidimensional poverty comparisons", *Economic Journal*, 116(514):943-968.

Benjamin, D.; L. Brandt and J. Giles. (2005). "The evolution of income inequality in rural China", *Economic Development and Cultural Change*, 53(4):769-824.

Lee, Nayoung, Geert Ridder and John Strauss. 2012. "Estimation of poverty transition matrices with noisy data", mimeo.

Lee, Nayoung. 2010. "Measurement error and its impact on estimates of income and consumption dynamics", USC Institute for Economic Policy Research Working Paper,

Elbers, C.; J.O. Lanjouw; P. Lanjouw (2003). "Micro-level estimation of poverty and inequality", *Econometrica*, 71(1):355-364.

Duclos, J.Y.; D. Sahn and S. Younger. (2006). "Robust multidimensional spatial poverty comparisons in Ghana, Madagascar and Uganda", *World Bank Economic Review*, 20(1):91-114.

Ravallion, M., S. Chen and P. Sangraula. (2008). Dollar a day revisited, Policy Research Working Paper 4620, World Bank.

Chen, S. and M. Ravallion (2004). How have the World's poorest fared since the early 1980s? *World Bank Research Observer*, 19(2):141-170.

Bourguignon, F. and C. Morisson (2002). The size distribution of income among world citizens: 1820-1990, *American Economic Review*, 92(4):727-744.

Deaton, A. (1997). *The Analysis of Household Surveys*, chapter 3.3.

Deaton, A. and Dreze, J. (2002). Poverty and Inequality in India: A re-examination, *Economic and Political Weekly*, Sept 7, 2002, pp.3729-3748.

Fields, G. *Distribution and Development*, chapter 9.

Duclos, J-Y, (2002). *Poverty and Inequality*, chapters 13-14.

Baulch, B. and J. Hoddinott, (2000). Economic mobility and poverty dynamics in developing countries, *Journal of Development Studies*, 36.6:1-24.

Ravallion, M. (2003). The Debate on Globalization, Poverty and Inequality: Why Measurement Matters, manuscript.

Deaton, A. (2003). Measuring Poverty in a Growing World, BREAD Working Paper No 036.

II. Models of the household and household production

A. Theory

* Singh, I., L. Squire and J. Strauss (eds.), (1986). *Agricultural Household Models: Extensions, Applications and Policy*, Baltimore: Johns Hopkins University Press, chapters 1,2.

* Strauss, J., (1986). The theory and comparative statics of agricultural household models: a general approach, in I. Singh, L. Squire and J. Strauss (eds.), *Agricultural Household Models*.

* Benjamin, D. (1992). Household composition, labor markets and labor demand: testing for separation in agricultural household models, *Econometrica*, 60:287-298.

Bardhan, P. and C. Udry (1999). *Development Microeconomics*, Oxford University Press. Chapter 2.

Becker, G. (1991). *A Treatise on the Family, Enlarged Edition*, Harvard University Press. Chapter 1.

Sen, A., (1966). Peasants and dualism with and without surplus labor, *Journal of Political Economy*, 74:425-450.

Nakajima, C., (1969). Subsistence and commercial family farms: some theoretical models of subjective equilibrium, in C. Wharton (ed.), *Subsistence Agriculture and Economic Development*, Chicago: Aldine.

Gronau, R. (1977). Leisure, home production and work: the theory of the allocation of time revisited, *Journal of Political Economy*, 85:1099-1124.

Besley, T. (1988). Rationing, income effects and supply response: a theoretical note, *Oxford Economic Papers*, 378-389.

McKay, A. and A.S. Taffesse (1995). Rationing, missing markets and the behaviour of agricultural households: A theoretical analysis, mimeo, University of Nottingham.

B. Empirical work: Static Models- recursive and non-recursive

* Strauss, J. and D. Thomas, (1995). Human resources: empirical modeling of household and family decisions, in T.N. Srinivasan and J. Behrman (eds.), *Handbook of Development Economics, Volume 3A*, Amsterdam: North Holland Press, Introduction.

* Rosenzweig, M. (1980). Neoclassical theory and the optimizing peasant: an econometric analysis, *Quarterly Journal of Economics*, 94(1):31-55.

- * Benjamin, D. (1992). Household composition, labor markets and labor demand: testing for separation in agricultural household models, *Econometrica*, 60:298-322.
- *LaFave, D. and D. Thomas. (2016). Farms, families and markets: New evidence on agricultural labor markets, *Econometrica*, 84(5):1917-1960.
- *Lambert, S. and T. Magnac (1994). Measurement of implicit prices of family labour in agriculture: An application to Cote d'Ivoire, in F. Caillavet, H. Guyomard and R. Lifrán eds., *Agricultural Household Modeling and Family Economics*, Developments in Agricultural Economics 10, Amsterdam: Elsevier.
- Jacoby, H. (2016). Food prices, wages and welfare in rural India, *Economic Inquiry*, 54(1):159-176.
- LaFave, D., E. Peet and D. Thomas (2013). Are rural markets complete? Prices, Profits and Recursion,, mimeo, Duke University.
- deJanvry, A. and E. Sadoulet (2003). Configurations and transactions: Frontiers in the modeling of rural households' behavior, mimeo.
- Lau, L., W-L. Lin and P. Yotopoulos (1978). The Linear Logarithmic Expenditure System: An Application to Consumption-Leisure Choice, *Econometrica*, 46:843-68.
- Yotopoulos, P, L. Lau and W-L. Lin (1976). Microeconomic Output Supply and Factor Demand Functions in the Agriculture of the Province of Taiwan, *American Journal of Agricultural Economics*, 58:333-40.
- Barnum, H. and L. Squire, (1979). A model of an agricultural household: theory and evidence, Occasional Paper No. 27, World Bank.
- Strauss, J. (1984). Joint determination of food consumption and production in rural Sierra Leone: estimates of a household-firm model, *Journal of Development Economics*, 14: 77-104.
- Renkow, M., D. Hallstrom and D. Karanja (2004). Rural infrastructure, transactions costs and market participation in Kenya", *Journal of Development Economics*, 73.1: 349-367.
- Roumassett, J., S. Setboonsarng, U. Wickramasinghe, J. Estudillo and R. Evenson. 1995. Specialization and Co-evolution of Agricultural Markets, Center for Institutional Reform and the Informal Sector, Working Paper No. 165, University of Maryland.
- Frisvold, G. 1994. Does supervision matter? Some hypothesis tests using Indian farm level data, *Journal of Development Economics*, 43(2):217-238.
- Deaton, A., (1988). Quality, quantity and spatial variation in price, *American Economic Review*, 78:418-430.
- Deaton, A., (1990). Price elasticities from survey data: extensions and Indonesian results, *Journal of Econometrics*, 44:281-309.
- Deaton, A., (1997). *The Analysis of Household Surveys*, 271-314.

C. Empirical Work: Dynamic Models and Models under risk

- * Ben-Porath, Y., (1980). The f-connection: families, friends and firms and the organization of exchange, *Population and Development Review*, 6:1-30.
- * Townsend, R., (1994). Risk and insurance in village India, *Econometrica*, 62:539-592.
- * Rosenzweig, M. (1988). Risk, implicit contracts and the family in rural areas of low income countries, *Economic Journal*, 98:1148-1170.
- * Rosenzweig, M. and O. Stark, (1989). Consumption smoothing, migration and marriage: evidence from rural India, *Journal of Political Economy*, 97:905-926.
- * Rosenzweig, M. and H. Binswanger, (1993). Wealth, weather risk and the composition and profitability of agricultural investments, *Economic Journal*, 103:56-78.
- *Mazzocco, M. and S. Saini. 2012. Testing efficient risk sharing with heterogeneous risk preferences, *American Economic Review*, 102(1):428-468.
- Attanasio, O., A. Barr, J.C. Cardenas, G. Genicot and C. Meghir. (2012). Risk pooling, risk preferences and social networks, *American Economic Journal: Applied Economics*, 4(2):134-167.
- Behrman, J., A. Foster and M. Rosenzweig, (1997). Dynamic Savings Decisions in Agricultural Environments With Incomplete Markets, *Journal of Business and Economic Statistics*, 15:282-92.
- Ravallion, M. and S. Chaudhuri (1997). Risk and insurance in village India: Comment, *Econometrica*, 65:171-184.
- Morduch, J., (2005). Consumption smoothing across space: Testing theories of risk sharing in the ICRISAT study region of south India, in S. Dercon (ed.), *Insurance Against Poverty*, Oxford: Oxford University Press.
- Rosenzweig, M. and K. Wolpin, (1993). Credit market constraints, consumption smoothing and the accumulation of durable production assets in low-income countries: investment in bullocks in India, *Journal of Political Economy*, 101:223-244.
- Saha, A. (1994). A Two-Season Agricultural Household Model of Output and Price Uncertainty, *Journal of Development Economics*, 45:245-69.
- Fafchamps, M. and J. Pender (1997). Precautionary Saving, Credit Constraints and Irreversible Investment: Theory and Evidence from Semi-Arid India, *Journal of Business and Economic Statistics*, 15:180-94.

III. Attrition bias in longitudinal studies

*Thomas, D., E. Frankenberg and J.P. Smith. 2001. Lost but not forgotten: Attrition and followup in the Indonesia Family Life Survey, *Journal of Human Resources*, 36:556-592.

*Thomas, D., F. Witoelar, E. Frankenberg, B. Sikoki, J. Strauss, C. Sumantri, and W. Suriastini. (2012). Cutting the costs of attrition: Results from the Indonesia Family Life Survey, *Journal of Development Economics*, 98(1):108-123.

IV. Labor supply and wages

A. Labor Supply

* Jacoby, H. (1993). Shadow wages and peasant family labor supply: an econometric application to the Peruvian Sierra, *Review of Economic Studies*, 60:903-921.

* Munshi, K. 2003. Networks in the modern economy: Mexican migrants in the US labor market, *Quarterly Journal of Economics*, 118(2):549-597.

* Field, E. 2007. Entitled to work: Urban property rights and labor supply in Peru, *Quarterly Journal of Economics*, 122(4):1561-1602

Foster, A. and M. Rosenzweig (2008). Economic development and the decline of agricultural employment, in T.P. Schultz and J. Strauss (eds.), *Handbook of Development Economics, Volume 4*, Amsterdam: North Holland Press.

Kajisa, K. 2007. Personal networks and nonagricultural employment: The case of a farming village in the Philippines, *Economic Development and Cultural Change*, 55(4):669-708.

Sahn, D. and H. Alderman (1988). The effects of human capital on wages and the determinants of labor supply in a developing country, *Journal of Development Economics*, 29:157-183.

Mammen, K. and C. Paxson (2000). Women's work and economic development, *Journal of Economic Perspectives*, 14.4:141-164.

Newman, J. and P. Gertler, (1994). Family productivity, labor supply and welfare in a low income country, *Journal of Human Resources*, 29.4:989-1027.

Skoufias, E., (1992). Labor market opportunities and intrafamily time allocation in rural households in south Asia, *Journal of Development Economics*, 40:277-310.

Blau, D., (1985). The effects of economic development on life-cycle wage rates and labor supply behavior in Malaysia, *Journal of Development Economics*, 19:163-185.

B. Returns to Education

Background reading: Card, D. (2001). Estimating the returns to schooling: Progress on some persistent econometric problems, *Econometrica*, 69.5:1127-1160.

* Schultz, T.P., (1988). Education investments and returns, in H. Chenery and T.N. Srinivasan (eds.),

Handbook of Development Economics, Volume 3, Amsterdam: North Holland Press, sections 3 and 4.

- *Rosenzweig, M. (2010). Microeconomic Approaches to Development: Schooling, Learning and Growth, *Journal of Economic Perspectives*, 24(3):81-96.
- * Strauss, J. and D. Thomas, (1995). Human resources: empirical modeling of household and family decisions, Section 5.
- * Boissiere, M., J. Knight and R. Sabot, (1985). Earnings, schooling, ability and cognitive skills, *American Economic Review*, 75:1016-1030.
- * Heckman, J. and J. Hotz, (1986). An investigation of labor market earnings of Panamanian males: evaluating the sources of inequality, *Journal of Human Resources*, 21:507-542.
- *Behrman, J and B. Wolfe. (1984). The socio-economic impact of schooling in a developing country, *Review of Economics and Statistics*, 66(2):296-303.
- * Lam, D. and R. Schoeni, (1993). Effects of family background on earnings and returns to schooling: evidence from Brazil, *Journal of Political Economy*, 101:710-740.
- * Behrman, J. and N. Birdsall, (1983). The quality of schooling: quantity alone is misleading, *American Economic Review*, 73:928-946.
- * Duflo, E. (2001). Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence From an Unusual Policy Experiment”, *American Economic Review*, 91:795-813.
- * Angrist, J. and V. Lavy. 1997. The Effect of a Change in Language of Instruction on the Returns to Schooling in Morocco, *Journal of Labor Economics*, 15:S48-76.
- * Angrist, J. (1995). The economic returns to schooling in the West Bank and Gaza Strip, *American Economic Review*, 85.5:1065-1087.
- Sahn, D. and H. Alderman (1988). The effects of human capital on wages and the determinants of labor supply in a developing country, *Journal of Development Economics*, 29:157-183.
- Rao, V., I. Gupta, M. Lokshin and S. Jana (2003). Sex workers and the cost of safe sex: The compensating differential for condom use among Calcutta prostitutes, 71.2:585-604.
- Orazem, P. and M. Vodopivec (1995). “Winners and Losers in Transition: Returns to Education, Experience and Gender in Slovenia,” *World Bank Economic Review*, 9.2:201-230.
- Smith, J., (1991). Labor markets and economic development in Malaysia, in T.P. Schultz (ed.), *Research in Population Economics*, Greenwich, CT: JAI Press.
- Kochar, A. (2000). “Migration and Schooling Rates of Return,” *Journal of Development Economics*, forthcoming.
- Psacharopoulos, G. and H. Patrinos (2002). Returns to Investment in Education: A Further Update, World

Bank Policy Research Working Paper 2881.

Bedi, A.S. and J. Edwards. 2002. The Impact of School Quality on Earnings and Educational Returns- Evidence From a Low Income Country, *Journal of Development Economics*, 68:157-85.

Jones, P. 2001. Are Educated Workers Really More Productive?, *Journal of Development Economics*, 64:57-80.

Kim, D-I. and R. Topel (1995). Labor markets and economic growth: Lessons from Korea's industrialization, 1970-1990. in R. Freeman and L. Katz (eds.), *Differences and Changes in Wage Structures*, NBER Comparative Labor Markets Series, U. of Chicago Press.

Willis, R., (1986). Wage determinants: a survey and reinterpretation of human capital earnings functions, in O. Ashenfelter and R. Layard (eds.), *Handbook of Labor Economics, Volume 1*, Amsterdam: North Holland Press.

Self-employment returns

* Schultz, T.W. (1975). The value of the ability to deal with disequilibria, *Journal of Economic Literature*, 13:827-846.

* Rosenzweig, M. (1995). Why are there returns to schooling?, *American Economic Review, Papers and Proceedings*, 85.2:153-158.

* Welch, F., (1970). Education in production, *Journal of Political Economy*, 38:35-59.

* Foster, A. and M. Rosenzweig (1996). Technical change and human capital returns and investments: Evidence from the Green Revolution, *American Economic Review*, 86.4:931-953.

*Foster, A and M. Rosenzweig, (1995). Learning by Doing and Learning From Others: Human Capital and Technical Change in Agriculture, *Journal of Political Economy*, 103.6:1176-1209.

*Conley, T. and C. Udry. 2010. Learning About a New Technology: Pineapples in Ghana, *American Economic Review*, 100(1):35-69.

Gurgand, M., (2003). Farmer education and the weather: Evidence from Taiwan (1976-1992), *Journal of Development Economics*, 71.1:51-70.

Giles, J. 2006. Is life more risky in the open? Household risk coping and the opening of China's labor markets, *Journal of Development Economics*, 81(1):25-60.

Foster, A. and M. Rosenzweig. 2002. Technological Changes and the Distribution of Schooling: Evidence From the Green Revolution in India, BREAD Working Paper No. 9.

Bandiera, O. and I. Rasul. 2006. Social networks and technology adoption in northern Mozambique, *Economic Journal*, 116(October):869-902.

Munshi, K. 2004. Social learning in a heterogeneous population: Technology diffusion in the Indian Green Revolution, *Journal of Development Economics*, 73(1):185-215.

- Yang, D. and M.Y. An. 2002. Human Capital, Entrepreneurship and Farm Household Earnings, *Journal of Development Economics*, 68:65-88.
- Pitt, M. and G. Sumodiningrat. 1991. Risk, Schooling and the Choice of Seed Technology in Developing Countries: A Meta-Profit Approach, *International Economic Review*, 32:457-73.
- Jamison, D. and L. Lau. (1982). *Farmer education and farm efficiency*, Baltimore: Johns Hopkins Press, chapters 5-8.
- Vijverberg, W. (1995). Returns to Schooling in Non-farm Self-employment: An Econometric Case Study of Ghana, *World Development*, 23.7:1215-1227.

V. Investments in education, health and fertility

- * Schultz, T.W. (1980). The Economics of Being Poor, *Journal of Political Economy*, 88.4:639-51.
- * Strauss, J. and D. Thomas, (1995). Human Resources: empirical models of households and family decisions, sections 3.1-3.5.
- * Moffitt, R. 2005. The analysis of causal relationships in population research, *Demography*, 42(1):91-108.

A. Fertility

- *Lam, D. (2011). How the world survived the population bomb: Lessons from 50 years of extraordinary demographic history, *Demography*, 48(4):1231-1262.
- * Schultz, T. P., (1997). Demand for children in low income countries, in M. Rosenzweig and O. Stark (eds.), *Handbook of Population and Family Economics*, Amsterdam: North Holland Press.
- * Schultz, T.P. 2008. Population policies, fertility, women's human capital and child quality, in T. P. Schultz and J. Strauss (eds.), *Handbook of Development Economics, Volume 4*, Amsterdam: North Holland Press.
- *Rosenzweig, M. and R. Evenson, (1977). Fertility, schooling and the economic contribution of children in rural India, *Econometrica*, 45:1065-1079.
- * Rosenzweig, M. (1990). Population growth and human capital investments: theory and evidence, *Journal of Political Economy*, 98:S38-S70.
- * Lam, D., and S. Duryea, (1999). Effects of Schooling on Fertility, Labor Supply and Investments in Children, *Journal of Human Resources*, 34.1:160-92.

- * Rosenzweig, M.R. and J. Zhang, (2006). "Do Population Control Policies Induce More Human Capital Investment? Twins, Birthweight and China's 'One-Child' Policy", Economic Growth Center Working Paper 933, Yale University.
- * Rosenzweig, M. and T.P. Schultz, (1987). Fertility and investments in human capital: estimates of the consequences of imperfect fertility control, *Journal of Econometrics*, 36:163-184.
- * Rosenzweig, M. and K. Wolpin, (1988). Heterogeneity, intrafamily distribution and child health, *Journal of Human Resources*, 23.4:437-461.
- * Schultz, T. Paul and Shareen Joshi. 2013. "Family planning and women's and children's health: Long Term consequences of an outreach program in Matlab, Bangladesh", *Demography*, 50(1):149-180.
- *Jensen, Robert. 2012. "Do labor market opportunities affect young women's work and family decisions: Experimental evidence from India", *Quarterly Journal of Economics*, 127(2):753-792.
- Munshi, K. and J. Myaux. (2006). "Social norms and the fertility transition", *Journal of Development Economics*, 80(1):1-38.
- Thomas, D. and J. Maluccio, (1996). Fertility, Contraceptive Choice and Public Policy in Zimbabwe, *World Bank Economic Review*, 10.1:189-222.
- Schultz, T.P., (1973). Explanation of birth rate changes over time: a study of Taiwan, *Journal of Political Economy*, 31 (supplement):238-274.
- Nugent, J., (1985). The old age motive for fertility, *Population and Development Review*, 11:75-97.
- Montgomery, M. and J. Casterline, (1993). The diffusion of fertility control in Taiwan: evidence from pooled cross section, time series models, *Population Studies*, 47:457-479.
- Foster, A. and N. Roy, (1992). The dynamics of education and fertility: evidence from a family-planning experiment, mimeo, University of Pennsylvania.
- Gertler, P. and J. Molyneaux, (1994). How economic development and family planning combined to reduce Indonesian fertility, *Demography*, 31:33-64.
- Browning, M., (1992). Children and household economic behavior, *Journal of Economic Literature*, 30:1434-1475.
- Birdsall, N., (1988). Economic approaches to population growth, in H. Chenery and T.N. Srinivasan (eds.), *Handbook of Development Economics, Volume 1*, Amsterdam: North Holland Press.
- Rosenzweig, M. and K. Wolpin. (1980). Testing the quantity-quality fertility model: the use of twins as a natural experiment, *Econometrica*, 48:227-240.
- Levy, V., (1985). Cropping pattern, mechanization, child labor and fertility behavior in rural Egypt, *Economic Development and Cultural Change*, 33:777-791.

Miller, G. 2010. Contraception as development: New evidence from family planning in Columbia, *Economic Journal*, 120(545):709-736.

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