Reading Summaries for Development General

Spring 2005

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These reading summaries are NOT intended to substitute for reading the articles. As you'll see, we leave out a lot of stuff and mess up much of what we include.

*This is a public good. All that we ask is that (1) you use this at your own risk—we certainly made errors on the general, we may have made some here and (2) if you make any changes or additions, you send them back to Greg Fischer (*gfischer-at-mit.edu*)*

Hope this helps.

[1] This work draws on some of the excellent summaries prepared by prior classes of development students. They are given credit at the top of each individual summary. All blame for errors belongs to Greg Fischer.

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Institutions

Corruption

- Shleifer & Vishny (1993) present an IO based model of n-marginalization in which they show that decentralized corruption can be more distortionary than centralized.
  - They also distinguish between corruption with theft, which is hard to counter because both parties have an interest in maintaining the corruption relationship, and may propagate in a competitive setting versus corruption with theft, where citizens would generally like to report the corruption.
  - Corruption is worse than taxes because secrecy is distortionary of itself. The red car/green car is a nice example.
- There are some, such as Leff and Huntington, that say corruption can be good. This is best exemplified by Huntington's quote: "In terms of economic growth, the only thing worse than a society with a rigid, over-centralized, dishonest bureaucracy is one with a rigid, over-centralized, honest bureaucracy."
- Mauro (1995) conducts a cross-country growth regression using subjective measures of corruption as key explanatory variables. Like the other institution focused growth economists, he uses ELF to control for endogeneity. The ID strategy is not believable, but it's an often quoted work in the field and offers at least suggestive correlations.
- Banerjee's (1997) "Theory of Misgovernance" argues that "what causes corruption is the combination of the fact that bureaucrats want to make money and governments make laws to prevent them from doing so." Red tape can actually get worse with stronger incentives for bureaucrats because they use red tape to sort who should get scarce slots.
- Acemoglu and Verdier (2000) offer a model where there's a tradeoff between government intervention and market failures. The government, as benevolent social planner, must offer rents to induce self-interested agents not to take bribes.
- Yang (2004) looks at displacement of lawbreaking in response to enforcement, and finds that enforcement can actually increase total corruption

Investor Protection [wanting a better term]

- La Porta, Lopez-de-Silanes, Shleifer and Vishny or some combination thereof have a number of papers on investor protection, corporate ownership, and legal origins.
  - Civil law countries generally offer the best legal protections for investors and French civil-law regimes the worst. German and Scandinavian law fit somewhere in the middle.
  - Concentration of ownership is negatively correlated with investor protection: only in countries where minority investors are well protected is ownership broadly distributed
  - While *de jure* protections are independent of income, the quality of enforcement is positively correlated.
  - Controlling shareholders typically have voting control disproportionate to their cash flow rights, primarily through pyramid structures and participation in management.
- Bertrand, Mehta, and Mullainathan (2002) look at the process of tunneling among Indian business groups. They hypothesize that group firms should under-respond to their own profit shocks and that the degree of under-response should increase as the cashflow rights of the ultimate owner fall. Their empirical results support that this process occurs through non-operating income statement charges.
- Johnson & Mitton (2001) argue that capital controls in post-crisis Malaysia created a screen for cronyism, where politically connected firms outperformed, but it's unclear to me how much we should take from this result or how to extend.

Institutions Broadly Defined

- Banerjee and Iyer (2004) look at how institutional overhang can affect economic performance by comparing regions that did and did not have landlords (tax farmers) during the British occupancy. They find that those without landlords have higher agricultural yields, better technological adoption, and invest more in schools and health.

- In a related paper, Iyer (2002) looks at British-controlled vs. native ruled areas using the doctrine of lapse to create an instrument for British control. Contrary to the OLS evidence that British regions performed relatively better, in the IV results, British areas exhibit little difference in agricultural productivity and have significantly lower investments in public goods.
- In a paper that may fit better in the Growth section, Parente & Prescott (1999) contend that poor countries are prevented from using better technology and becoming rich by monopoly rights to the technology, but I find it hard to reconcile this with the degree to which productivity in LDCs lags behind that of rich countries. As Banerjee & Duflo point out, couldn't countries settle for 20-year old technology and make up 60% of the shortfall? The P&P model is also rigged to get results as there are monopoly rights in the old technology but not the new. [or is it new and not old?]

Public Goods

- A lot of work has shown that ethnic diversity is associated with lower provision of public goods
  - Miguel and Gugerty (2002) find lower expenditures on education and water in rural western Kenya, where the ethnic composition is argued to be exogenous. They theorize that the difficulty of imposing social sanctions in such diverse communities is the cause.
  - Alesina, Baqir and Easterly (1999) find lower municipal public goods in more ethnically diverse areas.
  - Poterba (1997) finds lower school spending in areas where the school-aged population has an increased share of ethnic minorities, [particularly when the older population doesn't.]
  - Alesina & LaFererra (2000) also find lower levels of social capital in ethnically diverse regions
- Some would argue that decentralization can solve a lot of the problems with public goods provision, but this is ambiguous
  - Decentralized regimes may be more susceptible to capture by local elites
  - Kremer (2002) finds perverse incentives that lead to inefficient provision of educational resources when spending power is partially decentralized in Kenya.

Shleifer, A. and R.W. Vishny, "Corruption," Quarterly Journal of Economics, 108 (3) August 1993, pp. 599-617.

Summary by Greg Fischer, 4/11/05

Brief: Centralized corruption (as in Korea or USSR) is less distortionary than decentralized corruption. The secrecy costs of corruption makes it more distortionary than taxes.

Contribution:

Shleifer & Vishny's two main propositions on corruption:

1. Structure of government institutions and political process are important for determining level of corruption. Weak governments experience high corruption levels.
2. The illegality of corruption & need for secrecy make it more distortionary than taxation.

- Of course, this is just their abstract. Their paper really just (rather ingeniously) applies I/O theories of monopolies to corruption. I don't' see how these two "key points" are ever rigorously addressed.
- They take the principal-agent problem as given and focus on the consequences of corruption for resource allocation.

The Basics:

- "An important reason why many of these permits and regulations exist is probably to give officials the power to deny them and to collect bribes in return for providing the permits." [De Soto, 1989]
- They distinguish between corruption without theft (which always leads to higher all-in prices) and corruption with theft (which may actually lower prices below the official level).

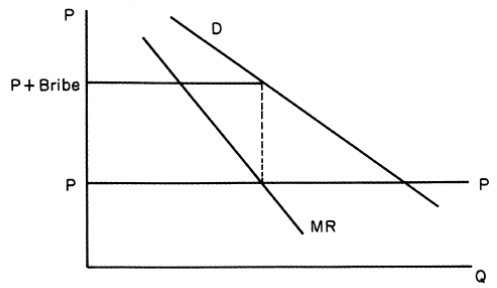


FIGURE Ia
Corruption without Theft

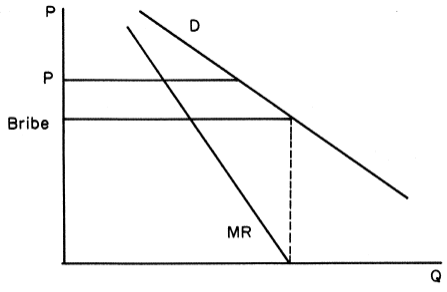


FIGURE Ib
Corruption with Theft

- In corruption with theft, corruption can propagate: Buyer A gets at below the gov't price, so buyer B must buy at lower (corrupt) price to remain competitive. Interest of buyers and (corrupt) sellers are aligned, making corruption more persistent. Implication: a first step in reducing corruption may be to create an accounting system that limits theft, giving buyers incentive to reduce corruption.
- Penalizing officials: (1) if probability of detection and penalty are independent of bribe size and number of people who pay, there is no change (unless expected penalty so large that corruption no longer pays). If expected penalty rises with bribe size, will naturally reduce size and raise output. If with number of bribers, then limit supply and charge larger bribe.

The I/O of it all:

- With different agencies each setting bribes independently (maximizing own income in Nash game, without regard to total bribes) things really suck: less total bribes *and* less output. With a monopolist (think USSR, Philippines under Marco, Korea, etc.), the monopolist maximizes joint revenue. If two goods (permits) are complements (say one needs multiple licenses to start a business), the monopolist will recognize complementarity and lower bribes (b/c $dx_1 / dp_2 < 0$). Of course, with free entry of government agencies, the whole market unravels in the limit. Bummer.
- If multiple agencies are selling substitutes (or there's the potential for entry of an alternative supplier, a la Blinder's contestable markets) corruption is reduced, perhaps to zero depending on the competition assumption (e.g., Bertrand would reduce it to zero).

- When do we see collusive (joint profit maximizing) corruption?
  1. Government has effective enforcement mechanisms (the KGB was pretty good here)
  2. When the ruling elite is small
  3. When society is homogeneous (argue that deviations with be disclosed through network).
- Huntington (1968) observed (rightly or wrongly) that political modernization, defined as a transition from an autocratic to a more democratic regime, is often accompanies by an increase in corruption. The experience of post-Communist Russia would certainly support this. Political competition helps limit corruption. Competition between bureaucrats naturally reduces corruption *without theft*, but Schleifer and Vishny argue that competition may increase corruption *with theft.*

Corruption & Secrecy:

- There are some that argue corruption could actually be beneficial, a way to bypass bureaucratic red tape (see Leff (1964) and Huntington (1968)).
- But corruption is worse than taxes b/c secrecy can have a cost. Two examples:
  - Green cars vs. Red cars. If can't collect bribes on red cars (which have a higher surplus and thus should be imported) may outlaw them in order to collect bribe on green.
  - Mozambique bottling machine: buy the unnecessarily expensive machine b/c it's uniqueness affords opportunities for corruption that wouldn't exist if competitive bids were possible.
- This suggests why many poor countries would rather spend money on defense and infrastructure (where corruption opportunities are plentiful) then education and health (although NYC seems to do OK with education corruption).

Questions:

- Why would corruption with theft increase under competition (p. 611)?

Paulo Mauro, "Corruption and Growth," The Quarterly Journal of Economics, Vol. 110 (3). p 681-712. August 1995.

Summary by Greg Fischer, 4/11/05

Brief: Cross-country growth regressions using subjective measures of corruption, amount of red tape, judicial efficiency and political stability suggest that corruption is correlated (he says it's causal, but come on!) with lower investment and hence lowers economic growth. Uses ethnolinguistic fractionalization to "control" for endogeneity, which is a joke, but he gets points (and published in the QJE) for trying.

Contribution: An oft-cited, decent crack at drawing an empirical link between corruption and poor growth performance.

Detailed Summary:

- Beating the dead horse here: Leff (1964) and Huntington (1968) suggest that corruption could raise economic growth either as "speed money" to bypass silly bureaucratic rules or as a sort of piece rate pay for efficiency. Shleifer and Vishny (1993) hold that the opposite is true: corruption should lower growth.
- Data: adds to the classic PWT cross country data the *Business International* subjective indices on corruption, red tape, and efficiency. Making a virtue of necessity, claims that subjective measures are nice b/c that's what outside investors look at anyway. I think this is crap. That might be nice for FDI, but certainly not for domestic investment.
- Recognizes that these measures may be endogenous, so uses ethnolinguistic fractionalization (the probability that two persons drawn at random will not belong to same EL group). Claims that ELF[2] is correlated with corruption and other institutional variables but exogenous to other economic variables and institutional efficiency. This is bold! By the way: how can you use one variable as an instrument for several endogenous others? His argument: judiciary efficiency, red tape, and corruption are closely related so their simple average (again, a simple average of subjective, scale-less measures[3]) is a reasonable proxy for bureaucratic efficiency, which can be instrumented for with ELF, which doesn't have any direct effect whatsoever… right.
- Note, there's also a pretty strong argument to make that subjective measures are endogenous (I don't know Knack & Keifer broached this, but I've seen it somewhere). When things are going well in a country (growth, lots of investment) it's easier to say nice things about the investment climate than when things are not (you don't get fired for buying IBM or stating the obvious).
- Finds a strong correlation between his bureaucratic efficiency aggregate and political stability.
- Runs regression (2SLS) with corruption or bureaucratic efficiency (by the way, if the red tape and judicial efficiency matter, than doesn't his corruption specification suffer from OV bias?) instrumented for by ELF. Finds that a 1 s.d. variation in corruption (again, what does this mean when dealing with meaningless orders of corruption? Could he have run some sort of ordered probit first stage?), changes investment by 2.9% of GDP. This is big. 1 s.d. of bureaucratic efficiency→ +5% investment and +0.5% GDP growth.
- There's no difference in the coefficients when splitting the sample by high and low red tape, which contradicts the Leff & Huntington assertion that in the presence of slow bureaucracies corruption can be beneficial.
- Pathways: in an endogenous growth model, bureaucratic inefficiency (and corruption as a key piece of this) could affect growth indirectly (by lowering the investment rate) or directly (by, for example, misallocating investment across sectors or projects).

[2] Factoid: the measure of ELF comes from a 1960 Soviet Department of Geodesy & Cartography study. Is this what everybody uses?

[3] As he points out, there's no way to compare the difference between a 2 and a 3 vs. a 4 and a 5.

- Explanation for correlation between political stability & corruption: strategic complementarity in the decisions of officials as to whether or not to take bribes. [could it also be that if the gov't is unstable, the efficiency wage offered by gov't jobs loses power as an incentive?]

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. (1998), "Law and Finance," Journal of Political Economy, 106 (6), 1113-1155.

Summary by Greg Fischer, 5/3/05

Abstract: La Porta, et al examine rules covering the protection of corporate shareholders and creditors, the origins of these rules, and the quality of their enforcement in 49 countries. Can these differences explain why firms are financed and owned so differently in different countries? The results show that common-law countries generally have the strongest and French-civil-law countries the weakest legal protections of investors, after controlling for income. German- and Scandinavian-civil law countries score somewhere in the middle. La Porta, Lopez-de-Silanes, Shleifer, and Vishny also find that concentration of ownership of shares in the largest public companies is negatively related to investor protection, consistent with the hypothesis that small, diversified shareholders are unlikely to be important in countries that fail to protect their rights. They also find that while *de jure* rules are independent of income, the quality of enforcement improves with income.

Observations

- There may be ways to contract around laws. For example, some firms may grant rights that are not required by law.
- As with all cross-country studies, omitted variables are likely a big issue.
  - What else did the British bring to the colonies besides their legal code?

Banerjee, Abhijit (1997). "A Theory of Misgovernance." Quarterly Journal of Economics, vol. 112(4), p. 1289-1332.

Summary by Greg Fischer, 4/11/05

Brief: Why are government bureaucracies associated with red tape, corruption, and lack of incentives? Governments act in precisely those situations where markets fail and there are agency problems between the government (perhaps a benevolent social planner) and self-interested bureaucrats. Under Banerjee's model, these problems are exacerbated at low levels of development and among bureaucracies serving poor constituencies. "What causes corruption is the combination of the fact that bureaucrats want to make money and the fact that governments make laws to prevent them from doing so."

Contribution: Admits that some governments may be rapacious, but says that a significant part of what we see as government failures may exist even when the government has the best of intentions. Provides structural contradiction to Leff and Huntington: here red tape arises to make corruption possible and further wouldn't arise if governments didn't care about social welfare.

Detailed Summary:

- Key assumptions necessary for model: governments are responding to market failures (which Banerjee models as a scarcity of some "slots") and the government must operate through agents (bureaucrats) that are self-interested.
- Three agents: government, bureaucrat, consumers. Actual allocation of slots rests with bureaucrat. Gov't can monitor and penalize misallocation to some extent.
- Predictions:
  - Bureaucrats may want to use red tape (pointless procedures) to meet IC constraints of heterogeneous consumers.
  - If the government were simply interested in making money, it would just set the fine for misallocation to zero, let the bureaucrat extract whatever he could, and extract maximum revenue from the bureaucrat (ideally a non-distortionary lump sum).
  - If people could pay enough for the slots (resources are such that even low types can afford slots) then an optimal auction is possible and there will be no red tape.
  - Red tape paradoxically gets worse as bureaucrats get stronger incentives (harsher penalties for failing to allocate slots to the high types in this model) because they use red tape to sort. There'd be no red tape if both government and bureaucrat are welfare or revenue maximizing. Red tape also highest when the average person's ability to pay is low because this implies that H types are receiving high rents so it's more tempting for L types to claim to be type H. Red tape discourages this.
- This is not quite our usual hidden-information model. Depending on the values of F (the penalty for misallocation) and y (the ability to pay), either of the incentive constraints could bind.
  - If everyone has resources to pay (y>L), then optimal mechanism is auction. In optimal auction, H-types IC constraint binds.
  - If y low and F high, bureaucrats really wants all H-types to get slot. Need a high π_h, this means that $p_l < p_h$ [need to understand this better], but low y means that can't pay much so the IR constraint of low types won't bind, therefore IC must (can't have both slack).
- Another shot at results:
  - High F → high π (if getting punished for misallocating, what H-types to get it with high prob)
  - Higher y associated with lower red tape (T_H in Banerjeese) for a given F
  - Higher y not necessarily associated with higher π —the highest values of π may obtain at very high and very low values of y
  - An increase in scarcity, all else equal, increases red tape.

Questions:

- How would labor market imperfections mess with the willingness to pay discrepancy (p. 1291)?
- What would happen if H, L, and y were unknown? Or just following some known distribution? Could red tape be used to gain information? Could this be efficient?
- How can we think about this models link to reality? Are bureaucrats really punished for misallocation? In this model, "slots" always go to the high types first. This seems unrealistic.
- Walk through arugments on pp. 1306-1307.

Acemoglu, Daron and Thierry Verdier (2000). The Choice between Market Failures and Corruption. American Economic Review, March 2000, v. 90, No.1, pp. 194-211.

Summary by Greg Fischer, 4/11/05

Brief: Simple idea: there's a trade off between government intervention and market failures. As corruption undermines purpose of intervention, governments will act to prevent it. Often this entails creating rents for bureaucrats, inducing the misallocation of resources, and increasing the size of bureaucracy. When corruption is harder to prevent, may see both more bureaucrats and higher wages for them. Optimal government intervention will likely be non-monotonic in income. Though Acemoglu and Verdier admit that this model has a certain lack of relevance to developing countries because it suggests that corruption should be rare, they present a very interesting model that explains why bureaucracies may be large and why bureaucrats my earn rents.

Detailed Summary:

- Great paper! Though it admits a certain lack of relevance to developing countries, precisely those areas in which we'd most like to explain corruption.
- Basic model assumptions:
  - Government as benevolent social planner intervening to correct some market failure
  - Gov't intervention requires use of agents (bureaucrats) to collect info, implement, etc.
  - Bureaucrats are self-interested and, by virtue of superior information, hard to monitor
  - There is some heterogeneity among bureaucrats
- Because gov't intervention to correct market failures requires bureaucrats to make decisions, there will be opportunities for these officials to be corrupts and collect bribes.
- Incentive payments (which when officials are credit constrained will take the form of efficiency wages)→rents.
- With heterogeneity among bureaucrats, it is often optimal not to pay sufficient rents to prevent *all* corruption.
- As monitoring becomes more difficult, bureaucrats will receive higher wages, there will be more of them and gov't intervention will be rarer. Why more bureaucrats: more likely to be inspected → smaller fines required to ensure compliance → maximum bribe smaller.
- Optimal intervention non-monotonic in income:
  - In rich economies, productivity is higher so the opportunity cost of intervention (a productive member of society becomes a bureaucrat) is higher.
  - In poor economies, resources are limited, gov't collects revenues by taxing those who don't comply with intervention (in this model, using "good" entrepreneurial technology, that is one with positive externalities), there for as get poorer, need more people to not comply to support budget [this all seems pretty odd. Is it just an artifact of the model, albeit one with intuitive implications? See p. 203 or p. 207]
- Should see "optimal" corruption when market failure is important and the fraction of "dishonest" (those who are harder to catch) bureaucrats is low. When the fraction of corrupt bureaucrats is high, as we suspect is the case in most LDCs, it's harder to rationalize optimal corruption. Thus Acemoglu and Verdier suggest that their model may have limited applicability for LDCs but describe pretty well corruption in the OECD.
- Misallocation of talent: there are rents to being a bureaucrat so every one wants to be one [how could we extend this to encompass reality?]. Suppose there are heterogeneous costs (or benefits, or net costs) to being an entrepreneur. Would like those with lowest cost to be entrepreneurs, but there's no way to get truthful revelation (everyone wants to be a bureaucrat) so bureaucrats selected randomly and talent is misallocated.

Questions:

- What's going on in Figure 1, p. 199 and the comparable figures later in the article?

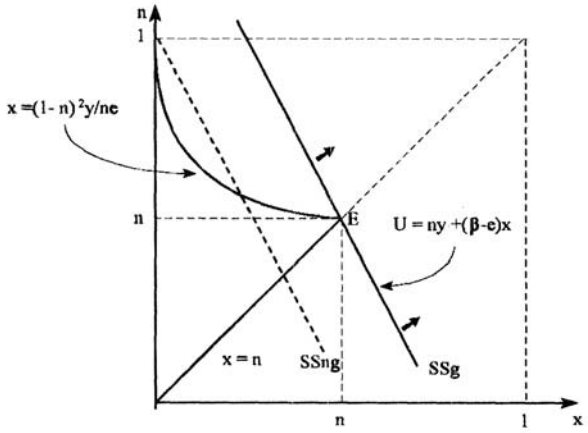


FIGURE 1. OPTIMAL GOVERNMENT INTERVENTION WITHOUT THE POTENTIAL OF CORRUPTION

Bardhan, Pranab. (1997). Corruption and Development: A Review of Issues. Journal of Economic Literature v35, n3 (September 1997): 1320-1346.

Summary by Greg Fischer, 4/11/05

Brief: Yuck! But it has some nice quotes, a slightly more detailed if less articulate summary of Leff & Huntington's works. Favorite quote is from Huntington: "In terms of economic growth, the only thing worse than a society with a rigid, over-centralized, dishonest bureaucracy is one with a rigid, over-centralized, honest bureaucracy."

Tidbits:

- Leff (1964): "If the government has erred in its decision [about a market intervention], then the course made possible by corruption may well be the better one."
- Huntington (1968): "In terms of economic growth, the only thing worse than a society with a rigid, over-centralized, dishonest bureaucracy is one with a rigid, over-centralized, honest bureaucracy."
- Even without pre-existing distortions, one may look upon corruption as part of a Coasean bargaining process in which the bureaucrat and the private agent may negotiate to efficiency (you know, only the lowest cost firms can afford the largest bribe). Corruption, in this world, has only distributional effect
- But the distortions of the system that make things like "speed money" potentially useful *are not exogenous*! They are often part of the "built-in corrupt practices of a patron-client political system.
- Sources of inefficiency:
  - Corruption being illegal, corruption contracts are not enforceable in court (Boycko, Shleifer, Vishny (1995)). Only reputation effects (and the possibility of busting a cap into someone) maintain contracts.
- Pays a lot of nice props to Shleifer & Vishny (1993): the relative merits of centralized vs. decentralized corruption, the need for secrecy making corruption more distortionary than taxes [what would happen if corruption didn't need to be secret?]
- Note: in most of the world, bribes are small relative to the rents available (counter examples include Mobutu in Zaire or Marcos in the Philippines).
- Despite nifty cross-country correlations like Mauro's, historians are fond of pointing out cases where corruption was associated with the emergence of an entrepreneurial class (the Gilded Age in 19th century America, the Age of Reason in England (late 17th c.), Mexico under the PRI (well, perhaps not an entrepreneurial class but better than the post-revolution bloodletting).
- Then there's Bardhan's own model. I didn't really understand what he was getting at.
- Tirole (1996) has a nice OLG model where corruption becomes entrenched by bad collective reputations that are hard to reverse.
- One way to deal with it: legalize it, e.g. Hong Kong off-track betting, customs in Singapore.
- Incentive payments: in China, magistrates paid *yang-lien-yin* ("money to nourish honesty"). Neat quote from Macaulay on British East India Co.: "Clive saw clearly that it was absurd to give men power and require them to live in penury."—efficiency wages.

La Porta, R., Lopez-de-Silanes, F., and Shleifer, A. (1999), "Corporate Ownership Around the World," Journal of Finance, 54(2), 471-517.

Summary by Greg Fischer, 4/11/05

Brief: Using data on the ownership structure of large corporations in 27 wealthy countries and identifying the ultimate controlling shareholders of these firms, La Porta, Lopez-de-Silanas, and Shleifer find that except in economies with *very good* shareholder protection, very few of these corporations are widely held. Firms are typically controlled by families or the State. Equity control by financial institutions is rare. Controlling shareholders typically have voting control disproportionate to their cash flow rights, primarily through pyramid structures and participation in management.

Detailed Summary:

- Only about 1/3 of the largest companies in the richest countries are widely held. This contrasts with modern notions of the corporation a la Berle & Means.
- Widely held firms are more common in places with good shareholder protection. How can you establish causality here?
- Observations lead nicely into the Mullinathan & Bertrand paper on Tunneling. Pyramids are a more common path to disproportionate control than super voting rights. Pyramids are a nifty way to screw minority shareholders in countries with poor shareholder rights.
- "Strong banks" can own majority stakes in industrial firms and invest more than 60% of their capital in such firms, by the LaPorta, et al defininition used here. It's potentially interesting that the UK is considered a "strong" bank country and the US a "weak" one, given their other financial similarities.
- No significant differences in ownership between the strong and weak bank countries.
- Family control may be conducive to corruption, as they claim, but I suppose we could also tell a story that family ownership also facilitates tighter control.
- Issuing ADRs imposes disclosure obligations, but doesn't really strengthen other minority rights?
- Why do existing owners continue (in general) to lobby against strengthening minority rights? More to gain from expropriation option than from increased value from minority stakes.

Banerjee and Iyer: "History, institutions and Economic Performance: the Legacy of Colonial land Tenure Systems in India" Mimeo 2004

Summary by Greg Fischer, 5/1/05 (incorporates material from Tom Wilkening)

Brief: Banerjee and Iyer use "relatively exogenous" rules on land tenure during the British occupancy of India to study how institutional overhang can affect economic performance. [Restricting themselves to regions that had borders of different land type to minimize regional differences], the authors find that districts that did not have landlords during British occupancy had higher yields, better technology adoption (HYV and Fertilizer), invested more in schools and health.

Detailed Summary:

- Land revenue or land tax was the major source of revenue for all governments of India including the British. Across India, three dominant land tax systems were adopted:
  - Landlord (– A single landlord was responsible for rent extraction from a region. They had power to levy taxes and keep a portion for themselves
  - Village – A village or subset of the village was responsible for rent extraction
  - Individual Level – Each villager is responsible for his own taxes. Taxes were adjusted regularly in response to bad shocks.
- What determined lab system:
  - Landlord systems required little monitoring and there was often already someone with such a social position. Costly to change a landlord system due to political cleavage
  - Non-Landlord systems provided greater incentives to farmers increasing taxable yields. Easy to make changes to system since no one had enough power to complain
  - Date of Conquest – Decisions were often based on political decisions at home or on specific orators. In particular 1820-1857 had many advocates for nonlandlord systems (this is used as an instrument for Landlord type – still may be endogenous but at least less so than geographic location).
- This all matters because since it was easier for the Colonial government to raise rents in non-landlord areas, it meant the state could capture some of the rents from productive investment. This created incentives for more irrigattion, railways, schools and other infrastructure.
- Empirics
  - 271 districts with landlord, health, education, and infrastructure
  - Restrict to neighboring regions (limits omitted geographic variable problems) and use time of British capture as an instrument for land tenure type. Find that non-landlord areas have better technology, schools, infrastructure, and yields despite fewer farmers per acre and less fertile soil.

Iyer, Lakshmi. "The Long-term Impact of Colonial Rule: Evidence from India" November 2002

Summary by Greg Fischer based on course ref. report & summary by another unknown author, 5/3/05

Brief: Iyer examines the long-term effects of British colonial rule on areas they directly controlled compared to those governed by native rulers within the British state. Simple OLS shows that British-controlled areas performed relatively well, but as selection into British rule is endogenous (the British took the most productive states for themselves, one would expect) she uses the "doctrine of lapse" to create an instrument for British control. IV estimates show that British areas exhibit little difference in agricultural productivity and investments, but they have significantly lower availability of public goods (schools, health centers, etc.). Iyer finds suggestive data that these regions are converging in the post-Independence period.

Interesting Notes

- Iyer is very clear that she is not estimating the effect of colonialism but rather the relative effect of direct colonial rule conditional on colonization.
- Main empirical issue is selection bias: what determines whether a state is directly ruled? Would have similar question if focused on colonization (that's why AJR instrument for institutional form).
- Doctrine of lapse: from 1848 to 1856, Lord Dalhouise, the British governor in India, refused to recognize the legal transfer of rule to adopted children. During this period, the British annexed states where the native ruler died without a natural heir. Iyer thus uses the death of an heirless ruler as an instrument for British rule.
- Concern: this forces her to drop all states annexed before 1848, which represents a large portion of the country.

Bertrand, M., Mehta, P. and Mullainathan, S (2002), "Ferreting Out Tunneling: An Application to Indian Business Groups," Quarterly Journal of Economics, 117(2), 121-148.

Summary by Greg Fischer, 4/11/05

Brief: Controlling owners of business groups are often accused of expropriating minority shareholders by "tunneling" resources from firms in which they have low cash flow rights to firms where they have higher rights. Bertrand and Mullainathan find a significant amount of tunneling among Indian business groups, much of it via the non-operating components of profit.

Detailed Summary:

- Ways to tunnel
  - Off market interest rate loans
  - Transfer price manipulation
  - Off-market asset sales
- Tunneling may have serious consequences. By reducing returns to outside investors, it can inhibit equity market growth and overall financial development.
- Would also reduce transparency, complicating inference by making signals from accounting data and the like noisier (although if we believed in efficient markets, investors could figure this out…)
- There's a bit of cross-sectional evidence on tunneling: groups where the controlling shareholder has higher cash flow rights have higher q-ratios and higher profitability, but this doesn't say much as it could result from preexisting differences (want larger rights in better companies) or other unobservables.
- Some tests for tunneling:
  - Group firms should under-respond to shocks to their own profits
  - This under-response should be greater in low-cash-flow-right firms
  - Group firms should be sensitive to shock affecting other firms in the group: since cash is tunneled, H will appear to respond to L's shock even if it's not directly affected.
  - Groups should be more sensitive to shocks affecting low-cash-flow-right firms in their group than to those affect high firms.
  - Low cf firms will be less sensitive to shocks affecting other firms in their group
- Data: uses the Prowess data from the Centre for Monitoring Indian Economy (CMIE), which includes annual report data for Indian companies from 1989-1999 [is this the full range of the data or just what Bertrand and Mullainathan?]
- Why not alternative explanation of risk sharing? Shouldn't see asymmetry of cash flow effect between high and low cf firms.
- Find that group membership dampens sensitivity to industry shocks (with fixed effects) by about 30%. This is still consistent with risk sharing.
- Use director equity and clear outside ownership as two proxies for cash flow rights. Find that each 1% increase in director equity increases the sensitivity to a 1 Rs industry shock by 0.03 Rs. Similar results when using outside ownerships as a negative measure. This isn't consistent with risk sharing.

Questions:

- Is the measurement error induced by not being able to see indirect cashflow rights (ownership through an intermediate vehicle) classical? The treat it as such (p. 129).
- Isn't it odd that the dissipation is equivalent in large and small groups (p. 133)?
- See question on pp. 145-146. How do get the conclusion that the market incorporates tunneling?

La Porta, R., Lopez-de-Silanes, F., and Shleifer, A., and Vishny, R. (2000), "Investor Protection and Corporate Governance," Journal of Financial Economics, 58 (1-2), 3-27.

Summary by Greg Fischer, 4/11/05

Brief: How well investors, both shareholders and creditors, are protected from expropriation explains much of the large differences that exist in ownership concentration across countries. Common law countries offer the strongest protection and have the most diverse ownership bases. Citing a handful of examples (e.g., Poland vs. Czech) the authors argue, intuitively if not rigorously, that financial markets need to include protection for outside investors; laissez-faire is not a good way to encourage them.

Detailed Summary:

- There exist large differences among countries in ownership concentration in publicly traded firms, in the breadth and depth of capital markets, in dividend policies, and in the access of firms to external finance. A common element to the explanations of these differences is how well investors, both shareholders and creditors, are protected by law from expropriation.
- Argue that legal systems ("a legal approach") are a more fruitful way to explain observed cross-sectional variation, corporate governance and reform than looking at (the conventional?) distinction between bank-centered and market-centered financial systems.
- Investor protection is important because expropriation of minority shareholders and creditors is extensive in many countries.
- Lots of says to expropriate. In some cases just steal. With a bit more creativity: transfer price below market, asset strip, investor dilution, diverting corporate opportunities, overpayment and cronyism in the selection of management are other ways.
- Pretty straight-forward idea: when investor rights such as voting rights of shareholders and reorganization/liquidation rights of creditors are extensive and well enforced, investors are willing to finance firms.
- At the extreme of no investor protection, the insiders can steal a firm's profits perfectly efficiently.
  - Without a strong reputation, no rational outsider would finance such a firm.
  - As protection improves, expropriation requires more distorted and wasteful diversion practices.
  - These mechanisms are still efficient enough for the insiders to choose to divert extensively.
  - When investor protection is very good, the most the insiders can do is overpay themselves, put relatives in management, and undertake some wasteful projects. After a point, it may be better just to pay dividends.
  - Firms then obtain outside finance on better terms.
  - By shaping the expropriation technology, the law also shapes the opportunities for external finance.
- They take a shot at the "Chicago view" of law & economics which holds that most financial regulation is unnecessary because financial contracts suffice.
- How well legal rules protect outside investors varies systematically across legal origins
  - Common law countries offer the strongest protection to both shareholders & creditors
  - French civil law countries have the weakest protections
  - German & Scandinavian law countries fall somewhere in between, generally better protecting creditors, particularly secured creditors.
- Unlike legal rules, which don't appear to depend on the level of economic development, quality of enforcement appears better in rich countries.
- [Should see larger control premia in countries with poorly protected investor rights] (p.13)
- Includes some nice examples about how tougher accounting standards and securities law helped grow the German IPO market and the Polish stock market (in contrast to that of Czech Republic which has been "plagued by massive expropriation of minority shareholders).
- Leaving financial markets alone is *not* a good way to encourage them. Financial markets need some protection of outside investors, by courts, government agencies or market participants themselves.

Johnson, S. and T. Mitton (2001) "Cronyism and Capital Controls: Evidence from Malaysia," mimeo, MIT.

Summary by Greg Fischer, 4/11/05 (currently draws on summary by Guy Michaels)

Brief: Johnson and Mitton argue that capital controls in Malaysia created a screen for cronyism, citing as evidence the fact that firms with political connections had worse stock returns in the early phase of the Asian financial crisis but did better than average once capital controls were imposed.

[Can anybody help generalize lessons from this? There seems to be so much other stuff going on that I can't really tell what to take from this.]

Some Background on Capital Controls:

- Until the 1970's, capital controls were a common policy instrument, but in line with IMF and World Bank policy, their use declined significantly in the 1980's and the early 1990's. They re-emerged in the late 1990's, particularly following the East Asian crisis. There are two main views:
  - Krugman (1998), Bhagwati (1998), Rodrik (2000) and Kaplan & Rodrik (2001) have argued that from a macroeconomic perspective capital controls may be useful in certain situations.
  - Rajan & Zingales (1998, 2001) argued that capital controls are part of a "relationship-based" (crony) capitalism, which allows politicians to pay supporting firms. This view implies that politically connected firms should:
    - Suffer more from macroeconomic shocks affecting the government's ability to provide them with privileges and subsidies.
    - Benefit more from capital controls, which allow them to get more subsidies.
- Plausibility check proposed by the authors: among the connected firms, those who had direct access to international capital markets should gain less.

Detailed Summary:

- Find that firms' stock price performance in Malaysia is broadly supportive of the view that capital controls create a screen for cronyism. Firms with political connections had worse stock returns in the early phase of the Asian financial crisis, but once capital controls were imposed, these firms did better on average.
- Only firms previously connected to Prime Minister Mahathir experienced a disproportionate increase in stock price in September 1998. [Why is this evidence of cronyism? Sure, it's suggestive, but what about endogeneity?]
- Discusses related paper by Fisman (2001), who estimates the value of political connections in Indonesia looking at how stock prices moved when former President Suharto's health was reported to change.
- Data: Malaysian firms with "at least a minimal amount of data" on Worldscope. Johnson & Milton consider the 424 firms covered representative of those traded in the Malaysian stock exchange from 1990-1999. Code as "politically connected" any firm which Gomez and Jomo (1997) identify as having officers or controlling shareholders with close relationships with key government officials – primarily Mahathir, Daim (close associate of Mahathir), and Anwar.
- Conclusion: The main beneficiaries of capital controls were well-connected firms with no previous access to international capital markets. [What can we generalize or learn from this paper?]

Questions:

- What does "the value of political connections" really mean?
- What the hell does the "there is no evidence" comment on p. 7 mean?
- Why would one look at book debt to equity rather than marker? Few investors would do this.
- Wouldn't a look at performance in the pre-period have been nice.

Parente, Stephen, and Edward Prescott. (1999) "Monopoly Rights: A Barrier to Riches," American Economic Review, 89(5), 1216-1233.

Very short summary by Greg Fischer, 5/3/05

Brief: Poor countries don't use better technologies and become rich because monopoly rights to the technology prevent them from doing so. In the Parente and Prescott model, eliminating monopoly rights would increase the GDP of poor countries by roughly a factor of 3 without an increase in inputs. This contrasts with the Schumpeterian view, in which monopoly rights are required to produce the profits necessary to encourage innovation.

Comments from Michael Kremer's Course Notes (Spring 2004):

- Monopoly creates huge welfare losses because they discourage entry and those in market keep using old technology.
- Several factors in the model "rig" the results, most notably, that there are monopoly rights in the old technology but not the new one.
- We also may wonder about how much of the difference in productivity this could possibly explain. As Banerjee points out in his class notes, the productivity gap between the US and India represents something on the order of 50 years of technological progress. Why can't India just use technology that's a mere 20 years out of date? Leading companies in many LDCs are at the frontier.
- [Anything else to add?]

Miguel, Edward and Mary Kay Gugerty, "Ethnic Diversity, Social Sanctions, and Public Goods in Kenya", 2002

Summary by Greg Fischer, 4/11/05

Brief: Ethnic diversity in rural western Kenya is associated with lower expenditures on public goods including primary school funding, school facilities, and water well maintenance. Miguel and Gugerty explain this with a theoretical model under which social sanctions are necessary to support collective action and in which such sanctions are difficult to impose across diverse ethnic groups.

Detailed Summary:

- Examines ethnic diversity and local public goods in rural western Kenya (Miguel has some follow up papers that narrow the focus to school funding).
- The identification strategy relies on stable, historically-predetermined patterns of ethnic dispersion (else you'd be concerned about endogenous sorting into regions).
- Ethnic diversity is associated with lower primary school funding, worse school facilities, and poor water well maintenance. [could we look at this in India with Esther's public goods data?]
- A theoretical model [describe?] shows how the inability to impose social sanctions can lead to failures of collective action
- A nice summary of the related literature from a footnote:
  - Goldin & Katz (1997) find that public secondary schooling expanded slowly in ethnically diverse US school districts from 1910 to 1940.
  - Poterba (1997) finds that an increase in the share of ethnic minorities among the school-aged child population is associated with lower school spending per child.
  - Alesina, Baqir, and Easterly (1999) find that high levels of ethnic diversity are associated with lower levels of funding for schools and other local public goods in US municipalities.
  - Alesina and LaFerrara (2000) show that ethnically diverse regions in the US have lower levels of social capital as measured by participation in community groups

Kremer, Michael et al, Decentralization: A Cautionary Tale, 2002.

Summary by Greg Fischer, 4/11/05

Brief: Kremer discusses the school financing system in Kenya as an example where decentralization can create perverse incentives that lead to inefficient allocation of resources, in this case too many small schools, too many teacher inputs, and too high school fees.

Detailed Summary:

- Kenya's educational system combines substantial centralization (particularly in the funding for teachers' salaries) with elements of local control and school choice.
- This creates incentives for local communities to:
  - Build too many small schools
  - Spend too much on teacher relative to non-teacher inputs
  - Set school fees that exceed those preferred by median voter and prevent many children from attending school.
- Randomized evaluation of a [inputs?] program suggest that a budget-neutral reduction in the cost of attending school and increasing non-teacher inputs, financed by larger class sizes, would reduce drop out rates without reducing test scores.
- Claims that transfers into and out of program schools suggest that the population would prefer such a reallocation, but this seems to neglect heterogeneity. Kremer's textbook paper and the balsaki study showed that response to inputs can differ greatly across population. While the preference may be true on average, it's not clear you'd want to standardize the whole system.
- How the system works:
  - Local harambee (literally "let's pull together") fundraisers to cover initial capital costs.
  - School fees, set locally, cover most non-teacher recurring costs.
  - Teachers assigned and paid by central government. They receive quite a good salary ($2,000 per year) by local standards.
  - "Teacher compensation accounts for more than 90% of expenses" [p. 13, denominator unclear].
- Incentive to set fees too high: all low fees do is increase attendance, but schools often evaluated by average performance. Don't get additional central government resources for marginal students. More students also mean more work for headmaster and teacher. Parent committees are also aligned because only those parents with children currently in school are represented.
- Little incentive for headmaster to "make school better" because that just attracts more students, not resources.
- External financing (e.g., from NGOs) just exacerbates things: most is paid per-teacher or per-school, and assistance directed towards weaker schools decreases incentives to be a good headmaster.
- The effects of the randomized program evaluation feel a bit tacked on and are probably not crucial to the place of this paper in our course.

Alesina, Alberto, Reza Baqir, and William Easterly. "Public Goods and Ethnic Divisions," The Quarterly Journal of Economics. Vol. 114 (4). pp1243-84. November 1999.

Summary by Greg Fischer, 4/11/05

Brief: More ethnically diverse jurisdictions in the US have higher spending, higher deficits and higher debt per capita and yet spend less on public goods such as roads and education (even conditional on the things you'd like to condition on: income, crime, etc.). The higher spending is financed largely by higher transfers rather than local taxes. The pattern is broadly consistent with political economy theories in which heterogeneous and polarized societies value public goods less (different preferences or negative externalities on utility), patronage more, and will be collectively careless about fiscal discipline.

Other Literature:

- Easterly and Levine (1997) report strong negative cross country correlations between ethnic diversity and a whole range of public goods. Conclude that ethnic diversity has something to do with Africa's poor economic performance.
- Our own Jim Poterba (1998) finds that jurisdictions with more elderly people spend less on education (not so surprising), but also that this reduction is particularly large when elderly residents and the school age population are from different racial groups.
- Expenditure shares on most public goods (excluding police, which is related to crime, and hospitals, no explanation for why) fall with increased ethnic diversity. The balance appears in the residual (shares must add to 1), which includes interest payments but also hard to classify expenditures with Alesina, Baqir, and Easterly speculate could include "patronage" expenditures.
- The do a bunch of robustness checks, controlling for crime, population density, percent black, Democratic voting share, and state dummies. Lose significance, but their using up a lot of their data to include fixed effects.
- [This seems to suggest that there's still room to contribute to this question]

Questions:

- What would happen with finer delineation of races? Caribbean vs. African blacks. Mexicans vs. Central Americans. Are the enough people of Indian or Chinese heritage to make relevant the fact that their considered part of the same group here?

Credit

Ideas & Questions

- Why are interest rates so high in developing countries?
  - Show that realized defaults can't be the reason
  - Banerjee's fixed monitoring costs model. Proportional monitoring costs don't do it
- Social banking: is it a good idea?
  - Lots of empirical evidence showing positive correlations, but as yet, not clear causal link AND even after substantiating a causal link, we'd want to do a cost-benefit analysis
- Abhijit's three favorite facts
  - Gap between lending and borrowing rates
  - Substantial variation in rates across borrowers
  - MPK is high, perhaps even higher than already high rates

Model

- Banerjee's lending model
  - Why realized default isn't enough
  - Monitoring costs

Papers

- Karlan (2003) provides support for one of the key pillars of microfinance: the idea that "social capital" reduces screening & monitoring costs and improves enforcement thereby improving credit access for the poor.
- Burgess & Pande (2003) find that rural bank expansion significantly reduces rural poverty, this runs contrary to conventional wisdom saying that the benefits of such expansion would be captured by local elites.
- Banerjee & Munshi (2004) show that agents who receive capital are not always those with the highest marginal product; the Gounders who have established social networks and internal sources of finance, have better access to capital and invest more, but are significantly less productive than outsiders.
- Aleem (1990), in a careful study of informal lenders in Pakistan, provides evidence for high and variable interest, and large borrowing-lending spreads. Of particular note is his quantification of screening and monitoring costs, often cited as the reason for such high lending spreads.
- Banerjee & Duflo (1993) find increased borrowing and output when firms given access to new, low interest loan; since an unconstrained firms would simply replace existing borrowing, this result suggests that firms were capital constrained.
- Stiglitz & Weiss (1981) develop a model that in which rationing occurs as a result of the interest rate being asked to serve as a screening and incentive device and thus being incapable of clearing markets as well.
- Morduch (1999) identifies (1) Group Liability, (2) Dynamic Incentives, (3) Regular and Short Repayment Schedules, and (4) Collateral Substitutes (don't want to piss off your friends) as potential mechanisms for microfinance success. His key contribution is set forth a research agenda to better understand microfinance.
- Pitt & Khandaker (1998) look at the impact of group lending in Bangladesh and find that the positive effect of microfinance are substantially larger for women than for men. They seek identification by comparing those eligible for MF in villages with and without MF institutions, but we should be worried about how villages are selected to receive MFIs and the fuzziness of the qualification cut-off.
- Banejee & Newman (ReStud 1998) suggest that it's theoretically possible for rural financial institutions to retard the modernization process by discouraging efficient migration.

Karlan, Dean (2003) "Social Capital and Group Banking", *Princeton University mimeo*

Summary by Greg Fischer, 2/20/05

Brief: Using exogenous variations in social capital (as measured by geography and cultural similarity) generated by the formation of lending groups for FINCA-Peru, Karlan finds that more social capital results in higher loan repayments and more savings; high social capital seems to improve the groups ability to distinguish between defaults caused by bad behavior (moral hazard) and negative personal shocks.

Contribution: Karlan provides support for one of the key pillars of microfinance: the idea that "social capital" reduces screening & monitoring costs and improves enforcement thereby improving credit access for the poor. Consider this in the context of Banerjee's (2004) "Contracting Constraints" and Morduch's (1999) "Microfinance Promise".

Detailed Summary:

- Theoretical views of social capital and group lending. Note that group lending links the fate of borrowers (if one member can't repay, the others in the group must repay for her).
  - Positive
    - Social capital is a substitute for physical collateral. With more common acquaintances and greater interactions the value of this capital and hence the cost of defaulting increase. Members may repay loans merely to protect their reputation.
    - Group members typically have more information about others both *ex ante* (to assess credit worthiness) and *ex post* (to evaluate reasons for default and enforce remedies).
  - Negative
    - Insurance aspect may reduce repayment incentive (e.g., your family will cut you slack if you have a real negative shock, while a bank won't.). This could be socially optimal, however, even if it's not good for a profit maximizing lender. This is supported with evidence from Bangladesh (see Sharma & Zeller, 1997) and Thailand (see Ahlin & Townsend, 2000) showing that groups with higher family relationships have more defaults.
    - Default may have a domino effect (once you're liable for someone else's default, why not default yourself?) (see Besley & Coate (1995))
- The program evaluated: FINCA organizes "village bank" of 30 women who meet weekly at the FINCA office. Most members have a loan from FINCA and one from internal group savings. Must make weekly payments on external loan. Groups are formed among first 30 people to show up & meet certain criteria. Data from six months in 2000.
- *This is the key identifying assumption: for those not invited by another member, group assignment is random.* Karlan tests the random assignment and finds that it holds for those who sign up on their own (the "uninvited") but not for those who are invited by existing members (the "invited").
- Social capital is measured by (1) Geographic proximity (measures of avg. distance to other members and number of members within a certain distance) and (2) Cultural similarity (an 8-point almost-objective measure of indigenous vs. ladino.
- Empirical approach: regresses financial measures (loan defaults, savings, and attrition) at both the individual and group level on social capital (uses OLS, Tobit and Probit, as appropriate).
- Results
  - Default: Cultural similarity and geographic concentration (particularly # of members within 10 minutes) negatively predict default. Economic magnitude is large: from 25th to 75th percentile is 3.9% and 7.2% change in default probability.
  - Savings: Geographic concentration but not cultural similarity produces higher savings (recall for interpretation that savings is either lent out to other members or earns no interest).
  - Attrition: default is strongest predictor of attrition, but interaction of social capital with default is negative, suggesting that more closely linked members can better evaluate reasons for default.

- Policy Implications:
  - Within sample, there's evidence that peer lending more effective when groups live closer together and are more culturally alike.
  - Karlan cautions that this does *not* suggest that homogeneity is good as this doesn't exist in data.
- Criticisms
  - [I could use some help here, I thought this was a very good & thorough paper]

Interesting Observations:

- Unlike Banerjee, Karlan starts with the premise that default rates are high. This is supported in his data with some : almost 20% of borrowers defaulting on their first loan.

Related Literature: Besides the other articles in the credit section, this paper relates closely to:

- Banerjee, Besley, Guinnane (1994). "Thy Neighbors Keeper: The Design of a Credit Cooperative with Theory and a Test." *QJE*. Builds a model of credit cooperatives designed to provide monitoring incentives and then tests it using data from German credit cooperatives in the 19th and early 20th century. It follows the *peer monitoring* view espoused by Stiglitz (1990) "Peer Monitoring in Credit Markets"
- Besley & Coate (1995). "Group Lending, Repayment Incentives and Social Collateral." *JDevE*. Appears to be the first to lay out the positive and negative aspects the "group repayment game": (P) successful group members may have incentive to repay loans made to unsuccessful members, (N) the whole group may default even if some members could have repaid, (P) group lending "harnesses social capital."
- Ghatak (2000). "Screening by the Company You Keep: Joint Liability Lending and the Peer Selection Effect." *The Economic Journal*. Joint liability lending contracts will induce endogenous peer selection in group formation. Thus joint liability can serve as a welfare improving screening device.

Burgess, Robin And Rohini Pande (2003), "Do Rural Banks Matter? Evidence from the Indian Social Banking Experiment," mimeo, Yale.

Summary by Jim Berry; Summary summarized by Greg Fischer, 5/3/05

Brief: Does an increase in the reach of banks into rural areas reduce poverty? Using a policy that required banks wanting to open branches in already serviced locations to open branches in unbanked locations as an instrument for endogenously determined bank placement, Burgess and Pande find that rural bank expansion significantly reduced rural poverty.

Empirical Strategy

- Identification:
  - Commercial banks prefer to open branches in richer areas while state-led bank branch expansions tend to favor poorer areas. Thus it's hard to identify causal impact of branch expansion.
  - based on national policy in India that forced commercial banks to open branches in relatively underdeveloped ("underbanked") rural areas from 1977-1990 (if a bank wanted to open a branch in a "banked" location, it had to open four in "unbanked" locations).
- From 1977-1990, rural branch expansion was relatively higher in less developed states. The reverse was true before 1977 and after 1990.
- This suggests that the branch licensing policy is causing these trends
- ID assumes that other poverty related programs in the states did not exhibit concurrent trend shifts and use this change as an instrument for branch expansion

Main Implication of Paper

- Commercial bank expansion into rural areas can significantly improve poverty. This runs counter to the argument that benefits of rural bank expansion will be captured by local elites and microfinance is therefore the way to go
- Open question: do these results generalize to areas with different levels of poverty, financial systems, etc.? Do they generalize outside of India.

Banerjee, Abhijit and Kaivan Munshi (2004), "How Efficiently is Capital Allocated? Evidence from the Knitted Garment Industry in Tirupur," Review of Economic Studies, Vol. 71(1), 19-42.

Summary by Guy Michaels, Summary summarized by Greg Fischer, 5/3/05

Brief: Banerjee and Munshi examine misallocation of capital by looking at differences in investment and productivity among T-shirt manufacturers in Tirupur (southern India). Find that Gounders (a group with access to cheaper capital) start with more capital than outsiders and maintain difference at all stages, but outsiders grow production much more quickly, eventually overtaking the Grounders. This contrasts with the neoclassical world, in which only marginal product matters and there's no place for community links.

Detailed Summary:

- One local group, the Grounders, accumulated significant wealth through agriculture.
  - Social ties make it easier for Gounders to access capital.
- Within communities, capital and ability are not substitutes, but they appear to be across groups.
- Background
  - Tirupur produces about 70% of India's exports of knitted garments
  - Until late 1980s, industry was dominated by the Grounders, a wealth, close-knit community
  - Since then, the industry has grown rapidly (about 50%/year) and seen influx of immigrants
- Data: 1995 survey (with retrospective look at 4 years) of 600 direct exporters, indirect exporters, and job workers
- Empirical Strategies
  - Version 1
    - OLS on pooled cross section regresses output, capital stock and capital-output ratio on firm dummies, cohort effects and experience in direct export
    - No time dummies since can't identify time, cohort, and firm specific FE simultaneously
  - Version 2: Non-parametrically estimate each LHS variable on experience and cohort effects, stratifying sample into Grounders and Outsiders.
- Results
  - Grounders begin with more capital but accumulate less over time
  - After 8 years in business, Gounders and Outsiders have comparable amount of capital
  - Grounders have higher capital-export and capital-output ratios at each level of experience
  - Grounders start with more output, but Outsiders overtake them at about year 5
  - Results are robust to looking at different productivity groups
- Policy implication: this isn't an argument against group banking (although Banerjee & Newman (1998) show that group banking *could* reduce output). Banerjee and Munshi argue that these results highlight the importance of "raising returns paid by the banking sector, and the financial sector more generally, which would require [improving] public banking sector, and [protecting interests on lenders and shareholders].
- Note: this makes sense, but seems a big leap from what the paper actually covers. We don't know how outsiders would have used more capital.

Aleem, Irfan, "Imperfect Information, Screening and the Costs of Informal lending: A Study of a Rural Credit Market in Pakistan", World Bank Economic Review, 3, 329-349, 1990

Summary by Jim Berry, Summary summarized by Greg Fischer, 5/3/05

Brief: Aleem surveys 14 informal lenders in Pakistan and produces one of Abhijit's favorite sources of evidence about lending and borrowing inefficiency, particularly for its detailed description and quantification of screening and monitoring costs (often cited as the cause for such high lending spreads).

Detailed Summary:

- Abhijit loves this article, presumably because many of Aleem's observations reflect the market characteristics described in Banerjee's "Contracting Constraints" (2004) article.
- Major contribution of the paper is its detailed description and quantification of screening and monitoring costs, two of the likely and oft cited culprits for the large borrowing-lending spreads.
- Screening
  - Full screening process lasts an average of 1 year
  - The surveyed lenders reject 50% of new applicants
  - The expected cost of screening and monitoring for the marginal loan is about 6.5% of the loan's value (average loan duration is 6 months). [How do they define the "marginal loan?]
- Average administration costs [can this be right] are about 40Rs. (including overhead) per 100Rs lent.
- Marginal cost of capital: 38%. Average cost: 27%. [is this to lenders or borrowers?]
- Overall marginal cost of lending is about 50% of loan value. Average cost is over 70%.
- Key insight: if Average Cost > Marginal Cost, a monopolistic competition model makes sense
- Abhijit states that the nature of monitoring requires this type of market structure. Jim, in his summary, suggests that the high marginal cost of capital and high overhead costs may be evidence of too many lenders. [I agree as it relates to overhead, but am less sure how this fits into the cost of cap]
- Why might we have monopolistic competition rather than perfect competition?
  - Information problems.
  - Lower interest rates and other loan contract terms might not be public knowledge.
  - It's also difficult to switch once you have a lender (have to go through vetting process again) so there may be ex post rents.
- Aleem argues for cutting subsidies to institutional lenders in order to reduce borrowing and hence the number of lenders, but if we're concerned about credit constraints it's not obvious to me that this would improve welfare.

Banerjee, Abhijit and Esther Duflo (2004), "Do Firms Want to Borrow More? Testing Credit Constraints Using a Directed Lending Program," mimeo, MIT

Summary by Greg Fischer, 2/20/05

Brief: Banerjee and Duflo test for firm credit constraints by looking at how they respond to a direct lending program, which creates a plausibly exogenous source of variation in access to capital. They look to see if newly available low interest-rate credit is used as a substitute for market credit (which they argue it would be if firms were not credit constrained) or used to expand operations (suggesting constraints). They find support for credit constraints.

The Crux

- There are two ways in ways in which firms could have less credit than they'd like
  - Credit rationing: limit in the amount of credit at subsidized rates (who wouldn't want cheaper money)?
  - Credit constraint: limit to the amount of credit available at market rate
- A rationed firm will use new availability of subsidized loans as a substitute for market rate debt. Only if there is full substitution will total debt increase [what if firms think about average rates, not just marginal. And what is the margin when you already have loan for which there may be transaction costs to repay?]
- A constrained firm will increase debt in all cases

The Program Evaluated: Changes in Lending Rules Imposed on Banks by Indian Government

- Prior to 1998, banks were required to lend at least 40% of their net loans to the "priority sector," firms with total investment in plant and machinery below Rs 6.5 million.
- From 1998 to 2000, the limit was increased to Rs 30 mm.
- In January 2000, the upper limit reduced to Rs 10 mm.

Estimation & Results

- Looks at diffs-in-diffs of first differences. Each of the estimation equations looks something like

  $$Y_{it} - Y_{it-1} = \alpha \cdot \text{Big} + \beta \cdot \text{Post} + \gamma \cdot \text{Big*} \text{ Post} + \varepsilon_{it}$$

  where Y is sales or total credit.
- A model of credit constraints would predict $\gamma > 0$ when firms Rs 6.5mm to Rs 30mm get access to the new lending. Similarly γ should be negative when they lose the subsidy.
- They find results as the model would predict and conclude credit constraints are present

Interesting Observation

- Bank officers decide each year whether to increase each firm's credit limit. There is a formal rule related to credit as a function of firm revenues. A very small percentage of firms gets an increase in any year, even though evidence of rationing is pervasive and revenues are increasing. This suggests bureaucracy is another inefficiency in the credit market.

Townsend, Robert (1993). "Risk and Insurance in Village India," Econometrica Vol 62, pp. 539-591.

Summary by Greg Fischer, 5/3/05

Brief: Townsend (1993) tests the full insurance model using data from three poor, high-risk villages in the semi-arid tropics of southern India. Although the model is rejected statistically, it provides a surprisingly good benchmark: household consumption co-moves with average village consumption and is little affected by cotemporaneous shocks to own income, sickness, unemployment, etc. after controlling for village consumption. In one of the three villages, Townsend finds evidence that the landless are less well insured than others.

Detailed Summary:

- There are a number of ways villagers can bear risk (diversification of landholdings, storage of grain, purchase of bullocks or land, borrowing and lending, and gifts from family networks, for example). Studying just any one in isolation misses the smoothing possibilities of another, so this paper adopts a GE framework and looks at individual and aggregate consumption behavior, thus jointly evaluating all institutions.
- Theory: if preferences are preferences are time separable and exhibit weak risk aversion, all individuals have the same discount rate, and information is common, then optimal risk sharing implies that individual consumption is determined by aggregate consumption.
  - Once controlling for aggregate consumption and individual fixed effects, consumption should not depend on individual income.
- Heterogeneous risk aversion across individuals would imply different coefficients on aggregate consumption for each individual, but would not alter the independence from individual income.
- If consumption and leisure are not separable (which seems reasonable), this result still holds if we control for aggregate leisure.
  - If consumption and leisure are substitutes and we do not include leisure in our regressions, then an indirect relationship between consumption and individual will appear.
- Data: ICRISAT annual data from 1975-1984 for 40 households in each of the three villages.
  - Within these villages, there is relatively low correlation of crops, and individual incomes don't exhibit high covariance.
- Results: Townsend can't reject that coefficient on village income is 1, and while he can statistically reject that the coefficient on own-income is zero, the effect is quite small. This suggests that at the village level, something like perfect risk sharing is achieved.
- Cannot address the question of what mechanism(s) make this possible, but Townsend notes that gifts and loans are quite large in relation to income levels.

Udry, Christopher (1994). "Risk and Insurance in a Rural Credit Market: An Empirical Investigation of Northern Nigeria," Review of Economic Studies Vol. 61 No. 3, pp. 495-526.

Summary by Raymond Guiteras, Summary summarized by Greg Fischer, 5/3/05

Brief: Udry looks at credit contracts as a form of insurance and risk smoothing; he finds that households do pool risk via credit contracts: borrowers receiving a negative shock repay less, but this could be explained by default or the like. The key corroborating result is that lenders receiving negative shocks are repaid more. However, full risk-pooling is not achieved.

Detailed Summary:

- Data
  - Survey of 200 households in 4 villages in northern Nigeria (1988-1989)
  - Data "designed to yield a complete picture of each household's asset and debt position", i.e. lending, borrowing, repayments made and received, wealth (land and other), demographics (age, length of time in village, education, Muslim, etc.) and self-reported shocks (wind damage, flooding, etc.)
  - Borrowing and lending are common: 75% of households made loans and 65% borrowed. 50% do both over the period.
  - Key limitation: lack income and consumption data, so can't directly test the thing people are trying to smooth.
- Theory: Udry's "competitive" model is the basic consumption smoothing model (the one we saw from Ivan in 14.453) with the addition of transaction costs for engaging in a loan contract (see p. 512 and equation 10).
- Results
  - Evidence of risk pooling: own shocks increase net payments to household
  - Evidence against *full* risk pooling: a shock to partner decreases payments to household (if fully insured then shouldn't have to change payment [but what if change in payment *is* insurance. Since people are insurance consumption not net asset repayments, I don't know that the empirical result should lead to this conclusion.]
- Udry proceeds to develop a bilateral model of loan contracting incorporating information flows and default decision (note: defaults are non-negligible, about 10%). With this model, the central result of the paper still stands: borrowers and lenders are engaged in risk pooling through state contingent loan repayments.
  - A number of weaknesses to the bilateral approach (identified by Udry in his Conclusion)
    - Lack of full information on partners in sample, difficulty of determining default, and the assumptions necessary to identify default decisions
    - Focusing on loans loses general equilibrium effects
    - Treats community norms as exogenous

Stiglitz, Joseph and A. Weiss (1981). "Credit Rationing in Markets with Incomplete Information," American Economic Review Vol 71, pp. 393-410.

Summary by Raymond Guiteras, Summary summarized by Greg Fischer, 5/3/05

Brief: Credit rationing exists when, among a group of observationally identical, would-be borrowers some receive credit and some don't. Similar to Stiglitz's efficiency wage model, the interest rate cannot serve as an instrument for multiple objectives: clearing the market, screening the borrower pool (adverse selection), and giving the incentive to pursue projects of appropriate risk (moral hazard).

Borrowers losses are bounded below by limited liability and lenders gains are bounded above by interest rates.

What is credit rationing?

- Credit rationing exists when, among a group of observationally identical, would-be borrowers some receive credit and some don't.
- In addition, those who don't receive credit are not indifferent about their exclusion; they would strictly prefer to borrow at the prevailing interest rate
- Excluded borrowers cannot obtain credit *even if they agree to pay more* than the prevailing interest rate or offer more collateral
- This occurs as a *market equilibrium*. It is not a temporary disequilibrium, nor is it the result of government price or quantity controls.

Why does credit rationing occur?

- Similar to the Stiglitz's efficiency wage model, the interest rate must serve for more than just clearing the market.
  - Must act as a screening device to reduce the average risk of the borrower pool (dealing with adverse selection)
  - Must give the incentive to pursue less risky projects (moral hazard)

If you only remember one thing about the model

- Returns are variable, but borrowers' losses are bounded *below* by their collateral
  - This makes their profit a *convex* function of the project's return
  - This means that expected return is increasing in the riskiness of the project
- Lenders' gains, on the other hand, are bounded above by the amount of the loan plus interest
  - Lender gains are concave in the project's return1
  - Expected return is therefore decreasing in the riskiness of the project

Morduch, Jonathan (1999), "The Microfinance Promise," Journal of Economic Literature

Summary by Greg Fischer, 2/20/05

Brief: The mechanisms used by microfinance institutions (MFIs) to "effectively" lend to the poor extend beyond group lending: (1) *Group Lending* (both peer selection and peer monitoring); (2) *Dynamic Incentives*; (3) *Regular Repayment Schedules*; and (4) *Collateral Substitutes* (see below for details). Since few MFIs are financially sustainable and those that are generally do not target the very poor, evaluation of microfinance requires consideration of costs and benefits and social impact. It appears the MFIs have in many cases successfully targeted poor households, empowered women, and generated repayment rates much better than earlier concessional lending programs.

Contribution: The key contribution is a reasonably clear layout of the principles of microfinance, a critique of how MFIs are evaluated, and research call to action.

Detailed Summary:

- This is a JEL style overview on microfinance in which Morduch (1) describes some specific microfinance enterprises; (2) lays out the key mechanisms used my microfinance institutions to lend to low-income individuals; (3) evaluates the industry based on sustainability and cost/benefit measures, and social impact; and finally (4) discusses some economic evaluations and a research agenda. This summary is a bit long to save you from having to read the whole thing.
- Some background & notes on microfinance in general
  - As of 1999, 8-10 million households (perhaps 45 million people) were served by MFIs. Growing rapidly.
  - Group-lending contracts effectively make a borrower's [group members] co-signers, mitigating problems caused by borrower-lender information asymmetries and reducing monitoring costs.
  - Poverty alleviation through subsidized credit was a centerpiece of many countries' development strategies from the 1950s to the 1980s, but almost all programs ended in disaster (default rates of >50% were the key problem).
- Notes on some of the banks (in case you want to sound informed)
  - Grameen Bank (Bangladesh): The granddaddy. Formed by Mohammed Yunus in 1974. Money from own pocked while teaching university economics. Voluntary, 5-member groups. Over 2 million borrowers. Over 95% women. Claim repayment rates of 97+%, but this is questionable. Rates about 20%
  - BancoSol (Bolivia). Urban lending. Very much for profit (no subsidies and seem to be doing well). High rates (about 50%) and more well-off borrowers. Avg. loans of almost $1000. No "social service" aspect: training
  - Rakyat Indonesia. Not-subsidized. Making money. Requires collateral so excludes the very poor.
- Mechanisms
  - **Peer Selection**: Part of the group lending advantage. Idea: personal knowledge of other borrowers mitigates adverse selection problem. Morduch focuses on similar types, building a toy model to show how the market could unravel with two types having identical expected, unlevered returns but a different probability of success (low risk projects won't be financed at a common rate because, in this model, their expected after-repayment return is too low).
  - **Peer Monitoring**. With joint liability, group members mitigate moral hazard.
  - **Dynamic Incentives**. Start small and then increase loan size with successful repayment. Problems: (1) competition with absence of credit reporting mechanisms weakens incentive, (2) with stand-alone MFIs, successful borrowers outgrow the incentive.
  - **Regular Repayment Schedules**. Repayment starts immediately in most cases. Says that this means that borrowers must have another source of income [but he's wrong in his assertion that this is unique to microfinance.]

  - **Collateral Substitutes**. Discusses alternate collateral schemes such as an emergency fund for lending groups or group "taxes". Notes that if threat of collection is believable, there should be few instances when collateral is actually collected. [contrast with Karlan's notion of social capital as a substitute for traditional collateral]
- Moduch says that theory has run beyond the evidence on these mechanisms. Most evaluation has been quite program-specific and is not generalizable.
- Financial sustainability
  - Through 1999, conversations about MFIs had focused on the fact that MFIs helped the poor without the need for public assistance.
  - The truth: they're not financially sustainable
    - He estimates (very informally) that 1% of MFIs are currently financially sustainable and about 5% could get there.
    - Most programs, however, are *operationally sustainable*, i.e., they cover their operating but not their capital costs.
    - Morduch's talk about what interest rates would be required to achieve sustainability (e.g., "Grameen would have had to increase nominal rates … from 20% to 50%") completely neglects moral hazard issues.
    - Those that are financially sustainable, "do so at the cost of the objectives": the target the well off among the poor and, increasingly, the non-poor.
  - While most need subsidies, they don't want them for fear of (1) losing independence/being beholden to donors' agendas, (2) scope being limited by small donor budgets [although this seems bogus vis-à-vis scope being limited by hemorrhaging money], (3) not wanting to lose the discipline imposed by profit maximization, and (4) negative past experiences with subsidized lending.
- There are very poor incentives for MFIs themselves to evaluate. The anecdotal stories that the can tell have been powerful rhetorical tools.
- Morduch argues that considered as a social program, microfinance may be an efficient use of subsidies. Low cost-benefit as measured by increased consumption to lending. Khandker finds 0.91 in Grameen's study. [Though these measures make little sense. Why look at immediate consumption change? Need dynamics, etc.]
- Problems with measuring benefits
  - There are very poor incentives for MFIs themselves to evaluate. The anecdotal stories that the can tell have been powerful rhetorical tools.
  - Marginal benefits seem to be high, but with large fixed costs, average benefit is likely low. Morduch "estimates" Grameen's average return to be 0.
  - How do we value social effects, such as "empowering women"?
  - Selections issues. Those who get loans are, perhaps, "special" and could have done better than others even without the loan. On the other hand, programs target the poor so could go other way.
- Programs that have achieve financial sustainability make a larger impact on changes in their borrower's incomes [but there's a lot of endogeneity here. Targeting wealthier borrowers, etc.]

Pitt, Mark and Shahidur Khandker (1998) "The Impact of Group-Based Credit Programs on Households in Bangladesh: Does the Gender of Participants Matter" Journal of Political Economy

Draws on Notes from Tom Wilkening and Guy Michaels, 2/21/05 (additional notes by GF)

Brief: Looking at the impact of microcredit participation in Bangladesh, by gender, on labor supply, schooling, household expenditure, and assets, Pitt and Khandker find positive effects that are substantially larger for women than for men.

The big concern with their study is the fact that program placement and take-up are not random.

Contribution: Evaluates microcredit with an attempt to control for endogeneity

Estimation

- Would like to estimate the effect of credit on a number of welfare measures: labor supply, schooling, household expenditure, and assets.
- Endogeneity problems
  - Program placement is not random. MFIs target poor villages and are probably invited to villages with both more liberal attitudes towards women and "better" other unobservables
  - Unmeasured village attributes may affect both credit uptake and outcome variables [P&K say that this is an issue even if programs are randomly placed, but if we consider the treatment being having a program, wouldn't that solve this?]
  - Unmeasured hh characteristics could have the same issue [and the same solution?]
- Claims that the interest rate would be ideal instrument, but it doesn't vary across the sample and may reflect unmeasured hh characteristics.
- Data: Sample from 87 villages in Bangladesh. Three in each of 29 randomly selected regions of rural Bangladesh. Villages fall into one of four categories of microcredit availability: microcredit for both sexes, men or women only, or none. In all, about 1800 household were interviewed.
- Equation of interest: regress outcomes (labor supply, children's schooling, etc.) on the amount borrowed from credit programs and household and village characteristics, noting that amount borrowed is endogenous:
  - Non-random program placement: programs placed in areas that were poorer and more prone to flood. Programs also placed upon request, which could bias estimates if requesting villages had more liberal views towards women.
  - Unobserved household characteristics: health, ability, and preference for equality, for example. Households that value women more are likely to send girl children to school and to allow women to borrow from credit programs.
  - Unobserved/unmeasured village characteristics: for example, distance to a large city could affect both demand for small scale businesses and attitudes.
- Identification:
  - Lacking good instruments, Pitt and Khandker adopt a quasi-experimental design dividing the sample up into three groups: (1) those who qualify for micro-credit in towns with microcredit, (2) those who do not quality for microcredit in towns with microcredit, and (3) all people in towns without microcredit.
  - Assuming exogenous land holdings [does this make sense], identification comes from interaction of village having program with household owning less than ½ acre of land, the typical cutoff for entering the programs.
  - Use weighted exogenous sampling LIML [worth taking a look at as a method to deal with choice-based sampling]
  - In sum, the identification is not totally believable
- Results
  - Elasticity of expenditures with respect to program was 0.18 for women and 0.11 for men.

- When women borrow:
  - Total per capita expenditures increase
  - Women's non-land assets increase
  - The labor supply of women increases, while men's labor supply declines
  - Boy children's school enrollment increases. Female enrollment is positive in the Grameen villages, but negative to neutral with the other lenders. Pitt and Khandaker suggest that this is due to mother-daughter labor substitution for household work.

Observations

- Group lending programs may be particularly attractive to women because it enables home production, which is less frowned upon in strict Islamic societies that out-of-home work and can allow for child care ("joint production of household goods")
- Need the unitary household model not to hold for this to matter for women's welfare

Questions

- How do village fixed effects control for the endogeneity of placement without losing the variation that the regression is trying to measure?
- Is looking at current expenditures the right measure of program effectiveness?

Education

The Readings

- Angrist and Lavy (1999) find that there's a correlation between smaller class sizes and student achievement using the exogenous, fuzzy regression discontinuity provided by implementation of Maimonides' rule in Israeli schools. Pritchett says that this effect is only noticeable for large class sizes, but as this is the norm for most developing countries (Kenya's odd system notwithstanding), this is probably relevant. But to evaluate reducing class sizes as an intervention, we really need to think about costs and benefits.
- Esther has two very nice papers on the effects of the large INPRES school construction program in Indonesia. They are worth looking at for the diff-in-diffs framework employed (Esther is fond of asking questions about the identification assumptions).
  - Exploiting differences in treatment due to individual birthdays and regional variation in the intensity of the program, that the school construction program did increase years of education and wages: 1 primary school per 1000 kids leads to about 0.15 more years of education and about a 2% increase in wages.
  - But general equilibrium effects matter! In her "Medium Run" paper (2004) she shows that the program actually *reduced* wages of the older cohorts. Why didn't capital flow into these areas to take advantage of the increased supply of skilled labor? Ah, credit…
- Banerjee, Cole, Duflo and Linden (2003) look at the use of remedial education (the "balsakhi" program) and computer assisted learning and find that both had significant positive effects. Neither affected attendance and, though the CAL program had a greater effect in total, the cost-benefit clearly favors the balsakhi. The results [how did they actually do this] suggest that the benefit of the balsakhi was direct and not from removing disruptive, underperforming kids from the main class.
- Pritchett's contribution to the Copenhagen Consensus is a nice summary of the issues, even if his main point about accountability reform is chatty and without empirical support. He largely skips over the benefits to raising returns, a point on which Schultz focuses, suggesting that even in poor countries (he studies SSA) the private return to education is convex. Schultz is also responsible for much of the work on the Progresa program, which would have been nice to read.
- Looking at the theory behind this all is Banerjee's (2004) "Educational Policy and the Economics of the Family," in which he takes apart the standard Barro-Becker model, showing that with symbolic consumption, we lose pretty much all the unique steady state results.
- Kremer's (2003) discussion reviews the results from a number of randomized studies of education.
  - Deworming is a particularly effective intervention.
- Psacharopoulos (1994) provides a periodic survey of returns to education estimates across countries. Though not particularly rigorous are that (1) returns are higher in LDCs and (2) returns are higher for women than for men.
- The Probe report of 234 villages in N. India details the poor state of educational performance, but suggests that parents are generally motivated, child labor is not a major constraint, direct costs are small but meaningful, school availability is only a meaningful constraint at the secondary level and beyond, and school quality is dismal.

Angrist, Joshua and Victor Lavy (1999), "Using Maimonides' Rule to Estimate the Effect of Class Size on Scholastic Achievement," *Quarterly Journal of Economics*, Vol 114 (2), pp. 533-575.

Summary by Greg Fischer, 3/7/05

Brief: Prima facia evidence suggests that there is little correlation between school inputs and student outcomes. Using a (fuzzy) regression discontinuity design based on Maimonides' Rule for class sizes in Israel, Angrist and Lavy show that when controlling for pupil backgrounds *smaller class sizes improve student achievement*.

Contribution: (1) Exploits an interesting source of exogenous variation in class sizes (Maimonides' Rule that there must be no more than 40 children in a class); (2) supports the findings of the Tennessee STAR experiment that class sizes matter; and (3) has a nice description of the econometrics of IV with fuzzy regression discontinuity.

The Idea: Assess the effect of smaller class sizes on student test performance using Maimonides' Rule of 40 as an instrument.

The Data

- Class-level test data for Israeli fourth and fifth graders in 1991 and student-level data (linked to classes) for 1992.
- Use a percent disadvantaged (PD) index to control for demographics. This variable is correleated with both enrollment and test scores.
- Focus only on Jewish schools as data not available for the period in question for Arab schools (Israeli schools are segregated).

Analysis

- M. rule states that classes can't have more than 40 students. Thus class size is a discontinuous function of total school enrollment by grade level. Use the function to estimate predicted classes sizes and use this prediction as an instrument to estimate the effect of smaller classes on performance.
- Why do you need an instrument? The main reason is that larger schools tend to be in better off areas and, because of the way the rule works, have a larger average class size. Straight OLS regressions of performance on class size show a positive correlation.
- Conducts analysis both for full sample and for ±5 of the cutoff points (40, 80, etc.), which represents ~25% of sample. Results comparable.
- Since grade size (the running variable that causes the discontinuity) may affect outcomes through channels other than class size, need to control for this adequately in the regressions. In practice, this seems to mean a linear function and a control for PD.
- There's a nice discussion of IV and regression discontinuity on p. 547 and on identifying treatment groups on pp. 563-567.

Results

- Good first stage: Maimonides' rule predictions of class size are close to actual.
- OLS exhibits a positive correlation between class size and test scores (but endogeneity is an issue).
- IV results suggest that there's a benefit to smaller class sizes. For example, a reduction in *predicted* class size of 10 students is associated with a 2.2% rise in reading scores for fifth graders. In general, the effect of 8 fewer students (comparable to the Tennessee STAR experiment) is associated with a 0.29σ increase in the class mean (at the low end of the STAR range).
- Note that Israeli class sizes are large relative to OECD (mean of 32), but perhaps low for LDCs.
- The paper hints at, but doesn't detail, the fact that this is NOT a particularly cost effective intervention.

Duflo, Esther (2001), "Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment" American Economic Review, Vol. 91 (4), pp 795-813.

Summary by Tom Wilkening (and Guy Michaels), 3/7/05

Brief: Duflo (2001) studies the short run effect that the INPRES large scale school construction has on schooling and wage decisions in Indonesia. Exploiting differences in treatment of individual due to birth date and differing regional intensity, Duflo finds that each primary school constructed per 1000 children led to increases of .12 to .19 years of education and 1.5 to 2.7 percent increases in wages. She uses these estimates to compute a return to education between 6.8 and 10.8.

Detailed Summary

- Data
  - The 1995 intercensal survey of Indonesia (SUPAS) covering about 200,000 households.
  - Linked to data number of schools in each individual's region of birth.
  - Includes 152,989 individuals men born between 1950-1972.
  - Schools targeted to regions with low enrollment (analysis will exploit this regional variation)
- Two distinct sources of variation
  - Since primary school construction began in 1973, men in the beginning of the sample are not affected by school construction while those in the later part of the sample will have higher exposure.
  - School construction was based on total number of projected children and the level of enrollment in primary schools – different regions will have different levels of impact.
- Estimation Strategy
  - Dif-in-Dif of length of schooling and wages where children born later are compared against those born in the middle of the sample (those w/o treatment) in high and low construction areas. Also compare those born in middle/later part of the sample to check the counterfactual of the dif-in-dif.
  - Regression: $S_{ijk} = c_1 + a_{1j} + b_{1k} + \sum (P_j d_{iy})\gamma_{iy} + X_{ijk}\beta + \varepsilon_{ijk}$ where d is a dummy for year of birth and P is the intensity of construction in a region. Same basic idea as dif in dif. **[What are a & b? Should try to understand this a bit better.]**
  - The schooling regression used as the 1st stage of an IV estimate of the returns to schooling
- Results
  - Construction of schools increases years of schooling from .12 to .19 years
  - Program impacts only primary education attainment.
  - Wages are increase from 1.5 to 2.7 percent. This translates in a 6.8 to 10.8 percent return to education. [How do they calculate this? I can't go from yrs & wages to this number]
  - Results suggest that the program is cost effective assuming an increasing country growth rate.
- Potential Problems
  - Diff-in-Diff requires that (1) the increase in schooling would have been the same between treatment and control w/o the program and (2) there is no time varying and region-specific effects correlated with the program. Control for other INPRES water-sanitation programs, but other stuff could still be going on.
  - 2SLS estimation: The increase in school construction must only affect wages through schooling – this may not hold if school construction affected wages or if quality also changed. Tests of wages for students in higher grades don't show signs of quality change.
  - External validity: Indonesia during the 1970's was a very special period [why?]
- Related Literature
  - The estimated effects of schooling on wages in this paper are comparable to those in the other literature, indicating that high private returns can be sustained even in a large-scale program.
  - However, Duflo (2004) finds that the older cohorts who did not benefit from additional education actually experienced a fall in wages and a rise in formal labor force participation due to the program.

Banerjee, Abhijit, Shawn Cole, Esther Duflo and Leigh Linden (2003) "Remedying Education: Evidence from Two Randomized Experiments in India," MIT mimeo

Summary by Jim Berry, Summary summarized by Greg Fischer, 5/2/05

Brief: Banerjee, Cole, Duflo and Linden evaluate the effects of remedial education ("balsakhi") and computer-assisted learning ("CAL") programs on 3rd and 4th grade children. Find that both interventions have significant positive effects.

Some Details

- Balsakhi intervention: 20 lowest performing students in school (or division in Mumbai) were taken out of class and taught by specially-trained teacher for 2 hours per day (half of school day)
  - Balsakhi, hired by NGO, have at least high-school education, receive about a week of training before they start, and earn $12-$15 per month. Hope is that teachers from slums can relate better to students.
- For each program, schools were randomized conditional on certain characteristics (class size, pre-test average. For Vadadora, in year 2, half of treatment (balsakhi) schools and half of control group were randomly assigned to receive CAL treatment. This is a common method to evaluate multiple, simultaneous interventions.
- The largest effects for balsakhi program were on lowest competency students. CAL effects were spread more evenly, but entirely driven by math scores.
  - If look at school averages, may wonder if balsakhi effect is direct (on those low-performing students who are getting the special lessons) or indirect (the one's who remain in class benefiting from better student-teacher ratio and less disruption). Results suggest the former.
- Neither program had a noticeable effect on attendance
- Cost-benefit analysis:
  - CAL had greater effect on test scores, but is 7x more expensive per student. Labor is cheap in India, but computers cost roughly the same the world over.

Duflo, Esther, "The Medium Run Effects of Educational Expansion: Evidence from a Large School Construction Program in Indonesia" *Journal of Development Economics* v74, n1 (Special Issue June 2004): 163-97

Summary by Greg Fischer, 3/7/05

Brief: Using regional variation in a massive primary school building program in Indonesia in the 1970s, Duflo finds that a 10% increase in primary school graduates in the labor force reduces the wages of older cohorts by 3.8% to 10% and increases their formal labor force participation by 4-7%. *General equilibrium effects matter.*

Contribution: Evaluations of most social programs in developing countries focus on short run & "partial equilibrium" effects. But in developing economies, the medium run is particularly important because re-optimization is likely to be sluggish due to market imperfections. This paper illustrates the importance of that effect.

Background & Data

- From 1974-1978 the Indonesian government built over 61,000 primary schools (INPRES program), doubling the number of available schools per capita.
- Schools targeted to regions with low enrollment (analysis will exploit this regional variation)
- Uses data from annual Indonesian Labor Force Survey (SAKERNAS): annual repeated cross sections of approx. 60,000 households from 1986-1999, matched with data on INPRES intensity
- Other Duflo paper shows that growth in education was faster in regions with more INPRES schools

Empirical Framework

- First stage: regresses share of primary school graduates in region-year cell on year and region fixed effects and interactions with (a) year and program intensity and (b) year and a vector of initial condition controls. Corroborates results from earlier Duflo—education grew faster in targeted regions—and the falsification works (there is no effect for older cohorts). Also verifies that migration didn't undo the effect of the program (people get education in INPRES area & move to Jakarta).
- Reduced form: regress wages on older cohort (not helped by INPRES) on same RHS [still need to work through the econometrics. While the interpretation is straight forward, the description of the methodology is a bit funky]

Results

- None of the results are statistically significant
- Coefficients in the wage equation are negative and declining. Education equation: increasing.
- OLS estimates suggest a small positive effect: +10% share of primary school graduates is associated with an 0.8% increase in wages, *after controlling for education.*
- Using INPRES intensity as an instrument (interacted with year dummies) find that +10% share of primary school graduates ***decreases*** wages by 3.8% in the full sample and 9.9% in rural areas.
- There does not appear to be a change in the skill premium (but again, nothing is really significant so not finding it here is not quite that big of a statement)
- Formal labor force participation increased by about 7%, and this change is significant.

Model to Explain It: use a simple two-sector framework (formal and informal). The formal uses physical & human capital. Informal uses land and human capital (downward sloping demand for effective labor, even in the long run, because land is fixed). In formal sector, capital adjustment matters for labor demand. Increased supply of educated workers, can lower wages if capital not sufficiently elastic [flesh this out]. Results suggest little to no reaction in physical capital to increase in human capital.

Lant Pritchett, "Towards a New Consensus for Addressing the Global Challenge on the Lack of Education," from *The Copenhagen Consensus*

Summary by Greg Fischer, 3/7/05 (Note that this was not an assigned reading at MIT. It's just a cool article from an interesting guy that appears on the reading lists at a couple of other schools).

Brief: As one of the Copenhagen Consensus papers, this is a very readable evaluation of five broad opportunities to improve the state of education in LDCs: (1) build more schools, (2) improve the quality of schools, (3) expand the demand for schooling by increasing incomes and raising returns, (4) lower the cost of schooling to increase demand, (5) increase school accountability.

Contribution: .

This is a nice overview of the challenges facing education in LDCs. The paper is written for non-academics, so it's chock full of useful information and actual recommendations. Though it's not without its biases and omissions, it's worth reading at least the first six pages (or the summary). Here's Pritchett's take [I'll try to add some better references later]

- Supply side expansion: doesn't really work. School construction has but a modest impact on actual attendance [what was the actual attendance effect on INPRES in Esther's paper?].
- Improving quality
  - Class size
    - Smaller class size seem to matter only with very large classes (but this is the case for many poor countries)
    - Only about 20% of differences in student performance can be explained by school effects, so class sizes can't matter that much
    - Need to balance against the supply of good teachers.
  - General budget expansion does little good. But in targeted areas (e.g., instructional materials & teacher training) paybacks can be high. Need better evaluation of interventions.
- Increase demand
  - So much of school attendance is an income effect. Education for children is a normal good and poor parents just don't spend on it.
  - He sort of skips over raising returns. The Schultz commentary has some nice bits on the fact that even in poor countries (his study is from sub-Saharan Africa) the private % return to education is convex, which means that rich parents have a greater incentive than poor to educate their kids.
  - Blanket fee reductions may be counter productive as they can hit budgets. Need to think about effectively targeting transfers (e.g., school lunches or conditional cash transfers such as PROGRESA).
- Systemic reform
  - This is his favorite point, but it's kind of flimsy on the evidence). The idea is that clear objectives, accountability, autonomy to manage for results, and information can solve everything.

The Copenhagen Consensus site on education can be found at:
http://www.copenhagenconsensus.com/Default.asp?ID=224

Banerjee, Abhijit (2004), "Educational Policy and the Economics of the family", Journal of Development Economics, Vol. 74 (1), pp. 3-32.

Summary by Greg Fischer (based on summary by Guy Michaels + own), 3/7/05
It is important to solve these models, working through the math.

Brief: Analyzes alternative models of family decision making regarding educational investments. Credit constraints, symbolic consumption, and imperfect altruism can all lead to inefficient investment

Contribution: .

The Basic Model Assumptions:

- Production Function: on final good produced with CRS technology. Skill and unskilled labor are perfect substitutes
- Human Capital Production: More skill intensive than goods production. Displays DRTS and no externalities.
- Labor supply: inelastically supply 1 unit of unskilled and some amount of skilled labor.
- Life cycle in 3 stages: (1) get education, (2) work, consume, have kids, (3) consume some more
- Markets: perfectly competitive markets for labor. We'll see what effects credit markets have
- Preferences: will also vary from perfect/imperfect altruism and with/without symbolic consumption
- Policy Instruments: government can tax work and offer educational subsidies
- Contracting: different intrafamily contractual arrangements are considered

The Barro-Becker Benchmark:

- Perfect altruism, no family contracting, perfect credit markets, no symbolic consumption
- Short-run: Parental preferences don't matter and there are no income effects (efficient ed investment)
- Steady state: unique. Only time preferences have any effect. Human capital is equally distributed. ***In benchmark model, lump sum taxes have no effect (always equate marginal cost to marginal benefit). Subsidies are distortionary. Increasing returns to H, increase investment in H.***
- ***In a model with no symbolic consumption, perfect altruism, no contracts, and perfect credit markets, investment in human capital does not depend on how much money parents have or their preferences.***
- ***If credit markets are perfect and interest rates are given, there can be income and preference effects on education only if there is symbolic consumption.***

Credit Constraints

- ***In a model with credit constraints two dynasties with different income levels and/or wealth will invest differently in H, even with perfect altruism and no symbolic consumption.*** There may be inefficient underinvestment.
- Steady state: **[need to look at this. Banerjee, pp. 16-17, shows that with no borrowing or lending, but either (1) perfect altruism without contracting or (2) no altruism but perfect contracting economy reaches same steady state as in Becker-Barro. Work through math]**
- The introduction of credit constraints alone do not alter the properties of the steady state as long as there is no symbolic consumption and we have either perfect altruism and no contracting or complete contracting and no altruism.

Symbolic Consumption (destroys pretty much all of the Becker results)

- *In the presence of symbolic consumption, the steady state need not be unique.*
- *The history of each dynasty may matter for long-run investment in human capital as will their preferences.*
- *Lump-sum taxes and subsidies may increase the efficiency of human capital investment.*
- *Higher returns to human capital are not necessarily associated with higher investment [why?]*

Kremer, Michael. 2003. Randomized Evaluations of Educational Programs in Developing Countries: Some Lessons." American Economic Review Papers and Proceedings 93 (2): 102-115.

Summary by Raymond Guiteras; Summary summarized by Greg Fischer, 5/2/05

Brief: Randomized evaluations eliminate omitted variables bias, the sign of which may be difficult to predict, and allow comparison of different treatments if study subjects (schools, areas, kids) are "similar enough." If researchers commit to publishing ex ante, publication bias can be eliminated as well. Finally, randomized trials need advocates, since unbiased estimates do not suit the interests of either the advocates or opponents of any particular program.

Provides a Quick Summary of Kremer's education papers (mostly in Kenya)

- Surveys results on programs to boost attendance, increase inputs and reform school systems
- Compares cost per additional year of education for three attendance interventions in Kenya while noting that validity of comparison rests on similarity of schools in different studies
  - Deworming: $3.50 per additional year
  - School meals: $36 per additional year
  - Uniforms: $99 per additional year
- [It would have been nice to compare these results to those from retrospective/observational studies to get a sense of bias]
- The section on inputs does compare randomized to retrospective evaluations
  - Finds that omitted variable bias tends to be positive: retrospective studies tend to find positive effects from increased inputs while randomized trials find little if any effects.
  - Kremer explains that this is probably the results of favorable community characteristics being correlated with more resources for schools (and thus the capacity to implement input increases on their own)

Other Interesting Notes

- With externalities, it's important to randomize at the proper level.
  - Consider "Worms". Randomizing at the student level would be a bad idea since transmission externalities would be substantial.
- Publication bias can still be a problem with randomization. One needs to publish/disseminate negative or insignificant results as well (Greenstone's "Journal of Experimental Design" or Fischer's "Graveyard of Failed Tests/The File Drawer".

Psacharopoulos, George. 1994. "Returns to investment in education: a global update," World Development, 22, 1325-1343.

Summary by Jim Berry; Summary summarized by Greg Fischer, 5/2/05

Brief: Psacharopoulous updates his periodic survey compiling returns-to-education estimates across countries. While the studies it surveys are not empirically rigorous, they encompass a number of countries, and this paper is regularly cited in other education literature. ***The general findings are that (1) returns are higher in LDCs and (2) returns are higher for women than for men.*** Note: the goal of this article is to measure the return to schooling in as many countries as possible. To do so, it forgoes adjusting for econometric problems commonly associated with returns to schooling measurement (ability bias, measurement error).

Ways of measuring returns to education

- "Full" method: work with detailed age-earning profiles and find the NPV equating costs to benefits of education
- Mincer equations or less parametric versions of the Mincer equation
- The review gives preference to the full method

Social Returns

- Finds that "social" returns to education are *lower* than private returns.
- This seems to be a mechanical result. The literature he is reviewing calculates social returns by subtracting public schooling costs from private returns.
- To get true social returns, should account for general equilibrium effects, potential externalities, etc.

General Trends

- Returns to education are large
  - Private returns are 29% for primary, 18% for secondary, and 20% for higher education
  - For the reasons mentioned above, reported private returns are lower.
  - Mincerian returns are about 10% per year of education
- Social and private returns are *declining in country's per capita income.*
- Returns are slightly higher for women than for men
- Returns to higher education are largest for engineering, law, and business/economics

Controversies

- Earnings might be higher just from screening effect, not productivity
- Ability bias is a major concern. Although the breadth of literature seems to find that incorporating all the various corrections (Grilliches) leads to results similar to those from OLS.
- Education differs in quality (a year of primary education in India is not the same as one in Japan). Some authors have found this to be important. Psacharopoulous calls this the "holy grail" of the field.
- He attacks those who feel "over-education" is a problem. Since people are still investing, there may be non-monetary benefits to education (don't we know it!).

Probe Report

Summary by Greg Fischer, 5/8/05

Brief: Survey of schools and households in 234 villages in Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh, Himachal Pradesh (all northern Indian states). Key facts: (1) very poor education performance, (2) parents are generally motivated, (3) child labor does not seem to be a big constraint, (4) direct costs are small but meaningful, (5) school availability is not a constraint at the primary school level but may be significant at secondary school and beyond, (6) school quality is dismal: teachers are usually absent and the facilities are horrible.

Interesting Tidbits

- The proportion of children who have never been enrolled in school is declining rapidly, to around 20% in 1996 from 55% in 1986.
- Most parents support compulsory education for all children
- Most parents expressed much stronger interest in their boys education
  - For boys, the interest in education was driven by hopes of better employment opportunities
  - For girls: "marriage considerations" and the ability to write, so they can correspond with family when married into another village
    - Education may give bride a better prospect of finding a "good husband" and raise the cost of her marriage because social customs require her to marry a better-educated man.
    - Social norms appear important: I'll send my daughters to school if other parents do
- Financial incentives—free meals or food rations, free textbooks, etc.—were cited by families as influencing their decision on sending kids to school. But see Kremer for thoughts on whether they actually had an effect (still Kenya is not Africa…)
- Motivation for education is not the same thing as motivation for schooling. Most schools are so bad that parents feel children don't get an education and can better spend time elsewhere.
- Schooling is expensive in relative terms
  - Avg. cost is Rs 318 (about $8), but this is a lot for poor families

Alan Krueger and Mikael Lindahl (2001), "Education for Growth: why and for whom?" Journal of Economic Literature, vol. 39(4): 1101-1136.

Summary by Raymond Guiteras; Summary summarized by Greg Fischer, 5/2/05

Brief: Krueger and Lindhal (2001) survey the macro literature on growth and education. This paper is a response to a "contrarian" cross-country growth literature (Barro and Sala-i-Martin (1995), for example) that downplays the contribution of education to growth. Krueger and Lindhal find that after adjusting for measurement error, the "macro" effect of schooling is *larger* than the standard "micro" effect. Krueger & Lindhal offer two explanations: (1) endogeneity bias, i.e., growth is causing education and (2) nation-wide externalities to education.

Family

- Browning and Chiappori is the key reference here after the seminal work by Becker on the unitary model of the household. They posit a collective model in which decisions are optimal despite heterogeneity in utility,

Browning, Martin and Pierre-Andre Chiappori (1998), "Efficient Intra-household Allocations: A General Characterization and Empirical Tests," Econometrica, Vol. 66 (6), pp. 1241-1278.

Summary by Guy Michaels, Summary summarized by Greg Fischer, 5/16/05

Brief: Browning and Chiappori establish a "collective" model of the household in which they salvage the efficiency of decision making from Becker's unitary model despite heterogeneity of preferences within the household. [The fulcrum of this seems to be the assumption that the bargaining weight, μ, is not a function prices *but not actions* that could affect income.]

Browning & Chiappori conclude that their model passes empirical tests of its predictions, but a slew of subsequent papers (including Duflo & Udry on Cote d'Ivoire, Duflo on grandmothers in South Africa, Udry on Burkina Faso, Garg & Morduch on sibling rivalry in Ghana, and Qian on China call this into question.

Detailed Summary:

- [Should remember some stuff from class notes. This is a pretty important model.]

Prior Literature and Background

- Becker, in several papers during the early 1980s, was the first to explicitly model intra-household behavior.
- Manser & Brown (1980) and McElroy & Horney (1981) applied Nash bargaining solution to the household problem, concluding that within household distribution of [power/earnings] should matter for decisions. In particular, the notion of simple "income pooling" was universally rejected as was the symmetry of the Slutzky matrix.
- Browning & Chiappori argue that despite the rejection of the Becker's unitary model, the household should be able to reach efficient outcomes because the repeated game and symmetric information aspects of household interaction should lead to cooperation.

Model & Empirics

- A fair bit of math follows, that is better seen by going through the class handouts and notes on Family
- Estimate behavior of Canadian households using "Quadratic Almost Ideal Demand System."
  - Results for single households do not reject the unitary model
  - Results for couples do reject the unitary model, but not the Browning & Chiappori collective model.
  - There seem to be a fair number of embedded assumptions in their estimation: consumption of durables and labor supply decisions are exogenous (the latter will be the crux of the criticism) and they don't deal for endogenous selection into being married or single.

Duflo, Esther (2003), "Grandmothers and Granddaughters: Old Age Pension and Intra-household Allocation in South Africa," World Bank Economic Review, Vol. 17 (1), pp. 1-25.[4]

Summary by Greg Fischer, 2/28/05

Brief: This paper tests and rejects the unitary model of the household using a change in a South African (old age) pension program. Duflo finds that the gender of the cash transfer recipient matters for childhood nutritional outcomes. Specifically, pensions received by women had a large impact on the anthropometric status of girls living in the household (with the greatest effect on daughters of daughters) but little impact on that of boys. Pensions received by men had little impact regardless of child gender.

Contribution: Using a nice natural experiment, Duflo cleanly rejects the unitary hypothesis of the family. The results also have efficiency implications when considering cash transfers: income in the hands of women is associated with large improvements in children's health (at least for girls).

Detailed Summary:

- It's not so straight-forward to test the unitary hypothesis of the family
  - Correlations of women's and men's income with household expenditures can be misleading because labor supply decisions are endogenous (*a* appears in the utility function directly or indirectly). For example, women may be less likely to work in a family that places a large value on child health. This would cause a negative correlation between women's income and child health, even if the household is unitary.
  - Correlations between asset income and household consumption patterns overcome this problem, but things like endogenous coupling decisions (women with more assets select a spouse whose preferences are more closely aligned).
  - Short-term variations in non-labor income can produce unexpected changes in income (thus getting around the endogeneity issue) but short-term reallocation shouldn't affect μ (much), so rejecting here rejects non only unitary model but Pareto efficiency as well.
- The setting
  - In the early 1990s, the benefits & coverage of a South African Old Age Pension program were expanded for the black population.
  - In 1993, the benefits were about *twice the median income* per capita in rural areas.
  - Over ¼ of black South African children live with a pension recipient.
  - All women over the age of 60 and all men over 65 are eligible.
  - The change in eligibility for blacks represents a large, unexpected non-labor income shift.
  - Paper focuses on the effect of these transfers on child nutrition as reflected in anthropomorphic indicators: weight-for-height (close to a flow measure) and height-for-age (more of a stock measure).
- Data: from national survey of South Africa carried out jointly by World Bank and S.A. Labor and Development Research Unit at the University of Cape Town. 9,000 randomly selected households.
- Strategy
  - Uses eligibility (age based, equivalent to intention-to-treat) to account for endogeneity of actually receiving the pension. In some specs, instruments for receipt with eligibility.
  - Since poorer people are more likely to live in extended families, controls for eligibility after controlling for presence of man or woman above 50, 55, and 60 along with other hh controls.
  - Uses straight diff-in-diffs for weight-for-height because it reacts quickly. Diff-in-diffs between old and young children in household for height-for-age because (a) it's more of a stock variable and (b) this helps control for household effects.

[4] Note this summary refers to the Nov. 2000 mimeo and not the published version of the paper.

- To control for possible endogenous hh formation (kids living with grandparents just to get pension effect) instruments with grandparent living (rather than living *with*)→similar point estimates but lose significance (not a lot of variation in instrument).
- Alternative interpretation: permanent income effect
  - 1 rand pension to a woman represents a larger expected npv because men expected to receive pension for shorter period.
  - Finds that propensity to save out of men's pensions is actually *lower* than for women's[5]
- Warning: it's hard to generalize as there are few cash transfer schemes of this magnitude. Duflo says that the key finding may be that large cash transfers have no effect on children's welfare when given to men (the Lemony Snickets effect). Administration matters.

Related Literature: Besides the other articles in the family section, this paper relates closely to:

- Two studies by Duncan Thomas, "Intrahousehold Resource Allocation: An Inferential Approach" in 1990 and "Like Father, Like Son, Like Mother, Like Daughter" in 1994, have similar results. The first says that compared to income in the hands of men, income or assets in the hands of women are associated with larger improvements in child health. The second says that women's income is associated with larger expenditures on household nutrients, health, and housing.
- Lundberg, Pollack, Wales (1996) look at change in allocation of child benefits from men to women ("from the wallet to the purse") and find that this change increases the expenditure on women's goods (e.g., women's and children's clothing relative to men's clothing).

[5] Non-pension income in mimeo (p. 21) is a typo. Should be *pension*. Corrected in published version.

Qian, Nancy (2005) "Missing Women and the Price of Tea in China," mimeo, MIT.

Summary by Greg Fischer, 2/28/05

Brief: Using exogenous variation in sex-specific agricultural income (tea vs. orchards), Qian shows that increasing income alone has no effect on sex ratios in China whereas increasing relative female income increases survival rates for girls. Increasing women's income increases educational attainment for all children; increasing men's income decreases educational attainment for girls and has no effect on boys.

Contribution: Establishes a causal link between economic conditions and sex ratios that operates through a non-unitary family model.

Detailed Summary:

- Motivation: sex imbalances seem to be negatively correlated with economic development; however, sex imbalance has been increasing in China as it grows.
- Results: a $7.70 increase in female adult income (about 10% of average rural household income) increases fraction of girls surviving by 1%. Increasing male's income *decreases* girl's survival. Unbiased increase in household income had no effect [should this be surprising?]
- Implications: policies that increase the economic value of women will increase the probability that female children live to adulthood.
- Can't just look at correlation between female incomes and girls' survival. In male-biased regions, adult women will earn less and parents will prefer boy children, but this is not a causal link.
- Strategy:
  - Women are more suited to tea picking and men to orchard work
  - Post-Mao agricultural reforms increased earning from such cash crops.
  - Have some spotty (but exogenous) data on agricultural prices (has to use 1997 agricultural prices as a proxy for 1980 prices
  - Puts bounds on results (assumes all migrants to tea counties are women, to orchard counties are men) as a robustness check to see if migration could be driving the results. Not much migration so not much of an issue.
  - Potential bias remains: (1) measurement error from using 1997 price data, (2) what if families that prefer girls switched to planting tea after the agricultural reform.
    - Uses average slope as an instrument for tea regions (tea grows best on hillsides) as an instrument for tea regions (worried about endogeneity of people that care more about women moving to areas where women are more effective workers. Same general results.
- Education
  - Uses the same basic strategy to look at intrafamily income allocation on children's earnings.
  - Finds that tea planting increases education of both boys and girls. Orchards decrease girls and have no effect on boys.
  - These results *cannot* be explained by change in returns to eductation.

Related Literature:

- Becker (*Treatise on the Family*, 1981) argues that sex ratios respond to economic conditions. More income increases demand for girls. Burgess & Zhuang (LSE mimeo, 2001) find more boy-preference in poorer households.
- Elsewhere, Trivers & Willard (Science, 1973) hypothesize that higher status household will have more boys [DESCRIBE]. Edlund (JPE, 1999) this pattern at the state-level in India.

Garg, Ashish and Jonathan Morduch (1998), "Sibling Rivalry and the Gender Gap: Evidence from Child Health Outcomes in Ghana." Journal of Population Economics, Vol. 11 (4), pp. 471-493.

Summary by Todd Gormley and Tom Wilkening. Summary summarized by Greg Fischer, 5/2/05

Brief: Using mico-level data from Ghana, shows that children with more sisters (as opposed to brothers) are healthier, suggesting what Garg and Morduch call "sibling rivalry"

Contribution:

Theoretical Model

- Capital and labor constraints force parents to ration resources
- Children will fare better when pitted against siblings with disadvantages
  - Use Becker's pure investment model (i.e., families equalize marginal returns to investment)
- A priori assumption that parents perceive higher returns to investments in boys. Implies:
  - A boy will receive more if other sibling is female rather than male
  - Effect could be reversed if parents concerned about "fairness"
- Impact of resource constraint is ambiguous. It depends on the form of the return function. Suppose boy's investment function is $R_M(H) = aH - bH^2$
  - $R_F = \alpha R_M(H)$ with $\alpha < 1$ implies a shrinking gender gap
  - $R_F(H) = aH - \beta bH^2$ with $\beta > 1$ implies a growing gender gap

Empirical Approach

- Regress health outcomes for very young children onto the total number of sisters and other family characteristics (parents' height, expenditure per household member, family size, birth order, etc.)
  - Controls for social spillovers with dummy for "at least one brother"
  - This also controls for "reference group effects" for boys (i.e., boy may be treated differently if he has at least one brother).
- Estimate with random effects but fail to account for or test potential RE problems
  - Endogeneity through the quality-quantity trade off: parents who care more about quality will have fewer children.
  - Family may continue to have children until they have at least one boy. This affects how we interpret the "at least one boy" dummy
- Linear probability model used to regress extreme health outcomes (stunting and underweight).
- Regressions stratified by income to test impact of capital constraints on gaps
- IV estimation for potential endogeneity of siblings not living at home [?]

Empirical Results

- Sibling composition has significant effect on health
  - Switching from all brothers to all sisters increases the health outcomes by 25-40%.
- Sisters reduce incidence of extreme health outcomes
- Very little evidence of rich households being less constrained relative to size of desired investments; the coefficients are roughly the same in the income stratified samples.

Duflo, Esther and Christopher Udry (2001), "Intrahousehold Resource Allocation in Côte d'Ivoire: Social Norms, Separate Accounts and Consumption Choices," NBER WP #10498, also BREAD WP016.

Summary by Raymond Guiteras. Summary summarized by Greg Fischer, 5/2/05

Brief: Duflo and Udry provide evidence against the Browning/Chiappori "collective model" of the household in which households do not act as a single unit but are still Pareto efficient. They show that household members do not provide each other with adequate insurance from observable income shocks. This is a slightly different angle from Udry's paper on "Gender, Agricultural Production, …" (JPE 1995) which showed that production was inefficient, but both are evidence against the collective model.

Their Idea

- In the Ivory Coast, men and women in the same household control their own plots of land.
- The patterns of crops raised by men and women differ significantly. Men raise [ ] and women [ ]
- Changes in rainfall patterns ("rainfall shocks") affect men's and women's crop yields differently.
- Because rainfall shocks are observable, they should be insurable and not affect the type of goods purchased conditional on total spending (i.e., allocation of expenditures within a family should be determined by total income but not year-to-year shocks to the source).
- Ethnographic literature illuminates social convention dictating that yams are special crop: though grown by males, income from yams is to be spent on "household public goods"
  - The ethnographic prediction is that high yam income should lead to high household public good expenditures
  - Classical economics would say that income from yams is fungible and, conditional on total income/spending, the source of income should not affect expenditure allocation.

Results

- First step: estimate effect of rainfall on crops
  - Find that rainfall does affect men's and women's crops differently.
  - Key pattern: last year's rainfall is more important for men's crops than women's
  - RG: this first stage is "less than transparent"
- Key results come from Tests of Income Pooling (in section 5.2)
  - Changes in sources of income, as instrumented by rainfall shocks, affect the composition of spending
    - Male, non-yam income and female income are spent disproportionately on "private goods": alcohol, tobacco and prestige goods.
    - Yam income goes to household public goods and basic necessities.
    - A 10% increase in male, non-yam income leading to a 0.3% decline in food purchases and no change in meat purchases
    - 10% rise in female income associated with 4% increase in food and 5% increase in meat.

Possible Explanation

- Duflo and Udry suggest that the pattern of expenditures could be explained by a model of informal insurance without commitment
  - The household member who gets a good shock needs to be "paid off" in order to remain in the partial insurance arrangement.

Udry, Christopher (1996), "Gender, Agricultural Production, and the Theory of the Household," Journal of Political Economy, Vol. 104 (5), pp. 1010-1045.

Summary by Guy Michaels, updated by Jim Berry. Summary summarized by Greg Fischer, 5/2/05

Brief: Udry provides evidence against efficient household decision making by showing that in Burkina Faso, plots of land owned by women are farmed less intensively than those by men (both in terms of labor and fertilizer) leading to an estimated 6% loss in household output.

Contribution:

The Idea

- The unitary model of household decision making has been soundly rejected, but bargaining models such as that of Browning and Chiappori (Ema 1998) have tried to retain the efficiency result. This paper finds a setting in which to test that result and rejects it.

A Model

- Consider a household that maximizes the weighted sum of individual utilities
  - choices over agricultural home production on various plots owned by different family members
  - production of family public goods subject
  - subject to time and budget constraints
- This implies separation of production of production and consumption decisions
  - Controlling for plot and crop characteristics, the gender of the plot's "owner" shouldn't affect inputs or productivity

Empirical Strategy and Implementation

- Data: IRISAT data for Burkina Faso, four year (1981-1985) panel of 150 households in 6 villages in 3 different climatic regions
- Setting: Household head decides on the use of some unidentified "communal" plots while other household members have some autonomy over their own plots. Men typically inherit land while women get land through marriage. Markets for land and hired labor are absent.
- Estimation Strategy & Results
  - Tabulations and OLS regressions suggest that men's and women's plots differ substantially in terms of inputs, quality, crops, and output. Controlling for these factors, women's plots yield 20% less.
  - Estimate similar specifications with individual, household, and village fixed effects. Predicted errors for the first two are similar, but larger dispersion at village FE level suggest inefficiencies are larger within village than within household [why is error dispersion the right measure?] [Check what actual model specification is]
  - Nonparametric regressions reveal that men's plots yield more than women's at every size level and plot yields decline in size.
  - Fertilizer is used almost exclusively on men's plots
  - Women's plots are not inferior in terms of observables
  - Thy hypothesis that women spend more time on child rearing activities leads to a puzzle: children's labor is used more on men's plots
  - The hypothesis of non-convex production technology is rejected
  - Using NLLS: intra-village misallocation is estimated to cost about 13% of output; intra-household misallocation costs about 6% of output.

Possible Explanation

- Informational asymmetries or the inability to sign binding contracts may be preventing efficient contracting.

Nutrition

Strauss, John and Duncan Thomas (1995), "Human Resources: Empirical Modeling of Household and Family Decisions." In Behrman, Jere and T.N. Srinivasan, eds., Handbook of Development Economics, Volume 3. Amsterdam: North Holland, pp. 1885-2023.

Summary by Jim Berry. Summary of summary by Greg Fischer, 5/2/05

Brief: Strauss and Thomas discuss the empirical pitfalls associated with estimating the effects of income on nutrient demands and the effect of nutrient intake on productivity. Key problems are reverse causality (more generally, just identification) and measurement error.

Effects of Income on Nutrient Intake

- Measured elasticities of calorie demand (income or expenditure elasticities) have ranged from near zero to over 1.
- There are different ways to measure calories
  - Indirect: compute elasticity of demand for food groups and convert food groups to calories. This is biased upwards because it does not account for substation within groups for costlier items (buying better meat rather than just more meat)
  - Direct: measure actual quantities of food consumed (this generally produces estimates at the lower end of the range)
- People measure both income and expenditure elasticities. Either is reasonable, but EIV is more of a problem for income (because of expenditure smoothing, income is a noisier measure of what we care about: long-run resources)
- Income is also endogenous. Higher caloric intake can cause higher income (recall the S-curve of work capacity) which will bias estimates upwards.
- Measuring actual calorie intake
  - Availability based on food purchases: this is the easiest way, but carries issues of wastage and leakage. Also misses meals out and guest meals. Note that in LDCs, the poor tend to eat out (at relatives) more often and the wealthy often invite others to dinner. This would understate consumption of poor and overstate that of wealthy.
  - Recall or observation: expensive. Also presents standard recall problems (what did you eat last Tuesday?) and difficulty in observing meals eaten outside of the home.
- How do deal with faulty measures
  - Would be nice to find an instrument, but what?
  - Could use household fixed effects, but this only removes time invariant portion of measurement error and may actually exacerbate the EIV problem
- Non-linearity of relationship (supposedly concave or S-shaped relationship between calories and income) suggests using non-parametric estimation.
- Family composition complicates measurement since most data is at the household-level.
- The relationship between health and income is similarly complicated
  - What dimension of health should one measure?
  - The relationship likely depends on the type of employment (how many calories does an accountant need?)
  - Endogeneity and measurement errors discussed above remain a problem
  - Nonlinearities are still an issue.

Dasgupta, Partha and Debraj Ray (1986), "Inequality as a Determinant of Malnutrition and Unemployment: Theory," The Economic Journal, Vol. 96 (384), pp. 1011-1034.

Summaries by Todd Gormley and Raymond Guiteras. Summary of summaries by Greg Fischer, 5/8/05

Brief: When labor output is a nonconcave function of income, asset inequality can lead to involuntary unemployment of the poor as an equilibrium outcome. When this occurs, as with other poverty trap models, redistribution can improve both equity and output.

Basic Idea

- Below a certain level of income (consumption), no labor effort is possible.
- Beyond this threshold (the resting metabolic rate (RMR)), the ability to work increases, but at a decreasing rate. Thus there is a region of increasing returns at low levels of consumption.
- Someone with non-labor income (say from land holdings) can produce more at a given wage than the landless.
- The poor, although willing to work at the prevailing wage, cannot find employment. They are "denied access to work that pays enough to enable them to produce enough for an employer to wish to hire them in the first place."
  - Efficiency wages for individuals depend on their non-labor income and the efficiency wage for the landless exceeds their reservation wage.
- [ADD SOME STUFF TO THIS FROM ESTHER'S SLIDES. THEY ARE MUCH BETTER THAN THE PAPER.]

Subramanian, Shankar and Angus Deaton (1996), "The Demand for Food and Calories," Journal of Political Economy, Vol. 104 (1), pp 133-62.

Summaries by Guy Michaels and Raymond Guiteras. Summary of summaries by Greg Fischer, 5/8/05

Brief: Subramanian and Deaton estimate the elasticity of per capita calorie intake and find that total expenditure elasticity *of calories* is high for the poor but falls with incomes. Richer households are substituting towards quality. [ANY BROADER IMPLICATIONS FOR THIS?]

Context

- A debate rages over the relationship between income and nutrition. The "revisionists" argue that just because *spending* on food increases with income doesn't mean that *nutrition* increases with income
  - Non-classical measurement error: the poor eat out while the rich feed others
  - Food waste
  - Substitution towards quality as incomes rise
- This paper uses very detailed *consumption* data to address these concerns

Methodology

- Use nonparametric methods ("Fan smooth local regression technique")[6] to allow for possibility that income-nutrition relationship changes with income. Parametric in covariates with bootstrapped standard errors.
- Find that total expenditure elasticity of calories is high for the poor (roughly 0.55) and falls gradually as incomes rise (to about 0.4).
- This compares to other estimates of roughly zero (In Brazil, the Philippines, and India, Strauss & Thomas estimated elasticity of 0.26 for the poor falling to 0.03).
- Total expenditure elasticity is about 0.75. The richer households indeed do substitute towards quality.

Data

- 1983 National Sample survey of rural Maharashtra, India
- 5630 households in 563 villages (not sure how selected)
- 30-day recall consumption data on 300 items (149 food items) including physical quantities & expenditure
- Converted to calories via a calorie content table, with corrections for wastage, meals out, etc. [how did they correct for this?]
- Also includes data for total expenditures (less volatile than income) with lumpy durables excluded

Implication

- Points out a flaw in the Dasgupta & Ray (1986) paper: "food energy is extremely cheap in Maharashtra…the additional 600 or so kilocalories that a farmer in the tropics might require for daily physical calories can be purchased for about 4% of the daily wage."
- From a theoretical point of view, the Dasgupta-Ray theory of nutritional poverty traps requires that the product of the elasticity of health w.r.t. income and income w.r.t. health be greater than one (a little bit of health let you earn enough to buy even more health).
  - One could say that these results make that unlikely
  - However, calories are a poor proxy for health
- Caveat: Subramanian & Deaton are clear that they are not estimating a causal effect. Reverse causality, non-classical measurement errors, and a host of omitted variables (sex, age, weight, etc.) prevent causal interpretation.

[6] Claim this is preferable to kernel. I'm not sure what this is. See p. 143-144 for details.

Srinivasan, T. N. (1994), "Destitution: A Discourse," Journal of Economic Literature, Vol. 32 (4), pp. 1842-55.

Summary by Raymond Guiteras. Summary of summary by Greg Fischer, 5/8/05

Brief: Srinivasan critiques Dasgupta's *An Inquiry into Well-Being and Destitution.* His key criticisms are: (1) Dasgupta's choice of a malnourishment level is arbitrary, (2) if employment rationing is done by independent lotteries in each period, then all the poor have the same experience on average and the notion of employment/unemployment isn't meaningful, (3) in India, the cost of food is low, so the nutritional poverty trap story isn't convincing.

Health

Abhijit Banerjee, Angus Deaton and Esther Duflo (2004), "Wealth, Health, and Health Services in Rural Rajasthan," American Economic Review, vol. 94(2): 326-330, May.

Summary by Greg Fischer, 2/28/05

Brief: This is just a summary of some data about health status and public services in Udaipur, Rajasthan. The gist: life sucks.

Contribution: Points to (and starts collection of) some data sources that may be useful in understanding the interplay of health, income, public services, development and the like.

Detailed Summary:

- Here's an extract of their summary:

> These data paints a fairly bleak picture: villagers' health is poor; the quality of the public service is abysmal; private providers unregulated and for the most part unqualified provide the bulk of health care in the area. Having low quality public facilities is correlated with some direct health measures: Lung capacity and body mass index are lower where the facilities are worse, after controlling for household per capita monthly expenditure, distance from the road, age, and gender.. Yet, as we have seen for the self reported health status, villagers not only do not perceive their health as particularly bad, but they seem pretty content with what they are getting. 81% report that their last visit to a private facility made them feel better, and 75% report that their last visit to a public facility made them feel better. Self reported health and well being measures, as well as the number of symptoms reported in the last month, appear to be uncorrelated with the quality of the public facilities. The quality of the health services, may impact health but does not seem to impact people's perception of their own health or of the healthcare system.

- Oh, and absenteeism is rampant among nurses, only 46% of men and 11% of women are literate, about 1/3 of the population can't walk 5km or draw water from a well, and avg. per capita expenditures are 470 rupees (which seems almost impossibly low to me).
- The data is a survey of 100 hamlets in Udaipur from January 2002 to August 2003.
- Combines four surveys: village survey (including census, infrastructure, etc.), facility survey (services); weekly facility visits (was it open & who was there), and household surveys.

Miguel, Edward and Michael Kremer (2004) "Worms: Identifying Impacts on Education and Health in the Presence of Treatment Externalities", Econometrica, 72 (1), 159-217

Summary by Todd Gormley and Tom Wilkening

Brief: Using a randomized experiment on Kenyan schools, this empirical paper demonstrates large positive effects (both direct and externality effects) from deworming students on school participation rates and overall infection rates.

Contribution: Kremer and Miguel demonstrate one potential causal connection between health and income.

Detailed Summary:

- Empirical Approach: A randomized evaluation of a project in Kenya with school-based mass treatment with deworming drugs in the late 1990s.
  - Since the program was randomly phased in for schools from 1998-2001, many econometric specification problems are avoided. Moreover, econometric specifications accounted for the distance of 'control' schools to 'treatment' schools to account for any externalities.
  - Additional econometric tests were done using the fact that girls older than 13 were not treated because of potential pregnancy side-effects.
- Literature Comparison: This study improves on prior research in two key areas:
  - Existing research randomizes among individual in the same school and thus underestimates treatment effects since deworming creates positive externalities for the control group and reduces attrition for the treatment group.
  - Focus on the effect on school participation levels rather than cognitive results.
- Estimated Impact: Reduced school absenteeism in treatment schools by one-quarter, and was cheaper than alternative ways of boosting school participation ($3.50 per incremental school year).
  - By reducing disease transmission, deworming substantially improves health and school participation among untreated children in both treatment schools and neighboring schools. Untreated schools within 6 kilometers of treated schools also show improvements in health and school participation.
  - Externalities appear to work through the interactions of children across schools and the use of the same water sources by students across schools
  - Evidence that deworming improves attendance but little evidence that deworming improves academic test scores.
- Policy Implications:
  - Calculations of cost-effectiveness estimates suggest the positive externalities of deworming are large enough to justify fully subsidizing treatment and potentially even paying people to be dewormed.
  - Note, since most of the benefit to deworming is through the externality, private deworming expenditure will always be below the social optimum.
- Connection to Larger Literature:
  - The large improvement in school participation following deworming found in this study points to the important role that tropical diseases such as intestinal worms may play in reducing educational attainment in sub-Saharan Africa and provides microeconomic support for claims that Africa's high tropical disease burden is a causal factor contributing to its low income.

Deaton, Angus (2003). "Health, Inequality and Economic Development," Journal of Economic Literature, vol. 41 (1), p. 113-158.

Summary by Greg Fischer, 2/28/05

Brief: A far ranging article drawing from economics, epidemiology, public health, sociology, psychology, and history literature. Deaton concludes that there is no *per se* link between inequality and health, rather there is some (still open for research) link between absolute income and health.

Contribution: Covers a lot of ground discussing links between income, inequality and health. It's worth a read if you want to get some ideas for thinking about the determinants of health.

Detailed Summary:

- If we suppose the relationship between income and health is concave (more money affords better nutrition, health services, etc.), then redistribution from rich to poor, either within or between countries, will improve aggregate health status.
- There's a recent body of literature saying that equal societies have more social cohesion, less stress, offer more public goods, and all kinds of other good stuff. Perhaps, some like Richard Wilkenson say, inequality has a direct negative effect on health. Pshaw says Deaton, after giving the idea its due.
- Among the poorest countries, increases in average income are strongly associated with increases in life expectancy, but as income per head rises, the relationship flattens out, and is weaker or even absent among the richest countries.
- While epidemiological literature takes for granted the link from income to health (without positing a specific mechanism), economics literature emphasizes causality in opposite direction.
- An exception to this approach is the generally accepted view that in poor countries, where malnutrition remains a major issue, there is wide agreement that income has a direct causal effect.
- This can still be an issue in rich countries, as evidenced by work of Doblhammer and Vaupel (2001) and (2002) that show a relationship among those who died from 1989 to 1997 between month of birth and life-expectancy that is tied to seasonal nutrition over 50 years ago.
- Where inequality might actually matter
  - Say the least wealthy live in industrial region regardless of absolute wealth.
  - Political inequality (Medicare desegregation in the U.S., Duflo on public goods in India)
- Paper has a nice overview (pp. 135-138) on measuring income inequality
- Deaton's summary is nice:

> There is a strong appeal to the idea that before the epidemiological transition, income determines mortality, while after it, income inequality determines mortality; that in poor countries, income protects against poor sanitation, unhealthy working and living environments, poor nutrition, and a plethora of infectious diseases; that in rich countries, where these evils are but distant memories, income inequality is an indicator of the quality of social arrangements, of stress, and of mortality…
>
> Income inequality will continue to affect mortality until everyone ceases to be poor, which happens long after average income has risen out of the range of poverty.

Technology

Foster A.D. and M.R. Rosenzweig (1995), "Learning by Doing and Learning from Others: Human Capital and Technical Change in Agriculture," Journal of Political Economy, 103 (6), pp. 1176-1209.

Summary by Greg Fischer, 3/27/05

Brief: Foster and Rosenzweig look for the presence of learning externalities and how individuals respond to them. Looking at adoption and productivity of HYV crops in the Indian ICRISAT villages, they find that there are indeed substantial learning externalities *and* that these are not internalized.

Detailed Summary:

- They use a Bayesian optimal target learning model. That may (it's hard to decipher) be heavily dependent on the parameterization of the model.
  - A farmer decides to allocate some number of his plots to cultivate new, higher yielding but riskier, HYV crops.
  - Target input model: the right combination of inputs is unknown to a "true" answer exists. Farmers have a prior and collect information through their own experience and that of their neighbors.
  - Neighbors' signals are noisier.
- For learning externalities to exist [your productivity must improve when your neighbors experiment. Changing your behavior is not enough because this could evidence simple mimicking or social pressure.
- Some testable implications of their parameterization:
  - The ratio of the benefits from own experience to neighbors experience should be constant, regardless of past history; there's nothing special about your own experience aside from the fact that it is a more precise signal.
  - The returns per hectare to experience should diminish at the same rate for both sources of exp
- Most interesting part of paper is the potential for strategic behavior
  - If I can learn from my neighbors at no cost and learning externalities are not internalized, I might as well wait for them to plant.
  - Should see [get from class notes. There's some nuanced stuff going on here]

Results

- No positive effect of experience on traditional cultivation. This provides an important robustness check.
- Own and village experience effects are positive and diminishing over time. The value of other's experience is considerably lower than own.
- Education helps you learn new technology quicker and at lower cost.
- Farmers with more assets plant more than do the poor.
- **If you have richer neighbors, you plant less. This is key evidence that externalities are not internalized.**

Questions:

- How does this paper really distinguish social pressures from learning (see their comment on p. 1177)? This is akin to the question in the Worms paper about distinguishing imitation from learning.
- Contrast the Foster & Rosenzweig notion of learning as something that affect productivity not just behavior to that of Miguel & Kremer (kids aren't getting "more productive" at taking deworming medicine).
- Quadratic production is described as supported in the data (fn#2, p. 1180), but wouldn't this imply a non-quadratic payoff after accounting for the cost of fertilizer, in contrast to assumption #2 on p. 1179?
- How does the fixed effects specification of their model deal with the random walk nature of θ_{jt}, the targeted fertilizer use by farmer *j* in period *t* (see fn#5, p. 1181)?

- "The ratio of profitability effects of cumulative experience [of farmer *j* and his neighbors on farmer *j*'s HYV profitability is a time invariant constant". Doesn't this seem weird? I know it's just a mechanical results from the first derivatives of the profit function, but it seems that, for example, if I've never planted HYV, the relative value of my own experience will be increasing as my neighbors plant more (all the info in the world from others won't reduce my variance on theta to zero).
- If there are plot specific characteristics, how can own and neighbors' experience contain the same amount of information (p. 1186)?
- This is just me being dumb, but what is the *p* subscript in equations 15-18 (see, for example, the error term)?
- Before equation 18, F&R talk about using the panel aspects of their data to correct for the spurious relationships that would be present in the cross-section. How does the panel deal with the asset accumulation effect?
- What is the ΔA_{jt} term in equation 18? This seems like it should be change in the number of parcels of land, but the definition of *A* in the π equation seems rather arbitrary.
- The notion of $\theta - \tilde{\theta}_{ijt}$ being uncorrelated with all the RHS variables (p. 1190) seems quite strong—for example, poor people may be more likely to underutilize fertilizer. Wouldn't this affect this?
- Why should $\gamma_{av} < 0$ (p. 1191)? Isn't *A* total plots not HYV?
- General question on estimation: shouldn't measurement error be a HUGE problem here?
- More econometrics: how can we distinguish own current period experience, β_{ot}, from economies of scale?
- What about serial correlation? Say $\beta_{ov} = 0$ but cultivation in *t* and *t-1* are correlated. What would the parameter estimates be?
- How is the average of the asset coefficients (p. 1196) a relevant measure without at least weighting by mean dollar value?

Basu, Susanto and David N. Weil, "Appropriate Technology and Growth," Quarterly Journal of Economics, 113 (4), pp. 1025-54. November 1998.

Summary by Greg Fischer, 3/27/05

Brief: Models growth and technology in a macro world where technologies are specific to a particular level of capital. This leads to a number of nifty non-linear relationships between savings and growth due to asymmetric technology spillovers.

Contribution: It may explain some of Young's results for the lack of TFP growth in the Asian Tigers: they were adding new capital so fast that they couldn't reap all the productivity benefits of the old. Creates another explanation for "convergence clubs" as the spillovers generate nonconvexities in the aggregate production function that in turn create multiple locally stable steady states. Countries with different savings rates can grow at the same rate (with the lower-savings country "drafting" off the technological advances of the leader).

Detailed Summary:

-

Questions:

- The idea of technology transfer being tied to capital investment (see fn2, pp. 1026-27) makes a lot of sense. How can India get combine technology *A* without buying combines?
- Does the idea that a country would never want to convexify make sense (p. 1039)?
- Talk about the idea of dg_1 / ds_1 falling as s_1 rises above $\overline{s}_1$. This is again just mechanical as the buffer of losing the technology progress from the follower disappears, but this also feels weird.

Klenow, P. and A. Rodriguez-Clare, "The Neoclassical Revival in Growth Economics: Has it Gone too Far?," NBER Macroeconomics Annual, pp. 73-114, 1997.

Summary by Greg Fischer, 3/27/05

Brief: Incorporating primary school education (which varies less across countries than does secondary schooling) and Mincerian returns increases the role of technology/productivity in explaining growth with cross-country regressions in a neo-classical (AK) framework. When all is said and done, they find that *A* accounts for about 90% of growth from 1960-1985 (using Summers-Heston data).

Contribution: A clear paper arguing that the "neo-classical" revival may have gone too far. Technology & productivity do matter for growth and they deserve further study.

Some Thoughtful Stage-Setting from their Intro:

- Theories endogenizing technology such as Romer (1990) and Grossman & Helpman (1991) [note: he doesn't mention Aghion] arose to explain enormous differences in growth rates and levels that, as Lucas pointed out, couldn't, it seemed, be explained by capital differences.
- Along come Mankiw, Romer & Weil (1992) saying that simply augmenting the Solow model with human capital allows capital to explain almost 80% of cross-country differences. A bit later, Young looks in detail at the East Asian "miracles" and finds capital deepening *not* productivity to be responsible.
- KR find that with some thoughtful modifications, technology looks to be pretty important again (leading us to spend a lot of time studying the micro models of it).

Criticism of MRW

- MRW regress Y/L on H/Y and K/Y and get R-squared of 0.78
  - The assumption in MRW that H/Y and K/Y are orthogonal to A (which is embedded in the error term) is horrible!
  - There's a very strong omitted variable bias: H/Y and K/Y are clearly influenced by A.

Empirical Approach

- Calculate H/Y and K/Y using same methodology as MRW (but use various, and perhaps more thoughtful, measures of human capital)
- Instead of using regression to find the shares of K & H, they just use the MRW estimates;

$$Y = K^{\alpha} H^{\beta} (AL)^{1-\alpha-\beta}, \qquad \alpha = 0.3, \beta = 0.28$$

- Using these parameters, calculate A for each country
- Look at: Var(Y/L) = Cov(Y/L, X) + Cov(Y/L, A), where X=H/Y and K/Y
  - This equation should tell us how much of the cross country variation in Y/L is explained by A (technology) and how much is explained by factor inputs (X)
  - Unlike MRW, KR allow for covariance between A and factor inputs, include primary and tertiary education in H, allow production of H to be labor intensive, and use Mincerian estimates to calculate H

Results

- MRW's estimates imply 78% is due to X, and 22% due to A.
- KR find that with adjustments, technology accounts for about 90% of growth from 1960-1985.

Questions:

- This, like most other approaches of its ilk, looks at growth per available worker. Employment effects are not an issue. Does anybody look at employment? With unemployment rates as high as they are in LDCs, this seems like a big issue.

Ellison, G. and D. Fudenberg, "Rules of Thumb for Social Learning," Journal of Political Economy, 101 (4), pp. 612-643, 1993.

Summary by Greg Fischer, 3/27/05

Brief: You don't have to be a hyper-rational Bayesian to get fairly efficient decisions in the long run. A "rule of thumb" decision rule that ignores history and looks at outcomes of neighbors, popularity, and trends can do quite well, but adjustment can be slow when superior technology is first introduced and good that are sometime much much better but usually a very little bit worse (consider vaccines or seatbelts) may find it hard to get adopted.

Contribution: Let's be honest, even most econ grad students can't solve full Bayesian models for anything but the simplest of cases.

Some Intuition:

- A strategy that is more popular today is more likely to have done well in the past, so relative popularity can serve as a proxy for historical performance.
- There's a trade off in window widths: small window widths lead to long-run steady states that are approximately efficient but converge slowly, which can be costly when starting far from optimum.
- Roughly speaking, increasing popularity weighting and decreasing window widths are substitutes, but in contrast to the homogenous model, in the heterogeneous model no amount of popularity weighting alone will lead to the exactly efficient long-run state because [ ].
- With a simple homogenous model, there's an optimal popularity weight for which the system always converges to the optimal steady state. Departures from this optimal weight: overweighting may converge to less good technology; underweighting may not converge at all.
- In non-linear environments (consider the hills and valleys example), it can be harder to get to good equilibrium. Introducing some noise in the system (say with a wider window) can be optimal.

Questions:

- Could it be optimal to have a varying window width, narrowing over time.

Conley, Tim and Udry, Christopher (2004), "Learning About a New Technology: Pineapple in Ghana" *mimeo*

Summary by Greg Fischer, 3/27/05

Brief: Most people would agree that learning and information matter, but it's hard to quantify just how important as it's hard to distinguish learning from interdependent, unobservable shocks. Conley & Udry use a dataset that distinguished information linkages from simple proximity (the standard measure of an information link) and show that for pineapple cultivation in Ghana farmers adjust their use of fertilizer to news from others to which they have information links. Less experienced farmers are particularly likely to adjust to news.

Contribution: Social learning is a hot topic. This paper uses unique data to quantify that importance.

Detailed Summary:

- Measuring the extent of social learning is difficult for two main reasons:
  - The set of neighbors from whom and individual can learn is difficult to define
  - Even with a properly defined set, interdependent preferences, technologies, and correlated unobservable shocks make it hard to distinguish learning from other phenomena.
- **Methodology**
  - Define information links between agents using survey about which agents they ask for info (main results based on actual counts, but robustness checks uses predicted)
  - Collect detailed geographic, soil, credit, and family info to control for many potentially confounding factors.
  - Data from a two-year survey of 200 households in southern Ghana. Useable data from 107 plantings by 47 farmers. Use panel aspect of data of isolate impact of new information on fertilizer use.
  - Posit a general local[7] learning model that abstracts from own experimentation & strategic considerations (contrast this to the Foster & Rosenzweig paper). [It also only mentions without analysis endogenous network formation. How would this affect results?]
  - Constructs an index of good/bad news [I had trouble understanding the precise approach, see pp. 20-23 & Appendix 2, but the idea is clear] and controls for the profitability of plots with similar growing conditions.
  - Two basic specifications: (1) logistic model of probability of changing fertilizer use with respect to good and bad news from info neighbors with same and different input levels, and (2) magnitude of changes as function of news indices, both with controls for geographical effects and estimated with spatial GMM.
- **Key results**. A given farmer:
  - More likely to change fertilizer use if info neighbor using similar amount of fertilizer achieves lower than expected profits.
  - Increase (decrease) fertilizer use if info neighbors achieve unexpectedly high profits using more (less) fertilizer than he does.
  - More responsive to news if inexperienced in pineapple cultivation
  - More responsive to news from experienced farmers with similar wealth levels (interestingly, not those with similar soil or many other likely similarities).
- Extension: Learning about optimal labor use. This allows comparison to established crops of maize-cassava, for which there shouldn't be "learning" (can't compare fertilizer inputs since m-c don't use)
  - Finds learning for pineapple and not for maize-cassava.
  - Also shows that if geographical proximity is used as proxy for information links, it looks as though there is learning for m-c crops—highlighting the necessity of their approach

[7] With a local model, information on *f(x)* gives info only on *x*. In a general learning model, f(x) also gives information on inputs in some neighborhood around *x*.

Kremer, M., "The O-Ring Theory of Economic Development" *Quarterly Journal of Economics*, 108 (3), pp. 551-575, 1993.

Summary by Greg Fischer, 3/27/05[8]

Brief: Using a production function in which a number of tasks must be performed for the product to have full value and in which quantity cannot substitute for quality, Kremer constructs a model in which workers of similar skill match in equilibrium and which is consistent with a number of stylized facts including: (1) enormous wage and productivity differences between rich and poor countries, (2) assortive matching rather than paying worker of any skill according to marginal product, (3) positive wage correlation across occupations within companies, and (4) right-skewed income distribution. Extensions to the model are consistent with poor countries having a greater share of GNP in primary production, workers being paid more in industries with high-valued inputs, and rich countries specializing in more complicated products, with larger firms, and higher wages.

Contribution: With a novel, simple and plausible production function, Kremer constructs a model that is consistent with a number of interesting stylized facts. Kremer concedes that many other explanations could support the observations, but suggests that this one merits further empirical research. Has anybody done this and how could one test for alternative explanations?

Detailed Summary:

- The basic model is as follows: $E(y) = k^{\alpha}\left(\prod_{i=1}^{n} q_i\right)^{n} B$, where: k is capital; $q_i \in [0,1]$ is the skill of a worker in task *i*, *n* is the number of tasks and *B* is worker productivity. Firms are risk neutral, capital supply is fixed at k* and a continuum of workers with skill distribution $\phi(q)$ supply labor inelastically. Intuition is that of Rosen's superstar model: you can't replace one great heart surgeon with two mediocre ones. A positive cross derivative implies firms will employ workers of an identical skill.
- From the first-order conditions for profit maximization, Kremer solvers for the wage as a function of q: $w(q) = (1-\alpha)q^{n}Bk^{\alpha}+c$ (with $c=0$ from the zero-profit condition). Implications:
  - Enormous wage and productivity differences driven by the q^n term. This is consistent with Lucas's observation that physical capital alone simply cannot explain differences in international income levels.
  - Firms hire workers of different skill and produce different quality products. This can explain why, for example, Italian bicycle manufacturers can still compete with China and Taiwan.
  - Positive correlation of wages for workers of different occupations within enterprises. Kremer considers this an alternative explanation to industry rents for why secretaries at big law firms & banks are paid more than other secretaries (but is there evidence on *q* or just *w*?)
  - Firms offer jobs to only some workers rather than paying all according to marginal product. With an O-ring p.f., it's pointless or impossible to hire workers of different skill level. Why hire a crappy plumber to screw up the work of high-skilled, high-wage carpenters & bricklayers?
  - Rightward skewed income distribution is an immediate consequence.
- Extension 1—Sequential Production (production in several stages, each requiring the last to be performed successfully). High-skill workers go later ("the master paints last"). Proof (by contradiction): assume that for some task $i>j$, $q_i<q_j$. Since $i>j$, $p_i>p_j$. If we were to switch workers, we'd gain $(p_i-p_j)(q_i-q_j)>0$. Implications:
  - Poor countries have higher share of primary production in GNP
  - Workers paid more in industries with high-value inputs.
- Extension 2: Endogenous technology choice (define $B(n)$ as value of output per task if all tasks performed correctly, with $B'(0)>0$ and $B''(n)<0$). FOC for choice of q is as above so we still get assortive matching. Optimal choice of *n* implies $n'(q)>0$. Implication:
  - Rich countries specialize in complicated products

[8] Draws on earlier notes by Guy Michaels.

Adding the assumption that there is a positive correlation across firms between the number of tasks and the number of workers, we also get:
  - Firms are larger in rich countries
  - Firm size and wages are positively correlated
- Extension 3: Endogenous skill formation under perfect information and imperfect matching. With our production function, the marginal product of skill, $dw/dq_i = E\left(\prod_{j \neq i} q_j\right)$. Using a model of noisy test scores and stochastic education technology (skill is a function of education/effort plus an error), Kremer gets a number of other nice results (see pp. 566-571 of paper for details): positive spillovers (returns to own education are increasing in the education of your "group" and hence are strategic complements), multiple equilibria are possible (room for government intervention), and existence of statistical discrimination.
- Extension 4: the matching result extends to production functions with positive cross partials, it does not require the increasing returns property.

Questions:
- What is R* (below equation 7 on page 555)? Should this be k*?
- Thinking about the general tool applicability & math, is there an easy way to do the integration from (9) to (10)?
- Why does $g(\overline{e}) = \overline{q}$? Where's Jensen's inequality?
- Discuss the difference with the labor statistical discrimination models where blacks' incomes are *more* sensitive to test scores.

Banerjee, A, "A Simple Model of Herd Behavior," Quarterly Journal of Economics, 107 (3), pp. 797-817.

Brief: In a sequential decision model, it is rational for each decision maker to look at the choices made by those that went before her as they may contain important information, yet this individual optimizing behavior can lead to inefficient equilibrium. The key reason this model creates herds rather than converges to correct option is that *choices made by agents are not always sufficient statistics for their information.*

Contribution: .

Main Results:

- The equilibrium pattern of choices may (and for a large enough population *will*) be inefficient in the ex ante welfare sense. Before knowing the order of play, individuals may want to prevent the first few decision makers from observing anybody else's choices. The basic idea is that individual optimization can have players disregarding their own information, following those who have already chosen, and hence destroying the signal they were given (consider the third person to choose in the restaurant example).
- The probability that *no one* in the population chooses the correct option is bounded away from zero for any size population. By making β, the probably that a signal is correct, small this probably can be made arbitrarily close to 1. If everyone chose independently, a fraction $\alpha\beta$ will choose correctly.
- Since the herd externality is a positive feedback (if I join the herd, the next person is more likely to do so), the pattern of choices can be very volatile across plays (this may explain a lot of excess volatility in asset markets, fashion, etc.).

Extensions:

- Alternative payoff structures. Banerjee considers what would happen if, for example, there were rewards to being the first to getting the right answer: still get herds because those without signal still follow. But it suggests endogenizing payoffs (as alternative to destroying information) to encourage information revelation.
- Endogenizing order of choice: with low waiting costs, can get case where uninformed may move earlier [AB says this is because it's marginal and not absolute value of information that matters. Huh?]

Questions:

- Is there a real world analog to everybody knowing the default *i*? What happens if we get rid of this assumption?
- When discussing the potential value of destroying information (p. 811), what is the distinction between ex ante and ex post welfare (see fn18)?
- Redo the Kremer cow problem.
- See Extension above

Miguel, Edward and Michael Kremer, "Networks, Social Learning and Technology Adoption: The case of deworming drugs in Kenya"

Brief: Further exploiting the worms study, M&K find that those randomly exposed to more information on deworming drugs through social links to early treatment schools were ***less*** likely to take the drugs and more likely to believe the drugs didn't work. This effect increases with education level and is consistent with the hypothesis that individuals (particularly the more educated) had overly optimistic priors.

Contribution: Lets people talk about worms in polite company. Deworming is a good example of a treatment where (1) the social benefits of inhibiting disease transmission are large relative to the private benefits and (2) benefits emerge gradually whereas the costs are immediate (leading to a particularly low value on treatment for those with hyperbolically discounting individuals, which children probably are). Such technologies may not diffuse on their own and subsidies may be optimal.

Interesting Observations:

- Find evidence of strong social effects and extensive social networks among teenagers, suggesting that a child-child public health approach could speed social learning (evidence that teens are largely responsible for their own health care decisions in Kenya).
- All the NGO sponsored education in the world doesn't seem to change worm prevention behavior.

Question of the "I don't understand" variety:

- What is the difference between "learning" and "imitation" here? Why does the negative result address this?

Question of the "hmm… I wonder" variety:

- Would be nice to see how well the children's network effects generalize.
- M&K note that no market for deworming drugs has developed in Kenya. Has one developed elsewhere?
- They find that mass treatment with deworming drugs generates substantial gains in school participation but has no effect on test scores. What does this mean?
- Does anybody but Ted Miguel call it the "Fan local regression" (p. 16)? [I think it's in the Deaton book too]

Kremer, M., "Creating Markets for New Vaccines" Parts I & II. 2001.

Brief: Malaria, tuberculosis, and strains of HIV common in Africa kill approximately 5 million people each year, yet research on vaccines for these diseases remain minimal. This lack of research is not only because the people affected are poor; vaccines are subject to severe market failures: governments are tempted to use powers as regulators, major purchasers and arbiters of I.P. to force down prices. Kremer advocates a pull mechanism of committing to purchase vaccines and make them available to poor countries as an attractive way to increase incentives for vaccine developers.

Contribution: .

Why people under-consume vaccines:

- Inadequate incentives: not only do vaccines have private benefits, but they help break transmission
- Chief beneficiaries are children, who cannot contract to pay vaccine developers for private benefits
- Consumers seem more willing to pay for treatment than prevention (Kremer argues that this is because it takes time for them to learn about effectiveness of vaccines, but it seems some behavioral explanation may be warranted)
- Monopoly pricing limits consumption of on-patent vaccines.

Interesting Observations:

- If the only reason for the lack of research on vaccines were the poverty of affected countries, there'd be no reason to target vaccines rather than general aid. It's the market failures and distortions that suggest efficient intervention.
- The story about fraud at USAID is sad.
- Other pull mechanisms and their drawbacks
  - Patent extensions on other drugs don't make sense: the windfall potential on Prozac may encourage Eli Lilly to develop vaccines, but it's really just a tax on Prozac.
  - Cash prizes are not politically popular and can have perverse incentives (get approved, get prize, let people find out later that the drug has side effects).
  - Tournaments are hard to properly define (does an 80% effectiveness hurdle discourage releasing the 75% effective drug that's better than nothing?) and often entail payments before a product is available.

Macro Credit

Ghatak, Maitreesh and Nien-Hui Jiang (2002), "A Simple Model of Inequality, Occupational Choice and Development", Journal of Development Economics 69(1), 205-226.

Summary by Greg Fischer, 4/18/05

Brief: .

Contribution: This paper fits into a long and growing literature on credit constraints and poverty traps; Galor & Zeira (1993) and Banerjee & Newman (1993) being two good examples.

Summary:

- Analyze a model of occupational choice (really just a simplified version of the Banerjee-Newman) model) in the presence of credit market constraints.
- Because threats of punishment work less well against the poor, they face greater borrowing constraints. This in turn prevents them from adopting efficient technologies or choosing profitable occupations, and hence they remain poor.
- At aggregate level, this implies that unlike in neoclassical growth models, two economies that are identical in terms of all parameters may end up with different steady state incomes in they had different initial distributions of wealth. This argument used to explain why measures of initial inequality are negatively correlated with growth.
- Basic model in just infinitely lived dynasties with preferences over consumption and bequests
- Two deterministic production technologies, but one uses capital (they characterize the two technologies as subsistence, or agricultural, technology and entrepreneurial, or industrial, technology, but this is arbitrary)
- Each agent chooses an occupation among subsistence, worker (worker for an entrepreneur at some market wage), and entrepreneur (invests an amount *I* to start a firm. Like Banerjee, firm size is fixed. [I wonder what happens when we endogenize this?]). In all occupations, excess capital is just invested at the market rate *r*.
- The form is credit rationing is modeled starkly: if wealth is below a certain level, can't get a loan at any interest rate (it's the classic moral hazard model: at lower wealth, need to borrow more, since level of sanctions is the same for all borrowers, have greater incentive to default).

$$(q - w_t) - r(I - a_{i,t}) \geq q - w_t - \pi F$$

$$\text{or, } a_{i,t} \geq I - \frac{\pi F}{r}.$$

- They then go on to calculate the equilibrium wage rate, which depends on the current wealth distribution and also influence the following period's distribution through savings behavior.
- With no frictions in the economy, if the modern technology is more efficient then it will be used by the entire economy, but not with imperfect credit markets.
- Model stochastics with exogenous savings shocks. This is odd, but easier than Banerjee-Newman.
- Page 223 has a nice list of related articles, focusing on entrepreneurial behavior, that are probably worth a look if interested in the field.

Two Steady States

- Low wage:
- High wage:

Cool comparative statics (p. 216)

- An increase in the productivity of the subsistence technology increases per capital income by raising the incomes of those in the subsistence sector, but in raising workers' wages it reduces the wealth level of entrepreneurs in a low-wage equilibrium: it's effect on s.s. income is ambiguous
- Productivity: increase in tech. productivity does not necessarily raise s.s. income because increased productivity in substance sector pushes up wages (as above) and can act as a drag on modernization by reducing income to entrepreneurs
- Increasing *s*, the exogenously assumed bequest rate, raises the s.s. wealth level of every dynasty.
- If there's a positive property of catching defaulters (basic model assumes zero and hence *no* credit markets) this, all else equal, makes the economy more likely to reach high wage eqm. This suggests that improving enforcement technology has an unambiguous positive role in eliminating poverty traps while lowering capital scarcity (just reducing *r*) has an ambiguous effect.

Banerjee, A. and A. Newman (1993), "Occupational Choice and the Process of Development," Journal of Political Economy 101, 274-298.

Summary by Greg Fischer, 4/18/05

Brief: .

Contribution:

Summary:

- Because of capital market imperfections, poor agents choose wage labor over self-employment, and wealthy agents become entrepreneurs who monitor workers.
- Only with sufficient inequality will there be employment contracts, else there is either subsistence or self-employment. In this sense, some inequality is necessary to make the transition from cottage industry (self-employment) to factory production (employment contracts).
- B&N summarize this point as follows: "despite the fact that capitalism is a more dynamic economic system, its initial emergence does depend on the existence of a populatin of dispossessed whose best choice is to work for a wage." Sadly, this may be necessary but is not sufficient.
- Note: what Banerjee & Newman really mean by "occupations" is contractual arrangements.
- Like most models of this ilk, there's a deus ex machina in the form of "foreign banks" willing to lend and borrow at some fixed international rate. [How would model change if required a certain wealth level to have access to this option?]
- This all leads to four occupational choices: (1) subsistence, (2) working (for an entrepreneur), (3) self-employment, and (4) entrepreneurship (which is using monitoring technology to keep track of workers' effort).
- Like others, ignores equity financing. It seems like most financial market models do this. This seems to be missing a big piece. Does anyone address this (Holmstrom?)?
- Page 281 has some worthwhile references to other capital/credit market models.
- The math and dynamics in the middle of the paper are gruesome (I skipped them and focused on the general ideas).
- Like most of these path/distribution dependent models: a one time redistribution can have permanent effects.
- Can have individual mobility but aggregate hysteresis [which I think means some persistent, unpleasant distribution, but we should check this!]

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

Summary by Greg Fischer, 4/18/05 (drawing on Todd Gormley's previous summary)

Brief: .

Contribution:

Summary:

- Continuing on (or starting) the themes of Banerjee/Newman (1993; among others) and Ghatak/Jiang (2002), shows that in the presence of credit market imperfections & indivisibilities in human capital, the distribution of wealth can have both short and long run effects on wealth distribution and per capita output.
- Galor and Zeira are motivated by an attempt to explain the positive correlation between equality of the wealth distribution and per-capita income. It interesting to contrast their motivation and the implications of their model with that of Banerjee-Newman, for whom inequality is required to capitalist institutions (factories) to form.
- Most of these models, and Galor and Zeira are no exception, abstract from heterogeneous abilities. [How does this matter?]
- Key model assumptions
    - Credit markets are imperfect: interest rates for borrowers > that for lenders
    - Human capital is indivisible→non-convexity of technology. This is modeled as a binary choice to either get education or not.
- Key difference from other studies: Differences between economies persist because of differences in human capital investment arising from credit market imperfections and individual-level production non-convexities created by the indivisibility of human capital investment.
- As seems standard in OLG models, consumption only occurs in the second period. [What effect does this abstracting from time preferences have on the model besides making the math more tractable?]
- They solve Cobb-Douglas utility (so agents allocate their income equally between consumption and bequests. Human capital is a pure investment good so choose education to maximize lifetime income.
- Distribution of wealth has significant macroeconomic consequences. In particular, if there are non-convexities in human capital production, these effects are carried into the long run. What matters is the percentage of individuals who inherit sufficient wealth to allow the investment in human capital.

Their Model

- There's one good produced with either skilled or unskilled labor. Skilled labor is more productive and thus earns a higher wage.
- Fixed cost of obtaining human capital (becoming skilled) induces non-convexity of investment returns
- Imperfect credit markets as lenders pay cost to avoid default. Causes gap between borrowing and lending rates.
- CD preference for consumption (c) and bequest (b): $U= \alpha \ln c + (1-\alpha)\ln b$
    - Constant fraction of wealth allocated to each of c and b.
    - Want to maximize total income in each period
- Parameter assumptions made to ensure:
    - Wealthy (those who don't need to borrow) always invest
    - There's a cutoff level of wealth, *f*, above which borrow to obtain skill
    - Thus, education limited to the wealthy
- There is a mapping of current wealth into whether or not you invest. The assumptions yield a quasi-S curve:

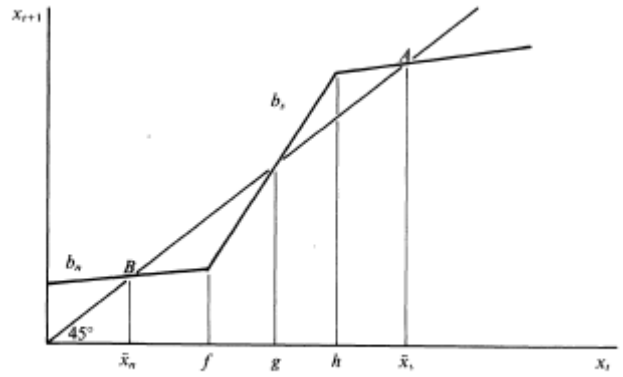


FIGURE 1

- Those with low wealth (x < g), converge to low wealth level and provide unskilled labor
- Those with wealth above g, converge to high wealth and skilled labor.

Some extension to the model (probably not that important)

- Small idiosyncratic wage shocks don't effect results
- There's something about allowing for variable wages, but I'm not sure what's going on.

Mookherjee, Dilip and Debraj Ray (2002), "Contractual Structure and Wealth Accumulation," American Economic Review, Vol. 92 (4), pp. 818-849

Summary by Greg Fischer, 4/18/05

Brief: With limited financial contracts, capital market imperfections can be endogenously derived from underlying moral hazard problems (here, when principals have all the bargaining power). In this setting, initial wealth distributions can affect long-run output and distribution ***even in the absence of non-convexities and externalities.***

Summary:

- Capital market imperfections are endogenously derived from underlying moral hazard problems.
- Unlike most of the other models we examine in this section, Mookherjee & Ray preserve Loury's (1981) original assumptions of convex technology and strategic savings behavior.
- They do, however, exogenously fix the set of agents (borrowers, workers, tenants, entrepreneurs) and principals (lenders, employers, landlords, financiers).
- Poverty traps emerge when principals have all the bargaining power. Owing to their lack of collateral, agents are offered a "floor contract" that provides rents (i.e., payoffs in excess of outside options) in order to provide adequate effort incentives, but this contract is removed as agents become wealthier which leads to an effectively 100% marginal tax on wealth accumulation by the poor.
- This produces an endogenous nonconvexity in the returns to savings and, for suitable parameter values, generates poverty traps. It also generates strong incentives for the wealth to oversave, less they risk becoming poor, so their wealth drifts upwards and classes polarize.
- Where agents have the bargaining power, the incentives to save exist at all wealth levels and regardless of the initial wealth distribution there are no poverty traps.

Dilip Mookherjee & Debraj Ray, 2003, "Persistent Inequality", Review of Economic Studies, ...

Summary by Greg Fischer, 4/18/05

Brief: When capital markets are imperfect, long-run inequality is inevitable in any steady state with some occupational diversity *irrespective* of the degree of foresight or intergenerational altruism of the parents, or the divisibility of the investment options.

Summary:

- If human capital accumulation generates pecuniary externalities across professions [describe] and capital markets are imperfect, persistent inequality is inevitable in any steady state, even if investments are divisible.
- Indivisibilities (here, the fineness of the occupation structure) generate a continuum of inefficient and efficient steady states with varying per capita income. With perfect divisibility, there's typically a unique steady state, which is Pareto efficient.
- Key assumption: Inputs supplied by different occupations are not perfect substitutes. Relative returns to occupations depends on distribution of occupations-->there exist pecuniary externalities to investment.
- But this model has the immediate implication, with which the authors seem quite pleased, that in any steady state there is no mobility at all across occupations with distinct wages. This seems contrary to empirical reality, no?
- In this model (see p. 371), the divisibility of investment makes no difference to inequality.

Recapping Main Themes

- When capital markets are imperfect, long-run inequality is inevitable in any steady state with some occupational diversity *irrespective* of the degree of foresight or intergenerational altruism of the parents, or the divisibility of the investment options.
- While individual dynasties are stuck in path dependence (recall the conclusion the occupational choice doesn't vary over generations at steady state) if there is a rich enough set of occupations, the economy will have a unique steady state (i.e., no path dependence). But add some granularity to the set of occupations, and you're back in the land of multiple equilibria where one-time interventions can have permanent effects.
- In extreme, with two occupations and exogenous training costs, there are two continua of efficient and inefficient steady states. The inefficient steady states involve underinvestment and greater inequality than every efficient steady state, hence there's scope for temporary interventions to raise both long-run per capital income *and* reduce inequality.

Banerjee, Abhijit (2003), "Contracting Constraints, Credit Markets and Economic Development," in M.Dewatripont, L.Hansen and S.Turnovsky, eds, Advances in Economics and Econometrics: Theory and Applications Eight World Congress of the Econometric Society, Volume III Cambridge University Press, pp. 1-46.

Summary by Greg Fischer based on summary by Guy Michaels, 5/8/05

Brief: .

Contribution:

Credit Markets in LDCs differ greatly from the Neoclassical model

- Sizeable gaps between lending and deposit rates within the same subeconomy. Intermediation often consumes over 1/3 of income.
- Lenders charge very different rates for loans that appear similar.
- Realized default rates are low and unlikely to explain these gaps.
- High interest loans are typically used for production and trade.
- Richer people borrow more ***and*** pay lower interest rates.
- Bigger loans are associated with lower rates.

Discussion

- Standard theory decomposes interest rates into default rates, opportunity costs of funds, transaction costs, and monopoly rents.
- None of these is causal. For example, screening and monitoring costs needed to discourage default increase transaction costs, direct credit to existing borrowers and create ex-post monopoly power for the lender (a borrow would need to reestablish credibility in order to move to a new lender).
- Low transaction costs may indicate that lending is limited to a small community; low default rates may indicate excessive monitoring; ex-post rents may not conflict with ex-ante competition.

Model of borrowing with ex-ante moral hazard

- The borrower may choose risky projects, expecting to default if things go badly. Implications:
  - Higher leverage or interest rates or lower productivity worsens inefficiency
  - More leveraged and less productive borrowers pay higher interest rates; a multiplier effect cause interest rates to raise more than cost of capital
  - Cpaital market imperfections lead to underinvestment; the rich tend to invest more
  - Imperfections lower demand for capital and thus lower *r* in partial equilibrium.
  - Positive feedback between *r* and monitoring costs can cause even greater increase in both (rates up, so more likely to default, so rates have to go up …)
  - The actual default level may be quite low
  - CRS in monitoring makes everyone borrow proportional to wealth and pay the same *r*.
  - IRS results in the rich paying a lower *r* and being able to borrow more.
  - [How does this relate to Holmstrom & Tirole (1996) on ex-post moral hazard?]

Implications

- Income Distribution
  - Credit market imperfections are important and can lead to much output being wasted on monitoring and to larger earning gaps between rich and poor.
  - Impact on long-run dynamics: if production, monitoring, and bequest technologies exhibit CRS or IRS, equality will increase [THIS IS FROM GUY. SHOULD CHECK ARTICLE AS THIS SEEMS WEIRD]
  - When prices are endogenous and supply and demand elasticities are low, there is scope for collective poverty traps [WHY IS THIS?]
- Other
  - Will lead to greater variation of firm size within an industry [WHY?]; firms may be too small (capital starved) or too big (capturing advantages of size).

- Over diversified firms are more likely
- Tied market transactions, such as trade credit, will be used to reduce monitoring costs
- Increased exposure to risk or greater risk aversion may improve incentives
- Reputation may be very important

Policy Implications

- The implications of social protection for the poor are different for insurance and credit markets.
- Ensuring the poor can access credit and have protected property rights can be very important.
- Subsidizing access to savings opportunities for the poor can avoid poverty traps.
- Lard reform can improve both growth and equality.
- Government agencies should assist firms in establishing their reputation.

Banerjee, A and A. Newman, "Poverty, Incentives and Development" American Economic Review, 84 (2), 1994, pp. 211-215.

Summary by Greg Fischer, 4/18/05

Brief: .

Contribution:

Summary:

- This is just a short Papers and Proceedings article on credit market imperfection induced poverty traps.
- Again the crux of these models: the poor are closer to the lower bound on utility (the limited liability constraint), threats of punishment don't work as well, so the poor behave as if they've got nothing to lose (the don't), and hence can't borrow.
- Leads to a focus on relative poverty. Banerjee and Newman note that the poor in America behave more or less like the poor in India. But the poor in the US have much more income and wealth than the poor in India. Why, they ask, don't the poor in America behave more like the middle class in India?
- In conclusion, they posit an increasing monitoring cost (as measured in food, but it really just needs to be the unit in which true limited liability constraints are measured). This generates the credit market imperfection occupational choice breakdown at a higher income level.

Loury, G., "Intergenerational Transfers and the Distribution of Earnings", Econometrica, 49 (4), 1981, pp. 843-867.

Summary by Greg Fischer, 4/18/05

Brief: .

Contribution:

Summary:

- This appears the paper the kicked off the line of thinking that credit market imperfections affect macro behavior.
- Unlike other (later) models of its ilk, Loury's model allows for a distribution of abilities (here, learned only in the "adult" stage of life). Why do later models drop this?
- Like other models, the fact that allocation of training resources for any generation depends on the distribution of earning among that generation's parents means that redistribution can both improve efficiency and inequality.
- Loury notes (p. 851) that there's a difference between intergenerational mobility (the property of some transition function, P, that determines the distribution of one's progeny in the income distribution) and cross-sectional inequality (an asymptotic property of the income generation generated by P). In light of this, what constitutes a "more equal" distribution is not so easily defined.
- Contains a number of the key elements in Banerjee's education model
  - Inefficiency is created by the inability of the poor to borrow to fund their children's education
  - Poor parents can't constrain children to repay debts incurred on their behalf (else, if the return to education was high enough, would borrow to fund kids education and they would pay back when they reaped the benefits)
  - Absence of inter-family loans (rich parents don't lend to poor to fund education)
- With two key assumptions—the declining marginal product of social background (returns to education are decreasing in parents income/social background, but declines less rapidly for the more able) and the uncorrelatedness of ability across generations—get result that universal education produces an earnings distribution with lower variance and higher mean than laissez-faire.

Dasgupta, Partha and Debraj Ray (1986), "Inequality as a Determinant of Malnutrition and Unemployment: Theory," The Economic Journal, Vol. 96 (384), pp. 1011-1034.

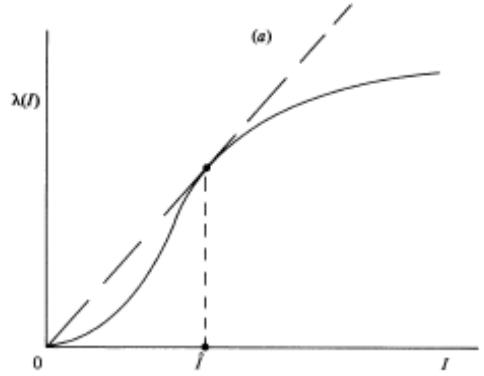
Summary by Greg Fischer, 4/18/05

Brief: .

Contribution:

Summary:

- While this paper also appeared in the Health & Nutrition section, it is applicable here as it uses the increasing returns to scale aspect of the nutrition-productivity relationship to derive a GE model that can explain involuntary unemployment, malnourishment and poverty traps.
- Dasgupta and Ray emphasize that they get these results with frictionless markets for all capital assets and perfect competition. There are no missing markets and the outcome is Pareto efficient, therefore the is no effective policy intervention.
- The crux of this model resides in a couple of charts. First the relationship between income and the ability to generate income (income is used to buy food)



- [NEED TO FINISH. SEE CLASS NOTES AND EARLIER WRITE UP, SHOULD WORK THROUGH SHORT VERSION OF THIS MODEL. ITS AND EASY EXAM QUESTION (AND APPERED ON THE 771 FINAL IN FALL 2003).

Banerjee, A.V. and A. Newman, "Information, the Dual economy and Development", Review of Economic Studies, 65 (4), 1998, pp. 631-653.

Summary by Greg Fischer, 4/18/05

Brief: .

Contribution:

Summary:

- *This is kind of a painful paper, but the basis idea is interesting.*
- There's a two sector economy. A modern sector with high productivity but large information asymmetries. And a traditional sector with low productivity but minimal asymmetries. This creates a tradeoff between credit availability and productivity. Banerjee and Newman put this in the social network context by placing the modern sector in urban areas.

The Model: Starts with a static model then adds dynamics.

- Everyone is more productive in the city (modern sector). In 1st best, everyone would migrate.
- Three periods
  - Individual begins life with wealth a_i (Banerjee & Newman don't subscript, but there has to be some heterogeneity for this to make sense, no?)
  - Makes a costless location choice and has a chance to consume some indivisible good (making this a productive investment makes model messy). If wealth is insufficient to cover cost, may be able to borrow to finance consumption.
  - Realize income, consume, payback or renege on loans, and (in the dynamic model) leave bequest
- The loan market
  - Capital is perfectly mobile between sectors
  - But information and enforcement powers are not.
    - Can successfully renege on loan repayment with some positive probability, π, in the urban sector. If caught, consumption is set to zero. [Note the model as presented in the paper starts with two opportunities to escape repayment, but then collapses them into one. I don't see where this ever affects the results].
    - Assume (this is a bit extreme) that if born and live in village, can't escape repayment of loans
    - Higher agency costs in urban market make consumption loans more difficult to obtain. Get standard agency cost model where ability to borrow is increasing in wealth and decreasing in interest rate.
    - Can only borrow if wealth is such that utility from repayment $[y-(m-a)r]$ > utility from reneging $[\pi y]$. This leads to cutoff level of assets, $a^c=m-[(1-\pi)\, y/r]$. If living in urban sector, can borrow iff $a > a^c$. If stay in village, can borrow iff $w > (m-a)\, r$, i.e. the wage is high enough to repay the loan. This leads to a lower cutoff $a^v = m - w/r$.
- Leads to tradeoff: if agree to stay in rural sector, for agents with $a < a^c$, can borrow to finance first period consumption, earn lower wages.

Model Implications

- Who migrates?
  - Those with assets greater than a^c. They have enough assets to borrow in either sector and would rather earn the higher wage available in the urban sector.
  - The very poor, those with assets less than a^v, because they can't borrow in either sector so would also prefer the higher wages of the urban sector.
  - Then there are some guys in the middle for whom $w-(m-a)\, r + s < \lambda w + ar$ (where s is the utility of the first period consumption good), i.e. the utility of being in the city (all linear here) including the return on loaning out assets at rate r, exceeds the utility of country life (only earn w, get to consume s, have to repay borrowing). This solves out to $r > s/m - (\lambda-1)\, w / m$. Since the RHS of

this is a decreasing function of w, it's the wealthiest among the middle class who move to the city.

- Source of inefficiency:
  - Intuitively, since everyone is more productive in the city, you'd think that there a chance for inefficiency when not everyone moves there
  - Could transfer some non-migrating individuals to the city. This increases total wages (they're now more productive) and decreases demand for loans (they borrow in the village but not in the city). This additional capital lowers interest rates in the urban sector, allowing more people to borrow there [I don't understand the mechanism for this last part].

Adding Dynamics

- Two key factors in the path to modernization (p. 644)
- Those who migrate earn more in the city than had they stayed in the village, thus they leave larger bequests, making it more likely that their children reach a^c.
  - Migrating agents increase overall income/capital, thereby pushing down the interest rate and increasing the ability for everyone in the urban sector to borrow (recall the *r* threshold).
- Generates a Kuznets curve path to modernization (inequality rises when some of people are in city and some still languishing in the village)
- Under some conditions, the economy modernizes fully, but it always does so too slowly. Would be better off if modernization were to occur fully and immediately as soon as modern sector opened.

Other Bits

- Potentially perverse effect from rural lending institutions (such as Grameen). They make capital more readily available in the traditional sector (say, for example, π_R was a small positive number before their arrival and is reduced to zero). So a^V falls; the marginal lower middle tier can now get loans so they stay. This increases interest rates in the village, raising a^c, thus the marginal upper tier of the middle class who went to the city now stay. This could be mitigated if such programs brought in outside financing that would not have otherwise been available, thus removing the effect on interest rates. [What effect have lenders like Grameen had on interest rates paid to other lenders?]

Land

The Ideas

- Why is it that big farms are less efficient than small farms
  - Limited liability leads to inefficient effort
  - Stiglitz: if risk aversion than don't want small farmer to be residual claimant
    - [Cheung, Chicago]: Would argue markets should solve risk aversion, BUT Land markets don't exist, people hold for non-monetary reasons (e.g., so can't use one instrument for multiple goals).
  - Eswaran-Kotwal have model of two-sided moral hazard.
    - Two inputs into cultivation: effort and managerial know-how.
    - Both sides payoffs depend on output so both need incentives
    - Relative skills determine who becomes tenant.
    - There's a fixed cost to managerial output, so managers want to work with multiple "tenants"
    - Why diversity of farm size: some agents have both skills so can stay small.
- What effect do land reforms have on efficiency
  - Depends on whether cause of inefficiency is limited liability or risk aversion
  - If limited liability, should transfer income in most efficient way possible, no reason it has to be land.
  - If risk aversion, upon getting land, tenants will need to replace insurance, may end up with same type of relationship. Just redistributing wealth. No Pareto improvement.

Models to Know

- Abhijit's limited liability land model (see land handout or class notes 11/26/04)
  - Full rent contracts, first best
  - Limited liability contracts with and without binding PC/IR
  - Quirky notes
    - Threat of eviction can be incentive for effort
    - Bilateral moral hazard

Empirical Evidence

- Rosenzweig & Binswanger (EJ: 1993): ICRISAT panel. Small farms at least 2x more productive. [Question of external validity since sample limited to farmers wealthy enough to have both own and sharecropped plots. CONFIRM ME]. They also note that as variance increases, gap in productivity decreases, which suggests that large are better insured.
- Shaban (QJE 1987): uses same ICRISAT data. Finds farmers use significantly less inputs on land that they sharecrop than on owned-land (controls for land quality). Not sure he fully deals with endogeneity of share/own decision. Also, external validity questionable since only looks at farmers with both sharecropped and owned land, who are richer than pure sharecroppers.
- Lin (AER 1992) uses variation in spread of de-collectivization in China. Finds small effects (about 14%) but could be endogenous timing (poor districts allowed to liberalize first)
- Banerjee, Gertler, Ghatak (JPE 2002) look at tenancy reform in W. Bengal (tenure security and reduction in tenant's required payment share), find large (at least 60%) increase in productivity, but admit to weaknesses in looking at aggregate data (can't control for other things, in particular ag-extension programs, going on simultaneously).
- Besley & Burgess (2000) use a 35-year panel to provide suggestive evidence that certain types of land reforms my reduce poverty, but they also suggest an efficiency-equity tradeoff. Yet I wouldn't buy the empirics.

Other Key Papers

Banerjee, Abhijit, Paul Gertler and Maitresh Ghatak (2002), "Empowerment and Efficiency: Tenancy Reform in West Bengal," Journal of Political Economy, Vol. 110 (2), pp 239-280.

Summary by Greg Fischer, 5/1/05

Brief: The tenancy reform implemented by the Indian State of West Bengal in the late 1970s (Operation Barga) is shown to have a positive impact on agricultural productivity (rice yields). Banerjee, Gertler, Ghatak start with a theoretical model of land reform embodying moral hazard and limited liability to show that tenancy reform has two effects: (1) threat of eviction by landlord may induce tenants to work harder so removing it could reduce effort and (2) greater security may increase investment (property rights) as would increased share of residual claims.

Interesting Notes

- Operation Barga included only partial tenancy reform—gave incumbent right to claim higher share of output and permanent tenure—rather than complete transfer (e.g., redistributing ownership).
- West Bengal, Bangladesh is used as control. W.B., Bangladesh had larger public investments and introduction of HYV (could the intro of HYV in Bangladesh been due to the fact that decision makers had less to lose?).
- Robustness check: look at relative performance within West Bengal, India across areas with different level of program intensity.

Besley, Timothy and Robin Burgess (2000), "Land Reform, Poverty Reduction, and Growth: Evidence from India," Quarterly Journal of Economics, Vol. 115 (2), 389-430.

Summary by Greg Fischer, 5/1/05

Brief: Using panel data from Indian states (1958-1992) show that certain types of land reform are associated with poverty reduction. The put in a lot of controls in an attempt to address concerns of proxy (is land reform just a proxy for a whole range of other anti-poverty programs) and endogeneity (is land reform just responding to other forces driving poverty). Never fully buy it, but it does establish correlation. Find some differences in types of reforms: tenancy reform seems to reduce ag. Productivity while consolidation improves it. Besley & Burgess suggest equity-efficiency tradeoff exists.

Interesting Notes

- Four types of land reforms
  - Tenancy reform: includes regulating contracts, registration programs, abolition of tenancy, and land transfer
  - Abolish intermediaries: sort of tax farming. Most completed before sample. Five during.
  - Landholding ceilings: goal to redistribute "surplus" to landless.
  - Consolidation of disparate landholdings.

Banerjee, Abhijit "Land Reforms: Prospects and Strategies" mimeo

Summary by Greg Fischer, 5/1/05

Brief: Focuses on policies of actively redistributing land to rural poor. Heart of empirical argument: small farms in developing countries tend to be substantially more productive than large farms. Inefficient land allocation can be caused by agency problems in the absence of missing credit or land markets. But even if we accept that small farms are more productive, case for reform not open and shut. First, type of agency problem matters. Landlord may be providing a service, either effective insurance of know-how. Land reform is just a form of wealth transfer, so other transfer schemes should be evaluated. w

Interesting Notes

- Agriculture should have increasing returns to scale (e.g., marketing/sales expenses, need to capital intensive machinery (such as sugar cane crushers)
- Would also expect the more capable to acquire more land and have larger farms
- Sometimes small can be better
  - May solve incentive problems: small farms tend to be family run so agency theory applies
    - Tenants likely too poor to pay sufficient rents
    - Sharecropping results, reducing tenants' incentives for effort and investment
    - Risk aversion can prevent making tenant residual claimant
- Crux of agency problem with land
  - Land-owner would like to sell tenant right to be residual claimant (i.e., charge fixed rents) because this creates correct incentives for effort and investment (abstracting for other effects)
  - But at beginning of season, tenant too poor to pay rent
  - End of season rents (effective the land-owner loans tenant rent for season) have problem that with uncertainty (e.g., crop failure) tenant may be unable to pay. Limited liability constrains land-owner's claims
  - If bound on rent sufficiently tight, may want some form of sharecropping, thereby reducing incentives.
  - **Important note: this problem is not caused by missing credit or land markets, but rather agency problems from either limited-liability or risk-aversion.**
- In limited-liability agency model, land-owner is not useful. Redistribution is clearly good, but it operates just through increase in tenants' net worth. **Other approaches to making tenants richer are isomorphic to redistributing land for these purposes.**
- With risk-aversion, land-owner is effectively providing insurance. In this model, land redistribution will just force tenant to go out and find someone to fill the insurance void left by prior landholder. No change in productivity.
- Land-owner may also offer technical expertise. Implication: fixed rates should be more common when tenant doesn't need anything (expertise, insurance) from land owners.
- Land reform: may make it harder for tenant to get inputs from landowner because no longer has threat of expulsion to enforce contract.
- Compensated land reform: less resistance but also less redistribution if compensate land holder

Alternatives to land reform

- Why might you want them? Even if no efficiency costs to redistribution, the actual act of redistributing may be quite costly (including opportunity costs). May wish to spend resources elsewhere.
- A final case for land reform: may provide permanent source of income (not subject to expenditure behavior of non-unitary family).
- Market assisted land reforms
  - Try to bring about reforms without coercion
  - Generally, state gives landless people grants or subsidized loans to buy land
  - Lose coordination benefits (for example, simultaneous targeted ag. extension programs).
  - Market approach should generate better targeting (people who want the land most get it)

- Incentives to negotiate price and no room for owners or tenant-buyers to gripe about compensation

Field, Erica (2004), "Do Property Titles Increase Credit Access Among the Urban Poor? Evidence from a Nationwide Titling Program," Mimeo, Harvard, January.

Summary by Greg Fischer, 5/1/05

Brief: Evaluates nationwide urban land titling program in Peru to see if strengthening property institutions allows lenders to accept low-income housing as collateral. Finds land titling associated with 10% increase in approval rates for pubic sector bank loans for home construction materials, but no effect on approval for private loans. Conditional on receiving a loan, finds a 9% reduction in private sector interest rates. But credit rationing still appears to be a problem after titling. In particular, all improvement accrue to construction loans; no change in entrepreneurial loans

Interesting Notes

- [Add more if have time] This is a great paper!

Field, Erica (2003), "Entitled to Work: Urban Property Rights and Labor Supply in Peru," Mimeo, Harvard, July.

Summary by Greg Fischer, 5/1/05

Brief: Looks at the labor market effect of Peru's nation-wide urban titling program. Field finds that titling results in substantial increase in labor hours, a shift in labor to work outside the home (which corresponds to a *reduction* in business investment), and a substitution of adult for child labor.

Interesting Notes

- [Add more if have time] This too is a great paper!

Reputation

The Ideas

Empirical Evidence

Other Key Papers

Tirole, Jean (1996), "A Theory of Collective Reputations (With Applications to the Persistence of Corruption and to Firm Quality)," Review of Economic Studies, Vol. 63 (1), pp.1-22.

Summary by Greg Fischer, 5/1/05

Brief: Models group reputation as the aggregate of individual reputations. A member's current incentives are effected by non only his past behavior (the classic reputation model) but, because his history is only observed with noise, also by the past behavior of the group.

Interesting Notes

- Behavior of new members depends on history of prior members' behavior
- Reputations, once broken, can be hard to rebuild
- A "corruption shock" can persist for a long time.

The Model Set-up

- Principal-agent matching model with incomplete information concerning agents past behavior
- Principal demands some good produced by agents (say T-shirts)
- Two possible good qualities (low and high); high worth more but costs more to produce (for model to be interesting, surplus from high should exceed that of low).
- Three types of agents: honest, cheaters, and opportunistic (choose whether to cheat after being hired)
  - Principal only knows proportion of agents
  - Can observe past cheating with some probability
- Two potential steady states
  - Low-corruption: all opportunists behave honestly & principal offers low quality option only if he observes past bad behavior
  - High-corruption: All opportunists behave corruptly. Principal only offers low option
- [See additional handwritten Model Notes for a detailed run through a simplified version of the model following Banerjee's lecture notes]

Banerjee, Abhijit and Esther Duflo (2000), "Reputation Effects and the Limits of Contracting: A study of the Indian Software Industry," Quarterly Journal of Economics, Vol. 115 (3), pp. 989-1017, 2000.

Brief: Reputation (age, ISO certification, past experience) has a strong effect on the type of contract (fixed price or time and materials) and the contract outcome. Test this with data from 125 Indian software CEOs and 230 associated projects. Find that time and materials contracts (risk of overrun with purchaser) are more likely for more established firms and for repeat business. Banerjee & Duflo consider this a possible explanation for why India, despite its large labor pool and cost advantage, did not have a larger share of the world software market (though if contracts are still forming, I don't see why this matters).

Interesting Notes

- ISO doesn't have an effect, but industry was switching to competing standard (SEI) specific to software industry. Project characteristics don't matter.

McMillan, John and Christopher Woodruff (1999). "Interfirm Relationships and Informal Credit in Vietnam," Quarterly Journal of Economics Vol 114 No. 4, pp. 1285-1320.

Brief: Firms in Vietnam tend to offer trade credit when (1) it's hard for the customer to find an alternative supplier, (2) the seller has information about customer either through research or prior dealings, and (3) the supplier belongs to a network of similar suppliers (which provides both information and a means of sanction). Vietnam is a good test of relational contracting, because there is almost no court system to enforce contracts.

Interesting Notes

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Macro-Population Models

The Ideas

Empirical Evidence

Other Key Papers

Kremer, M., "Population Growth and Technological Change: 1,000,000 B.C. to 1990," Quarterly Journal of Economics, 108 (3), pp. 681-716.

Summary by Greg Fischer, 5/1/05

Brief: .

Interesting Notes

- See hand written model notes.

Galor, O., and David N. Weil, "The Gender Gap, Fertility, and Growth," American Economic Review, 86 (3), pp. 374-387, 1996.

Summary by Greg Fischer, 5/1/05

Brief: .

Interesting Notes

- See hand written model notes.

Mark Rosenzweig (1990), "Population Growth and Human Capital Investments: Theory and Evidence," Journal of Political Economy, vol. 98: S12-S70.

Summary by Greg Fischer, 5/1/05

Brief: .

Interesting Notes

- See hand written model notes.

Macro-Miscellaneous

The Ideas

Empirical Evidence

Other Key Papers

Young, Alwyn. "Invention and Bounded Learning by Doing," Journal of Political Economy. Vol. 101 (3). P 443-72. June 1993.

Summary by Greg Fischer, 5/1/05

Brief:

Interesting Notes

- Sustained technological progress involves interaction between deliberative innovation and serendipitous learning.
- Model
  - Invention of new products requires sacrifice of current consumption as resources allocated from production to research.
  - Successful innovators obtain infinitely lived patents as incentive to engage in research
  - Following models of learning by doing (LBD), Young assumes that production experience generates new knowledge on how to produce goods more efficiently.
    - In contrast to previous models, Young assumes the potential for such gains are finite & bdd.
  - New technologies have potential to be more productive, but are initially inferior to mature technologies that have attained learning bound (with margin on inferiority increasing in how far new technologies are from society's cumulative experience)
  - In general equilibrium, learning and innovation are interdependent:
    - Sustained innovation is necessary to allow continuation of otherwise bounded learning
    - Learning is necessary to make viable the continued innovation of otherwise increasingly unproductive new technologies.
- With small markets, large time discounting, or relatively costly innovation, the profitability of inventive activity is so low that [little] takes place. [check article again for a better understanding of this equilibrium]
- In the opposite scenario—large markets, relatively inexpensive innovation—innovation pulls ahead of learning experience, leading to an equilibrium in which rates of innovation and growth are determined by rate of learning (so just like a LBD model in which pattern of production determines growth).
  - Here, a subsidy to innovative activity will not affect growth.
- In intermediate case, both invention and learning are potentially binding constraints and policies affecting either will affect growth.

Young, Alwyn. "Learning By Doing and the Dynamic Effects of International Trade," Quarterly Journal of Economics. Vol 106 (2). p. 369 -405. May 1991.

Summary by Greg Fischer (as copied from abstract), 5/1/05

Brief:

Interesting Notes

- Uses the same basic bounded learning by doing model as Young's "Innovation and Bounded Learning By Doing" paper in which learning, although bounded in each good, exhibits spillovers across goods.
- Distinguishing LDCs and DCs (the latter begin with a higher initial level of knowledge), finds that less developed country experiences technical progress and GDP growth under free trade that is *less than or equal to* that experienced in autarky.
- Since there are still usual static gains from trade, free trade may still improve welfare in LDCs.

Krugman, Paul. "The Narrow Moving Band, the Dutch Disease, and the Competitive Consequences of Mrs. Thatcher: Notes on Trade in the Presence of Dynamic Scale Economies," Journal of Development Economics. Vol. 27 (1-2). p 41-55. October 1987.

Summary by Greg Fischer, 5/2/05

Brief:

Interesting Notes

- Model of trade in which comparative advantage, instead of being the product of underlying country attributes, evolves over time through learning by doing.
- In this model, arbitrary patterns of specialization, once established, tend to become entrenched as productivity increases.
- Presents a nice explanation of observations that are inconsistent with conventional models
  - Temporary protection of selected sectors can permanently alter the pattern of trade *in favor* of the protecting country (think about East Asia)
  - Seemingly favorable development, such as the discovery of natural resources such as the Dutch's discovery of North Sea oil, may lead to a *permanent* loss of other sectors and reduce welfare in the long run
    - Dutch disease: discover oil→lot of demand for it→exchange rates rise→marginal industries are no longer competitive→other countries grow in productivity→exchange rates fall but the comparative advantage in these industries is gone for good.
  - A temporary overvaluation of currency due to tight money can lead to same permanent loss of competitiveness in some sectors.

Aggregative Growth Theory & Critiques

The Ideas

Empirical Evidence

Other Key Papers

Caselli, F. & J. Ventura (2000) "A Representative Consumer Theory of Distribution," American Economic Review, Vol. 90 (4), pp. 909-26.

Summary by Greg Fischer, 5/1/05

Brief: Adding heterogeneity to initial wealth, taste for public good, and labor skill to the neoclassical model and separating consumption into private and public goods can induce pretty much any pattern you want into the distribution of consumption, assets, and income. The point seems to be that Representative Consumer models don't require everyone to be identical, just that the aggregates behave in a way that can be modeled as a RC. This allows one to still model distributional dynamics from a tractable RC model.

Interesting Notes

- [See Model Notes for an application in context of Banerjee's growth section]

Mankiw, Greg, David Romer and David Weil (1992), "A Contribution to the Empirics of Economic Growth", Quarterly Journal of Economics, 107 (2): 407-37. Coordination & Production Failure Models

Summary by Greg Fischer, 5/1/05

Brief: .

Interesting Notes

- See hand written model notes.

Goldstein, Markus and Chris Udry (1999), "Agricultural Innovation and Resource Management in Ghana,",Mimeo, Yale University, August.

Summary by Greg Fischer, 5/1/05

Brief: Pineapple production in Ghana is much more profitable than traditional maize and cassava rotations, but almost no women and only select men grow it why? Offers a number theories—capital constraints affect women disproportionately, failure of unitary model of household, some social learning story, land tenure [mechanism?], soil quality differences [why?]—but the result if very much a work in progress with lots of loose ends and a jumble of weak empirical correlations.

Interesting Notes

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Bils, Mark and Peter Klenow (2000), "Does Schooling Cause Growth?" American Economic Review, 90 (5): 1160-83.

Summary by Greg Fischer, 5/1/05 (a very abbreviated summary based on someone else's work)

Brief: A number of previous papers (e.g., Barro (1991) and Sala-i-Martin (1995) find a positive relationship between schooling and growth in cross country growth regressions, with an additional year of mean schooling associated with around 0.3% faster growth. The causal interpretation people like to put on this is that schooling increase human capital which increases output. Bils and Klenow posit a human capital production function and show that schooling may actually be associated (implausibly?) with a fall in human capital. They conclude that effect of human capital on growth is small: about 22%, with physical capital and TFP differences accounting for 46% and 32%, respectively.

Interesting Notes

- Note that raw labor increased in places with higher schooling, so they'll focus on GDP per worker rather than GDP per capita.
- Construct measure of human capital to see how schooling maps into this

$$h(a) = h(a-n)^{\phi} \exp\{s^{1-\psi} + \gamma_1(a-s) + \gamma_2(a-s)^2\}$$

  - The get γs from Mincer regressions
  - Get ψs from cross-country regressions of Mincerian returns on schooling levels. The use ψ=0.58, which is VERY concave, so much so that such diminishing returns seem implausible.
  - The try with different values of ϕ. [What is the interpretation of ϕ?]
- Results: regressing human capital growth on schooling yields negative coefficients for ψ>0.
- Allow for indirect effect of human capital through technology (this fits with the idea that there's an externality that goes from human capital to technology adoption), but this has little effect.
- Then they do some funky metrics (who knows?) to explore reverse causation—basic idea: if economy is growing, it's great to get an education because pay for it when economy and prices are low, and reap benefits when economy is richer.

Murphy, Kevin, Andrei Shleifer and Robert Vishny (1989), "Industrialization and the Big Push", Journal of Political Economy, 97(5): 1003-1026.

Summary by Greg Fischer, 5/1/05

Brief: Rosenstein-Rodan's had the idea that under certain conditions, it can be profitable for many sectors of the economy to industrialize even when no sector industrializing along can break even. Murphy, Shleifer, Vishny (1989) characterize mechanisms that could generate this "Big Push" model of development. These can lead to the existence of multiple, Pareto-ranked equilibria.

Interesting Notes

- Empirical motivation: in countries with over 20 million people, domestic demand accounts for over 70% of increases in domestic industrial output from the 1950s to the 1970s Even in export-oriented South Korea, it accounts for over half.

Model 1: Factory wage premium

- A measure 1 of monopolistic firms in different sectors. Can use CRS technology (produce L, pay wage L), or invest in some IRS technology (produce αL, pay compensating wage (1+v)L and fixed cost (1+v)F]. [See Model Notes for detail]
- What's required?
  - Increasing returns
  - Factory wage premium (needed to create demand externality)
  - [See Kremer notes for more]
  - First firm to industrialize must make negative profit <u>but</u> increase aggregate output (by paying more in wages and thereby generating a demand externality)

Model 2: Dynamic Model with Pecuniary Externalities

- Expectations about future industrialization by other firms raises expected future demand and increases incentives to invest (industrialize). This will lower demand today (agents invest rather than consume) but this has no effect on investment incentives

Model 3: Infrastructure

- Industrializing sectors generate demand for infrastructure (railroads, accounting systems)
- If enough firms industrialize, it becomes profitable to build infrastructure, lowering everyone's costs so they would want to industrialize.

Kremer, Michael (1993), "The O-Ring Theory of Economic Development" The Quarterly Journal of Economics, 108 (3), pp. 551-575. *(also in Technology)*

Summary by Greg Fischer, 5/1/05

Brief: .

Interesting Notes

- See hand written model notes.

Rosenzweig, Mark R., 1995, "Why are there returns to schooling?" American Economic Review, 85, 153-158.

Summary by Greg Fischer, 5/1/05

Brief: Theoretically, schooling enhances productivity by improving access to information sources and improving one's ability to process new information. Returns to school are higher when substantial learning is required to use inputs properly.

Interesting Notes

- Fits in the context of macro models because it speaks to rates of return to human capital investment in developing countries
- Uses a Bayesian learning, target-input model similar to that in Foster and Rosenzweig "Learning By Doing …" (JPE 1995), to illustrate.
- Schooling improves learning and enhances returns by either improving prior or increasing precision of new information.
- Implication, new technology should only increase returns to schooling if it's hard to use.
- Empirical evidence
  - Introduction of easy to use contraceptives had little impact on schooling returns
  - Intro of HYV seeds did increase returns to schooling (see the "LBD" paper from 1995).
    - HYV results suggest that schooling positive impact results from enhanced ability to incorporate new information rather than improving access to external information [how is this?]

Risk

Banerjee, A.V. and A. Newman, "Risk-Bearing and the Theory of Income Distribution", Review of Economic Studies, 58 (2), 1991, pp. 211-235.

Summary by Greg Fischer, 5/1/05

Brief: [How should one summarize this???]

Interesting Notes

- A model of distribution driven by risk bearing
- Credit markets are perfect
- Standard bequest model: agents have preferences over consumption and bequests.
- Can save at exogenous rate or can become entrepreneurs, whose investments are risky but have higher expected returns
- Entrepreneurs can ensure themselves by selling stock in their firms
- Moral hazard: entrepreneur needs to exert unobservable, costly effort. If doesn't put in effort, project fails.
- There is a minimum share in the firm that an entrepreneur must hold to satisfy IC. Since entrepreneur is risk averse, this constraint will bind.
- [Assuming fixed project size and CRRA], there is a wealth effect: the richer you are, the less risk averse you are, and the higher β has to be to satisfy IC.
- Always obtain a non-degenerate, ergodic distribution and any initial distribution of wealth will converge to this invariant distribution.
- There is still mobility in the model. In fact (AB likes to point this out) every dynasty will pass through every income level in finite time.
- [What's the big conclusion?]

Newman, A., "Risk-Bearing and Knightian Entrepreneurship", mimeo 1995.

Summary by Greg Fischer, 5/1/05 (based on summary by Gerard Padró i Miquel)

Brief: In the Knightian (traditional) theory of entrepreneurship, risk bearing is the factor that separates entrepreneurs from workers. With the ability to buy insurance, moral hazard, normal (concave) utility, can get a reversal of the traditional patterns: the poor become entrepreneurs and the wealthy work. Newman himself concludes that while interesting, this set of theories bears little connection to reality [but the basic idea and model is still taught in 14.771].

Key Ideas & Intuition

- In traditional model
  - Workers bear no risk for wage
  - Entrepreneurs subject to risky project returns
  - Relatively risk averse agents, therefore, become workers and less averse become entrepreneurs
  - Since most utility functions we consider have absolute risk aversion decreasing in wealth, rich people become entrepreneurs and poor become workers
- Suppose, however, that it's possible to buy insurance, that entrepreneurial actions are costly, affect firm value, and are non-observable.
- Without insurance, firm size would be increasing in wealth [why?]
- If insurance, all firms will be optimal size (with expected profits of starting a firm equal to the wage; recall he's assumed perfect credit markets)
- **Since utility function is concave, very little variability will be sufficient to discipline poor people**, because it implies large difference in utility (contrast with model in "Two Poverties" where limited liability bounds utility from below and poor "have nothing to lose")
- **If risk aversion doesn't decline too quickly** (technically, need the reciprocal of marginal utility to be convex), **then rich work and bear no risk because they're very expensive to insure.**

Interesting Notes

- [See class notes from 14.771 for a good discussion]

Banerjee, A.V., "The Two Poverties", Nordic Journal of Political Economy, Vol. 26 (2), pp. 129-41, revised 2003.

Summary by Greg Fischer drawing heavily on summary by Todd Gormley, 5/1/05

Brief: Two versions of poverty—"desperation" in which the poor have nothing to lose so no one wants to lend to them, and "vulnerability" where losses hurt too much so poor don't invest—have very different policy implications. In the latter, a more effective social safety net increases investment, in the desperation model it has the opposite effect.

THIS IS A VERY GOOD PAPER TO WORK THOUGH. IT CONTAINS NICE, SIMPLE MODELS COVERING SOME OF ABHIJIT'S FAVORITE THEMES.

Basic Theoretical Model

- Overlapping generations model with intergenerational altruism
  - Either consume or bequest income (identical to Galor-Zeira, same preferences)
    - Preferences "rigged" as C-D to ensure constant fraction of income saved/consumed
  - Lower bound on level of indirect utility (e.g, social welfare system or death)
  - Can either save wealth in bank at rate r or invest in a business for return $R>r$
  - Starting business costs direct disutility of effort, E, and must forgo wages w

Poverty as Desperation

- Poor are poor because they have nothing to lose; people don't want to because can't enforce
- Because of incentive to default if borrow to invest, incentive compatibility constraint required
  - If default at get caught, lose everything down to floor
  - → investment cap (max. amount of borrowing) that's an increasing function of wealth
- Implications:
  - Those with more wealth can borrow more (because they have more to lose)
  - [Decreasing risk aversion makes incentive compatibility tougher-CHECK PAPER]
  - Increasing the social welfare floor reduces the ability to borrow and decreases investment

Poverty as vulnerability

- Poor because losses hurt too much, i.e., they are relatively risk averse and therefore underinvest.
- No incentive to default. Always repay if possible, no credit market imperfections.
- Return on investment now only succeeds with probability q. If fails, return is zero.
- CRRA ensures diminishing absolute risk aversion; rich are less sensitive to failure risk.
- Implications:
  - With low social safety net, only the rich will invest.
  - With high social net, poor will have little to lose and also invest. Only the middle class don't
  - More risk aversion leads to less investment

Differences between the models

- The effect of raising the social safety net on investment by the poor goes in opposite directions
- Being "vulnerable" is almost the literal opposite of "having nothing to lose"
  - Different policy implications.

Savings

Ideas

- We generally consider two motivations for savings: (1) the permanent income hypothesis which says that people want to smooth consumption throughout their lives in order to equate discounted marginal utilities of consumption and (2) precautionary savings, which has people building a buffer stock because borrowing constraints prevent them from borrowing when they get negative shocks.

Models

- Basic Euler equation

Papers

- Paxson (JPE 1993) uses rainfall variation in Thailand to deconstruct the permanent and transitory components of farmers' income and finds support for the PIH: people tend to save transitory shocks and consume permanent.
- Deaton & Paxon (1994) which test the PIH's implication that variability of consumption and income should increase with age. They find support for this using repeated cross-section of household expenditure data in Taiwan, the UK, and the US.

Deaton, A., and C. Paxson, (1994) "Intertemporal Choice and Inequality," Journal of Political Economy, Vol. 102 (3), pp. 437-467.

Summary by Greg Fischer, detailed summary drawn from notes by Guy Michaels 5/1/05

Brief: This is a test of the implication of the Permanent Income Hypothesis's implication that within-cohort inequality of consumption and income should increase with age. In contrast, models with strong precautionary savings motives, liquidity constraints, and risk sharing can limit or prevent growing inequality. Using data from the US, the UK and Taiwan, Deaton and Paxson find support for the PIH, but caution that other explanations (screening models, human capital investment, etc.).

The Idea

- The permanent income hypothesis (PIH) implies that within-cohort inequality in income and consumption should increase with age.
- Models with strong precautionary savings motives, liquidity constraints, and risk sharing can limit or prevent growing inequality.
- Deaton & Paxson find support for the PIH's implication of increasing inequality with data from Taiwan, the US, and the UK.

Methodology & Data

- Data: pooled cross-section of household surveys from US, UK, and Taiwan. Avoids attrition issues of panel data. See Deaton's "Analysis of Household Surveys" for a discussion of using cross-sectional data as a quasi-panel.
- Estimation: households are tracked by the age of the household head. Each cohort-year cell in each country typically has 150 to 400 observations (though fewer for younger heads).
- Deaton and Paxson plot variation of hh consumption by cohort by year. Curves generally upward sloping. US & UK profiles start sloping upwards earlier than those in Taiwan and are steeper.
- Caveat: The authors note Mincer's (1974) observation that the dispersion of income along the lifecycle may be due to differential investments in human capital. Screening models could also generate a similar outcome.

Implications

- Without bequest, society level of inequality remains stable, but under PIH, substantial bequests should lead to growing inequality over time.
- Demographic transition can lead to substantial changes in inequality following a Kuznetz Curve.
- Aggregation can hide a lot of what's really going on.

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Inequality & Growth

Ravallion, M. (2001) "Growth, Inequality and Poverty: Looking Beyond Averages," mimeo, World Bank Development Research Group.

Summary by Greg Fischer, 5/1/05

Brief: Summarizes much of the relevant literature on connections between growth, inequality and poverty. Ravallion critically reviews a number of cross-country studies, including Dollar & Kray's (2000) controversial "Growth is Good for the Poor", and he concludes that the cross country evidence is suspect (lack of effective price deflators, underreporting by the rich, discrepancies in results between household survey and NIPA studies, absence of informal sector, etc.). Calls for looking more closely at micro evidence.

Interesting Notes

Forbes, Kristin J. (2000) "A reassessment of the relationship between inequality and growth," American Economic Review 90(4), 869–887

Summary by Greg Fischer, 5/1/05 (extracted from summary by Todd Gormley)

Brief: Through better control of omitted variables and measurement errors, panel data estimation shows that inequality is associated with short-term economic growth, contradicting some prior literature (e.g., Dollar and Kray) which concluded no such tradeoff existed.

Interesting Notes

- Uses panel data and GMM to correct for some of the measurement error and omitted variable biases that are present in most cross-country research (*I never really buy the ability to correct fully for omitted variables at such an aggregate level, but …)* using the "high quality" section of the Deininger & Squire data from 1966-1995.
- Regress income growth onto lagged measures of inequality, income, education levels, market distortion measurements (incl. corruption), country and year dummies
  $$Growth_{i,t} = \beta_1 Inequality_{i,t-1} + \beta_2 Income_{i,t-1} + \beta_3 X_{i,t-1} + \alpha_i + \eta_t + \varepsilon_{i,t}$$
- Variable of interest is β_1, the coefficient on lagged inequality as measured by the Gini coefficient
- Uses Arrelano-Bond (first differences, uses lagged RHS variables as instruments, need predetermined RHS variables).
- Problems: likely endogeneity problem between lagged growth and inequality; few observations; limited regional coverage (using higher quality data excludes most poor countries, so it's unclear how relevant this result is); and Gini measure is not perfectly comparable across countries.
- Banerjee & Duflo point out that this result can be entirely driven by instrumenting changes in inequality with lagged inequality in a sample where the majority of changes are downwards.

Banerjee, Abhijit and Esther Duflo, "Inequality and Growth: What Can the Data Say?", Journal of Economic Growth 2003

Summary by Greg Fischer, 5/1/05

Brief: First, point out that relationship between inequality and growth is probably linear, a point which they demonstrate with a simple model of holdups in which any changes in inequality could retard growth. Previous studies miss this when testing for a linear relationship. Then the use Deininger-Squire, finding that regressions on current gini and gini-squared yield nothing, but non-parametric estimates of growth on gini show a clear inverted U-shape. They (of course) don't claim causality, but use their results to poke holes in the existing literature.

Interesting Notes

Sala-i-Martin, Xavier (2002) "The World Distribution of Income (Estimated from Individual Country Distributions)," NBER Working Paper 8933.

Summary by Greg Fischer, 5/1/05

Brief: Making all kinds of structural assumptions and using quintile income shares estimated from based on Deininger-Squire [how do they calculate it], which he assumes are constant over the study period but then subjected to a transformation based on changes in standard deviations (*quite parametric*), applied to the PPP adjusted GNP measures of the Summers-Heston data, Sala-i-Martin finds substantial reductions in poverty over the period from 1970 to 1998; "the whole distribution has shifted to the right."

With enough assumptions, a smart researcher can say anything, but there's enough of a lack of transparency (yes, he spells out details, but there are too many assumptions to trace back) to be suspicious.

Interesting Notes

Chen, Shaohua and Martin Ravallion "How did the World's poorest fare in the 1990s?"

Summary by Greg Fischer, 5/1/05

Brief: Using a variety of poverty measures (more importantly the World Bank's favorite "$1/day" standard), and country-level household survey data (with all its attendant difficulties, and in contrast to Sala-i-Martin's use of NIPAs) concludes that while percentage of world's population living in poverty fell from 1987-1998, the absolute number of poor still increased.

Main point: it's not quite time to start patting ourselves on the back. But boy is it a leap of faith to pretend that any of these studies is truly comparable or to buy results which construct poverty measures from reported distributions and means (behavior at the tails is always wacky).

Interesting Notes

Financial Development

King, Robert G. and Ross Levine (1993). "Finance and Growth: Schumpeter Might be Right," *Quarterly Journal of Economics v. 108, pp. 717-737.*

Summary by Greg Fischer, 5/1/05

Brief: This is just another in a long line of silly cross-country growth regressions. Here, King and Levine are trying to link financial development to growth. In include it only for their choice of financial indicators: (1) **Financial Depth:** the size of the formal financial intermediary sector to GNP, (2) **The importance of domestic private banks to the central bank**, (3) **Proportion of credit allocated by financial system to private enterprises**, and (4) **Ration of claims on non-financial private sector to GDP.** Results suggest that financial deepening comes before growth, but the assiduously avoid any causal language.

Interesting Notes

- It's a short, quick read. The intro and conclusion are probably worth a peek.
- Gives credit for Schumpeter for identifying the importance of financial intermediaries.

Sapienza, Paola, Luigi Guiso and Luigi Zingales (2004). "Does Local Financial Development Matter?" *Quarterly Journal of Economics*, vol. 119 (3).

Summary by Greg Fischer, 5/1/05 (based on Todd Gormley's summary)

Brief: Micro-level empirical data from Italy suggest that greater local financial development increases local competition, promotes higher firm growth rates (especially for smaller firms), lower the age of the average entrepreneur, and increases overall local growth.

Interesting Notes

- Prior research focused on cross-country regressions during period of low international capital mobility. Sapienza, Guiso and Zingales ask whether local development still matters as global integration increases.
- King and Levine look at older data in the U.S., pre financial market integration.
- Locality matters as banker's use rule of thumb: "never lend to a client located more than three miles from the bank's office."
- Use household survey and firm level data from Italy in the 1980s
- Regress a number of outcome variables (including firm growth) on a proxy for financial development using IV at the regional level.
- Their proxy is the probability that an individual is able to obtain credit in a specific region (specifically differences in rejection rates). Resulting proxy is highly correlated with other measures of financial development, so they think it's a good one [need to confirm that it's not the chance of getting turned down by a particular institution]
- Exogeneity of financial development to contemporaneous growth is hard to buy. Use "judicial inefficiency" and "social capital" measures (blood donation, elector turnout, and levels of cooperatives) as instruments.
- *It seems to me that all of these could affect growth directly. Not sure they're valid instruments.*
- Find effect of financial development (or whatever they're actually end up testing if the instruments don't really work) has largest effect on small and medium-sized businesses and all kind of good effects on the economy.

Rajan, Raghuram and Luigi Zingales (1998). "Financial Dependence and Growth." *American Economic Review* v. 88(3), pp. 559-586.

Summary by Greg Fischer, 5/1/05

Brief: Does financial development facilitate economic growth? Rajan and Zingales (1998) use a panel of firm-level data to show that firms with a greater predicted need for external finance grow faster in countries that have more-developed financial markets. The industry identification strategy is believable.

This is really quite a nice paper. The industry identification strategy is believable (though not without flaws, see below). There's also a nice UCLA working paper by Braun & Larrian that focuses this to manufacturing companies in recessions.

Interesting Bits

- Since Schumpeter (1911), economists have emphasized the positive influence of financial development on growth, but demonstrating a causal link has been difficult because:
  - Omitted variables (such as propensity to save) could be driving both
  - Reverse causality: the level of credit and the size of the stock market may rise because of anticipated growth.
- The theoretical mechanisms by which financial development affects economic growth
  - Financial markets and development help firms overcome moral hazard and adverse selection (identify investment opportunities, reduce investment in liquid but unproductive assets, mobilize savings, boost technological innovation, and improve risk taking), thus reducing their cost of obtaining outside financing.
  - Financial development should, therefore, disproportionately help firms and industries that rely more on external finance.
- Can't use actual external financing of industries—not only is it not available, but even if it were, it'd be endogenous—so use U.S. companies in same industry as benchmark [Though this is an improvement, I'm still not sure it solves the problem as type of firm within industry (e.g., pharmaceutical research vs. generic manufacture) may be endogenous]
- Use a panel of data for 41 countries in the 1980 with industry data in each country to estimate:

$$Growth_{j,k} = \beta_1 \cdot Country + \beta_2 \cdot Industry + \beta_3(\text{Industry } j\text{'s share of manufacturing in country } k \text{ in 1980}) + \beta_4(\text{External dependence of industry } j \cdot \text{Financial Development of Country } k) + \varepsilon_{j,k}$$

- Results
  - There is a positive and significant effect of financial development on growth of industries that require external finance.
  - Finding is robust to different measures of financial development (accounting standards, total capitalization/GNP, domestic credit/private sector GNP, per capital income(!)) and external dependence.
  - Rule out that financial development is proxying for human capital (find no chance when including interaction between external finance and human capital) and technological maturity (include log of per capita GDP interacted with external dependence [is this the right check?])
  - They test for and rule out reverse causality (see p. 582 if curious)
- One tough problem: the measure of accounting quality.
  - First, it's based on what firms actually doing, so this is likely endogenous. Firms who expect to need financing are likely to be more disclosive, clean up books, etc.
  - This is measured by surveying three or so firms in the country and looking at which of 90 reporting items they disclosed. It ignores industry variation, which could deal with all of this.