

The Cliometric Society



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Report on the 45th Cliometrics Society Conference

By Ron Alquist (Michigan), Marta Felis-Rota (London School of Economics), Sok Chul Hong (Chicago), and Martin Uebele (University of Warwick and Humboldt-University of Berlin)

(Tucson) The 45th Annual Cliometrics Conference was held May 18-20, 2007, at the Westward Look Resort in Tucson, Arizona. The Program and Local Arrangements Committee created a stimulating and international program and provided the finest hospitality to all. Thanks to committee members Ann Carlos (Colorado at Boulder), Price Fishback (Arizona), Paul Rhode (Arizona), and Susan Wolcott (SUNY-Binghamton)!

Michael Huberman (Montreal) opened the conference with "Are Your Labor Standards Set in China? Evidence from the First Great Wave of Globalization, 1870-1914." The paper, co-authored with **Christopher M. Meissner** (Cambridge and NBER), explores the effect of labor laws on trade in the late 19th and early 20th centuries. Their motivation is the supposed paradox of a globalizing nineteenth century economy and the coincident rise of labor market regulation in western industrializing countries. Using an index for labor protection which they created, they study the effect of labor standards on exports in a gravity model. They find that higher labor standards did not have an enduring negative effect on exports, but in fact standards increased productivity. They also state that standards were raised in the first place because of emerging democracy. A case study of Belgium illustrates their argument.

One part of the discussion was about the relation between legislation and the labor market. Joyce Burnette (Wabash)

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The Economic and Business Historical Society Meeting

By Daniel C. Giedeman, Grand Valley State University

(Providence) The 32nd Annual Meeting of the Economic and Business Historical Society was held at the Providence, Rhode Island, Hilton from April 26-28, 2007. The conference was well-attended by a diverse group of scholars from across North America, Europe, and Asia. In total, sixty papers were presented in twenty-three different sessions. EBHS President and Program Chair Roberto Mazzoleni (Hofstra University), EBHS President-Elect Silvano Wueschner (Air University), EBHS Chairman of the Board of Trustees Jamie Stitt (High Point University), Michael Namorato (University of Mississippi), Dave Zalewski (Providence College), and Sharon Murphy (Providence College) were instrumental in the coordination and success of the conference. Providence College also generously provided audio-visual resources for the meeting.

The conference began on Thursday morning with three concurrent panels. Franklin Noll (U.S. Bureau of Engraving and Printing) chaired the first of these panels that was highlighted by **Giandomenico Piluso's** (University of Siena) presentation of "Do Banks Follow Business Cycles? Evidence from the Italian Case, 1890-1973," which he co-authored with **Carlo Brambilla** (Bocconi University). Unfortunately, this first panel was abbreviated because **Loren Gatch** (University of Central Oklahoma) was unable to attend to give her presentation "Local Money in the United States during the Great Depression." Patrick Breen (Providence College) chaired the second panel of the early morning session. The first paper of this panel was "Uncertain Business: A Case Study of Barbadian Plantation Management, 1770-1793" by **Justin Roberts** (Johns Hopkins University). The next presentation was **Jonathan Chu's** (University of Massachusetts-Boston) "William Bligh - Breadfruit and the Adjustment of the British West Indies to the American Revolution." The panel was rounded out by "Born out of Slavery - Evidence from Bergen County, New Jersey, 1804-1846" by **Teresa Hutchins** (Ramapo College of New Jersey).

Dan Giedeman (Grand Valley State University) chaired the final panel of the first session which was led off by **Christopher Ebert** (Brooklyn College) presenting "Insurance and Inter-Imperial Merchant Organization in the Early Atlantic Economy and its Institutional Context." In his paper, Ebert used the example of the voyage of the Dutch ship *de Hoop* to highlight the international nature of Portuguese shipping during the early 17th century. Ebert discussed how the need for a method to insure fair practices among a geographically and

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A Letter from the Director

Editor's note: As regular readers of this column will recall, the Society's executive director, Lee Craig, recently announced his retirement. Shortly after that announcement, Lee taped an episode of Larry King Live on CNN. Below is the transcript from that episode. Sadly, CNN tells the *Newsletter* that there are no plans to air the tape.

Larry King: Good evening. I have with me tonight a very special guest. Lee Craig, executive director of the Cliometric Society will be with us to tell you all about Clios, metrics, and other fascinating things from his world. But first, here's what's happening in the news.

(Cut to news.)

(Cut to Larry.)

LK: Welcome back. With me is Lee Craig, executive director of the Cliometric Society. Welcome.

Lee Craig: It's good to be here, Larry.

LK: First, tell us: What is a Clio?

Lee: Clio was the muse of history.

LK: And metric?

Lee: Uh, in this context it means to measure.

LK: So you're measuring history.

Lee: Sort of.

LK: *(Bored.)* That must be interesting. But our viewers are also interested in what goes on behind the scenes of this measuring-history organization. The nitty-gritty of how it works. You've been a party to more than a few scandals during your time in office. Am I right?

Lee: Actually, I'm not aware of any scandals, Larry.

LK: *(Shocked!)* You're not aware of any scandals? I should tell you that several guests on this show have mentioned some, I'll say, less-than reputable interactions with you and your organization.

Lee: Okay, Larry, I think I know where this is going ...

LK: For example, is it true that you've personally refused to take phone calls from Oprah Winfrey? And before you answer, I want you look at this tape.

Oprah: *(Roll tape)* ... and Larry this Mr. or Dr. Craig, or whatever he calls himself, won't even take my calls. *(Stop tape.)*

LK: *(Raises eyebrows.)*

Lee: It is not that I refused to take her call, Larry; it is just that I was once in class when she called, and then she refused to take my call in return.

LK: I see. So Oprah was willing to grant your little society some time on her show -- which by the way, I'm told, people in New York and LA are willing to kill to get on -- and while you expected her call, you went to class anyway? Is that how it happened?

Lee: I'm paid to teach not sit around and wait for celebrities to call me.

LK: Have you ever heard yourself referred to as "arrogant"?

Lee: Only in my course evaluations, Larry.

LK: Let's move on to another topic. My sources tell me you got into a fight with Wayne Newton in a Las Vegas restaurant. Any truth to that?

Lee: No, Larry; there's no truth to that. I once met Wayne Newton briefly in the Reno Airport. That's the extent of our association.

LK: You know, he's a friend mine, and when he was last on the show he talked about you and your society. Watch.

Wayne: *(Roll tape.) (Laughter.)* ... Well Larry, some guy from the Metroclius Group or whatever they're called was pressing me for a donation, and he wouldn't let up; so I just let him have it, just decked him right there at the bar in Mon Ami Gabi. *(Stop tape.)*

LK: Do you want to call Wayne Newton a liar?

Lee: No, Larry; I don't want to do that. Maybe I had a little too much to drink that night.

LK: Speaking of that, is it true that you and members of your board of trustees once spent an entire night in a bar of questionable repute--very questionable repute--in Montreal, and that after the bar closed, in violation of the law, you remained inside with the employees, all of whom were female, for several more hours? And that you and male members of the board danced together on several occasions?

Lee: Well, Larry it's not like it sounds ... Who told you that?

LK: Finally, I'm holding a photocopy of a police report. It says you and a certain "Grubby Farley" were detained coming out of

Letter from the Editor

Dear Cliometric Society Members,

Thanks to the Clio Board of Trustees for offering to me this opportunity to serve as your *Newsletter* editor. Thanks especially to Mike Hauptert (past editor) and Jean Bonde (past managing editor) for their assistance and patience as I've taken on this challenge.

We've enjoyed designing the new look for your *Newsletter*; we hope you enjoy perusing it. Though the look is new, the content is familiar. You'll find your favorite reports of the formal and not-so-formal proceedings of the 2007 Clio meetings. You'll find reminders of upcoming meetings and paper submission deadlines. You'll find an interview with an elder of economic history, teasers for the ASSA meetings, and more.

Suggestions, critiques, and submissions for future editions of the *Newsletter* may be forwarded to me at mhansen@american.edu. I can be reached the old fashioned ways at Department of Economics, American University, 4400 Massachusetts Ave., NW, Washington, DC, 20016, 202-885-3793.

Best wishes for a safe holiday break.

Mary Eschelbach Hansen

"As I tell my daughters: I'm only a god-like figure...." - Lee Craig

a Munich discothèque at 5:00A.M.

Lee: It's "Farley Grubb", and it's true that I once roomed with him in Munich. But I don't recall any police...

LK: But did the two of stay out all night? On more than one occasion?

Lee: Um, well, I think he stayed out later than I did.

LK: I could go on, but let's take some calls. You're on Larry King Live.

Caller #1: Hi Larry; thank you for taking my call. I live with my parents in Nampa, Idaho, and I'm going to college next year, and I'm interested in studying economic history. But my dad says that the Cliometric Society is run by the Trilateral Commission and he won't let me have anything to do with it. So my question is: Is it run by the Trilateral Commission?

LK: Good question. (*Turns to Lee.*) Is it?

Lee: No, Larry.

LK: This is not the first time a caller has asked about the Trilateral Commission. What is it? If it doesn't run your organization, what is its affiliation with your organization?

Lee: Larry, the Trilateral Commission is a group of three very rich, very powerful economic historians of who study financial markets.

LK: What are their names?

Lee: (*Hesitates.*) I probably should not reveal that...

LK: Would like to go back to the other charges against you during your tenure in office? I have a tape of Kate Moss ... And here's one of Billy Connolly, something about you and Tom Weiss with Billy in Glasgow...

Lee: No, that's okay. I'll tell you. The Trilateral Commission, also known as the "Money Trust," is composed of Richard Sylla, Charles Calomiris, and Joseph Mason. There, are you happy?

LK: Let's take another call.

Caller #2: Hi Larry; I'm a big a fan of Dr. Craig's. I just want to ask him how he does it. How does he keep everything going—the conferences, the journals, the bills? He must be some kind of god, right?

LK: How do you do it? Are you a god?

Lee: (*Chuckles.*) No, Larry. As I tell my daughters: I'm only a god-like figure; I'm not really a god.

LK: We're almost out of time. Before we finish I want to tell our viewers you won't want to miss next week's show. Nancy Reagan will be here to talk about Ronnie's years in the Cliometric Society. She claims he did not leave it—it left him.

LK: (*Returning to Lee.*) Before we go, would you like to summarize your nine-year reign? Maybe tell us about membership growth, or the endowment, or the number of conferences, sessions or paper presentations you've organized or planned, any or all of the good things that have happened on your watch?

Lee: Thanks for the opportunity, Larry, but I've notice that

university administrators like to do that when they move on. I think I'll pass.

LK: No final words at all? No MacArthur-esque farewell? Wouldn't you like to get a word in against your enemies? I think your members deserve something.

Lee: (*To Clio members.*) Thanks for the opportunity to serve. It's been fun. That's it.

LK: (*Visibly emotional, chokes up, shakes Lee's hand. Roll music. Fade to black.*)

The Tarheel Tattler

Another year, another Clio Conference, another Tattler report. The Clioms gathered in sunny Tucson for this year's conference. For you first-time readers, the Tattler's report identifies the Cliom who, in the heat of battle, shares the most universally profound insight at the annual conference. That person joins all past winners in the Clio Pantheon. As part of our ritual, we begin by reciting (chanting, really) to the inaugural winner: "Never open a can of worms larger than the universe." Yes, of course, how obvious, you say, but these things always appear obvious only in retrospect. The Tattler also likes to repeat last year's winner, just to prove that when it comes to universally profound insights, the Clioms never lose their edge. In not-so-sunny Binghamton a Catalanian told the Clioms: "People in Spain don't have peat; they have donkeys." If only the Tattler could be a font of such wisdom.

Unfortunately, things got off to a rocky start this year, as our first speaker was a certain Michael from Canada. The session chair (a big fan of institutional economics from Davis, California) began by sternly noting: "I'm going to give Michael five minutes, and then I'm going to cut it off!" The session went downhill from there. The very first question, after the chair cut "it" off, was from "Alan": "I guess my question is this: Did this legislation really matter?" Which was followed by "Joyce," who said: "I'm going to restate Alan's question." This was followed by "Christina," who said: "I'm going to restate Joyce's question." Which was followed by "Warren," who said: "I'm going to restate Christina's question." This was followed by "George," who said "I'm going to restate Warren's question." Which was followed by "Joshua," who said: "I'm going to restate George's question." The audience, now totally captivated, stared at the presenter, waiting for his response to the highly refined question, and it was: "I think I'd like to answer a different question." The Tattler does not make this stuff up.

Fortunately, the whole conference was not like that. Indeed, Clio is like baseball: You see something new every game. This year, the attendees witnessed something never seen before in Clio's nearly fifty-year history. Last year's hostess from Bing-

Tarheel Tattler (continued from page 3)

hampton actually yawned in boredom while asking her own question. Normally, Clio attendees bore each other, not themselves.

Also, this year we added three new words to the Clio lexicon: “competitivity” – of or pertaining to a competitive state; “plantationers” – those who, held in a state of bondage, work on a plantation; and “stochasticity” – the random nature of a sequence of economic data.

The last of these—which might actually be a word, the Tattler couldn’t tell—was the contribution of that money truster from Drexel, Burnham, Lambert, who offered the following bibliographic help to one struggling young Cliom: “There’s an interesting literature on this: There’s a book on Florida; I don’t know who wrote it. There’s a book on Toledo; I don’t know who wrote it either. Then there’s some other book.” The Tattler

*“I’d like to see you
do something really
sexy...like running
some regressions.”*

thinks that book was on Ft. Wayne, but he doesn’t know who wrote it. The Drexel man was not finished. Later he told the audience: “In my mind, I’m thinking.” Yes, the Tattler wondered, but how can we be sure?

A dashing Hopkinsite dropped in this year, and she made many contributions, though, some of them were a bit—the Tattler wants to be tactful here—shall we say, chatty. After she prefaced one lengthy comment (or was it a question?) with, “I don’t know where to begin;” a jaded Cliom sitting near the Tattler could be heard to say, “Yes, but where will she end?” Meow! Our Hopkinsite then teased the audience with: “I’d like to see you do something really sexy...like running some regressions.” She had the Tattler, and then she lost him.

As regular readers of this column know, we hand out several special Clio awards each year, and our Hopkinsite contributed to our first special award this year, the **Data are Precious Award**. She asked Michael from Canada: “You say you have annual data, but are they really annual?” To which he replied: “No; they’re yearly.” Ah, the Tattler thought, the Canadians are a subtle people.

Our **Diligent Young Scholar Award** goes to the novice Cliom who said: “I get this question every time I present this paper; maybe I should just address it.” Or maybe he’d like to answer a different question.

And, what would a Clio be without the nitty-gritty give

and take of an enlightening intellectual exchange. This year’s **Steve Broadberry-Greg Clark Award** goes to “Martin” and “Mark” for:

Martin: Finland isn’t part of Scandinavia.

Mark: Yes it is; I checked it.

Martin: No it isn’t.

Mark: Yes it is; I checked it.

Martin: No it isn’t.

Mark: I’ll double check that.

During a break in the action, the Tattler suggested they settle the matter by checking Wikipedia.

The **William Pitt the Elder Good Government Award** goes to our non-institutionalist from Davis who, asked (and answered): “What did they do with the tax revenues? They poured them down a rat hole, like the American War of Independence.” Hear him; hear him.

And this year’s **Robert Margo Quantitative Methods Award**, appropriately enough, goes to one of Bob’s young co-authors, who observed that “If you cut the number of ships to zero, then they won’t come after you.” As the Tattler never tires of telling his colleagues, Bob can spot talent.

Enough of the preliminaries; on to our finalists. The second runner-up this year came from a former Shaw Bear, who told us: “It’s tough to grow people in Africa.” Yes, good; but not quite universal enough for some committee members, who thought it was tough to grow them elsewhere as well. Our first runner-up, from a long-time Tar Heel originally from the banks of the Wabash, bested that insight with: “Hassling the Spanish is nice, but money is better.” If only she had added: And that’s why the Spanish have donkeys rather than peat.” To the Tattler, money is better than hassling the Spanish, but Spain won last year; and in the spirit of celebrating diversity, the committee went in another direction this year. Turning, of all places, to a sociologist!

True Clioms should be ashamed that they let this year’s award go to a Stanford sociologist who slipped in under the tent. He told our august assemblage: “People want to reproduce themselves, and go to the grocery.” And some of you thought sociology was a soft discipline.

That’s all the news that’s fit to print from sunny Tucson. Thank you; drive carefully; and I’ll see you in Edinburgh.

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College), Price Fishback, and Alan Olmstead (UC-Davis) wondered if labor laws really mattered, given that studies for the same period in the US showed mostly that regulation was ineffective. Christina Gathmann (Hoover Institution/Stanford), and Susan Wolcott proposed the use of wages instead of hours worked to show the effectiveness of labor market regulation. The second part of the discussion centered on the main variables of the study. Aldo Musacchio (Harvard Business School), Sumner La Croix (Hawaii), and others, wondered if the labor

compact index wasn't too aggregated and if working with its components would yield clearer results. Also, the use of exports was discussed as a measure of international competitiveness, a concern raised by Gathmann, among others. Lastly, the discussion turned to using a low frequency indicator like the decadal labor compact index on the right hand side to explain annual exports and the alleged interactions between time and cross section variation, pointed out by Caroline Fohlin (Johns Hopkins) and Carol Shiue (Colorado at Boulder).

Warren Whatley (University of Michigan) presented his paper "From Gold Coast to Slave Coast: West Africa in the Emerging Atlantic Economy, 1264-1807," which proposes a supply and demand model of the Atlantic slave trade during the seventeenth and eighteenth centuries. Although this period was the height of the slave trade, there are many questions that remain unanswered, such as: the elasticity of supply of slaves; the broader effect of the slave trade on African development; and the role of guns, gold, and sugar in the slave trade. Whatley proposes answering these questions by investigating the trend value of gold as a determinant of the supply of slaves. The key parameter that the analysis will estimate is the elasticity of supply of slaves.

Given the preliminary nature of the research, the discussion focused on the paper's analytical framework. Greg Clark (UC-Davis) pointed out that an alternative explanation of what determined the supply of slaves was that the marginal product of slave labor was higher on sugar plantations than in Africa. Whatley countered that quantitative estimates of the elasticity of supply remained an open question and that his analysis would provide such an estimate. Regina Grafe (Northwestern University) suggested an alternative way of thinking about supply and demand in this context. On the supply side, she offered political competition as a possible explanation: Selling slaves to European slave traders became a means of raising revenue for African elites. On the demand side, she asked if the market for gold bullion was truly integrated during the period that the paper investigates. Following up on this line of questioning, Alan Olmstead maintained that if the market for bullion was not integrated, Whatley would need to take careful account of local factors in the determination of the supply of slaves.

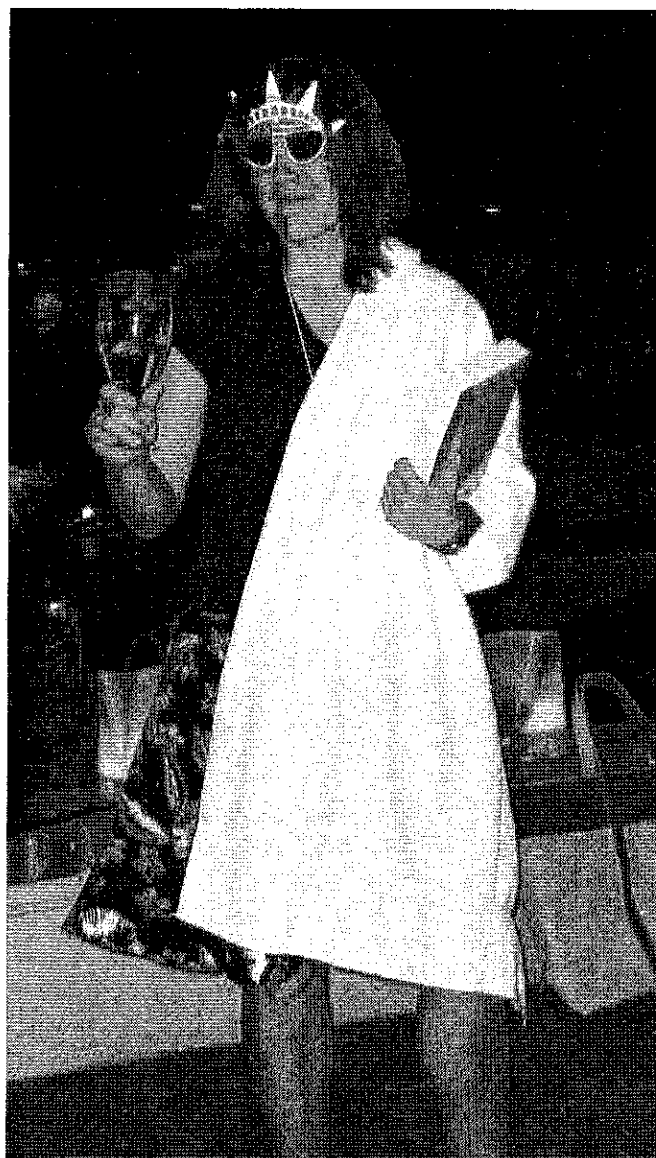
Se Yan (UCLA) presented his paper "Economic Openness, Industrial Development and Income Distribution in China, 1860-1936." Using wage data from the China Maritime Customs, he suggests that structural economic changes in China in the period increased the real income of urban people, with some lags. The Chinese data thus support Kuznets' hypothesis that inequality of income distribution increases in the early stage of growth but gradually decreases.

Some participants pointed out various economic and social factors besides industrialization itself that could affect the real wage and skill premium. Christina Gathmann suggested the importance of changes in economic opportunities boom. Mary Eschelbach Hansen (American University) asked about the

role of internal migration in wage determination. Fishback and Der-Yuan Yang (National Kaohsiung First University) were curious about the political background of the period. Susan Wolcott suggested a possible difference in skill pattern by region.

First thing Saturday, **Joe Mason** (Drexel) delighted us with a paper on business cycle persistence. In "Rational Divestiture in Real Options-based Liquidation Cycles: Evidence from Failed Bank Assets in the Great Depression," Mason argues that slow recoveries might be the result of rational economic decision making on behalf of the trustees responsible for liquidation of bank assets. The time liquidation does not depend on value but on volatility. In his model, the delay in liquidation increases with volatility.

Caroline Fohlin liked this paper. However, she showed



Caroline Fohlin attends the Clio banquet in fashion.

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some concern about agricultural values used as proxies. Robert Margo (Boston University) helped Mason out by stating that all assets are tradable. As a proof, he unsuccessfully tried to purchase Mason's watch on the spot by waving a few dollars in front of him. Marina Adshade (Dalhousie) wondered how the value of assets would be affected, while Price Fishback was concerned about the summary variables constituting a "black box." Angela Redish (British Columbia) asked why volatility is not in the model; Martin Uebele asked what the paper contributes to our understanding of the Great Depression. Michael Hauptert (Wisconsin-La Crosse) wanted to know more about the composition of these bank assets, while Aldo Musacchio wanted to know more about the trustees, in particular, what are their incentives? Mary Hansen and Sam Williamson (Miami) were concerned about the knowledgeability and rationality of the trustees. Joshua Rosenbloom (Kansas) thought that exploring this topic from a micro theory framework with a small number of buyers would be a good idea.

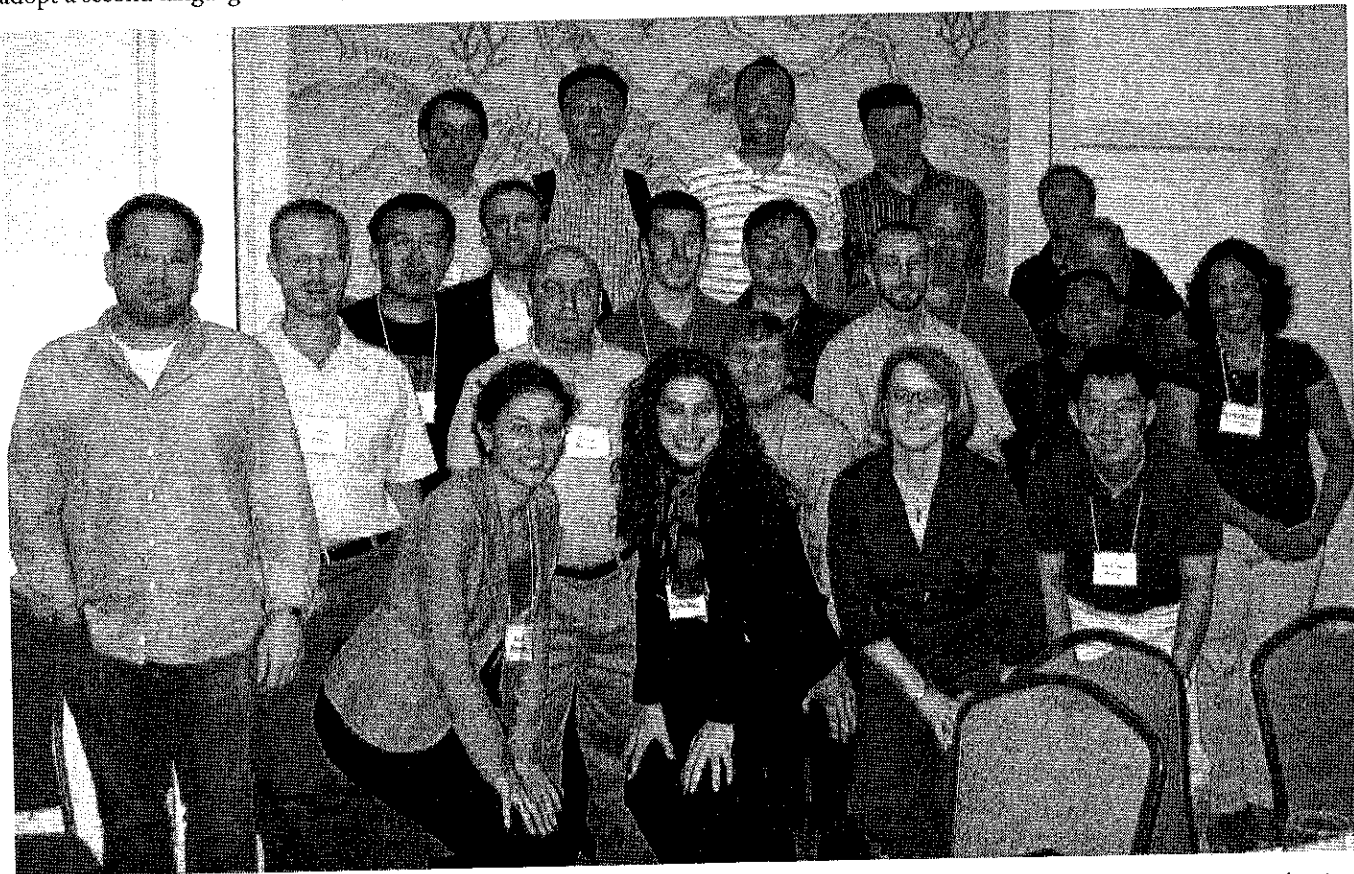
Next on the agenda was **David Clingingsmith** (Harvard) who presented "Bilingualism, Language Consolidation, and Industrialization in Mid-20th Century India." The paper focuses on how industrialization created an incentive for workers to adopt a second language in India, which, the author argued, led

to eventual language consolidation on the subcontinent.

During the first of her several appearances on the queue, Susan Wolcott questioned Clingingsmith about the specific industries and locales where language consolidation was likely to occur. Several participants wanted additional information about the role castes might have played in employment, employer-employee interactions, and language acquisition.

Leah Boustan (UCLA) then presented her paper exploring the parallel between the processes of suburbanization and income inversion (loss of middle class in the city center). In "Inside the Black Box of 'White Flight': The Role of Suburban Political Autonomy and Public Goods," she finds that there is a wealthy-neighborhood premium reflected in the price of housing which shows a preference for suburban areas.

Shawn Kantor (UC-Merced) wondered how decisions about the provision of public goods were made in different decades. Louis Cain (Loyola and Northwestern) raised the issue of where to establish borders. Warren Whatley brought up the case of Detroit as a counterexample of inner city suburbs. Price Fishback and Rick Steckel (Ohio State) stressed the fact that there could be a wealth effect, and, therefore, Boustan should control for median income or other measures such as schooling test scores. Carol Shiue doubted that much importance should be



Attending the Cliometrics Society Conference for the first time: (first row) Ron Alquist, Leah Boustan, Marta Felis-Rota, Christina Gathmann, Ta-Chen Wang; (second row) Grant Miller, David Pervin, Martin Uebele, Trevor Kollmann, Sonam Gupta, Wafa Hakimi Orman; (third row) Se Yan, Mark Dincecco, John Parman, Sok Chul Hong, David Clingingsmith, Regina Grafe, Jonathan Fox; (fourth row) Mauricio Drelichman, Chung Choe, Aldo Musacchio, Hemming Hillman.

“...he unsuccessfully tried to purchase Mason’s watch on the spot by waving a few dollars in front of him.”

placed in any case on results built from no robust coefficients. Joe Mason raised some measurement issues related to differential taxation and man-made versus natural borders. Greg Clark suggested the use of the boundaries used by the real estate industry. George Grantham (McGill) wondered about how to deal with annexed cities. Finally, Louis Cain pointed out that public goods are provided by state and federal authorities as well as local authorities, so the figures in the paper cannot account for every public spending effect.

Saturday afternoon’s long session started with a long run study of the development of centralized and limited government contributed by **Mark Dincecco** (IMT Lucca Institute for Advanced Studies). For “Fiscal Centralization, Limited Government, and Public Finances in Europe” Dincecco collected tax revenues per capita for five major European countries during 1650-1913. He explains the variation in revenues using centralized/decentralized tax collection and unlimited/limited government. The effect of both centralized tax collection and limited government is to increase tax revenues according to panel estimates.

Mauricio Drelichman (British Columbia) suggested that the causal relationship between tax revenues and centralized government was the other way round. Until introduction of a centralized government, tax collection was simply too costly and therefore not enforced. Angela Redish asked if looking only at centrally collected taxes on the left hand side wasn’t overly restrictive. Price Fishback suggested that Dincecco’s measure of urbanization should not be considered a proxy for growth. George Grantham argued that France was fiscally centralized earlier than 1790, as Dincecco suggests. Caroline Fohlin was concerned that the five-country cross section was too narrow.

John Parman (Northwestern) presented “The Expansion of Public Schools and the Decline of American Mobility” which suggests that the expansion of the public education system in the early twentieth century decreased intergenerational income mobility. His analysis is based on a sample from the 1915 Iowa census, which measured individual income level and school quality. He constructs father-son pairs between the Iowa census and the 1900 federal census. He argues that “while the expansion of public education benefited people across the income distribution, increasing average educational attainment and wages, the magnitudes of those benefits varied.”

Robert Margo suggested that Parman refer to Gary Solon’s work on intergenerational income elasticity. He also raised an issue about children’s contribution to parental income. Richard Steckel suggested that the result in the paper could be a part of long-term trend in the US, pointing out that mobility was generally less in the nineteenth century than in the twentieth

century. He also emphasized the relationship of educational level between father and son as well as measurement of mobility. Some participants, including Gregory Clark and Leah Boustan, pointed out measurement error and limitations caused by using one-year cross-sectional data. Louis Cain suggested the use of additional variables on ethnic heritage, property tax records, and farm value.

“From Privateers to Navy: How Seapower Became a Public Good” was presented jointly by **Christina Gathmann** and **Henning Hillmann** (both Stanford). They use data on privateers—gunned merchant ships authorized by one country to interfere with the enemy’s trade—for the sixteenth through the nineteenth centuries. They argue that, after centuries of successful privateering, increased trade and longer trade routes caused the need to supply public naval power. They argue that because of agency problems, hierarchical organizations became more suitable for defensive services than outsourcing to private merchants.

One type of question centered on the agency problems of the private supply of defensive tasks. Mauricio Drelichman argued the incentive for privateers to behave in the Crown’s interest was small, and Felipe Tamêga-Fernandes (LSE) asked if there was a rationale for the share the privateers could retain from the prizes they captured. A complementary explanation was offered (in various shades) by Gregory Clark, Joseph Mason, and Martin Uebele. Instead of a strong demand effect leading to the transition to public naval sea power provision, it may have been that reduced fiscal constraints opened up the scope for a Royal Navy while demand stayed constant. Drelichman proposed that the level of organizational capability might have been insufficient for a long time to organize a complex hierarchy such as the Royal Navy. Regina Grafe agreed with a demand-driven transition to public sea power provision, but suggested a different change in demand: the crucial change in trade might not have been the volume increase or the length of trade routes, but the shift from bilateral to multilateral trade routes, which rendered the contracting of escort services more difficult.

In the last session before Saturday evening’s dinner, **Regina Grafe** and **Oscar Gelderblom** (Utrecht) presented their innovative co-authored paper on commercial institutions in pre-modern Europe. In “How to Beat (Very) Imperfect Markets? Re-Thinking the Comparative Study of Commercial Institutions in Pre-Modern Europe” they argue that market conditions and property rights regimes are the principal determinant of delegation.

The questions and comments were technical and oriented towards improvement of the metrics used. Marta Felis-Rota suggested the use of growth as a dependent variable instead of

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Early Sunday morning?

institutional characteristics. Mauricio Drelichman preferred the use of a multinomial logit instead of a probit estimation, and urged Grafe not to speak of multiple equilibria. Price Fishback recommended doing more analysis of the heterogeneity of the merchants. Susan Wolcott discovered a trend in the power of investment decisions, while Angela Redish worried about missing observations between 1750 and 1800. Rick Steckel suggested doing some sensitivity analysis of the categorization; since this was a general worry, expressed by both Susan Wolcott and Aldo Musacchio. Finally, Mark Dincecco was enthusiastic about the approach and wished the authors good luck.

Grant Miller (Stanford Medical School) started off Sunday morning's session with "Women's Preferences and Child Survival in American History." He argued that woman's suffrage played a role in the dramatic decline of child mortality rate in the early twentieth century. In particular, he says that "the extension of suffrage rights to American women helped children to benefit from the scientific breakthroughs of the bacteriological revolution" by increasing public spending on sanitation.

Shawn Kantor questioned how quickly voting power produced public health impacts. Richard Steckel suggested that where the public money was spent would be important because some public health interventions might not be affected by women suffrage. Louis Cain introduced some recent works on the importance of water purification and milk pasteurization in improving infant mortality rates in the early twentieth century. Susan Wolcott suggested the role of regional differences in environments such as climate and population density, and questioned what drove woman suffrage.

The final paper of the conference was presented jointly by authors **Wolfgang Keller** and **Carol H. Shiue** (both University of Colorado, Boulder). "Tariffs, Trains, and Trade: The Role of Institutions versus Technology in the Expansion of Markets" finds that railways had the largest long run effect on market integration in Europe; customs liberalization had a similarly large effect in the short run; currency agreements did not seem to affect market integration in either the short or long run.

Aldo Musacchio wanted the authors to explore differences between German and non-German states. Ron Alquist

wondered about evidence regarding quantity of trade (rather than price differences) while Caroline Fohlin wanted additional information about how much railways changed transportation costs between city pairs. Susan Wolcott was concerned that the results may mask interactions between the existence of trains and the development of currency agreements, while Price Fishback grilled the authors on their econometrics.

EBHS Meeting (continued from page 1)

ethnically diverse group of traders led to state involvement in regulating the merchant industry. Caudia Rei (Boston University) followed with her paper, "The Organization of Merchant Empire: A Case Study of Portugal and England." Rei modeled the organizational choice made by the Portuguese and English merchant empires to determine why Portugal opted for a crown monopoly while England franchised monopoly rights to private agents. She then presented empirical evidence in support of her model. The panel's final paper was "Operational Knowledge and Theory: The Occlusion of Global and Regional Networks in Classical Economic Discourse" by Woodruff Smith (University of Massachusetts-Boston). Smith described how classical economists, such as Adam Smith, chose not to incorporate operational knowledge concerning the actions of individuals involved in conducting South Asian trade into their theories, but instead framed the actions of these individuals as corruption.

The conference's second session also consisted of three panels. The first panel, chaired by Wade Shilts (Luther College), was started by **Willard Enteman's** (Rhode Island College) "The Historical Development of the Legal Concept of the Modern Corporation." **James Hunt** (Mercer University) then presented "Business Strategy and Litigation in the 1950s: The Case of Guttman v. Illinois Central Railroad." The panel concluded with "The United States Statement of Cash Flows: Past, Present, and Future Potential" by **Jerome DeRidder** (Perdue School of Business-Salisbury University). Another panel of this session was chaired by **Ralph Gunderson** (University of Wisconsin-Oshkosh). The papers in this panel were "Ripples Across the Pond: American Liberals, British Socialists and the Trajectory of the Trans-Atlantic Political Economy After the British Labour Victory of 1945" by **Gary Darden** (Fairleigh Dickinson University) and "Every Man's Need, But Not Every Man's Greed": The Gandhian Vision and Indian Economic Development" by **D. Gene Pace** (Claffin University).

David Zalewski chaired the third panel of the second session. **Jane Knodell** (University of Vermont) presented "Private Banking Networks and the Development of the Domestic Capital Market in the U.S., 1840-1880" as the first paper of this session. **Jeffrey Fear** (Harvard University) then presented "Banks on Board: Banks in German and American Corporate Governance, 1870-1914," a paper he co-authored with **Christopher Kobrak** (European School of Management). Fear argued that

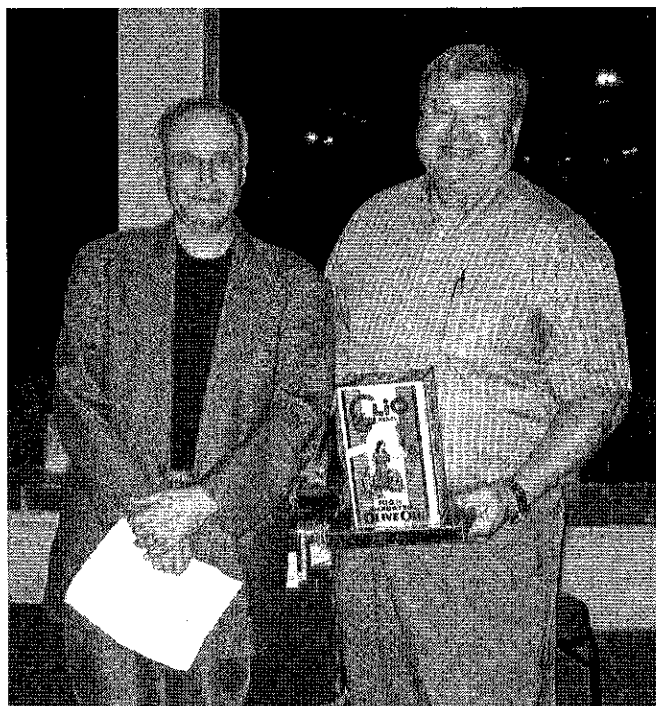
prior to the First World War, there was a much greater similarity between corporate governance in Germany and the United States than most of the literature on this topic recognizes. Additionally, Fear suggested that American companies were more actively managed by American investment banks than were German companies by German banks. The final paper of the panel was **Jessica Vechbanyongratana's** (University of Colorado at Boulder) "A Vehicle for Growth: Massachusetts Savings Bank Investment Regulation, 1816-1834." In her paper, Vechbanyongratana compared the development of savings banks in Massachusetts to their counterparts in New York.

The third session of panels took place early on Thursday afternoon. Franklin Noll chaired the first panel of this session which started with **Roger Lloyd-Jones** (Sheffield Hallam University) presenting a paper he co-authored with **M.J. Lewis** (Sheffield Hallam University) titled "A War of Machinery: The Machine Tool Industry and Arming the Western Front, 1914-16." This paper described the problems encountered by the British government as it sought to figure out how to produce high-quality shells in a new type of war industry. **Dan Li** (Boston University) then presented "The Economic Costs of Civil Wars: Chinese National Railroads, 1905-1923" in which she used GMM techniques to estimate the effects of civil war on railroad revenue, expenses and investment. The final paper of this panel was "Why Did the League of Nations Fail?" by **Jari Eloranta** (Appalachian State University). Eloranta argued that the League of Nations' failure resulted mostly from internal problems and disagreements. Questions to Lloyd-Jones from the audience and subsequent commentary focused on the role that the United States played in providing the U.K. with armaments and the influence that German submarine warfare played in necessitating that the U.K. produce its own shells. Some discussion of Eloranta's paper revolved around the question of whether the League's failure could be tied to the United States unwillingness to join the League; Eloranta suggested that U.S. involvement in the League would have been insufficient to prevent its collapse. It was recommended to Dan Li that she should consider the effect that World War One may have had on foreign involvement in Chinese railroads.

A second panel of the third session was chaired by James Stitt and was comprised of papers by **Yovanna Pineda** (St. Michael's College), **Gregory Wood** (Penn State University-Erie), and independent scholar, **Maura Doherty**. Pineda's talk was titled "Congressional Planning for Industrial Training Centers for Women and Children in Argentina, 1918-1930." Wood presented "Forty Plus Clubs and White-Collar Manhood during the Great Depression" and Doherty's paper was "Weaving Gender into the Global Textile Industry." **Stephanie Crofton** (High Point University) chaired the third and final panel of this session. **Susan Nance** (University of Guelph) began the panel with "Managing Elephant Labor: Writing Animals Into the History of American Business." **Tammy McClanahan Johnson** (Academy of Academic Practitioners) then presented

"The Creation of the Sales Manager and the Evolution of the Traveling Salesman: 1870-1940" and **Christiane Diehl Taylor** (Eastern Kentucky University) concluded the panel with "From the Background to the Foreground: 1950s Corporate America 'Discovers' the Importance of Social Capital in the Achievement of Institutional and Managerial Success."

Thursday's final session consisted of two panels. The first, chaired by Jari Eloranta, had two papers: "How Much Control Is Enough? Control Organs Under Stalin, 1929-1953" by **Andrei Markevich** (University of Warwick) and "Selecting Risks in an Anonymous World: The Life Insurance Agency System of Antebellum America" by Sharon Murphy. The other panel, chaired by D. Gene Pace, began with **Jonathan Silberstein-Loeb** (University of Cambridge) presenting "Reuters and the Economics of Information" and was followed by "Does Culture Matter? Entrepreneurial Attitudes in 20th Century Business Leaders' Autobiographies in Finland and the United States" by **Heli Valtonen** (University of Jyväskylä). Silberstein-Loeb's paper described the history of the Reuters News Agency and led to questions involving the standardization of news, the marginal value of news, and the relative role of news agencies during war-time. Valtonen's paper was an initial examination of seventeen autobiographies that attempted to determine if general distinctions could be drawn concerning the authors' values, especially focusing on aggressiveness and gender issues. In the discussion it was suggested that Valtonen consider employing methods used in Literature to analyze writings (including the study of repetition and metaphors) along with other suggestions on how best to present her findings.



Robert Margo confers the coveted Clio Can on Richard Steckel.

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Friday morning sessions started with three panels. Silvano Wueschner chaired a session comprised of papers by **Neil Forbes** (Coventry University) and **Erik Benson** (Cornerstone University). Forbes presented "Big Business and Rearmament in the Third Reich: International Networks, Technology Transfers and Synthetic Raw Materials Before the Second World War" while Benson's talk was titled "Rivals of a Kind: the Anglo-American Commercial Aviation Rivalry, 1939-45." A second panel was chaired by Lynne Pierson-Doti (Chapman University). **Der-Yuan Yang** (Kaohsiung First University of Science & Technology) presented the first paper of this panel, "On the Foundation of the Bank of England: A Mechanism for Showing Trust." His paper was followed by "Organizational Flexibility and Governance in a Civil-Law Regime: Scottish Partnership Banks during the Industrial Revolution" by **Charles Hickson** (Queen's University, Belfast). The final paper of the panel was "Macroeconomic Stability of Centralized and Decentralized Exchange: Anthropological and Historical Data" by **James Stodder** (Rensselaer Polytechnic Institute). **Sanjay Paul** (Elizabethtown College) chaired the final panel of this early morning session. In her paper "Mad Money in Historical Perspective" **Janice Traflet** (Bucknell University) led off this panel with a presentation that traced the development of the term "mad money" from its original meaning of funds that could be used by a woman to obtain transportation home from a date gone awry to its current use by Jim Cramer in his television show. **R. Daniel Wadhvani** (University of the Pacific) then presented "The Structure of Innovation in the U.S. Personal Finance Industry, 1870-1930" in which he looked at the unwillingness of savings banks to expand into offering other services such as insurance to their depositors. Traflet's presentation generated a number of comments concerning the actual influence of Jim Cramer in the market, while much of the discussion concerning Wadhvani's paper focused on reasons why savings banks may have had legitimate reasons to think that expanding the scope of their operations may not have been wise.

The second session on Friday started with a panel chaired by Jochen Streb (University of Hohenheim). The first paper of this panel was "The Essence to Fly High: The Survey of Aircraft Frame Industry Catch Up" by **Takashi Kanatsu** (Hofstra University). Next came "Technology and Knowledge Transfer in the Machine Tool Industry -- The United States and Germany, 1870-1933" by **Ralf Richter** (Bielefeld University) followed by **Jeffrey Furman's** (Boston University) "Academic Science and the Birth of Industrial Research Laboratories in the U.S. Pharmaceutical Industry." Erik Benson chaired a second panel of presentations led by **Duncan Philip Connors** (University of Glasgow) who presented "Government Intervention and the Decline of British Shipbuilding 1964-1973." **Richard Stone** (Shippensburg University) then presented "Railroad Abandonment: The Legalities and the Results," a paper he co-authored with **Michael Landry** (Northeastern State University). **John Phelan** (University of New Haven) concluded the panel with

"Does Concentration Matter?" The third panel of the session consisted of papers related to the teaching of economic and business history and was chaired by Jason Taylor (Central Michigan University). **Wade Shilts** started the panel with his paper "Economic History in the Age of Wikis and iPods: Is It Time to Adopt Pedagogy from an Alternate Universe?" In this paper, Shilts discussed the unique teaching challenges and opportunities that have arisen from technological change. Shilts also addressed various sources of dissonance that increase the costs of student listening/learning. **Jari Eloranta** followed with his intentionally provocatively titled paper "Are Business Historians Quantitatively Illiterate?" Co-authored with **Jari Ojala** (University of Jyväskylä), Eloranta examined the impact of cliometrics in the discipline of Business History. The panel's final paper was "How to Incorporate Economic History into Economics Courses" by **Dan Giedeman** and **Aaron Lowen** (Grand Valley State University). Giedeman and Lowen reviewed introductory level economics textbooks to determine how, and to what extent, they incorporated economic history. In general, they found that the amount of history in these texts was rather limited, although some topics, such as the Great Depression, were often covered in some detail.

On Saturday morning, the final day of the conference, there were two sessions with three panels each. Roberto Mazzoleni chaired the first panel of the first session. **Ross Thomson** (University of Vermont) began the panel with his paper "Technological Leadership in the Antebellum United States." **Jochen Streb** then presented "Technological Creativity and Cheap Labour? Explaining the Growing International Competitiveness of German Mechanical Engineering before World War I" which was followed by "Gentlemen and Mechanics, Start your Engines!" by **Paul Christensen** (Hofstra University). The second of the panel of the early morning session was chaired by **Ranjit Digne** (State University of New York-Oswego). **Carl Lane** (Felician College) led off the panel with his paper "The Elimination of the National Debt and the Failure of John Quincy Adams's Administration." Lane explained how John Quincy Adams seemed to place a low priority on debt reduction instead preferring an assortment of federal government spending projects. Lane suggested that the state of the public debt was a key factor in Adams' loss to Andrew Jackson in the 1828 presidential election. **Matthew Gregg's** (Roger Williams University) "Revalu-

The EBHS's 33rd Annual Meeting will take place April 17th-19th, 2008 in Montgomery, Alabama.

ating the Indian New Deal: An Econometric Analysis" was the second paper of the panel. The final paper of the panel was "Spillover Effects and Per Capita Spending on Public Capital: Shedding Light on the Small Population State Bias during the New Deal" by **Jason Taylor** and **Fred Bateman** (University of Georgia). Taylor suggested that the federal government's pattern of allocating a seemingly disproportionate amount of spending to less populated states during the Great Depression could have been efficient in the presence of spillovers. The final panel of the early session was chaired by James Stitt and was started by **Thomas Wippeny's** (Elizabethtown College) "The Ineffable Intractability of Income Inequality or - Why You Still Make More Money Than I Make." **Sanjay Paul** then presented "The End of History -- or the End of Globalization? An Appraisal of the Washington Consensus," which was followed by "Latin American Immigration: A Qualitative Approach to the Estimation of Net Benefits" by **Magdalena Rappl** (Tennessee Technological University).

In the final session of the conference Janice Traflet chaired a panel consisting of **Jessica Elfenbein's** (University of Baltimore) paper "Baltimore's M.S. Levy and Sons: Straw Hat Makers to the World, 1870-1960" and "Getting Back to the Basics: A Brief History of the J.C. Penney Company" by **Mark Gardner** (Piedmont College). Silvano Wueschner chaired the second panel of this session which was initiated by **Ranjit Dighe** presenting "The Business Press and Prohibition in the United States." **Philip Glende** (University of Wisconsin-Madison) then presented "Victor Berger's Dangerous Ideas: Censoring the Mail to Preserve National Security During World War I." **Gilbert Mathis** (Murray State University) concluded the panel with his paper "Social Security - Solvent or Bankrupt? In Need of Reconstruction or Retirement?" The final panel was chaired by Roberto Mazzoleni and was led off by **Stuart Sweeney** (Oxford University) presenting "Indian Railways and Famine 1875-1914: Magic Wheels and Empty Stomachs." **Ralph Gunderson** concluded the panel and the conference with the paper "A Postwar History of the Economic Environment and Interests That Influenced Global Trade Talks," which he co-authored with **Denise Robson** (University of Wisconsin-Oshkosh).

In addition to the sessions described above, conference attendees also enjoyed other events and activities. The Society's annual reception on Thursday evening was well-attended by conference participants and their guests. At this reception, Lynne Pierson-Doti, editor of the Society's journal, *Essays in Business and Economic History*, presented several awards for outstanding publications in the journal. Carl Lane received the James Soltow Award for best article by an author not previously published in *Essays* for his paper "The Elimination of the National Debt in 1835 and the Meaning of Jacksonian Democracy." Jason Taylor was awarded the Charles Kennedy Award for best article published in Volume 25 of *Essays* for his paper "Buy Now! Buy Here!: the Rise and Fall of the Patriotic Blue Eagle Emblem, 1933-1935." The Editor's Award for con-

tributors of multiple articles to *Essays* whose work over several years gives scholarly definition to the journal went to Gilbert Mathis for his paper "Tobacco in Transition: An overview of Sixty-Six years of Partnership between Producers, Processors and Politicians" and other articles dating back to Volume 3 of the journal. On Friday afternoon more than forty conference attendees made the short trip to Pawtucket to visit Slater Mill, the birthplace of the American Industrial Revolution. There they were given a delightful tour of the Sylvanus Brown House, the Wilkinson Mill, and the Old Slater Mill. Additionally, as has become somewhat of a tradition at EBHS conferences, participants continued their collegial discussions at local establishments after the daily sessions had ended. Particularly popular locations for these conversations this year were Italian restaurants on Federal Hill and the nearby Trinity Brew House, Rhode Island's largest brewery.

The EBHS' 33rd Annual Meeting will take place April 17-19, 2008 in Montgomery, Alabama. Silvano Wueschner of Air University is the Program Chair for this conference. Details and the call for papers can be found at the Economic and Business Historical Society website: www.ebhsoc.org. The deadline for paper and/or panel submissions is January 7th, 2008. Additional information may be obtained by sending an e-mail to Silvano Wueschner at: silvano.wueschner@maxwell.af.mil

Book Preview

Gender, Work and Wages in Industrial Revolution Britain

By Joyce Burnette

The following is an abridged version of the Introduction to Gender, Work, and Wages in Industrial Revolution Britain by Joyce Burnette, forthcoming from Cambridge University Press in 2008.

Early in the morning of Friday, January 28, 1820, a night watchman at the Broomward Cotton Mill in Glasgow discovered a fire in the carding room. He

gave the alarm, and, on going to the spot, found that some Person or Persons had, by getting up on a tree opposite to, and within three feet of the east side of the Mill, thrown in, through the opening pane of one of the windows, a Paper Bundle or Package, filled with Pitch and Gunpowder, and dipped in Oil (*The Glasgow Herald*, Monday, January 31, 1820).

James Dunlop, the owner of the mill, was probably not surprised. The motives of the arsonists were no mystery:

a gang of miscreants who, for some time past, have waylaid, and repeatedly assaulted and severely wounded, the persons employed at the Broomward Cotton Mill, who are all women, with the view of putting the mill to a stand, and throwing the workers out of employment (*The Glasgow Herald*).

The women spinners employed by Dunlop lost their jobs as a direct result of the male workers' opposition.

Book Preview (continued from page 11)

The attempt to burn Dunlop's mill was just one battle in a war between the cotton spinners' union and their employers. [Opponents to women workers drew] on gender ideology to create a sense of outrage. [One called] women whores for the offenses of "spending their money" and "drinking with young fellows," activities which do not seem to us worthy of condemnation but clearly fall outside what the writer considers to be proper feminine behavior. One suspects, though, that the real reason for the opposition to female employment is that the women are working "in men's places." If women were employed, men would be unemployed, or at least would have to work for lower wages. Employers were somehow immune to these concerns about proper feminine behavior, and actively sought to hire women because they could benefit economically from doing so. It was the male workers, who would lose economically from their employment, who expressed such concerns about proper female behavior. Thus a man's opinions on whether women should work in the factory seem to have been determined by whether he would win or lose economically from the employment of women. The union's grievances were not directed only at women spinners, but also to other forms of competition; the employment of male workers not approved by the union was also violently opposed. The violence was economic warfare, aimed at protecting the spinners' wages and working conditions. The actions of the Glasgow mule spinners are just one example of barriers to women's employment that were erected because of economic motivations; men excluded women to reduce competition and raise their own wages.

In the late eighteenth and early nineteenth centuries women and men generally did not work the same jobs, and they did not receive the same wages. These differences are widely known, and the most common explanation is that they resulted from discrimination or gender ideology. This book will argue that economic motivations explain the patterns we observe. In some cases, the occupational sorting was required for economic efficiency. Since strength was a scarce resource, the market paid a premium for it. In other cases occupational sorting was the result of a powerful group seeking to limit women's opportunities in order to improve its own economic position, at the expense of women, and at the expense of economic efficiency. The case of the Glasgow cotton spinners illustrates the second case. Women were excluded from the highly-paid occupation of cotton spinning, not because they were incapable of doing the job, or because employers refused to hire them, or because social disapproval, combined with violence, kept them at home, but because the male cotton spinners' union was effective in excluding them, thus reducing the supply and increasing the equilibrium wage of cotton spinners.

The main conclusion of this book is that economic motivations caused the gender differences we observe in the labour market of Industrial Revolution Britain. In some cases these economic forces were beneficial, and in other cases they were

harmful, but in either case both women and the economy in general would have benefited from more competitive markets. In the relatively competitive sectors of the labour market, strength was an important input in production, and men's higher wages represent the premium paid for strength. In order to economize on the scarce resource of strength, men were sorted into occupations requiring more strength, and women into occupations requiring less strength. Economic motivations led employers to hire men for jobs requiring strength, and hire women for jobs requiring less strength. When technology changed, the gender division of labour changed to, always allocating men to the more strength-intensive jobs. Employers were not constrained by gender roles, but switched between men and women workers when prices signaled that they should. While these forces did result in gender differences in wages and occupations, they were beneficial in the sense of improving the efficiency of the economy, and in the sense that they minimized the gender wage gap. Women's role in child-bearing reduced the time women had available for market work, and probably encouraged them to remain in the low-wage cottage industry sector, but overall childbearing was probably not as important as strength in determining women's productivity.

Unfortunately, economic motivations were not always beneficial. The desire for gain sometimes leads groups with economic power to alter the market to favor themselves at the expense of others. Mancur Olsen called such groups distributional coalitions. While such groups take many forms, a common form are unions and professional organizations. These organizations often attempt to limit the supply of their services and thus raise their own wages. One way that occupational groups tried to limit labour supply was by excluding women from the occupation. While those in the occupation would benefit from high wages, society as a whole would suffer a loss of efficiency, and women would be harmed by having their occupational choices restricted. Heidi Hartmann has also argued that women were excluded from certain occupations because men wanted to protect their own economic interest. Hartmann adds that men wanted not only to maintain their own high wages, but also to protect their own power within the family by ensuring that women remained dependent. I agree with Hartmann, and will argue that most of the real discriminatory constraints that women faced were restrictions put in place by men who were trying to protect their own economic position. Of course, not every group of men was able to enforce restrictions against women. Only those occupations with some source of market power, such as possession of a specialized skill, were successful in excluding women.

I offer different explanations for different parts of the labour market, but the explanations have a common strain: the importance of economic self-interest. I do not believe that self-interest is always good. In fact, one half of my story illustrates how self-interest could be harmful to both women and the economy.

Self-interest is beneficial if disciplined by competition, but most economic actors would prefer to take the easier route of monopoly and, if allowed, will use their power to benefit themselves at the expense of others. Competition was the most powerful force protecting women's opportunities, and barriers to women's employment appeared where competition was weakest. In competitive labour markets, market forces led to occupational sorting, but this sorting benefited women because it minimized the economic costs of their lesser strength. The main source of barriers to women's employment was groups of men, or "distributional coalitions" to use Mancur Olson's term, who wished to monopolize an occupation to raise their own wages. Where competition was strong these rules were ineffective; only where competition was limited would unions and professional organizations effectively bar women from employment. If there had been more competition, women would have been able to work in a wider variety of occupations, and would have had opportunities to earn higher wages.

In Industrial Revolution Britain men and women tended to work in different occupations, and received different wages. This book explores the reasons for those differences. I conclude that gender ideology played a supporting role, but was not the driving force behind most of the occupational segregation or wage gaps. Gender ideology had the most influence in institutions that did not have to compete to survive, such as the family and the government. Comparative advantage and productivity differences determined the division of labour and wages in the most competitive sectors of the labour market. In other sectors, where one group was able to amass enough economic power to stifle competition, men erected barriers to the employment of women in order to reduce the competition for their jobs. These men used gender ideology to increase public support for the entry barriers they erected, but their primary motivations were economic.

An Interview with Eric Kerridge

Eric Kerridge (born 1919) is the major figure in British agricultural history. His book *The Agricultural Revolution* (1967) changed forever the way in which we view the agricultural changes associated with the Industrial Revolution. He found that the major changes took place in the sixteenth and seventeenth centuries rather than the eighteenth. This iconoclastic finding shocked the academic establishment of his day but is now widely accepted. The book, with its carefully crafted language, is a joy to read. There were many books to follow, but *The Agricultural Revolution* is the one for which he is best known.

For much of his career (1961-84) Kerridge was Professor in the Economics Department at the University of Wales, and since his retirement he has continued to publish regularly.

This interview was conducted by John Latham through correspondence in August 2005. Latham has known Profes-

sor Kerridge for years, as both were in the University of Wales, albeit at different campuses (Kerridge at Bangor and Latham at Swansea). At the annual University of Wales Economic History Symposium Kerridge was a welcome and provocative participant.

Eric, I see you as one of the great Elders of world economic history. I well remember meeting you at a University of Wales Staff-Student Economic History Colloquium at Gregynog Hall, Montgomeryshire, in the mid-1970s, and later at a Colloquium at St George's Hall, Windsor Castle, in 1984, where you gave a paper on Early Modern English markets. We share an admiration for the nowadays much neglected American economic historian J.U. Nef. His book, *The Rise of the British Coal Industry* (1932), inspired me to take up economic history, and I know his work was a great influence on your work on agriculture. Can you tell us something of Nef and his influence on your work? Did you ever meet him?

As an undergraduate Nef's *Coal Industry* opened my eyes to the great possibilities in research in early modern English agricultural history and inspired me with the hope of pursuing it. Once I had graduated, Nef personally encouraged me to do this. We corresponded regularly over a score of years, and I met him for lunch once in London. Later he got me invited to his Wiles lecture at Queen's University, Belfast, and I came to know him more closely. (These lectures formed the basis of his *Cultural Relations*.) He was a great lover of France and of paintings, and both wealthy and open-handed. He was a Christian, as manifested in his United States and in his actions. In the mid-1970s he took umbrage at something Professor D.C. Coleman had written about *Coal Industry* and penned a response to it, but he shied away from publishing it under his own name. He asked me to put it in the *Economic History Review* under mine, which for friendship's sake, and some small amendments, I did. In its old age Nef was no longer able to read much. We had always exchanged publications, but when I sent him a copy of my *Textile Manufactures*, his wife said he now found reading almost impossible, but he had taken pleasure in the book's dedication to him.

Your key work, *The Agricultural Revolution* (1967), was described as "An important and provocative book" (Chaloner and Richardson 1976, 50). Can you tell us about your findings and about why so many found them challenging? How did people react to your work?

The Agricultural Revolution was a key work in more ways than one. It occupied 20 years of my life. Contrary to my expectations, I discovered that all the writers who—at first, second, or third hand—had followed Arthur Young were wrong in locating the agricultural revolution in the later eighteenth century. The records clearly showed it occurred about 1560-1690. This discovery changed my view of the world.

Also, my studies had sideshoots. They had to extend to the lives and works of both Arthur Young and William Marshall.

Kerridge Interview (continued from page 13)

Moreover, *The Agricultural Revolution* was father to all of my later books. In preparing it, I had to study agriculture's legal and business aspects, which I dealt with in *Agrarian Problems*. Then, at my publisher's request, I wrote a book for the general public (*The Farmers of Old England*). This summarized my published works and those still in progress.

As one of the achievements of the agricultural revolution was the further rise of pasture sheep at the expense of fallow ones, and since these two groups of breeds bore radically different fleeces, I was led to study the consequences for the textile and hosiery industries. Fallow sheep gave wool that had to be carded, pasture ones gave wools that needed combing. So I spent a dozen years in research into the fabrics made, partly or wholly, from combed wool. These I described as best I could then showed how these products commanded higher prices and employed far more workers and capital than the older textiles had, and also dwarfed them in both production and profit. This was in *Textile Manufacturers*.

In the course of this work, in dealing with trade in textiles, I lighted on inland bills of exchange. So I spent a few years studying these and found that they were an English invention, a fiduciary medium that come into general use by Englishmen and provided the financial base of English exports. This discovery I wrote up as *Trade and Banking*.

Then I found time to revise and extend a chapter discarded from *The Agricultural Revolution* on grounds of space. This resulted in *Common Fields*, where I showed that common fields in a form suited to northern Europe were an Anglo-Saxon invention that was only taken up on the Continent about a half a millennium later.

As to how my *Agricultural Revolution* was received, I found a curious, comic and long-lived medley of consternation and disbelief. One man who had bought a copy took it back to the shop on the grounds that it was not about the eighteenth and nineteenth centuries. Hostile reviews I regard as compliments. It takes a long time for new ideas to take root. And why should I trouble myself over reviews by suburbanites who cannot tell one end of a cow from the other? Now, after half a century or so, some of my argument is graciously received, even though sometimes distortedly combined with the beliefs that it confuted. I even hear discussions as to whether there were two agricultural revolutions! What is still not generally understood is that the agricultural revolution arose in agriculture, and its achievements then shaped the manufacturing industries and the whole of English life; whereas the changes in agriculture in

the late eighteenth and nineteenth centuries were in response to a concatenation of an industrial revolution, the wars against France, and the debasement of the currency that accompanied them. Unlike the agricultural revolution, these later agricultural changes resulted less in the accumulation of capital than in its consumption, as in the complete destruction of the black lands on the downs and the spoiling of the red.

You have worked on many other issues since that time. Your paper at St. George's House was essentially a study in English Common Law, and the individual freedoms it enshrines and guarantees. Can you comment further on your work on this kind of topic, and on the philosophy which lies behind it?

At St George's I vowed to extend and strengthen my studies about the Common Law, which was unique to the English-speaking peoples. This I have now done in about 200,000 words. The Common Law was based on the Holy Bible and enforced all that was enforceable in the Ten Commandments. Punishments were imposed along the lines of those ordained in the Old Testament and approved by Jesus; felons (for example, murders, thieves, and child-molesters) were hanged by the neck until dead. Hanging was intended mainly as a deterrent to others; horse thieves were hanged not just because they had stolen horses, but in order that horses should not be stolen.

Christians believed in the protection of their property. This protection was provided by the Common Law. All property belonged either to the king or to his subjects: "May I not do what I want with my own?" was taken literally by all persons, and by none more than the lawyers. Thus freedom of trade was protected and all unlawful restraints of trade, including those emanating from trade (labor) unions were put down.

"The poor who are always with you," that is, those unable to fend for themselves, were succored and relieved, and conversely, it was a sin to give alms to the able-bodied. The Crown ruled between people, not over them. Kings were responsible to the courts of law and of equity, the defense of the realm inward and outward, the freedom of overseas trade, the purity of the gold and silver coinage, and the maintenance of true religion. The King in Parliament presented some of the Bills relating to his administration, but the vast majority of Bills arose from individual, independently-minded members of the Lords and the Commons. The Bills were concerned with commonweal matters. Parliamentary Acts declared, explained, and ratified the fundamental tenets of the Common Law, but could not change them. Some Acts were misguided, but then the common-law

"Before the war I was a carefree undergraduate and granted myself a good deal of leisure. After the war I lived the disciplined and almost leisureless life I had learned as a soldier."

courts either ignored them or remolded them to bring them into conformity with the Common Law.

You have also worked extensively on the debasement of money over the last millennium, work yet to be published, and I wonder if you can comment on your findings here.

Money consisted of gold and silver coins, which were only twice debased—and then in times of war. And both times, when peace returned, the old purity was restored. This is the theme of the sixth chapter of my as yet unpublished *Early Modern English Society*, so here I confine myself to more recent developments, which are to be dealt with in a revised version of my paper entitled “Money.”

During the Great War, in 1915, the British government called in all gold coins on the pretext of preventing their export, and then it exported the gold to buy the necessities for waging war. The people’s gold coins were never returned to them. The gold standard was never restored; the gold-exchange standard was set up. This allowed the states to transfer gold ingots overseas; rather, to be more exact, to change the labels of ownership without actually removing the gold. [Kerridge argues that the resulting dominance of the state was plainly unlawful.]

What are you working on currently?

A work on the causes and consequences of the Great Rebellion of 1640. It argues that by 1640 most of England had a capitalist market economy that conflicted with the feudal organization of government.

Turning to other matters, perhaps you can tell us a little of your childhood and early schooling. Where were you born and what did your father do?

I was born on the outskirts of Ipswich, Suffolk, in 1919, the second son of three. I also have a sister, the youngest of us. My father was a solicitor’s managing clerk, one rank below articulated clerk. His work brought him into close contact with farmers, and he spent much time visiting farms. We children all attended St. John’s Church of England School. I, and my two brothers, then proceeded to Ipswich School. One of our great delights in the holidays was to walk and cycle in the East Anglican countryside. We three boys went on to read history at University. We had history in our bones.

Your University education must have been interrupted by the war. Can you tell us about your University days and the major figures who influenced you?

My studies at University College, London, were, indeed, disrupted by the war, and for over five long years. Before the war I was a carefree undergraduate and granted myself a good deal of leisure. After the war I lived the disciplined and almost leisureless life I had learned as a soldier. I had not been discharged from the army, only put on reserve on condition that I continue at college, which I could only do by passing the examinations in subjects I had forgotten. And, as it took the bureaucrats many months to process by release, I was left with only 18 months to do two years’ work. But after so long an absence from academic work, my appetite for it was insatiable.

I worked day and night, but not without reward.

Both as an undergraduate and as a graduate student, the man who influenced me most was Sir John (J.E.) Neale. He was a great scholar and such a master of Tudor and early Stuart history that he “lectured” off the cuff, with barely a short note to refer to, and always with insight and good judgement. As a graduate, my chief director of research was R.H. Tawney. He was kind, friendly, and very helpful in pointing out good manuscript sources. I liked him, but was affronted by his socialist views and eventually took issue with him on the security of customary tenures. This, in turn, affronted him.

What about your service days? I believe you were in the Royal Artillery. Can you tell us about your army days and where you served? Did you see action?

Yes, I was in the Royal Artillery as part of Air Defense Great Britain, British Troops Northern Ireland, British Liberation Army, and British Army of the Rhine (BAOR)—Ubique quo

“We had history in our bones.”



Eric Kerridge, photo by Ilse Krupp.

Kerridge Interview (continued from page 15)

fas et gloria ducunt. Our regiment was designated as a mobile heavy anti-aircraft one, but this objective took a long time to reach. It took much time in learning, drills, practice, and examination of equipment, and so on, with many spells at training schools. When we eventually got a gun-layer (GL), I became an operator fire-control. In brief, it took three years for us to be fully trained.

Apart from leaves, which were few and far between, we were always on active service and all on duty day and night. We were always in the countryside not far from the places we were defending. A list of our sites would amount to a gazetteer of out-of-the-way places: Cherbourg, Antwerp, Fallingbostal (where our task was to extract potatoes from the Germans and feed them to the survivors in the camp in nearby Belsen).

We had seen plenty of action, in defense of Glasgow and Belfast, and, on the Isle of Doges, of London; we saw many times as much again in the defense of Antwerp. Day and night, week after week, the Germans rained doodle-bugs (buzz-bombs, V1s) on the city. Then came the V2 rockets. While at Merxem, we mounted a special ground expedition in support of the gallant Canadians clearing the Germans from the north side of the Scheldt estuary. We were called back for the Korean War, but mercifully, only for retraining on new equipment.

Later, for many years, you were at the University College of North Wales, Bangor, in the Economics Department. Can you tell us about your days in Bangor, and your experiences there?

I was there from 1961 to 1984. It was a form of internal exile but had its advantages. I lectured and tutored in my department and also in the Agricultural Department. This work occupied me three or four hours a week, so I had plenty of time for research and writing even in term time. My first head of department was Duncan Black, a Scots economist of the Adam Smith school, who was interested mainly in the theory of committees. We got on well. When he retired and went off to Virginia, his successor was Jack (J.R.S.) Revell. He ordered me to lecture on financial history, then supported my research about inland bills of exchange. Nevertheless, he reinforced the distaste I had already formed for current exposition of theoretical and applied economics.

The study of economic history has expanded in many different directions during the years of your long career, but as far as Britain is concerned, the very hub of the industrial revolution, the sad outcomes as been a real decline in those studying it at undergraduate and graduate level, and the closure of many departments. Why do you think this is, and do you think it can be remedied?

It is part of the general decay of historical studies. Proper history is no longer taught in State schools, only snippets that support propaganda of one sort and other. Also, history is also falling into neglect in the universities. For all this, I can see no immediate remedy, and the only hope in the distant future seems to me to be the cessation of State interference in

schools and universities, plus a reformation of mind and spirit amongst scholars.

Looking back over your long career, who do you see as the major figures in our subject?

This is tricky. One must first discriminate between good and bad influences. Amongst the good I name that great genius, John Nef, and then many others, including T.S. Willan, T.S. Ashton, G.D. Ramsey, W.H.B. Court, J de L. Mann, W.H. Hutt, John Munro, W.K. Jordan, and Maurice Beresford.

Lastly, have you any observations to make about economic history in general and its future?

The best way forward for genuine economic historians is to follow Nef's example in taking over the political and other branches of history and transforming them by the application of economic history. This task we can now pursue with the aid of much knowledge not available to Nef.

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Honors and Awards

Awards Presented at the 2007 Business History Conference

BHC Lifetime Achievement Award:

Louis Galambos (Johns Hopkins University)

Hagley Prize: Christopher D. McKenna (University of Oxford), *The World's Newest Profession: Management Consulting in the Twentieth Century*

Herman E. Krooss Prize: Bethany Moreton (University of Georgia) for "The Soul of the Service Economy: Wal-Mart and the Making of Christian Free Enterprise, 1929-1994" (Yale University, 2006)

Newcomen Article Prize: Dario Gaggio (University of Michigan) for "Pyramids of Trust: Social Embeddedness and Political Culture in Two Italian Gold Jewelry Districts," *Enterprise & Society* 7:1 (March 2006).

K. Austin Kerr Prize: Eric S. Hintz (University of Pennsylvania) for "Independent Inventors in an Era of Burgeoning R&D"

Awards Presented at 2007 Economic History Association Meetings

Nevins Prize: Mark Geiger (University of Minnesota; Ph.D. at University of Missouri) for "Missouri's Hidden Civil War: Financial Conspiracy and the End of the Planter Elite"

Gerschenkron Prize: Steven Nafziger (Williams College; Ph.D. at Yale University) for "Communal Institutions, Resource Allocation, and Russian Economic Development: 1861-1905"

Ranki Prize: Avner Greif (Stanford University) for *Institutions and the Path to the Modern Economy: Lessons from Medieval Trade*

Hughes Prize for Teaching: Peter Lindert (UC-Davis).

Cole Prize: Tim Leunig (London School of Economics) for "Time is Money: A Re-assessment of the Passenger Social Savings From Victorian British Railways," *Journal of Economic History* (September 2006).

Explorations Prize (not an official EHA prize): David S. Jacks (Simon Fraser University) for "What Drove 19th Century Commodity Market Integration?" *Explorations in Economic History* 43 (July 2006)

Upcoming Meetings

1st Latin American Economic History Congress
4th Uruguayan Economic History Conference
Montevideo, 5 - 7 December 2007

The inaugural session of the congress and the panel discussions will take place in the main auditorium ("Paraninfo") of the Universidad de la República, on 18 de Julio avenue, between Eduardo Acevedo and Tristán Narvaja streets.

The symposia of CLADHE I - IV JUHE will be held at the Centre of Postgraduate Studies of the State University's Faculty of Law, next to the intersection of Colonia and Tristán Narvaja streets, about one hundred meters distance from the main auditorium.

http://www.economia.unam.mx/amhe/cladhe/index_ingles.html

The Economics Network

of the European Social Science History Conference
at the European Social Science History Conference
Lisbon, Portugal, 27 February - 1 March 2008
<http://www.iisg.nl/esshc/economics.php>

Economic History Society Annual Conference

University of Nottingham, 28 - 30 March 2008
<http://www.ehs.org.uk/society/annualconferences.asp>

54th Business History Conference

California State University, Sacramento, 10 - 12 April 2008
<http://www.thebhc.org/annmccet/index.html>

Canadian Network for Economic History Conference

18 - 20 April 2008
<http://qed.econ.queensu.ca/CNEH/>

Sixth World Congress of Cliometrics

Dalkeith Palace, Edinburgh, Scotland, 17 - 20 July 2008

The Program Committee will put together an international program from the proposals submitted to the conference. Proposals are due 15 November 2007. The program will be posted on the Congress web site and the applicants will be informed in January 2008. Papers due 11 March 2008.

All members of sponsoring organizations are invited to attend. Advance registration will be open 1 January 2008. To receive the Congress book in a timely fashion, those interested in attending must register for the conference by 1 March 2008.
<http://eh.net/Clio/WCC6/content.html>

Third Symposium of the European Association of Evolutionary Political Economy

5 - 6 September 2008
<http://www.eaepe.org/>

Calls for Papers

Economic & Business Historical Society

(April 17-19, 2008)

The Economic & Business Historical Society welcomes proposals for presentations on all aspects of business and economic history at its 33rd annual conference at Montgomery, Alabama April 17-19, 2008. Composed of more than one hundred North American and international members, the Economic & Business Historical Society offers its members and conference participants an opportunity for intellectual interchange within a collegial interdisciplinary group. The Society holds its annual convention in locations of historical significance. Both the annual membership (\$30) and conference registration fees are modest. Papers presented at the conference may be submitted for publication in the Society's peer reviewed journal, *Essays in Economic and Business History*, edited by Lynne Picerson Doti, Chapman University.

The Society seeks proposals for both individual papers and panel sessions. Proposals for individual papers should include an abstract of no more than 500 words, a brief CV, postal and email addresses, and telephone and fax numbers. Panel proposals should also suggest a title and a panel chair. Graduate students and non-academic affiliates are welcome. Graduate students may qualify for reduced registration fees. Submissions imply that at least one author will register for the conference and be present at the time designated in the conference program.

The deadline for submission is January 7th, 2008.

<http://www.ebhsoc.org/papers.html>.

Appalachian Spring: 3rd Annual Conference in World History and Economics (Apr. 26, 2008)

This conference is an interdisciplinary meeting aimed at bringing together scholars from Appalachian State University (Boone, NC) with scholars from other universities in North Carolina and the surrounding states. The keynote speaker will be Dr. Peter Lindert from the University of California, Davis. We will feature 5-6 panels with scholarly papers, divided among different topical themes, including an undergraduate/graduate panel. This year's theme will be Government and Progress: A World of Experience.

The conference will take place on April 26, 2008, on the Appalachian State University campus, Boone, in the beautiful North Carolina mountains. Those interested in participating should let the organizers know by March 1st, 2008. A one-page abstract describing the scholar's proposal should be submitted to the organizers by that date. A full paper will be expected by the organizers by April 2nd, 2008. There is no registration fee.

The organizers might provide funding for accommodations (pending on funding), but not for travel expenses. We will offer meals to the participants during the meeting at no cost.

Organizers (contacts for paper proposals and practical matters):

- * David Johnson, Assistant Professor (Appalachian State University, Department of History):
phone: 1-828-262-6007, email: johnsonda@appstate.edu
- * Jari Eloranta, Assistant Professor (Appalachian State University, Department of History):
phone: 1-828-262-6006, email: elorantaj@appstate.edu

X Conference of the Spanish Economic History Association (Sept. 10-12, 2008)

Session: "New Issues in Quantitative Economic History"

The Spanish Economic History Association will hold its IX Congress in Murcia (Spain), 10-12 September 2008. The session "New Issues in Quantitative Economic History" is open for papers on any aspect of European or international economic history from the early modern period to the end of the twentieth century. Comparative papers will be most welcomed. The organizers, Stefano Battilossi (Carlos III) and Blanca Sánchez-Alonso (San Pablo-Ceu) invite proposals of papers with a strong analytical and quantitative approach. Papers should be written in English and the discussion will be in English as well. We particularly encourage submissions from young scholars willing to present their research to the lively community of Spanish economic historians. Reduced rates for doctoral students will be available. For each proposal an abstract not exceeding 500 words together with the institutional affiliation and email address of the authors should be sent by email as an attached document in Word format by December 15th, 2007 to: Stefano Battilossi, Universidad Carlos III de Madrid, battilos@clio.uc3m.es, and Blanca Sánchez-Alonso, Universidad San Pablo-Ceu, blanca@ceu.es.

All submissions will be acknowledged. Notices of acceptance will be sent to corresponding authors by January 31st, 2008.

The World Economic History Congress (August 3-7, 2009)

In 2009 the International Economic History Association (IEHA) will hold its XVth World Economic History Congress in Utrecht, The Netherlands, from August 3 to 7. The organizing institutions are Utrecht University and the International Institute of Social History.

The World Economic History Congress takes place every three or four years. It offers excellent opportunities for scholars in economic history from all over the world to present their work, exchange knowledge and views, and set the research agenda for the years to come.

The theme of the 2009 congress will be "global economic history." The congress is expected to contribute to the following goals: enhance the dialogue with social sciences and economics; develop a programme of global economic history; integrate business history; build better institutions for academic exchange in the internet age.

Sessions will cover a wide range of subjects, periods from antiquity to the present day, and a variety of regions around the world. The congress will also include a dissertation competition, a poster session for young researchers, and a series of keynote lectures on the ongoing process of transformation of the world economy and its relationship with the aim of sustainability.

April 2008: Second call for session proposals and call for dissertations.

November 2008: Deadline submission of session proposals (second round) and dissertation abstracts; selection of proposals and dissertations; final programme confirmation; call for posters for poster session.

<http://www.wehc2009.org/>.

The 2008 Economic History Association Meetings (September 12-14, 2008)

Hosted by Yale University
Omni New Haven Hotel at Yale
New Haven, Connecticut,
Alan L. Olmstead, President

"The Engines of Growth: Innovation, Creative Destruction, and Human Capital Accumulation"

The Program Committee—Paul Rhode, University of Arizona (Chair); Werner Troesken, George Mason University; Tracy Denison, California Institute of Technology; and Ken Pomeranz, University of California, Irvine—welcomes proposals for individual papers, as well as for entire sessions. As is the rule, papers on all subjects in economic history are welcome, but a number of sessions will be devoted to the theme "The Engines of Growth: Innovation, Creative Destruction, and Human Capital Accumulation."

The analysis of the causes and consequences of economic growth is central to the study of economic history. Growth takes place in a legal, political, and social context and the innovations that drive growth are often opposed by vested interests that expect to lose from the changes. Creative Destruction, whereby revolutionary innovations both spawn entirely new ventures and undermine the value of existing investments, appears to be an inevitable part of the long-run growth process. Understanding the political economy of institutional change and innovation is of special interest. This is particularly true for human capital and information given their public good characteristics. The Program Committee invites papers and sessions on this theme dealing with experiences from a broad range of geographical regions, time periods, and institutional settings.

Papers and session proposals should be submitted on line at: http://eh.net/cha/meetings/prop_08.html. The following rules and procedures apply. The due date is January 31, 2008. Paper proposals should include a 3-5 page précis and a 150-word abstract suitable for publication in the *Journal of Economic History*. By vote of the Board of Trustees, the corresponding author must be a current member of the Association (to join the Association, please go to <http://eh.net/cha/>). Papers should in all cases be work in progress rather than accepted or published work; submitters have a responsibility to let the program committee know if the proposed paper has been submitted for publication. Submissions for entire sessions should include no more than three papers and each proposal should be submitted separately. The committee reserves the right to determine which papers will be included in those sessions that are accepted. Finally, those who had a paper accepted by the regular program committee for the 2007 meeting (Austin) must wait two years before submitting again.

The dissertation session convened by Kevin O'Rourke (Trinity College, Dublin) and Zorina Khan (Bowdoin College) will honor six dissertations completed during the 2007-2008 academic year. The submission deadline is June 1, 2008. The Alexander Gerschenkron and Allan Nevins prizes will be awarded to the best dissertations on non-North American and North American topics. Note that students may not submit both to the dissertation session and the regular program, but there is a two year window within which a dissertation may be submitted for consideration.

Graduate students are encouraged to attend and the Association offers subsidies for travel, hotel, registration, and meals, including a special graduate student dinner. A poster session welcomes work from dissertations in progress.

See www.ehameeting.com or contact Meetings Coordinator Jari Eloranta at elorantaj@appstate.edu.

The Cliometric Society

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Cliometric Society Statement of Operations 2006-2007

REVENUES AND SUPPORT	Budgeted 2007	Actual 2006	Budgeted 2006
Dues-Regular	6,975.00	75183.23	7785.00
Dues-Student		100.00	150.00
EEH Subscriptions	15,300.00	14,580.00	15,300.00
EHES Dues collected by Clio	5,775.00	6,159.50	5,820.00
Cliometrica Subscriptions	3,250.00	-	-
Donations	2,250.00	1,952.50	1,800.00
World Congress Receipts	-	-	-
Interest and other income	100.00	76.50	85.00
Total revenue and support	33,800.00	30,386.73	30,940.00
EXPENSES			
Salaries	1,500.00	1,500.00	1,500.00
Newsletter	4,000.00	4,541.81	4,000.00
Elsevier	14,450.00	13,355.71	14,620.00
Clio member dues remitted to EHES	5,500.00	6,122.86	5,250.00
Springer	3,250.00	-	-
IEHA Dues	450.00	-	-
Director's Travel and Trustees Meeting	1,250.00	1,415.34	1,300.00
Bank, Credit Card, and Wire Fees	1,350.00	1,305.37	1,825.00
ASSA Meetings	1,300.00	1,350.00	1,350.00
Office Expenses	250.00	522.09	350.00
World Congress Debits	-	-	-
Transfers to Reserve Account	-	420.00	-
Other Expenses	-	-	-
Eh.net dues	500.00	500.00	500.00
Total expenses	33,800.00	31,033.18	30,920.00
CHANGE IN NET ASSETS FROM OPERATING TRANSFERS	-	(646.45)	20.00
NET (OPERATING) ASSETS - BEGINNING OF YEAR	259.56	906.01	906.01
NET (OPERATING) ASSETS - END OF YEAR (BUDGETED)	259.56	259.56	926.01

Chionometric Society Session, Friday, January 4, 2:30 p.m. at the Hilton-Durham
Technological Innovations and Social Capital: What Mattered When

Chair: Farley Grubb (Delaware)

Discussants: Paul Rhode (Arizona), Zorina Khan (Bowdoin), Farley Grubb,
Wayne Grove (Le Moyne)

The New Deal and Diffusion of Tractors in the 1930s

Price Fishback (University of Arizona and NBER)

Shawn Kantor (University of California Merced and NBER)

Todd Sorensen (University of Arizona)

I. Introduction

The large-scale adoption of tractors in American agriculture might well be considered one of the most important technological trends of the 20th century. William White (2001, 2000) describes the tractor as an "unsung hero," producing social savings that were substantially larger than the railroads of the late 19th century. As the share of farms with tractors rose from 3.6 percent in 1920 to 80 percent in 1960, the agricultural requirements for labor, land, and animal stocks dropped dramatically, freeing these resources for alternative uses in the economy.

Despite a number of highly informative studies on the diffusion of tractors, scholars to date often could only offer indirect assessments of the New Deal policies on the adoption of this important invention during the 1930s. The 1930s were an important decade for tractor diffusion. During a decade of terrible depression the share of farms owning tractors rose from 16.8 percent in 1930 to 32.4 percent in 1940. Sally Clarke (1994) suggests that the Agricultural Adjustment Administration and the New Deal farm loan programs might well have promoted the adoption of tractors in the corn belt by reducing the risk of downward fluctuations in farm market prices, improving the terms of loans, and putting more cash into the hands of farmers. Warren Whatley (1985, 1987) shows that the presence of share tenancy and cropping was associated with slowed adoption of tractors in the cotton South prior to 1930, while Lee Alston (1981) finds that tractors are inversely related to the extent of tenancy between 1930 and 1960. Whatley (1983) also shows that New Deal programs were associated with a reduction in tenancy during the 1930s. Thus, we might infer that the reduction in tenancy associated with AAA payments in the south was associated with faster adoption of tractors. However, as yet no one has had access to direct information on the extent of New Deal spending

and loans across counties; therefore, scholars have had to rely on indirect inference to draw their conclusions.

In this paper we use data reported by the U.S. Office of Government Reports (1940) on the distribution of New Deal funds across counties to examine directly the impact of the AAA rental and benefit grants, the Farm Credit Administration and Farm Security Administration loans, and public works and relief grants on the adoption of tractors between 1930 and 1940. In the process we describe the New Deal programs, describe their anticipated impact, perform OLS estimations that show the basic relationships between tractor adoption and New Deal programs, and then use instrumental variables to work to reduce endogeneity in the estimates of the impact of New Deal programs on tractor adoption. The analysis suggests that all three New Deal programs served to stimulate the adoption of tractors, although the precision of the estimates is weaker for the AAA programs than for the farm loan and public works and relief programs.

II. The New Deal Programs for Farms, Relief, and Public Works

The New Deal programs that were likely to directly affect agricultural input choice were the broad array of farm programs through grants and loans and the public works and relief programs through their impact on work opportunities for potential farm workers, croppers, and tenants. The county-level evidence reported by the Office of Government Reports on farm programs includes information on AAA Rental and Benefit payments aggregated for the period from 1933 through 1935, AAA Soil Conservation Allotment payments aggregated for the two years 1936 and 1937, the Farm Credit Administration loans to farmers, loans through the Farm Security Administration, and loans through the Rural Electrification Administration for the period March 1933 through June 1939.

Details omitted.

III. Modeling the Choices of Representative Farmers

To organize thinking about the impact of the New Deal programs and to offer some insights into the issue of whether other contemporary empirical analysis we develop a theoretical model of a representative farmer. This is

a standard one-period model of a risk averse farmer maximizing expected utility. The farmer makes the choices at the beginning of the period and does not discover the prices or harvest outcomes until the period has ended. We assume the farmer is risk averse in making decisions about farm inputs. We have couched the analysis in terms of numerical values, yet some features of Clarke's analysis based on the non-cash part of the farm economy are easily incorporated. Her focus on non-cash opportunity costs might also be incorporated in the model based on whether cash or non-cash opportunity costs are considered to be the more relevant factor. Clarke strongly emphasizes the role of lowering interest rates and giving farmers more access to cash credit would make them more likely to take accept risk. Obviously, if labor and capital are substitutes on the farm, lowering the rental rate of capital should increase demand for capital. However, if Clarke's argument about risk aversion is correct, one should be able to find that a lower interest rate will increase demand for tractors without making any assumptions about the substitution patterns between labor and capital on the farm.

We treat the choice of all farm inputs as endogenous in this model, which is consistent with Olmstead and Rhode's (2001) findings that tractors and farm size were simultaneously chosen. We can alter this assumption within the model by fixing the land size or adding credit constraints. Assume that farmers are expected utility maximizers.

Please see full paper for complete model.

IV. Empirical Model

We follow Olmstead and Rhode's (2001) focus and estimate the model for the entire United States. As a starting point, we examine the base relationships between the growth rate in the number of tractors between 1929 and 1939 (measured as the change in the log values) in the county as a function of only the New Deal loans and grant programs by estimating OLS regressions where the New Deal loans and expenditures are treated as exogenous. The AAA grant expenditures per rural farm person describes the cross-county distribution of AAA funds availability of AAA funds. We focus on the total spending rather than the national parameters because the deals offered farmers tended to be packages of the national parameters and the specific acreage allowed to farmers in the county. We see the FCA and FSA loans per rural farm person as a measure of the availability of the loans in the area, which might have differed to the extent that local administrations were effective relatively to other groups. We anticipate that greater availability of the farm loans also influenced local private credit opportunities in these areas. Finally, the public works and relief spending per capita describes the extent of public work available in the area

IV.1 The Estimation Equation

To examine the potential for omitted variable bias we then add a series of variables, so that the OLS regressions (and later IV regressions) ultimately take the following form. We estimate the effect of New Deal spending on the level of tractor adoption in 1939, using both OLS and IV. Our OLS model is specified as follows:

$$\ln(T_{39i}) - \ln(T_{29i}) = \beta_0 + \beta_1 \ln(T_{29i}/F_{29i}) + \beta_2 ND_i + \beta_3 X_i + \varepsilon_i$$

where \ln is the natural log, T_{1i} is the number of tractors in year t and county i and T_{29i}/F_{29i} is the number of tractors per farm in 1929. ND_i is a 3x1 vector of New Deal funds per rural farm population and X_{30i} is a $k \times 1$ vector of explanatory variables. The parameters β_0 and β_1 are coefficients to be estimated, while β_2 and β_3 are 1x3 and 1xk vectors of coefficients to match up with the New Deal and explanatory variables in their respective vectors. Finally, ε_i is a stochastic error term that contains random error terms and unobservables. We include the natural log of tractors per farm in 1929 to control for prior propensity to adopt tractors as well as the effects on growth rates of starting at different levels. We focused on using the number of farms in 1929 as a normalization to avoid mixing up changes in the number of tractors with changes in the number of farms during the 1930s. The change in log tractors from 1929 to 1939 will have the same value as the change in log tractors per 1929 farm from 1929 to 1939.

IV.2 Controlling for Endogeneity of New Deal Programs

It is likely that the New Deal spending and loan programs were not exogenous to the situation in agriculture... In selecting instruments for the distribution of public works and relief grants, farm loans, and AAA grants, we are looking for factors that vary across counties in ways that might have influenced the political and administrative supply of loans and grants but would not have influenced the farmers' decisions to expand their use of tractors after controlling for all of the factors we have included in the tractor growth equation. To correct for the endogeneity biases of the New Deal variables, we follow a two stage least squares (2SLS) approach. Since the success of this empirical strategy depends on the credibility of the instruments that are chosen, we follow a stringent set of criteria for choosing suitable identifying instruments. First, the instruments must have been either natural features or have been determined prior to the decisions made about New Deal spending and migration to avoid the potential for simultaneity bias. Second, to insure that the variables have power and make sense in the first-stage regression for which they are primary instruments, the coefficients must have reasonable signs in the appropriate first-stage New Deal regression and the effects must

level. The smaller impact of the AAA might have been the combination of a series of the offsetting effects we described earlier. Switching the land to alternative uses may have still provided work eased by the use of a tractor while at the same time easing the harvest labor problems that farmers faced. This positive effect might have been at least partially offset, however, by the lower costs associated with using horses and mules as the land was converted to the production of feed and forage production.

Although our emphasis has been on the New Deal farm programs, the analysis also shows the impact of other key variables on the growth in tractors. Better hydrological soil quality on several dimensions—average water content, permeability, and hydric—were associated with faster tractor growth, while more slope reduced tractor growth. Tractor growth was slower in areas with high precipitation, greater variation in monthly temperatures, more months of extreme or severe drought and wetness and in the dust bowl counties. Consistent with the emphasis in the literature on the problems in obtaining harvest labor in more isolated areas, tractor growth was more rapid in counties with more urbanization and larger populations.

Crop mix was also important. Within states, areas with crop mixes focused on more cotton and less corn in 1929 were more likely to see rapid tractor growth within the same state. Meanwhile areas experiencing lower crop values per rural farm person in 1929 experienced more rapid tractor growth. It may be that farmers in less successful areas as the economy peaked in 1929 saw tractors as a way to enhance productivity.

VII. Conclusions

Despite a decade of Depression, there was significant expansion in the adoption of tractors during the 1930s. The results here suggest that New Deal programs contributed to the growth rate in the use of tractors between 1929 and 1939. Farm loan programs and the public works and relief programs in rural areas both raised the growth rate of tractor usage in economically and statistically significant ways. The estimated effects for the AAA are also positive but smaller in magnitude and we cannot always reject the hypothesis of no effect on the growth rate in tractors.

The findings in this paper fit in well with other recent studies of the impact of the New Deal. Public works and relief spending contributed to increased economic activity in many areas and were associated with net in-migration into areas. In the farming sectors the presence of public works and relief spending reduced out-migration, which in turn aided the diffusion of tractors by relaxing the harvest labor constraint that had been a problem for tractors in the past.

The findings here suggest that the AAA had complex effects. The program was

be both economically and statistically significant. Third, it must be the case that over-identification tests cannot reject the hypothesis of no correlation between the identifying instruments and the estimated 2SLS error term of the final-stage tractor-growth equation. In other words, we are testing whether the instruments themselves have been inappropriately omitted from the tractor-growth equation.

V. Results

Descriptive statistics omitted from this version.

We start by focusing on the estimation without controls for farm size and tenure. The 2SLS results are consistent with our expectation of a negative bias for the OLS estimates as the coefficients of all three New Deal programs become positive. The farm loan and public works and relief coefficients are both statistically significant at the 6 percent level or better, while the AAA coefficient is statistically significant at the 16 percent level. We had anticipated that the farm loan programs would have had a positive effect on tractor growth by lowering interest rates on farm mortgages and crop loans, expanding the length of the loans, and raising the share of value on which the farmers could borrow. An additional dollar per rural farm person in farm loans raised the tractor growth rate by 0.47 percent for the 10 year period, holding fixed the prior level of tractors. A difference of one standard deviation is a relatively common difference found within samples and can give us a better sense of the historical importance of the farm programs. A one-standard-deviation increase in rural farm loans per rural farm person of \$75.95 would have been associated with a 0.717 standard deviation increase in the growth rate of tractors.

The presence of more public works and relief funds also contributed to greater tractor growth, probably by relaxing the harvest labor constraint in these areas. Public works and relief expenditures had reduce net out-migration in a county-level study by Fishback, Horrace, and Kantor (forthcoming). It appears that the program administrators generally were following practices of releasing workers for harvest without prejudice against their return to the projects when the harvest was over. An additional dollar per person of public works and relief contributed to a 0.19 percent increase in the tractor growth rate, holding the prior log level of tractors per farm constant. This effect is reasonably large, as a one-standard deviation increase in these grants of \$107.5 was associated with a 0.45 standard deviation increase in the tractor growth rate.

The AAA grant program had a smaller direct effect than the other two programs even though the size of the subsidy was larger than under the farm loans. An additional dollar per rural farm person raised the tractor growth rate by only 0.12 percent and the effect is statistically significant at the 16 percent

designed to raise farm incomes relative to nonfarm incomes to levels seen circa 1910-1914. As yet, we have not estimated the AAA's success at achieving this goal. However, we have examined a variety of effects in other areas that suggest that the AAA might well have been highly redistributive. The results in this paper suggest that the AAA might have contributed to the adoption of tractors, but this possible technological benefit likely came at substantial costs to other some segments of the farm population before the programs were adopted. Other studies in our project show that AAA payments did not lead to a rise in retail sales suggesting that the benefits of the program that accrued to the farmers receiving grants were likely offset by losses to other parts of the farm population. The fact that infant mortality rates for blacks and whites in the South rose and that the AAA was associated with significant out-migration seems to confirm this finding.

References omitted due to space limitations

Is Social Capital Persistent? Comparative Measurement in the Nineteenth and Twentieth Centuries and its Synergies with Per Capita Income

Marta Feltis Rota (London School of Economics)

I. Introduction

Recently, there has been a growing interest in social capital and in the difficulties related to its measurement. This paper proposes to measure social capital by means of principal components analysis and presents the first available international social capital estimates for the nineteenth century. The analysis is based on a nineteenth-century international database containing a wide range of socio-economic variables. Social capital indicators are constructed for the years 1870 and 1890. These indicators are compared to mid-twentieth century social indicators, facilitating the study of the evolution of social capital between the nineteenth and twentieth centuries. In the very long run, one can find a significant decline in the relative position of the European countries and the United States.

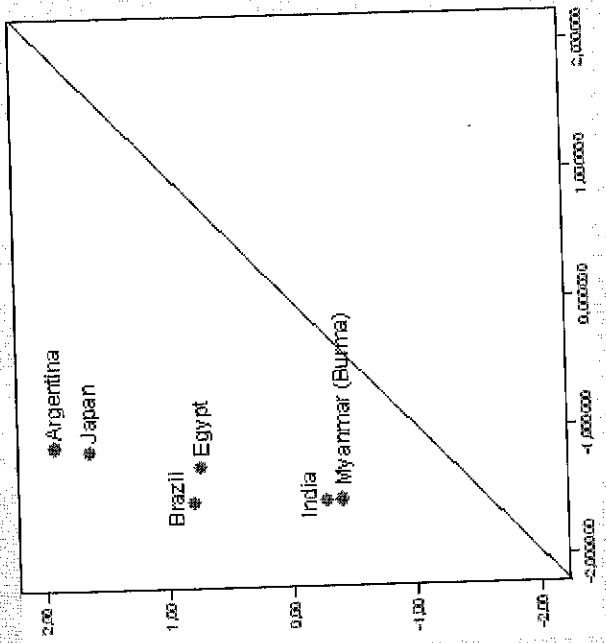
More importantly, is there a persistent relationship between social capital and economic performance? There is empirical evidence showing a positive link between social capital and economic performance in the second half of the twentieth century. Can we go a step forward and speak of stylised fact or structural relationship in the long run? In a second part, this paper uses the newly created nineteenth century international social capital indicator to contrast its potential synergies with per capita income at that time. The results show that the relationship between social development and per capita

income already existed in the late nineteenth century. The paper finds a strong positive linear relationship between the two; and this relationship upholds after controlling for foreign trade volume and structure, urbanisation, education, quality of institutions, political stability, government expenditure, population growth, and climate.

Table 1 – Social Development Index (SDI) from First Principal Component Scores

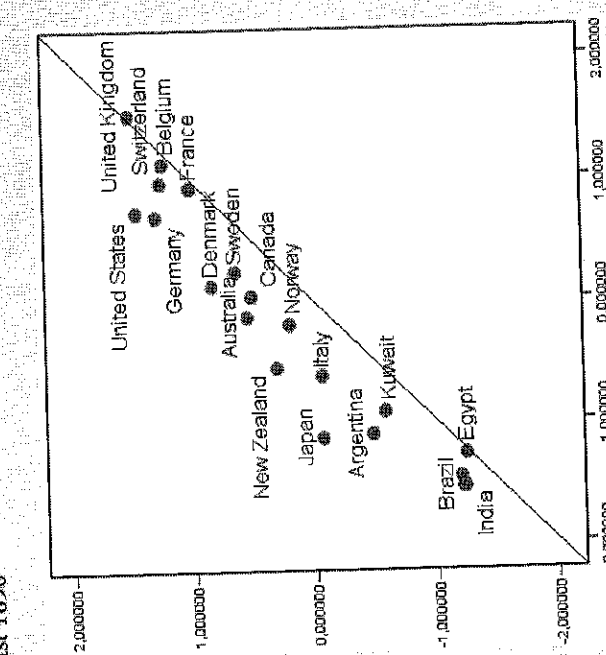
Country	SDI 1870	SDI 1890	Change SDI 1890 – SDI 1870	Sign of Change
Argentina	-1,108	-0,477	0,631	+
Australia	-0,137	0,550	0,687	+
Belgium	1,122	1,231	0,109	+
Brazil	-1,545	-1,214	0,330	+
Burma	-1,538	n/a	n/a	n/a
Canada	0,029	0,513	0,484	+
Denmark	0,119	0,841	0,722	+
Egypt	-1,269	-1,242	0,028	+
France	0,925	1,010	0,085	+
Germany	0,690	1,296	0,606	+
India	-1,545	-1,230	0,315	+
Italy	-0,629	-0,065	0,564	+
Japan	-1,137	-0,066	1,071	+
Netherlands	n/a	0,974	n/a	n/a
New Zealand	-0,560	0,309	0,868	+
Norway	-0,205	0,197	0,402	+
Russia	-1,463	-1,198	0,265	+
Spain	-0,921	-0,580	0,342	+
Sweden	0,232	0,646	0,414	+
Switzerland	0,968	1,254	0,286	+
United Kingdom	1,529	1,511	-0,018	-
United States	0,726	1,459	0,734	+

Figure 1 - Scatter Plot for the New Social Development Index: 1870 against 1890



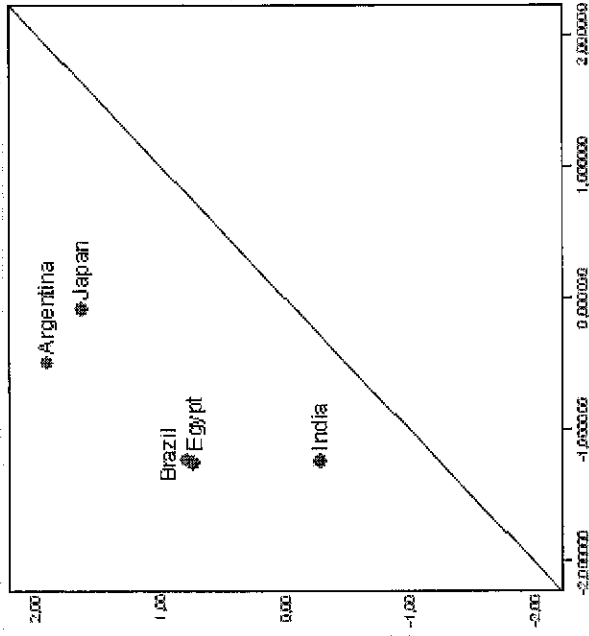
SDI 1870 in the horizontal axis. SDI 1890 in the vertical axis. Almost all countries improved over this period.

Figure 2 - Scatter plot for Social Development Index: Historical Evolution from 1870 to 1960



SDI 1870 in the horizontal axis. SOCDEV in the vertical axis. All countries in the sample improved notably during the period 1870-1960.

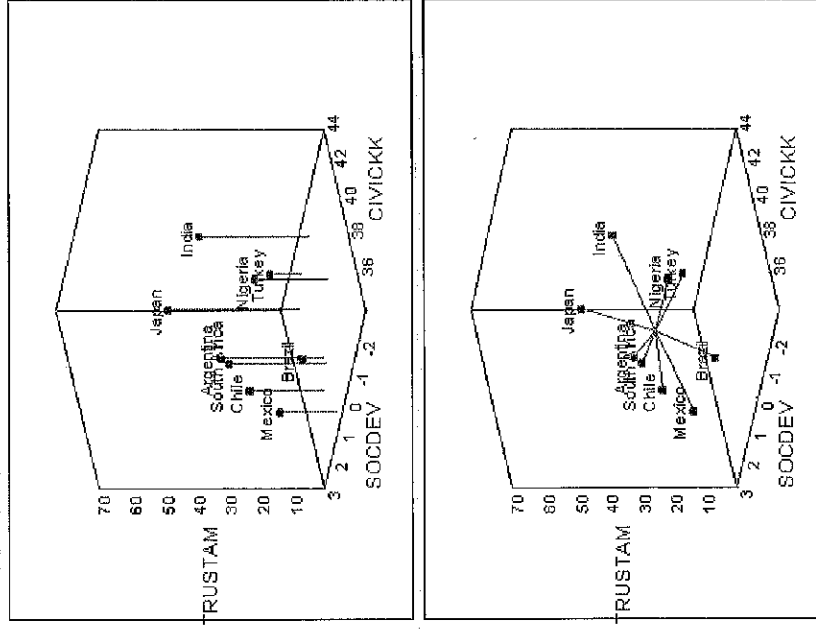
Figure 3 - Scatter plot for Social Development Index. Historical Evolution from 1870 to 1960



SDI 1890 in the horizontal axis. SOCDEV in the vertical axis. All countries in the sample improved notably during the period 1890-1960.

II. Three Contemporary Alternatives to Monitor Social Capital

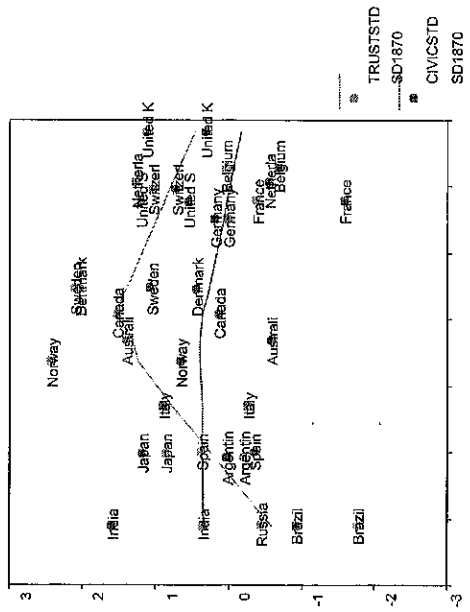
Figure 4 - 3D Scatter Plots. Spikes to the Floor and Centroid respectively



The two most popular contemporary alternatives for measurement of social capital are trust and civic engagement, taken from the World Value Surveys. The plots depict a 3-dimensional positioning of the 3 measurement alternatives, for the sample of countries where all 3 are available.

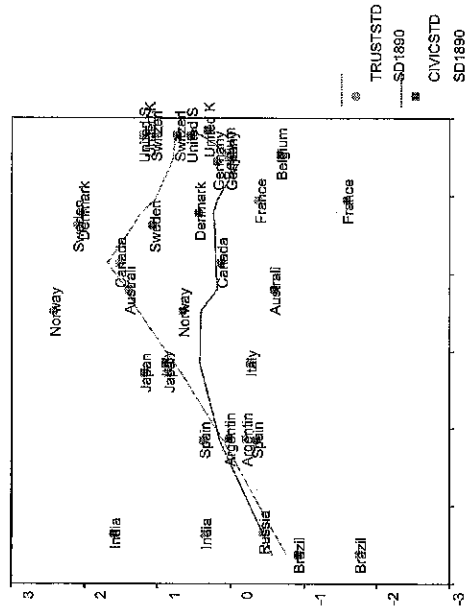
III. Intertemporal Comparisons: Nineteenth and Twentieth Centuries

Figure 7 - Historical Evolution 1870-Nowadays.
Overlay Scatter Plot with Fitted Line



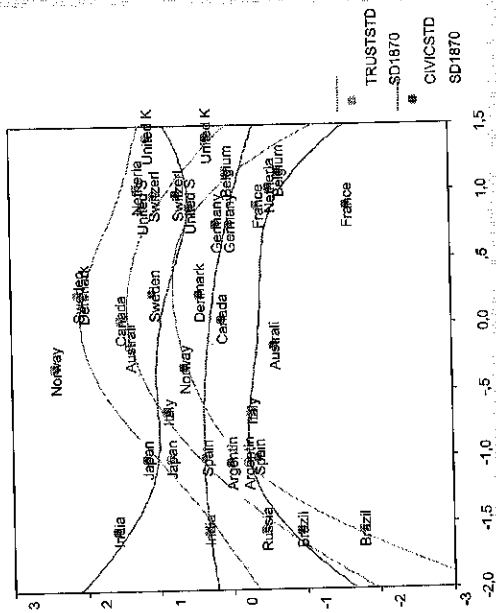
Social development in the horizontal axis, trust (light) and civic (dark) in the vertical axis. Fit method: Lowess. 50% of points fitted with 3 iterations. Locally weighted linear regression reveals exceptional evolutions.

Figure 8 - Historical Evolution 1890-Nowadays.
Overlay Scatter Plot with Fitted Line



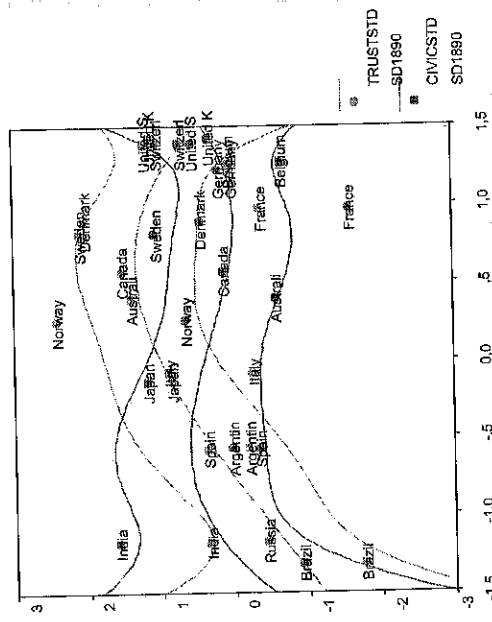
Social development in the horizontal axis, trust (light) and civic (dark) in the vertical axis. Fit method: Lowess. 50% of points fitted with 3 iterations. Locally weighted linear regression reveals exceptional evolutions.

Figure 9 - Historical Evolution 1870-Nowadays.
Overlay Scatter Plot with Quadratic Regression Lines



Social development in the horizontal axis, trust (light) and civic engagement (dark) in the vertical axis. Fit method: Quadratic regression prediction lines. The variables present non-linear relationships between them.

Figure 10 - Historical Evolution 1890-Nowadays.
Overlay Scatter Plot with Cubic Regression Lines



Social development in the horizontal axis, trust (light) and civic engagement (dark) in the vertical axis. Fit method: Cubic regression prediction lines. The variables present non-linear relationships between them.

IV. The Relationship between Social Development and Income in the Nineteenth Century

Figure 11 – Social Development and Log Per Capita GDP in 1870

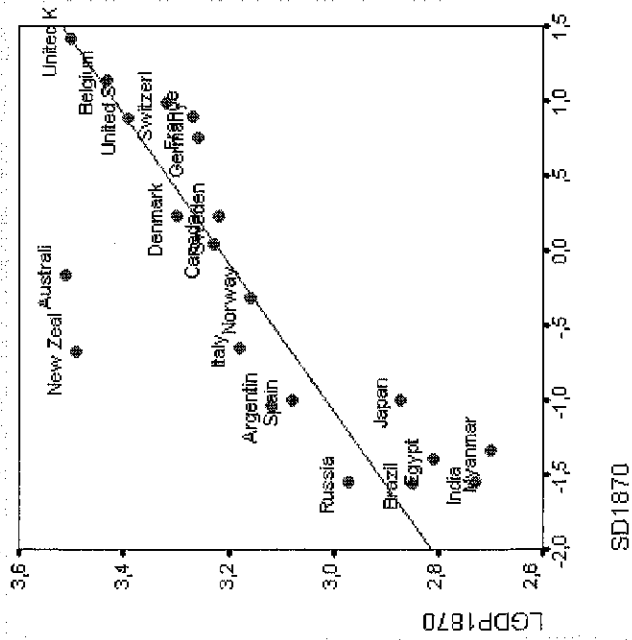


Figure 12 – Social Development and Log Per Capita GDP in 1890

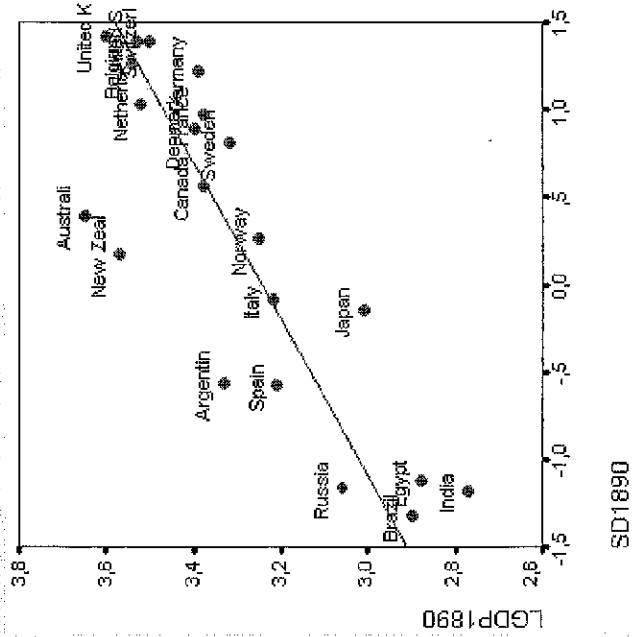


Table 2
Level of association between Social Development and Income
Dependent Variable: Log GDP from Maddison Method: OLS

Year	(1) 1870 21	(2) 1870 19	(3) 1890 21	(4) 1890 19	(5) 1960 72	(6) 1960 70
Observations						
SIDI slope	.202*** (.035)	.209*** (.022)	.224*** (.034)	.224*** (.025)	.236*** (.023)	.233*** (.021)
R ²	.633	.836	.698	.826	.596	.648
Adjusted R ²	.614	.827	.682	.816	.590	.643

Notes: Constant included in the regressions but not shown on table. Standard deviation of coefficients between parentheses. Influential observations outside 2 standard deviations (Australia and New Zealand for 1870 and 1890, Gabon and Venezuela for 1960). *** Coefficient statistically significant at the 0.01 level.

Table 3
Social Development and Income including control variables.
Dependent variable: Log GDP from Maddison Method: OLS

Year	(1) 1870 21	(2) 1870 21	(3) 1890 21	(4) 1890 21
Observations				
SIDI	.472*** (.123)	.427*** (.154)	.417** (.149)	.489*** (.140)
growth of exports	.003 (.002)	-	.001 (.002)	-
foreign dependency	-	-.003 (.003)	-	-.005* (.003)
Urbanisation	-.005 (.004)	-.002 (.004)	-.002 (.004)	.000 (.002)
literacy rate	.012*** (.004)	.008** (.003)	.010** (.003)	.007** (.002)
form of land tenure	-.011*** (.003)	-.010*** (.003)	-.008** (.004)	-.009*** (.002)
political stability	-.004 (.003)	-	-.001 (.003)	-
political power of workers	-	.003 (.005)	-	.006** (.002)
domestic importance of govt	.002 (.003)	.001 (.003)	.001 (.002)	.001 (.001)
shift of exports to manuif	-.008* (.004)	-.005 (.003)	-.004* (.002)	-.004** (.002)
population growth	.010** (.003)	.009** (.004)	.008*** (.002)	.004* (.002)
% land in tropics	-.715*** (.175)	-.686*** (.181)	-.258 (.200)	-.203 (.135)
R ²	.949	.944	.967	.983
Adjusted R ²	.897	.887	.935	.965

Notes: Constant not shown. Standard errors between parentheses. *Coefficient statistically significant at the 0.1 level. ** Coefficient statistically significant at the 0.05 level. *** Coefficient statistically significant at the 0.01 level.

The Dishonest Origins of Modern Currency

Dror Goldberg (Texas A&M University)

In 1690 Massachusetts issued the first inconvertible, legal tender paper money. The circumstances of that issue are far more complicated than the usual story of a wartime specie shortage. While the colony was lobbying England for a new charter it could not officially issue money because such violation of the royal prerogative had contributed to the revocation of the original charter. It therefore disguised the paper money as a private-like IOU. Since the last royal governor declared that all the colony's lands belong to the king, the colony could not back the paper money with land, as was then standard.

The Airplane as an Open Source Invention

Peter B. Meyer (Office of Productivity and Technology, U.S. Bureau of Labor Statistics)

For decades before there were functional airplanes, there was an international discussion about wings and flying machines. The Wright brothers learned from and participated in these public networks of information. This paper argues that their 1903 invention of the airplane was based primarily on open-source information and networks which were like those in open source software development, and unlike formal research and development in which technical advances are kept secret or declared to be intellectual property.

By the 1890s several journals and societies in France, Britain, Germany, and the United States were devoted to the topic of winged flying machines. Important experiments by Otto Lilienthal, Samuel Pierpont Langley, and Lawrence Hargrave advanced the field. Lilienthal and Langley each wrote books carefully describing their experimental tests of the lift and drag of objects in an air flow. Hargrave published the results of all his experiments and patented nothing, on the principle that flight would become possible most quickly if he, and everyone, did this.

Engineer Octave Chanute was inspired by the possibility that by cooperating, aerial experimenters around the world could make winged flying machines a reality. He visited and corresponded with many experimenters, and encouraged a free exchange of ideas. In his optimistically titled 1894 book, *Progress in Flying Machines*, Chanute summarized and commented on hundreds of kites, gliders, experimenters, authors, and theorists of aerial navigation. Newly interested people learned about the subject from this important book. Wilbur and Orville Wright read it and contacted Chanute.

Like the others, the Wrights discussed their experiments openly. Chanute visited them and invited colleagues to participate in their effort. The Wrights published articles, and met other experimenters. In other words, the Wrights took an open source perspective on their technology.

Starting in 1902, the Wrights developed uniquely effective wings and propellers. They began to withdraw from processes of open sharing, believing (correctly) that they were near to a successful powered glider flight. They patented and licensed their technology. This led to permanent conflicts with Chanute, who was devoted to open-source processes of invention.

In the Wrights' published papers and histories of their work, the key predecessors most often referenced are Lilienthal, Chanute, and Langley. Thus by this form of citation count we can infer they built on the work of these three author/experimenters. Chanute's book refers to Lilienthal, Hargrave, and Langley among the most frequently. By contrast, the writings of Chanute and the Wrights rarely refer to other experimenters who had patents. The patents seem to have been irrelevant to the advance of the technology, whereas Chanute's open 1894 description tells us the platform of technology the Wrights actually built from.

Table 1. Most-cited authors and experimenters in Chanute's 1894 book *Progress in Flying Machines*

Experimenter / group	Pages referring to, or quoting, that person	Location (background)
Hiram Maxim	33	Britain (US)
Otto Lilienthal	31	Germany
Alphonse Penaud	22	France
Louis Mouillard	21	Algeria, Egypt (Fr)
Lawrence Hargrave	19	Australia (Br)
Thomas Moy	19	Britain
Jean-Marie Le Bris	17	France
Samuel Langley	16	US
Francis Wenham	15	Britain
H. F. Phillips	14	Britain

Several aspects of these experimenters are analogous to open source software developers:

- The motivations of the aircraft experimenters mentioned include intrinsic components and altruistic components (e.g., the interest in the problem, the desire to fly, and the hope to make the world a better place).
- Aircraft experimenters were not in a small local club or hierarchy. Rather, they were autonomous, distributed around the world, and drawn to the activity itself.
- They specialized in particular technologies of experimentation then published their findings in order to advance the technology.

A formal economic model shows a set of assumptions which generate open source technology agreements. If there are self-motivated individual tinkers who are interested in making progress on some technology and see no way to profit from it, they would rather share their technology than work alone. The members of the agreement form an information network. Endogenously they want to standardize on designs and descriptions of the technology so as to reduce costs of information exchange. Network members tend to prefer not to establish intellectual property since there are no profits in the network, and inducing new costs will reduce the size of the network and thus slow the progress that is their payoff. The network's members optimally specialize based on their opportunities in particular aspects of the technology or in expanding or managing the network. A tinkerer with the capability to recruit, evangelize, or publish might make more progress than by tinkering with the technology itself. Thus we can think of Chanute and the other authors as making functional choices toward advancing progress when they write or speak in public.

A tinkerer in the network is modeled as seeing no way to make a profit from the technology. But this veil may lift, and a tinkerer may see an opportunity to produce a profitable product. If so, the tinkerer prefers to exit the network, establish intellectual property, create a startup firm, and conduct focused research and development. The Wright brothers did this, transforming from creative tinkerers into entrepreneurs. Thus, new industries can arise from networks of open-source technologists. The open-source technologists are a necessary element, and their desire to advance the technology is a kind of natural resource.

Chometric Society Session, Saturday, January 5, 12:30 p.m. at the Hilton-Durham
The Economics of Empire, Slavery, and Segregation

Chair: William Collins (Vanderbilt)

Discussants: William Collins (Vanderbilt), Jenny Wahl (Carleton College),
Gavin Wright (Stanford)

Why Did Ghettos "Go Bad"? Evidence from the US Postal Service

Leah Platt Boustan (University of California, Los Angeles and NBER)
Robert A. Margo (Boston University and NBER)

In 1990 and 2000, residential segregation at the metropolitan area level was associated with an array of negative socioeconomic outcomes for African-Americans. However, these relationships are of fairly recent vintage. In 1940 and 1950, African-Americans living in segregated cities enjoyed *better* economic outcomes than their counterparts in integrated areas.

Why have ghettos gone from "good" to "bad" in the period following World War Two? We aim to distinguish between two main hypotheses for ghetto decline. A peer effects-based explanation emphasizes the departure of the middle class from African-American residential enclaves which left the remaining population bereft of positive role models and social networks. In contrast, a spatial mismatch explanation stresses the departure of manufacturing plants and other large employers from the city, which increased the physical distance between black neighborhoods and employment opportunities.

Because physical and social isolation rose in tandem, disentangling these two channels is an empirical challenge. Our strategy is to examine the relationship between a metropolitan area's level of segregation and the employment of its black residents in a well-paying job that, primarily for exogenous reasons, has remained in central cities. Working for the United States Postal Service (USPS), particularly as a sorting clerk, fits these criteria. First, mail sorting often takes place in downtown areas. Early in the twentieth century the postal service situated mail processing and distribution nodes near centrally-located rail depots. Rather surprisingly, the same activities remain mostly centralized today due to political, union, and regulatory pressure against relocation. Furthermore, black postal workers fall squarely into the middle class, typically earning above the median non-black wage. There is considerable anecdotal evidence that social networks within the black community played an important role in enhancing access to these coveted jobs.

Crucial for our analysis is documenting how the relationship between segregation and the choice (for African-Americans) to work for the postal service has changed over time. If cross-class social networks were, at the margin, more important than job accessibility in generating access to middle class jobs, we would expect to find a positive relationship between residential segregation and black postal employment from 1940-1970, when these networks were still intact. This association should eventually disappear, perhaps as early as 1980. If, instead, job accessibility was the key factor, we expect to find no relationship between segregation and postal employment in 1940 or 1950, when private sector jobs in a mid-skill range, such as those in manufacturing, were also concentrated in downtown areas. However, as firms leave central cities, a positive relationship between segregation and postal work should emerge. In particular, any such relationship should be especially strong in 1960 and 1970, a period in which firms had begun to suburbanize but black households had yet to follow.

Close to one percent of the white male labor force was employed by the postal service throughout the century. In contrast, black postal employment increased dramatically from one percent in 1940 to 2.5 percent in 1970, a rate faster than the general growth in public employment. In some cities in 1970, the racial disparity in postal employment was two or three times greater than the national average, entirely because blacks were so much more likely to work for the Post Office. For example, in San Francisco, Chicago, and Indianapolis, the share of blacks employed in postal work in 1970 was as high as 7.5 percent, an extraordinary large (and, to our knowledge, previously unnoticed) level.

Historically black postal workers have had relatively high living standards. In 1940, postal workers were in the top five percent of the black wage distribution and the 70th percentile of the non-black distribution. Approximately fourteen percent of all blacks who were in the middle class (defined as earning above the non-black median) worked for the postal service. As recently as 2000, the mean black postal worker remained in the top 25 percent of black earners and above the median for the nation as a whole.

Social networks fostered black employment in the postal service. Black postal workers have historically been well-organized and socially connected. Because they were not permitted to join white postal unions, black workers formed their own associations. Postal workers often had inside knowledge about when a job might become available and encouraged others to apply.

Mail processing has remained, for the most part, in downtown areas, near black neighborhoods, even as similar warehousing and wholesale operations have moved to the suburbs. The centralization of mail processing dates from

the early twentieth century when the bulk of intercity mail was transported by rail. Main rail terminals were located in the heart of the central business district. Intercity mail was collected at a central facility, loaded on the train, and sorted en route (into cubbyholes) by highly trained railway mail clerks.

Railway mail peaked in the 1920s and thereafter fell into decline. Some of its demise can be attributed to advances in air transportation and trucking which ultimately proved a less expensive way of transporting the mail between cities, particularly after the completion of the federal interstate highway system in the late 1950s. With the transition of firms and households to the suburban ring already underway, the average customer was closer to the highway system and to (most) airports than to the central city. Railway mail suffered accordingly, with the last route between New York City and Washington, DC ceasing operations in 1977.

Given that many mail recipients had moved to the suburbs and that the mail itself no longer traveled by rail, it would seem economically sensible that mail processing and distribution, too, would move out of the central city. However, the post office faces a number of impediments to the relocation of its main facilities. The National Environmental Protection Act (1969) requires that federal agencies prepare an environmental impact statement, including a consideration of local job loss, before undertaking a "major federal action" such as relocating a processing and distribution facility. Local politicians and the postal unions routinely oppose site relocation for a variety of reasons.

Data from the 1970 census indicate that between 53 and 56 percent of full-time non-postal workers in the private and public sectors respectively remained in the center city in that year. Mail carriers were similarly distributed between the city and the suburbs. By contrast, 70.9 percent of non-mail carriers in the postal sector worked in the city. Indeed, nearly one in five such postal employees worked in the central business district, compared to one in twelve private sector employees. To further document the location of mail processing activities, we mapped the (ca. 2000) street addresses of as many processing and distribution centers as we could find in the public record. There are 318 of such centers nationwide, of which we have located exact street addresses for 145 to date. Eighty percent of the metropolitan centers are in the central city. On average, the black population share in a facility neighborhood is 37.8 percent, compared with 27.9 percent in the county in which the facility tract is located. Even more striking is the fact that the typical facility is located in a neighborhood that is physically adjacent to at least one census tract that is majority black. For the average neighborhood containing a P&DC, the maximum black population share in an included census tract is 61.7 percent.

We explore the relationship between segregation and postal employment

from 1940 to 2000 by estimating the following equation using IPUMS data for each Census year:

$$\text{Postal}_i = \alpha + \beta (\text{Black})_i + \gamma (\text{Black}_i \cdot \text{Segregation}_i) + \delta (\text{Black}_i \cdot \% \text{black}_i) + \Pi_j + \gamma X_{ij} + \epsilon_{ij}$$

where i and j index individuals and metropolitan areas, respectively. Postal _{i} is an indicator equal to one for postal employees. β , the coefficient on the black dummy, captures the fact that, nationwide, African-Americans are more likely to work for the postal service (Figure 1). A metropolitan area-specific intercept (Π_j) allows the probability of engaging in postal work to vary by place – for example, due to differences in mail volume in small and large cities. The metropolitan area dummies also absorb any effect of segregation on postal employment that is common to all area residents. Standard errors are clustered to allow for correlated errors at the metropolitan area level.

The coefficient of interest (γ) is the interaction between a metropolitan area's level of segregation and the individual race dummy. γ is identified by variation in segregation levels across metropolitan areas, rather than by comparing residents of ghetto and non-ghetto neighborhoods. If γ is positive, blacks in segregated areas are more likely to work for the post office, relative to their white counterparts. Under the social networks hypothesis, we expect this relationship to be positive during the period of "good ghettos" from 1940-1970 and then to diminish over time. If the spatial mismatch hypothesis better fits the data, we expect γ to be positive from 1960 onward, as other employment leaves the city.

We measure residential segregation using a dissimilarity index. The index takes on a value of zero when each neighborhood mirrors the racial composition of the area as a whole and a value of one in a perfectly segregated city. Because the dissimilarity index is mechanically related to an area's black population share, we include the interaction between the black population share and an individual's race in our main specification.

The number of metropolitan areas that can be identified in the micro data and for which the data exist to calculate a segregation index varies from 45 in 1940 to 243 in 2000. We present our main results for a complete set of metropolitan areas, as well as for the 45 areas that can be identified in every year. The one exception is 1960, in which an individual's metropolitan area of residence cannot be identified in the micro data. For this year, we run state-level regressions, with a state's segregation index defined as the population-weighted dissimilarity indices of cities in that state.

We find no relationship between segregation and the relative probability of black postal employment in 1940 or 1950. If anything, blacks were less likely

to serve as postal workers in segregated cities in these years. Black enclaves were still integrated by income during this period, and the postal service employed one in every seven members of the black middle class. In contrast, by 1960, living in a segregated area was positively associated with black postal employment. A one standard deviation increase in the metropolitan dissimilarity index is associated with a 1.4 percentage point increase in the probability of working for the postal service (compared to a mean of 3.4 percent). From 1980-2000, the magnitude of this relationship falls by half, but remains statistically and economically significant.

The association between segregation and black postal employment is strongest in 1960 and 1970, years in which firms had started to decentralize but black households were prevented from moving out to the suburban ring. The timing of the relationship is most consistent with the spatial mismatch hypothesis. As employers left the city, residents of centrally-located black enclaves faced the prospect of longer commutes. These commuting costs may have prompted some workers to search for a new job or to withdraw from the labor force altogether.

In the remainder of the paper we conduct a series of robustness checks. These checks confirm that the substantive results are not changed when, for example, we restrict the sample to cities that can be consistently identified in all census years, or expand the analysis to include all adults, among other tests.

Our most important sensitivity analysis examines whether the association between segregation and postal employment holds for all postal workers or just for a subset of occupations. We divide the postal sector into mail carriers, whose work is distributed throughout the metropolitan area, and other postal employees, primarily clerical, who tend to work in the central city. We also study the relationship between segregation and black employment in other public sector occupations that, according to census data, were concentrated in central cities. We divide occupations into those that are above and below the (public employee-weighted) median central city share. Bus drivers and subway conductors are the most centralized occupations, while teachers are among the most decentralized.

In 1940, living in a segregated city does not increase the probability of a black resident working for the postal service in any capacity. In contrast, by 1970, segregation becomes positively associated with postal work, but *only* for the non-carriers, who tend to work in the central city. The probability of working as a mail carrier, a job that is evenly distributed between city and suburb, has no economically (or statistically) significant relationship with segregation in any year. Other public occupations follow a similar pattern. Segregation increases the share of African-Americans that work in centralized

public occupations, while *decreasing* the share who work in decentralized ones. The fact that the relationship between segregation and black postal employment does not hold for mail carriers rules out alternative explanations that are based on features common to all forms of postal employment as well as explanations based on private sector racism. Instead, only those forms of public employment that are centralized are correlated with segregation, consistent with spatial mismatch.

In 1940 and 1950, residential segregation was associated with higher earnings for African-Americans but, by 1970, black ghettos had turned "bad" in socio-economic terms. Previous work has not resolved whether the economic isolation of black neighborhoods can be attributed mainly to social isolation — that is, the absence of positive economic role models — or to physical isolation from job opportunities.

In this paper, we focus on a particular employer, the U.S. Postal Service. A significant fraction of postal employment was historically located in central cities during the age of railroad mail delivery and remains so today largely because of obstacles the Postal Service has faced in attempting to move its facilities. Using census data, we examine the relationship between a metropolitan area's level of residential segregation and black employment in the postal service. Relative to whites, black postal employment is an increasing function of segregation, but only from 1960 onward. In addition, this pattern is observed only for postal clerical workers, who tend to work in downtown areas, not for letter carriers. This timing suggests that spatial mismatch is the relatively more important explanation for the origins of bad ghettos. Black employment shifted towards the post office precisely at the time when other "good jobs," such as those in manufacturing, were leaving central cities, but before fair housing laws and subsequent legislation opened up the suburbs to middle class black residents.

American and British Struggle along the Rubber Chain before South-East Asian Plantations: a Quantitative Approach, 1860-1910

Felipe Tamega Fernandes (LSE)

1. Main Argument

The main argument of the paper is that competition prevailed in the British and American rubber manufacturing industries even though some consolidation occurred at the top. Competition emanated along the rubber chain and translated into a struggle for a steady supply of the raw product which, in a context of "rubber famine", made the two industrial centres quite dependent

on developments in crude rubber production. The present paper then analyses the rubber chain, from manufacturers to tappers, and quantifies the elasticity of demand for different sources of rubber. Preliminary results suggest that although the USA emerged as the main rubber manufacturer, Britain played a decisive role in the crude rubber market. Furthermore, the elasticity of demand for different sources seemed to vary substantially but they might be quite stable across time.

2. Methodology

The computation of demand elasticity will follow Irwin's (2003) methodology for antebellum cotton in the USA: Almost Ideal Demand System (AIDS). AIDS provides with a framework that is general enough to be used as a first-order approximation to any demand system and, in practical terms, involves the estimation of a set of equations by Seemingly Unrelated Regressions (SUR) method in the form:

$$w_i = \alpha_i + \sum_j \gamma_{ij} \log p_j + \beta_i \log \frac{x}{P}$$

where w_i is the budget share of country i , p_j is the implicit price for rubber from all different sources j and x is the amount of money spent on rubber by country i . Lastly, since rubber prices are collinear, P is taken as the Stone's Price Index.

3. Data

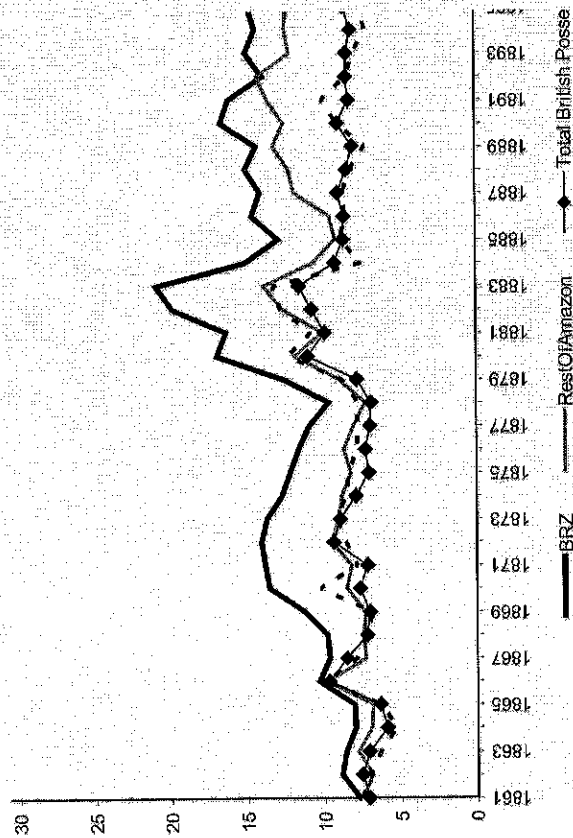
The data used in the estimation was obtained from trade statistics from Britain, found in the *Parliamentary Paper* series that provides a detailed account of UK imports and exports from 1853 onwards from which it is possible to compute quantities and implicit prices for rubber by country of origin. The underlying idea is then to estimate the equation above in the period before the emergence of plantations in South-East Asia. Therefore, the analysis here shall finish in 1910 when South-East Asia plantations took over the market and begin in 1853 (or whenever data were available).

Data on values and quantities of rubber exported to UK by origin was gathered for the period 1853-1912 (implicit prices were then computed as the ratio between values and quantities imported into UK). What can be observed from the data is that the number of rubber exporting countries increases with the passage of time for three main reasons. First, many countries appear and disappear because of their independence or incorporation by/from another. Secondly, with the increase in the price of rubber, the extraction of competing sources might have become profitable. Thirdly, UK Trade Statement might have just become more accurate in their descriptions, especially due to the

increasing importance of the rubber trade.

It can also be inferred from the data that many exporting countries were not in fact crude rubber producers and countries like Holland, France, Portugal, Belgium, Germany, etc. were mainly re-exporting rubber produced in their own colonies or merely intermediating importers in UK with exporters in other countries. This effect should not be neglected for these "re-exporters" could account for as much as 29% of the market in a given year (in quantity terms), even though on average they accounted for 15% of the quantity of rubber exported to UK from 1853 to 1912.

Figure 1: Implicit Prices of Rubber Exported into the UK for 4 Groups of Countries



Source: Annual Statement of Trade
 OBS: BRZ = 'Brazil'; RestOfAmazon = 'Dutch Guyana', 'Ecuador', 'Nueva Granada', 'Colombia', 'Venezuela' and 'Peru'; Total British Possessions = 'Chamel Islands', 'New South Wales', 'British West Indies', 'British East Indies', 'British India', 'Maltrac', 'Bombay & Scinde', 'India Singapore & Ceylon', 'Singapore & Eastern Straits', 'Ceylon', 'Federated Malay States', 'Borneo', 'Mauritius', 'Aden', 'Australasia', 'British West Coast Africa', 'British East Coast Africa', 'British South Africa', 'Natal', 'Zanzibar & Pemba', 'Gold Coast', 'Lagos', 'Nigeria', 'Sierra Leone', 'Gambia', 'Niger Protectorate' and finally 'Other British Possessions'; RoW = Rest of the world, all countries not listed above.

It is worth mentioning the fact that implicit prices, computed as official value

divided by quantity exported, differed hugely across countries and showed a general upward trend across time. Computing the coefficient of variation of prices across countries for the period 1855-1912 (there is no value of rubber exports for either 1853 and 1854 to compute implicit prices) can be as large as 0.52 (in 1909) and it shows general upward trend after 1858. Furthermore, no country except from Brazil was capable of supplying adequately the UK market and in spite of its high prices, Brazil did not see its position in the UK rubber market undermined until 1910 when its market share started to decline rapidly due to South-East Asian plantation competition.

4. Organisation of the Paper

The paper is organised in 7 sections, including an introduction, Section 2 discusses the early history of rubber until 1850s. It is argued there that due to proximity of crude rubber sources and the dexterity of indigenous producers, rubber shoe exports from Pará, Brazil, soared, supported by technical expertise and capital from New England shoe-makers. However, due to industrialisation in the USA and England and the discovery of the vulcanisation process, this thriving trade was replaced by a crude rubber trade, with Pará consolidating as the main supplier. Section 3 then discusses the developments brought about by the vulcanisation process and how it shaped the British and American rubber manufacture industries. The main argument there is that the rubber industry is characterised by competition on both sides of the Atlantic, even though some consolidation occurred at the top. Moreover, despite some technical and financial interactions, British and American industries competed with each other. This competition emanated then from Britain and the USA along the rubber chain, and Section 4 thus investigates how British and American capitals struggled for securing a steady supply of crude rubber. This section then suggests that the crude rubber market dictated final prices of rubber manufactures and strongly influenced rubber industry profitability in both countries. In a context of scarcity of the raw product, British and American capital ventured abroad and the result might be seen as a tie: from 1870 to 1910, Britain and the USA secured the same overall amount of rubber. However, since British consumption was much lower than the American, Britain could profit from re-exports of the product, notably to the USA. Section 5 further shows that despite the fact that Britain was better positioned in crude rubber market, the country was still hunger for the raw product and there might have been scope for crude rubber producers to extract monopoly rents. This analysis is based on the computation of elasticities of export demand for crude rubber produced from different sources by the AIDS methodology present above. In Section 6, a robustness check of the is carried out and, finally, Section 7 concludes the paper.

5. Preliminary Findings

The development of the rubber industry on both sides of the Atlantic was intrinsically connected. The British (and the French) took a lead on the first developments of rubber, devising methods for dissolving the product and rendering its manipulation viable. The Americans initially tried to manipulate the raw product without chemicals (or with their limited use) but Charles Goodyear was only able to devise his vulcanisation process after licensing the "solarisation" process. Goodyear's breakthrough related not only to the chemicals (chiefly sulphur) used for dissolving the rubber, something that the British (and the French) had known for quite a long time, but also to applying high temperature to the compound. The vulcanisation process would have granted the American rubber manufacturers some advantage over their British counterparts, but the turn of events would decide that vulcanisation would also be devised in Britain by Hancock out of American samples sent by Charles Goodyear himself. Thus in the USA, a rubber industry would grow based on Goodyear licences whereas in Britain, Chas. Macintosh Co. would enjoy a temporary monopolistic position in vulcanised rubber manufacturing until the foundation of Moulton's venture (which counted on American expertise) and North British Co. (which was founded by Americans). The next impulse would go from Britain to the USA: the re-discovery of the pneumatic tyre by John Boyd Dunlop in 1888 which laid the foundation for a bicycle boom in Britain, USA and Continental Europe. Dunlop Company was able to exploit most markets through ventures abroad, but due to a mistaken strategy, it remained out of the US market and since US companies devised a different tyre size for American cars, British firms had an additional trouble breaking into America. Furthermore, following the development of the car making industry, US tyre making companies went abroad, particularly to Britain where Firestone, Goodyear and Goodrich established themselves. Analogously, Dunlop re-established itself in the USA in 1917 meaning that the rubber industry became even more competitive at the top level.

Even though British and American rubber industries were intrinsically connected, it by no means meant that they were cooperative. In spite of cartelisation attempts, competition prevailed on both sides of the Atlantic and as shown by British and American international ventures (epitomised by Dunlop's attempts to establish itself in the USA), British and American rubber companies were definitely rivals. British and American exports of rubber manufactures soared with clear advantage to the USA, fuelled by the deeper development of motorcar industry in that country.

This rivalry between rubber industries emanated along the rubber chain, notably after 1890s. Access to a steady and reliable supply of rubber could

then be the key for success in a context of rising crude rubber prices. Indeed, changes in the price of crude rubber usually drove prices of rubber manufactures and producers showed confidence that their price adjustments would be followed by the whole industry. Another evidence of how important crude rubber prices were in dictating the price for the whole chain refers to the fact that the profit levels along the rubber chain were strongly correlated and profits for tyre companies had a positive correlation with crude rubber prices: rubber stocks held could cause disaster or could be a blessing for a rubber manufacturing company. Therefore, it is important to understand the sources of supply in order to understand rubber manufacturing industries in America and in Britain.

Table 1: Breakdown of Quantity of Crude Rubber Imported into UK and USA, 1850-1910

	Brazil		USA		Americans		Africa		Asia		Oceania		Europe	
	UK	USA	UK	USA	UK	USA	UK	USA	UK	USA	UK	USA	UK	USA
1850-1859	67.7%	100%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1860-1869	66.0%	96.0%	17.4%	11.1%	1.1%	1.1%	1.1%	1.1%	21.1%	4.2%	0.0%	0.0%	4.2%	11.8%
1870-1879	48.8%	43.2%	12.6%	35.8%	16.4%	2.2%	1.9%	14.8%	14.8%	2.3%	0.0%	0.0%	6.9%	19.8%
1880-1889	46.8%	54.1%	9.0%	19.8%	20.2%	1.5%	1.5%	14.8%	14.8%	2.3%	0.0%	0.0%	12.7%	28.4%
1890-1899	43.0%	61.4%	7.0%	8.0%	29.0%	0.3%	0.3%	5.8%	7.0%	1.7%	0.0%	0.0%	12.7%	28.4%
1900-1910	46.8%	52.2%	19.4%	12.7%	15.2%	0.1%	0.1%	7.0%	2.1%	0.0%	0.0%	0.0%	18.4%	32.4%

Source: UK - Parliamentary Papers and, USA - Trade and Navigation Report of the Secretary of the Treasury.

The scarcity of crude rubber led to a struggle along the rubber chain for a steady supply of that raw product: indeed the rubber industry needed to break the dependence upon an unreliable raw product which defined its prices and the ultimate level of its rubber manufacture production. With this aim, British and American investments, fuelled by their rubber manufacturing needs, poured into several different parts of the globe with mixed results. Britain took a lead in Africa leaving the USA out, but it seems that many British ventures consumed too much funds and produced too little. Conversely, the USA was able to secure an important supply of crude rubber from Mexico and Central America, leaving Britain out, but the USA seemed to have paid dearly for that position. In Asia, there was clear advantage to Britain and in the Amazon region (excluding Brazil), the USA held a superior position. Finally, in regard to the main crude rubber supplier, there was a draw: both countries succeeded in generating an important flow of crude rubber from Brazil, with a slight advantage to the USA. Therefore, during 41 years of rubber trade, from 1870 to 1910, total rubber import figures suggest a draw in the struggle for crude rubber supply: whereas Britain imported on average 16,690,980 kilograms of crude rubber per year, the USA imported on average 16,504,344 kilograms of rubber per year. However, a sizeable portion of British rubber imports was re-exported, notably to the USA rendering Britain a prominent role in crude

rubber market, especially when the role of its colonies and its naval supremacy are taken into account. Firstly, from 1870 to 1910, British colonies supplied 20% of total crude rubber imports into Britain whereas Britain + its colonies supplied 18% of overall US crude rubber imports. Secondly, since most of the crude rubber trade was carried by British vessels, the role of British capital was even more decisive even though importing more rubber than the country needed did not mean that the UK could define prices in the market, and the country was still dependent on developments in crude rubber production. Indeed, preliminary estimations for the demand of rubber (not shown here) from different sources support that view.

When to Care: The Economic Rationale of Slavery Health Care Provisions

Kevin Lander (Tulane)
Jonathan Pritchett (Tulane)

Prior to the Civil War, many hospitals in the southern United States treated both free and slave patients. In this paper, we develop a model for the selective medical treatment of slaves. We argue that the pecuniary benefits of health care increased with the price of the slave if healthy. Using a rich sample of admission records from New Orleans's Touro Hospital, we find a positive correlation between the predicted price of the slaves and the probability of hospital admission. We test the robustness of the model by controlling for the length of residence in the city, ownership by traders and doctors, and the type of illness.

Clometric Society Session, Sunday, January 6, 10:15 a.m. at the Hilton-Chequers
The Rise of Bourgeois Society: Urbanization, Education, and Marriage

Chair: Robert Margo (Boston University)

Discussants: Gary Richardson (George Mason), Matthew Baker (Hunter-CUNY), Robert Margo, Ilyana Kuziemko (Princeton)

Bourgeois Towns: How Capitalism Became Ethical, 1600-1776

Deirdre McCloskey (University of Illinois-Chicago)

Dears:

This is the Table of Contents and then part of the Preface to Bourgeois Towns: How Capitalism Became Ethical, 1600-1776 as of Oct 1, 2007. You may see the full version at deirdremccloskey.org. My hope---hope is a virtue---is to submit it to the University of Chicago Press this April 15.

Deirdre

Part 1: The Shifting Rhetoric of the Aristocratic and then Bourgeois English Needs to Be Explained

Chapter 1: Bourgeois Precursors Were Ancient

Chapter 2: But the Early Bourgeoisies Were Precarious

Chapter 3: The Dutch Bourgeoisie Preached Virtue

Chapter 4: And the Dutch Bourgeoisie *Was* Virtuous

Chapter 5: Yet Old England Disdained the Market and the Bourgeoisie

Chapter 6: And so the Bourgeoisie Could Not "Rise"

Chapter 7: But in the Late 17th Century the British Changed

Chapter 8: For Example, a Bourgeois England Measured

Chapter 9: The New Values Were Triumphant by 1848, or 1776, or even 1710

Part 2: The Bourgeois Virtues Were Philosophized in the 18th Century

Chapter 10: Adam Smith Shows Bourgeois Theory at Its Amiable Best

Chapter 11: Ben Franklin Was Bourgeois, But not Prudence-Only

Chapter 12: Bourgeois Theorizing Was in Fashion

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Chapter 14: Smith was No Reductionist, Economistic or Otherwise

Chapter 15: "Hobbesian" Prudence is not Sufficient

Chapter 16: Prudence-Only is Refuted by Experience and Experiment

Chapter 17: The Left Should Acknowledge the Virtues

Chapter 18: But So Should the Right

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 Chapter 19: Modern Growth is a Factor of at Least Fifteen
 Chapter 20: It Was not Thrift
 Chapter 21: Nor Was It Original Accumulation, or the Protestant Ethic
 Chapter 22: Foreign Trade Was Not It, Nor the Slave Trade, Nor Imperialism
 Chapter 23: Material Causes are thus Rebutted
 Chapter 24: Nor Was It Nationalism
 Chapter 25: Nor Institutions: Against North and Braudel

Part 4: Bourgeois Rhetoric Does the Work
 Chapter 26: It Was Unexpected Technology, and So We Need New Economic Models
 Chapter 27: Ideology is Rhetoric
 Chapter 28: Sweet Talk is How We Work
 Chapter 29: Sweet Talk is Virtuous
 Chapter 30: The Bourgeoisie Speaks Acts
 Chapter 31: Bourgeois Virtue is an Idealism of Ordinary Life
 Conclusion: How One Might See the Coming of a Bourgeois Rhetoric

Preface: The Argument: How a Change in Talk Made the Modern World

Once upon a time a change happened unique to Europe, especially after 1600 in the lands around the North Sea, and most especially in Holland and then in England and Scotland—though the change was foreshadowed in northern Italy and the Hansa towns, and tried out in 2nd century B.C. Carthage and 18th century A.D. Osaka. The change was the coming of a business-dominated civilization.

A hard coming we had of it. But the hardness was ideological and rhetorical, not socio-economic. What made the modern world, as many economic historians are realizing, was not trade or empire or the exploitation of the periphery. These were exactly peripheral. Anyway imperialism was routine, in the Athenian Empire or the Abbasid Empire or the Moghul Empire. Nor was the modern-making a class struggle. Again recent historians have come to see the class struggle as exactly *not* the history of all hitherto existing societies. Nor did a business-dominated civilization come from any of the splendid engines of conventional economics, limited in horsepower, such as the division of labor or increasing returns or the downward march of transaction costs or the Malthusian pressures on behavior and the chances of selection.

What made the modern world was, proximally, innovation in machines and organizations, such as the spinning Jenny and the insurance company, and innovation in politics and society, such as the American constitution and the

British middle class. And such innovations of the 18th and 19th centuries in Europe and its offshoots ultimately came out of a change in what the blessed Adam Smith called “moral sentiments.” That is, they came out of a change, ultimately, in the *rhetoric* of the economy. The rhetorical change had socio-economic consequences, certainly, and these of great significance. But the impetus was rhetorical. Honest invention and hopeful revolution came to be spoken of as honorable, as they had not been before, and the seven principal virtues of pagan and Christian Europe were recycled as bourgeois. The wave of gadgets, material and political, in short, came out of an ethical and rhetorical tsunami c. 1700 in the North Sea. *That’s the argument.*

To say it in a little more detail:

In Dante’s time a market was said to be an occasion for sin. Holiness in 1321 was earned by prayers and charitable works, not by buying low and selling high. And still in Shakespeare’s time a claim of “virtue” for working in a market was spoken of as flatly ridiculous. Virtue was earned by nobility, not by bargaining. The very name of “gentleman” in 1600 meant someone who attended the Cadiz Raid or attended Hampden Court, engaging in nothing so demeaning as actual work.

But from 1321 to 1600 in northern Italy and in Holland, and then more broadly down to 1776 and still more broadly to 1848, something changed in the talk of Europe. In England the change in the rhetoric of the economy happened during a concentrated and startling period 1600 to 1776. The change? Capitalism and bourgeois work came to be spoken of as virtuous. In some ways, though not all, they became in fact virtuous. And by the end, by 1848, notoriously, in Holland and England and America and other offshoots and imitators of the northwestern Europeans a businessperson was routinely said to be good, and good for us. Capitalism, from the precursors in the Italian states around 1300 to the first modern bourgeois society in Holland around 1600 to a world-making rhetoric around 1848, grew for the first time in history on a big scale to be acceptable. The rise of a business-dominated civilization, which came before the material changes resulting from it, was historically unique. It was a change in ethics, that is, a change in earnest talk about how to be good.

The book moves from the seen-to-be, the “rhetoric” of capitalism, as I put it, to the actual. Most controversially, to speak of material actualities, it claims that the rhetorical and ethical change *caused* modern economic growth, which at length freed us from poverty. People came to accept the creative destruction of the old ways of doing things, and the economy paid them back with interest. The change was the cause, too, of a liberalism which at length abolished slavery and freed women. People came to expect to have a say in their

The Origin of the Institutions of Marriage

Marina Adshade (Dalhousie University)
Brooks A. Kaiser (Georgetown College)

Abstract

Biological factors, social structures, and economic systems co-determine the evolutionarily dominant form of the institution of marriage. Polygyny and monogamy compete, with long run implications for economic growth and well-being. Inequality of wealth during the Neolithic Era should have promoted the institutionalization of polygyny. We find, however, that certain types of agricultural production generated externalities that affected neurological pair-bonding incentives, with the affected societies adopting monogamous marriage institutions more frequently than economic conditions warranted. We develop a search and matching model in which wealth inequality generates polygyny as the dominant mating preference; expected reproductive success and lifetime consumption for wealthy men and their wives are maximized. The addition of biological factors which endogenously determine the relative bargaining power of women in monogamous relationships, however, generates conditions that foster monogamy despite the inequality of wealth. Using evidence from the Standard Cross Cultural Sample (S.C.C.S.) we find that agricultural production externalities that affect neurological pair-bonding incentives significantly reduce the tendency to polygyny, even when resources are skewed. We argue that dairy agriculture or increased consumption of soy and flax products increases levels and/or effects of the neuropeptides that reinforce earlier evolutionary pressures for serial monogamy which developed during the Pleistocene era and reducing the tendency to institutionalize polygyny, all other conditions equal.

1 Introduction

Marriage is the original institution, uniting men and women in genetic reproduction and household production. As an institution, marriage serves to reduce transactions costs both for individuals and societies. For individuals, marriage provides contractual support for producing successful genetic continuity, reduces transactions costs for traditionally extra-market goods and services ranging from homemaking to intimate companionship, and generates kinship ties that may reduce idiosyncratic risks. At the individual and societal level, strong marriage institutions provide intergenerational income transfers, promote community stability and reduce group risks, provide mechanisms for capital accumulation, and increase opportunities for specialization. The dynamism with which family structures are currently evolving increases the

need to investigate institutional variations for marriage. Recent developments in neuroscience suggest that biological factors play a role in determining these institutional variations.

Institutionalized monogamy and agricultural development are positively correlated across cultures. We hypothesize that the influence of externally generated biological impacts, in particular changes in the levels and/or effects of the hormones and neurotransmitters oxytocin (OT) and vasopressin (AVP), promoted monogamy. Evidence from anthropology and evolutionary biology suggests that there was a period of evolutionary history prior to the Neolithic revolution where serial monogamy, a likely function of these neurotransmitters, evolved to improve genetic longevity (Fisher, 2004). Certain external environmental factors related to dairy agriculture production or the consumption of soy products appear to influence these neurotransmitters in humans and other mammals (Fisher, 2004; Patisaul et al, 2001; Wang et al, 2003; Zak, 2007). We hypothesize that in some societies the earlier biological adaptation of monogamy was reinforced after the Neolithic revolution by these external environmental factors so that as marital institutions developed, the choice between polygyny and monogamy was influenced significantly by the presence or absence of these external environmental factors. This runs counter to the prevailing view that the transition from a hunter gatherer to agriculturalist society, with its coincident increase in inequality, should generate polygyny as the dominant marital institution.

1.1 The analysis

For our purposes, we define marriage as (potentially symbolic) actions and gestures made at the individual and community level that result in the contractual arrangements that define family and a kinship structure for a society. Marriage is preferred by men as the chances that the children they are helping rear carry their genes improve if the women are "wives" in society's eyes, and penalties for infidelity are imposed. Marriage is also preferred by women if they value genetic continuance and if contractual matching increases the consumption levels of both themselves and their offspring. Both men and women prefer marriage in that they receive benefits to bonding that are independent of consumption and childbearing, what we might call 'love'. Thus we expect social norms will develop that promote a form of the institution of marriage that best meets these objectives.

We develop a search and matching model³ in which Nash bargaining

³ The full details of the model are excluded in this summary but are available in the full version of the paper on the author's website at <http://myweb.dal.ca/mr964257/marriage.pdf>.

determines the potential match surplus between men (who vary by their level of resources) offering marriage contracts to women. A woman's bargaining power is an endogenous function of the expected number of wives the offering man will have; if the wife anticipates sharing her husband with other women the pair-bonding benefits with will accrue to her are reduced and her bargaining position is improved. The model generates predictions on the prevalence of marriage institutions, polygyny and monogamy, within an individual system as a function of the resource distribution and the mode of agricultural production.

We empirically test the predictions of the model, that polygyny will be increasing in resource inequality and decreasing in external biological factors that increase pair bonding, and investigate the impacts on societal choice of marital institution under the framework of the Paleolithic era and the Neolithic era by comparing marital institutions across hunter-gatherer and early agrarian cultures throughout the world. These institutions and production technologies are documented along with up to 100 other ethnographic details for 1167 cultures described in Murdock's Ethnographic Atlas (Murdock et al, 2000) and with up to 2000 other details for 186 cultures described in the atlas's better documented subset, the S.C.C.S. (Murdock & White, 2006).

1.2 *An Early History of Marriage*

The evolution of sexuality and pair bonding among early humans can be traced out from the work of anthropologists, neurologists and paleontologists. Early mating patterns can be broken down into three periods, each distinguished by a particular method of food accumulation: early foragers, hunter gatherers and agriculturists. Understanding the evolutionary pressures of these distinct periods assist in delineating the trade-offs between polygyny and monogamy more clearly.

1.2.1 Early foragers: 5 million - 1.8 million B.C.E.

Our earliest ancestors (*Anstralopithecus* spp.) most likely lived in a "primal horde" (Coontz, 2005). In the primal horde there was no long-term pair bonding; males and females copulated with many partners. All genetic competition took place at the sperm level. Food was shared but principally in exchange for sexual favors, not only between males and females but other pairings as well. As these early hominoids were quadpedal and infants were more developed at birth than in the later periods, having an infant did not impede a mother's ability to gather the fruits, nuts and insects that largely constituted her diet. Living in among trees made it easy protecting the young who were often raised in group nurseries. Males were neither providers nor

protectors making the forming of pairs redundant.⁴

As the climate warmed and the forests receded humans began to move out into the fields. Their diet now consisted of gathered vegetation and scavenged meat left behind by predators. Humans became bipeds (*homo habilis*) because either it made it possible to use tools more effectively, to carry off meat to a safer location, it made gathering more efficient or it made hunting possible. Walking upright, however, tied women to their infants more thoroughly. Children were also harder to protect in the open savannah than they had been in the forests. For men, these risks of the savannahs meant that protecting a harem was likely to be too difficult; monogamy suited. The impetus for monogamy grew as the division of labor in child-rearing increased. It is believed that during this period the neuropeptides oxytocin (primarily female) and vasopressin (primarily male) developed their role in promoting male-female attachment (Fisher, 2004).

1.2.2 Hunter-gatherers: 1.8 million forward

Over time our ancestors transformed from scavengers to hunters and began to acquire tools, skills and language. The development of tools and the ability to hunt big game increased the amount of meat in the hominid (*homo erectus*) diet. The higher protein diet meant that brains and heads grew; infants were born earlier to accommodate the larger head in the birth canal, and required more care from their mothers (Fisher, 2004). Bipedalism meant that mothers could no longer carry their children on their backs or cling to their chests. The ability of mothers to collect their own food was diminished, at least for the period they were nursing their babies, or about 4 years. In this period there is evidence of pair bonding as well as the additional drive to temporarily "love addictively", which would have increased survivability as males became both providers and protectors. Relationships began with conception and ended when the child became independent of its parents. Resources would have been spread relatively evenly among the males which suggest that most relationships were monogamous, at least over short periods of time.

1.2.3 Agriculturists: 21,000 B.C.E. and onward

As resources become scarcer, due to greater climate fluctuations, higher population pressures, or other similar shifts, humans sought more energy-intensive food sources. The gathering of cereal grains and other plant foods evolved into early agricultural cultivation and eventually to the domestication of animals. The invention of the plow over 4000 years ago led to a greater division of labor by gender than had been seen in previous periods. Now

⁴ In spite of this promiscuity there is evidence of short-lived monogamy even in this period.

production required the input of both male and female labor. Agriculture also led to a means to accumulate wealth; both resources and power became more widely dispersed. Despite this redistribution, the evidence does not support a greater movement towards polygamy; in fact the opposite is true, it supports a movement toward long-term stable pair bonding.

1.3 Evidence: *The Science of Love and Bonding*

Functional Magnetic Resonance Imaging technology has shown romantic love to be associated with increasing dopamine and norepinephrine levels, and perhaps reduced serotonin levels, all of which activate the nucleus accumbens, prefrontal cortex, and ventral pallidum, reward centres of the brain (Fisher, 2004). OT and AVP, and their associated receptors, have been identified as the mechanisms for pair bonding in monogamous mammal species (Young, 1999; Young and Wang, 2004). These reward centres of the brain are also associated with the formation of the OT-AVP pair-bonding attachment or long-term love that can be initiated from dopamine-driven infatuation (Young and Wang, 2004). OT and AVP levels increase in humans and other mammals through touch, orgasm, massage, and other types of social interaction, including prolonged eye contact. Pair-bonding can be self-reinforcing; oxytocin and vasopressin levels will attach you to your mate, which encourages you to behave towards your mate in a manner which increases your attachment to that mate through higher levels of the hormones (Fisher, 2004). During the transition from romantic love to attachment, selective increases in certain dopamine receptors may reduce the ability to form new pair-bonds, stabilizing the existing bond and as a result solidifies monogamous behavior (Young and Wang, 2004; Fisher, 2004).

Evidence suggests that this human brain chemistry evolved during the Pleistocene era to promote monogamous pair bonding, an evolutionary change that became a biological drive (Fisher, 2004). Strong pair-bonds were needed to raise an infant in a hunter-gatherer society, where mortality risks were high and specialization of tasks began to promote limited economic dependency (Fisher, 1992). From the Neolithic era forward the established behavioral norms determining family structure became institutionalized.

The link between the institutionalization of monogamy and agricultural production occurs when the specific agricultural products initiate a self-reinforcing increase OT levels in humans, bolstering the biological preference for serial monogamy developed in the Pleistocene-era for its value in increasing genetic survival. We hypothesize that both dairy agriculture and the cultivation of certain crops high in phytoestrogens initiate such an increase. Genetic change, in the form of lactose tolerance, has already been attributed to the introduction of dairy agriculture (Check, 2006). Pictorial evidence

from around 4000 B.C.E. transmitted information amongst farmers on how gazing into a creature's eyes simulated oxytocin to promote milk let-down (Rosenstock & Baten, 2006). This, and other tactile human-animal interactions, would also have increased oxytocin levels in the human population in ways that changed social behavior (Fisher, 2004; Barker et al., 2003).⁵

Consumption of phytoestrogens from flax seed, soy, and teas enhance the effects of oxytocin by increasing the number of oxytocin receptors in the brain and the ability of these receptors to bind the OT (Zak, 2007). Animal studies confirm that soy diets with phytoestrogens change neurological behavior in areas that are traditionally associated with oxytocin and vasopressin.⁶ Using data for 41 countries, Zak (2007) find an overall significant positive effect of dietary intake of phytoestrogens on trust at the national level, a related social behavior shown to be increasing in OT (Zak, 2007). We hypothesize that increased OT levels from phytoestrogens also reinforced institutionalization of the monogamous ideal.

2 Empirical Support for the Model

2.1 Data and Variables

We empirically investigate the probability of prescribed monogamy as the dependent variable in a standard logistic regression using the S.C.C.S. as collected electronically from World Cultures: The Journal of Cross-Cultural and Comparative Research. The data set contains ethnographic data on 186 pre-industrial cultures around the world. Incomplete data for one society reduces the usable set of cultures to 185 for this analysis. These data have been coded according to the standard, vetted definitions widely used by anthropologists and other researchers as new researchers use the sample, originally published by Murdock and White in Ethnology in 1969 (Murdock & White, 2006). We focus on *prescribed* monogamy because we do not expect the biological impacts to entirely preclude polygamy or extramarital sexual relations, rather we anticipate that societies will institutionalize the idealized social norm, which is influenced by the biological conditions. The societies in the sample for Africa, however, do not include any cases of prescribed monogamy. We therefore present the results both with and without the

⁵ As a further note to the story oxytocin and vasopressin uptake receptors are blocked by stress hormones, particularly adrenaline (Davis et al., 1998). Thus the uptake of these neuropeptides, and their effectiveness, may have been additionally increased by the transition to agriculture if there was also a reduction in adrenaline, a possibility given the expected change in action from game-hunting to farming.

⁶ Studies conflict on how these changes are manifested in terms of social outcomes (Hardley et al., 2003; Scallet et al., 2003; Wang et al., 2003; Whiteman et al., 2002; Parisault et al., 2001; Parisault et al., 1999).

inclusion of Africa.⁷

Explanatory variables used in the regression include measures of production technology, wealth, division of labour, and societal structure.

To capture the effects of various production technologies, we include the level of dependence on hunting and agriculture, where the levels range from 0-9, with 0 being less than 5%, 1 being 6-15%, 2-8 increasing by 10%, and 9 including dependence levels over 85%. We expect that increased dependence on hunting should decrease the likelihood of prescribed monogamy, while increased dependence on agriculture has an uncertain effect. If the agricultural landscape increases oxytocin levels, through milking or soy or oilseed production and consumption, then agriculture should be correlated with monogamy. If not, it should decrease the probability of monogamy as it allows for wealth accumulation. Thus we include whether animals are milked regularly and control for wealth using the level of fixedness of the residence, the ability to store surplus food and population density. We would expect these variables to negatively influence the probability that the society has prescribed monogamy. As well class distinctions indicate social stratification that should enable polygamy in the same manner as physical wealth. We include a ranked measure of class stratification, from 1-5, where 1 indicates no class stratification and 5 represents complex stratification. Finally inter-generational wealth is perhaps fostered and preserved by prescribed monogamy. Thus monogamy may be expected to exist more frequently if there exist inheritance rules for land, though unequal distribution of this land would favor polygamy. We therefore include the existence of inheritable property rights for land.

The data set has no direct evidence on soy or oilseed crops. Flax and soy have several thousand times higher levels of phytoestrogens than other crops, with flax having about 3 times more than most soy (Thompson et al. 2006). Flax cultivation is ancient in Europe and the Near East, though much of this cultivation is for producing linen rather than food. Soy cultivation is ancient and limited to Asia until the end of the 19th century. While soy may have been cultivated as many as 4000 years ago in Northern China and Inner Mongolia, and was certainly a staple part of the diet from 1000 B.C.E. forward, it did not reach the west until the late 1800s and has only recently become a food source there. We use a regional indicator for Asia, or East Eurasia in the full ethnographic atlas, to see if soy cultivation affected the probability of monogamy, relative to the rest of the world. We expect a positive influence on the probability of monogamy, though such a result may of course reflect cultural factors other than simply diet.

Finally, we include the female contribution to subsistence. Higher

contributions by wives to family consumption have been shown to increase the probability of polygyny. We use an average of three studies' calculations that ranges from 0 to 80 percent contribution (Divale, 2004). In the complete ethnographic atlas data, this variable is replaced by an indicator of whether or not women contribute at least 50% of household agricultural production.

2.2 Empirical Results

Table 1 shows the results of the logistic regressions. Results are in the form of the odds ratio, thus coefficients greater than one indicate the explanatory variable contributes to explaining monogamy while coefficients less than one indicate the explanatory variable contributes to explaining the absence of monogamy. Columns 1 and 2 report the odds ratio and p-values for the SCCS data, columns 3 and 4 report the odds ratio and p-values for the SCCS data excluding Africa, and columns 5 and 6 report the odds ratio and p-values for the complete ethnographic atlas.

Most of the variables have the expected directional impact in all regressions. Milking activities, inheritable land, and agricultural dependence all significantly increase the probability of institutionalized monogamy ($\alpha = 0.1$). Milking activities increase the probability of monogamy 1.56 to 4.45 times above chance, depending on the specification. This is less than the positive impact of inheritable land, but more than any other explanatory variable other than the Asian indicator variable. Asian communities also increase the probability of monogamy as compared to the rest of the world by 8.4-10.15 times in the SCCS data; the full ethnographic atlas may contain more diverse societies as the variable is not significant at $\alpha = 0.1$.

Population density, fixity of residence, and female contribution to subsistence all significantly reduce the probability of prescribed monogamy in at least one, but not all, of the specifications, while storable food surpluses and class distinctions do not have any significant effect. Thus the greater social structure seems less important than household level activities and net benefits.

These findings corroborate our hypothesis that biological externalities accompanied the choice of production technology in the Neolithic era and appear to have had long run societal impacts on the forms of institutionalized marriage.

3 Discussion and Conclusions

Throughout the evolution of humanity, two basic structures of familial organization have competed: polygamy and monogamy. Economies in which resources are evenly distributed tend to lead to monogamy as men compete equally for wives. If an economy transitions to one in which resources are

⁷ Please see the full version of the paper for a more detailed discussion on the condition for Africa

distributed unequally, however, and storage of wealth becomes viable, the joint utility at the family level for consumption and assurance of gene continuance asserts polygamy as pareto-superior strategy. From the male's perspective more wives will provide more opportunities for genetic continuation. Women also stand to gain in polygamous systems when resources or skills are unequally distributed because it may be more advantageous to be the second or third wife of a rich or powerful man than the only wife of a poor man. When women contribute significantly to the family consumption levels, men are more capable of maintaining multiple wives and polygamy itself contributes to the imbalance in the income distribution. Women also may have greater impetus to participate in polygamy if they contribute significantly to family support since they can share the burden (Marlowe, 2003). Thus, we expect a rise in polygamy to be correlated with increases in inequality (Becker, 1991; Kanazawa and Still, 1999; Sanderson, 2001; Gould, Moav and Simhon, 2004).

Ceteris paribus, the evolution of ancient man from hunter-gather to agriculturalist should have increased polygyny. With agriculture came greater impetus to define and protect private property, the ability to store wealth and an eventual reallocation of resources to a more unequal distribution (Pryor, 2005). This tendency toward wealth inequality is represented in our data: societies that have more rich, more poor, and more dispossessed individuals are more likely to be agricultural. Instead of leading to polygynous marriage institutions, however, in many societies monogamous marriage emerged. We link the biological imperative to mate with the institutional evolution of marriage. A countervailing force to the economic drive toward a woman marrying the man making the highest offer in terms of consumption income, regardless of the number of wives he already has, is hormonal benefits that come from pair bonding. These hormonal benefits are linked to particular types of agricultural production, in particular dairy production, as well as lower levels of stress-related adrenaline. These connections lead us to believe that the transition to agriculture and its accompanying well-defined property rights has a different expected impact that simple resource inequality; we expect more monogamy.

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Table 1. Odds Ratio for Socially Imposed Monogamy

Variable	Standard Cross Cultural Sample (SCCS)		SCCS Excluding Africa		Ethnographic Atlas	
	Odds Ratio	P Value	Odds Ratio	P Value	Odds Ratio	P Value
Milking activities	3.36	0.06	4.45	0.03	1.56	0.07
Inheritable land	5.24	0.06	5.35	0.06		
Surplus Stored Food	0.98	0.97	0.89	0.86		
Class distinctions	0.83	0.37	0.80	0.31	0.98	0.82
Pop. density	0.61	0.04	0.65	0.08		
Fixity of Residence	0.62	0.09	0.67	0.16		
Settlement Pattern					1.02	0.80
Hunting dependence	0.56	0.12	0.64	0.22	0.86	0.13
Agricultural dependence	1.44	0.04	1.48	0.05	1.17	0.01
Female contribution to subsistence	0.97	0.07	0.97	0.18		
Female contribution to agriculture > 50%					0.93	0.72
Asia	10.15	0.00	8.36	0.00		
East Eurasia					0.65	0.13
Africa					0.02	0.00
Log likelihood	-53.25		-50.57		-360.18	
Likelihood Ratio Statistic (LR)	40.03 [$\chi^2(10)$]		36.51 [$\chi^2(10)$]		155.4 [$\chi^2(8)$]	
Probability (LR) > χ^2	0.00		0.00		0.00	
Pseudo-R ²	0.27		0.27		0.18	
N. Observations	185		157		1040	

Fiscal Taxation and Educational Development: Evidence from British India

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This paper studies the development of school systems within British India in the late 19th and early 20th century. Despite the centralized nature of colonial administration, there was tremendous provincial heterogeneity in public school systems. Certain provinces like Bombay successfully developed a system of publicly funded and publicly managed primary schools, while other provinces like Bengal developed a system of privately managed schools partially subsidized by public funds. These differences in school systems were strongly related to the availability of public revenues. Areas under the Temporary Settlement (for e.g. Bombay) where tax assessments were periodically revised to account for changing conditions received higher public revenues and thus were able to support higher public expenditures on schooling. In comparison, areas under the Permanent Settlement of 1793, where tax assessments had been fixed in cash for perpetuity received lower public revenues for education. Different revenue structures led to different primary school structures (one pure public with publicly managed schools and low fees, the other with privately managed schools and high fees), which in turn led to systematically different literacy patterns in colonial and post-colonial India. Thus, historic land settlements had important consequences for colonial public investments in education and literacy.

The Curious Dawn of American Public Schools

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The world has long known that advances in knowledge are crucial to economic growth, that broad mass education advances knowledge, and that the United States has had one of the world's highest per-capita income levels since the nineteenth century. We have also believed that these familiar facts are linked.

As soon as we ask how the Americans became leaders in mass education, puzzles arise. Given the usual narrative flow, one would expect that the Founding Fathers wisely encouraged universal primary schooling from the very start. Yet their Constitution said essentially nothing on the subject, and most of them were not enthusiastic about involving the federal government in education.

Two other facts that should have puzzled us further: Americans at the grass-roots level had developed their primary schools some decades before help arrived from above, and they did it largely by voting to tax themselves. How did education advance so soon in a country that resembled Russia in its rich opportunities in agriculture, forestry, and mining? How did a supposedly anti-government and anti-tax country spontaneously decide that schools should use property taxes, and not rely on private tuition alone? Why in North America, when several established European countries had already declared that their people should be educated, and had the established governments to finance and monitor schools? The puzzle becomes even greater when considering for America's peculiarly high fertility. How did the Americans manage to pay for so much schooling per child when families were so large?

Fortunately, our pursuit of this puzzle is well guided by the work of other scholars. The field of education history has produced a vast literature, only some of which can be cited here. Most helpfully for present purposes, other economic historians have recently identified a similar puzzle, and have given tentative answers that we shall reinforce and extend here. A pioneering study by Albert Fishlow showed that primary school enrollments and funding were already growing as fast before the "common school revival" of the 1830s and 1840s as they were in that over-publicized era.⁸ Carl Kaestle and Maris Vinovskis have offered plausible interpretations and data improvements.⁹ Stanley Engerman and Kenneth Sokoloff have contrasted North America with the rest of the Americas in terms of schooling and suffrage, plausibly arguing that the greater equality of voting rights in North America was a key to the rise of schooling.¹⁰ Claudia Goldin and Larry Katz have pointed to decentralization and democracy as two of the virtues that advanced American education for a century and a half, first in the rise of primary schooling and then in the high school revolution.¹¹

⁸ Fishlow (1966), "Common School Revival" in Henry Rosovsky (ed.) *Industrialization in Two Systems*.

⁹ Kaestle (1973), *The Evolution of an Urban School System: New York City, 1750-1850*; Kaestle and Vinovskis (1974), "Quantification, Urbanization, and the History of Education" in *Historical Methods Newsletter* 8; Kaestle (1976), "Between the Scylla of Brutal Ignorance and the Charybdis of a Literary Education" in Lawrence Stone (ed.) *Schooling and Society*; Kaestle and Vinovskis (1980), *Education and Social Change in Nineteenth Century Massachusetts*; and Kaestle (1983), *Pillars of the Republic*.

¹⁰ Engerman, Mariscal, and Sokoloff (2002), "Schooling, Suffrage, and the Persistence of Inequality in the Americas, 1800-1945" Manuscript; Engerman and Sokoloff (2005), "The Evolution of Suffrage Institutions in the New World," in *Journal of Economic History* 65.

¹¹ Goldin and Katz (1997), "Why the United States Led in Education," NBER Working Paper 6144; Goldin (2001), "The Human Capital Century and American Leadership" in *Journal of Economic History* 61; Goldin and Katz (2003), "The 'Virtues' of the Past" NBER Working Paper 9958.

We present two kinds of new evidence suggesting that these economic historians have put scholars on the right path, and that some other views need to be revised. First we offer some simple but striking contrasts with Europe, to underline the distinctive position of the North Americans. Then we statistically explore and explain some of the differences among American communities' commitments to education. The early Americans (and Canadians) spontaneously developed public schools because a combination of factors raised both their private and their public demand for education. In the global context of the late eighteenth century and the early nineteenth, the North Americans had especially few (white) poor, had a broader democracy, and had a more decentralized form of government even in the colonial era.

According to the real wage comparisons that are emerging in the Global Price and Income History project (<http://gpih.ucdavis.edu>), it is suggested that North American white workers in standard occupations could indeed buy more of the basics of life than workers anywhere else. Before 1800, we have no evidence that workers in Massachusetts could buy more flour than workers in Mother England. After 1800, however, they clearly could. Carpenters in Massachusetts could buy more flour than English building craftsmen, and Massachusetts common laborers could buy more than English laborers, whether they worked in the building trades or in agriculture. Nor is this contrast confined to their ability to buy flour. The Massachusetts workers could also afford to buy more beef, more butter, more eggs, more sugar, more shoes, and more candles than English workers in the same occupations. They probably could also pay for more housing, more hides, and more wood, though they probably paid more for cloth. Workers who could afford more of most basic goods than workers anywhere else in the world would also have had a better chance to afford a few years of basic schooling for their children.

By itself, greater affordability would only help to explain a higher private demand for education, and would not explain why taxes would be paid. Bringing taxes and public schools into the trans-Atlantic contrast requires an exploration of the politics of taxes for schools.

Here too, ordinary white Americans had an advantage over common men in the European countries they and their ancestors came from: They had more political voice relative to local elites, and increasingly so over the first half-century of independence. The degree of male suffrage in England-Wales and the United States shows contrasts across the Atlantic resembling the contrast that Stanley Engerman and Kenneth Sokoloff have found between North America and Latin America.¹² Before the 1880s the vote was much more strictly limited to those with substantial property in Britain than in America. Voting in France was similarly restricted. Other European countries also had

¹² Engerman, Maissal, and Sokoloff (2002), and Engerman and Sokoloff (2005)

to wait, usually until the twentieth century, before common workers had as much voting rights suffrage as white Americans.

The third salient feature of North America was its relative decentralization of government. British policy tended to give towns more fiscal autonomy in the American colonies than in Britain. The Constitution reinforced this local autonomy, by using federalism and other safeguards to impede the exercise of central government authority. On the schooling front, local autonomy was often extensive even where a centralized state board kept accounts on all school districts. For New York State before 1850, we know that state law deferred to local autonomy in most decisions regarding funding. Even the state laws that were passed were confined to providing only partial support and little regulation of instruction or finance at the district level, at least until 1850.

The democracy theme also helps to explain why some areas led and others lagged in white schooling within the United States. We did statistical investigation of the differences among U.S. counties in the mid-nineteenth century, based on the 1840 and 1850 decennial census data and presidential election returns. Two political voice variables stand out as determinants of schooling: The extent of local suffrage and the ability of centralized Southern elites to dominate the electorate.

We use the share of white men who actually voted for president as a fair proxy for the right to vote in local fights over schools and taxes. At face value, the effects of the voting rate look strongly positive in the behavior of Northern U.S. counties in 1840 and 1850. For every hundred white children ages 5-14, about 14 more of them would attend common schools in counties where 80 percent voted than in counties where only 60 percent voted. The same extra voting raised government support by 45 cents per child, a noticeable share of the grand average support levels. Additional regressions on the 1850 data confirm that all of this impact of extra voting took the financial form of extra local taxes, rather than state taxes or endowments. These effects were roughly the same for total schools as for public schools alone, meaning that extra voting had no effect on private academies in the North. Extra voting, in other words, meant extra local tax support that did not "crowd out" any private support in the North.

In the South, by contrast, the same difference between 60 percent voting and 80 percent voting had much less effect on enrollments or on support per child. The effects are generally positive but not significantly different from zero. This null result held in the South even though the shares of whites that voted were as high in the South as in the North.

The regressions behind these results show negative influences on education

in the form of fixed state-level effects for the South, rather than systematic differences between counties. There is a general pattern to these fixed effects. Looking first at the effects of slavery on white children's school enrollments, we find a negative effect only at the inter-state level, and not in any difference between counties within a Southern state. When we shift from enrollments to government financial support for schooling per white child, we find that a more slave-dominated state spent less government money, but much more private tuition, per white child. That might suggest an anti-subsidy form of elitism, in which the wealthy take the familiar view that schooling is a private matter.

What deeper political economy might lie behind the regressions' link between slavery and lower white enrollments at the state level? Historians have identified two Southern institutional tendencies that stood in the way of local school development: centralization of power throughout the region, and elitism in the laws governing membership in Southern legislatures. In both these institutional respects, the South resembled nineteenth-century England. A combination of statistical results and institutional history thus inclines us to the view that centralized restraints on political voice in the South held back the schooling of Southern white children of modest economic background.

Our empirical results support some conventional expectations about the provision of public schools. Both in the North and in the South, communities with more school-age children per adult delivered less public and private schooling per white child. We also found that extra migrants from other states raised school attendance and the number of teachers in the North.

Other standard explanations of the demand for primary education need to be revised. The passage of national and state laws has been overemphasized by past writers. Contrary to another common view, we also find that cities lagged behind the Northern countryside in the spread of enrollments and attendance. Religion and ethnicity may also have played only minor roles in explaining the schooling differences among American whites, despite a long tradition of emphasizing the written Bible as a force for education.

A number of concerns arise in the cross-section analysis of U.S. counties. They can be addressed with alternative data sets, particularly state-level data and national sample featuring changes between censuses. The use of more detailed data relieves some of our fears about using the voting rate as a proxy for voting rights. The side test using the numbers franchised from the New York state census of 1845 gets the same strong positive effects that the national samples got with the voting-rate proxy. The New York data also allow to use different measures of school attendance, as opposed to school enrollments. According to the results, the determinants are similar for each of these alternative ways of counting students.

A final concern is that the results so far may have introduced omitted-variable biases by leaning on spatial cross-sections of counties and states. Here we can offer two natural experiments to deal with the problem. First, in Louisiana, the new state constitution of 1845 gave universal white male suffrage and explicitly called for the free-school law which followed in 1847. We were able to confirm its positive effect on enrollments with first-difference regressions of U.S. counties from 1840 to 1850. Another natural experiment arises from New York's switch to universal manhood suffrage between 1821 and 1826 by the repeal of property and tax requirements for voting. Over that four year span the share of adult men who obtained their formal right to vote jumped from 66 percent to 83 percent, and the ratio of enrollments to the 5-16 population rose from 95.9 percent to 107.6 percent.

It is much easier to explain the early onset of public schooling in America if one focuses on the link between political voice and support for funding schools. Part of that political voice was channeled through the right to vote. On this front, our findings support the suggestion that Engerman and Sokoloff derived from their study of state-level correlations: "The movement for the establishment of public schools supported by local property taxes closely and successfully followed the expansion of the suffrage, which strongly suggests that the latter did indeed make a difference for policy."¹³ This paper has argued that the franchise, and the broader concept of political voice, helps to explain both America's head start and the differences among communities within this country.

The wider distribution of political voice inclined the rural North (and upper Canada) toward higher enrollments, more than toward high expenditures per pupil. In this respect the rural North differed from Northern cities, from the South, and from England, all of which had respectable expenditures per pupil but lower enrollment rates.

If the political voice effects seem to have been so strong in the antebellum era, what has happened to them since the Civil War? By the twentieth century they should have faded away, as suffrage became more universal and Southern planters and slaveholders' grip was weakened. The differences in politics and education did indeed fade away gradually, both for the North and for Southern whites. The lingering post-bellum exception was the effect of Jim Crow voting laws after the Civil War. As Robert Margo has shown, differences in black voting rights helped to explain much of the differences between Southern states in their degree of racial discrimination in school policy.¹⁴ Only from the 1930s on did blacks' education converge clearly and rapidly toward that of whites.

¹³ Engerman and Sokoloff (2005), pp. 908-909.

¹⁴ Margo (1990), *Race and Schooling in the South*.

For Southern whites, both their education and the region's distinctive institutions converged very slowly toward the national standard. It took a century and a half for their enrollments to catch up. Political changes must have helped. Planters lost relative influence, both in the aftermath of the Civil War and in the region's industrialization across the twentieth century. The South's curious preference for more centralized government also faded gradually. As of 1902, it still existed to some extent, and it still correlated with lower public spending on education. Local school districts controlled only 13 percent of public education spending in the South versus 35 percent in the non-South, while state governments controlled 33 percent in the South and only 22 percent elsewhere, the remainder being controlled by county government. By 1982, the differences had nearly vanished. All states have delegated the task of spending on primary and secondary education to local governments, though some still control that spending with statewide regulations.¹⁵ Thus convergence toward decentralization and democracy has accompanied convergence toward high enrollment rates.

Where should the research frontier be pushed hardest in the political economy of early American schooling? Our view is that we need more detailed research on how the decisions were made and how they affected schooling at the town level. Part of the extra research can be econometric, and it can include the use of town-level data, which are available but take time to process. Our main plea, however, is for studies of how the decision-making process really worked in town meetings and in state legislatures. We know that the issue of schooling was hotly contested, but we still need to learn how the crucial political pressures were applied.

The paper is available at <http://www.nber.org/papers/w13335>.

Economic History Association Session

Friday, January 4, 12:30 p.m. at the Hilton-Durham

Money, Finance, and Equity

Chair: Peter Rousseau (Vanderbilt)

Discussants: Michael Edelstein (Queens College), Andrey Ukhov (Indiana), Peter Rousseau, Se Yan (UCLA)

Keynes the Investor

David Chambers (Oxford University)
Elroy Dimson (London Business School)

John Maynard Keynes was an active investor throughout his life, first investing for his own account in 1905. In the early 1920s, he persuaded the Fellows of King's College, Cambridge to allow him full discretion in managing a portion of the endowment fund, called the "Chest". Keynes took personal responsibility for investments made by the Chest, in contrast to the City institutions that Keynes advised, for which decisions were taken in collaboration with others. In addition, this fund was deemed outside the onerous Trustee Acts, which severely restricted the type of securities to be held by the rest of the endowment. The Chest therefore represents the purest test of Keynes' skills as an institutional investor.

A thorough analysis of Keynes' investment abilities applying state-of-the-art portfolio analysis is of interest, firstly, because of who Keynes was. Just as importantly, this is also a study of how a sophisticated investor confronted the investment challenges of the interwar years. This period constitutes a major transition point in modern financial history. During these years, Britain moved from the weakly-protected, retail investor, bond-centric investment world of pre-1913 to the more tightly-regulated, institutional investor, equity-centric financial system of the second half of the 20th century.

Keynes' investment activities were an important part of both his public and personal lives. Yet, they have been dealt with only cursorily in the literature to date. Skidelsky (1983, 1992, 2000) discusses Keynes' investment prowess, but relies heavily on Vol. XII of *The Collected Writings*. Westall (1992) gives us an insight into Keynes' influence at Provincial Insurance, but fails to undertake the extensive quantitative investment analysis required. Moggridge (1983) briefly reviews Keynes activities in Vol. XII of *The Collected Writings*, and provides annual performance estimates that suggest he was a star investor. The

¹⁵ The spending results for 1902 and 1982 are from Sylla, Legler, and Wallis, ICPSR file 6304, 1995.

provenance of these figures is unknown. Chua and Woodward (1983) evaluated Keynes' investment performance at King's College, but used Moggridge's estimates.

We know little about the detail of the portfolios that Keynes constructed. Furthermore, even if the earlier performance computations are accurate, the source of Keynes' out-performance remains unexplained. Was any out-performance the accumulation of a succession of skilled investment choices, or did he make one large bet on the US stock market turning around in the 1930s?

The record of Keynes' trading has remained dormant in the Kings College Archives, and has not yet been analysed. We reconstruct Keynes investment decision-making from the detailed records of portfolios and transactions which have been overlooked by scholars. This paper describes the data collected on the King's portfolios, and the Chest in particular, examines the asset allocation chosen by Keynes, the types of investments made, and the nature of the risks he took. Subsequent versions of this paper will go on to consider his investment performance. His investments in foreign exchange and commodities will be the subject of a separate paper.

1. Keynes's investment activities

Keynes was both an extremely active private investor, a director of various insurance and investment companies and bursar of King's College, Cambridge. Most notably, he gave investment advice to two insurance companies, as Chairman of the National Mutual (1921-38), and a director of the Provincial (1923-46). In both cases, his fellow directors took an active interest. Tiring of cross-examination during the stock market sell-off of 1937-38, he resigned from the National Mutual in 1938. Even at the Provincial, he did not have a free hand as the considerable volume of correspondence with the Chairman, indicates.

Keynes appears not to have encountered any of these same problems at King's where he had full discretion over policy once he became First Bursar in 1924, holding office until his death in 1946. The most important of these unrestricted funds was "the Chest", a fund created within the overall endowment in the early 1920s, at Keynes's insistence, and which was free to invest in ordinary shares, foreign currencies and commodities. Other unrestricted funds were created within the endowment in 1933, but these had much shorter track records. There seems little doubt that within the College his investment policy went unchallenged. His apparent success bred confidence in his financial prowess and his annual "Chancellor of the Exchequer" speech to the fellows became a not-to-be-missed fixture in the College calendar.

Investment portfolios up to 1913 were governed by rules first laid down

in 1861 which emphasized the "safety" of principal rather than the pursuit of return. Institutional investors in Britain concentrated their investments in low risk assets such as well-collateralised loans, mortgages, bonds and debentures with known maturity dates. Notwithstanding the emergence of an interwar appetite for investing in ordinary shares, or common stocks (Scott, 2002), institutions invested very little in this new asset class until the second half of the twentieth century. Insurance companies, by far the largest interwar investors, had only very modestly increased their allocation to equities from an insignificant 3% in 1920 to barely 10% by 1937.¹⁶ Even the most aggressive insurers never held more than 30% of their assets in equities in the interwar years.¹⁷

Not much is known about the early investment activities of endowments and foundations. Prior to 1913 they were largely invested in property. As for the rest, the Trustee Acts severely restricted their scope, to primarily UK and colonial government securities, UK railway securities, water company securities and local authority housing bonds and mortgages.¹⁸

In summary, the attraction of analysing the Chest lies in it being the purest expression of Keynes' investment skill in an institutional context, and in its lying outside the reach of the Trustee Acts.

2. Keynes's investment philosophy

Keynes's own writings emphasise two aspects of his development as an investor. Firstly, his willingness to invest in ordinary shares, or common stocks; and secondly, his wholesale switch in investment style following the events of 1929.

Keynes was a great advocate of ordinary share, or common stock, investing, and believed equities constituted a new asset class to sit alongside fixed income securities and cash. His views on allocating funds between these asset classes however changed radically after 1929. Prior to that date he was a great believer in his "credit cycle theory of investment"¹⁹ according to which a close monitoring of monetary and economic indicators would enable him to time any switch between equities, fixed income and cash. The performance of the Independent Investment Trust was however very disappointing, and he was left with a heavy exposure to equities when the UK market fell in August, 1929. This sobering experience led Keynes to a radical shift from a top-down to a bottom-up investment philosophy. In a review of his investment performance in 1938, he attributed his success to concentrating on a few core holdings,

¹⁶ Scott (2002).

¹⁷ Baker and Collins (2003), Appendix 1.

¹⁸ The 1925 Trustee Act, *Stock Exchange Official Intelligence* 1926, pp. 1922-23

¹⁹ *CW* Vol. XII, pp. 33, excerpt from The Independent Investment Company's prospectus.

considered cheap relative to their intrinsic value, and held for the long-term.²⁰

3. Data

Investment portfolios, transaction records and investment reports to the auditors were obtained from the King's College Archives for the period from 1921 to 1946. Security prices were collected from the *Stock Exchange Daily Official List* for British securities, and from CRSP and the *Commercial and Financial Chronicle* for US securities. Capital and dividend histories are taken from the *Stock Exchange Official Yearbooks* and the *Stock Exchange Ten-Year Record* for British stocks, and from CRSP and Moody's *Manuals* for US stocks.

4. King's College Endowment and the Chest

Keynes became First Bursar in 1924. Although the Chest was established in 1921, it is difficult to decipher from the archival records what investments were included until we come to the accounts for the year ended August 1925. The size of the Chest grew, through a combination of investment performance and cash inflows, from less than one fifth in 1924 to almost 45% of the College's total investments, excluding property, on the eve of Keynes's death (Table 1). Whilst other funds unrestricted by the Trustee Acts were established in the 1930s, the Chest remained the largest. At its peak in 1935, when Keynes had diversified into the US market, the number of portfolio holdings approached 100.

The Chest was a relatively small fund in institutional terms. The portfolios of the National Mutual and the Provincial were respectively four and two and a half times the size of King's College. However, the insurers had between two and three times the number of portfolio holdings, and hence the size of individual holdings was not so much smaller at King's.²¹

True to his convictions, Keynes was an aggressive investor in ordinary shares. Up until the early 1930s, he allocated between 70% and 90% of the Chest to this new asset class (Figure 1). Unfortunately, he failed to foresee the sharp fall in the London market which began in 1929, and which led over the two years to August 1931, to a halving in British share prices. Although briefly seeking refuge in UK government securities in the early 1930s, his resolve was not shaken, and by the mid-1930s he was investing heavily in US common stocks. The Chest's total equity weighting never thereafter dropped below 50%.

Furthermore, he made a substantial allocation to US preference stocks, many of which were in dividend arrears, and might be considered quasi-equity. In contrast, he invested very little in corporate debentures, and his modest bond exposure, outside of the early 1930s, was concentrated on high yielding sovereign bond issues. In short, this portfolio was both very different to the rest

²⁰ CW Vol XII, pp 102-109.

²¹ CW Vol XII, pp 95, and pp 99.

of the endowment community, and to other contemporary institutional portfolios.

As well as taking considerable risks in his asset allocation, Keynes had a predilection for small stocks. The size distribution of his British shareholdings is graphed in Figure 2. Other than during the last two years of WW2, at least three-quarters of his portfolio consisted of firms with an ordinary market capitalisation below £6.5 million, a size precluding membership of the largest 100 shares quoted on the London Stock Exchange. Similarly, the distribution of Chest shareholdings by dividend yield diverges sharply from that of the overall market (Figure 3). In the mid-1920s, the median dividend yield on his British holdings was between 9% and 10%; in the 1930s it fell to below 4% as Keynes invested in a combination of mining stocks and recovery stocks which had passed their dividends.

Finally, Keynes concentrated the majority of his British portfolio in a few sectors, namely, commercial and industrial firms, metal mining stocks, and iron, coal and steel firms (Figure 4). Compared to the overall market (Table 2), his sector allocation was radically different. Keynes was massively underweighted in railway securities in favour of large holdings in the Commercial, Industrial, etc., and the Mining sectors.

5. Summary

The Chest represented an investment portfolio with which Keynes could give full expression to his investment abilities. This detailed study of his asset allocation policy, his portfolio holdings and their size, yield and industry characteristics indicates he departed dramatically both from the market and from the institutional consensus. Subsequent versions of this paper will consider the extent to which this helped or hindered his investment performance.

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Figure 2: Size distribution of British shareholdings (ordinary share market capitalisation, £000)

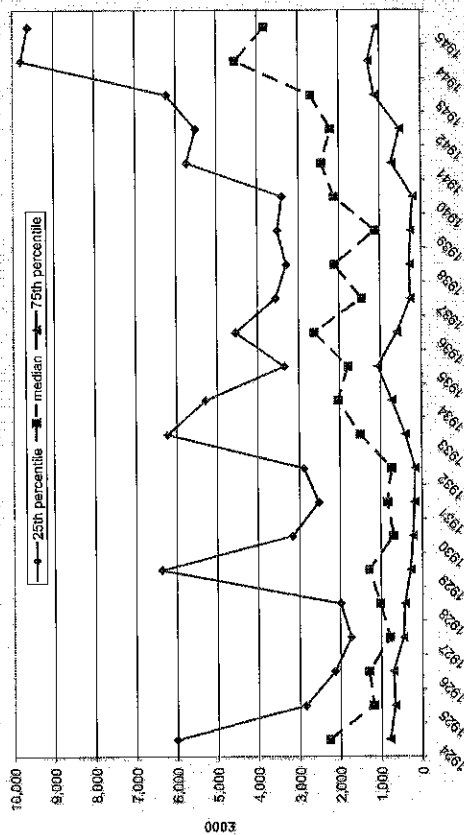


Figure 4: Sector allocation
Sector definitions follow the London Stock Exchange classification of quoted companies.

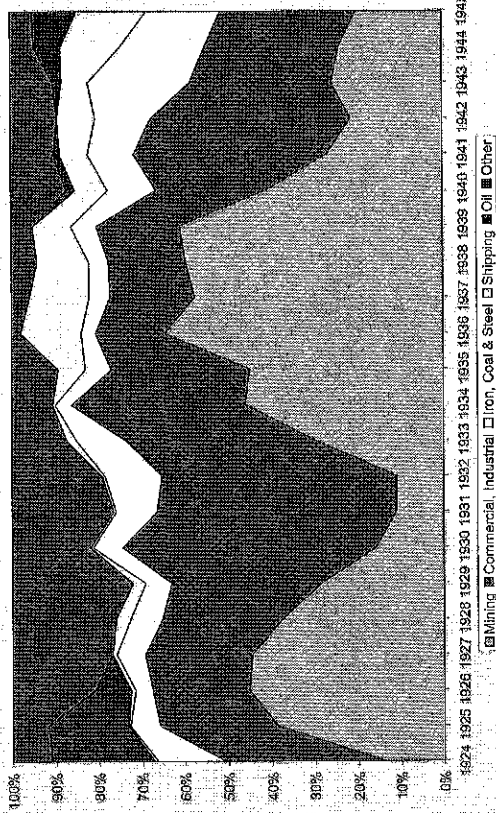
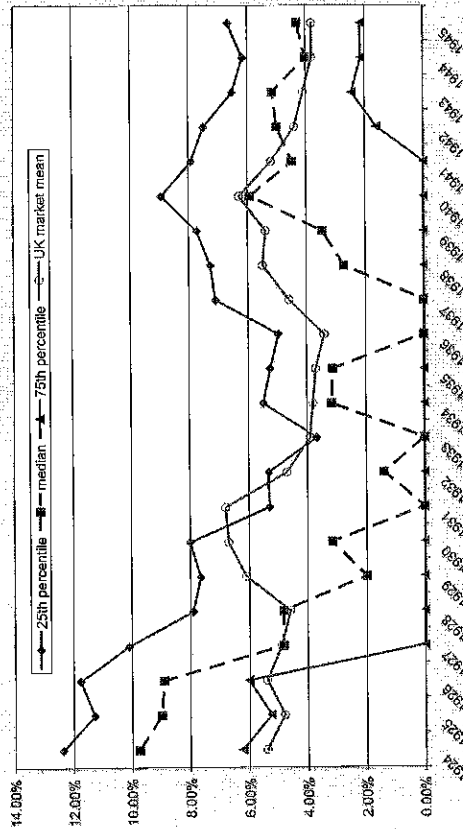


Figure 3: Dividend yield (%) distribution of British shareholdings



The Costs of Trading in the New York Stock Exchange, 1900-1910: Information versus Competition

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Abstract.

Using a newly-gathered database of daily closing prices, quoted bid and ask prices, and volumes for all stocks listed on the New York Stock Exchange in 1900 and 1910, we first calculate quoted spreads and analyze their cross-sectional properties. We then calculate measures of effective transactions costs, and find that they exceed modern rates by a substantial margin. We decompose these measures into asymmetric information and order-processing components and find that the asymmetric information component fell as a proportion of the total spread between 1900 and 1910. Analysis by volume quartiles indicates that the asymmetric information component of trading costs declined as trading volume rose, but order processing costs did not. The fact that brokers did not translate these economies of scale into lower order processing costs suggests that brokers enjoyed some market power and likely earned some level of monopoly rents.

I. Introduction

The United States is considered one of the greatest exemplars of a 'market-oriented' financial system. Such active use of markets depends on the ability of participants to transact efficiently, at reasonable cost. Thus, in this paper, we examine the costs of trading in the New York Stock Exchange in 1900 and 1910 to provide a key piece of evidence on the functioning of early markets for industrial securities.

II. The Development of the NYSE before World War I

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III. Measuring Transactions Costs

Market makers in an asset market receive as their compensation the difference between the price paid to sellers and the price obtained from buyers—the bid-ask spread. Transactions do not necessarily take place at quoted bid and ask prices, however, meaning that quoted spreads are not necessarily precise reflections of real transactions costs. Moreover, the quoted spread wraps up a range of different transactions costs: order processing expenses, inventory risk, asymmetric information, and potentially monopoly

rents. In order to estimate realized spreads, we use the method (#2) proposed by George, Kaul and Nimalendran (1991). This method refines and extends the serial covariance measure proposed by Roll (1984). The underlying idea of this estimator is that, in informationally efficient and stationary markets, variation in transactions prices results from the randomness of buy and sell orders plus positive transaction costs. In liquid markets with low transaction costs, successive individual orders have little impact on observed transaction prices. In thin markets, price effects of individual trades may be more pronounced. If transactions costs are higher, the deviation of transaction prices from true fundamentals will not be immediately arbitrated, even in efficient markets. Therefore, the covariance of successive price changes provides information about market liquidity, and hence, effective transaction costs.²²

For computational details of the GKN measure, please see the full paper.

We set out several hypotheses based on the historical analysis. First, at the narrow level of the individual specialist, there seem to have been opportunities to set transactions costs above competitive levels due to the market power exercised, at least in some shares. At the broader level, the continuous market mechanism could have reinforced this tendency by splitting up orders into smaller lots (as opposed to aggregating the day's trades into larger ones) and thereby keeping order processing costs high. As communications technologies had advanced relatively far by 1900, order processing costs may have declined from their 19th century levels. Moreover, the NYSE maintained relatively tight listing standards, which should have mitigated asymmetric information costs. Still, we expect that the cost increasing factors dominate, so that we should find that average total transactions costs (realized spreads) for the full population of stocks in 1900 and 1910 exceed those calculated for the post-WWII period, particularly the last few decades of the 20th century. We hypothesize further that these relatively high costs stem both from a high order processing component and a somewhat higher adverse selection component.

In terms of the cross sectional variation in spreads, we expect that the theoretical models apply at least as well in the earlier stages of market development as they have in recent years. Thus, our hypotheses remain essentially the same as those posited in the literature (reviewed earlier in this section).

IV. Data and Descriptive Statistics

We gathered data for all stocks listed on the New York Stock Exchange and reported in the New York Times for every trading day (Monday through Saturday) in the years 1900 and 1910, including closing transaction prices, closing quoted bids and asks, and the number of shares sold for each stock each day.²³

²² See Madhavan (2000) for a more technical survey on the empirical estimation of transaction costs.
²³ The exchange operated every day but Sunday up until 1952, when the Saturday sessions ended.

For further details, please see the full paper.

V. Quoted and Estimated Spreads

We next produce estimates of effective trading costs (the GKN spread measure) (Table 3). We included all companies for which the serial covariance of the returns of the bid prices could be computed based on at least 4 observations, i.e. where the number of observations of the second order difference of bid prices is greater or equal to 4. This condition leaves us with 208 firms in 1900 and 194 firms in 1910. The resulting estimates of the GKN spread (Table 3) average 2.19 percent for 1900, and 2.60 percent for 1910. Median effective spreads are lower, at 1.57 and 1.75, for the same years. Looking at the different average sales quartiles we see that the effective spreads are higher than the quoted bid-ask spreads reported in the New York Times for actively traded stocks but the quoted spreads are higher than effective spreads in the two quartiles with the lowest average trading volume.

The average quoted spreads over the full sample as well as for most quartiles rose between 1900 and 1910. While median quoted spreads remained just about constant within the full population, they increased substantially among the most and least active quartiles of shares. While improving communications technology could have lowered transactions costs, other factors seem to outweigh these potential cost reductions. In fact, our finding squares with Garvy (1944) and Brown et al. (2006) who claim that after 1909 competition from the Consolidated Exchange declined. This loss of competitive pressure likely allowed brokers to raise costs. Realized spreads also grew on average for the full sample, but for individual quartiles, they grew less than quoted spreads, and in some cases even fell slightly. Among the most actively traded stocks, the median GKN measure increases from just under one percent to close to two percent.

Spreads and their components

For the full sample of securities, we find that 36 percent of the spread comes from order processing costs in 1900, and that figure falls to 33 percent in 1910. On the flip side, therefore, the asymmetric information component rises from 44 percent in 1900 to 67 percent in 1910 (Table 4). As expected, for both 1900 and 1910, the average quoted bid-ask spreads decrease with increasing trading activity. The average price and the standard deviation of the returns, however, do not bear a significant relationship to trading activity (Table 3). The spread decomposition also differs depending on trading volume. For stocks in the top half of the volume range, the spread is due entirely (or almost

We also collected the closing price and days' volume for 1890, but because the NYT did not publish quoted bid and ask prices at that time, we cannot calculate quoted spreads or conduct the spread decomposition for 1890.

so) to order-processing costs: estimates of α range between 94 and well over 100 percent. The order-processing component of spreads of firms in the lower half of the trading volume range is only 52 to 61 percent in 1900 and 26 to 62 percent in 1910. The remainder is attributable to asymmetric information. In other words, asymmetric information costs contribute essentially nothing to the spreads for heavily traded stocks, while such costs make up anywhere from 40 percent to 74 percent of trading costs for lighter traders. Since trading in stocks should have increasing returns to scale (e.g. due to fixed costs) we would expect a decrease not only in total spread but also in the order processing cost component as trading volume increases. However, the results show that lower transaction costs for highly traded stocks are merely a result of lower asymmetric information costs. This suggests that the order processing costs contain monopoly rents.

VI. Cross-Sectional Determinants of Spreads

We use the following explanatory variables to explain average percentage quoted spreads: average daily dollar volume (V), average price (P), variance of stock returns (V) and the number of trading days (Days). Additionally, we include a dummy variable for preferred shares. We find that trading activity, volume, price, and return variance explain a considerable part of the cross-sectional variation of spreads (Table 5). As predicted, volume, price and trading days reduce the bid-ask spread, although the effect of volume is virtually zero for 1910 and the coefficient of price just fails to be marginally significant in 1900. The risk associated with a stock as measured by the variance increases the spread—but only for common stocks. As we hypothesized, spreads on preferred shares do not relate to the variance of their returns: the coefficient of the interaction term of preferred issues and variance is negative and of the same magnitude as the positive effect of the variance. Thus, for preferred shares these two effects just offset each other. The fact that the bid-ask spread of preferred issues is not responsive to a stock's risk implies that the asymmetric information component is relatively unimportant for this share class.

VII. Conclusions

We present a new dataset of daily closing transactions prices and volumes for all stocks, common and preferred, listed on the New York Stock Exchange (and covered in the New York Times) for 1890, 1900, and 1910. For 1900 and 1910, we compute daily quoted bid-ask spreads, effective trading costs, and order processing and asymmetric information components. Our analysis demonstrates that, as expected, effective spreads exceed modern rates by a substantial margin. Spreads rose on average between 1900 and 1910, and the asymmetric information component fell as a proportion of the total spread

during the same time. Thus, order processing costs rose, perhaps due to the declining competition from the Consolidated Exchange. Preferred shares incurred lower transactions costs, and their spreads did not increase with return volatility—in contrast to common shares. By and large, the more actively traded shares traded with lower spreads, but the biggest difference came in quoted not effective spreads. Cross sectional analysis within each year indicates that the asymmetric information component of trading costs declined as trading volume rose. In other words, in contrast to expectations, more actively traded shares traded with higher order processing cost components. The fact that brokers did not translate these economies of scale into lower order processing costs suggests that brokers enjoyed some market power and likely earned some level of monopoly rents.

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Table 3: Quoted and Realized Spreads, 1900 and 1910

Panel A: 1900		Sales	# Obs.	Average Price	Std. Dev.	Spread in \$	Spread in (%)	GKN in (%)
1. quart.	Mean	193.57	98.58	81.57	0.03	1.97	3.34	1.95
	Median	188.82	92.00	80.20	0.02	1.65	2.52	1.42
	Std. Dev.	65.21	49.86	44.20	0.05	1.15	2.63	1.91
2. quart.	Mean	422.32	138.62	47.32	0.03	1.01	3.64	2.77
	Median	418.47	145.00	36.63	0.03	0.86	2.61	2.19
	Std. Dev.	89.01	69.41	41.63	0.02	0.58	3.12	2.41
3. quart.	Mean	1085.78	218.27	50.01	0.02	0.65	2.06	2.52
	Median	960.78	243.00	36.50	0.02	0.59	1.64	1.94
	Std. Dev.	369.64	67.79	41.60	0.01	0.53	1.48	2.18
4. quart.	Mean	8416.74	259.98	62.53	0.02	0.29	0.70	1.54
	Median	5569.61	286.00	56.46	0.02	0.25	0.48	0.92
	Std. Dev.	8000.85	66.68	36.54	0.01	0.13	0.52	1.72
all stocks	Mean	2529.60	178.86	60.36	0.02	0.98	2.44	2.19
	Median	615.09	198.50	52.45	0.02	0.66	1.68	1.57
	Std. Dev.	5246.39	89.98	42.98	0.03	0.93	2.47	2.11
Panel B: 1910								
1. quart.	Mean	159.76	66.63	86.33	0.05	3.69	6.62	1.19
	Median	163.64	64.00	87.32	0.02	2.45	3.85	1.22
	Std. Dev.	30.48	37.09	55.99	0.10	3.85	7.63	4.12
2. quart.	Mean	295.88	135.29	69.25	0.03	1.54	3.71	3.35
	Median	284.02	137.00	65.46	0.02	1.24	2.58	2.52
	Std. Dev.	50.41	53.07	45.42	0.02	0.92	2.97	3.05
3. quart.	Mean	610.26	200.12	59.59	0.02	0.88	2.26	3.32
	Median	555.58	211.00	50.71	0.02	0.77	1.64	1.97
	Std. Dev.	164.01	53.56	38.48	0.02	0.41	1.94	3.54
4. quart.	Mean	9397.92	260.67	73.33	0.02	0.44	1.20	2.55
	Median	2162.03	281.00	63.68	0.02	0.36	0.82	1.57
	Std. Dev.	23182.59	52.87	47.34	0.02	0.23	2.07	2.97
all stocks	Mean	2592.96	165.35	72.13	0.03	1.64	3.46	2.60
	Median	411.27	162.50	66.10	0.02	0.96	1.75	1.75
	Std. Dev.	12091.95	87.68	47.85	0.05	2.35	4.77	3.54

Table 4: Spread Decompositions, 1900 and 1910

The proportion of the order processing component ω by a cross-section regression of the effective spread (s^{GKN}) on the quoted spread (s):

$$s^{GKN} = \beta_0 + \beta_1 s + \varepsilon. \text{ We expect } \hat{\beta}_0 = 0 \text{ and } \hat{\beta}_1 = \pi.$$

	all stocks			common stocks			preferred stocks				
	C	R ²	obs	c	spread	R ²	obs	C	spread	R ²	obs
1900											
1st	0.0033	0.44	52	0.0019	0.5271***	0.55	23	0.0127**	0.0429	0.00	29
	1.0249			0.3179	5.0541			2.3358	0.1950		
2nd	0.0096**	0.42	52	0.0103**	0.5361***	0.59	32	0.0262***	-0.2525	0.04	20
	2.4090			2.2621	6.6239			2.8273	-0.8199		
3rd	0.0106**	0.23	52	0.0084**	0.8098***	0.49	35	0.0190	0.0420	0.00	17
	2.2918			2.0427	5.6729			1.5447	0.0549		
4th	0.0041	0.24	52	0.0038	1.8582***	0.27	39	0.0067***	0.6611**	0.33	13
	1.1493			0.8709	3.6863			2.7091	2.3262		
all	0.0104***	0.31	208	0.0116***	0.5080***	0.44	129	0.0159***	0.0065	0.00	79
	6.0231			5.6988	10.0554			4.3878	0.0406		
1910											
1st	0.0194***	0.04	49	0.0218	-0.2070*	0.14	21	0.0031	0.4494***	0.45	28
	2.5104			1.3382	-1.7671			0.5636	4.5970		
2nd	0.0135***	0.27	48	0.0036	0.6559***	0.63	27	0.0223*	0.4484	0.10	21
	2.2163			0.6743	6.4825			1.9146	1.4846		
3rd	0.0084	0.36	49	0.0030	1.2268***	0.51	34	0.0184	0.8990*	0.21	15
	1.3332			0.4785	5.7829			1.2425	1.8580		
4th	0.0133***	0.50	48	0.0128***	1.0165***	0.52	42	0.0166	1.0278	0.03	6
	3.7478			3.3106	6.6377			0.7856	0.5798		
all	0.0255***	0.00	194	0.0266***	-0.0636	0.01	124	0.0167***	0.4188***	0.16	70
	8.0942			6.7515	-1.0618			3.2874	3.6278		

Table 5: Cross-sectional determinants of spreads

Variable	Coefficient	1900 t-Statistic	Prob.	Coefficient	1910 t-Statistic	Prob.
Intercept	0.19	4.25	0.00	0.29	11.00	0.00
Log(V)	-0.01	-4.77	0.00	0.00	0.44	0.66
Log(P)	-0.01	-1.63	0.11	-0.03	-5.67	0.00
Variance	7.67	2.28	0.02	0.42	11.32	0.00
Variance*Preferred	-7.65	-2.30	0.02	-0.36	-4.28	0.00
Log(Days)	-0.01	-3.07	0.00	-0.03	-7.40	0.00
Radj	-0.01	-1.27	0.21	0.00	-0.68	0.50
No. of Obs.	238			248		
adj. R ²	0.61			0.62		

Note: Dependent Variable: Average percentage quoted bid-ask spread OLS regression with Newey-West HAC Standard Errors and covariance (lag truncation=4)

The Continental Dollar: What Happened to It after 1779?

Farley Grubb (University of Delaware and NBER)

From 1775 through 1779 the U.S. Congress financed the American Revolution largely by issuing fiat paper money—the Continental Dollar. The basic story of the Continental Dollar is familiar to all. A lot were issued and hyper-inflation ensued. They became worthless. In 1779 Congress permanently discontinued emissions and shortly thereafter abandoned paper money. In 1781 Continental Dollars ceased to circulate as a currency and were soon forgotten. They had no appreciable impact on subsequent public finance decisions.

The post-1779 portion of this story is not well documented and its veracity is challenged here. A substantial body of heretofore ignored evidence is marshaled to show that the disposition of the Continental Dollar both within Congress and among the public remained an open, controversial, and unresolved question well into the 1790s. This uncertainty affected the public's decision to hold Continental Dollars as a speculative investment compared with trading them, trading them in the marketplace, or remitting them for taxes. This evidence is also used to document the exact amount and time path of Continental Dollars remitted to the U.S. Treasury to be burned between 1779 and 1790. A complete quantitative assessment of remittances has never

been done before. It reveals ongoing activity regarding the Continental Dollar throughout the 1780s and establishes the size of the Continental Dollar debt facing the Federal Government during this period. This debt is used to explain how the Federal Government's ability to restructure its finances was constrained. For over a decade after 1779 the Continental Dollar continued to be an important presence in shaping the emerging U.S. financial revolution.

1. Emissions and Remittances of Continental Dollars, 1775-1790: The Quantitative Evidence

The time path of Continental Dollars emitted by Congress and still outstanding—net of those remitted to the U.S. Treasury—is presented in Figure 1. Emissions began in June of 1775 and ended in November of 1779. Regarding net new emissions, \$199,990,000 were emitted over this period. All were still outstanding as of mid-1780. Regarding gross emissions or total printings of Continental Dollars, Congress printed an additional \$41,510,000 to be swapped one-for-one with already emitted Continental Dollars—replacing existing Continental Dollars that were either too torn or ragged to continue in circulation or were under threat of being counterfeited. Separating gross from net emissions is important for interpreting the evidence on the remittances of Continental Dollars that follows and that is shown in Figure 1.

Taxes to pull Continental Dollars out of circulation were not initiated until after 1779. Before 1789, under the *Articles of Confederation*, Congress did not have the power to directly tax the public and so could not directly redeem Continental Dollars from the public. Congress therefore asked the states to accept Continental Dollars in payment of state taxes and then remit them to Congress as part of the funding requisitions each state owed Congress. The states, however, failed to provide the funds requested before 1780. In the fall of 1779 Congress permanently discontinued emissions of Continental Dollars. On June 28, 1781 the Secretary of Congress, Charles Thomson, restated the funding-requisition quotas each state owed Congress with regard to remitting Continental Dollars. He indicated that \$195 million Continental Dollars were still outstanding at that time. These assigned quotas are listed in Table 1.

With the requisition act of March 18, 1780, Congress attempted to induce states to make specie payments to Congress as part of their funding quotas and to reduce the quantity of paper money outstanding from \$200 million Continental Dollars to \$10 million "Continental-State" Dollars. Congress gave states a discount when requisitions were paid in specie (one Spanish silver dollar being accepted in lieu of 40 Continental Dollars) and would allow states to issue one Continental-State Dollar on their own account for every 20 Continental Dollars they remitted to the U.S. Treasury to be burned. Under this scheme states removed between \$31.8 and \$41.4 million Continental Dollars

from the public and remitted them to the U.S. Treasury between late 1780 and late 1781. This experiment collapsed by late spring of 1781 and was never revived.

If states would have filled their monthly quotas, then all the old Continental Dollars would have been pulled out of circulation and replaced with Continental-State currency by April 1781. The states, as usual, did not fill their quotas. As the Continental-State Dollar experiment collapsed, Continental Dollars ceased to circulate as currency. Being near worthless, many have assumed that the rest were simply trashed at this time, e.g. Breck (1843, pp. 15-16) concluded:

Two hundred million lost all value, and were laid aside. The annihilation was so complete that barber-shops were papered, in jest, with the bills; and the sailors, on returning from their cruise, being paid off in bundles of this worthless money, had suits of clothes made of it, and with characteristic light-heartedness turned their loss into a frolic by parading through the streets in decayed finery...

Similarly, Phillips (1866, p. 185) related the following story from a Tory newspaper in New York, the *Livington's Gazette*, written on May 12, 1781:

The congress is finally bankrupt! Last Saturday a large body of inhabitants with paper dollars in their hats by way of cockades, paraded the streets of Philadelphia, carrying colors flying, with a dog tarred, and instead of the usual appendage and ornament of feathers, his back was covered with the congress' paper dollar. ... was directly followed by the jailor, who refused accepting the bills in purchase of a glass of rum, and afterwards by the traders of the city, who shut up their shops declining to sell any more goods but for gold and silver.

In another state, Phillips (1866, p. 185) related that (see also Ferguson, 1961, p. 66):

... the continental money was buried with honors. Its remains, deposited in elegant coffins, were followed to the grave by a numerous concourse; an eloquent oration was delivered narrating its services, as those of a former friend and benefactor. When the obsequies were concluded, the orator, holding to view a specimen of a new emission authorized by the state to replace the old continental, exclaimed "*be thou also ready, for thou shalt surely die!*" — a prophecy soon fulfilled.

But were such stories of the trashing of Continental Dollars just minor political theater and Tory propaganda representing trivial amounts of Continental

Dollars, or were they indicative of some mass orgy of destruction and so represented significant amounts of Continental Dollars disposed of as trash? The quantitative evidence suggests that it was trivial.

The total amount of Continental Dollars taxed out of circulation by the states, remitted to the U.S. Treasury, and burned between 1779 and 1790 is seldom discussed nor has the exact time series of outstanding balances of Continental Dollars still at large after 1779 been tallied previously in the literature. Yet the existence of three separate reports allows for the construction of such a series from direct evidence. On January 14, 1786 Joseph Nourse, the Registrar of the Treasury from 1781 to 1829, reported to Congress the amount of Continental Dollars—face value—paid into the U.S. Treasury from May 1779 through 1785 by month, year, and source.

In May of 1782, Michael Hillegas, Continental Treasurer under the administration of Robert Morris, reported to state Governors a portion of the report given by Nourse to Congress in 1786—the portion covering from November 25, 1780 through February 23, 1782. Hillegas' report is basically identical to Nourse's report for the period that the two overlap except that Hillegas identifies which of the remittances were just currency swaps, i.e. those affecting gross but not net emissions. Finally, on May 11, 1790 Alexander Hamilton, Secretary of the Treasury, reported to Congress the amount of Continental Dollars—face value—paid into the U.S. Treasury from November 1780 through March 1789 by day, month, year, and state.

These series, slightly rearranged (put into chronological order), are reproduced in Table 2 (not included here—you will have to come to the talk or get the paper to see it). Combining the three series gives a continuous quantitative monthly series from May 1779 through March 1789 of the amounts of Continental Dollars—face value—remitted by each state to the U.S. Treasury. Eliminating the overlap or duplication between the series, yields a total of \$153.5 million Continental Dollars—face value—remitted to the U.S. Treasury and burned by 1790. Interpreting this number, however, required some additional scrutiny (not included here—you will have to come to the talk or get the paper to have the mystery revealed to you).

By 1790 the total amount of Continental Dollars (face value) still outstanding was \$80.5 million (\$200 million of net new emission minus \$119.5 million remitted through 1789 as reported by Hamilton) or \$88 million (\$241.5 million of gross emissions minus \$153.5 million of gross remittances as the result of combining the Hamilton and Nourse reports). The \$80.5 million is shown to be the better estimate. Thus by 1790, 11 years after ceasing to issue Continental Dollars and seven years after the end of the Revolution, Congress had managed to get the states to redeem in some manner and remove from the

public roughly 60 percent of the net new Continental Dollars ever emitted. By any measure, this was quite an accomplishment—a success seldom noted in the literature—especially considering that Congress' original legislation did not require redemption of Continental Dollars before 1797 for those issued in 1779.

Figure 2 combines the information in Table 1 and the Hamilton evidence in Table 2 to chart the progress of each state in filling its quota of remittances of Continental Dollars (not included here—you will have to come to the talk or get the paper to see this).

Congress adopted the new *U.S. Constitution* in 1789 and under its auspices restructured its finances with the Funding Act of August 4, 1790. The act increased the default rate to 100 Continental Dollars being exchangeable for 1 dollar in Federal Government interest-bearing bonds. It also, for the first time, made the default on the Continental Dollar irrevocably permanent. The bonds were callable perpetuities that paid 6 percent annual interest, but with one-third paying no interest until 1800. Only \$6 million, of the \$80.5 million Continental Dollars still outstanding in 1790 were so exchanged between 1791 and 1797—when the exchange program was discontinued. “The rest [\$74.5 million] seems to have remained in the hands of people who held it after the time fixed by the funding act, hoping that ultimately the notes would be redeemed in full.” (Bullock, 1895, p. 138) They would be disappointed.

2. Post-1790 Agitation for Revising the Redemption of the Continental Dollar

The evidence presented here identifies \$80.5 million Continental Dollars as still outstanding in 1790, of which only \$6 million would be exchanged for bonds in the early 1790s at the 100 to 1 default rate set by Congress in 1790, basically traded in for next to nothing. But what happened to the other \$74.5 million Continental Dollars that were still outstanding? Did they just go quietly into the trash bin at this point, or perhaps they had been trashed long before? The literature on the Continental Dollar assumes that they quietly vanished, that almost none were left around by and after 1790 to be redeemed, and that there were no objections or controversies to its final default in 1790. Some important though limited and rarely-considered evidence indicates otherwise.

Apparently after passing the Funding Act of August 4, 1790, Congress was bombarded with petitions by holders of Continental Dollars asking Congress to revise its default rate and redeem Continental Dollars at par, or at least redeem them at rates better than 100 to 1. This can be deduced from the letters and advice given to Congress on these matters by the Secretaries of the Treasury—who universally and forcefully advocated rejection of these petitions and recommended strict adherence to the 1790 Funding Act. On November 22,

1792, Alexander Hamilton reported to Congress (*American State Papers*, 1834, Class IX, Claims, v. 1, p. 55):

The SECRETARY OF THE TREASURY, to whom were referred the several petitions specified in the list herewith transmitted, respectfully submits the following report thereupon:

These petitions seek indemnification upon various sums of paper money received from the public during the late war, by the respective petitioners, on account of claims arising upon transactions of that period.

There is no subject upon which the special interposition of the Legislature for relief of particular individuals can be more delicate and dangerous, than that of depreciation; the infinite multitude of cases, in which claims of this nature might, with equal or nearly equal degrees of equity, be supported, the impossibility, from the extraordinary circumstances of the times when those claims originated of during [doing] general justice; the inextricable confusion and incalculable expense of an attempt to redress all the grievances and hardships of that kind which unavoidably took place, afford considerations of the most powerful nature for leaving every question of depreciation where the rules and principles of settlement at the Treasury have left it.

...The magnitude and extreme delicacy of the matter in question appear to render it advisable to adhere to the acts of limitation, as well as the rules of settlement at the Treasury, in this particular, with peculiar caution and strictness.

Such was the policy of the United States in Congress assembled, and perseverance in that policy is recommended by a variety of weighty reasons.

Similarly, on December 23, 1795, Oliver Wolcott, Jr., Secretary of the Treasury, submitted a report to Congress assessing the “...claims [against the United States] which have not been admitted to be valid...” Class 7, of the 14 classes of claims, consisted of claims “...founded on bills of credit issued by the authority of the late Government, commonly called bills of the *old emission* [Continental Dollars]. For these Mr. Nicholson claims payment *at par*, that is, one specie dollar for every dollar in paper. The only provision hitherto made for this specie of paper is by the act of Congress of the 4th of August, 1790...” Wolcott listed over \$300,000 in Continental Dollars (face value) being claimed for payment *at par*—which accounted only for the claims being made by three people. Apparently, the default enacted August 4, 1790 was neither uncontroversial nor quietly accepted.

But why had people held onto Continental Dollars for so long? Was their hope of future redemption at better rates reasonable? Why were they now, in the early 1790s, petitioning Congress to revise the default rate set by the 1790 Funding Act? Were people laboring under some reasonable yet thwarted expectation of redemption? *The rest of the paper answers these questions and it explains why Congress had to irrevocably default on the Continental Dollar in 1790 to be consistent with its policy for funding the rest of its debt—so come to the talk and see!*

Fig. 1 The Continental Dollar, 1775-1790: Cumulative Totals Outstanding—Face Value

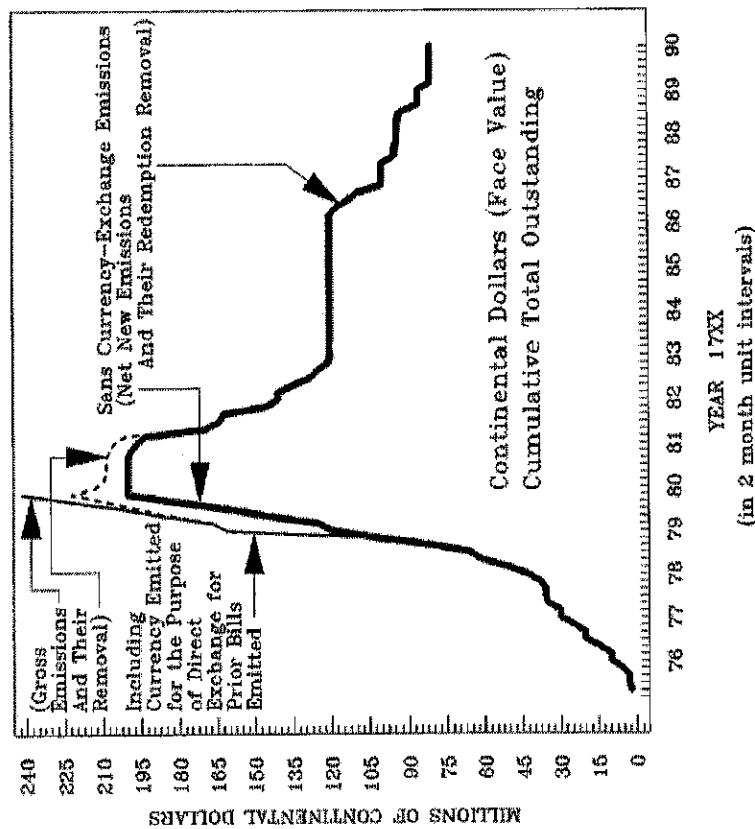


Table 1. Quota of Continental Dollars Assigned to Each State to be Redeemed

State	Quota Assigned	Quota Completed
New Hampshire	\$5,200,000	September 18, 1782
Massachusetts	29,900,000	August 31, 1782
Rhode Island	2,600,000	August 13, 1787
Connecticut	22,100,000	
New York	9,750,000	
New Jersey	11,700,000	
Pennsylvania	29,900,000	January 7, 1782
Delaware	2,210,000	
Maryland	20,540,000	
Virginia	32,500,000	
North Carolina	13,000,000	
South Carolina	15,600,000	
Georgia	[unlisted]	
	<u>\$195,000,000</u>	

Sources: Ferguson (1973, v. 1, p. 194); JCC (v. 15, p. 1150); Table 2.

Notes: The total amount of Continental Dollars that Congress thought it had emitted was \$200 million—the last emission being in November of 1779, but due to an accounting error the actual final total was \$199,990,000 (Grubb, 2007b). Presumably the unstated amount to be assigned to Georgia reflects the difference between the \$195 million listed above and the total Congress thought it had emitted.

The Economic Effects of Civil War: Evidence from Chinese National Railroads, 1906 - 1923

Dan Li (Boston University)

During the Later Qing Dynasty and so-called "Warlord Period" (1906-1923) China suffered from numerous and violent internal conflicts, or "civil wars". These conflicts are thought to have slowed the pace of economic development and, especially, growth in infrastructure. I study these alleged impacts using a new panel data set linking archival data for Chinese railroads to detailed information on civil wars. I show that conflict had negative effects on business passenger flows, operative revenue, and investment, with the latter operating primarily through Tobin's Q. These effects occurred during the same period as the conflict, but also persisted after the fighting had stopped. My findings suggest that, in the absence of internal strife, China would have experienced more rapid growth during a crucial phase of its modern economic history.

Economic History Association Session

Saturday, January 5, 2:30 p.m. at the Hilton-Pelican

Session to Honor Kenneth L. Sokoloff

Chair: Stephen Haber (Stanford)

Research on Inventive Activity and Technological Change

Robert Allen (Oxford)

Research on Early Manufacturing and Productivity

Claudia Goldin (Harvard)

Research on the Sources of Economic Growth and Development

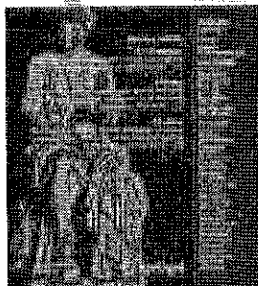
James Robinson (Harvard)

Kenneth L. Sokoloff and Cliometrics

Douglass North (Washington University, St. Louis)

New Journal

Cliometrica



Cliometrica: Journal of Historical Economics and Economic History

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Cliometrica provides a leading forum for exchange of ideas and research in all facets, in all historical periods and in all geographical locations of historical economics. The journal encourages the methodological debate, the use of economic theory in general and model building in particular, the reliance upon quantification to buttress the models with historical data, the use of the more standard historical knowledge to broaden the understanding and suggesting new avenues of research, and the use of statistical theory and econometrics to combine models with data in a single consistent explanation. The highest standards of quality are promoted. All articles will be subject to Cliometrica's peer review process. On occasion, specialised topics may be presented in a special issue.

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