SECTION II. SPEECHES & ABSTRACTS

Remarks on Cliometrics in the USSR and on a Study of NEP

by L. I. Borodkin
(Moscow University)

[Borodkin thanked the organizers for the invitation to attend, and brought greetings to the Congress from Soviet cliometricians, who are organized under the Commission on Quantitative Methods and Computers in Historical Research in the USSR Academy of Sciences, Ivan Koval'chenko, chair.]

In the Soviet Union there are two ways of referring to historians who use mathematical methods. In Leningrad they are called cliometricians and in Moscow, quantitative historians. I see that you adhere to the Leningrad line, and so will I, although I am a Muscovite.

In this brief exposition I would like to give a panorama of cliometrics in the Soviet Union and also review my recent work on the period of NEP (the New Economic Policy), the 1920s.

The first works in cliometrics were written by Ivan Koval'chenko and Valentine Ustinov in the 1960s. [The field has expanded since to about 200 cliometricians, whose work is cited in a recent bibliography of 1000 items. Although we do not have a special journal, Nauka has so far published seven biennial volumes of work by cliometricians. There is an annual conference of cliometricians organized by Moscow University, and recently there have been introduced both a textbook on mathematical methods in historical research (1984) and a course on the same subject at all 70 universities in the country (1986).]

With great attention and interest we followed the dramatic collision between cliometricians and traditional historians in the USA. In our country this collision was not striking, possibly because there were too few computers. However, we think that it is not accidental that the executive secretary of the historical sector of the Academy of Sciences was elected the leader of our cliometricians, Ivan Koval'chenko.

What are the questions that concern us? [In *economic* history: agrarian markets and agrarian and industrial development in the 19th and 20th centuries; rural-urban exchange, NEP, agrarian collectivization, etc. In *socio-political* history: peasant protest, workers' movements, bureaucratic elites in Russia/USSR, and voting behavior in the US Congress, etc. In *cultural* history: literacy in imperial Russia, medieval Russian texts and musical notation, etc. In *historical demography*: family reconstitution for 17th and 18th centuries, population growth and ethnicity, 1917-27.]

What methods do we use? We use mathematical statistics, above all multivariate analysis. However, in the last few years we have begun to use models: differential equations, Markovian chains, game theory, graph theory, fuzzy set theory.

As for fuzzy set theory, we think that it has great value for the future of our cliometrics. We have used this theory for over 10 years. However, I recall an incident connected with this theory. Eight years ago I talked at an American-Soviet symposium about our use of this theory to provide a typology of agrarian development of Russian provinces, and we said that the father of this theory was an American professor from California, Lotfi Zadeh. Our American colleagues said that they had not heard of him or of the theory. As a result, our Soviet colleagues for a long time thought that we had invented both Zadeh and his theory.

A great deal of attention has been given to collecting data bases from various parts of the country. We now have 70 data bases. At the end of this year a consortium on data bases will begin to be available for researchers.

Now, a word about my work on simulation of social mobility in the private sector of the economy in the period of NEP. The discussion in recent years about the essence of NEP, its results, and the reasons for its interruption in 1929 emerged from both political reality and from its scholarly significance. Today's situation has given rise to speculation about the value of different forms of property. These problems were a subject of tense discussions at the recent Congress of Peoples Deputies in May and June. Our distinguished economist Popov expressed the opinion at this Congress that the Soviet economy should consist of no less than 50% cooperative and private enterprise.

The source I and M. Svishchev used is tax records describing private enterprises, compiled twice a year during NEP. We have data for the most successful year of NEP, 1925. All enterprises (there were about 100,000 in the Ukraine alone) were divided into five groups, by size of labor force, with the first group comprising the smallest firms and the fifth group, the largest. This source provides a dynamic picture. In the course of the year more than one-third of the firms changed their status: they moved from one group to another or were ruined. Many new firms appeared.

The question we ask is what would have been the structure of the private sector in the first half of the 30s - that is, after NEP had been interrupted. We were particularly interested in the potential share of the fourth and fifth groups (whose share in 1925 was only 3.4%), although many anticipated rapid growth of these groups and saw in it a great danger. Using a Markov chain to simulate the composition of groups, we made the assumption of a stationary process (that is, a constant transition matrix). But since the system we studied was open, it was necessary to know the dynamics of newly established firms. We selected five scenarios of such a dynamic, which covered the diapason of possible variants.

We concluded, in particular, that for all scenarios the size of the fifth group in the first half of the 1930s could not have been larger than 4 - 5%. The results of this simulation show that the danger that the state would have lost the ability to regulate the structure of the private sector of the economy was unfounded.

In conclusion I would like to say that it was the cliometricians who, even before *perestroika*, organized the Soviet-American scholarly projects. In 1983 in the USSR and USA were published collections of articles of Soviet and American cliometricians. This year, an issue of the *Russian Review* will be devoted to the works of Soviet cliometricians and next year there will be two books: one in the USSR of papers by participants in Soviet-American symposia including papers by Carol Leonard, Richard Sutch, Roger Ransom, Alan Olmstead; and one in the US, at the invitation of Roger Ransom, a collection of translations of Soviet articles for a supplementary volume to *Research in Economic History*. I hope we can take this project further.

[Edited from a somewhat lengthier text]

INSTITUTIONAL AND CLIOMETRIC HISTORY

by Douglass C. North
(Washington University)

Like Bill Parker before me, I intend to preach about what we should be doing in cliometrics. I believe our agenda should focus on the unresolved problems of explaining historical change. We can no longer uncritically continue to derive our theoretical tools from neo-classical economics. Rather, we must break new ground, and I believe that the great frontiers of economic history are three in number. They consist of the parameters that the economists hold constant, but which must be analyzed and modelled if we are to develop further in economic history.

The first great frontier is the way in which the stock of knowledge has evolved. The stock of knowledge and how it is developed and disseminated not only has set an upper limit to human well-being but shapes the way we perceive our environment and our human inter-relationships. While good work has been done by economic historians on technology, this is really a very small piece of the total set of issues. We are concerned not only with how the stock of knowledge has grown, but with how it is distributed, how it is used, how people perceive the world around them, how they communicate. To the best of my knowledge there is very little work that economic historians have done in this direction. Don McCloskey's work on rhetoric is perhaps the lone exception of research on the way in which information and communication amongst individuals is developed, but there is much to do, and this remains perhaps the most underdeveloped frontier of them all.

The second frontier is the relationship between population and resources. I believe we are now doing good work on this subject. Not only was one of the original cliometricians, Dick Easterlin, a major contributor to demographic history and continues to be to this day, but other good work has now followed his pioneering efforts. The group on demographic history of Cambridge, England has made important contributions. So too have many of you in this room; of course my old friend Bob Fogel has I believe provided us a path-breaking contribution with his study of nutrition and mortality.

The third frontier is the way in which human beings have structured their relationships with each other, which defines and specifies the effectiveness of the societies they develop. I mean by this the study of institutions, and the contribution it can make to economic history. Institutions are the constraints that human beings impose on their own interaction, political, economic, or social, and I believe that the study of institutions can contribute to three important developments for economic historians.

The first is that institutions narrow the choice set. Almost all the models that economists employ are unnecessarily underspecified, and they are underspecified because the models usually have implicit in them specific rules, laws, property rights, norms of behavior, and methods of enforcement, which have defined the opportunity set of the players, but which are largely ignored in most economic analyses. Institutions together with the technology employed determine the total costs of engaging in economic activity, that is production plus transaction costs, and since institutions play a critical role in this aspect of economic activity, they have throughout history been a major determinant of the degree to which societies have been successful in capturing the gains from trade and realizing the potential of technology. We are just beginning to do good work in looking at the way in which institutions affect the performance of economies. As I look around the room, I see Phil Hoffman who has done excellent work in French history, Gary Libecap who has an important forthcoming study on the history of resource industries in American economic history, Lee Alston, whose contributions have looked at the political economy of the American South and most recently Jean-Laurent Rosenthal who has looked at the way the French revolution affected the institutional structure of France and the performance of her economy, particularly with respect to agriculture.

The second contribution that a study of institutions can make is to force us to recognize the way in which the past shapes the present and the future. Here the important contribution is that it makes history matter, and the reason is that institutions change incrementally. They do so because institutions are made up not only of formal rules, which can be changed overnight, but of a set of informal constraints and the way they are enforced, habits that change only very slowly. Together, therefore, the institutional framework of a society is a mix of formal and informal constraints, that change very slowly and that therefore make us, in many respects, prisoners of the past. We cannot understand the present, therefore, without a thorough understanding of the past. The choice set today is yesterday's choice set plus the incremental changes that have occurred in that institutional framework. This has fundamentally important implications for the way in which societies and economies have evolved. First, it has typically made revolutions far less revolutionary than the revolutions themselves might have portended. The reason is that while the formal rules may change overnight, the informal constraints do not, and the tension between the new formal rules and the old informal constraints produces an ongoing struggle, which typically results in revolutions, over the long haul, that are far less revolutionary than they were intended to be. The second implication is that the same rules, when imposed in different societies have different consequences, and the result is that simply imposing political rules or economic rules in another area will not produce the same results as they did in another social setting. Imposing U.S. style constitutions in third world countries or indeed even free market rules in another area of the world will not produce results like the United States' experience.

The third contribution that a study of institutions can make is to teach us something about path dependence. Path dependence has become a major subject of study, in part because of the pioneering work of Brian Arthur and Paul David. While both have focused on path dependence in terms of an analogy with technological change and increasing returns, I view path dependence somewhat differently and indeed regard it as operating in a somewhat different fashion than either Brian or Paul has described. I think that path dependence is a function of the way in which incentives change in a society. Now, since it is institutions that define the opportunity set, they in turn are responsible for creating the opportunities that are seized upon by political and economic entrepreneurs, who in turn create organizations and develop firms, trade unions, and other forms of organization to maximize opportunities, given an initial institutional framework of incentives. But they do more than that. In the course of developing organizations and promoting their own maximizing activities, learning by doing and the development of skills will lead them to modify the institutional framework. Therefore, the very process of attempting to achieve the objectives set out by the institutional framework will lead organizations either directly to alter the rules of the game or indirectly to alter the informal constraints gradually. As a result, I believe that path dependence is the ongoing process by which an initial institutional framework creates opportunities which then lead political and economic entrepreneurs, in the course of developing possibilities for maximizing their objectives, to alter that institutional framework. This feedback from institutions to organizations that in turn modifies the institutional framework is, I believe, the heart of what path dependence is about, but we still know very little about this very important subject. Whether path dependence looks like the technological story that Paul David has been telling, or like the incremental process of institutional change that I am describing, it is less important than that we continue to strive to understand the way by which societies evolve incrementally, in radically divergent directions. Despite the implications of economic theory and international trade models which would have us view history over the last two or three thousand years as a convergent process, we observe most clearly persistent divergence and different rates of performance of societies and economies. Understanding this divergence is a basic challenge to economic history.

Let me conclude with one final bit of preaching. I think what has given Bill Parker and me the satisfaction we have derived over the past 40 years of doing research in economic history has been the continuous efforts we have made to widen and develop the frontiers and the stock of our understanding of economic history. That means that while most of our time has been spent on specific research that has been both precise and focussed, we have had in mind the big issues, and it is this that has made ongoing research such a satisfaction.

In short and in conclusion, let me give you one piece of advice: in your research, think big.

The Financial Market and Government Debt Policy in France, 1750-1793

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There exists a vast historical literature debating the financial policies of the last years of the Ancien Regime and the early years of the Revolution. It is rich with institutional detail, biographical insights, and political judgments. It is virtually devoid of any systematic consideration of the interaction between those policies and the financial market which constrained them. It is also largely non-quantitative. We propose to reevaluate government policy in light of new data on the financial market.

We have assembled data on the market prices of a variety of government and quasi-government assets from 1750 to 1793. The market is the Paris Bourse; the data sources are newspaper summaries of market activity. Our base sample consists of weekly observations.

The implied market interest rates on long-term (perpetual) French government bonds were high in comparison with British consols. They were near 5% before the Seven Years' War, and always above 5% for the rest of the century. The paper considers in detail the movements of this series during the economic and political turmoil of the period.

We can also observe market prices for other assets, notably life annuities and lottery tickets. These can be compared with the government asking prices at the time of issue and with the market returns on long-term bonds. Government asking prices implied high potential rates of return to life annuities and modest returns on lottery chances. By and large the market prices were close to the goverment asking prices for both assets. Government pricing policy was therefore not incompetent in the sense of charging prices different from what the market would bear, in contrast to what many previous authors have suggested. There remains the dual puzzle of why the market demanded such a high return for life annuities, and why the government borrowed so heavily in such an expensive instrument. We offer some speculative explanations based on a closer inspection of the life annuity market.

STRUCTURE AND PERFORMANCE OF TWO EARLY 20TH CENTURY CHINESE VILLAGE ECONOMIES: A SOCIAL NETWORK APPROACH

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Much of China's early twentieth century history has been written with an eye to the political and social foment in evidence during this period. What with the success of the revolution and founding of the Republic in 1911, the "warlord era" of the 1910s and 20s, the Japanese invasion and war in 1937-1945, and through it all, the conflict between domestic Communist and Nationalist factions finally culminating in the 1949 founding of the People's Republic of China, there are plenty of stories to tell. As a consequence, economic history of this period has taken a back seat to political and social history.

In recent years it has been our goal to establish an empirical foundation on which to rest an analysis of the character and performance of China's early twentieth century economy. Yet we have faced difficulties linking our economic story with the political one usually told. What we try to suggest in this paper is that a story of increasing commercialisation, the rise of a competitive economy, and concomitant increase in realised trade gains has more relevance to the political conflagrations than might appear. Commercialisation's effect on China's rural sector was to provide increased opportunities for production and occupational specialization. This, in turn, allowed some individuals to receive increased gains from trade while it also dealt others a more economically-adverse blow.

As powerful as stories of redistributed trade gains and technologically-induced changes in factors' marginal productivities are for explaining political and social uprisings, however, they do not give the whole picture. When has anyone ever acted on the basis of perfect information? What we suggest in this paper is that people's political actions may also be motivated by perceptions of the entire economic process promoted by their individual positions within the economy. That is, to the extent people assume economic occupations and lives increasingly distinct from one another, they are bound to nuture different perspectives and attitudes towards the larger process in which they are engaged (and which they only know imperfectly). Beliefs in the "rightness" or "fairness" of a system almost certainly play a role in people's decisions to act. We suggest a quantitative technique for exploring from whence those beliefs might come.

EUROPE IN THE AFRICAN MIRROR: THE SLAVE TRADE AND THE RISE OF FEUDALISM

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The massive slave trade of the African diaspora is a puzzle. The heavy losses in the capture and transportation of the slaves suggest that slave exports should have been less profitable than local use, and slave capture less profitable than exploitation through tribute; nor are these difficulties adequately resolved by differences in real wages (which would have generated voluntary emigration from Africa as from Europe or Asia) or in relative rates of exploitation (which trace involuntary migration to market failures).

The present paper develops a simple model of international trade that focuses on relative transport costs as well as relative productivities. It readily shows how a trade deficit in luxuries can set in motion a Pareto-stable slave export flow, with the attendant political fragmentation and endemic strife, even though real wages may be higher locally than abroad.

On a global scale, this model can account for the geographic non-congruity of voluntary and involuntary migrations. Applied specifically to Africa, it can account for slave exports and petty warfare together, without needing to assume the latter to explain the former.

This model also seems congruent with the familiar slave flows of Europe's past, from the pre-historic trade to the Aegean to the later medieval trade in Slavs; but that is not all. The present model provides an explanation of the collapse of the barbarian kingdoms in the post-Roman West superior to those now current in the literature: Dark Age Western Europe displayed all the causes and consequences of the internal capture of slaves for export, and direct evidence of such slaving is in fact readily available.

THE SPANISH ECONOMY DURING THE FIRST WORLD WAR: A NEW APPROACH

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Traditionally, the period of the First World War has been recognized in Spain as one of great economic growth, specially for the industrial sector. The aim of this paper is to offer a new approach to the subject (and) some new estimates. To do so, we integrate the different pieces of information into a model where "rational-maximizing" agents and market equilibrium are assumed.

We can summarize the main points of the paper as follows. Our new estimates of the Spanish GDP show a remarkable real increase during the WWI that stands in agreement with previously used qualitative information but corrects former quantitative estimates.

Nevertheless, the WWI can be credited as the origin of this growth only in a very indirect way. Far from the simplistic idea that the WWI opened to the Spanish economy big opportunities for very profitable external transactions, its main impact was a change in relative prices and a wide inflation brought about by an accommodating monetary policy. Rises in production and the rate of saving resulted from the reduction in real wages and the redistribution of income and wealth that had been provoked by those impacts. Large trade surpluses were then obtained even though the term of trade worsened off for Spain.

Lastly, the kind of external assets in which these surpluses were saved did not provide a good refuge against the war and postwar inflations. Then, the war benefits flattened in real terms and a good portion of the productive and saving efforts of the Spanish economy flew export to finance the war.

HOW THE ARGENTINE ECONOMY PERFORMED DURING
THE INTERNATIONAL GOLD STANDARD: A REEXAMINATION

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ABSTRACT

Based on a new data set at hand, the paper shows that currency substitution was already an economic phenomenon for the Argentine small open economy during the international gold-standard (1880-1913). This is a crucial finding because, if currency substitution prevailed, then the notion that Argentina, by abandoning the fixed exchange rate regime, could manage an independent monetary policy to insulate the level of economic activity from shocks arising from the rest of the world should be qualified if not dismissed. The empirical results indicate that, in the medium-run, domestic attempts to inflate (or deflate) the economy were mainly reflected in changes in the foreign exchange rate. The unclear design of the government debt policies plus an obscure definition of the role played by the banks of issue had clear costs in terms of lost domestic output. The financial collapse and the failure to establish a credible monetary standard may have accounted for a loss of up to 3% of domestic real output by standard efficiency cost measures. The evidence marshalled in the paper suggests that the 1890-1891 financial collapse -known as the Baring crisis- had its roots in the design of inconsistent domestic monetary and fiscal policies. The enduring controversy among the monetarist-fiscalist interpretation of the crisis which emphasized the disruptive effect that sustained budget deficits had on money and capital markets and, the challenging approach, "the Balance of Payments School" which held the view that a sudden international credit tightening gave first rise to exchange rate depreciation causing the balance of payments collapse, is basically settled. The currency substitution phenomenon provide a rationale to bridge the fiscal origins of the crisis with the balance of payments collapse.

ON THE ACCURACY OF HISTORICAL INTERNATIONAL FOREIGN TRADE STATISTICS. MORGENSTERN REVISITED

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Comparing statistics of two countries one can often find that for both total trade figures and individual commodities the quantity stated as having been exported by one country to another does not tally with the data of the importing country. This fact has been noticed even in very recent international foreign trade compilations. Many authors have considered it as a proof of unreliability of the whole set of foreign trade statistics.

In this work we will argue that this inference is not necessarily correct. Pairwise comparison between countries really tests only the geographical assignment, which could be faulty because of causes of divergence that do not affect the overall data. These errors would cancel each other out in total trade figures and therefore the aggregate data could be accurate and reliable.

We will support this statement with a simple test of accuracy based on a comparison between the total value of imports or exports (according to each country's statistics) with the sum of the same trade flows as registered by the partner countries' statistics. We will use the same data base employed by Morgenstern, for the years 1909-13, 1928 and 1935. The results considerably strengthen the shaken trust in the reliability of data: values of our index are already rather good in 1909-13 and they show a further improvement after the war. The test proves a certain continuity in the reliability of data and that an important part of their dispersion is due to c.i.f. - f.o.b. differences because of trade flows composition.

As a necessary introduction to the test, in the first part of the paper we consider the actual degree of comparability of data, which depends mainly on the similarity of compilation criteria among countries.

A COUNTERFACTUAL ANALYSIS OF THE 1982 DEBT CRISIS: THE CASE OF BRAZIL

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This paper analyses the causes of the 1982 debt crisis for the largest LDC debtor, Brazil. Brazil is an important case study for several reasons: (1) it is a resource-rich country and was considered a model of successful development in the 1970s; (2) it did not suffer from political instability or significant capital flight; and (3) even a partial default by Brazil would trigger a major reassessment of the entire LDC debt situation, as did the Brazil moratorium of 1987-88.

This paper uses an historical, counterfactual simulation approach which predicts Brazil's probability of repayment difficulties given forecasts of key exogenous variables. These variables include Brazilian and OECD GDP, real exchange rates, and outstanding debt. The forecasts used are ex ante expectations of the future path of the world economy, derived from IMF publications from the period. Predictions of repayments difficulties are generated using an econometric model of Brazil's balance-of-payments. This approach is immune from the charge of perfect hindsight and allows for dynamic, interaction effects between exogenous shocks, the level of debt, and the possibility of a repayments crisis.

The siumulation results demonstrate that by 1978 Brazil's debt service ability was quite precarious. Internally, the country was reaching the limits of its ability both meet its debt service payments while continuing to experience economic growth. Externally, private banks were approaching lending limits to Brazil. The path between a payments crisis and excessive bank exposure was a narrow one. Any significant adverse external development was likely to cause serious difficulties for Brazil, its creditors, or both.

Simulations run beginning in 1981 show that the second oil shock of 1979 was serious enough, without other shocks, to make a debt crisis highly probable. Without significant and painful adjustment, Brazil would have faced debt service ratios upwards of 70%, and these levels would have continued for several years. On the lending side, large U.S. banks' exposure in Brazil would have escalated dramatically, making a cutback in lending likely. I estimate that, without additional external liquidity, Brazil would have had to undertake adjustment policies resulting in a 21% decline from trend in Brazilian income. Adjustment of this magnitude was unlikely to be undertaken in the world of unenforceable claims which characterizes sovereign lending.

THE FIRST FEDERAL GOVERNMENT CONSUMER GUARANTEES: 1891 MEAT INSPECTION

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In the relatively short period between 1887 and 1891, the legislative basis was established for major intervention by the Federal Government in the American economy: The Interstate Commerce Act of 1887, the Sherman Act of 1890, and the Meat Inspection Acts of 1890 and 1891. Representing a significant break from what had been considered an appropriate role for the Federal Government in the past, these laws provided for a new and permanent regulatory mandate for the government.

Although these laws are considered fundamental outcomes of populist/progressive era legislative efforts, their origins are not well understood. Federal Government quality inspection guarantees for consumers is a case in point. To begin, even though emphasis in the literature is placed on the 1906 Meat Inspection Act and Pure Food and Drug Acts, the initial Meat Inspection Acts came 16 years earlier. Further, the 1890 and 1891 Meat Inspection laws and the Sherman Act were drafted by the same Senate Committee. This raises the question of what the link was between meat inspection and antitrust? Understanding this connection will better explain the motives behind the first federal consumer quality guarantees and the Sherman Act.

The 1890 Act was designed to promote U.S. livestock and meat exports that were subjected to foreign restrictions due to allegations of disease. The charges were contested and appeared to have been a pretense to protect local European producers. Both the timing of the 1890 law and its impact are unclear. The first question is why it was not enacted in 1881, when all meat and livestock exports fell. The legislation was not considered in Congress until 1888. Because there is no obvious relationship between export patterns and the enactment of the legislation, the second question is what did the law do?

But if there are questions regarding the 1890 export inspection law, the timing and content of the 1891 act are even more puzzling. The 1891 Act called on the Secretary of Agriculture to inspect livestock prior to slaughter in the interstate and export trade to certify that the meat was fit for human consumption. In Congressional debate references were made to livestock diseases; the inability of consumers to distinguish pure from diseased meat; and an "outcry" for pure food. Nevertheless, there is no documented record of a health crisis associated with the consumption of tainted or diseased meat. Further, there is no evidence of demand by consumers for Congress to intervene as a third party to guarantee meat product quality. The incidence of the various livestock diseases of concern had been and continued to be very limited in the U.S. Finally, the 1891 law preceeded the dramatic, though unsubstantiated allegations of unwholesome meat made in the 1898 'embalmed beef' scandal and by Upton Sinclair in The Jungle in 1906. Curiously, the 1890 and 1891 meat inspection acts and the Sherman Antitrust Act were drafted by the same Senate Committee. The committee was not interested in livestock diseases, but was established to investigate the practices of the large Chicago packers and railroads as causes of depressed cattle prices. Nominal and real U.S. cattle prices fell by 33 percent in nominal terms and by 24 percent in real terms between 1884 and 1890.

The questions, then are, what was the relationship among cattle prices, antitrust, livestock disease, consumer information, and the Chicago packers, and how did these issues lead to federal government intervention as a guarantor of meat meat quality for consumers for the first time in 1891?

The paper outlines conceptual issues underlying the demand for government or third party provision of consumer information and quality guarantees. It places those issues into the context of the meat industry in the late nineteenth century. It examines the nature of the livestock industry and contageous diseases in the 1880s to determine the basis for the charges of diseased meat. Then it addresses changes in the structure of the meat packing industry and how they were tied to the timing and content of federal meat quality guarantees.

THE COMPETITION FOR THE BRITISH TIMBER MARKET, 1850 - 1895

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The British market for wood is examined in the period following the adoption of Free Trade with attention to the changing composition of its sources of supply. The standard account is that, with the removal of the timber duties, more advantageously located and lower cost producers in the Baltic region pushed Canada out of the British market. This explanation sits awkwardly with the facts, at least for the period after 1851.

In this paper British import data and price statistics are assembled to review the devlopment of the timber market in the latter half of the nineteenth century. A model of the market is developed wherein the price of timber is shown to be exogenously determined by conditions in the United States. Canada forms a key link between the North American and British markets and variations in Canadian exports to Britain are determined by shifts in British demand and shifts in the Baltic supply of timber. The Canadian presence in the market makes the supply of timber perfectly elastic at the U.S. price, adjusted for transport costs. In this scheme of things Canada was not so much pushed out of the British market for timber but withdrew to serve the U.S. market, drawing in supplies from the Baltic to fill the place it had vacated.

Changing French Trade Conditions, National Welfare, and the 1860 Anglo-French Treaty of Commerce

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ABSTRACT

Did France benefit from the passage of the 1860 Anglo-French Treaty of Commerce? What accounts for Napoleon III's success in promoting a trade policy so at odds with the nineteenth century French tradition of prohibition and protection? I estimate a system of import and export equations as a first step towards a comprehensive economic analysis of the 1860 treaty. I suggest that real changes in France's position in world trade increased the potential benefits of lower tariffs and raised the costs of maintaining widespread prohibitions. As France's relative position as the dominant continental industrial power was rapidly eroded by industrialization and economic growth in neighboring countries the demand for French products became more elastic over time. This would have increased the pressure for free trade and helped to sustain the Emperor's initiative.

Elasticity calculations are not used to establish an exact optimal tariff but instead allow us to focus on changes in the price elasticity of export demand. The quantitative evidence clearly suggests that France -- unlike Britain -- clearly benefitted from tariff reform even in the short-run. This is consistent with work in French political history that stresses the stability of competing interest groups in the mid-nineteenth century since it increases the probability that the gains from improved trade were recognizeable and decisive in the fight over commercial policy.

THE EVOLUTION OF PLANT SIZE IN CANADIAN MANUFACTURING AND CANADIAN MANUFACTURING GROWTH, 1870 - 1910

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For the first time, Canadian census data are exploited to determine the average plant size in Canadian manufacturing by major manufacturing sectors and sub-sectors for the 1870-1910 period and to assess the hypothesis that firm size contributed to intensive manufacturing growth in Canada in this period. Average plant size is found to have increased most significantly from 1870 to 1900, an era of stagnant labor productivity growth. On the other hand, plant size changed relatively little over the 1900-1910 period, a period of substantial labor productivity growth. Therefore, no clear direct causal link is found to exist between the growth in plant size and the growth in labor productivity. Moreover, estimates in this paper indicate that most workers were employed in the relatively large plants throughout the period under investigation. Finally, I find that the growth of plant size in Canada and the United States differed such that by 1910 average plant size in Canada was much greater than that in America. Apart from this, the evidence in this paper suggests that plant size in Canada increased irrespective of changes in labor productivity, whereas in the United States plant size increased with increases in labor productivity.

REPUTATION BUILDING AND OPTIMAL COINAGE DEPRECIATION IN EARLY 19TH CENTURY SPAIN (1599 - 1650)

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ALBION COLLEGE

Spain was the most feared power in Early Modern Europe. Its Habsburg rulers spent most of the sixteenth and seventeenth centuries fighting ruinously expensive wars to defend a farflung, disconnected empire. They financed the wars in many ways, including depreciating its copper coinage's unit of account repeatedly in the early seventeenth century, causing its commodity value to fall. Gold coinage was depreciated less often. The period's only silver depreciation, in 1642, was rescinded after three months. Did these apparently inconsistent policies make sense?

I use a simple model to argue that the Spanish Crown's concern about its gold and silver coins' reputations were usually enough to prevent fiscally expedient depreciation. Normally, sovereigns preferred the long run reputational returns from producing stable coinage to the short run gains from settling debts in depreciated coinage. In wartime, sovereigns' spending needs and discount rates increased, making depreciation more attractive. The Spanish Crown depreciated token copper coins after decades of warfare, increased taxes and borrowing, and debt default. The Crown depreciated gold coins in response to the metal's increasing market value, not wartime necessity. The depreciations ratified market events and did not drive away demand for Spanish coins. Gold or silver depreciation for fiscal needs was unprofitable. Those coins circulated internationally in a competitive market, while domestic copper coins effectively enjoyed a monopoly. Spain had a big bullion coinage business to protect, as my archival data of mint outputs indicate. The Crown acted to preserve its silver coins' reputation by eliminating an invasion of Peruvian counterfeits.

THE ABOLITION OF SEIGNEURIAL TENURE: WHY 1854?

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The abolition of seigneurial tenure in what is now Quebec in 1854 provides a unique case study for economic historians interested in the process of institutional change. Our purpose is to shed light on two rather straightforward questions. First, given that voluntary commutation had been unheard of outside of urban areas, why is the system forcibly terminated after 1854? Second, why does the government step in with significant financial aid to achieve commutation?

One could attempt to explain the timing of commutation with reference to the increased costs of this feudal remnant as economic development occurred, and justify the government financial role as a legitimate expenditure to overcome the negative externality associated with seigneurial tenure. The bourgeoisie would be the likely source of the pressure for change. In the Canadian context, abolition is often presented as a victory for an English middle class pursuing more than economic motives over a French Canadian agricultural population which wished to retain the system.

This line of argument can be criticized on four grounds. First, the negative effects of seigneurial tenure on the economy appear to have been exaggerated. Second, at the end, it is the censitaires wielding the most political influence when the final decisions on commutation are taken. Third, the agricultural interests appear to have benefitted at the expense of urban interests in 1854. Fourth, the agricultural interests themselves had good reasons to wish the system removed at mid-century.

Commutation should be viewed as a political act. It reflected a changing political configuration after 1840 whereby the agricultural interests were able to take advantage of the long-standing English opposition to seigneurial to obtain a financial transfer. While we are right to hail commutation as efficiency-enhancing, we should not automatically believe that this is why it happened.

BLACK STRIKEBREAKING AND THE ORIGINS OF THE AMERICAN LABOR MOVEMENT

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How extensive was the use of black workers to break strikes before 1930? Was there a racial component to the phenomena? Or were blacks just among the many driven by labor market conditions and unemployment to find employment during labor disputes?

To answer these questions, and others, I have extensively surveyed the secondary literature to collect data on the incidence of black strikebreaking between the Civil War and 1929. The results are used to generate some stylized facts about how widespread the practice was and where, when and why it happened. This is my first report on this work.

In general, I find that blacks did gain a foothold in certain northern industries as strikebreakers. Often these strikebreakers were recruited from the South in large numbers, but they were recruited from northern labor markets as well. Sometimes they were misled by false advertisement that failed to mention a strike in progress, but often they were fully aware of the situation and viewed strikebreaking as an opportunity to take better paying jobs from discriminating white union members. The extent of black strikebreaking was negligible compared to the total number of strikes. But while there is no way of knowing the proportion blacks were of all strikebreakers, regressions suggest they responded to general labor market conditions and were substitutes for immigrant strikebreakers.

WHAT EXPLAINS WAGE GAPS BETWEEN FARM AND CITY? EXPLORING THE TODARO MODEL WITH AMERICAN EVIDENCE, 1890 - 1941

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Wage gaps between farm and city are one of the most pervasive aspects of modern economic growth, and they are not simply an institutional peculiarity of newly industrializing Third World countries since they seem to have been even bigger among 19th and 20th century western nations. Indeed, in the 1890s, real farm wages were about 70 percent of real unskilled city wages in America. In the 1920s they had fallen to about 60 percent of real unskilled city wages, while in the late 1930s the figure was about 45 percent. What accounts for these large wage gaps and their increase over time? This paper answers this question by exploiting the Todaro model, a paradigm whose intellectual tradition originates with American interwar experience but which has until now been used principally to explain wage gaps in the Third World. A partial general disequilibrium version allows us to sort out the "push" and "pull" forces accounting for both the wage gap and farm emigration over the period. Large wage distortions remain, but the model is successful. The analysis has important implications for the way macroeconomic historians should view the process whereby unemployment is generated in response to labor market shocks.

ONE MARKET OR MANY? QUANTITATIVE EVIDENCE OF LABOR MARKET INTEGRATION, 1870 - 1898

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It is widely believed that the completion of national rail and telegraph networks in the late nineteenth century made possible the emergence of a national economy in the United States. Although there is an extensive literature tracing the emergence in this period of a national capital market, the history of the emergence of a national labor market has been largely neglected by economic historians. This paper seeks to add to our knowledge about the history of labor market integration through an examination of previously unexploited wage and price data from twelve major U. S. cities and covering twenty three occupations from 1870 to 1898. It finds that, in contrast to the increasing integration perceived in other markets at this time, there was little improvement in labor market integration. Instead, real wage differentials of twenty to twenty five percent persisted between eastern and midwestern cities, while differentials of ten to twenty percent were common between cities within these two regions. Measurements of real wages are subject to a variety of biases, of course, but neither these biases nor the direct costs of movement between locations seems capable of accounting for the observed pattern of real wage variation. It thus appears justified to interpret these differentials as an indication of the persistence of substantial inter-city differences in labor scarcity. The persistence of these differences in the face of the exceptionally rapid rate of population growth in the high-wage midwestern cities suggests, however, that they were as much the result of large geographic variations in the rate of growth of labor demand during the late nineteenth century as they were of imperfections in the labor market.

AN ECONOMETRIC MODEL OF SEASONAL LABOUR MIGRATIONS BETWEEN AGRICULTURE AND INDUSTRY (FRANCE 1869)

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In the 1860's in France, firms often shut down in summer. The hypothesis tested in this paper is that this phenomenon may be partially explained by workers'mobility between agriculture and industry during summer. Labour supply is modeled as an arbitrage by agents between the two types of work, and as a reaction by firms against the quits of their workers. The latter will set higher wages in summer depending on their adjustment costs on other production inputs.

The model is estimated by alternative methods. Non linear least squares and non linear Probit, because the observed variable for shutting down is qualitative. The data come mainly from the Industrial Census of 1860. The results confirm the importance of wage effects and firms'productions conditions, and the study allows to measure the own and crossed wage elasticities of labour supply to the industrial sector.

WAGE FLEXIBILITY AND LABOR-MARKET ADJUSTMENTS IN THE CONTRACTION OF 1893: THE CASE OF CINCINNATI

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During the contractionary year of 1893, a majority of manufacturing workers in Cincinnati received a reduction in days worked compared with 1892, but only a small minority (22 percent) experienced a cut in money wages, suggesting that even at this early date the quantity of labor employed responded much more flexibly than wages at the beginning of an economic downturn. Establishment-level survey data collected by the Ohio State Bureau of Labor Statistics provide a valuable source for examining cross-section patterns in wage flexibility. I estimate probit models of the probability of a wage cut to see how wage flexibility varied with the sex of the worker and characteristics of the establishment and industry. Perhaps the most interesting result is that female workers were much less likely to receive a wage cut than were males. This difference seems to spring from the pattern of employment of women across industries and establishments rather than from a significant difference between the sexes within any given establishment that employed both men and women.

INTERNAL LABOUR MARKETS AT THE CANADIAN PACIFIC RAILWAY?

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This paper analyses a sample of CPR employee records to determine which features of internal labour markets existed, or developed, over the period 1900-39. For the post-war period, there is quite strong evidence that an internal labour market was in place. Seniority reduced the risk of layoff, and workers employed for more than a few years typically stayed with the CPR for most of their working life. Wage rates and job categories were clearly linked, so that all workers of a given grade received the same wage. However, some important characteristics of internal labour markets are never apparent. There was little training within the firm, and it was always possible to be hired directly into skilled positions, although the latter feature was more common before 1914. Possibilities for promotions or raises were so limited that adult age wage profiles were horizontal - only for teenagers did wages rise with age. The difference between pre and post World War I labour markets is very clear. Quit rates drop dramatically in 1921 and stay low thereafter, while layoff rates are higher throughout the interwar period than in the years to 1920.

THE "PROBLEM OF OLD AGE" IN AMERICA: OLDER MEN, RETIREMENT, AND THE INDUSTRIAL SCRAP HEAP

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Between 1900 and the introduction of Social Security, retirement rates of older males stagnated. This is perplexing since historians generally argue that opportunities for older workers were disappearing in this period. Using logit regressions, I examine the retirement decision of over 4000 older urban males in 1910. Among the determinants of labor force participation assessed are individual, family, and ethnic characteristics, the availability of Civil War pensions, and demographic and economic characteristics of the local labor market. I conclude that certain features of industrialization did decrease the employability of the elderly, especially the decreased viability of self-employment among the elderly. However, the shortening of the workweek encouraged older workers to keep working, counteracting the forces which pushed them into retirement.

DID THE GREAT IRISH FAMINE MATTER?

Kevin O'Rourke, Harvard University

This paper examines the thesis that the Irish Famine of 1846-1850 was irrelevant insofar as long run population movements in Ireland in the second half of the nineteenth century were concerned. Specifically, it has been argued by Raymond Crotty and others that international price movements would have led to rural depopulation in Ireland even if the Famine had not occurred. The logic behind this is that since after the mid-1850's agricultural relative prices were moving in favour of animal and dairy products and against tillage, there would have been a switch away from labour intensive tillage towards land intensive pasture, leading farmers to shed labour.

This hypothesis is tested by constructing a computational general equilibrium model of the Irish agricultural economy as it stood on the eve of the Famine. The model is subjected to the international price shocks that in fact took place between 1845 and 1876. The surprising finding is that these price shocks would have increased employment rather than reduced it. This is due to two facts: first, since cows and pigs ate potatoes in large amounts, an increase in pasture would have called forth an increase in labour-intensive potato growing. Second, although relative prices were moving against corn in this period, in absolute terms all farm prices were advancing; since wages were stuck at subsistence levels, farmers would have switched to more labour intensive techniques of production.

THE POLITICAL ECONOMY OF INTERNATIONAL MIGRATION 1815 - 1914

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Why was the century before the outbreak of the First World War a period of relatively free, even subsidised, international migration? This paper attempts to answer the question in terms of the demand for and the supply of policies; which groups benefitted from or were harmed by migration, and who was in a position to do something about it. In closed economies identifying those groups is a fairly simple matter, given the domination of government by owners of one factor of production. However in an equilibrium of an international economy with incomplete specialisation, conclusions derived under autarky also require sector-specific labour and non-traded goods sectors. Otherwise factor price equalisation implies that in equilibrium neither workers nor land owners nor capitalists can improve their wellbeing by subsidising, taxing, prohibiting or placing quotas on migration unless matching changes in trade policy are implemented.
Since factor prices are "sticky", they adjust only with a lag to exogenous shocks to the economy, the international economy is and was likely to have been out of full equilibrium for considerable periods. Whenever such a shock occurred; the abolition of slavery, reductions in transport costs, trade depressions or wars, a signal was sent for a migration policy reaction. In view of the Civil War and deep recessions, it is therefore at first sight surprising that the United States remained almost completely open to European immigration until 1921. The explanation is that unions could not wholeheartedly lobby for protection during depressions since they tended to be dominated by foreign born workers , that they would have had to raise tariffs at the same time to achieve a permanent gain in income, that the interests of agrarian mid-Western states ran counter to those of industrial workers and that immigrant labour in aggregate probably did not lower but may have actually raised the marginal productivity of the average domestic employee.

SOCIAL HISTORY AND AGRICULTURAL PRODUCTIVITY IN FRANCE

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This paper argues that evidence from leases, when properly adjusted for the change in product prices and the cost of the factors of production, sheds light on the productivity of agriculture in Old-Regime France. To justify such a use of leases, the paper examines other sources of evidence about agricultural productivity and addresses a number of issues of interest to social historians: the existence of labor markets, the variability of product prices, and the nature of the land rental market. The paper looks at a sample of over five hundred leases from the Paris region and concludes that although agriculture stagnated under the Old Regime limited growth was possible on farms near Paris when the city was growing rapidly. The growth of productivity near Paris reflected specialization in response to a growing market.

LABOUR PRODUCTIVITY IN MEDIEVAL AGRICULTURE. THE CASE OF TUSCANY AND THE LOW COUNTRIES

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A method is developed and applied which uses data on changes in occupational structure, income distribution and net agrarian trade to deduce changes in per capita output in the agrarian sector of two regions.

It is possible to infer changes in labour productivity in agriculture from changes in the occupational structure. Consider an economy large enough to be closed and neglect - for simplicity in exposition only - changes in income distribution. Assume, furthermore, a stable 'Engel law' type consumption function (i.e.diminishing average propensity to consume agrarian goods as income grows). Under these conditions an increase in the relative size of the non-agrarian labour force can be uniquely attributed to an increase in agrarian labour productivity. The mechanism at work is that an increase in per capita income changes the composition of demand away from agrarian products which will affect the occupational distribution away from agrarian occupations. Observed changes in the occupational distribution can therefore be used for deducing changes in per capita income (output).

In chapter 4 of my **Preindustrial Economic Growth.Social Organization and Technological Progress in Europe (Oxford:Blackwell)** I suggest a method for productivity measurements along these lines although changes in income distribution are also controlled for. Applying the method using stylized facts for Europe in the period AD 1100 to 1300 yielded annual labour productivity growth rates around 0.1-0.2 percent.

But Europe was unevenly developed in this period with advanced as well as backward areas. The most advanced regions had a very high proportion of the population in the non-agrarian sector, high population densities but few signs of Malthusian distress. Agricultural methods were exhibiting signs of technological sophistication; there was an increasingly diversified supply of agrarian and non-agrarian goods. A resource in scarce supply such as land was put to an extremely intensive use and hours per labourer were probably increasing. Industrial plants were grown on an extended scale but these regions were to some extent dependent on supply of food from other regions to feed their large urban populations. To get a plausible estimate of labour productivity in the most advanced regions we thus have to control for changes in import of agrarian products. An accounting method which incorporates this property of the most advanced areas will be applied to two important continental regions: Northern France and the Low Countries and Tuscany. The results from these calculations will be discussed in relation to the general characteristics of the European medieval economy.

HOW FAR CAN WE GO? MEASURING AND EXPLAINING PORTUGUESE ECONOMIC GROWTH

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This paper presents new evidence on Portuguese economic growth, based on estimates for indexes of agricultural and industrial output, as well as some attempts at measuring labour productivity trends.

Portugal will appear as a country where economic growth was not absent during the 1850-1913 period but where the fundamental structural changes did not take place. Some hypotheses aimed at better understanding Portugal's persistent degree of backwardness throughout the period will be discussed. From international comparisons it will be shown that a particular feature of Portuguese economy was its low degree of opening to international trade. It will be argued that a sluggish international sector was an important obstacle to overcoming the trap of poverty in Portugal, a small, low income and low labour productivity Country.

The paper includes a broad overview of Portuguese economy's historiography on backwardness; the presentation of growth patterns of output and output per worker in Portugal; and a discussion of the origins and effects of the low degree of Portuguese economic international integration.

ELECTRICITY AND ECONOMIC GROWTH. A VIEW FROM SPAIN

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The introduction of electricity and its rapid diffusion have been identified as one of the main causes of the economic growth of industrial economics in the first third of the XXth century. Electricity meant a larger supply of primary energy, allowed for a more flexible and efficient use of production inputs and induced the creation of new products and industries. Under appropriate circumstances, this new energetical option also led to a general decrease of the cost of energy and the increase of total factor productivity. In this paper I analyze the process of electrification in Spain, and try to explain why it did not play this expected beneficial role in full. An explanation is especially needed, because Spain was since the beginning of the XIXth century a first comer whose initial industrialization suffered from poor energy resources, but at the end of the century had a good early start in electricity. It was also endowed with a rich hidroelectrical potential, being thus in a position to eliminate the energy restriction. Nevertheless, while en 1920 electricity was already the dominant source of industrial motive power in the US economy, it represented under 25 per cent in Spanish manufacturing establishements. Unlike in the US, labour productivity in Spain did not depart significantly from its levels of 1900 until the 1960´s, while consumption of energy por unit of GNP was steadily increasing. I argue that the monopoly power of the electrical companies was practically unchecked by any state regulatory activities, and that this led to the implementation of a price discrimination policy based on demand charge rate structures resulting in high prices of electricity. While the ratio between the price of coal and the price of electricity grew by 500 per cent in the US between 1913 and 1929, it only grew by 70 per cent in Spain, and only by 10 per cent en the Basque Country, where heavy industry was located and comsumption per capita was higher. These high prices slowed down the adoption of electricity and the improvements in factory organization that went with it,in an industrial economy where major industries were rather effective in protecting their oligopolistic markets, and thus lacked incentives to innovate.

ECONOMIC GROWTH IN THE 20th CENTURY

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This paper presents growth accounts for 32 countries for the period 1900-87. It covers 16 OECD countries, 9 Asian countries, 6 Latin American countries and the USSR.

Aggregate GDP of these countries grew at 3% a year over the 20th century; per capita GDP 1.7%. The range of per capita growth lay between 3.1 for Japan and 0.1 for Bangladesh.

Over this period there was convergence of real per capita income in the 16 OECD countries and in Latin America, but wide divergence in Asia where the initial range was 2:1 but is now 13:1 between Taiwan and Bangladesh (the poorest of all 32 countries).

The USA has clearly been the productivity leader throughout this century. The evidence suggests fairly steady technical progress at the frontier until the 1970s, when US productivity growth began to falter.

Fastest long-term GDP growth occurred in Latin America taken as a group; fastest per capita growth in OECD countries and USSR. Asian countries grew most slowly over the century, but had an enormous acceleration in their pace of growth after 1950.

This paper is the first chapter in the author's *Economic Growth in the Twentieth Century* [Paris: OECD, 1989] which covers performance in 45 countries.

ECONOMIC GROWTH BEFORE 1840: REVISED CONJECTURES

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Economic historians have long been interested in determining when modern economic growth began in the United States, whether the shift to a high rate of growth was a sudden or gradual affair, and what caused growth to proceed at a faster pace. In 1967 Paul David produced a series of conjectural estimates of per capita output for the period 1800 to 1840 which revealed an average annual growth rate of between 1 and 1.5 percent; an enviable performance, albeit not quite as good as the rates achieved after the Civil War. Within the antebellum period there were fluctuations, but no take-off.

Those conjectures rest entirely on two other series - estimates of farm gross product and the labor force - and on a key assumption about the growth of productivity in the nonagricultural industries. This paper sets forth new estimates of the farm labor force for the period 1800 to 1860, and a new set of conjectures about the levels and growth of per capita output based on these labor force figures. I also examine the differences in the patterns and sources of growth revealed by the David and Weiss conjectural estimates of per capita output.

The new estimates lower the farm labor force in the years before 1830, while raising the figures for 1840, 1850 and 1860. As a consequence, the farm work force grew more rapidly than was previously believed, while farm productivity grew more slowly. The impact of the revisions varied by subperiod. At the national level, the growth in output per worker is similar in the two series in two of the twenty year subperiods, 1800 to 1820 and 1840 to 1860. In the remaining subperiod, 1820 to 1840, productivity growth is much more rapid in the Lebergott-David series than in the present estimates. As a consequence, over longer time spans that encompass this sub-period, the older labor force series produces a faster rate of growth of farm productivity and per capita product than does the new one.

In those middle 20 years the differences are glaring. The new series shows much slower growth of output per worker (.48 vs 1.34 percent per year). Moreover, it is not just that the David series shows much more rapid growth in productivity over this period than does the new evidence, but its performance relative to the subsequent 20 years. Given the time pattern of advance in the two series, a critical question is whether agricultural productivity grew faster in the 20 years before 1840 or in the 20 years after, as implied in the new estimates.

The paper concludes with additional estimates of per capita product in which a key assumption of the previous conjectures, that output per worker in nonagriculture grew at the same rate as that in agriculture, is dropped. I use recent estimates of productivity advance in nonfarm industries to explore the more likely course of advance in per capita output before 1840.

THE FUNDAMENTALS OF CANADIAN DEVELOPMENT, 1870 TO 1985

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The Canadian economy grew from relative underdevelopment to quite high development from 1870 to the 1980's. The growth was undoubtedly assisted by the presence of quite large natural resources; it has resulted in a quite wide diversification in the present day economy.

Four stages in Canadian growth are clearly identifiable. The start, in the first stage from 1870 to the 1890's, was not auspicious: while total population grew, there was actually some loss of people from net emigration; foreign trade was sluggish and capital formation was low. The second stage, usually dated from 1896 to 1929, was, in sharp contrast, a period of great expansion: it was the period of the settlement of the prairie region, based, initially, on the prospect of sale of wheat abroad and then, later, on realized sales, and involving high levels of immigration; the great driving force before World War I was very, very high levels of capital formation based on the prairie settlement; from the war to 1929, the realization of export sales of wheat, supplemented by some other resource-based products, was a primary source of buoyancy. The third stage, encompassing the depression of the 1930's and World War II and its aftermath were periods of great upset: Canada was among the hardest hit nations of the depression; the ravages of the depression were replaced by great wartime expenditures and the emergence of continued buoyancy after the war. Finally, in the fourth stage from 1950 to 1985, Canada had a period of great growth of population and production: revived external trade remained important; but sustained high levels of capital formation were these years' most notable feature.

MANAGERIAL DECISIONS AND PRODUCTIVITY CHANGE: THE NEW BEDFORD WHALING FLEET IN THE 19TH CENTURY

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There are at least two ways to study the impact of management on productivity change: (1) measure the effects of specific managerial decisions; (2) measure the influence of specific managers. Both techniques are employed in this paper on New Bedford whaling. First, a multiple regression model intended to explain productivity differences among whaling voyages is estimated. Variables are divided into two groups: those under the control of management--the whaling agents who organized the voyages--and those that are not. The statistical fit of the model is excellent and managerial decisions are shown to have been important factors explaining productivity differences.

The model is then extended to include an index of the quality of the various whaling captains--an index expressing the ex ante opinions of the whaling agents who hired the captains. Once again the results are excellent: productivity is shown to vary directly with the quality of captains, the impact of captains on productivity being substantial.

Finally, three separate indexes of the character of whaling agents are introduced, one at a time. The first is an index of the extent to which the agents specialized in the whaling industry; the second measures experience; the third measures credit standing. The second and third indexes perform well. The first is less successful, but the explanation may lie in a measurement weakness that can probably be overcome with more work.

SECOND THOUGHTS ON THE EUROPEAN ESCAPE FROM HUNGER: FAMINES, PRICE ELASTICITIES, ENTITLEMENTS, CHRONIC MALNUTRITION, AND MORTALITY RATES

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The six principal findings of this paper are as follows: (1) Crisis mortality accounted for less than 5 percent of total mortality in England prior to 1800 and the elimination of crisis mortality accounted for just 15 percent of the decline in total mortality between the eighteenth and nineteenth centuries. (2) The use of variations in wheat prices to measure variations in the food supply has led to gross overestimates of the variability of the food supply. (3) The famines that plagued England between 1500 and 1800 were man-made, the consequence of failures in the system of food distribution related to an extremely inelastic demand for food inventories, rather than to natural calamities or inadequate technology. (4) It was not only within the power of government to eliminate famines but in fact the food distribution policies of James I and Charles I succeeded in reducing the variability of annual wheat prices by over 70 percent. (5) A change in the government policy could not have eliminated chronic malnutrition. Elimination of chronic malnutrition required technological changes that permitted the per capita consumption of food to increase by about 50 percent. (6) Improvements in average nutritional status appear to explain nearly all of the decline in mortality rates in England, France, and Sweden between 1775-1875 but only about half of the mortality decline since 1875.

ECONOMIC ADVANTAGES OF BEING PERIPHERAL: SUBORDINATE NATIONS IN MULTINATIONAL EMPIRES

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Drawing on insights from international political economy, the paper suggests that for several decades at the beginning of modern economic growth a country will find it materially advantageous to be a subordinate country within a multinational empire. Complete openness to the international economy or national protectionism would have been inferior. Evidence is offered from the historiography of the Ukraine, Ireland, Hungary, and Wallachia to show the functions which can be fulfilled by the imperial hegemon. In each case new "anti-nationalist" economic historians have recently published studies independently confirming this positive influence. Of course, some imperial powers had no such effective; in other cases, the positive influence was temporary.

ETHNIC INCOME DISTRIBUTION IN KOREA AND TAIWAN IN THE 1930S: AN UNFAVORABLE CHANGE FOR JAPANESE COLONIZERS?

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This paper constructs domestic income accounts classified according to ethnic groups in two major former Japanese colonies, Korea and Taiwan in 1930 and 1940, and, on this basis, discusses effects of economic changes on the ethnic income distribution in the colonies in the 1930s.

The prevalent theory stresses the increased Japanese political and economic power in the colony in the 1930s. However, the estimation shows a slight decline of the Japanese income share in total domestic income in both Korea and Taiwan between 1930 and 1940: in Korea, Japanese occupied 23.5% of total domestic income in 1930 and 20.7% in 1940 and in Taiwan, the corresponding figures were 26.3% and 21.6%. Essentially, the income distribution in Korea and Taiwan during the 1930s was based on a non-zero sum game, rather than a zero-sum game which is sometimes assumed. The economic pie was increased and a larger portion of its increment was distributed to the indigenous people, primarily because of favorable effects of the inflationary policy on the colonial agricultural sector. Thus, the reinforced Japanese dominance and their decreased income share in the colonies were not a paradox. This point suggests a substantial reinterpretation of the effects of the ever more aggressive Japanese expansionism on the colonial economies during the 1930s.

CONTRACTUAL PROBLEMS AND NON-MARKET ECONOMIC INSTITUTIONS IN MEDIEVAL LONG-DISTANCE TRADE: THEORY AND HISTORICAL APPLICATION

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The paper presents an empirical examination of questions related to long-distance commerce in pre-modern economies. The basic question I address concerns the nature and the operation of non-market economic institutions which enabled merchants to increase efficiency through the employment of overseas agents. While many scholars emphasized the role of social control systems and ethics in generating "trust" in pre-modern economies, the evidence at hand and therefore the approach taken here reflects the importance of economic sanctions in promoting "trust".

Employing overseas agents was the "technically" efficient manner of organizing the supply of the services required in handling a merchant's goods abroad. However, due to asymmetric information the anonymous market or the legal system could not provide an organizational framework through which these relations could be organized. Organization theory predicts that facing organizational problems of that kind, "private order" institutions will emerge.

This paper presents the institution established for this aim by eleventh century Mediterranean traders. I utilized the Geniza documents, a rich historical source never before utilized by economic historians. The empirical examination suggests that private order institutions, based upon reputation mechanism, were utilized. By establishing ex ante linkage between past conduct and future economic reward, an agent could credibly commit himself not to breach a contract ex post. Since reputation mechanisms are effective only when a decision maker can be identified by others, the merchant-agent relations took on a non-anonymous, personal character. However, the merchants took advantage of the fact that the contractual relations among several merchants and agents affect the contractual relations between each agent and merchant. Agency relations were organized in coalitions whose size reflects the information transmission technology.

THE PIT AND THE PENDULUM: WAGE NEGOTIATION, ARBITRATION AND RATIONAL BEHAVIOUR IN THE BRITISH COAL INDUSTRY, 1893 - 1914

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ABSTRACT. In this paper we construct a game form based on the constitutions of the British coal industry conciliation boards, and show how the induced game can be used to explain certain features of the record of the wage negotiations for which the conciliation boards were responsible. In particular we test various alternative explanations of the observed frequency of appeal to the arbitrator. The results are generally favourable to the view that the negotiators behaved rationally, within the constraints imposed by the boards' constitutions.