Abstracts of Papers Presented at the Annual Meeting

Defining the Obstacles to Mexico's Industrialization: The Relative Standing of "Fundidora Monterrey" During the Early Twentieth Century

This paper examines the case of "Fundidora Monterrey," an integrated iron and steel mill that appeared in Mexico in 1900, forty years earlier than any of its Latin American counterparts. It looks at causes of retardation in Latin America, comparing the mill's performance internationally. It finds out that Fundidora had a total factor productivity similar to that of the British iron and steel industry in those years and was only 3 percent to 4 percent less efficient than the German and the American industries. Fundidora's labor and capital intensities were also similar to those of the British industry. Excess capacity was not a structural problem but a variable over which entrepreneurs had some control and one that was diminishing through time. There was sufficient demand in Mexico for it to be utilized fully given the explicit import-substitution policy the government undertook. Fundidora production costs were higher than those of its foreign competitors mainly due to the high costs of coke and coal it faced, which showed a downward trend as these inputs began to be produced in Mexico and as its markets developed as part of the industrialization spurt. Fundidora appeared by 1910 as increasingly able to compete internationally.

AURORA GÓMEZ GALVARRIATO, *Instituto Technológico Autónomo de México*

Government Guarantees, Private Profits, and Social Returns: Public Transport Policy in Brazil, 1854–1913

Government subsidies sparked the onset of the railway age in nineteenth-century Brazil. There were two main tenets of public transport policy. The first was guaranteed minimum dividends to railroad investors. Guaranteed dividends attracted and secured domestic and foreign investment in railroad projects. The second was rate regulation by central and provincial authorities. Regulation captured for the consumers of transport services a large share of the gains produced by railroads. Social benefit-cost analysis reveals that the major guaranteed railroads all generated high social rates of return. However, not all railroads needed subsidies to attain competitive profits. Nonetheless, excessive subsidies were small, and the bulk of the benefits created by foreign railroad investment accrued to Brazilians rather than shareholders overseas. Rate regulation by the government quite effectively distributed the surplus away from foreign-owned railroads. Moreover, lower freight rates were associated with foreign- and state-owned railroads, and those railroads had less impressive profit records. Political considerations were central in determining the magnitude and distribution of the surplus that the subsidized railroad projects created. These results stand in sharp contrast to the "dependency" interpretations of Brazil's political and economic evolution. Open-economy politics gave rise not to neocolonial institutions serving the interests of rapacious foreigners, but rather impelled state intervention that served the interests of a national elite.

WILLIAM R. SUMMERHILL, *University of California, Los Angeles*

On the Costs of Inward-Looking Development: Price Distortions, Growth, and Divergence in Latin America

From the 1930s to the 1980s, economic policies in Latin America epitomized the inward-looking model of development. The model was born of the experience in the Depression, and its principles were codified by the 1950s in unorthodox economic theories. Even though its performance in the shape of the import-substitution strategy was seen as disappointing by the 1960s, the distortions created by the autarkic policy regime were long lived, persisting, and worsening into the 1970s and 1980s. I examine the costs of those distortions for economic growth and explore the structural differences between growth dynamics in Latin America and elsewhere. Distortions had pervasive and profound effects on many aspects of the growth process and help explain divergent development in the region.

ALAN M. TAYLOR, *Northwestern University*

Changing Patterns of Cultivation: Responding to the Company's Land Revenue Demand, Kaira District (Gujarat, India), Circa 1802–1858

The English East Company acquired nearly 600 Kaira villages from around 1802 to 1817, and with them the sovereign's right to collect the taxes and rents (land revenue) exacted on agricultural resources and output. During its half-century rule in Kaira, the Company repeatedly modified the structure of the land revenue system, the level of the land revenue demand, and the manner in which land revenue assessments were levied. Each modification altered the price of land relative to labor and capital in agricultural production and elicited new land-use and crop-choice responses from Kaira's agriculturists. When the relative price of land declined, jungle and grasslands were cleared, fallows were shortened, and cultivation expanded rapidly. When the relative price of land rose, formerly cultivated lands were left fallow, the expansion of cultivation slowed or reversed, investments in land improvements accelerated, and labor and capital intensive crops were adopted. Despite the Company's steadfast desire to enhance its revenue receipts, its land revenue policies periodically created perverse incentives that adversely affected both its revenues and the welfare of Kaira's inhabitants.

MARCIA J. FROST, *Emory & Henry College*

Plot Scattering, Risk Aversion, and Labor Spreading: Some Evidence from Nineteenth-Century Northern France

This paper assesses the contribution of risk aversion and labor-spreading to the persistence of plot scattering in nineteenth-century France. The variation in consumable crop together with the poor quality of storage and high transportation costs prevailing in French agriculture are suggested to be an appropriate setting for testing some implications of these theories. In contrast to some evidence from contemporary surveys of farmers' motives for scatter, the results derived from the study of a sample of communes in northern France do not suggest that risk aversion was a predominant factor explaining the variation in scatter across the region in the mid-nineteenth century. Scattering is also shown not to entail any significant sacrifice in yield or in yield growth; enclosure did not raise yields on average across the commune; common pasture, with all its constraints on individual choice, was more likely to disappear where scatter was already lower; and greater potential labor supplies were associated with reduced scatter.

MICHAEL FOLEY, *Reed College*

The Bargaining Position of Married Women: Evidence from Montreal Marriage Contracts in the 1820s and 1840s

In this paper I examine changes in the terms of Montreal marriage contracts drafted in the 1820s and 1840s for evidence of changes in women's relative bargaining position. Montreal offers a particularly interesting view of this, because although property laws in Quebec were similar to those in France, the city was increasingly composed of people of British origin. British and French property laws were quite different and undoubtedly caused some to reconsider their views of spousal property allocation. The contracts dictated property division during the marriage, revealed whether a woman retained administrative control of her estate (if it was held separately), and described the nature of support a wife would receive if she survived her husband. My preliminary findings are mixed. Of the women who signed contracts, a higher proportion administered their own property during the 1840s, but women who held their property separately (independent of administrative control) appeared to receive less support for their widowhood. These results suggest that although individuals may have bargained over property rights, the outcomes likely depended on the relative position of the participants. They also suggest that marriage contracts may be a fruitful, but relatively untapped, source of information on spousal property rights.

GILLIAN HAMILTON, *University of Toronto*

Secrecy, Firm-Specific Human Capital, and Enforceable Debt Contracts in Ancien Régime Taxation

Ancien régime public finance has been characterized as a system that used contractual outsourcing rather than administrative internalization for the bulk of its taxation. The individuals and corporate bodies to whom such business was given were also sources of investment in public debt. Most explanations of the ancien régime system view it as a product of expedient responses to high agency costs. Evidence from a study of the receivers general, officials responsible for the collection and disbursal of the revenue from direct taxation, suggest that such a purpose would be frustrated by administrative design. An alternative explanation emphasizes the structure as a mechanism for the enforcement of credible fiscal policy. Effective collateralization of tax revenues required that the creditors

engage in business practices that relied on secrecy and firm-specific human capital. This impeded the diffusion of information about asset values and uses, the liquidity of financial markets, and the adoption of the managerial and accounting practices necessary for large-scale organization. Increasing corporate size allowed for greater sanctions in the event of default, reducing the need for collateral, but it was limited by the need to maintain secrecy and forms of human capital that were specific to corporate members.

GREGORY LA BLANC, *Duke University*

*Macroeconomic Features of the French Revolution**

This paper describes aspects of the French Revolution from the perspective of theories about money and government budget constraints. We describe how unpleasant fiscal arithmetic gripped the Old Regime, how Estates General responded to reorganize France's fiscal affairs, and how fiscal exigencies impelled the Revolution into a procession of monetary experiments ending in hyperinflation.

THOMAS J. SARGENT, *University of Chicago and Hoover Institution, Stanford University*, AND FRANÇOIS VELDE, *Johns Hopkins University*

* Abstract to the published version of this paper, *Journal of Political Economy* 103, no. 3 (1995), p. 474.

Volume of Transactions and the Breadth of the Market: Hudson's Bay and Royal African Companies, 1670–1700

It has been argued that by the end of the seventeenth century, all the institutional features necessary for the operation of a securities market existed. Yet we know very little about how the late seventeenth-century market actually operated. This paper presents a preliminary examination of one aspect of the operation of the London stock market—the volume of transactions within the Hudson's Bay and Royal African Companies from 1670 to 1700. Our purpose is to explore the market for shares in these chartered companies, primarily asking the question why individuals engaged in stock transactions of the Companies. The low correlation between stock transactions and other business opportunities with the firms dispels the possibility that stock ownership was merely used to buy into the firms' business. Information about participation in stock transaction indicates a diversity of ownership both in terms of the types of people and the size of ownership blocks; large and small investors participated. Finally, Granger Causality tests determine that investors were using a variety of available Company and economy data to make transaction decisions. The resulting impression is of a well-functioning and organized market supporting a variety of participants who were making well-informed investment decisions. Further, this structure was in place twenty-five years before the end of the century.

ANN M. CARLOS, JENNIFER KEY, AND JILL L. VAN STONE, *University of Colorado, Boulder*

An Analysis of Corporate Structures in Prewar Japan

Understanding the fundamental institutions, including private firms, in an economy gives insight into its capacity for growth and development. Zaibatsu played an important role in the prewar Japanese economy. Until recently, most attempts to explain the existence of these conglomerates have been based on scattered anecdotal evidence or the experiences of individual firms. This paper analyzes financial data from a large number of Japanese firms of all kinds. The evidence from this analysis undermines several past theories about zaibatsu. In addition, the paper proposes a new theoretical framework to show that zaibatsu could have formed as the result of rational investor responses in response to asymmetric information and principal agent problems between shareholders and managers. The member firms in these conglomerates would exhibit risk characteristics in line with the risk-taking preferences of their controlling investors. The empirical evidence supports the new framework.

JENNIFER L. FRANKL, *University of California, Berkeley*

Minimal Finance yet Economic Growth in Southeast Asia from the Late Nineteenth Century to World War II

This paper focuses on how rapid Southeast Asian economic growth was achieved before World War II with only minimal finance. Abundant natural resources, tapped through vent-for-surplus trade, allowed growth without high domestic investment or any net real transfer from the rest of the world. But as Southeast Asian countries grew, and their trade surpluses expanded apace, a lack of financial capacity became increasingly apparent: natural resources only temporarily substitute for financial capacity. Monetary instability and a failure to develop institutions capable of mobilizing domestic resources contributed to a legacy of financial dualism with which postindependence Southeast Asia had to wrestle in trying to realize continued economic growth.

W. G. HUFF, *University of Glasgow*

Stasis Amid Change: Regional Income Inequality in Canada, 1870–1890

New estimates of provincial and subprovincial regional commodity income describe considerable variation in the level and composition of income within eastern Canada during the late nineteenth century. Individual districts and regions grew at different rates from 1870 to 1890, although the structure of inequality changed very little, if at all. A test for convergence on district-level data yields weak evidence of convergence that, allowing for bias due to measurement error, is consistent with the view that high- and low-income districts grew at the same rate. There is no evidence that the Canadian political union of 1867 exacerbated regional inequality during its first two decades.

KRIS INWOOD, *University of Guelph*, AND JIM IRWIN, *Central Michigan University*

Regions, Resources, and Economic Geography: Sources of U.S. Regional Comparative Advantage, 1880–1987

Resources or economies of scale are often used to explain U.S. economic geography. The standard neoclassical Heckscher-Ohlin theory predicts that the geographic distribution of economic activities is based on regional differences in resources, whereas the increasing returns theory emphasizes the importance of internal or external economies of scale. This paper examines the long-run geographic distributions of resources and manufacturing activities to see whether or not a set of factor endowments is able to explain the geographic distribution of manufacturing activities. This task is accomplished by estimating the Rybczynski equation, which relates regional production with regional factor endowments. The regression estimates show that a consistent set of factor endowments, as predicted by the Heckscher-Ohlin theory, was able to explain a significant amount of the geographic variation in manufacturing activities over time. Although these results do not completely rule out the importance of increasing returns, they do suggest certain limits on how increasing returns affect U.S. economic geography.

SUKKOO KIM, *Washington University*

Bank-Firm Relationships and the Development of Interlocking Directorates in the Kaiserreich

Banks are seen as a critical component of German industrialization. This notion stems from the perception that banks played important entrepreneurial, advisory, and oversight roles in late nineteenth-century firms. From their positions on supervisory boards of industrial enterprises, bankers supposedly orchestrated the push toward heavy industry. This paper suggests an alternative view: that interlocking directorates were uncommon in nineteenth-century Germany and that such relationships—once they developed—were pursued by bankers and industrialists alike. From this perspective, interlocking directorates can be viewed neither as an engine of industrialization nor as a lever of control for the banks.

CAROLINE FOHLIN, *California Institute of Technology*

Kartell or Cartel? Evidence from Turn of the Century German Coal, Iron, and Steel Industries

The rapid growth of the German economy during the years 1870 to 1913 is a paradox for neoclassical oligopoly theory. Large firms and vigorous antitrust enforcement are thought to be distinguishing factors of successful economies. The slow growth of the British and French economies in this period is commonly attributed to their failure to follow this path.

The German economy, however, was dominated by powerful cartels and relatively small firms. Its success remains unexplained by the standard framework. This paper contrasts implications of neoclassical cartel theory with an efficiency-based theory using data from the highly cartelized turn of the century German heavy industries. Surprisingly, evidence suggests that stable cartels were not associated with monopoly power. Cartelization, rather than raising price and restricting quantity, actually increased output and lowered price. Further, the cartels stabilized demand, allowing firms to use more efficient production technologies. An implication of this research is that received cartel theory has been constrained to the point of irrelevance by the assumption that interfirm cooperation only involves price-output decisions. Cartels of the type seen in late nineteenth-century Germany may have been an efficient means of industrial organization, given the existing institutional environment.

JANICE KINGHORN, *Washington University*

Diversification, Liquidity, and Supervision for Small Financial Institutions: Nineteenth-Century German Credit Cooperatives

Germany's successful nineteenth-century credit cooperatives were by design small, limited their operations to specific geographical areas, and employed few paid staff, most of whom had little business experience. Cooperatives would seem vulnerable to liquidity problems caused by correlated shocks to their member's fortunes. They would also seem vulnerable to fraud and mismanagement and to have problems convincing the public they were safe places to invest money. The historical record shows, however, that the cooperatives overcame these problems, growing steadily in numbers and assets. The solution had little to do with government regulation. Rather, the cooperatives devised a series of regional banks and auditing associations to which most cooperatives eventually belonged. To obtain the benefits of membership in these organizations, a cooperative had to submit to discipline imposed by the auditing association. The importance and vigilance of the Centrals and auditing associations were heightened because of a struggle between cooperatives that left competing "name brands" of credit cooperatives. Through these ties, the private organizations devised an effective alternative to government regulation of the credit cooperatives.

TIMOTHY W. GUINNANE, *Yale University*

Careers North and South: Railway Workers in Australia and Canada, 1885–1940

Railway companies had to develop systems to recruit, train, and discipline large numbers of employees. I examine how different employment practices were in the railway industry in Australia and Canada by tracing the careers of cohorts of workers hired by the Victorian Railways and the Canadian Pacific Railway. Lifelong employment and on-the-job training were normal for VR employees, whereas at the CPR most recruits quit within the year. Wages at VR were not higher, relative to the rest of the Victorian economy, than were CPR wages, relative to the rest of the Canadian economy. VR employees were more likely to be promoted than were CPR employees, but promotions occurred very slowly in Victoria.

Because all Australian railways had similar hiring rules (they generally took on teenaged boys and men in their twenties), the Australian manufacturing sector was smaller than in Canada and individual urban labor markets were geographically more isolated; a steady job with one employer was probably more valuable to an Australian than a Canadian railway worker.

MARY MACKINNON, *McGill University*

A Tale of Two Dominions: Australia, Canada, and the Convergence Hypothesis

In 1870 Australian GDP per capita was among the highest in the world, and more than twice the Canadian level. Today Canada's GDP per capita stands 25 percent above the Australian level. Despite the similarities—large land areas compared to small populations, British colonial origins, and early specialization in export staples that gave way to industrial and service employment—the difference in the two dominions performance appears substantial. We consider whether a time series approach to the convergence hypothesis can shed light on this comparative macroeconomic experience. Unit root-based tests are utilized to investigate catching-up and long-run convergence between Australia, Canada, the United Kingdom, and the United States. Here we extend earlier time series work on the convergence hypothesis by incorporating the effects of discontinuities into the convergence process. The results favor long-run convergence between Australia and the United Kingdom, highlighting the depth of the institutional and cultural links between these two economies, and catching-up in all other bivariate comparisons. However the pace of catching-up has not been uniform, and Canada's superior performance appears to stem from stronger links to the United States.

DAVID GREASLEY AND LES OXLEY, *University of Edinburgh*

China and the Spanish Empire

Europeans intruded Asian space during early modern times, not vice versa, so nearly everyone seems to have assumed that economic impacts also flowed from West to East. We argue the opposite: Global trade emerged in response to dynamism within Ming China. China's fiscal and monetary systems methodically converted to a silver basis, which caused silver's value to soar there. East-West (and Sino-Japanese) trade involved the swap of silver for Asian wares. Because Mexico and Peru contained the world's richest silver mines, prodigious profits accrued to mine owners—the Spanish Crown. In other words, Castile's fiscal foundation rested upon silver profits, but these profits depended upon demand in the world's largest economy—China. A microeconomic model is used to understand the relationship between moneys and trade during the sixteenth and seventeenth centuries.

DENNIS O. FLYNN AND ARTURO GIRALDEZ, *University of the Pacific*

The Debasement Puzzle: An Essay on Medieval Monetary History

This paper establishes the stylized fact that medieval debasements were accompanied by unusually large minting volumes and revenues. This fact is a puzzle under the commonly held view that metallic coins are commodity money and exchange by weight. An existing

explanation is that debased coins were used to reduce the real burden of nominally denominated debts. This explanation is logically flawed: nothing prevents agents from renegotiating contracts and avoiding the incurment of minting costs. The paper also establishes other facts about monetary mutations, which altogether pose a challenge to monetary economics.

ARTHUR J. ROLNICK, *Federal Reserve Bank of Minneapolis*, FRANÇOIS R. VELDE, *Johns Hopkins University*, AND WARREN E. WEBER, *Federal Reserve Bank of Minneapolis*

Patents and the Paths of Innovation in American Railroading, 1846–1900

Prior to the 1870s American railroads engaged in many concurrent experiments with a complex, rapidly changing technology. Lines cooperated freely and obtained innovations from a variety of sources, including their own shopworkers, pet suppliers located along their routes, and numerous outside inventors. As they increased the scale of their operations and simultaneously pursued greater uniformity, however, railroads came to perceive that patented devices could pose large financial risks. Potential liabilities increased still further when courts, unable to determine reasonable license fees in the oligopolistic market for railroad innovation, assessed damages based on the savings railroads derived from using patented devices. By routinizing their policies regarding in-house innovation and formalizing procedures for interfirm cooperation, railroads significantly reduced the possibilities of infringment after 1880. These policies complemented successful efforts to improve operating efficiency through study, routinization, and incremental improvement along well-defined frontiers. Such tasks fell to engineers, shopworkers, and suppliers who did not typically seek rewards through the patent system. Patents did remain prominent in areas such as safety and comfort, where inventors sometimes bypassed the roads themselves and marketed their creations directly to consumers of railroad services.

STEVEN W. USSELMAN, *Georgia Institute of Technology*

Long-Term Change in the Organization of Inventive Activity

Through a quantitative analysis of the patenting and assignment behavior of inventors in the late nineteenth and early twentieth centuries, we study the growth of trade in technological information and highlight increases in the division of labor between those who invented new technologies and those who exploited them commercially. These changes, we argue, were encouraged on the supply side by the growing complexity and capital intensity of technology, which raised the requirements for effective invention and led inventors to become increasingly specialized. On the demand side, the growing competitiveness of product markets made it more imperative for firms to stay on the technological cutting edge—both by making inventive activity a regular part of their operations and by becoming significant purchasers of technologies developed by others. Dividing responsibility for invention and commercialization depended, however, upon the development of markets and other types of organizational supports for trade in technology. Our evidence suggests that such institutions emerged as products of a self-reinforcing process whereby high patenting in an area encouraged the evolution of organizations and

conditions supporting a market for technology, which in turn encouraged higher rates of inventive activity, as well as greater specialization and productivity at invention on the part of individuals. Indeed, long before firms invested in research laboratories, or even developed stable employment relations with inventors, market trade in technology had encouraged a degree of specialization at invention typically associated with large-scale enterprise in the twentieth century.

NAOMI R. LAMOREAUX, *Brown University,* AND KENNETH L. SOKOLOFF, *University of California, Los Angeles*