

Luke C.D. Stein

Finance Division
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Employment

- From 2020 **Assistant Professor of Finance**, Babson College
- 2013 – 2019 **Assistant Professor of Finance**, W.P. Carey School of Business, Arizona State University
Honors Faculty; Barrett the Honors College (2015–19)

Other past positions

- 2010 **Price Theory Scholar**, Becker Center on Chicago Price Theory, University of Chicago
- 2008 – 2009 **Economics and International Trade Team Member**, Obama-Biden Presidential Transition Team
- 2006 **Consultant**, Bain & Company (Tokyo)
- 2005 – 2006 **Senior Associate Consultant**, Bain & Company (New York and Tokyo)
- 2004 – 2005 **Special Assistant**, Office of Strategic Initiatives, New York City Department of Education
- 2002 – 2004 **Associate Consultant**, Bain & Company (New York)

Education

- 2013 **Ph.D.**, *Economics*, Stanford University
Dissertation committee: Nicholas Bloom (chair), Ran Abramitzky, Caroline Hoxby
- 2002 **A.B. magna cum laude**, *Applied Mathematics with citation in Japanese Language*, Harvard University

Research

Refereed publications

Financial inclusion, human capital, and wealth accumulation: Evidence from the Freedman's Savings Bank,

The Review of Financial Studies, 33 (11), 5333–5377, November 2020 (with Constantine Yannelis)

Best Paper, 2019 University of Oregon Summer Finance Conference

This paper studies how access to financial services among a previously unbanked group affects human capital, labor market, and wealth outcomes. We use novel data from the Freedman's Savings Bank—created following the American Civil War to serve free Blacks—employing an instrumental variables strategy exploiting the staggered rollout of bank branches. Families with accounts are more likely to have children in school, be literate, work, and have higher occupational income, business ownership and real estate wealth. Placebo effects are not present using planned but unbuilt branches, or for Whites, suggesting significant positive effects of financial inclusion.

Independent executive directors: How distraction affects their advisory and monitoring roles,

Journal of Corporate Finance, 56, 199–223, June 2019 (with Hong Zhao)

Active corporate executives are a popular source of independent directors. Although their knowledge, expertise, and network can bring value to firms on whose boards they sit, independent executive directors may be more likely to be distracted than other directors due to their outside executive roles. Using newly constructed data linking independent directors to their employers, we identify periods when employers' poor performance may distract them from board service. We find that firms with distracted independent executive directors have lower performance and value, higher CEO compensation, reduced CEO turnover–performance sensitivity, lower earnings quality, and lower M&A performance. These adverse effects are mainly driven by distracted directors who sit on relevant committees, and are stronger for small boards.

The “visible hand”: Race and online market outcomes,

The Economic Journal, 123 (572), F469–F492, November 2013 (with Jennifer L. Doleac)

We examine the effect of race on market outcomes by selling iPods through local online classified advertisements throughout the United States. Each advertisement features a photograph including a dark- or light-skinned hand, or one with a wrist tattoo. Black sellers receive fewer and lower offers than white sellers, and the correspondence with black sellers indicates lower levels of trust. Black sellers' outcomes are particularly poor in thin markets (suggesting that discrimination may not “survive” competition among buyers) and those with the most racial isolation and property crime (consistent with channels through which statistical discrimination might operate).

Working papers

Angels, entrepreneurship, and employment dynamics: Evidence from investor accreditation rules, Revision requested, *The Journal of Financial Economics* (with Laura Lindsey)

This paper examines the effects of a shock to angel finance on entrepreneurial activity and employment. Using U.S. Census data, we estimate the state-level fraction of households that lost accreditation status from Dodd–Frank's elimination of housing wealth in determining accreditation. A larger reduction in the pool of potential investors reduces firm entry and employment at small entrants, particularly in areas with alternate sources of financing. Employment increases at small and young incumbents, and relative wages for the startup sector decline, especially for high-skilled workers and industries. These results suggest that angels are an important source of entrepreneurial finance to high-quality, competitive firms.

The gendered impacts of perceived skin tone: Evidence from African American siblings in 1870–1940 (with Ran Abramitzky, Jacob Conway, and Roy Mill)

We study differences in economic outcomes by perceived skin tone among African Americans using full-count U.S. decennial census data from the late-19th and early-20th centuries. Comparing children coded as “Black” or “Mulatto” by census enumerators and linking these children across population censuses, we first document large gaps in educational attainment and income among African Americans with darker and lighter perceived skin tones. To disentangle the drivers of these gaps, we identify all 36,329 families in which enumerators assigned same-gender siblings different Black/Mulatto classifications. Relative to sisters coded as Mulatto, sisters coded as Black had lower educational attainment, were less likely to marry, and had lower-earning, less-educated husbands. These patterns are consistent with more severe contemporaneous discrimination against African American women with darker perceived skin tones. In contrast, we find similar educational attainment, marital outcomes, and incomes among differently-classified brothers. Men perceived as African Americans of any skin tone faced similar contemporaneous discrimination, consistent with the “one-drop” racial classification rule that grouped together individuals with any known Black ancestry. Lower incomes for African American men perceived as having darker skin tone in the general population were driven by differences in opportunities and resources that varied across families, likely reflecting the impacts of historical or family-level discrimination.

Racial discrimination in asset prices: Evidence from horse betting (with Spencer Barnes)

In the presence of behavioral biases, prices can diverge from fundamentals, and the effects of racial/ethnic bias are evident in many financial and non-financial markets. We investigate the determinants and consequences of discrimination in parimutuel horse betting by assessing return differences across horses whose trainers have racially/ethnically distinctive surnames, which bettors may see as a proxy for quality (accurately or inaccurately) or a source of non-pecuniary returns (due to animus). Bets on horses with nonwhite-named trainers earn higher risk-adjusted returns, and these differences are especially pronounced among riskier bets, which receive lower average returns under the well-known “favorite–longshot” bias. Racial/ethnic return differences are stronger—overall and especially among longshots—for “win” than “place” and “show” bets, among horses with poor prior performance, in low-stakes races with “fast” conditions, and in the U.S. South. These results are consistent with the effects of discrimination being strongest among less informed and less sophisticated bettors.

Measuring and mitigating racial bias in Large Language Model mortgage underwriting (with Donald E. Bowen III, S. McKay Price, and Ke Yang)

We conduct an audit study of loan approval and interest rate decisions suggested by large language models (LLMs). Using a dataset of real loan applications and experimentally manipulated race and credit scores, we find that LLMs recommend denying more loans and charging higher interest rates to Black applicants than otherwise-identical white applicants. This racial bias is largest for lower-credit-score applicants and riskier loans, but present across the credit spectrum. Surprisingly, simply instructing the LLM to make unbiased decisions eliminates the racial disparity in approvals, and moderates the interest rate disparity. LLM recommendations correlate strongly with real lenders' decisions, despite having no fine tuning or specialized training, no macroeconomic context, and access to only limited data from each loan application. A number of different leading LLMs produce racially biased recommendations, although the magnitudes and patterns vary. Our results highlight the critical importance of auditing LLMs, and demonstrate that even basic prompt engineering can help reduce LLM bias.

Economic uncertainty and earnings management (with Charles C.Y. Wang)

In the presence of managerial short-termism and asymmetric information about skill and effort provision, firms may opportunistically shift earnings from uncertain to more certain times. We document empirically that when financial markets are less certain about a firm's future value, the firm reports more negative discretionary accruals. Stock-price responses to earnings surprises are moderated when firm-level uncertainty is high, consistent with performance being attributed more to luck rather than skill and effort, which can create incentives to shift earnings toward lower-uncertainty periods. We document that the resulting opportunistic earnings management is concentrated in CEOs, firms, and periods where such incentives are likely to be strongest: (1) where CEO wealth is sensitive to change in the share price, (2) where announced earnings are particularly likely to be an important source of information about managerial ability and effort, and (3) before implementation of Sarbanes-Oxley made opportunistic earnings management more challenging. Our evidence highlights a novel channel through which uncertainty affects managerial decision making in the presence of agency conflicts.

Tax-timing options and the demand for idiosyncratic volatility (with Oliver Boguth)

Investors have a choice over when to incur taxes on individual investments, and typically benefit from delaying the realization of capital gains while harvesting losses. This option implies that the effective tax rate on capital losses exceeds the one on capital gains, resulting in a convex after-tax payoff. Convexity creates a demand for idiosyncratic volatility (IVOL) within a well-diversified portfolio, and can therefore explain the puzzling negative relation between IVOL and expected stock returns. A simple model with tax-timing options predicts that the demand for idiosyncratic volatility increases with the tax rate, the nominal interest rate, and unrealized capital gains, and we show that all three measures predict the IVOL premium in the time-series. In the cross-section, we show that the magnitude of the IVOL premium increases with investors' average tax exposure.

The effect of uncertainty on investment, hiring, and R&D: Causal evidence from equity options (with Elizabeth C. Stone)

There is wide debate over the impact of uncertainty on firm behavior, due to the difficulty both of measuring uncertainty and of identifying causality. This paper takes three steps that attempt to address these challenges. First, we develop an instrumental variables strategy that exploits firms' differential exposure to energy and currency prices and volatility. For example, airlines are negatively affected by high oil prices while oil refiners benefit from them, but both are sensitive to oil price volatility; retailers, in comparison, are not particularly sensitive to either the level or volatility of oil prices. Second, we use the expected volatility of stock prices as implied by equity options to obtain forward-looking measures of uncertainty over firms' business conditions. Finally, we examine how uncertainty affects a range of outcomes: capital investment, hiring, research and development, and advertising. We find that uncertainty depresses capital investment, hiring, and advertising, but encourages R&D spending. This perhaps-surprising result for R&D is consistent with a theoretical literature emphasizing that long investment lags create valuable real put options which offset the effects of call options lost when projects are started. Aggregating across our panel of Compustat firms, we find that rising uncertainty accounts for roughly a third of the fall in capital investment and hiring that occurred in 2008–10.

Research presentations

*Coauthor presentation †Scheduled

2024 Brown (econ.); Colorado College (intro. econ.); Babson Faculty Research Fund (BFRF) Research Day; Research in Behavioral Finance Conf.[†]; Univ. of Cambridge Real Estate Finance and Investment Symposium[†]; Southwest Finance Association^{*}; Univ. of Washington Fostering Inclusion Research Workshop^{*}

- 2023 Harvard (economic history); NBER Summer Institute (Dev. of the American Economy); Babson Faculty Research Fund (BFRF) Research Day; BFRF Discussion Series; FMA*; Lone Star Finance Conf.*
- 2022 Florida State Univ.; Journal of Accounting, Auditing and Finance Conf. (canceled)
- 2021 Colorado College (intro. econ.); Univ. of San Francisco; Babson Faculty Research Fund Discussion Series
- 2020 SEC Division of Economic and Risk Analysis
- 2019 U.C. Davis (economic history); Babson (brown bag); Univ. of Lausanne (brown bag); EFA; FIRS; NBER Summer Institute (Development of the American Economy); Adam Smith Workshop in Corporate Finance*; Bocconi/Sapienza/RFS New Frontiers in Banking Conf.*; BYU Red Rocks Finance Conf.*; CSEF/RCFS Conf. on Finance, Labor and Inequality; European Winter Finance Conf.; Univ. of Kentucky Finance Conf.; MFA (×2); Northeastern Univ. Finance Conf.; Univ. of Oregon Summer Finance Conf.; SEC Conf. on Financial Market Regulation*; Society of Labor Economics*; FDIC*; Univ. of Georgia*; Rutgers Univ.*
- 2018 Cambridge Univ.; Suffolk Univ.; WFA; SFS Cavalcade; FIRS*; CEIBS Accounting and Finance Symposium; Chicago Fed Conf. on Labor Market Dynamism; China International Conf. in Finance*; European Winter Finance Summit*; French Finance Assoc.*; Univ. of Kentucky Finance Conf.; Texas A&M Young Scholars Finance Consortium; UNC Kenan Institute Frontiers of Entrepreneurship Conf.*; U.C. Riverside*
- 2017 Johns Hopkins (brown bag); EFA (×2); Arizona Junior Finance Conf.*; CalTech/USC/UCSD Southern California Private Equity Conf.*; Christmas Meeting of the German Economists Abroad*; Columbia-NYU Junior Finance Conf.*; European FMA*; Melbourne Business School Financial Institutions, Regulation, and Corporate Governance Conf.; MFA; Univ. of Oregon Summer Finance Conf.; Stevens Institute of Technology Emerging Trends in Entrepreneurial Finance Conf.; Stanford Institute for Theoretical Economics Labor and Finance Conf.; Univ. of Wisconsin Junior Finance Conf.; Goethe Univ. Frankfurt*
- 2016 Univ. of Texas at Austin (brown bag); Arizona Junior Finance Conf.; FMA; NFA*
- 2015 Hong Kong Polytechnic Univ.; Univ. of Hong Kong; Chinese Accounting Academic Conf.*; Econometric Society World Congress; MIT Asia Conf. in Accounting
- 2014 Univ. of Arizona; Federal Reserve Bank of Chicago; AEA; MFA
- 2013 Arizona State Univ.; Cambridge-INET Institute; Dartmouth; Federal Reserve Board of Governors; Univ. of Michigan Ford School of Public Policy; Univ. of Minnesota; Univ. of San Francisco; Univ. of Utah; Univ. of Wisconsin; APPAM Annual Fall Research Conf.; CES/Ifo Macroeconomics and Survey Data Conf.; Stanford Institute for Theoretical Economics Macroeconomics of Uncertainty and Volatility Conf.
- 2012 All-U.C. Econ. History Graduate Student Conf.*; Assoc. for the Study of Religion, Economics, and Culture*; Becker Friedman Institute Policy Uncertainty and Economic Implications; Northwestern (econ.)*
- 2011 Economic History Association (poster); International Industrial Organization Conf.
- 2010 Univ. of Chicago (brown bag); Federal Reserve Bank of San Francisco Applied Microeconomics Summer Conf.; U.C. Santa Barbara All-California Labor Economics Conf. (poster)

Fellowships and prizes

- 2022 **Deans' Award for Excellence in Graduate Teaching**, Babson College
Annual award to one faculty member for "excellence and innovative practices in teaching"
- 2022 **Thomas Kennedy Award for Teaching Excellence**, Babson College
"Faculty of the Year" awarded annually by graduating class to one faculty member "who personifies teaching excellence at the graduate level and whose personal standards of quality and caring extend beyond the classroom"
- 2021 – 2023 **Teaching Innovation Fund Award**, Center for Engaged Learning and Teaching, Babson College
Award supporting "The Freedman's Savings Bank: The (Broken) Promise of America's First Black Bank"
- 2019 **Huizingh Outstanding Undergraduate Teacher Award**, W.P. Carey School of Business, ASU
Annual award to two instructors "dedicated to inspiring students through excellence in teaching and mentoring"
- 2019 **Dean's Excellence in Research Summer Grant**, W.P. Carey School of Business, ASU (declined)
- 2016 2018 **Huizingh Outstanding Undergraduate Teacher Award Finalist**, W.P. Carey School of Business, ASU

- 2011 – 2012 **Walter J. Gores Faculty Achievement Award for Excellence in Teaching**, Stanford University
Stanford's "highest award for excellence in teaching," awarded annually to one graduate student university-wide
- 2011 – 2012 **Shultz Graduate Fellowship in Economic Policy**, Stanford Institute for Economic Policy Research
- 2010 – 2011 **Gerald J. Lieberman Fellowship**, Stanford University
- 2009 – 2010 **George Shultz Dissertation Support Fellowship**, Stanford Institute for Economic Policy Research
- 2009 **Economics Department Outstanding Teaching Assistant Award**, Stanford University
- 2007 – 2008 **Forman Family Fellowship in Economics**, Stanford University
Highest overall score on graduate qualifying examinations
- 2000 **Tazuko Ajiro Monane Prize**, Harvard University
- 2000 **Harvard-Rotary International Fellowship**, Okayama-Minami (Japan) Rotary Club
- 1998 **USA Mathematical Olympiad Honorable Mention**

Teaching experience

- 2021 – 2024 **Financial Data Analysis and Practice**, M.S. in Finance (Babson Finance 6200)
- 2020 – 2023 **Introduction to Financial Management**, Miami "Blended" M.B.A. (Babson Finance 7200)
- 2021 – 2022 **Finance for Entrepreneurs**, M.S. in Entrepreneurial Leadership (Babson Finance 6110)
- 2020 – 2021 **Finance**, M.B.A. (Babson Finance 7800)
- 2019 **Identification Strategies in Corporate Finance**, Ph.D. (ASU Finance 791; with Mark Seasholes)
- 2014 – 2019 **Managerial Finance**, Undergraduate (ASU Finance 302)
- 2010 – 2011 **OHS Microeconomics**, High School (Stanford EPGY OHS Econ. 20)
- 2009 **Intermediate Microeconomics**, Undergraduate (Stanford Econ. 50)
- 2007 – 2008 **Microeconomic Theory for Non-Economics Ph.D. Students**, Ph.D. (Stanford Econ. 202N)

Teaching Assistant

- 2013 **Introduction to Financial Economics**, Undergraduate (Stanford Econ. 140)
- 2012 **Managerial Economics**, M.B.A. (Stanford GSB Management Econ. 200)
- 2012 **Economics for Sloan Fellows**, M.S. (Stanford GSB Management Econ. 209)
- 2011 **Emergency Medical Technician Training**, Undergraduate (Stanford Med. School Surgery 111/211A)
- 2009 **First-Year Macroeconomics**, Ph.D. (Stanford Econ. 210)

Case Development

- 2023 **The Freedman's Savings Bank: The (Broken) Promise of America's First "Black Bank"**

Advising

Doctoral, *Arizona State University*, Anthony Rice (2021, Chinese University of Hong Kong), Sean Flynn (2017, Colorado State University), Hong Zhao (2017, NEOMA Business School), Yung-Ling Chi (2016, National Chung Hsing University), Qi Dong (2015, King Fahd University of Petroleum and Minerals)

Undergraduate, *Arizona State University*, Chadwick Ali'varius, Max Bamford*, Alexander Doughty*, Neil Jha*, Zach Leibovit-Reiben*, John Charette, Harshit Thacker, Hamza Amjad*, Gurkaran Chotalla*, Landon Gagner, Matthew Klein, John Lauro, Michael Muscheid, Aaron Chavez, A. J. Gilman, Steven Kaye, Samir Reddy* *Thesis chair

University and professional service

Babson College, Finance Div. Faculty Recruiting Cmte. (2023–24), Arts in the Curriculum Cmte. (From 2023), Babson Organizational Redesign Academic Working Group (2023), Faculty Senate (From 2021), Venture Capital Investment Competition Advisor (2021, 23), MSF Curriculum Cmte. (From 2022), Finance Awards Cmte. (From 2022), Babson Acceleration Club Advisor (2021–22), Inclusive Teacher Training Program Design Cmte. (2021), Graduate School “Hybrid 2.0” Cmte. (2021), Cutler Center Cmte. (From 2020), Miami Blended MBA Block Coord. (2020–21)

Arizona State University, Graduate College Completion Fellowship Faculty Review Cmte. (2019–20), Finance Dept. Undergraduate Programs Cmte. (2016–19), Truman Scholarship mock interviewer (2017–2019), Sonoran Winter Finance Conf. Organizing Cmte. (2015–16), Finance Dept. Research Seminar Cmte. (2014–15), Finance Dept. Faculty Recruiting Cmte. (2013–14)

Stanford University, Stanford Emergency Medical Service (2010–13), Univ. Bicycle Safety Cmte. (2008–12), Registrar’s Student Advisory Group (2007–11)

Harvard University, Undergraduate admissions interviewer (2008–15)

Conference organization, Virtual Finance & Economics Conf. (2020), Labor and Finance Group (2017), ASU Sonoran Winter Finance Conf. (2016)

Program committee, SFS Cavalcade (2021–24); Univ. of Kentucky Finance Conf. (2020–24); Financial Management Assoc. (2014–15, 21–24); Southwest Finance Assoc. (2021–24); Eastern Finance Assoc. (2019–21, 24); Southern Finance Assoc. (2020, 22, 24); Australian Gender Economics Workshop (2021); Midwest Finance Assoc. (2019–21); FIRN Financial Research Network (2017–19, 2021); ASU Sonoran Winter Finance Conf. (2014–20); AFFECT Showcasing Women in Finance EU Conf. (2019); SIT Emerging Trends in Entrepreneurial Finance Conf. (2018); FMA Best Paper Cmte. (2015)

Referee, AER; Econometrica; JF; JFE; JFQA; Management Science; QJE; REStat; REStud; RFS; Journal of Accounting Research; AEJ; Applied Economics; Applied Economics; Journal of Applied Econometrics; Journal of Banking and Finance; Journal of Corporate Finance; Journal of Development Economics; Journal of Econometrics; Journal of Economic Behavior and Organization; Economic Inquiry; Economic Journal; Journal of Economics and Management Strategy; Journal of Empirical Finance; Entrepreneurship Theory and Practice; Journal of the European Economic Association; European Financial Management; Explorations in Economic History; Financial Innovation; Financial Management; Financial Review; Israel Science Foundation; Journal of Labor Economics; Labour Economics; Journal of Law, Economics, and Organization; Journal of Legal Studies; Journal of Monetary Economics; Journal of Money, Credit, and Banking; Macroeconomic Dynamics; Journal of Public Economics; Quarterly Journal of Finance; Quarterly Review of Economics and Finance; Review of Corporate Finance Studies; Review of Finance; Small Business Economics; Venture Capital; Weather, Climate, and Society

Invited discussions

2024 **Corporate Climate Lobbying**

Leippold, Sautner, Yu (CEPR–ESSEC–Luxembourg Conf. on Sustainable Financial Intermediation)

Financial Scarring and the Failure of the Freedman’s Savings Bank

Van Orden, Arthi, Richardson (Economic History Association–ASSA)

2023 **Individual Investor Voice and Firm Value: Evidence from a Quasi-Natural Experiment**

Xu, Zhuang (Financial Management Association)

Who becomes a business angel?

Bach, Baghai, Strömberg, Warg (London Business School Private Capital Symposium)

Applications or Approvals: What Drives Racial Disparities in the Paycheck Protection Program?

Chernenko, Kaplan, Sarkar, Scharfstein (American Finance Association–ASSA)

2022 **Discrimination and Quality Signals: A Field Experiment with Healthcare Shoppers**

Chan (Becker Friedman Institute Discrimination in the 21st Century Conf.)

2021 **Societal Trust and Financial Market Participation: Evidence from the Freedman’s Savings Bank**

Traweek, Wardlaw (SFS Cavalcade)

- 2020 **Overreaction in credit spreads: The role of lenders' personal economic experiences**
Carvalho, Gao, Ma (Midwest Finance Association)
- rTSR: When do relative performance metrics capture relative performance?**
Ma, Shin, Wang (Midwest Finance Association, canceled)
- Financing entrepreneurship: Tax incentives for early-stage investors**
Denes, Mezzanotti, Howell, Wang, Xu (Finance in the Cloud Innovation/Entrepreneurship Conf.)
- 2019 **The effect of financial literacy on financial policies: Evidence from a randomized control experiment in Mozambique**
Custódio, Mendes, and Metzger (European Finance Association)
- The leveraging of Silicon Valley: Venture debt in the innovation economy**
Davis, Morse, and Wang (Midwest Finance Association)
- Creative destruction and venture capital investment**
Wang and Yung (Midwest Finance Association)
- Cash to spend: Credit constraints, IPO lockups, and house prices**
Hartman-Glaser, Thibodeau, and Yoshida (American Real Estate and Urban Economics Association-ASSA)
- 2017 **Roadblock to innovation: The role of patent litigation in corporate R&D**
Mezzanotti (European Finance Association)
- Uncertainty and consumer credit decisions**
DiMaggio, Kermani, Ramcharan, and Yu (Financial Intermediation Research Society)
- Investor behavior in crowdfunding**
Wallmeroth (Stevens Institute of Technology Emerging Trends in Entrepreneurial Finance Conf.)
- What is revealed when firms disagree with short sellers?**
Bargeron and Bonaime (Arizona Junior Finance Conf.)
- Do companies care about insider trading behavior? Evidence from director turnover**
De Groote, Bruynseels, and Gaeremynck (Midwest Finance Association)
- 2016 **Uncertainty, real options, and firm inaction: Evidence from monthly plant-level data**
Carvalho (Western Finance Association)
- 2015 **Do managers do good with other people's money?**
Cheng, Hong, and Shue (Northern Finance Association)
- Understanding director elections: Determinants and consequences**
Ertimur, Ferri, and Oesch (MIT Asia Conf. in Accounting)
- 2014 **A corporate finance application of the Oaxaca-Blinder decomposition**
Brendel, Rudolph, and Schwetzler (Midwest Finance Association)
- 2011 **Demographic preferences and price discrimination in new vehicle sales**
Langer (International Industrial Organization Conf.)