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This thesis consists of three unrelated essays in the fields of labor and urban economics. The first essay exploits the creation of a formal college system in Quebec in the late 1960's as a quasi-experiment to estimate the value of community college. Focusing on the effect of the policy on English-speaking Quebecois, the creation of the CEGEPs (Colleges of General and Vocational Education) is shown to increase schooling by about a third of a year for both men and women, without diverting students from university. Despite increasing educational attainment, estimates of the impact of CEGEP on wages are negative. Analysis suggests the negative estimates can be understood as a combination of lost labor market experience, a decrease in the return to university, and an insignificant return to CEGEP. The results are robust to the inclusion of controls and across years of data. Possible interpretations of the results are discussed. The second essay, co-authored with William Wheaton, examinesthe relationship between labor market agglomeration and wages. Using the 5% public use micro sample of the 1990 U.S. census, we find that observationally equivalent workers in the manufacturing sector earn higher wages when they are in urban labor markets that have a larger share of national or metropolitan employment in their same occupation and industry groups. Quantitatively, the effect is large, with an elasticity (measured at the means) of between 1.2 and 3.6 for these effects. We interpret the willingness of firms to pay more for equivalent workers in dense markets as evidence of an agglomeration economy in urban labor. The third chapter estimates the effect of employment dispersion on average commute times in American cities. Using a sample of over two hundred cities, I find that residents of cities where employment is more geographically disperse have lower average commute times than residents of cities where employment is more centralized. The results are robust to theinclusion of city fixed effects. An instrumental variables strategy is employed to try to account for potential simultaneity between changes in employment dispersion and changes in commute times.

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This dissertation consists of three essays on the heterogeneous reactions of firms to shocks, with particular empirical applications to the Chilean economy. The first essay presents a model of heterogeneity in an economy with financial constraints. The main issue in the model is to characterize the entrepreneurs and firms that are affected by shocks or policy innovations. The model delivers a dual margin composed of a segment of relatively poorer but more productive entrepreneurs and a segment of richer but less productive entrepreneurs. The main result we present in this essay is that these two margins will react heterogeneously to shocks in economically meaningful ways. The second essay is devoted to the construction of the panel and the econometric use of the FUNDES-SII panel firm database. We use this database to study firm creation, destruction and performance on maps of firms. The main result of this essay is that there does seem to be some empirical evidence of a margin of high productivity, low capital entrepreneurs for the Chilean economy, as predicted in the first essay of the thesis. Finally, we find that among smaller firms leverage seems to be an indicator of financial constraint, while among larger firms it is an indicator of financial access. The third essay is devoted to the construction of the panel and econometric use of the INE-BFL panel worker database to study workplace creation and destruction in Chile. For local interest, the main feature of the chapter is that it is the first time that representative and consistent series of job creation and destruction that is made available for the Chilean economy. The main feature of the chapter, however, is the estimation and characterization of workplace fragility by firm size. We estimate separation, matching and bankruptcy probabilities, and inquire into their sensitivity to the economic cycle.

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I investigate search models in which firms wish to employ multiple workers. I first focus on efficiency. One important approach to modeling frictional labor markets is competitive search equilibrium, in which workers direct their search towards wages that firms commit to pay them upon hire. If each firm wishes to hire precisely one worker, the competitive search equilibrium is efficient (Moen, 1997; Shimer, 1996). I show that if firms wish to employ multiple workers, then hiring will not generally be efficient if firms post only a single wage. Efficiency requires that firms commit to hire a fixed number of workers at the posted wage, to pay all applicants, or to make wages contingent on the number of applicants. I show that if firms post only a wage, the amount of inefficiency is highest at intermediate levels of labor market tightness. Efficiency under wage posting is restored in a dynamic model if the duration for which firms commit to posted contracts becomes small. I next calibrate a continuous-time version of the model to US data. Under the benchmark parametrization and in response to plausible business-cycle shocks to productivity, the model does not produce fluctuations in unemployment that match the amplitude of such fluctuations in US data. It appears that the existence of firms that wish to employ multiple workers is not per se a source of much amplification. Finally, Daron Acemoglu and I present a generalization of the Diamond-Mortensen-Pissarides (DMP) search model of unemployment which incorporates both intensive and extensive margins of employment creation. Firms possess a production technology with diminishing returns to labor, and recruit workers by posting vacancies. Entry by new firms corresponds to the extensive margin of employment creation, while job creation by existing firms captures the intensive margin. As in the baseline DMP model and theories of the firm developed by Stole and Zwiebel (1996a,b) and Wolinsky (2000), wages are determined by continuous bargaining between the firm and its employees. We characterize the steady-state equilibrium in this class of models and discuss the implications of various different types of shocks on the equilibrium unemployment rate.

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The first chapter presents a model of legal interpretation in a hierarchical court. Using a two-level court in which judges have spatial preferences over doctrine, the model examines how appeals, panels, and other structural features of the court affect the incentives of judges and promote uniform interpretation of the laws. The threat of appeal has a moderating influence on judges in the lower court. When the cost of appeal is low, this effect will be stronger, but the lower court will also have less influence on the final decision. Hence, under many conditions, overall uniformity will be maximized at an intermediate cost of review. Factors that may increase the predictability of rulings on the higher court, such as panel size, may weaken the incentives toward moderation on the lower court. The second chapter analyzes judicial decision making in three-judge appellate panels. When judges are ideological but have a preference for consensus, there will be negotiation among the three judges in an effort to reach agreement. This paper constructs a model of judicial negotiation, where judges have preferences on an ideological spectrum and disutility from disagreement. The parameters of the negotiation model and the judges' ideological inclinations are then estimated on a data set of sex discrimination cases using maximum likelihood estimation. The results find strong evidence that judges' votes are influenced by their panel colleagues, but that this influence mostly takes the form of outvoted judges joining the majority. However, judges in the minority appear to have a small but significant effect on case outcomes. The third chapter examines the impact of liability law on firms' investments in product safety when such investments take the form of fixed costs and liability does not apply equally to competing products. Using a model with one innovative good and one competitively supplied good, the paper finds that asymmetric liability deters safety innovation when the administration of the tort system is inefficient. When inefficiencies in the tort system are small, however, incentives to develop safer products may be stronger under asymmetric liability.

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Chapter 1 analyzes the theoretical and quantitative implications of optimal fiscal policy in a business cycle model with incomplete markets. I first consider the problem of a government facing expenditure shocks in an economy where the only asset is a real risk-free bond. The model features a representative-agent economy with proportional taxes on labor and capital. Taxes on capital must be set one period in advance, reflecting inertia in tax codes. This rules out replication of the complete markets allocation. In the model, capital taxation and capital ownership provide a state contingent source of revenues - creating a new potential role for capital taxation and ownership as risk sharing instruments between the government and private agents. For a baseline case, I show that the optimal policy features a zero tax on capital. Numerical simulations show that the baseline case provides an excellent benchmark: the average tax on capital, while not theoretically zero, turns out to be small. The volatility of capital taxes decreases sharply as the period length is increased. I then allow the government to hold a non trivial position in capital. Capital ownership allows the government to realize about 90% of the welfare gains from moving to complete markets. Large positions are typically required for optimality. But smaller positions achieve substantial benefits. In a business-cycle simulation, I show that a 15% short equity position achieves over 40% of the welfare gains from completing markets. Chapter 2 is the product of joint work with Ivan Werning and analyzes how estate taxes should optimally be set.For an economy with altruistic parents facing productivity shocks, the optimal estate taxation is progressive: fortunate parents should face lower net returns on their inheritances. This progressivity reflects optimal mean reversion in consumption, which ensures that a long-run steady state exists with bounded inequality-avoiding immiseration. Chapter 3 is the product of joint work with Stavros Panageas. We study optimal consumption and portfolio choice in a framework where investors save for early retirement and assume that agents can adjust their labor supply only through an irreversible choice of their retirement time. We obtain closed form solutions and analyze the joint behavior of retirement time, portfolio choice, and consumption. Investing for early retirement tends to increase savings and stock market exposure, and reduce the marginal propensity to consume out of accumulated personal wealth. Contrary to common intuition, prior to retirement an investor might find it optimal to increase the proportion of financial wealth held in stocks as she ages, even when she receives a constant income stream and the investment opportunity set is also constant. This is particularly true when the wealth of the investor increases rapidly due to strong stock market performance, as was the case in the late 1990's. We also show that the model can potentially provide a rational explanation for the paradoxical fact that some investors saving for retirement chose to increase their allocation to stocks as the market was booming and reduce it thereafter.

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This dissertation consists of three essays on the effects of low-skilled immigration on US prices and labor markets. The first essay uses confidential data from the Consumer Price Index to estimate the causal effect of low-skilled immigration on the prices of non-traded goods. Then, it combines wage and price effects with consumption patterns of native skill groups to determine the net benefits and distributional impacts of immigration on the native economy. The results suggest that a 10 percent increase in the share of low-skilled immigrants in the labor force decreases the price of immigrant-intensive services by 1.3 percent. I also find that wage effects are significantly larger for low-skilled immigrants than for low-skilled natives because the two are imperfect substitutes. Overall, the results imply that the low-skilled immigration wave of the 1990s increased the purchasing power of high-skilled natives by 0.65 percent but decreased the purchasing power of low-skilled natives by 2.66 percent. The second essay, coauthored with Jose Tessada, is motivated by the first essay's finding that low-skilled immigration reduces the prices of services such as housekeeping and babysitting. Because these services are close substitutes for home production, a decrease in their price should affect natives' time use. Using time-use surveys, we find that low-skilled immigration has increased the consumption of market-provided household services and has decreased the time women spend on household chores. As a result, women have significantly increased their supply of market work, both at the intensive and extensive margin. We estimate that the immigration flow of the 1990s decreased by 20 minutes the time women spend daily on household chores and increased by 5 percentage points the likelihood that a woman reports working in the market. The third essay formalizes and empirically explores how immigrants' lack of English skills determines immigration's impact on the US labor market. I present a theoretical model in which low-skilled native workers can perform both "manual" and "language" tasks, immigrants perform manual tasks only, and the two tasks are q-complements. The model predicts that an immigration flow reduces the relative returns to manual skills and makes some natives shift from manual to language occupations. Using data from the Occupation Information Network and the Census, I find that: (1) within a city, occupations that require fewer language skills have a higher ratio of low-skilled immigrants to natives, and (2) after an immigration shock, there is a disproportional reduction in the wages of natives that work in manual occupations.

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This thesis is a collection of three essays on international trade and economic growth. Chapter 1 analyzes the dynamic gains from trade in a Hecksher-Ohlin economy with endogenous factor accumulation. In a framework where heterogeneous workers make educational decisions in the presence of complete markets, I first show how convergence of factor rewards induces divergence of factor abundance and levels of income. When heterogeneous workers invest in schooling, higher type agents earn a surplus from their investment. By affecting educational decisions, trade influences the international distribution of this surplus. The latter effect tends to benefit richer countries disproportionately, leading to divergence of welfare when markets are opened to trade. The shift of investments to initially rich countries also leads to a global increase of the average skill premium despite a decrease of the price of skill intensive goods. I next examine whether the factor content of trade indeed does affect domestic education decisions. To establish a causal relation, I instrument for the factors embodied in actual imports by the geographic component of trade. The constructed measures of geographical proximity to skilled and unskilled labor have significant effects on domestic educational decisions. Countries that tend to be close to international supply of skilled labor have lower levels of advanced education, while the reverse is true for countries that are close to labor abundant nations. A one standard deviation difference in geographic proximity to skilled labor is associated with a difference' of about 2/3 of a year of average higher education. Chapter 2 examines why movements of relative costs brought about by exchange rate fluctuations are passed on to customers only slowly, and never to a full extent. We first develop a perfectly competitive economy featuring heterogeneity of both good qualities and of consumer valuations. In equilibrium, high valuation consumers and high quality firms are matched. The relative scarcity of different qualities leads to pricing-to-market and markups that are determined by the local toughness of competition. Our production setup features trade in intermediate goods, local assembly that is subject to decreasing returns and fixed costs of market entry. In every export market, firm entry and size decisions are determined by how local prices compare to the cost of production at home. We next analyze how changes in the real exchange rate are transmitted internationally. In the short run, the set of firms active in the export sector is fixed, but each firm accommodates changes in the exchange rate by adjusting the quantity of its exports. Due to this response of export volume to the relative cost of production, market toughness counteracts exchange rate movements, leading to partial pass-through in the short run. Due to the presence of fixed costs of market access, in the long run also the set of firms that are actively exporting reacts to movements of the real exchange rate, with two associated consequences. Firstly, pass-through is larger than in the short run because long run export volume responds to relative costs due to changes in both the average firm size and in the number of firms. Secondly, the response of the market entry decision to changes in the relative cost of production affects only low quality firms, which fetch a relatively low price for their output. Exchange rate movements thus change the composition of actively exporting firms, with the consequence that aggregate price indexes overstate the actual extent of pass-through in the long run. Chapter 3 further examines the seminal work of Acemoglu et al. (2001) on the effects of settler mortality on colonization policies during early imperialism. The authors build a strong case for the importance of institutions as the primary force of economic development. However, because their empirical analysis is limited to former colonies, they cannot directly distinguish their theory from the rivaling view that a country's disease environment has direct effects on economic prosperity and institutions. In this paper, using either additional historical sources or a model of the geographic determinants of disease, I first construct two measures of mortality rates including up to 36 countries that have not been colonized. I then show that mortality did affect institutional development in former colonies but not in the rest of the sample. This can only be rationalized in the context of the colonial origins theory of Acemoglu et al. Turning to disentanlge the relation between institutions and income, I sometimes find that disease environment influences income also directly and correspondingly, that institutions are somewhat less important for prosperity in my specifications than when working with a sample composed of only former colonies. Incorporating these findings, I estimate that institutions are the major determinant of long run prosperity and can explain about 50% of the observed variation of current income levels, while the direct effects of disease environment can account for about 15%.

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This thesis is a collection of three essays on entry regulation, institutions, and development.Chapter 1 examines the effect of a business registration reform in Mexico on economic activity. This reform made registration procedures less complex and was implemented in different municipalities at different points in time, allowing for identification. I find that the reform increased the number of registered businesses in eligible industries. This increase was due to former wage earners opening businesses. Former unregistered business owners were not more likely to register their business after the reform. The results also show an increase in employment in eligible industries. Moreover, they indicate that the competition from new entrants lowered prices and decreased the income of incumbent businesses. Chapter 2, coauthored with Francisco Gallego, argues that within country variation in economic development across the Americas can be explained by differences in institutions that have their roots in the colonial era. Colonizers engaged in different economic activities in different regions of a country, depending on the local conditions and the supply of native labor. Some activities where "bad" since they created extractive institutions, while "good" activities created inclusive institutions. We show that areas with bad colonial activities have lower GDP per capita today than other areas. Areas with high pre-colonial population density also have lower GDP per capita today. The intermediating factor between history and current development appears to be institutions and not income inequality or the share of ethnic minorities. Chapter 3 uses the example of Mexico's Progresa and Microrregion programs to illustrate that one can arrive at very different conclusions about the relative cost-effectiveness of public development programs, depending on the assumptions made about social opportunity costs. For Progresa, I estimate the amount of US$ required to save one life per 1000 live births to be 14.1. For the Microrregion Program, this number could fall anywhere between 7.6 and 29. The main challenge is that social opportunity costs are not necessarily equal to market prices in the presence of market failures, and that we currently lack good guidelines for how to address this issue in applied work.

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The first chapter of this dissertation examines the behavior of long- and short-term capital gains distributions after the passage of the Tax Reform Act of 1997, which lowered the maximum tax rate on long-term gains. Using a panel of mutual fund data, I examine the ratio of long-term to total gains distributions around the time of the Act, and find that fund managers appear to tilttheir distributions towards the long-term after 1997. This behavior is consistent with the hypothesis that managers are tax-sensitive, and the estimates are robust to the inclusion of fund-level fixed effects and other controls. I also examine fund capital gains patterns in a difference-in-differences framework, comparing actively managed to index funds; this technique gives a lower-bound estimate of the increase in the fraction of gains paid-out as long-term after the Act of five percentage points. The second chapter examines equity mutual fund dividend yields. Dividends are highly-taxed for individual investors, but tax-favored for corporate investors. Consequently, I hypothesize that corporate investors may prefer to hold higher-dividend yield funds than non-corporate investors. I use institutional funds as a proxy for corporate, trust, or non-profit shareholders, and find that these funds do have systematically higher dividend yields than their retail counterparts. These results are consistent with the tax clientele hypothesis, and are robust to the inclusion of a number of fund- and industry-level controls. Chapter three, co-authored with James Poterba, documents the increasing use of redemption fees throughout the mutual fund industry. These fees are levied against investors who liquidate their positions before a specified time, and are paid back into the fund to compensate existing investors for the negative externalities of redemptions. We find that foreign and sector funds are more likely to impose redemption fees, and that institutional funds are less likely to have fees. Using data from the SEC, we find that the largest funds with redemption fees collected nearly $58 million in fees in 2000. We also find that funds with redemption fees appear to have lower turnover and higher returns than their no-fee counterparts, controlling for time, fund objective, and other characteristics.

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In Chapter 1, I study the efficiency properties of competitive search equilibria in economies with informational asymmetries. Employers and workers are both risk-neutral and ex-ante homogeneous. I characterize an equilibrium where employers post contracts and workers direct their search towards them. When a match is formed, the disutility of labor is drawn randomly and observed privately by the worker. An employment contract is an incentive-compatible mechanism that satisfies a participation constraint on the worker's side. I first show that in a static setting the competitive search equilibrium is constrained efficient, that is, it cannot be Pareto improved by a Social Planner subject to the same informational and participation constraints faced by the decentralized economy. I then show that in a dynamic setting, on the contrary, the equilibrium can be constrained inefficient. The crucial difference between the static and the dynamic environment is that the worker's outside option is exogenously given in the former, while in the latter it is endogenously determined as the equilibrium continuation utility of unemployed workers. Inefficiency arises because the worker's outside option affects the ex-ante cost of information revelation, generating a novel externality which is not internalized by competitive search. In Chapter 2, I explore whether match-specific heterogeneity, with or without full information, can amplify the responsiveness of unemployment rate and market tightness to productivity shocks. On the contrary, I show that heterogeneity can dampen the response of market tightness to productivity, once one calibrates the model to match two main facts: the finding rate and the finding rate elasticity to market tightness. First, I show a theoretical result for the steady state analysis in the extreme case of no aggegate shock. Then, I report the calibration exercise for alternative specification of the idiosyncratic shocks distribution. Chapter 3 is the product of joint work with Daron Acemoglu and constructs a model of non-balanced economic growth. The main economic force is the combination of differences in factor proportions and capital deepening. Capital deepening tends to increase the relative output of the sector with a greater capital share (despite the equilibrium reallocation of capital and labor away from that sector). We first illustrate this force using a general two-sector model. We then investigate it further using a class of models with constant elasticity of substitution between two sectors and Cobb-Douglas production functions in each sector. In this class of models, non-balanced growth is shown to be consistent with an asymptotic equilibrium with constant interest rate and capital share in national income. We investigate whether for realistic parameter values, the model generates transitional dynamics that are consistent with both the more rapid growth of some sectors in the economy and aggregate balanced growth facts. Finally, we construct and analyze a model of "non-balanced endogenous growth," which extends the main results of the paper to an economy with endogenous and directed technical change. This model shows that non-balanced technological progress will generally be an equilibrium phenomenon.

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My dissertation is a collection of three essays that consider various aspects of income inequality and the demand for skill. The first chapter uses the advent of the US Interstate Highway System to examine the effect of reducing trade barriers on the relative demand for skilled labor. The Interstate Highway System was designed to connect major cities, to serve national defense, and to connect the US to Canada and Mexico. As an unintended consequence, many rural counties were connected to the highway system. I find that these counties experienced an increase in trade-related activities, such as trucking and retail sales. By increasing trade, the highways raised the relative demand for skilled manufacturing workers in skill-abundant counties and reduced it elsewhere, consistent with the predictions of the Heckscher-Ohlin model. The second chapter examines the effect of the division of labor on the demand for information processing. I find that manufacturing industries with a more complex division of labor employ relatively more clerks, who process information that is used to coordinate production. An early information technology (IT) revolution that took place around 1900 raised the relative demand for clerks in manufacturing, and significantly more so in industries with a complex division of labor. The increased demand for clerks likely contributed to the subsequent onset of the High School Movement. Interestingly, recent changes in IT have enabled firms to substitute computers for clerks, and I find evidence that this substitution occurred at a faster rate in more complex industries. The third chapter, coauthored with Liz Ananat, examines the effect of marital breakup on the economic outcomes of women with children. We find that having a female firstborn child increases the probability that a woman's first marriage ends in divorce. Using this exogenous variation we find that divorce has little effect on a woman's average household income, but it does increase the probability that her household ends up in the lowest income quartile. While women partially offset the loss of spousal earnings by receiving more child support and welfare, combining households, and increasing their labor supply, divorce still increases the odds of household poverty.

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This dissertation analyzes the impact of various financial incentives on firm behavior. The first two chapters examine product-market and input-market effects of a firm's capital structure and the incentives they create. The third chapter analyzes how incentives from the tort system affect physician location decisions. Chapter 1 examines the impact of union bargaining on capital structure determination. If a firm maintains a high level of liquidity, workers may be encouraged to raise wage demands. In the presence of external finance constraints, a firm has an incentive to use the cash flow demands of debt service payments to improve its bargaining position. Using both cross-sectional estimates of firm-level collective bargaining coverage and state changes in labor law to identify changes in union bargaining power, I show that firms indeed appear to use financial leverage strategically to influence collective bargaining negotiations. These estimates suggest that strategic incentives from union bargaining have a substantial impact on financing decisions. A firm's financial structure can also impact investments in marketing and operations management. Chapter 2 examines how capital structure affects a firm's provision of product availability - an important dimension of product quality in the retail sector. Using U.S. consumer price index microdata to measure the prevalence of out-of-stocks, I find that supermarket leveraged buyouts, which reduce liquidity, increase out-of-stocks by 10 percent. These findings suggest it is important for firms to consider these sorts of real effects on their operations when setting financial policy. Chapter 3 examines financial incentives created by medical malpractice liability. If patients bear the full incidence of cost changes and market demand is inelastic, then marginal changes in malpractice liability will not affect physicians' net income or location decisions. Using county-level, specialty-specific data on physician location from 1970 to 2000, I find that damage caps do not affect physician supply for the average resident of states adopting reforms. On the other hand, caps appear to increase the supply of specialist physicians in the most rural areas by 10 to 12 percent. This is likely because rural doctors face greater uninsured litigation costs and a more elastic demand for medical services.

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This dissertation consists of four essays on human capital, institutions, and incentives. In the first essay, I investigate the effects of voucher-school competition on educational outcomes in Chile. I present a theoretical model that produces three empirical predictions: voucher-school competition 1) improves student outcomes; 2) may put stronger pressure on public schools to increase quality; and 3) has weaker effects when public school budget constraints are softer. I exploit the interaction of the number of Catholic priests and the institution of the voucher system as a potentially exogenous determinant of voucher school entry. Using this instrument, I confirm the main predictions of my theoretical model. In the second essay, I show that cross-country differences in schooling persist to the present because colonial factors influence the extent of institutional variables, such as democracy and political decentralization. By using the number of native cultures before colonization as an instrument for political decentralization, I show that the degree of democratization positively affects the development of primary education, whereas political decentralization is the more important explanation for differences in higher levels of schooling. In the third essay, coauthored with Robert Woodberry, we show that competition between Protestant and Catholic missionaries increased schooling in former colonies. Our evidence implies that Protestant missionaries increased schooling in Catholic countries, and that the impact of Protestant and Catholic missionaries on educational outcomes was similar when missionaries of both denominations faced the same legal and institutional treatment. We interpret these results in the context of an economic rationale in which different institutions created differences in competitive pressures faced by Catholic and Protestant missionaries. Finally, in the fourth essay, I investigate the evolution of the skill premium in Chile over the last decades. I present evidence that patterns of skill upgrading in Chile have followed the evolution of the same variable in the US, consistent with a model of endogenous technological choice where new technologies are produced in developed countries and adopted in developing economies.

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This dissertation consists of three essays that examine banking and corporate finance in developing countries. Specifically, it explores the theoretical and empirical implications of open capital markets, foreign bank entry, and the role of bond markets during banking crises. Chapter 1 analyzes the impact of opening capital markets using a theoretical model that incorporates both foreign and domestic lenders in the presence of asymmetric information. The model suggests that when foreign lenders are limited in their ability to obtain information about entrepreneurs, they may engage in cream-skimming by only targeting the largest, most profitable firms. This cream-skimming can induce a reallocation of credit that may either increase or decrease overall net output of the open economy. The consequences of this credit reallocation depend on the type of financial opening and the quality of domestic institutions. Chapter 2 examines the entry of foreign banks as a specific case of opening capital markets. I estimate the impact of entry using variation in the location of foreign banks established in India following a policy change in 1994. The estimates indicate that the 10 percent most profitable firms received larger bank loans, but that on average, firms were 7.6 percentage points less likely to have a loan after entry. The decline in loans was uncorrelated with firms' profitability and driven by a decrease among group-affiliated firms. The reallocation is consistent with the presence of asymmetric information, and similar estimates are obtained using the location of pre-existing foreign firms as an instrument for the location choice of new banks. Chapter 3, co-authored with Simon Johnson and Changyong Rhee, uses a quasi-natural experiment in Korea after the 1997-98 financial crises to assess bond markets in emerging economies. Evidence confirms that bond markets can develop quickly during a banking crisis and act as a 'spare tire' even when almost all previous private finance flowed through the banking system. However, access to bonds was feasible only for the largest firms, and there is no evidence that bond finance was better directed than bank finance. Firms with weaker pre-crisis corporate governance were no less likely to obtain bond financing.

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This dissertation consists of three essays. The first one studies the effect of labor policy, in particular of firing costs, on financially restricted firms. It proposes and models an effect of firing costs that has not been described in the literature so far. When a time gap exists between production and its associated revenues, firing can become a liquidity adjustment tool that allows firms to increase their short-term liquidity. The presence of firing costs reduces the ability of firms to use this tool. This reduction negatively affects the optimal levels of investment and production of financially restricted firms. I present empirical evidence in line with this effect. The second essay studies the empirical relationship between aggregate macroeconomic volatility and idiosyncratic firm-level volatility. This relationship is a testable implication of a rich set of theoretical models available in the literature. I propose a consistent estimator of the variance of firms' real sales growth rate (proxy for idiosyncratic volatility) based on the cross-sectional properties of firms' distribution. I use optimal structural break tests and long-run relationship tests to study the relationship between aggregate and idiosyncratic firm-level volatility. The main empirical results suggest a negative and significant long-run relationship. The third essay, coauthored with Norman Loayza, analyzes potential monetary and fiscal policy biases that could result from the interaction between fiscal and monetary authorities-in a macro-policy environment where the monetary authority is committed to independently controlling inflation. We show that an increase in the divergence of authorities' preferences, with respect to the short-run trade-off between output and inflation gap, could lead to higher fiscal deficits and higher interest rates. We use a game-theoretic model to analyze this interaction, and we present supporting empirical evidence based on a panel data estimation for industrial countries.

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This dissertation develops new econometric procedures for the analysis of high-dimensional datasets commonly encountered in finance, macroeconomics or industrial organization. First, I show that traditional approaches to the estimation of latent factors in financial data underestimate the number of risk factors. They are also biased towards a single market factor, the importance of which is overestimated in samples. In Chapter 3, I derive a new consistent procedure for the estimation of the number of latent factors by examining the effect of the idiosyncratic noise in a factor model. Furthermore, I show that the estimation of factor loadings by Principal Components Analysis is inconsistent for weak factors and suggest alternative Instrumental Variables procedures. Chapter 4 uses the theoretical results of the earlier chapters to estimate the stochastic dimension of the US economy and shows that global risk factors may obfuscate the relationship between inflation and unemployment. Chapter 5 (co-authored with Jerry Hausman) suggests a new procedure for the estimation of discrete choice models with random coe±cients and shows that ignoring individual taste heterogeneity can lead to misleading policy counterfactuals.

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This dissertation consists of four chapters on empirical and experimental macroeconomics and other experimental topics. Chapter 1 uses a laboratory experiment to test the predictions of a dynamic global game designed to capture the role of information and coordination in speculative attacks. The game has a large number of heterogeneously informed agents deciding whether to attack a status quo; the status quo in turn collapses if enough agents choose to attack. The theory predicts that the equilibrium size of the attack is decreasing in both the underlying strength of the status quo and the agents' cost of attacking. Furthermore, the knowledge that the status quo has survived a past attack decreases the incentive to attack, implying that a new attack is possible only if agents receive new information. Our experimental evidence supports these theoretical predictions. We identify the agents' beliefs about the actions of others to be the main channel through which the relative strength of the status quo, the cost of attacking, and learning impact observed behavior. However, we also find that the subject's actions are overly aggressive relative to the theory's predictions. Once again, we find that the excess aggressiveness in actions stems from the aggressiveness of their beliefs about others' actions. Chapter 2 studies gender inequality in performance. One explanation for this inequality is that the genders perform differently under competitive conditions, as previous experimental studies have found a significant gender gap in competitive tasks that are perceived to favor men. We use a verbal task that is perceived to favor women and find no gender difference under competition per se. We also reject the hypothesis that a "stereotype threat" explains the inability of women to improve performance under competition: even in verbal tasks, competition does not increase women's performance. We offer an alternative explanation for this finding: namely, that women and men respond differently to time pressure. With reduced time pressure, competition in verbal tasks greatly increases the performance of women, such that women significantly outperform men. This effect appears largely due to the fact that extra time in a competition improves the quality of women's work, leading them to make fewer mistakes. On the other hand, men use this extra time to increase the quantity of work, which results in a greater number of mistakes. Chapter 3 studies the effects of institutions on development in post-Communist Russia. Even though Russia transitioned to a democratic institutional system in 1991, old Communist institutions persist in some of its regions. These "shadow institutions" have a significant effect on economic outcomes and, in particular, on small business development. We show that regions run by old Communist elites have had lower levels of economic development than regions led by newcomers to the political arena. Chapter 4 uses a laboratory experiment to investigate whether an uninformative announcement by an outsider can help us detect multiplicity in a dynamic global game setting. When theory predicts a unique equilibrium, the announcement should have no effect on behavior. In the presence of multiplicity, the announcement may serve as a coordination device. The experimental results suggest that the effect of the uninformative announcement is significant only in circumstances where information dynamics result in multiple equilibria. Moreover, the announcement seems to impact observed behavior through its effect on the subjects' beliefs about others' actions.

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This thesis consists of three chapters on Economic Growth and Informational Frictions. Chapter 1 investigates the relation between financial development, R&amp;D expenditure and aggregate growth. It provides empirical evidence that financial development has a large positive effect on both growth and R&amp;D, and that the effect of financial development on growth is likely to be explained by its effect on R&amp;D. I also study a general equilibrium model in with predictions which are consistent with the empirical regularities mentioned above. In particular, aggregate growth increases as financial development increases. The model also predicts that financial development produces large welfare gains, specially at low levels of financial development. Finally I show that the model studied suggests that R&amp;D policy is welfare improving and that policy should be conditional on the level of financial development. Chapter 2 gives an empirical assessment of the world income distribution. In particular, I take a CES production function implied by a Skill-Biased technical change model and fit this production function to the data. The calibration results give evidence of the importance of including different skills to account for the observed income differences over time. I also show that the calibration exercise is validated by the estimated values of the parameters of the model. In Chapter 3 I study a model of entry under uncertainty. In particular, I analyze an economy where potential entrants make entry decisions after receiving noisy signals of the true demand levels for the different sectors of the economy. I show that equilibrium strategies depend on the precision of the signals received by agents. When precision is low the equilibrium of the game is a pure strategy equilibrium where agents enter the sector for which they receive a higher signal. On the other hand when precision is high the optimal strategy is to randomize over which sector to enter. The model also highlights the non-monotonic relations between the discrepancy between the equilibrium and efficient entry levels and both the precision of the signal and the true relative demand between sectors.

MIT\_Dept. of Economics.\_673

The first chapter examines the interaction of heterogeneous firms in a competitive market in which firms motivate their workers using relational incentive contracts. In the steady-state rational-expectations equilibrium, aggregate TFP is fully characterized by a weighted average of firm-specific sustainable effort levels. Relational contracts amplify exogenous productivity heterogeneity and lead to dispersion in the net marginal revenue product of labor. Improvements in formal contracting disproportionately benefits low-productivity firms, leading to a greater dispersion of the net marginal revenue product of labor in weaker contracting environments. Thus, cross-country differences in contracting institutions can partially explain the observed pattern that misallocation is more pronounced in developing countries. The second chapter explores organizational responses to influence activities-costly activities aimed at persuading a decision maker. Rigid organizational practices that might otherwise seem inefficient can optimally arise. If more complex decisions are more susceptible to influence activities, optimal selection may partially account for the observed correlation between the quality of management practices and firm performance reported in Bloom and Van Reenen (2007). Further, the boundaries of the firm can be shaped by the potential for influence activities, providing a theory of the firm based on ex-post inefficiencies. Finally, boundaries and bureaucratic institutions interact: more concentrated decision-making and bureaucratic institutions are complements. The third chapter (co-authored with Robert Gibbons and Richard Holden) analyzes a rational-expectations model of price formation in an intermediate-good market under uncertainty. There is a continuum of firms, each consisting of a party who can reduce production cost and a party who can discover information about demand. Both parties can make specific investments at private cost, and there is a machine that either party can control. As in incomplete-contracting models, different control structures create different incentives for the parties' investments. As in rational-expectations models, some parties may invest in acquiring information, which is then incorporated into the market-clearing price of the intermediate good by these parties' production decisions. The informativeness of the price mechanism affects the returns to specific investments and hence the optimal control structure for individual firms; meanwhile, the control structure choices by individual firms affect the informativeness of the price mechanism. In equilibrium the informativeness of the price mechanism can induce ex ante homogeneous firms to choose heterogeneous control structures.

MIT\_Dept. of Economics.\_674

This thesis explores three aspects of the coexistence of governments and markets from an optimal policy point of view. In chapter 1, I study how the presence of financial markets shapes the government's ability to redistribute. Individuals do not, constrain consumption to equal their net-of- tax income every period, but instead use markets to allocate their resources over time. This restricts the set of policy instruments available to the government. At the same time, however, markets enable agents to enter long-term consumption commitments. Changing these contracts is costly. These potential default costs mitigate the government's ex-post incentives to renege on the promised tax schedule, and therefore provide a coninitment device for the government. In that sense, financial markets may facilitate rather than hinder redistribution. In chapter 2, I present a rationale for corporate income taxes to discriminate between debt and equity financing. For risk-averse entrepreneurs, equity generates more surplus than debt, because it provides financing and insurance. A government seeking to extract surplus from entrepreneurs would naturally tax equity-generated income more than debt-generated income. Moreover, in the presence of private information, the government can use taxes to discriminate between different types of entrepreneurs. This degree of freedom allows a manipulation of the relevant incentive constraints, and an increase in overall efficiency. The optimal non-linear tax schedule to achieve the desired discrimination is isomorphic to one that taxes debt-generated income at a lower rate than equity-generated income. In chapter 3, I explore how fast people adapt to institutional change. I study the differential reaction of former East and West Germans to a series of health care reforms. Along with the decrease in coverage under the public health insurance, former East Germans were significantly less likely to sign complementary insurance contracts in the private market. I show that the differential uptake rates of additional insurance are consistent with a model in which agents learn over time that institutions have changed and they are now responsible for optimizing their coverage. Thus, I provide evidence for the existence of a substantial transition period in the individual adaptation to new institutions.

MIT\_Dept. of Economics.\_689

When a contract is signed between two economic agents, it is likely to produce some effect on non-contracting, third parties and provide new information to the contracting parties. This thesis examines how such third party externality and newly generated information should affect the initial form of the contract. In the first essay, a headquarters of a firm designs a mechanism with which it extracts the division managers' superior information about the external market opportunities. The information allows the headquarters to provide optimal investment incentive to the managers and make efficient trading decisions. The essay provides a justification for a real-world headquarters, who delegates all the operating decisions to the division managers but maintains the ultimate authority within the firm. The second essay examines how a client would contract with her lawyer to provide best incentive to the lawyer and maximize her return from litigation. By providing different contingent shares based on settlement and judgment, she is able to provide better incentive without diluting her return from litigation. At the same time, when she has relatively poor bargaining leverage against the counter party, the essay shows that delegating the settlement authority to the lawyer and leaving him a large rent would be more beneficial for the client. The third essay analyzes the salary contracting problem faced by the owner of a firm who is aware of a potential opportunity to sell her firm in the future. The essay demonstrates that when the owner grants a large severance payment to the employee, she would be able to defer the compensation burden to the potential buyer and increase her net return from the firm.

MIT\_Dept. of Economics.\_764

This thesis examines the effect of bankruptcy law on consumer borrowing and welfare. The thesis consists of four theoretical chapters and two empirical chapters. Chapter 1 presents a simple model of consumer borrowing where the repayment of debt is governed by a bankruptcy law which allows a consumer to protect income below a given exemption level from creditors. Increasing bankruptcy exemption levels are found to increase borrowing and to increase consumer welfare so long as the consumer is borrowing less than the maximum amount possible. If consumers are borrowing the maximum amount possible, increasing exemption amounts increases credit constraints and decreases borrowing. Consumer welfare is maximized at the point where the marginal benefit the amount of insurance provided by the bankruptcy regime equals the marginal cost to reducing borrowing. Chapter 2 expands the model described in chapter 1 to include consumers who differ as to either their demand for credit or their ability to repay loans. The optimal exemption level is found to occur where the marginal cost due to increasing credit constraints to consumers with a higher demand for credit or a lower ability to repay is balanced against the increased insurance benefit provided to other borrowers. Chapter 3 considers the effect of bankruptcy law on credit markets with asymmetric information. I find that the possibility to receive a discharge of debt provided by bankruptcy law may cause consumers to distort their borrowing choices. Optimal exemption levels balance costs due to distortions in borrowing with benefits associated with increases in insurance. Chapter 4 presents a model of the effect of bankruptcy law on incentives to work. I find that increasing exemption levels may either increase or decrease incentives to work or to take risk. Chapter 5 examines the effect of exemption levels on household borrowing. I find that increasing personal property exemption levels are associated with higher levels of home mortgage debt and decreased probabilities that non-homeowners have greater than $50,000 in debt. Homestead exemptions are negatively associated with homeownership. Chapter 6 finds that personal property exemption levels are positively related to bankruptcy filing rates.

MIT\_Dept. of Economics.\_765

This thesis considers inference issues in serially correlated multilevel and panel data and presents a separate essay that examines the impact of 401(k) participation on wealth. The first chapter examines generalized least squares (GLS) estimation in data with a grouped structure where the groups may be autocorrelated. The analysis presents computationally convenient methods for obtaining GLS estimates in large multilevel data sets and discusses estimation of covariance parameters for use in GLS when the shock follows an AR(p) process. Standard estimates of the AR coefficients will typically be biased due to the inclusion of group level fixed effects, so a simple bias correction for the AR coefficients is offered which will be valid in the presence of fixed effects and group specific time trends. The chapter concludes with a simulation study that illustrates the usefulness of the derived methods. The second chapter further explores inference in serially correlated panel data by considering the asymptotic properties of a robust covariance matrix estimator which is advocated for use in panel data. The estimator has good properties when the cross-section dimension, n, grows large with the time dimension, T, fixed. However, many panel data sets are characterized by a non-negligible time dimension. Chapter 2 extends the usual analysis to cases where T [right arrow] [infinity symbol] showing that t and F tests based on the robust covariance matrix estimator display their usual limiting behavior as long as n [right arrow] [infinity symbol] with T. When T [right arrow] [infinity symbol] with n fixed, the results show that t and F statistics can be used for inference despite the fact that the robust covariance matrix estimator is not consistent but converges to a limiting random variable. The properties of tests based upon the robust covariance matrix estimator are examined in a short simulation study. The final chapter uses instrumental variables quantile regression to examine the effects of participating in a 401(k) on wealth. significant over the entire range of the asset distribution and that the increase in the lower tail appears to translate completely into an increase in wealth. However, there is evidence of substitution between net financial assets and other forms of wealth in the upper tail of the distribution. The results demonstrate that estimates of treatment effects which focus on a single feature of the outcome distribution may fail to capture the full impact of the treatment and that examining additional features may enhance our understanding of the economic relationships involved.

MIT\_Dept. of Economics.\_839

This thesis analyzes two issues in international trade: trade policy determination and international outsourcing. The first three chapters introduce the firm as a novel unit of analysis in the political economy of trade policy. Chapter 1 takes a standard model of political economy of trade policy in the presence of lobbying. It shows that, in the presence of heterogeneity in the participation of firms in political activity, the level of protection is determined, among other factors, by the intensity of lobbying in a given sector. Chapter 2 analyzes the strategic interaction among firms in a given sector and shows how lobbies are formed when protection from foreign competition represents a public good. This chapter offers different criteria that lobby formation might obey and analyzes the impact of the characteristics of the distribution of firm size on the level of protection of industrial sectors. Chapter 3 presents a new dataset which allows me to test the theoretical predictions derived in Chapter 1 and Chapter 2. In particular the empirical results show how ,the level of protection depends positively on the intensity of lobbying as measured in Chapter 1 and how the intensity of lobbying, called here Participation Shares, depend positively on simple characteristics of the distribution of firm size, such as mean and standard deviation. The fourth chapter offers a novel perspective on the decision of firms to outsource part of their production activities and looks at the impact of individual firms' decisions on incentive of other firms to outsource. Outsourcing firms face a potential loss of product differentiation, but achieve economies of scale at the level of the intermediate good producer. Interaction among firms in a sector can lead to waves of outsourcing.

MIT\_Dept. of Economics.\_840

Long-term care expenditures represent one of the largest uninsured financial risks facing the elderly. Medicaid provides incomplete insurance against these costs: unlimited nursing home benefits with a deductible equal to the savings and income above the means-testing limits. While private insurance is available, fewer than 10 percent of the elderly are currently covered. This thesis explores how the elderly prepare for future nursing home use and the interactions between the private and public insurance systems. Chapter one exploits the state-variation in Medicaid generosity to study the financial response of the elderly to perceived future nursing home needs. I find that the elderly shift their consumption and savings decisions in response to Medicaid. Single households have lower net worth through the median of the distribution due to Medicaid policy. On the other hand, I find that married households do not lower total net worth, but they change their relative holdings of protected and non-protected assets. Chapter two explores the crowd-out effect of the public Medicaid program on demand for private long-term care insurance coverage. We estimate the impact of Medicaid program rules on private long-term care insurance coverage for the elderly. We find small but statistically significant marginal crowd-out effects. Our estimates imply that even a $67,000 decrease in the asset disregard for couples would only increase private long-term care insurance ownership among the elderly by 1.9 percentage points. These findings underscore that marginal reforms to the existing Medicaid program are unlikely to be an effective way of increasing private long-term care insurance coverage among the elderly. Chapter three explores individuals' expectations for future nursing home use. I compare self-reported probabilities to the statistical probability computed with a state-of-the-art model used by the long-term care insurance industry. I find that respondents tend to overestimate unlikely outcomes and underestimate likely outcomes. On average, though, the expectations are very accurate. I find that expectations for nursing home use evolve with health conditions in similar ways as the statistical probability. While I find that expectations include private information, they do not account for all information available to the individual, especially the individual's demographic characteristics.

MIT\_Dept. of Economics.\_841

In this dissertation, I present three empirical essays that encompass topics in industrial organization. The first essay examines the degree of competition and spatial differentiation in the retail industry by exploiting a unique dataset that describes a consumer's choice of store, product of purchase, item price, and demographics. I estimate a consumer's choice of retailer in the sales market for DVDs among online, mass merchant, electronics, video specialty, and music stores, and I allow for unobserved heterogeneity in preferences for store types and disutility of travel. A consumer's traveling cost varies by income, and substitution occurs proportionately more among stores of the same type. The second essay investigates an intriguing puzzle in the movie industry: "why do studios cluster their big theatrical hits during the July 4th weekend?" A series of recent papers by Einav (2002) indicate that although the underlying demand for theatrical movies remains high around Labor Day, studios tend to release their high quality movies at the beginning of the summer. I employ data from the home video industry to provide more evidence on whether booms in theatrical revenues are supply- or demand-driven and to investigate why firms might cluster their releases as they do. The third essay presents examples based on actual and synthetic datasets to illustrate how simulation methods can often mask identification problems in the estimation of mixed logit models. Typically, simulation methods approximate an integral (that does not have a closed form) by taking draws from the underlying distribution of the random variable of integration. The examples reveal how a "low" number of draws can generate estimates that appear identified, but in fact, are either not theoretically identified by the model or not empirically identified by the data. The number of draws required to reveal the identification problem will depend on the data, model, and type of draws used. These examples emphasize the importance of checking the stability of the estimates with respect to the number of draws.

MIT\_Dept. of Economics.\_842

This thesis is a collection of three essays in international trade. Chapter 1 explains how firm heterogeneity and market structure can distort the geography of international trade. By considering only the intensive margin of trade, Krugman (1980) predicts that a higher elasticity of substitution between goods magnifies the impact of trade barriers on trade flows. In this chapter, I introduce firm heterogeneity in a simple model of international trade. I prove that the extensive margin, the number of exporters, and intensive margin, the exports per firm, are affected by the elasticity of substitution in exact opposite directions. In sectors with a low elasticity of substitution, the extensive margin is highly sensitive to trade barriers, compared to the intensive margin, and the reverse holds true in sectors with a high elasticity. The extensive margin always dominates, and the predictions of the Krugman model with representative firms are overturned: the impact of trade barriers on trade flows is dampened by the elasticity of substitution, and not magnified. To test the predictions of the model, I estimate gravity equations at the sectoral level. The estimated elasticities of trade flows with respect to trade barriers are systematically distorted by the degree of firm heterogeneity and by market structure. These distortions are consistent with the predictions of the model with heterogeneous firms, and reject those of the model with representative firms. Chapter 2 demonstrates the importance of liquidity constraints in international trade. If firms must pay some entry cost in order to access foreign markets, and if they face liquidity constraints to finance these costs, only those firms that have sufficient liquidity are able to export. A set of firms could profitably export, but they are prevented from doing so because they lack sufficient liquidity. More productive firms that generate large liquidity from their domestic sales, and wealthier firms that inherit a large amount of liquidity, are more likely to export. This model predicts that the scarcer the available liquidity and the more unequal the distribution of liquidity among firms, the lower are total exports. I also offer a potential explanation for the apparent lack of sensitivity of exports to exchange rate fluctuations. When the exchange rate appreciates, existing exporters lose competitiveness abroad, and are forced to reduce their exports. At the same time, the value of domestic assets owned by potential exporters increases. Some liquidity constrained firms start exporting. This dampens the negative competitiveness impact of a currency appreciation. Under some circumstances, it may actually reverse it altogether and increase aggregate exports. This model provides some argument for competitive revaluations. In chapter 3, I build a dynamic model of trade with heterogeneous firms which extends the work of Melitz (2003). As countries open up to trade, they will experience a productivity overshooting. Aggregate productivity increases in the long run, but it increases even more so in the short run. When trade opens up, there are too many firms, inherited from the autarky era. The most productive foreign firms enter the domestic market. Competition is fierce. The least productive firms that are no more profitable are forced to stop production. Not only do the most productive firms increase their size because they export, but the least productive firms stop producing altogether. Aggregate productivity soars. As time goes by, firms start to exit because of age. Competition softens. Some less productive firms resume production. This pulls down aggregate productivity. The slower the exit of firms, the larger this overshooting phenomenon. This model also predicts that the price compression that accompanies trade opening may be dampened in the long run. It also predicts that inequalities should increase at the time when a country opens up to trade, and then gradually recede in the long run.

MIT\_Dept. of Economics.\_1042

This dissertation consists of three empirical studies, each using a measure of pre-market skills to examine an aspect of wage inequality in the U.S. labor market. Chapter One analyzes the factors associated with the change in the gender wage gap for young workers. I decompose the change in the gender wage gap over the entire wage distribution into factors associated with education, pre-market skills and the minimum wage. Improvements in education explain nearly all of the fall in the gap for the top three quarters of the distribution, leaving a small role for beneficial unexplained factors that led to excess shrinking of the gap. Women in the bottom quarter of the distribution actually experienced residual increases in the gender wage gap, and the gap rose outright for women in the bottom decile of the distribution. The fall in the real value of the minimum wage is discussed as a plausible explanation for the residual increase in the gender wage gap for low-earning women. Chapter Two evaluates the increase in the return to college between 1979 and 1999. Improved sorting of highly skilled individuals into college over the period implies that the composition of unobserved skill across education groups is not time invariant. Despite the increase in college attendance, college degree holders in 1999 had higher measures of pre-market skills than degree holders in 1979. For new labor market entrants, improved skill sorting accounts for four to nine percent of the increase in the return to college over the period. Accounting for improved sorting and the increased return to these skills reduces the estimated increase in the return to college by one third for males and one sixth for females. Chapter Three explores the wage premium associated with on-the-job computer use. I show the computer wage premium does not appear to be simply the result of a spurious correlation with typically unobserved cognitive and interpersonal skills. For males and females, the return to on-the-job computer use falls by less than 15% after controlling for worker heterogeneity in pre-market skills. Controlling for education, workers using a computer at work do not receive a higher wage premium for their other productive skills.

MIT\_Dept. of Economics.\_1043

This dissertation is a collection of three independent essays in empirical development economics using data from China. In the first two chapters, I examine the determinants of choices within the household. In the first chapter, I estimate the causal effects of total income, relative female and relative male income on sex imbalance. The second chapter studies the effects of relaxations in the One Child Policy on sex ratios and family size and then exploits the exogenous variation in family size caused by the relaxations to estimate the causal effect of family size on school enrollment. The third chapter is a descriptive study of income inequality for top income earners in China during 1986-2002 and the potential redistributive effectiveness of progressive income taxation.

MIT\_Dept. of Economics.\_1060

This dissertation consists of three papers studying how firms allocate real and financial capital, and how taxes, the labor market and asymmetric information affect these allocation decisions. The first paper studies the response of business investment to taxes. I use the variation provided by recent reforms to the Mexican tax system, including the elimination of accelerated depreciation for investment outside the main metropolitan areas. I show that investment is very sensitive to tax changes (an elasticity of investment with respect to the user cost around -2.0), mainly due to the small open economy nature of Mexico: large responses of multinationals and large elasticity of imported assets. I also show that investment behavior is consistent with nonconvexities and irreversibilities. The results are robust to different specifications and instrumental variables approaches, and are not an artifact of tax evasion. The second paper studies the link between payout and unionization. Signaling models suggest that dividends are used to convey information about future earnings to investors. However, if unions also receive these signals, managers will be less inclined to send the signal, preventing unions from using this information when bargaining for higher salaries. Using data from IRS 5500 Forms to measure firm unionization, I find dividends to be better predictors of future earnings in non-unionized firms. Results are robust to different specifications and time periods, as well as to an instrumental variables approach that uses state level right-to-work laws to address unionization endogeneity. The third paper, joint with Antoinette Schoar, studies the presence and extent of Performance-Based Arbitrage (PBA) in the money manager industry. PBA (correlation between past performance and assets given by investors to arbitrageurs) prevents arbitrage from equalizing prices and fundamental values. We document the presence of PBA and show it might be profitable for investors. We show that PBA is stronger in periods of lower returns and higher volatility, and it is stronger in equity versus fixed income markets. However, we also show that PBA is weaker among managers that use arbitrage strategies, suggesting that although PBA exists, its effect on security prices might be small.

MIT\_Dept. of Economics.\_1100

This thesis studies the long-term benefits of preschool interventions, the impact of promotions on heart disease, and the effects of light trucks on traffic fatalities. The first chapter examines the long-term effects of preschool interventions. Several influential experiments - Abecedarian, Perry, and Early Training - have convinced many economists that preschool interventions have super-normal returns. This chapter implements a unified statistical framework to present a de novo analysis of these experiments, focusing on core issues that received little attention in previous analyses: treatment effect heterogeneity by gender and over-rejection of the null hypothesis due to multiple inference. The primary finding of this reanalysis is that girls garnered substantial short- and long-term benefits from the interventions. However, there were no significant long-term benefits for boys. These conclusions change little when allowance is made for attrition and possible violations of random assignment. The second chapter, coauthored with Sir Michael Marmot, investigates the effect of promotions on heart disease. The positive cross-sectional relationship between socioeconomic status and health is well documented, but little evidence exists regarding the causal effect of social status on health. This chapter uses data on British civil servants from the Whitehall II study. It identifies differences in departmental promotion rates as a plausibly exogenous source of variation in promotion opportunities and exploits this variation to estimate the causal effect of promotions on heart disease. The results suggest that promotions can reduce the probability of heart disease by 3 to 13 percentage points over a 15 year period. The third chapter analyzes the traffic safety impact of the increasing popularity of light trucks. It combines estimates from a state-level panel data set with an accident-level micro data set. The results suggest that a one percentage point increase in light truck share raises annual traffic fatalities by 0.41 percent, or 172 deaths per year. Of this increase, approximately one-quarter to one-third accrue to the light trucks' own occupants, and the remaining two-thirds to three-quarters accrue to other roadway users. Using standard value of life figures, the implied Pigovian tax is approximately 4,650 dollars per light truck sold.

MIT\_Dept. of Economics.\_1101

This thesis examines three questions of causality relevant to public finance and labor economics: the effect of racial segregation on city characteristics, the effect of divorce on women's economic outcomes, and the effect of abortion legalization on completed fertility. Chapter one examines the effect of segregation on cities. There is a strikingly negative city-level correlation between residential racial segregation and population outcomes -- particularly for black residents -- but it is widely recognized that this correlation may not be causal. This chapter provides a novel test of the causal relationship between segregation and population outcomes by exploiting the arrangements of railroad tracks in the 19th century to isolate plausibly exogenous variation in a city's susceptibility to segregation. I show that, conditional on miles of railroad track laid, the extent to which track configurations physically subdivided cities strongly predicts the level of segregation that ensued after the Great Migration of African-Americans to northern and western cities in the 20th century. Prior to the Great Migration, however, track configurations were uncorrelated with racial concentration, income, education and population, indicating that reverse causality is unlikely. Instrumental variables estimates find that segregation leads to negative characteristics for blacks and high-skilled whites, but positive characteristics for low-skilled whites. Segregation could generate these effects either by affecting human capital acquisition of residents of different races and skill groups ('production') or by inducing sorting of race and skill groups into different cities ('selection'). I develop a model to distinguish between production and selection effects. The findings are most consistent with the view that more segregated cities produce better outcomes for low-skilled whites and that more segregated cities are in less demand among both blacks and whites, implying that Americans on average value integration. Chapter two, coauthored with Guy Michaels, examines the effect of divorce on women's economic outcomes. Having a female firstborn child significantly increases the probability that a woman's first marriage breaks up. We exploit this exogenous variation to measure the effect of marital breakup on women's economic outcomes. We find evidence that divorce has little effect on a woman's average household income, but significantly increases the probability that her household will be in the lowest income quartile. While women partially offset the loss of spousal earnings with child support, welfare, combining households, and substantially increasing their labor supply, divorce significantly increases the odds of household poverty on net. Chapter three, coauthored with Jonathan Gruber and Phillip B. Levine, examines the effect of abortion legalization on completed fertility. Previous research has convincingly shown that abortion legalization in the early 1970s led to a significant drop in fertility at that time. But this decline may have either represented a delay in births from a point where they were "unintended" to a point where they were "intended," or they may have represented a permanent reduction in fertility. We combine data from the 1970 U.S. Census and microdata from 1968 to 1999 Vital Statistics records to calculate lifetime fertility of women in the 1930s through 1960s birth cohorts. We examine whether those women who were born in early legalizing states and who passed through the early 1970s in their peak childbearing years had differential lifetime fertility patterns compared to women born in other states and in different birth cohorts. We consider the impact of abortion legalization on both the number of children ever born as well as the distribution of number of children ever born. Our results indicate that much of the reduction in fertility at the time abortion was legalized was permanent in that women did not have more subsequent births as a result. We also find that this result is largely attributable to an increase in the number of women who remained childless throughout their fertile years.

MIT\_Dept. of Economics.\_1102

This dissertation presents work empirically investigating various aspects of the criminal justice system. Chapter one, coauthored with Chris Rohlfs, examines the judicial bail-setting process and the defendant decision to pay bail. Optimal bail-setting rules must balance the tradeoffs between costs to defendants and costs to society. This chapter develops a model of optimal bail that incorporates the cost of jailing the defendant, the private cost to the defendant from being incarcerated, the cost of crime, and the costs that arise when defendants abscond. The model is empirically calibrated using data from a randomized experiment. The randomized experiment allows the use of defendants' bail posting decisions to estimate their subjective values of freedom. Our estimates suggest that high-risk defendants would be willing to pay $300 to $1,000 for 90 days of freedom. We find the socially optimal level of bail to be substantially lower than levels currently set by judges. Aggregating nationally, we find that the total social benefit of reform would be on the order of $10 billion per year. Chapter two, coauthored with Marianne Bertrand and Sendhil Mullainathan, is a study of the impact of defendant race on interjudge sentencing disparity, which seeks to add to the knowledge of the role of race in the courtroom. This chapter attempts to determine whether the legal system discriminates against minorities by addressing a related question: do judges differ in how they sentence minorities? This approach avoids the difficulty of systematic racial differences in case characteristics by exploiting the random assignment of cases to judges. We measure the between judge variation in the ratio of African-American to White defendant sentence lengths and incarceration rates. In our data set, which includes all felony cases in Cook County, Illinois from 1985-2005, we find large between-judge variation. We also find that judge characteristics, such as age, and the judge's previous work experience as a prosecutor or defender all predict their racial gap in sentencing. Chapter three presents evidence regarding the deterrent effect of incarceration. Knowing the magnitude of the deterrent effect of incarceration on crime is crucial to optimal policy setting. In this chapter I make use of sentence enhancements in gun robbery sentence lengths caused by add-on gun laws to attempt to estimate this impact. Since defendants subject to add-ons would be incarcerated in the absence of the law change, the short-term effect will be solely deterrent. I take advantage of the temporal variation in the passage of these laws in different states to identify the causal impact of the law change. I find that add-on gun laws result in a significant reduction in gun robberies, approximately 5% within the first three years of passage, for the average add-on gun law. The results are robust to a number of tests, and do not appear to be due to a large spillover to other types of crime.

MIT\_Dept. of Economics.\_1103

This dissertation consists of three chapters on adverse-selection type insurance markets. Chapter 1 develops a model for analyzing non-exclusive insurance markets. It establishes that the "screening" considerations of models following Rothschild and Stiglitz (1976)-long applied for analysis of exclusive-contract insurance markets-also apply when contracting is non-exclusive and contracts are linearly priced. It characterizes the contracts offered in efficient markets and shows that screening and non-exclusivity together impose significant restrictions on the structure of insurance policies. In a two risk-type market for retirement annuities, market efficiency requires that either all annuities purchased will provide declining real income streams or else all will provide rising income streams. Chapters 2 and 3 examine the consequences of regulations which restrict the use of characteristic-based pricing in exclusive contracting insurance markets. Chapter 2 argues that restrictions on pricing on the basis of observable characteristics such as gender, race, or the outcomes of genetic tests are undesirable, since the distributional goals of these restrictions can be accomplished more efficiently by employing social insurance. In particular, it shows that a government which can provide pooled-price social insurance can relax restrictions on characteristic-based pricing while implementing a "compensatory" social insurance policy in a way that ensures no individual is harmed while some individuals gain. Chapter 3 is collaborative work with James Poterba and Amy Finkelstein. It starts from the observation that the "compensatory" social insurance policies identified in Chapter 2 are not typically employed in practice. When they are not, permitting characteristic-based pricing has both efficiency and distributional consequences vis a vis banning such pricing. We develop a methodology for empirically measuring the magnitudes of both consequences. We apply this methodology to evaluate the hypothetical imposition of a ban on gender-based pricing in the U.K. annuity market. We estimate that this imposition will re-distribute significant resources from short-lived men to long-lived women. The amount of re-distribution may be up to 50% less than would be predicted without accounting for the endogenous market response, however.

MIT\_Dept. of Economics.\_1148

This dissertation addresses the potential agency conflicts arising between an insurance broker and its commercial clients. Though the broker is hired to find its client the best insurance quote on the market, the broker's contractual arrangements and private information may lead it to stray from this ideal. The first chapter introduces the institutions of commercial lines insurance in the interest of providing a foundation for the empirical inquiries to follow. The second chapter asks whether contingency fees, which are annual payments rewarding the broker for attaining premium volume and profitability targets with an insurer, distort the broker's sales behavior. The analysis uses data on policies written through a privately-held insurance broker in Arizona from 1994 to 2000. I am able to identify the effect of contingency fees because individual agents working at the broker make placement decisions, and only some agents have an incentive to respond to this compensation. Contingency fees are found to distort sales toward insurers that have contracts in effect at the broker. Moreover, agents appear to respond to contractual nonlinearities and are more inclined to place business with insurers offering high marginal incentives. The third chapter asks whether the broker can effectively communicate its private information to the client if it is in the broker's immediate interest to avoid costly search. The client would like the broker to search if the client's current insurer is no longer pricing its coverage competitively. In contrast, the broker would like to avoid costly search, while retaining the client. Thus, the broker has an incentive to distort the information provided to the client, always arguing that the client's current coverage is priced competitively. If search is only warranted when a client faces an idiosyncratic price increase, the moral hazard may still induce heightened search activity in response to systematic price increases. The broker cannot credibly communicate to the client the fact that all prices (not just its price) have increased. Using the data set employed in the second chapter, systematic price increases are found to significantly increase client turnover among insurers consistent with the moral hazard hypothesis.

MIT\_Dept. of Economics.\_1149

This dissertation addresses two aspects of firm behavior in emerging markets. Chapters 1 and 3 consider the decision of firms to borrow in domestic or foreign currency and the implications of this decision on fixed capital and inventory investment. Chapter 2 explores the effects of institutions, via transaction costs, on the variety of intermediate goods used by firms in different economies, and the effects of this choice on productivity levels. Much has been written recently about the problems for emerging markets that might result from a mismatch between foreign currency denominated liabilities and assets (or income flows) denominated in local currency. In particular, several models, developed in the aftermath of financial crises of the late 1990's, suggest that the expansion in the "peso" value of "dollar" liabilities resulting from a devaluation either aggravated or triggered many of the recent financial crises. However, little evidence has been presented either on the effects of foreign currency debt on investment or the variables that affect firm level debt choice in the first place. Two of the papers in this dissertation (Chapters 1 and 3) attempt to fill this gap using a new database with accounting information (including the currency composition of liabilities) for close to 400 non-financial firms in five Latin American countries. In Chapter 1 (coauthored with Hoyt Bleakley) we estimate, at the firm level, the reduced-form effect on investment of holding foreign currency denominated debt during an exchange rate realignment. We consistently find that this effect is positive, contrary to the predicted sign of the net-worth effect. Additionally, we show that the estimated coefficient can be decomposed into competitiveness and net-worth effects, and provide direct evidence that the competitiveness effect dominates the net-worth effect. We argue that the positive response of investment is the result of firms debt choice decisions. If those firms holding dollar debt are also those firms whose current and future incomes benefit most from a devaluation then it is not surprising that the contractionary balance sheet effects of devaluations are more than offset by expansionary competitiveness effects. In Chapter 3 I explore the issue of debt choice in more detail with the help of a simple model of debt composition. In the model, firms hedge against exchange rate shocks by altering the currency mix of their liabilities. Within a sample of non-financial Latin American firms I find that firms holding dollar debt are those whose income we expect a priori to be more highly correlated with the exchange rate. I also find evidence that firms holding dollar debt are less credit constrained. Finally, I explore variations across countries and over time in the determinants and levels of dollarization. Within the sample of Latin American corporations I find that exchange rate stability has a significant positive effect on the level of dollarization. All three empirical findings are consistent with a model of debt composition in which credit constraints lead to risk averse behavior by firms Although there is growing evidence of the role of institutions in explaining cross country differences in income per capita, there is still little evidence as to the precise mechanisms by which institutions affect economic outcomes ...

MIT\_Dept. of Economics.\_1151

This thesis examines the incentives to exercise market power that generators would face and the different strategies that they would follow if all electricity supplies in Chile were traded in an hourly-unregulated spot market. The industry is modeled as a Cournot duopoly with a competitive fringe; particular care is given to the hydro scheduling decision. Quantitative simulations of the strategic behavior of generators indicate that the largest generator (" Endesa") would have the incentive and ability to exercise market power unilaterally. It would schedule its hydro resources, which are shown to be the real source of its market power, in order to take advantage of differences in price elasticity: too little supply to high demand periods and too much to low demand periods. In the second Chapter the following mitigation measures are analyzed: (a) requiring Endesa to divest some of its generating capacity to create more competitors and (b) requiring the dominant generators to enter into fixed price forward contracts for power covering a large share of their generating capacity. Splitting the largest producer in two or more smaller firms turns the market equilibrium closer to the competitive equilibrium as divested plants are more intensely used. Contracting practices proved to be an effective tool to prevent large producers from exercising market power in the spot market. In addition, a more efficient hydro scheduling resulted. Conditions for the development of a voluntary contract market are analyzed, as it is not practical to rely permanently on vesting contracts imposed for the transition period. In the final Chapter, a model that explicitly allows producers to engage in strategic behavior to congest the system's main transmission line in order to exercise market power is estimated. Results indicate that there is no pure strategy equilibrium in which one generator plays an aggressive strategy and congests the line towards the other region while the other generator passively accepts imports. Indeed, generators would follow opposite strategies. The second largest producer's position in the industry is not strong enough to exercise market power most of the time but is strong enough to restrain Endesa's attempts to congest the line.

MIT\_Dept. of Economics.\_1197

This thesis is a collection of three empirical essays in international finance. The first chapter studies the transmission of monetary policy through the lending channel in a partially dollarized banking system. Taking advantage of the cross-sectional and time-series variation in the individual Mexican bank balance sheets, I find that the deposits and loans of banks with a larger share of foreign deposits are less sensitive to domestic monetary shocks, particularly for small banks. This result is reinforced when foreign monetary shocks and country risk shocks are controlled for. The results also suggest that banks with a larger foreign deposit share are more sensitive to foreign (U.S.) monetary shocks. Finally, these banks are more sensitive to country risk. That is, they are more prone to lose deposits when Brady bond spreads increase, although the size of their loan portfolio is not reduced. The second chapter examines whether bank credit fuels asset prices, using evidence from the Japanese real estate boom during the 1980's. The decline in banks' loans to keiretsu firms is used as the shock to bank real estate credit. The evidence supports using keiretsu loans as an instrument. Financial deregulation allowed large firms to replace bank finance with financing from public markets. The main part determines that those prefectures that experienced a larger loss in their banks' proportion of keiretsu loans experienced a positive increase in real estate lending which fuelled land inflation. An increase of 0.01 in a prefecture's instrumented share of real estate loans for 3 years implies a 28 % higher land inflation rate. The third chapter evaluates the behavior of sovereign credit ratings. This chapter questions the view that credit rating agencies aggravated the Asian crisis by excessively downgrading those countries. I find that ratings are, if anything, sticky rather than excessively procyclical. Assigned ratings exceeded predicted ratings prior to the crisis, mostly matched predicted ratings during the crisis period, and did not increase as much as predictions in the recent period following the crisis. Ratings are also found to react to nonmacroeconomic factors, lagged spreads and default history.

MIT\_Dept. of Economics.\_1198

The first chapter of this thesis analyzes how the gossip process can be manipulated by malicious people and the impact of such manipulation on information transmission. In this model, a single piece of information is transmitted via a chain of agents with privately known types. Each agent may be either objective or malicious, with the latter type aiming to bias the information transmitted. In an indirect-impact gossip model where agents aim to influence a final decisionmaker, the malicious type's equilibrium incentive to make up wrong information is independent of their position in the gossip chain. Moreover, adding just a few malicious people to the population sharply decreases the amount of information transmitted. In a direct-impact gossip model where every malicious agent is concerned about influencing the immediate listener, gossip causes initial contamination of data, but eventually dies out as the objective people stop listening. The second chapter is joint with Botond Koszegi, in which we consider a career concerns model in which an agent's productivity has two components: talent and responsiveness to incentives. We use the term "drive" to reflect people's different responsiveness to incentives, and show that the extra dimension of heterogeneity changes the behavior of agents and the structure of organizations in significant ways. First, since agents more responsive to incentives are expected to work harder-and therefore be paid more-than less driven ones, everyone might be induced to work hard to signal that they are driven. Over a long horizon, these "drive-signaling incentives" have a tendency to bootstrap themselves, and, if this effect is strong enough, to create significant incentives with little else motivating the agent. On the other hand, signaling one's drive can be detrimental, because past outputs will be taken by the principal to reflect lower ability. Thus, drive-signaling incentives are likely to increase effort early in the career and decrease it later. We discuss in detail a consequence of our framework for organizational design. To maximize effort, the principal wants to observe a measure of the agent's effort (say, his hours worked) early, but not late, in the career. The third chapter models how people's improving ability to observe the state of the world interacts with their incentive to reveal their information truthfully. A principal makes a decision based on a sequence of reports from an agent with reputational concerns. Agents with privately known ability receive signals of different initial quality, as well as varying speed of quality improvement. Thus both the accuracy and the sequencing of the reports affect the principal's perception of the agent's ability. This paper has three main findings. First, in equilibrium, mind changes or inconsistent reports may be more valued by the market as a sign of talent and fast improvement, yet mediocre agents still repeat their early opinion more frequently because they have less relative confidence in their signal quality improvement. Second, sequential reporting can be superior to a final reporting system ...

MIT\_Dept. of Economics.\_1281

The first essay explains why credit contracts in developing countries are often denominated in foreign currencies, even after many of these economies succeeded in controlling inflation. I propose a new interpretation based on the demand for insurance against real aggregate shocks. The fact that devaluations occur more frequently in adverse states of the world provides a motive for holding dollar assets when the risk of recession is the main source of volatility in consumption. The model predicts persistence in the degree of "dollarization" in economies with low inflationary risk. The second essay looks at how the government's lack of commitment technology affects the capacity of resident agents to optimally diversify risk. I find that government's moral hazard introduces a trade-off between pooling idiosyncratic risk and diversifying aggregate country uncertainty. As a result, local agents face excessive consumption risk. This paper also explores how institutions can be designed as to overcome this moral hazard problem. The third essay proposes an explanation for the variation across countries in the quality of the institutions governing the financial. The explanation based on the proportion of local investors participating in the domestic financial sector. I find that the participation of local investors in the financial market and, correspondingly, the resulting institutions vary according to wealth distribution and the size of capital inflows.

MIT\_Dept. of Economics.\_1282

These four essays concern the theory of games and its application to economic theory. The first two, closely linked, chapters are an investigation into the foundational question of the sensitivity of the predictions of game theory to higher-order beliefs. Impact of Higher-Order Uncertainty with Muhamet Yildiz In some games, the impact of higher-order uncertainty is very large, implying that present economic theories may be misleading as these theories assume common knowledge of the type structure after specifying the first or the second orders of beliefs. Focusing on normal-form games in which the players' strategy spaces are compact metric spaces, we show that our key condition, called "global stability under uncertainty," implies a variety of results to the effect that the impact of higher-order uncertainty is small. Our central result states that, under global stability, the maximum change in equilibrium strategies due to changes in players' beliefs at orders higher than k is exponentially decreasing in k. Therefore, given any need for precision, we can approximate equilibrium strategies by specifying only finitely many orders of beliefs. Finite-Order Implications of Any Equilibrium with Muhamet Yildiz Present economic theories make a common-knowledge assumption that implies that the first or second-order beliefs determine all higher-order beliefs. We analyze the role of such a closing assumption at any finite order by instead allowing higher orders to vary arbitrarily. Assuming that the space of underlying uncertainty is sufficiently rich, we show that, under an arbitrary fixed equilibrium, the resulting set of possible outcomes must include all outcomes that survive iterated elimination of strategies that are never a strict best reply. For many games, this implies that, unless the game is dominance-solvable, every equilibrium will be highly sensitive to higher-order beliefs, and thus economic theories based on such equilibria may be misleading. Moreover, every equilibrium is discontinuous at each type for which two or more actions survive our elimination process. Conversely, the resulting set of possible outcomes must be contained in rationalizable strategy profiles. This yields a precise characterization in generic instances. Price Dispersion and Loss Leaders Dispersion in retail prices of identical goods is inconsistent with the standard model of price competition among identical firms, which predicts that all prices will be driven down to cost. One common explanation for such dispersion is the use of a loss-leader strategy, in which a firm prices one good below cost in order to attract a higher customer volume for profitable goods. By assuming high transportation costs which indeed force each consumer to buy all desired goods at a single firm, we create the possibility of an effective loss-leader strategy. We find, however, that such a strategy cannot be effective in equilibrium, so that additional assumptions limiting price search or rationality must be introduced to explain price dispersion or loss leaders. Two Notes on the Blotto Game We exhibit a new equilibrium of the classic Blotto game in which players allocate one unit of resources among three coordinates and try to defeat their opponent in two out of three. It is well known that a mixed strategy will be an equilibrium strategy if the marginal distribution on each coordinate is U [0, 2]. All known examples of such distributions have two-dimensional support. Here we exhibit a distribution which has one-dimensional support and is simpler to describe than previous examples. The construction generalizes to give one-dimensional distributions with the same property in higher-dimensional simplexes as well. As our second note, we give some results on the equilibrium payoffs when the game is modified so that one player has greater available resources. Our results suggest a criterion for equilibrium selection in the original symmetric game, in terms of robustness with respect to a small asymmetry in resources.

MIT\_Dept. of Economics.\_1283

This thesis characterizes the important role of US ethnic scientists and entrepreneurs for international technology diffusion. Chapter 1 studies the transfer of tacit knowledge regarding new innovations through ethnic scientific communities in the US and their ties to their home countries. US ethnic research communities are quantified by applying an ethnic-name database to individual patent records. International patent citations confirm knowledge diffuses through ethnic networks, and manufacturing output in foreign countries increases with an elasticity of approximately 0.3 to stronger scientific integration with the US frontier. To address reverse-causality concerns, reduced-form specifications exploit exogenous changes in US immigration quotas. Consistent with a model of sector reallocation, output growth in less developed economies is facilitated by employment gains, while more advanced economies experience sharper increases in labor productivity. The findings suggest tacit knowledge channels partly shape the effective technology frontiers of developing economies. Chapter 2 further exploits this heterogeneous technology diffusion through ethnic networks to test the importance of Ricardian technology differences for international trade. Panel regressions find technology growth increases manufacturing exports. To establish a causal relationship between technology and trade, instrumental-variables specifications exploit uneven technology diffusion from the US through ethnic scientific networks. The instrumented elasticity of export growth to the exporter's technology development is 0.9 in the preferred specification. Supplemental specifications show this elasticity is robust to controlling for the importer's technology development and to Rybczynski effect due to factor accumulation. Exogenous reforms of US immigration law again test for reverse causality. The findings suggest technology differences are an important determinant of trade patterns. As a supplement to these first two studies, Chapter 3 provides detailed documentation on the ethnic-name strategy employed with US patent records. The growing contribution of Chinese and Indian scientists to US technology formation, especially in high-tech industries, is described. The institutional and geographic dimensions of US ethnic innovation are further characterized. Finally, Chapter 4 concludes with an independent study of income inequality and social norms for compensation differentials and government-led redistribution. This work demonstrates that short-run responses in social norms do not amplify income inequality shocks (e.g., due to skill-biased technical change).

MIT\_Dept. of Economics.\_1284

This thesis is a collection of three essays on economic development and experimental economics. In Chapter 1, I present experimental evidence about how Thais treat information from domestic and foreign sources. Thai students answer a series of objective general-knowledge questions, both before and after observing answers given by American students and other Thai students. By looking at how subjects update their original answers after observing information, it is possible to estimate the weights that subjects assign to themselves, the American answers they see, and the Thai answers they see. Consistent with previous studies, I find that Thais exhibit a significant level of overconfidence in that they overweigh their initial answers. Despite their overconfidence, the relative weight that they give to answers given by Americans compared to answers given by other Thais is, in most instances, statistically indistinguishable from the optimal solution. Moreover, the experimental design allows me to distinguish between two possible explanations for this fact. Under one hypothesis, subjects overestimate the relative precision of American answers, but fail to recognize the value of independence, and the two errors cancel each other out. Under a second hypothesis, subjects recognize the relative accuracy of each group and appreciate the value of independence. The data rejects the first hypothesis and supports the second. In Chapter 2, I report the results of an experiment that tests for the presence of an information endowment effect. Experimental evidence suggests that an individual who is endowed with a coffee mug or chocolate bar demands a much higher price to sell than an unendowed person is willing to pay to acquire the same good. This study shows that a similar phenomenon does not exist when the endowment consists of information rather than goods. The results suggest that the endowment effect operates primarily on preferences as opposed to judgment. In Chapter 3, my co-author and I use econometric methods to create a data set that makes it possible to better identify what areas of Thailand are poor and unequal. We show the potential for our results to improve policies targeted at poor households.

MIT\_Dept. of Economics.\_1317

This thesis is a collection of three empirical essays on economic development and finance. Chapter 1 examines how politicians influence the lending decisions of government owned- banks, particularly whether government resources are used to achieve electoral goals. Theories of electoral competition predict how politicians may allocate resources to win elections: distributing more resources prior to election years, and targeting these resources towards "close" races. I find strong evidence of manipulation in agricultural lending by government banks. More credit is lent just prior to election years. Moreover, this spike is most pronounced in districts in which the previous election was close. I document that these distortions are costly: repayment rates vary with the electoral cycle, while output does not. Chapter 2 tests theories of public and private ownership of banks. In 1980, the government of India nationalized some private banks while leaving similar banks in private hands. Using a regression discontinuity design, I find that government owned banks grew less quickly and lent more to agriculture. These differences manifest themselves in outcomes across credit markets in India as well. Villages whose banks were nationalized received a substantial increase in agricultural and total credit, at lower interest rates, than villages whose banks were not. Strikingly, the additional credit had no effect on real agricultural outcomes, and may have hurt employment in trade and services. Chapter 3 investigates the economics of manumission, a process whereby a slave purchases her own freedom. Using newly collected data from Louisiana, I first paint a qualitative and quantitative portrait of manumission. I then answer the question of whether slaves purchasing their freedom paid above market prices. Legal changes following the Louisiana Purchase allow me to conclude that manumission laws were quite important in determining the terms at which manumission agreements were struck: when slaves lost the right to sue for self-purchase at market price, there was a precipitous drop in the number of manumissions, while prices paid increased.

MIT\_Dept. of Economics.\_1318

This thesis exploits a major overhaul in the U.S. Department of Veterans Affairs health care system to answer various questions about publicly-provided health care. The VA restructuring involved the adoption of a capitated payment system and treatment methods based on the managed care model. This reorganization was accompanied by a major expansion in the population eligible to receive VA care. Chapter one analyzes both the efficiency of providing public health care in a managed care setting and the effectiveness of expanding coverage to healthier and wealthier populations. I estimate that between 35 and 70 percent of new take-up of VA care was the result of individuals dropping private health insurance. While utilization of services increased, estimates indicate that the policy change did not result in net health improvements. Regions providing more care to healthier, newly-eligible veterans experienced bigger reductions in hospital care and larger increases in outpatient services for previously-eligible veterans. This shift away from specialty care may help to explain the aggregate health declines. Chapter two examines the impact of the introduction of a VA-sponsored drug benefit on Medicare-eligible veterans. Results suggest that a drug benefit does not result in changes in the quantity of drugs consumed, but does lead to an increase in spending and a shift in who pays for the prescriptions. The benefit appears to have a larger effect on lower-income individuals. Results also show suggestive evidence of positive health effects as a result of the drug benefit, an outcome which could be cost-saving in the long run. Chapter three utilizes the change in government health care coverage for veterans to test whether employer-provided insurance leads to inefficiencies in the labor market, and the degree to which such inefficiencies might be alleviated by expanding public health insurance programs. We examine the impact of health care coverage on labor force participation and retirement by comparing veterans and non-veterans before and after the VA expansion. Results indicate that workers are significantly more likely to cease working as a result of becoming eligible for public insurance, and are also more likely to move to part-time work.

MIT\_Dept. of Economics.\_1319

In this thesis, I estimate a structural demand model for prescription drug benefits by Medicare beneficiaries using data from the Medicare HMO program. I then use the utility parameter estimates to explore other questions of interest relating to the elderly's demand for prescription drug benefits. In Chapter 1, I study the question of how much Medicare beneficiaries value prescription drug benefits. Using data from the Medicare HMO program, I find that Medicare beneficiaries are willing to pay $33 to increase their brand-name coverage limit by $100. I also estimate marginal cost for each HMO and regress it on prescription drug benefits. I find that raising brand-name coverage by $100 costs $30. These estimates suggest that Medicare HMO enrollees are less than average prescription drug users and the results give a lower bound for the welfare derived by the elderly from prescription drug benefits. Chapter 2 addresses the question of how Medicare HMOs' choices of premiums and benefits affect selection. Changes in demographic factors (a measure of risk based on beneficiaries' characteristics) and risk scores (a measure based on beneficiaries' inpatient diagnoses) in the fee-for-service sector are regressed on changes in premiums and benefits in the HMO sector. The results show that increasing premiums and lowering benefits raise the demographic factor but have no effect on the risk score, suggesting that beneficiaries in more expensive demographic categories switch out of HMOs when premiums rise and benefits fall but these beneficiaries are healthy for their demographic category. Chapter 3 measures the welfare loss from the withdrawals from the HMO program following the Balanced Budget Act of 1997, using the utility parameter estimates from Chapter 1. The changes to the Medicare HMO program in the Balanced Budget Act triggered many plan withdrawals from the program. The welfare and costs are calculated under two counterfactual scenarios. The results show that the Medicare HMO program generates more welfare than costs and that the withdrawals resulted in a net loss for society. The estimates of the loss range from $4.3 billion to $16.6 billion.

MIT\_Dept. of Economics.\_1320

This thesis is a collection of three theoretical essays on institutions and economic growth. Chapter 1 considers a particular institution: ethnicity. Ethnic, religious and tribal divisions are empirically associated with economic underdevelopment. I construct a model in which groups form endogenously to enable cooperation between their members in a prisoner's dilemma. Groups sustain trust through monitoring, whereas only the Nash equilibrium, trade, is possible in an anonymous market. Optimal group size trades off the benefits of increased scale and the costs of reduced ability to detect cheating. Inter-group hostility can enable each group to enforce more trusting behavior between its own members. Even if groups may form optimally, in equilibrium they may persist inefficiently. Chapters 2 and 3 consider some distributional implications of technical change in a model with human capital. Both chapters distinguish between general skills, that are equally useful with any vintage of technology, and specific skills, that are associated with a particular vintage. In Chapter 2, I construct a model of slow technology diffusion. In developing countries, diffusion takes the form of a "dual economy", in which a gradually increasing fraction of workers use modern technology, while the remainder use traditional technology. Intermediate technologies are never used. During the transition, wages of specific-skill workers fall, as workers with general skills disproportionately join the modern sector. The model can also be applied to technology diffusion in developed countries. Chapter 3 asks why, early in the modern era, technical change was primarily deskilling, while in the modern era it is skill-biased. Whereas previous explanations have focused on changes in technology, this paper suggests that changes in skills themselves were important. High-skill workers invest in specific skills if technical change is slow, and in general skills if it is rapid. This generates a U-shaped relationship between the rate of technical change and the skill-premium. Moreover, with low rates of technical change the modern sector is unskill-intensive, whereas the reverse is true when technical change is faster. The predictions of the model are compared with the historical experience.

MIT\_Dept. of Economics.\_1365

This paper offers a set of explicit functional relationships that link energy and the economy. Despite the reliance on energy permeating the whole economy, no such complete relationships had been presented before. How related are energy and the economy? What role does energy play in the economic growth? Motivated to seek an explicit functional answer, I theorize the role of energy and then test it with economic models, using data for 16 OECD countries from 1980 to 2001. First, I find that energy is a cross-country representative good whose prices are equalized when converted to a reference currency. Thus, energy prices satisfy the purchasing power parity. For all but one country, the half life of the real energy exchange rate is less than a year and as low as six months, shorter than those derived by other real exchange rate measures. Second, considering energy a cross-time representative good, I obtain that a country's utility function is inversely proportional to both its income share of energy and its energy price. I also obtain an explicit, unified two-dimensional (cross countries and time) production function with energy and non-energy as the two inputs. Third, I conclude a cross-country parity relationship for income shares of energy, similar to that for energy prices. Further, I provide an intertemporal connection between the trajectory of the income share of energy and the productivity growth of the economy. Lastly, I demonstrate the tradeoffs between energy efficiency and economic wellbeing, with the energy price being the medium for the tradeoffs. One may apply the functional roles of energy offered in this paper to help frame the current global-scale issues that are energy relevant.

MIT\_Dept. of Economics.\_1438

This dissertation consists of three chapters on international capital flows. Chapter 1 emphasizes the importance of innovations in the investment opportunity set, captured by changes in expected asset returns, as an important mechanism to explain international capital flows. More specifically, it analyzes the implications of time-varying portfolio shares on the dynamics of the current account. The predictions of a partial-equilibrium model of the current account, with dynamic portfolio choices, are evaluated using data for the U.S. and Japan. We show that variations in investment opportunities change agents' optimal portfolios in a direction consistent with the actual bilateral current account movements. Chapter 2 focuses on two questions related to international investment and access to international capital markets. First, does the structural change in the U.S. mutual fund industry toward more "aggregation" (favoring funds that invest globally over funds that invest in specific countries or regions) affect firms in other countries? And second, are investors forgoing gains from international diversification by shifting toward more global funds? The empirical evidence presented suggests that the answer is yes to both questions. Chapter 3 investigates the relation between information asymmetries and institutional investor mandate. The results suggest that information asymmetries vary across institutional investor mandates, being significantly more pronounced for funds with broader mandates.

MIT\_Dept. of Economics.\_1441

In this dissertation, I provide evidence of the causal impact on mortgage supply of the Community Reinvestment Act (CRA) and the "Government-Sponsored Enterprises (GSE) Act", laws requiring banks and the GSEs (Fannie Mae and Freddie Mac), respectively, to help improve credit access for low-income households and neighborhoods. While financial markets evolved rapidly since the early 1990's, I use discontinuities in the laws' eligibility rules to identify their effects. To implement the analyses, I use a census of mortgage applications collected under the Home Mortgage Disclosure Act. Overall, these programs appear to have had limited impact. I first analyze CRA's effect on mortgage lending in targeted neighborhoods: census tracts with a median family income (MFI) under 80% of MSA MFI. The regression discontinuity (RD) estimates suggest an overall credit supply shift of at least $6 billion ($2007) from 1994 and 2002 in targeted neighborhoods. In addition to CRA's direct effect on bank lending, I also find that unregulated institutions lend more in targeted tracts ("crowd-in"). Further analysis suggests that information spillovers from increased bank lending helps generate crowd-in. In Chapter 2, I examine CRA's effect on home purchase mortgage lending to households with income under 80% of the MSA MFI. In both Chapters 1 and 2, I find CRA's impact is concentrated in the largest MSAs, where enforcement is most intense. The RD estimates indicate that CRA caused a 6% increase in large MSA bank home purchase lending at the cutoff. Unlike in Chapter 1, there is no theoretical basis for crowd-in and none is found. Nor do I find that banks crowd-out unregulated institutions. Finally, I measure the impact of one of the three goals established under the GSE Act. Under this goal the GSEs target census tracts with MFI under 90% of MSA MFI. The RD estimates suggest this goal led to a 3-4% increase in GSE purchases, and increased GSE-eligible originations by 2-3% at the cutoff. Unlike previous research, I find no evidence that the GSEs crowd-out FHA and subprime loans. The results imply a lower bound of the goal's impact of $2.4 billion between 1997 and 2002.

MIT\_Dept. of Economics.\_1515

This thesis studies the economics of technology adoption in the healthcare industry. The first chapter analyzes the impact of health information technology (HIT) on the quality and intensity of care delivered to Medicare inpatients. Building an organizational model, I show how the adoption of HIT may improve patient health and may either increase or decrease medical expenditures. Using Medicare claims data from 1998-2005, I estimate the effects of HIT by exploiting variation in hospitals' adoption statuses over time, analyzing 2.5 million inpatient admissions across 3900 hospitals. HIT is associated with an initial 1.3% increase in billed charges. Additionally, HIT adoption appears to have little impact on the quality of care, measured by patient mortality, medical complication rates, adverse drug events, and readmission rates. These results are robust to the addition of rich controls for pre-trends. The findings suggest that HIT is not associated with improvements in either the efficiency or quality of hospital care for Medicare patients, through five years after adoption. In the second chapter, I investigate the scope for physician learning about the value and applications of new medical technologies across geographic regions. In particular, I analyze the diffusion of positron emission tomography and deep brain stimulation, using data on Medicare claims from 1998-2005. The mix of patient diagnoses treated with the new technologies changes substantially during the early stages of diffusion. Moreover, states that are late to adopt these technologies do not repeat the process of experimental learning undertaken by early adopters to discover which patients should receive the new treatment In the third chapter, I analyze several policy initiatives that aim to manage the usage of medical technologies and discuss key determinants of technology adoption that may be fruitful targets for future research and policy intervention. Effective technology policy must balance cost, control with a recognition that new medical technologies have been associated with tremendous health and longevity gains. I find that existing Medicare coverage determinations and state certificate of need programs appear to have little influence on actual resource utilization, in part driven by lack of enforcement of existing policies.

MIT\_Dept. of Economics.\_1516

This thesis consists of three essays on information, decision-making and health. All three concern the relationship between the choices consumers would make if they were "fully informed" in an appropriate sense and the choices we actually observe. Chapter 1 considers how we can determine whether consumers are appropriately taking into account health information when they make their food consumption decisions. The fundamental idea is to determine the value of a statistical life (VSL) implicit in food consumption decisions and to compare this value with previous estimates of the VSL. The main positive result is that the VSL estimated from food consumption is about 1/10th as large as estimates from other contexts. I also consider the normative implications under the assumption that VSL estimates from other contexts indicate how individuals would behave if they were "fully informed" and discuss what additional evidence might support such an assumption. Chapter 2, co-authored with Jonathan Gruber, performs an analogous exercise in the case of health care plans. Where Chapter 1 makes the normative assumption that consumers should value years of life equally regardless of where they come from (e.g. eating healthier foods or reducing risk of on-the-job death), Chapter 2 makes the normative assumption that consumers should value a dollar of cost savings equivalently whether it comes through premiums or out of pocket costs. This restriction can then be used to evaluate whether consumers are choosing appropriately. The chapter studies this question in the context of Medicare Part D Prescription Drug Plan, the most significant privatization of the delivery of a public insurance benefit in recent history. Chapter 3 attempts to consider the circumstances in which the partial equilibrium welfare analyses performed in parts 1 and 2 extend to a general equilibrium setting in which prices and product characteristics respond endogenously to changes in demand. In particular, Chapter 3 derives conditions under which more information leads to welfare gains in general equilibrium taking into account the endogenous response of firms' pricing and product quality decisions.

MIT\_Dept. of Economics.\_1517

In this thesis, I study the relationship between macroeconomic risks and asset prices. In the first chapter, I establish that inflation risk is priced in the cross-section of stock returns: stocks that have low returns during inflationary times command a risk premium. I estimate a market price of inflation risk that is comparable in magnitude to the price of risk for the aggregate market. Inflation is therefore a key determinant of risk in the cross-section of stocks. The inflation premium cannot be explained by either the Fama-French factors or industry effects. Instead, I argue the premium arises because high inflation lowers expectations of future real consumption growth. To formalize and test this hypothesis, I develop a consumption-based general equilibrium model. The model generates a price of inflation risk consistent with my empirical estimates, while simultaneously matching the joint dynamics of consumption and inflation, the aggregate equity premium, and the level and slope of the yield curve. In the second chapter, with L. Kogan and Dmitry Livdan, we study the relation between returns on the aggregate stock market and aggregate real investment. While it is well known that aggregate investment rate is negatively correlated with subsequent excess stock market returns, we find that it is positively correlated with future stock market volatility. Thus, conditionally on past aggregate investment, the mean-variance tradeoff in aggregate stock returns is negative. We interpret these patterns within a general equilibrium production economy. In our model, investment is determined endogenously in response to two types of shocks: shocks to productivity and preference shocks affecting discount rates. Preference shocks affect expected stock returns, aggregate investment rate, and stock return volatility in equilibrium, helping model reproduce the empirical relations between these variables. Thus, our results emphasize that the time-varying price of aggregate risk plays and important role in shaping the aggregate investment dynamics. In the third chapter, with S. Parsa, we show a novel relation between the institutional investors' intrinsic trading frequency-a commonly used proxy for the investors's investment horizon- and the cross-section of stock returns. We show that the 20% of stocks with the lowest trading frequency earn mean returns that are 6 percentage points per year higher than the 20% of stocks that have the highest trading frequency. The magnitude and predictability of these returns persist or even increase when riskadjusted by common indicators of systematic risks such as the Fama-French, liquidity or momentum factors. Our results show that the characteristics of stockholders affect expected returns of the very securities they hold, supporting the view that heterogeneity among investors is an important dimension of asset prices. JEL classification: E31, E44, G12.

MIT\_Dept. of Economics.\_1518

The chapters in this thesis tackle different questions, but share the attempt to open the "black box" of the relationship between institutions and economic outcomes. In the first chapter, I examine mass media's role in countering special interest group influence by studying county-level support for US Senate candidates from 1980 to 2002. I use the concentration of campaign contributions from Political Action Committees to proxy capture of politicians by special interests, and compare the reaction to increases in concentration by voters covered by two types of media markets - in-state and out-of-state media markets. Unlike in-state media markets, out-of-state markets focus on neighboring states' politics and elections. Consistent with the idea that citizens punish political capture exposed in the media, I find that an increase in concentration of special interest contributions reduces candidate's vote shares in in-state counties relative to the out-of-state counties, where the candidate receives less coverage. The second chapter (with Daron Acemoglu and Simon Johnson) examines the effect of population growth on violent conflict. Exploiting the international epidemiological transition starting in the 1940s, we construct an instrument for changes in population (Acemoglu and Johnson, 2007) and find that countries with higher (exogenous) increases in population experimented larger increases in social conflict. Using a simple theoretical framework, we interpret these findings as evidence that a larger population generates greater competition for resources and makes violence more likely if institutions cannot handle the higher level of disputes. The third dissertation chapter asks the following question: if property rights in land are so beneficial, why are they not adopted more widely? I propose a theory based on the idea that limited property rights over peasants' plots may be supported by elite landowners to achieve two goals. First, limited property rights reduce peasants' income from their own plots, generating a cheap labour force. Second, they force peasants to remain in the rural sector to protect their property, even if job opportunities appear in the urban sector. The theory identifies conditions under which weak property rights institutions emerge, and provides a specific mechanism for the endogenous persistence of inefficient rural institutions.

MIT\_Dept. of Economics.\_1519

Chapter 1 looks at the empirical estimation of the welfare impacts of bargaining. Bargaining for retail goods is common in developing countries, but rare in the developed world. The welfare implications of this difference are theoretically ambiguous-if bargaining is a low cost form of price discrimination, it may lead to greater trade and welfare and even approximate the optimal incentive compatible outcome. However, if bargaining imposes large utility costs on the participants, then a fixed price may be preferable. I develop the tools to resolve this question, specifying a model of repeated trade with asymmetric information adapted to the context of bargaining, and developing a dynamic structural estimation technique to infer the structural parameters of the market. I then apply these techniques to the market for local autorickshaw transportation in Jaipur, India, using data I collected over 2008-2009. Chapter 2 carries out the first comparison of production function parameters estimated by structural techniques with those estimated via randomized instrumental variables using a unique dataset and field experiment performed by De Mel, McKenzie, and Woodruff (2008). In the context of a simple model of a household firm, I discuss the coefficients that each approach estimates, and the assumptions necessary to interpret those coefficients as the structural parameters of the model. I find that the values of structural and experimental estimators that most plausibly estimate the same parameters are indeed statistically and economically similar, suggesting that in some contexts structural models of production functions may be effective in recovering the parameters of production functions in the context of developing markets. These parameters may then be used to address questions relating to firm productivity and capital allocation that are both central to the study of firms in development, and potentially difficult to identify using randomized variation alone. Chapter 3 documents an attempt to overcome the challenges of police reform in the Indian state of Rajasthan, evaluated through a series of RCT (Randomized Control Trials). Four reform interventions were implemented in a randomly selected group of 162 police stations across 11 districts of the state: (1) weekly duty rosters with a guaranteed rotating day off per week; (2) a freeze on transfers of police staff; (3) in-service training to update skills; and (4) placing community observers in police stations. To evaluate these reforms, data was collected through two rounds of surveys (before and after the intervention) including police interviews, decoy visits to police stations, and a large scale crime survey-the first of its kind in India. The results suggest that two of the interventions, the freeze on transfers and the training, do have the potential to improve the police effectiveness and public image. The other reforms showed no robust effects, an outcome that may be due to their incomplete implementation.

MIT\_Dept. of Economics.\_1520

This dissertation consists of three chapters on topics in labor economics. In the first chapter, I present a model in which firms under-invest in hiring novice workers because they don't receive the full benefit of discovering novice talent. A firm must pay a cost to hire a novice worker. When it does, it obtains both labor services and information about the worker's productivity. This information has option value as a productive novice can be rehired. However, if competing firms also observe the novice's productivity, the option value of hiring accrues to the worker, not the employer. Firms will accordingly under-invest in discovering novice talent unless they can claim the benefit from doing so. I test this model's relevance in an online labor market by hiring 952 workers at random from an applicant pool of 3,767 for a 10-hour data entry job. In this market, worker performance is publicly observable. Consistent with the model's prediction, novice workers hired at random obtained significantly more employment and had higher earnings than the control group, following the initial hiring spell. A second treatment confirms that this causal effect is likely explained by information revelation rather than skills acquisition. Providing the market with more detailed information about the performance of a subset of the randomly-hired workers raised earnings of high-productivity workers and decreased earnings of low-productivity workers. Due to its scale, the experiment significantly increased the supply of workers recognized as high-ability in the market. This outward supply shift raised subsequent total employment and decreased average wages in occupations affected by the experiment (relative to non-treated occupations), implying that it also increased the sum of worker and employer surplus. Under plausible assumptions, this additional total surplus exceeds the social cost of the experiment. In the second chapter, I estimate the sensitivity of students' college application decisions to a small change in the cost of sending standardized test scores to colleges. In 1997, the ACT increased the number of free score reports it provided to students from three to four, maintaining a $6 marginal cost for each additional report. In response to this $6 cost change, ACT-takers sent more score reports and applications, while SAT-takers did not. ACT-takers also widened the range of colleges to which they sent scores. I show that students' response to the cost change is inconsistent with optimal decision-making but instead suggests that students use rules of thumb to make college application decisions. Sending additional score reports could, based on my estimates, substantially increase low-income students' future earnings. In the third chapter, I analyze the effects of the Tennessee Education Lottery Scholarships, a broad-based merit scholarship program that rewards students for their high school achievement with college financial aid. Since 1991, over a dozen states, comprising approximately a quarter of the nation's high school seniors, have implemented similar merit scholarship programs. Using individual-level data from the ACT exams, I find that the program did not achieve one of its stated goals, inducing more students to prefer to stay in Tennessee for college, but it did induce large increases in performance on the ACT. This suggests that policies that reward students for performance affect behavior and may be an effective way to improve high school achievement.

MIT\_Dept. of Economics.\_1521

This thesis studies Kenyan households' use of savings accounts and malaria testing and treatment technologies. The first chapter studies whether or not married couples use savings accounts strategically. In the absence of commitment, the availability of a "private" savings technology (a device that is only accessible by a single owner) may incite individuals to take costly strategic savings action in order to manipulate the time path of consumption. This chapter presents a model that formalizes this idea and derives several testable theoretical implications. In particular, households where husbands and wives are well matched in terms of time preference should make greater use of joint (public) accounts, less use of individual (private) accounts, and make more efficient investment choices as compared to their poorly matched peers. The model informed the design of a field experiment where married couples in rural Kenya were given the opportunity to open joint and individual bank accounts at randomly assigned interest rates. The behavior of individuals in the experiment is inconsistent with ex-ante Pareto efficiency and a variety of alternative models of intrahousehold resource allocation, but consistent with the proposed model of strategic savings. Savings misallocation due to strategic behavior may be substantial: in the experiment poorly matched couples forgo at least 64 percent more interest than well matched couples. The second chapter studies the impact of reducing bank account transaction costs. Free ATM cards were offered to a randomly selected subset of newly opened formal bank accounts in Western Kenya. The ATM card reduced withdrawal fees by over 50 percent (from $0.78 to $0.38) and enabled account holders to make withdrawals from their accounts at any time of the day. The cards also enabled accounts to be accessed without the in-person verification of a national identity card. Targeting ATM cards to joint accounts and accounts owned by men substantially increased savings rates (by 39 percent) and average daily balances (by 16 percent) in the bank accounts. In contrast, the intervention had a negative impact when targeted to individual accounts owned by women. This gender difference appears to be driven by differences in bargaining power within the household: the positive treatment effect for men is concentrated in households where men have above median bargaining power, whereas the negative treatment effect for women is concentrated in households where women have below median bargaining power. The final chapter (co-authored with Jessica Cohen and Pascaline Dupas) uses data from a randomized controlled trial conducted with over 2,900 households in rural Kenya to study the tradeoffs between the affordability of effective antimalarials (ACTs) and overuse. We compare a 95-percent ACT subsidy (currently under consideration by the global health community) to an alternative policy regime that explicitly acknowledges the problem of overuse by providing access to a subsidized rapid diagnostic test for malaria (RDT) in tandem with subsidized ACTs. We find that ACT access increases by 60 percent in the presence of an ACT subsidy of 80 percent of more. Under the proposed 95-percent ACT subsidy, however, only 56 percent of those buying an ACT at the drug shop test positive for malaria. We show that targeting could be substantially increased (without compromising access) when the ACT subsidy is reduced to 80 percent but accompanied by an RDT subsidy.

MIT\_Dept. of Economics.\_1522

This dissertation is a collection of three independent essays in theoretical and applied econometrics. The first chapter analyzes dynamic games with continuous states and controls. There are two main contributions. First, we give conditions under which the payoff function is nonparametrically identified by the observed distribution of states and controls. The identification conditions are fairly general and can be expected to hold in many potential applications. The key identifying restrictions include that one of the partial derivatives of the payoff function is known and that there is some component of the state space that enters the policy function, but not the payoff function directly. The second contribution of the first chapter is to propose a two-step semiparametric estimator for the model. In the first step the transition densities and policy function are estimated nonparametrically. In the second step, the parameters of the payoff function are estimated from the optimality conditions of the model. We give high-level conditions on the first step nonparametric estimates for the parameter estimates to be consistent and parameters to be v/fn-asymptotically normal. Finally, we show that a kernel based estimator satisfies these conditions. The second chapter, which is coauthored with Liran Einav and Amy Finkelstein, analyzes the welfare cost of adverse selection in the U.K. annuity market. We develop a model of annuity contract choice and estimate it using data from the U.K. annuity market. The model allows for private information about mortality risk as well as heterogeneity in preferences over different contract options. We focus on the choice of length of guarantee among individuals who are required to buy annuities. The results suggest that asymmetric information along the guarantee margin reduces welfare relative to a first best symmetric information benchmark by about 2 percent of annuitized wealth. We also find that by requiring that individuals choose the longest guarantee period allowed, mandates could achieve the first-best allocation. The third chapter develops a test for the exogeneity assumptions of classical factor models based on the fixed interactive effects estimator of Bai (2005). The exact form of the test is given for simple linear models. Simulations are used to asses the test's performance. The application of the test to more complicated models is also considered. The test is applied to a model of education as an example.

MIT\_Dept. of Economics.\_1571

This dissertation consists of three essays which examine the impact of public policy on labor market outcomes of those with disabilities. The first essay analyzes a microlending program for people with disabilities in India. People with disabilities are disproportionately represented among the poorest of the poor in developing countries. An increasingly common method of combating poverty in developing countries, providing microlending through self help groups, has been largely unavailable to the disabled. This essay reports on one of the first programs in India to provide people with disabilities access to self help groups and microlending. Between 2002 and 2004, the Indira Kranthi Patham program began over 23,000 self help groups for people with disabilities in rural Andhra Pradesh. I evaluate the effect of this program on borrowing, education, labor market, and asset ownership outcomes by comparing people with disabilities to their non-disabled siblings in treatment and control villages. The estimates suggest that the program led to increased borrowing, education, and asset ownership, while having negative to zero impact on labor market participation among the disabled. The second essay evaluates the labor market effects of the American with Disabilities Act. In 1990, Congress passed the Americans with Disabilities Act(ADA) to improve the labor market opportunities of the disabled. Immediately following the enactment of the ADA, the employment rate of people with disabilities declined. However, the longer term labor market consequences of the ADA have not been studied. Interest in the longer term post-ADA employment trends of people with disabilities derives from the weakening of the ADA's employment provisions by the Supreme Court. The weakening of these provisions has decreased the cost to employers of hiring disabled workers. This essay uses variation in state disability laws and data from twenty years of the March Current Population Survey to determine the short and longer term impact of the ADA on labor market outcomes of people with disabilities. The estimates suggest that the ADA led to a short-term decline in weeks worked and labor force participation of those with disabilities while having an insignificant impact on these outcomes in the medium and longer run. The final essay explores the wage implications of the American with Disabilities Act for those with disabilities. Those with disabilities have persistently lower wages than the non-disabled. To improve labor market outcomes of the disabled, Congress passed the Americans with Disabilities Act (ADA). Immediately following the enactment of the ADA, the wages of people with disabilities decreased. However, the longer term wage consequences of the ADA have not been studied. Interest in longer term post-ADA wage trends of people with disabilities derives from the weakening of the ADA's employment provisions by the Supreme Court. This essay uses variation in state disability laws and data from twenty years of the March Current Population Survey to determine the short and longer term impact of the ADA on the log weekly wages of people with disabilities. Using data from the March Current Population Survey, this essay shows that the ADA led to a longer term increase in the weekly wages of those with disabilities. This finding is sensitive to the composition of the sample. Furthermore, this essay presents evidence that the wage effect of the ADA varies according to level of education.

MIT\_Dept. of Economics.\_1572

The thesis consists of four essays on bargaining and repeated games. The first essay studies whether allowing players to sign binding contracts governing future play leads to reputation effects in repeated games with long-run players. Given any prior over behavioral types, a modified prior is constructed with the same total weight on behavioral types and a larger support under which almost all efficient, feasible, and individually rational payoffs are attainable in perfect Bayesian equilibrium. Thus, whether reputation effects emerge in repeated games with contracts depends on details of the prior distribution over behavioral types other than its support. The second essay studies reputational bargaining under the assumption of first-order knowledge of rationality. The share of the surplus that a player can guarantee herself is determined, as is the bargaining posture that she must announce in order to guarantee herself this much. It is shown that this maxmin share of the surplus is large relative to the player's initial reputation, and that the corresponding bargaining posture simply demands this share plus compensation for any delay in reaching agreement. The third essay studies the maximum level of cooperation that can be sustained in sequential equilibrium in repeated games with network monitoring. The foundational result is that the maximum level of cooperation can be sustained in grim trigger strategies. Comparative statics on the maximum level of cooperation are shown to be highly tractable. For the case of fixed monitoring networks, a new notion of network centrality is introduced, which characterizes which players have greater capacities for cooperation and which networks can support more cooperation. The fourth essay studies the price-setting problem of a monopoly that in each time period has the option of failing to deliver its good after receiving payment. Optimal equilibrium pricing and profits are characterized. For durable goods, a lower bound on optimal profit for any discount factor is provided. The bound converges to the optimal static monopoly profit as the discount factor converges to one, in contrast to the Coase conjecture.

MIT\_Dept. of Economics.\_1587

This dissertation consists of three essays. The first chapter studies whether credit demand is sensitive to interest rates, to the prominence of interest rate disclosure, and to nudges. Consumer credit regulations usually require that lenders disclose interest rates. However, lenders can evade the spirit of these regulations by concealing rates in the fine print and highlighting low monthly payments. I explore the importance of such evasion in Brazil, where consumer credit for lower and middle income borrowers is expanding rapidly, despite particularly high interest rates. By randomizing contract interest rates and the degree of interest rate disclosure, I show that most borrowers are highly rate-sensitive, whether or not interest rates are prominently disclosed in marketing materials. An exception is high-risk borrowers, for whom rate disclosure matters. These clients are rate-sensitive only when disclosure is prominent. I also show that borrowers who choose this type of financing are responsive to nudges that favor longer-term plans. Despite this evidence, the financial consequences of information disclosure, even for high-risk borrowers, are relatively modest, and clients are less susceptible to nudges when the stakes are higher. Together, these results suggest that consumers in Brazil are surprisingly adept at decoding information even when lenders try to obfuscate the interest rate information, suggesting a fair amount of sophistication in this population. The second chapter (co-authored with Leonardo Bursztyn, Florian Ederer, and Noam Yuchtman) studies the importance of peer effects in financial decisions. Using a field experiment conducted with a financial brokerage, we attempt to disentangle channels through which a person's financial decisions affect his peers'. When someone purchases an asset, his peers may also want to purchase it because they learn from his choice ("social learning") and because his possession of the asset directly affects others' utility of owning the same asset ("social utility"). We randomize whether one member of a peer pair who chose to purchase an asset has that choice implemented, thus randomizing possession of the asset. Then, we randomize whether the second member of the pair: 1) receives no information about his peer, or 2) is informed of his peer's desire to purchase the asset and the result of the randomization determining possession. We thus estimate the effects of: (a) learning plus possession, and (b) learning alone, relative to a control group. In the control group, 42% of individuals purchased the asset, increasing to 71% in the "social learning only" group, and to 93% in the "social learning and social utility" group. These results suggest that herding behavior in financial markets may result from social learning, and also from a desire to own the same assets as one's peers. The third chapter (co-authored with Pedro Daniel Tavares) uses data on checking and savings accounts for a sample of clients from a large bank in Brazil to calculate the prevalence and cost of "borrowing high and lending low" behavior in a setting where the spread between the borrowing and saving rates is on the order of 150% per year. We find that most clients maintain an overdrawn account at least one day a year while having liquid assets. However, the yearly amount of avoidable financial charges would only correspond, on average, to less than 0.5% of clients' yearly earnings. We also show that consumers are less likely to engage in such behavior when the costs of doing so are higher. These results suggest that the spread between the borrowing and saving rates is a key determinant of this behavior.

MIT\_Dept. of Economics.\_1588

Chapter 1 examines geographic variations in physician practice styles by exploring the role of physician-specific factors such as preferences and learned behavior versus environment-level factors such as hospital capacity. I exploit cardiologist migration across geographic regions and find that physicians who start off in the same region and subsequently move to dissimilar regions practice similarly before the move but very differently after the move. Based on this change in behavior, baseline estimates imply that the role of the environment on physician behavior is twice as important as physician-specific factors. Specifically, a one percentage point change in practice environment results in an immediate 2/3 percentage point change in physician behavior, with no further changes over time. Chapter 2 (co-authored with Leila Agha) explores the diffusion of new cancer drugs by testing the influence of physician investigators who lead clinical trials. The basic idea is to exploit variation across drugs in the location of clinical trials to test whether geographic proximity to a principal investigator influences the speed of technology adoption. Using original data on clinical trial study authors and sites for 21 new cancer drugs along with Medicare claims data from 1998-2008, we estimate that patients are 30% more likely to receive treatment with a new drug if they seek care in the hospital referral region where the drug's principal investigator practices. This effect, which is estimated in the first two years following initial FDA approval, fades over time until there is no apparent difference in utilization after four years. Chapter 3 (co-authored with Leila Agha) explores the prescribing of new cancer drugs for off-label (non-FDA approved) indications, yielding three key results. First, over 20% of new cancer drug use within the Medicare population over 1998-2008 was applied to off-label cancers. Second, geographic proximity to the principal investigator of a drug's pivotal clinical trial-a factor which appears to significantly boost on-label usage-has no discernible impact on off-label prescribing. Third, we find that prescribing increases following FDA approval expansions, suggesting that approval status influences patient treatment and thus may provide a useful policy instrument for directing medical technology adoption.

MIT\_Dept. of Economics.\_1589

In this thesis, I study the behavior of industrial firms in India in the electricity market and with respect to locational choice and environmental regulation. In the first chapter, I study the competitive effects of transmission infrastructure on market outcomes in the Indian day-ahead electricity market. Transmission constraints may increase local market power by limiting competition across regions. I find that bidders in import-constrained regions do raise bid prices in response to congestion and I simulate the effects of relaxing transmission constraints using a structural model of power-market bidding. The welfare gain from infrastructure expansion is large as a share of market surplus and mostly due to the strategic responses of bidders to a better-integrated market. In the second chapter, I study the agglomeration of manufacturing activity in India. Industry in India is shown to be spatially agglomerated to an extent similar to that observed in the United States and perhaps slightly greater. All the Marshallian forces of linkages in goods, labor and ideas between industries are important for industrial colocation, with hiring similar workers the strongest predictor of coagglomeration patterns. Finally, in the third chapter, my advisors, Esther Duflo and Michael Greenstone, Rohini Pande and I measure the effects of auditor independence on the reliability of reports by third-party environmental auditors and the regulatory compliance of the firms they audit, using a field experiment. We find that a reformed audit system in which auditors were randomly assigned to plants, monitored and given incentives for accuracy greatly improves the accuracy of auditor reporting, as measured by independent backchecks of true pollution levels. Moreover, the treatment plants subject to greater scrutiny under the reformed audit system responded by reducing pollution output relative to the control group.

MIT\_Dept. of Economics.\_1619

The chapters included here investigate the general relation between fiscal policy and elections. Chapter 1 provides a general summary of the 3 main chapters. Chapter 2 examines local and non-local public expenditures and how the two are linked through the political process. Emphasis is placed on the role of voter composition within localaties in order to look at the effects of suburbanization on expenditures. Chapter 3 examines the validity of the medan voter result when turnout is allowed to depend on policy platforms. With endogeneous turnout there may be multiple equilibria or a motivation to pull policy platforms away from the median and towards the mode of the voter distribution. Chapter 4 examines the link between presidential elections and the economy. Democratic election victories are often followed by a booming economy when compared to Republican victories. The instrument by which the president may influence the economy, however, is difficult to find. This chapter investigates the role of fiscal policy in explaining the impact of elections. It finds only a limited role for fiscal policy in the linkage from elections to the economy.

MIT\_Dept. of Economics.\_1620

This dissertation consists of three independent empirical examinations of the effects of information and earnings on individual behavior. The first essay examines the effects of information about the quality of previous performance on contemporaneous performance evaluation. I adapt a model of statistical discrimination to incorporate a signal that indicates whether previous performance exceeded some criterion, and I test the model's predictions using a regression discontinuity design and a policy change at the United States Military Academy involving insignias of academic awards on cadet uniforms. I estimate the signaling effects of an award indicating placement on the Dean's List on senior year GPA to be 0.05 grade points. The second essay examines the relationship between male economic conditions and female marriage rates. I overcome problems of endogeneity and spurious correlation by using the oil boom and bust in Texas from 1970 to 1990 to instrument for average male earnings in Texas counties. I estimate that a 10% increase in male earnings results in a 15% increase in the hazard rate of never married young women into marriage, which does not indicate a significantly large contribution of changes in male economic status to the decline in marriage rates over the past several decades. The third essay examines how pay spreads in tournament compensation schemes may induce higher ability individuals to sort themselves into tournaments with higher pay spreads. I exploit variation in the promotion rates of different military occupations resulting from the downsizing of the Army in the 1990s, and I find modest evidence that higher ability soldiers are more likely to reenlist when the effective pay spreads are higher.

MIT\_Dept. of Economics.\_1625

This dissertation brings together three essays on the relationship between education, health, and family structure in developing countries. The first essay studies the impact of the AIDS epidemic on children's schooling in Kenya. I draw on the relationship, established in previous literature, between the lack of male circumcision and HIV prevalence. The Luo ethnic group, who does not generally practice male circumcision, had a much larger increase in the HIV prevalence rate between 1993 and 1998. I show that there was a corresponding increase in orphan rates and a decrease in educational achievement among the children in this group. This does not seem to be accounted for by alternative explanations, such as changes in the political clout of the Luo or mean reversion. The second essay examines the impact of sibling sex composition on educational outcomes of children in Tanzania. The estimates suggest that 14-year-old children with three sisters are 24 percentage points less likely to complete primary school (7th grade) after completing 6th grade than children with no sisters, and 8.4 to 9 percentage points less likely to complete primary school overall. Having two or more older sisters, however, can benefit children in completing 4th, 5th, or 6th grade of primary school. These results are robust to the inclusion of parental background characteristics and an index measuring household assets. The third essay, co-authored with Professor Esther Duflo, takes advantage of a school construction program that took place in Indonesia between 1973 and 1978 to estimate the effect of education on fertility and child mortality. Time and region varying exposure to the school construction program generates instrumental variables for the average education in the household, and the difference in education between husband and wife. We show that female education is a stronger determinant of age at marriage and early fertility than male education. However, female and male education seem equally important factors in reducing child mortality. We suggest that the OLS estimate of the differential effect of women' s and men's education may be biased by failure to take into account assortative matching.

MIT\_Dept. of Economics.\_1626

Chapter 1 focuses on corporate governance and business cycles. The delegation of control to insiders fosters initiative but it also gives them the opportunity to expand their firm beyond the profit-maximizing size. When goods markets are imperfectly competitive, firms are too small relative to the social optimum. In such circumstances, insiders' tendency to increase investment, employment and output are at once costly for shareholders and beneficial for the economy. Under plausible assumptions, I show that firms find it optimal to delegate control when demand is high, and that delegation choices provide a powerful amplification mechanism. Finally, the model predicts that an increase in firm volatility can decrease aggregate volatility and I present evidence consistent with this prediction. Chapter 2 studies the implications of higher product market competition and capital market integration for unemployment in Europe. These changes are likely to increase efficiency and output in the long run, but it may take time for economic actors to fully understand them and adapt. In the presence of collective bargaining and slow learning by unions, these changes can generate first a rise, then a decline in unemployment. This fits the general evolution of unemployment in Europe since the 1970s. The speed of learning by unions is likely to depend on the degree of trust between labor and capital. The empirical evidence suggests that countries where trust was lower have had more of an increase, and a later turnaround, in unemployment. Chapter 3 compares the impact of shocks to U.S. interest rates and emerging market bond spreads on domestic interest rates and exchange rates across several emerging market economies with different exchange rate regimes. Consistent with conventional priors, the results indicate that interest rates in Hong Kong react much more to U.S. interest rate shocks and shocks to international risk premia than interest rates in Singapore. The results are less clear-cut in the comparison of Argentina and Mexico: while interest rates in Mexico seem to react less to U.S. interest rate shocks, they react about the same to bond spread shocks, in addition to a significant impact on the exchange rate.

MIT\_Dept. of Economics.\_1635

This thesis investigates forms of non-price competition in the U.S. airline industry. The first two chapters focus on airlines' use of frequent flyer programs (FFPs) while the final chapter considers the entry strategies of "low-cost carriers". FFPs may alter the intensity of competition between firms. Increasing marginal benefits built into the reward schedules of FFPs give consumers an incentive to concentrate their flying with a single carrier. When selecting the airline with which to accumulate points, consumers will prefer the dominant carrier at an airport because it offers the best opportunities for earning and redeeming points. Prior research, however, has not disentangled the impact of FFPs from the other advantages possessed by dominant airlines. Chapter One develops an empirical approach that allows for the identification of the marginal effects of FFPs. In the mid 1990s, domestic airlines increasingly formed FFP partnerships with international carriers. While theseagreements had no direct impact on the quality of domestic flights, they did significantly change consumers' earning and redemption opportunities. Using earning and redemption opportunities as a measure of the value of an airline's FFP points, this chapter exploits time-series variation in the extent and scope of international partnerships to evaluate the economic impact of enhancements to FFPs. The results indicate that enhancements to an airline's FFP are associated with increases in an airline's market share, with the impact being larger on routes that depart from airports at which the airline is more dominant. Chapter Two examines the FFP partnerships formed between the major domestic carriers at the end of 1998. Unlike international partnerships, which involve airlines whose networks are largely non-overlapping, domestic partners both primarily operate within the U.S. While these partnerships may still expand earning and redemption opportunities, on routes on which the partners overlap,they may also increase substitutability between the airlines' flights. This chapter documents that the domestic partnerships did, in fact, expand the airlines' FFPs and that this expansion was associated with increases in an airline's market share. Chapter Three examines the entry strategies of low-cost carriers. One hypothesis for the recent success that LCCs have achieved is that they offer consumers a combination of quality and price not offered by the major network carriers. As a first step to investigating this hypothesis, this chapter examines the characteristics of routes entered by LCCs.

MIT\_Dept. of Economics.\_1636

In this thesis, I cover three relevant topics in macroeconomics: the effects of trade liberalization, the effect of institutions and the determinants of credibility on macroeconomic policies. The first essay revisits the empirical work on the effects of trade liberalization and analyzes how it affects growth through two distinct channels: through better access to intermediate supplies and through tougher foreign competition. In particular, both effects are significant: while the first boosts growth the second one hinders it. Moreover, the effect of the first channel outweighs the effect of the second one. The second essay is an empirical analysis showing that weaker institutions increase transaction costs, particularly the costs incurred by a firm when dealing with suppliers of intermediate goods. In particular, It is showed that industries with a more complex intermediate structure suffer a relatively larger loss of productivity in countries with poorer institutions. The third essay revisits the theoretical determinants of governments' credibility in regard to outstanding debt. Governments default not because they want to, but because they cannot avoid it. Under this and other assumptions, some standard results need no longer hold. For instance, appointing a conservative policymaker or denominating public debt in foreign currency may reduce credibility.

MIT\_Dept. of Economics.\_1637

The first chapter attempts to shed light on the role of housing price dynamics in mobility decisions, asking whether households respond to prices in a forward- or backward-looking manner, and the extent to which high leverage constrains moving behavior. On a broader level, the study tests whether price dynamics dominate non-market shocks as a force governing household mobility, given the importance of housing as an investment good and saving device. Using a 13 year sample from the Panel Study of Income Dynamics, I find that households are largely backward-looking in both their mobility and consumption decisions, and that non-market shocks play a significant role. Households show little or no response to equity constraints, and do not appear to time the market, despite significant forecastability in housing prices. These conclusions lend support to the notion of prices leading trading volume, but do not support the theoretical work of Stein (1995), which attributes mobility behavior to changes in equity constraints brought about by changes in housing prices. The second chapter uses data from the Retirement History Survey to measure the impact of property tax abatement programs on elderly homeownership decisions. Analysis using a competing risks framework, in which the decision to trade down is treated separately from the decision to end homeownership completely, shows striking differences in the impact of property taxes on each type of failure: for the elderly who choose to trade down, property taxes have a positive effect on the hazard of moving. Alternatively, property taxes have little impact on the tenure decision. Incorporating individual heterogeneity to correct for sample bias, to capture mover-stayer effects, and to account for correlation between property taxes and omitted variables, has little effect on the results. From an "ex post" perspective, the results of the analysis lead to the conclusion that property tax abatement programs have a small impact at best, and may be leading to undesirable redistributional outcomes. The final chapter employs data from the neighborhood clusters sample of the 1989 American Housing Survey and the wealth supplement of the 1989 Panel Study of Income Dynamics to study to distribution of wealth within US residential neighborhoods. Calculations using the Bourguignon decomposable inequality index show that wealth is more unequally distributed than income, and income more than housing wealth, at all levels of aggregation--neighborhoods, metropolitan areas, census regions, and the entire US.

MIT\_Dept. of Economics.\_1638

This thesis is a collection of three essays on development economics and finance. The first chapter studies the 1992 presidential impeachment in Brazil to evaluate the impact of an anti-corruption drive on politically connected companies. I identify two types of firms: companies owned by friends and relatives of the impeached president ('family-connected') and firms proven to be connected to him in a parliamentary investigation ('other-connected'). Using an event study procedure, I establish that family-connected firms have on average negative daily abnormal returns of 2 to 9 percentage points when damaging information about the president is released. However, the 'other-connected' companies do not experience a decline in their stock market valuation during the impeachment. Furthermore, the stock market decline experienced by 'family connected' companies was reversed entirely within a year. The impeachment had limited success in reducing corruption. The second chapter evaluates the effects on multinational firms of the OECD "Convention on Combating Bribery of Foreign Public Officials in International Business Transactions". I compare the balance sheet performance of foreign companies in 24 developing host countries whose source countries have implemented the convention with the performance of firms whose source countries have not yet implemented it. I find that the OECD convention had a negative impact on profit and sales growth of multinational companies. This effect is amplified in countries with less efficient bureaucracies. In economies where bribery is more valuable to firms, the OECD convention has a larger negative impact on multinational firms. The third chapter studies in detail the distribution of one type of financial market participant: mutual funds. The essay documents that their size follows a regularity observed in several other area of economics, Zipf's law: the number of funds with size greater than x is proportional to 1/x. This chapter extends previous theories of random growth to explain why this is the case: Zipf's law arises when mutual funds grow at the highest speed allowed by constraints in the system, something we call a "maximum growth principle." We investigate empirically the key features of the theory, and show that they are validated by the data.

MIT\_Dept. of Economics.\_1639

This dissertation is a collection of three essays which address several questions in corporate finance and taxation. The first essay uses a panel dataset of balance sheet and income information, taken from the tax returns of U.S. corporations, to study the relationship between bank competition and the financing of firms. Over the period 1987 to 1998, I find that in more competitive banking markets firms use less outside debt and more inside debt and equity than firms in less competitive banking markets. The evidence is consistent with models in which market power provides banks with implicit equity stakes in their borrowers, making banks more willing to begin lending relationships with borrowers whose projects are characterized by substantial asymmetric information or delayed payoffs. In the second essay, I reconsider the distortionary impact that the U.S. corporate and personal tax systems may have on organizational form choices by firms. I show that when Project choice is endogenous and when one considers the non-linear nature of the corporate tax schedule, it is not necessarily inefficient for a firm to choose to be a pass-through entity rather than a non-pass-through entity in response to differences in after-tax returns between the two entity types. I provide empirical evidence that is consistent with this theoretical point by examining the behavior of a sample of S corporations and C corporations. The third essay is co-authored with Daniel Bergstresser and James Poterba. In this essay, we use a panel dataset of mutual fund characteristics and returns from Morningstar, Inc. to develop measures of the effective capital gains tax burden mutual fund investors face on unrealized capital gains in mutual funds. We explore the determinants of the effective capital gains tax burdens and the impact they have on net inflows of savings into mutual funds.

MIT\_Dept. of Economics.\_1657

This dissertation consists of four empirical studies, each using military-induced variation to examine various aspects of human capital production and the U.S. labor market. The first two chapters study the effects of social interactions on human capital development at the United States Military Academy where social groups are randomly assigned. Chapter 1 highlights the empirical difficulties associated with identifying social effects and contains evidence suggesting that occurrences common to a social group may account for a large part of social group correlations found in many studies. While models that address these identification concerns provide little evidence of social effects in academic performance, there is evidence that both peers and role models influence other dimensions of human capital that have important labor market consequences. Chapter 2 builds on the previous chapter by investigating whether peers are complements or substitutes in the production of human capital at West Point. Heterogeneity in peer group composition can provide evidence for the degree of substitutability between peers. Estimates reveal that more heterogeneous peer groups have positive effects on individual grades. This suggests that peers serve as substitutes, and therefore, mixing cadets by ability is optimal for the efficient production of education at West Point. Chapter 3 evaluates the impact of military-induced parental absences and household relocations on children's educational attainment. Estimates indicate that parental absences adversely affect children's test scores by a tenth of a standard deviation and frequent household relocations also have modest negative effects of similar magnitude. Chapter 4 investigates the effects of female labor supply on the U.S. wage structure at mid-century. As men mobilized for war in the 1940s, women were drawn into the workforce. In states with greater mobilization rates, women worked more after the War and in 1950, although not in 1940. Estimates indicate that increases in female labor supply lower female and male wages, and generally increase the college premium and male wage inequality. Finally, at mid-century, women were closer substitutes to high school graduate and relatively low-skill males, but not to those with the lowest skills.

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This thesis is a collection of essays on the effect of trade costs on international trade. Chapter 1 derives and empirically examines how factor proportions determine the structure of commodity trade when international trade is costly. It combines a many-country version of the Heckscher-Ohlin model with a continuum of goods developed by Dornbusch-Fischer-Samuelson (1980) with the Krugman (1980) model of monopolistic competition and transport costs. The commodity structure of production and bilateral trade is fully determined. Two main predictions emerge. There is a quasi-Heckscher-Ohlin prediction. Countries capture larger shares of industries that more intensively use their abundant factor. There is a quasi-Rybczynski effect. Countries that rapidly accumulate a factor see their production and export structures systematically move towards industries that intensively use that factor. Both predictions receive support from the data. Factor proportions appear to be an important determinant of the structure of international trade. Chapter 2 focuses on the effect of preferential tariff liberalization on the direction of trade and suggests that NAFTA has had a substantial impact on North American trade. The chapter focuses on where the US sources its imports of different commodities from. It identifies the impact of NAFTA by exploiting the substantial cross-commodity variation in the tariff preference given to goods produced in Canada and Mexico. Canada and Mexico have greatly increased their share of US imports of commodities for which they enjoy a tariff preference. For commodities where no preference is given, Canada's share has declined while Mexico's has increased much more modestly. The empirical results suggest that Canada's share of US imports may have declined without NAFTA, rather than increased, while the growth in Mexico's share of US imports would have been much slower. Useful products of the empirical work are estimates of consumer willingness to substitute between different varieties of the same commodity. The estimated average elasticities of substitution range from 5 to 7. Chapter 3 examines the effect of international trade costs on the volume of trade. It extends the model in Chapter 1 to allow trade costs to vary by country and commodities. An arbitrary country imports more commodities from countries where bilateral trade costs are lower, and imports more from larger countries. It also sources specific commodities disproportionately from trading partners that possess in relative abundance the productive factors that are used relatively intensively in the production of that commodity. Useful products of the empirical examination are estimates of the willingness to substitute between different varieties of goods within an industry. The implied elasticities of substitution are mostly high, typically ranging between 6 and 16. With such high elasticities of substitution, small costs to international trade will sharply reduce trade volumes.

MIT\_Dept. of Economics.\_1758

This thesis is a collection of essays on organizational economics and finance-related topics. Firms and individuals who sell opinions may bias their reports for either behavioral or strategic reasons. Chapter 1 proposes a new methodology for measuring these biases, particularly whether opinion producers under or over emphasize their private information, i.e. whether they herd or exaggerate their differences with the consensus. Applying the methodology to I/B/E/S analysts reveals that they do not herd as is often assumed, but rather they exaggerate their differences with the consensus by an average factor of about 2.4. Analysts also overweight their prior-period private information and thus under-update based on last period's forecast error; this under-updating helps explain the apparently conflicting over and under-reaction results of DeBondt and Thaler (1990) and Abarbanell and Bernhard (1992). A useful by-product of the methodology is a measure of the incremental information content of an analyst's forecasts. Using this measure reveals that analysts differ greatly in performance: the information content of the future forecasts of the top 10 percent of analysts is roughly six times that of the bottom 40 percent. Chapter 2 examines whether career concerns can create an incentive for opinion-producing agents to exaggerate. We find that they can, the reason being that high-ability agents have opinions that are more different from the consensus on average and potential clients will learn more quickly about how different an agent's opinions are from the consensus on average that about whether or not they are exaggerating. The model predicts that agents should exaggerate more when they are under-rated by their clients, when the realizations of the variables they are forecasting are expected to be especially noisy, and when they expect to make fewer future forecasts. We find that these predictions are consistent with the empirical data on equity analyst's earnings forecasts. In models by Fershtman and Judd (1987) and Sklivas (1987), firms competing in quantities benefit strategically from commiting to managerial incentives that are biased toward revenue maximization. Little empirical evidence has been produced in support of these models, and their assumption that incentive contracts are observable has been criticized as unrealistic. Chapter 3 proposes an alternative model in which firms competing in strategic substitutes commit to using less precise profit measures, which biases the optimal unobservable contract towards revenue maximization. This model performs better empirically. Firms that compete in strategic substitutes choose less precise profit measures across six different measures, and firms with less precise profit measures in turn have stock returns and thus managerial incentives that are driven ...

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In 1999 the Federal Communications Commission decided to relax its prohibition against one firm owning two television stations in the same market. Although joint ownership was prohibited prior to 1999, evidence on the effects of joint operation is provided by local marketing agreements, contractual arrangements that allow one station to operate another station in the same market. Chapter 1 studies the effect of joint operation on costs by estimating a model of television station entry decisions from 1993 to 1998. Using the method of simulated moments to estimate the entry model, I find that stations operated under local marketing agreements are significantly more likely to enter. Controlling for the endogeneity of local marketing agreements and the competition-reducing effects of local marketing agreements does not affect the conclusion that joint operation reduces costs. Chapter 2 uses the experience with local marketing agreements to study the effects of joint operation on markets for advertising and programming. Using panel data on over 160 markets from 1993 to 1998, I find that most mergers do not increase the price of advertising. However, mergers between stations that are likely to be close substitutes (as measured by their network affiliation) can lead to significant price increases. In the programming market I find that the ratings of merging stations increase, suggesting that mergers increase the quality and variety of programming. During the 1990s the broadcast television industry also experienced significant consolidation at the national level. This consolidation was spurred in part by the Telecommunications Act of 1996, which relaxed restrictions on the number of television stations a firm can own nationwide. Chapter 3 studies the effect of group ownership on viewers by using ratings data for 750 television stations in 1993 and 1998. I find that the increase in group ownership led to small increases in ratings.

MIT\_Dept. of Economics.\_1785

This thesis consists of three separate papers. In the first paper, using the Panel Study of Income Dynamics (PSID), which has measures of both risk preferences and religiosity along with measures of many risky behaviors, I investigate the implications of the correlations among risk preferences, religiosity and gender for the observed relationship of each of these variables with risky behaviors. I conclude that the correlations of risk preferences, religiosity, and gender with behaviors are all strongly robust to including the others in the regression; although they are correlated, they have independent relationships with risky behaviors. The second paper reports the results of a randomized field experiment to study the impact of choice in charitable giving; in this experiment half of the recipients of a newsletter from a Dutch NGO were able to choose what program area their donation would be spent on. There is no difference in either mean response rates or mean donation amounts between the treatment and control groups; I thus conclude that while most of the treatment group in this experiment did not value the choice that they were given, the choice also did not make them any less likely to donate. In the third paper, a coauthor and I develop a computer model in which individual agents choose a neighborhood based on preferences over the area's racial composition; this model of residential segregation is loosely based on the 1971 Schelling model. We find that both the strength of preferences for diversity, and historical segregation, have strong effects on equilibrium levels of integration. When we include contemporary discrimination in our model, however, we find that it increases segregation in an initially unsegregated model, but has no additional effect on segregation in an initially segregated model. Finally, we examine a simple social policy that encourages integration, and find that it is successful in creating diversity, making diversity-seeking agents better off.

MIT\_Dept. of Economics.\_1786

This thesis, which consists of three essays, uses empirical methods to study questions in criminal procedure and employment antidiscrimination law. The first chapter measures the consequences for offenders of expanding constitutional criminal jury trial rights. I study the Supreme Court's landmark decision in Apprendi v. New Jersey (2000), which extended beyond-a-reasonable-doubt jury factfinding (and all the costs and complications it entails) to particular facts previously decided by judges using a preponderance-of-the-evidence standard. The limited holding of Apprendi and the calculations required by the U.S. Sentencing Guidelines allow me to compare changes in the sentence lengths of groups of offenders who were differentially affected by the decision. I find that this expansion of jury trial rights benefited criminal offenders, reducing the average sentence for those most affected by more than 5 percent. The second chapter studies the prosecutorial charging response to the Supreme Court's Apprendi decision. Using federal arrest, charging, and sentencing data to evaluate prosecutorial behavior, I find evidence that prosecutors reacted to the higher costs of factfinding by reducing the number of counts filed against affected defendants by as much as 10 percent, presumably magnifying the sentence reduction that would have occurred had prosecutors not substituted charging resources toward unaffected defendants. The third chapter, co-authored with Christine Jolls, examines the employment consequences of the American's with Disabilities Act's (ADA) two major features-the discrimination prohibition and the "reasonable accommodations" requirement. Several studies have suggested that the passage of the ADA might have reduced employment opportunities for individuals with disabilities, but which particular feature or features of the ADA, if any, caused this disemployment effect are unknown. Using state-level variation in pre-ADA legal regimes to separately estimate the employment effects of the ADA's two substantive provisions, we find strong evidence that the immediate post-enactment employment effects of the ADA are attributable to the reasonable accommodations mandate rather than the firing costs associated with the antidiscrimination provision. Moreover, the pattern of effects across states suggests, contrary to prior findings, that declining disabled employment after the immediate post-ADA period may reflect factors other than the ADA.

MIT\_Dept. of Economics.\_1829

This dissertation consists of three essays in empirical labor and health economics. The first chapter examines how the amount of time devoted to a leisure activity varies in response to temporary changes in the price of that activity. Specifically, I estimate the effect of changes in expected winnings in an online poker game on the probability that players quit playing. I find that expected winnings have a large negative effect on the probability that a player quits playing poker. A one dollar increase in expected winnings decreases the probability that a player quits playing altogether by 0.5 percentage points, compared to the mean of 1.1 percentage points. This corresponds to a price elasticity of demand for poker of -0.14. The second chapter develops and tests a model of how college students choose their field of study. The model combines features from learning and human capital models and captures several stylized facts from the empirical literature on choice of college major. I test the model's predictions using High School and Beyond data. I find three results that generally agree with the model's predictions. First, students with higher levels of ability choose majors with higher average earnings. Second, students who receive low grades in college are more likely to change their field of study. Third, students who switch majors in college subsequently earn less than students who do not change majors, but this difference is primarily due to major-switchers obtaining degrees in low-paying fields. The third chapter, coauthored with Abhijit Banerjee, Esther Duflo and Gilles Postel-Vinay, provides estimates of the long-term effects on height and health of a large income shock experienced in early childhood. Phylloxera, an insect that attacks the roots of grape vines, destroyed 40% of French vineyards between 1863 and 1890, causing major income losses among wine growing families. We exploit the regional variation in the timing of this shock to identify its effects. We find that, at age 20, those born in affected regions were about 1.8 millimeters shorter than others. This estimate implies that children of wine-growing families born when the vines were affected in their regions were 0.6 to 0.9 centimeters shorter than others by age 20. This is a significant effect since average heights grew by only 2 centimeters in the entire 19th century.

MIT\_Dept. of Economics.\_1830

This dissertation is composed of three chapters. The first demonstrates that natural gas violates many of the simplifying assumptions frequently used in modeling its behavior. Careful analysis of futures contracts written on gas suggests that gas prices are seasonal while returns are non-Gaussian and evidence stochastic volatility. In addition, examination of options prices indicates the intermittent presence of jumps. We find that models which disregard these properties struggle to recover options prices with any precision. Thus, we propose an alternative nonparametric approach to gas options pricing that captures these salient features while also shedding light on the nature of risk aversion embedded in gas markets. The second chapter offers a parametric approach to pricing derivatives written on natural gas futures designed to overcome the shortcomings of existing parametric schemes. First, it proposes a model of the underlying futures prices that admits stochastic volatility. Second, it makes use of a state-of-the-art Bayesian particle filtering technique to estimate the underlying process parameters along with a simulation-based technique for option pricing. While it trades off some performance relative to nonparametric approaches, such as the kernel scheme employed in the first chapter, the strategy employed is very general and allows for the pricing of more complex derivatives. The final chapter presents new estimates and approaches to estimating the home bias puzzle. It uses micro-level data to calculate households' foreign equity exposure as a function of wealth. We find simple estimates have significant errors-in-variables problems and we construct an estimator using grouping to account for this issue. Our estimates still imply low aggregate investment in foreign equity.(cont) Finally, we disaggregate the investment decision by incorporating two step decisions that allow households to forgo participating in the market. As a result of the decoupling, we find foreign equity levels closer to that of standard portfolio theories.

MIT\_Dept. of Economics.\_1831

In Chapter 1, I propose a model in which consumers base their purchasing decisions upon their recollections of the product quality, and in which firms can use persuasive advertising in order to change these recollections. Although consumers are aware that such advertising has occurred and take this into account when updating their beliefs about the product, they cannot prevent their memories from being affected. I analyze which firms engage in persuasive advertising as well as the price level that these firms choose. I show that persuasive advertising may be used in equilibrium even though consumers are fully aware of it, and that persuasive advertising does not always signal high quality products. The model is then extended to incorporate both persuasive and informative advertising, where firms reveal some verifiable information about their products. In that case, persuasive advertising may block the full unraveling of information, and high quality products are not promoted with only one type of advertising - in some cases, persuasive advertising can signal a product of either higher or lower quality than a product promoted with informative advertising. Chapter 2 is the product of joint work with Abhijit Banerjee and develops a model to study the effectiveness of complaints against corruption. A bureaucrat has to decide on a public infrastructure project in a village where a rich and a poor villagers live. A dishonest bureaucrat can be bribed not to choose the surplus maximizing project and instead to choose a project that favors the rich villager. Once the bureaucrat has chosen a project, the villagers can send a costly praising or complaining message to the bureaucrat's supervisor who does not know whether the bureaucrat is honest or dishonest. From his point of view the messages are anonymous; the supervisor does not know who is rich or poor in the village. The only leverage of the supervisor is to transfer the bureaucrat and replace him with another one who will repeat the game in the following period. In any relevant equilibrium no complaints happen and more generally there are no complaints in equilibrium without bribery. We find that complaints will be observed only when they should not be and that the government cannot necessarily get people to complain by cutting the message cost. In addition, lowering that cost may hurt since, when the share of honest bureaucrat is low, the poor are pessimistic about the benefit of complaints while the rich are optimistic and they respond more to a lower cost. Finally, the supervisor cannot fully decide to implement a particular equilibrium as multiple ones coexist. Chapter 3 is the product of joint work with Elie Ofek. We model a duopoly in which ex-ante identical firms need to decide where to direct their innovation efforts. The firms face market uncertainty with respect to consumers' preferences for innovation on two product attributes, and technology uncertainty with respect to the success of their R&amp;D efforts. Firms can conduct costly research to resolve their market uncertainty before setting R&amp;D strategy. We find that the value of market information to a firm depends on whether its rival is also expected to obtain this information in equilibrium. We show that, as a result, one firm may forgo market research even though its rival conducts such research and learns the true state of demand. We examine both vertical and horizontal demand structures. With vertical preferences, firms are a priori uncertain which attribute all consumers will value more. In this case, a firm that conducts market research will always innovate on the attribute it discovers that consumers prefer, and expend more on R&amp;D than a rival that has not conducted market research. With horizontal preferences, distinct segments exist-each cares about innovation on only one attribute-and firms are a priori uncertain how many consumers are in each segment. In this case, a firm that conducts market research may follow a 'niche' strategy and innovate to serve the smaller segment to avoid intense price competition for the larger segment. Consequently, a firm that conducts market research may invest less in R&amp;D and earn lower profits post-launch than a rival that has forgone such research.

MIT\_Dept. of Economics.\_1832

This thesis consists of three essays on the economics of education.The first chapter estimates the effects of participating in the National School Lunch Program in the middle of the 20th century on educational attainment and adult health. My instrumental variables strategy exploits a change of the formula used by the federal government to allocate funding to the states that was phased in beginning in 1963. Identification is achieved by the fact that different birth cohorts were exposed to different degrees to the original formula and the new formula, along with the fact that the change of the formula affected states differentially by per capita income. Participation in the program as a child appears to have few long-run effects on health, but the effects on educational attainment are sizable. The second chapter studies the issue of racial diversity in higher education. I estimate the effects of college racial diversity on post-college earnings, civic behavior, and satisfaction with the college attended. I use the Beginning Postsecondary Students survey, which allows me to control for exposure to racial diversity prior to college. Moreover, I use two techniques from Altonji, Elder, and Taber (2005) to address the issue of selection on unobservables. Single-equation estimates suggest a positive effect of diversity on voting behavior and on satisfaction with the college attended, but I do not find an effect on other outcomes. Moreover, the estimates are very sensitive to the assumptions made about selection on unobservables.The third chapter studies university affirmative action bans. I use information on the timing of bans along with data from the Current Population Survey (CPS) and the American Community Survey (ACS) to estimate the effects of such bans on college enrollment and educational attainment. I use a triple difference strategy that uses whites as a comparison group for underrepresented minorities and that exploits variation in the bans over states and across time. I find no adverse impact of bans on overall minority college attendance rates and educational attainment relative to whites, and I find no effect of the bans on minority enrollment in public colleges or four-year colleges.

MIT\_Dept. of Economics.\_1833

This dissertation is a collection of three empirical essays in industrial organization using data from an anonymous retailer. All these chapters examine some facet of consumer behavior. The first chapter estimates demand for store and national brand over-the-counter pain relievers. There is evidence that the substitution patterns between store and national brands are starkly asymmetric- price cuts by national brands steal more share from store brands than store brand price cuts steal share from national brands. Another distinguishing characteristic between store and national brand products is that store brands can be found at only one retailer while national brands are found virtually anywhere. I find that an increase in the number of competing local retailers is associated with an increase (decrease) in store brand (national brand) share, which is consistent with the unique availability of store brands. In the second chapter, I investigate consumer inventory behavior and find that the increase in quantity resulting from a sale is in large part due to stockpiling motives. For example, using field experiment data, the estimated increase in consumption (net of stockpiling) is close to zero for the product categories mouthwash, diapers, and chocolate. I also identify a selection bias when one uses store-level data to estimate the impact of price on quantity. The third chapter evaluates the effectiveness of lowering prices versus just claiming prices are lower on demand, and how this relates to consumer price knowledge. Using a large-scale field test in which we varied both actual price (in the absence of any cue) and claimed price, we find that the response of these two effects is positively correlated. A likely explanation for this positive correlation is that customers simply care more about the prices of some products than others. Also, customers respond more to low prices on items for which they have good price knowledge, but respond more to low price claims when their price knowledge is poor, although this is a second order effect.

MIT\_Dept. of Economics.\_2190

This thesis studies the optimal income tax scheme in four different settings. Chapter 1 focuses on the implications of lack of commitment for the optimal labor and capital income tax rates. It finds that it is optimal to converge to zero capital income taxes and positive labor income taxes in the long run. The government will follow the optimal plan as long as its debt is low enough, which implies that the lack of commitment may lead to some asset accumulation in the short run. Chapter 2 determines the optimal tax schedule when education is endogenous and observable, in a setting where agents have heterogeneous abilities. It finds that, for each ability level, it is optimal to subsidize monetary educational costs at the same marginal rate at which income is being taxed. Chapter 3 finds that when entrepreneurial labor income cannot be observed separately from capital income, then it is optimal to have positive capital taxation in the long run. Chapter 4 finds that if human capital expenses are unobservable, then in the optimal plan human capital accumulation will be distorted in the long run.

MIT\_Dept. of Economics.\_2191

This dissertation consists of three chapters on the interaction of political institutions and macroeconomic activity in dynamic environments. Chapter 1 studies the optimal management of taxes and debt in a framework which relaxes the standard assumption of a benevolent government. We assume instead the existence of a self-interested ruler who manages the government budget. Unlike in the standard economy, temporary economic shocks generate persistent changes in taxes and debt along the equilibrium path so as to optimally limit rent-seeking by the ruler. The presence of political economy distortions causes the debt market which is complete to behave as if it were incomplete. In contrast to an incomplete market economy, taxes are positive in the long run. A numerical exercise suggests that the welfare cost of political economy distortions is high if the government chooses suboptimal politically sustainable policies which do not respond persistently to shocks. This is because the government over-saves and resources are wasted on rents. Chapter 2 studies the dynamics of war and peace in an environment with two groups seeking resources from each other. Peaceful compromise is subject to limited commitment and informational frictions since groups cannot commit to concession-making and the private cost of concession-making can be extremely high. We show that phases of war enforce phases of peace along the equilibrium path. Even though fluctuations between war and peace can occur in the short run, long run convergence to permanent war is inevitable since this maximizes the duration of peace in the short run. In an extension, we allow each group to waste resources during war to inflict additional damage on its enemy. Under some conditions, phases of peace occur even in the long run, since phases of peace enforce phases of war. Chapter 3 is joint work with Daron Acemoglu, Simon Johnson, and James A. Robinson. We revisit the conventional wisdom which views high levels of income as a prerequisite for democracy. We show that existing evidence for this view is based on cross-country correlations which disappear once we look at within-country variation. Rather than reflecting causality, the cross-country correlation between income and democracy reflects longer-run changes, in particular, a positive correlation between changes in income and democracy over the past 500 years. We suggest a possible explanation for this pattern based on the idea that societies may have embarked on divergent political-economic development paths at certain critical junctures.

MIT\_Dept. of Economics.\_2192

This thesis examines the mechanisms by which retail markets converge to a concentrated structure where competition is dominated by only a few large firms. Using a model of competition based on the vertical product differentiation (VPD) enciogenous sunk cost framework proposed by Sutton (1991), several empirical implications are identified and evaluated using a detailed dataset of store level observations from the supermarket industry. Chapter 2 provides a formal test of the hypothesis that the high levels of concentration observed in the supermarket industry are the result of competitive investment in endogenous sunk costs. Using the bounds regression methodology developed in Sutton (1991), I document the existence of a large, positive lower bound to concentration that remains bounded above zero regardless of market size. This exercise is supplemented by a detailed case history of the industry that provides additional evidence that competition is focused on sunk outlays. In chapter 3, I expand the analysis by focusing on the local structure of competition. The principal contributions of the empirical work presented in this chapter involve identifying the high quality set of supermarket firms, demonstrating that they exist only in bounded numbers (do not increase proportionately with the size of the market), and identifying features of the observed market structure which are inconsistent with alternative explanations, namely by highlighting the distinctive nature of strategic complementarity. As such, I demonstrate that the VPD framework accords well with the combination of features observed in the supermarket industry, providing an accurate representation of the mechanisms sustaining its concentrated structure, which appear to be both competitive and stable. Three formal models of retail competition are presented in chapter 4, along with testable implications regarding the strategic interactions of rival firms.

MIT\_Dept. of Economics.\_2290

This thesis is a collection of papers in which behavior genetic methods are used to shed light on individual differences in economic preferences, behaviors and outcomes. Chapter one uses the classical twin design to provide estimates of genetic and environmental influences on experimentally elicited preferences for risk and giving. The paper reports evidence that these preferences are broadly heritable, with estimates suggesting that genetic differences explain approximately twenty percent of individual variation. The results thus point to genes as an important source of individual variation in preferences, a source which has hitherto been largely neglected in the economics literature. The chapter is written with Christopher T. Dawes, Magnus Johannesson, Paul Lichtenstein and Bjorn Wallace. Chapter two shows that these findings also extend to the field. Following a major pension reform in the late 1990s, all Swedish adults had to form a portfolio from a large menu of funds. Matching individual investment decisions to the Swedish Twin Registry, the paper finds that approximately 25% of individual variation in portfolio risk is due to genetic variation. The results, which are complementary to those reported in chapter one, also hold for several other aspects of financial decision-making. The chapter is written with Magnus Johannesson, Paul Lichtenstein, Orjan Sandewall and Bjorn Wallace. Chapter three uses two complementary Swedish datasets to examine the importance of family environment in explaining variation in income, educational attainment, and measures of cognitive and non-cognitive skills. Using seven different sibling types who differ in their degree of genetic relatedness and rearing status, I find moderate family effects on educational attainment, cognitive skills and non-cognitive skills. This contrasts with the effects of family on income, which are low. Additional analyses, based on a sample of identical (MZ) and fraternal (DZ) twins for which more comprehensive income data is available, reveal large and persistent separation of the MZ and DZ correlations over the entire lifecycle, except at very early ages. One interpretation of this finding is that there are strong family effects on the timing of labor market entry. I discuss the relevance of these results for efforts to understand the causes of income inequality.

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This thesis consists of three essays that examine household savings and portfolio choice behavior. Chapter One analyses the effects of employer matching contributions and tax incentives on participation and contribution behavior in employer-sponsored 401(k) savings plans. Employer sponsored retirement savings plans consist of several different incentives designed to increase employee savings, including matching contributions, tax deductibility, and tax free compounding. There is a substantial literature on the effects of match rates on retirement savings, but little on the effects of preferential tax treatment. This chapter provides estimates of the impact of employer matching and tax deductibility on retirement savings using a uniquely suited dataset from a large United States Corporation. I estimate that the effect of a one percentage point change in the match rate corresponds to a 0.06 percentage point increase in savings plan participation rates, while a similar one percentage point increase in marginal tax rates increases participation by 1.35 percentage points. Changes in the match rate have an insignificant effect on contribution rates (conditional on participation), though a one percentage point change in marginal tax rates tends to increase contribution rates by 0.16 percentage points. The effects of the match rate and marginal tax rate are transformed into changes in the annualized rate of return of the savings plan and this disparity remains. Finally, these estimates are used to calculate the changes in wealth at retirement due to changes in match rates and marginal tax rates under a variety of parameterizations. Chapter Two examines the trading and contribution behavior of employees participating in the 401(k) plan at a large United States corporation. This corporation offers employer matching contributions in company stock, and employees are prohibited from trading the matching contributions for an extended period. The empirical work details evidence of rebalancing behavior that is impacted by vesting restrictions and within-firm variation in match rates. Employees are between 3 and 7 percentage points more likely to rebalance their retirement portfolio once matching contributions have fully vested, and an additional 6 to 11 percentage points more likely if they face a 100% match rate relative to a 50% match rate. Variation in match rates also leads to changes in composition of employee contributions: increases in the match rate lead to decreases in the amount of company stock that the employee purchases with their own funds. Employees are between 13 and 19 percentage points less likely to contribute their own income to the matched asset and, if they still contribute to company stock, the employee's own-money contributions in company stock fall by between 13 and 18 percentage points. Together, these estimates provide evidence that employee contribution and rebalancing behavior is altered by asset-specific matching contributions and by restrictions on the trade of particular assets. Chapter Three uses data from multiple panels of the Survey of Income and Program Participation to identify the effect of unemployment insurance benefits on household savings behavior. This chapter extends existing literature on precautionary savings and insurance to allow for the fact that insurance benefits are multi-dimensional, including replacement rates and benefit durations; incorporates additional econometric methods to accommodate the skewness and variation in household savings; allows for heterogeneous savings responses based on the likelihood of the insured risk through a two-step estimation procedure; and by allowing insurance benefits to affect the level and composition of assets by analyzing changes in the composition of the household's portfolio across assets that are likely (or unlikely) to represent precautionary savings. I find suggestive evidence of quantitatively large reductions in precautionary savings behavior in response to variation in both replacement rates and benefit durations, though these results are not statistically distinguishable from zero. The negative effect of benefit increases on savings is magnified for households at greater risk of unemployment, and for the households with below median levels of financial wealth, though again these results are statistically insignificant once standard errors are properly adjusted. These extensions do not provide enough power to detect savings responses to variation in insurance benefits at standard levels of confidence, despite point estimates that represent economically large responses.

MIT\_Dept. of Economics.\_2303

This dissertation consists of four chapters analyzing the effects of heterogeneous and asymmetric information in macroeconomic and financial settings, with an emphasis on short-run fluctuations. Within these chapters, I study the implications these informational frictions may have for the behavior of firms and financial institutions over the business cycle and during crises episodes. The first chapter examines how collateral constraints on firm-level investment introduce a powerful two-way feedback between the financial market and the real economy. On one hand, real economic activity forms the basis for asset dividends. On the other hand, asset prices affect collateral value, which in turn determines the ability of firms to invest. In this chapter I show how this two-way feedback can generate significant expectations-driven fluctuations in asset prices and macroeconomic outcomes when information is dispersed. In particular, I study the implications of this two-way feedback within a micro-founded business-cycle economy in which agents are imperfectly, and heterogeneously, informed about the underlying economic fundamentals. I then show how tighter collateral constraints mitigate the impact of productivity shocks on equilibrium output and asset prices, but amplify the impact of "noise", by which I mean common errors in expectations. Noise can thus be an important source of asset-price volatility and business-cycle fluctuations when collateral constraints are tight. The second chapter is based on joint work with George-Marios Angeletos. In this chapter we investigate a real-business-cycle economy that features dispersed information about underlying aggregate productivity shocks, taste shocks, and-potentially-shocks to monopoly power. We show how the dispersion of information can (i) contribute to significant inertia in the response of macroeconomic outcomes to such shocks; (ii) induce a negative short-run response of employment to productivity shocks; (iii) imply that productivity shocks explain only a small fraction of high-frequency fluctuations; (iv) contribute to significant noise in the business cycle; (v) formalize a certain type of demand shocks within an RBC economy; and (vi) generate cyclical variation in observed Solow residuals and labor wedges. Importantly, none of these properties requires significant uncertainty about the underlying fundamentals: they rest on the heterogeneity of information and the strength of trade linkages in the economy, not the level of uncertainty. Finally, none of these properties are symptoms of inefficiency: apart from undoing monopoly distortions or providing the agents with more information, no policy intervention can improve upon the equilibrium allocations. The third chapter is also based on joint work with George-Marios Angeletos. This chapter investigates how incomplete information affects the response of prices to nominal shocks. Our baseline model is a variant of the Calvo model in which firms observe the underlying nominal shocks with noise. In this model, the response of prices is pinned down by three parameters: the precision of available information about the nominal shock; the frequency of price adjustment; and the degree of strategic complementarity in pricing decisions. This result synthesizes the broader lessons of the pertinent literature. However, this synthesis provides only a partial view of the role of incomplete information: once one allows for more general information structures than those used in previous work, one cannot quantify the degree of price inertia without additional information about the dynamics of higher-order beliefs, or of the agents' forecasts of inflation. We highlight this with three extensions of our baseline model, all of which break the tight connection between the precision of information and higher-order beliefs featured in previous work. Finally, the fourth chapter studies how predatory trading affects the ability of banks and large trading institutions to raise capital in times of temporary financial distress in an environment in which traders are asymmetrically informed about each others' balance sheets. Predatory trading is a strategy in which a trader can profit by trading against another trader's position, driving an otherwise solvent but distressed trader into insolvency. The predator, however, must be sufficiently informed of the distressed trader's balance sheet in order to exploit this position. I find that when a distressed trader is more informed than other traders about his own balances, searching for extra capital from lenders can become a signal of financial need, thereby opening the door for predatory trading and possible insolvency. Thus, a trader who would otherwise seek to recapitalize is reluctant to search for extra capital in the presence of potential predators. Predatory trading may therefore make it exceedingly difficult for banks and financial institutions to raise credit in times of temporary financial distress.

MIT\_Dept. of Economics.\_2318

This dissertation studies the interaction of liquidity and incomplete or asymmetric information. In Chapter 1, I study a dynamic economy with illiquidity due to adverse selection in financial markets. Investment is undertaken by borrowing-constrained entrepreneurs. They sell their past projects to finance new ones, but asymmetric information about project quality creates a lemons problem. The magnitude of this friction responds to aggregate shocks, amplifying the responses of asset prices and investment. Indeed, negative shocks can lead to a complete shutdown in financial markets. I then introduce learning from past transactions. This makes the degree of informational asymmetry endogenous and makes the liquidity of assets depend on the experience of market participants. Market downturns lead to less learning, worsening the future adverse selection problem. As a result, transitory shocks can create highly persistent responses in investment and output. In Chapter 2, I study why firms can choose to be illiquid. Optimal incentive schemes for managers may involve liquidating a firm following bad news. Fragile financial structures, vulnerable to runs, have been proposed as a way to implement these schemes despite their ex-post inefficiency. I show that in general these arrangements result in multiple equilibria and, even allowing arbitrary equilibrium selection, they do not necessarily replicate optimal allocations. However, if output follows a continuous distribution and creditors receive sufficiently precise individual early signals, then there exists a fragile financial structure such that global games techniques select a unique equilibrium which reproduces the optimal allocation. In Chapter 3, I study speculative attacks against illiquid firms. When faced with a speculative attack, banks and governments often hesitate, attempting to withstand the attack but giving up after some time, suggesting they have some ex-ante uncertainty about the magnitude of the attack they will face. I model that uncertainty as arising from incomplete information about speculators' payoffs and find conditions such that unsuccessful partial defenses are possible equilibrium outcomes. There exist priors over the distribution of speculators' payoffs that can justify any possible partial defense strategy. With Normal uncertainty, partial resistance is more likely when there is more aggregate uncertainty regarding agents' payoffs and less heterogeneity among them.

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In Chapter 1, I study the effects of wealth inequality on economies where financial markets are imperfect. I exploit the idea that inequality should have a different effect across sectors. Using a difference-in-difference strategy, I show that sectors that are more in need of external finance are relatively smaller in countries with higher income inequality. I then build a model in which sectors differ in their fixed cost requirement, agents face collateral constraints, and production is subject to decreasing returns. A calibrated version of the model is consistent with the documented facts on inequality and cross-sector outcomes. At the calibrated parameters, wealth inequality exacerbates the effect of financial frictions on the economy. Quantitatively, wealth inequality can generate losses of up to 46 percent of per capita income. In Chapter 2, co-authored with Claire Lelarge and Michael Peters, we explore the ingredients that a model of import behavior should have in order to be consistent with the firm level evidence. We build a model where firms are heterogeneous in their factor neutral productivity, and prices, fixed costs and input qualities are common across firms. Using a comprehensive dataset of French firms, we test the qualitative predictions of such model. The model fares well in describing firm's expenditure across imported varieties, but fails to account for the pattern of expenditure between domestic and foreign inputs. We conclude that a mechanism inducing firm-level heterogeneity in the relative price of domestic varieties is needed to model import demand. In Chapter 3, I study the effects of financial frictions on the pattern of cross-industry growth rates. I document two facts: (i) externally dependent sectors tend to grow faster along the economy's development path, and (ii) externally dependent sectors grow disproportionately faster in countries with better financial institutions. I argue that financial frictions can account for these facts. I build a dynamic two-sector model in which sectors differ in their liquidity requirement and agents face collateral constraints. Financial frictions generate faster growth in the sector with higher liquidity requirement. I identify conditions under which financial development leads to higher excess growth in the externally dependent sector.

MIT\_Dept. of Economics.\_2398

This thesis investigates the role of strategic social interactions in household decision-making using empirical evidence from India. In the first chapter, I ask how the actions of peers influence an individual's own decision to repay her loan obligations. In the subsequent chapters, I employ experiments to unpack some of the complex social interactions at play in communities in India. In each chapter, the value of social relationships plays a key role in influencing behavior. Chapter 1 examines peer effects in the case of microfinance. Around the world, microfinance institutions (MFIs) have invested heavily in building social capital and generally boast stellar repayment rates. However, recent repayment crises have fueled speculation that peer effects might also reinforce default behavior. I estimate the causal effect of peer repayment on individuals' repayment decisions in the absence of joint liability following a district-level default in which 100% of borrowers temporarily defaulted on their loans and after which borrowers gradually decided whether to repay. Because the defaults occurred simultaneously, the timing of the shock induced variation in repayment incentives both at the individual and peer group levels. Individuals (or peer groups) near the end of their 50-week loan cycles were closest to receiving new loans and had the strongest incentives to repay; those who had recently received disbursements had the weakest. Using the variation in the peer group's incentives to instrument for peer repayment, I find that if a borrower's peers shift from full default to full repayment, she is 10-15pp more likely to repay. Last, I present a dynamic discrete choice model of the repayment decision to estimate the net benefit of the peer mechanism to the MFI. Repayers' positive influence on others (not non-repayers' negative influence) mainly drives the effect. Thus, peer effects actually improve repayment rates relative to a counterfactual without peer effects. The second chapter (co-authored with my classmates Arun Chandrasekhar and Horacio Larreguy) uses detailed network data to study the role social interactions may play in contract enforcement and in determining the scope of co-investment. We perform laboratory experiments in Indian villages with non-anonymous participants, where participants play basic two-party trust games with a sender and receiver. In some treatments, we introduce third-party monitors or punishers that may or may not be identifiable by the other two participants. We find that the social network interacts with the play of the game in economically meaningful ways. First, social proximity partially mitigates the investment problem. Second, very central punishers are efficiency enhancing. Third, elites benefit from higher partner transfers, but do not use their status to increase total surplus. Finally, we use our results to provide an assessment of institutional structures as a function of network shape. Typically, socially far judges encourage efficient behavior, while socially close judges are prone to collusion. The final chapter (co-authored with Arun Chandrasekhar) explores the diffusion of information about rival goods. We randomly invite households to come to a pre-specified, central location in 39 villages to participate in laboratory games. Because many households that were not directly invited turned up at our experiments, we study how the information about the opportunity to earn close to one day's wage diffuses through rural Indian communities. Furthermore, because some members of some of the villages had prior experience playing similar laboratory games, we ask how experience with a task affects information-spreading and -seeking behavior. Finally, we examine possible channels for strategic information diffusion. In our environment, participant slots for non-invited households are limited, making them rival goods. Additionally, participants could potentially receive larger payoffs from playing the laboratory games with their peers. Because of these two motivations, we examine how final participation patterns may reflect strategic behavior on the part of informed households.

MIT\_Dept. of Economics.\_2399

This dissertation ties together three papers on mechanism design with boundedly rational agents. These papers explore theoretically whether, and to what extent, limitations on agents' ability to strategically misrepresent their preferences can help a mechanism designer achieve outcomes that she could not achieve with perfectly rational agents. The first chapter investigates whether local incentive constraints are sufficient to logically imply full incentive-compatibility, in a variety of mechanism design settings. This can be motivated by a boundedly rational model in which agents cannot contemplate all possible misrepresentations, but can consider those that are close to their true preferences. This chapter offers a unified approach that covers both continuous and discrete type spaces, showing that in many commonly studied cases, local incentive-compatibility (suitably defined) implies full incentive-compatibility. The second chapter advances the methodology of looking quantitatively at incentives for strategic behavior, motivated by the premise that agents will be truthful if the incentive to be strategic is small enough. This chapter defines a mechanism's susceptibility to manipulation as the maximum amount of expected utility any agent can ever gain from strategic misrepresntation. This measure of susceptibility is then applied to anonymous voting rules. One set of results estimates the susceptibility of specific voting rules; an important finding is that several voting systems previously identified as resistant to manipulation are actually more susceptible than simple plurality rule, by the measure proposed here. A second set of results gives asymptotic lower bounds on susceptibility for any possible voting rule, under various combinations of efficiency, regularity, and informational conditions. These results illustrate how one can quantitatively explore the tradeoffs between susceptibility and other properties of the voting rule. The third chapter carries the methodology of the second chapter to a market environment: unit-demand, private-value double auction markets. This chapter quantitatively studies the tradeoff between inefficiency and susceptibility to manipulation, among all possible mechanisms for such markets. The main result approximately locates the possibility frontier, pinning it down within a factor that is logarithmic in the size of the market.

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This thesis studies the impact of private information on the existence of insurance markets. In the first chapter, I study the case of insurance rejections. Across a wide set of non-group insurance markets, applicants are rejected based on observable, often high-risk, characteristics. I explore private information as a potential cause by developing and testing a model in which agents have private information about their risk. I derive a new no-trade result that can theoretically explain how private information could cause rejections. I use the no-trade condition to generate measures of the barrier to trade private information imposes. I develop a new empirical methodology to estimate these measures that uses subjective probability elicitations as noisy measures of agents' beliefs. I apply the approach to three non-group markets: long-term care (LTC), disability, and life insurance. Consistent with the predictions of the theory, in all three settings I find significant evidence of private information for those who would be rejected; I find that they have more private information than those who can purchase insurance; and I find that it is enough to cause a complete absence of trade. This presents the first empirical evidence that private information leads to a complete absence of trade. In the second chapter, I show that private information explains the absence of a private unemployment insurance market. I provide the empirical evidence that a private UI market would be afflicted by private information and suggest the amount of private information is sufficient to explain a complete absence of trade. I present evidence a private market would still not arise even if the government stopped providing unemployment benefits. Finally, in the third chapter I use the empirical and theoretical tools developed in the first chapter to explore the impact of an adjusted community rating policy that would force insurance companies to only price based on age. My results suggest such a policy would completely unravel the LTC insurance market. Not only would welfare not be improved for those who are currently rejected, but the regulation would prevent the healthy from being able to purchase long-term care insurance.

MIT\_Dept. of Economics.\_2401

This thesis examines three topics. The first chapter, entitled "Persistent Effects of Peru's Mining Mita" utilizes regression discontinuity to examine the long-run impacts of the mita, an extensive forced mining labor system in effect in Peru and Bolivia between 1573 and 1812. Results indicate that a mita effect lowers household consumption by around 25% and increases the prevalence of stunted growth in children by around six percentage points in subjected districts today. Using data from the Spanish Empire and Peruvian Republic to trace channels of institutional persistence, I show that the mita's influence has persisted through its impacts on land tenure and public goods provision. Mita districts historically had fewer large landowners and lower educational attainment. Today, they are less integrated into road networks, and their residents are substantially more likely to be subsistence farmers. The second chapter, entitled "Trafficking Networks and the Mexican Drug War" examines how drug traffickers' economic objectives influence the direct and spillover effects of Mexican policy towards the drug trade. Drug trade-related violence has escalated dramatically in Mexico during the past five years, claiming over 40,000 lives. By exploiting variation from close mayoral elections and a network model of drug trafficking, the study develops three sets of results. First, regression discontinuity estimates show that drug trade-related violence in a municipality increases substantially after the close election of a mayor from the conservative National Action Party (PAN), which has spearheaded the war on drug trafficking. This violence consists primarily of individuals involved in the drug trade killing each other. The empirical evidence suggests that the violence reflects rival traffickers' attempts to wrest control of territories after crackdowns initiated by PAN mayors have challenged the incumbent criminals. Second, the study predicts the diversion of drug traffic following close PAN victories by estimating a model of equilibrium routes for trafficking drugs across the Mexican road network to the U.S. When drug traffic is diverted to other municipalities, drug trade-related violence in these municipalities increases. Moreover, female labor force participation and informal sector wages fall, corroborating qualitative evidence that traffickers extort informal sector producers. Finally, the study uses the trafficking model and estimated spillover effects to examine the allocation of law enforcement resources. Overall, the results demonstrate how traffickers' economic objectives and constraints imposed by the routes network affect the policy outcomes of the Mexican Drug War. The third chapter, entitled "Insurgency and Long-Run Development: Lessons from the Mexican Revolution" exploits within-state variation in drought severity to identify how insurgency during the Mexican Revolution, a major early 20th century armed conflict, impacted subsequent government policies and long-run economic development. Using a novel municipal-level dataset on revolutionary insurgency, the study documents that municipalities experiencing severe drought just prior to the Revolution were substantially more likely to have insurgent activity than municipalities where drought was less severe. Many insurgents demanded land reform, and following the Revolution, Mexico redistributed over half of its surface area in the form of ejidos: farms comprised of individual and communal plots that were granted to a group of petitioners. Rights to ejido plots were non-transferable, renting plots was prohibited, and many decisions about the use of ejido lands had to be countersigned by politicians. Instrumental variables estimates show that municipalities with revolutionary insurgency had 22 percentage points more of their surface area redistributed as ejidos. Today, insurgent municipalities are 20 percentage points more agricultural and 6 percentage points less industrial. Incomes in insurgent municipalities are lower and alternations between political parties for the mayorship have been substantially less common. Overall, the results support the hypothesis that land reform, while successful at placating insurgent regions, stymied long-run economic development.

MIT\_Dept. of Economics.\_2447

This thesis consists of three essays that examine the impact of tax policy on firms' decisions to invest in productive capital. The first chapter uses newly-collected data on transaction prices of used construction machinery to examine the impact and incidence of recent tax incentives for investment. Theory predicts that incentives applying only to new investment should drive a wedge equal to the value of the incentives between the prices of new machines and equally productive used machines. The estimated effect of recent "bonus depreciation" incentives on the size of this wedge is close to zero. The total supply of machines, however, is highly price elastic. Together, these results suggest that the effectiveness of tax incentives that succeeded in stimulating investment demand would not be blunted by inelastic supply, but that the most recent set of tax incentives did little to stimulate investment demand. The second chapter documents the prevalence of losses among US corporations in recent years and examines their implications for the effectiveness of tax incentives for investment. Results suggest that asymmetries in the corporate tax code made recent bonus depreciation tax incentives about 5% less effective than they otherwise would have been. Recent declines in the ratio of cash flows to assets made bonus depreciation as much as 24% less effective than it otherwise would have been. Thus, recent losses can explain only part of the observed ineffectiveness of bonus depreciation. The final chapter estimates the response of dividend payouts to a 2003 dividend tax cut using a new control group of unaffected firms. Dividend payouts by real estate investment trusts rose sharply following the tax cut, even though REIT dividends did not benefit from the cut. It appears that the surge in aggregate dividend payouts subsequent to the tax cut was driven primarily by an increase in corporate earnings. Evidence from the tax cut thus provides little support for the claim that dividend taxation creates large distortions to firm investment decisions or large efficiency costs.

MIT\_Dept. of Economics.\_2486

This thesis is a collection of essays on contract theory and behavioral economics. Chapter 1 proposes a model of choice under risk based on imperfect memory and self-deception. The model assumes that people have preferences over their own attributes and can, to some extent, manipulate their memories. It leads to a non-expected utility representation and provides a unified explanation for several empirical regularities: non-linear probability weights, small-stakes risk aversion, regret and the competence hypothesis. It also leads to endowment and sunk cost effects. The model implies that behavior will converge to the one predicted by expected utility theory after a choice has been made a sufficiently large number of times. Chapter 2 develops a model of competition with non-exclusive contracts in a market where consumers are time-inconsistent. Non-exclusivity creates a stark asymmetry between immediate-costs goods and immediate-rewards goods. In the former, non-exclusivity does not affect the equilibrium and, when consumers are sophisticated, the efficient allocation is achieved. When consumers are partially naive, the optimal sales tax may be either positive or negative and depends on parameters that are hard to estimate. In the case of immediate-rewards goods, however, the equilibrium features marginal-cost pricing and is always Pareto inefficient. Moreover, the optimal tax does not depend on the consumers' degree of naivete and is a function of parameters that are easy to assess. Chapter 3 is based on a joint work with Aloisio Araujo and Humberto Moreira. It considers a job-market signaling model where signals convey two pieces of information. The model is employed to study countersignalling (signals nonmonotonic in ability) and the GED exam. A result of the model is that countersignalling is more likely to occur in jobs that require a combination of skills that differs from the combination used in the schooling process. The model also produces testable implications consistent with evidence on the GED: (i) it signals both high cognitive and low noncognitive skills and (ii) it does not affect wages. Chapter 4, which is also based on joint work with Aloisio Araujo and Humberto Moreira, characterizes incentive-compatibility in models where types are multidimensional and the single-crossing condition may not hold. This characterization is used to obtain the optimal contracts in multidimensional screening as well as the equilibria in multidimensional signaling models. Then, I determine the implications of signaling and screening models when the single-crossing condition is violated. I show that the unique robust prediction of signaling is the monotonicity of transfers in (costly) actions. Any function from the space of types to the space of actions and an increasing transfer schedule can be rationalized as an equilibrium profile of many signaling models. Apart from the monotonicity of transfers in actions, I obtain an additional necessary and sufficient condition in the case of screening. In one-dimensional models, this condition states that the principal's profit as a function of the agent's type must grow at a higher rate under asymmetric information than under symmetric information.

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This dissertation contributes to an understanding of the manner in which various dimensions of malpractice law shape physician behavior and how this behavior, in turn, impacts health outcomes. In Chapter 1, I explore the association between regional variations in physician practices and the geographical scope of the standards of care to which physicians are held in malpractice actions. To investigate this general association, I explore whether treatment utilization rates in a state converge towards national utilization levels as states abandon the use of "locality rules" to adopt laws requiring physicians to comply with national standards of care. I focus the analysis on the case of cesarean delivery and find robust evidence of convergence in cesarean section utilization, whereby as much as 40 - 60% of the gap between state and national cesarean rates is closed upon the abandonment of a locality rule. In Chapter 2, I estimate the returns to regional cesarean intensities, drawing on an arguably exogenous source of variation in cesarean rates resulting from the adoption of national-standard laws. I first document robust evidence of triage in regional cesarean utilization, whereby physicians in high intensity regions begin to perform cesareans on mothers who are less in need of this intensive delivery alternative. Second, I find no evidence to suggest that an increase in regional cesarean rates otherwise leads to an increase in average neonatal outcomes. Third, I find evidence suggesting that increases in regional cesarean rates may be crowding out mothers otherwise in need of cesarean delivery. In Chapter 3, I consider another dimension to malpractice law and estimate the relationship between different levels of malpractice pressure, as identified by the adoption of non-economic damage caps and related malpractice laws, and certain decisions faced by obstetricians during the delivery of a child. Contrary to the conventional wisdom, I find no evidence to support the claim that malpractice pressure induces physicians to perform a substantially greater number of cesarean sections. However, I do find evidence of positive defensive behavior in the utilization of episiotomies during vaginal deliveries and in the durations of maternal lengths of stay.

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The first essay analyzes the impact of the 1930's American Dust Bowl and investigates how much the short-term costs from erosion were mitigated by long-term adjustments. Exploiting new data collected to identify low, medium, and high erosion counties, estimates indicate that the Dust Bowl led to substantial immediate decreases in agricultural land values and revenues. Until at least the 1950's, however, there was limited reallocation of farmland away from activities that became relatively less productive due to erosion. Relative changes in agricultural land values and revenues indicate that the annualized long-term cost was 86% of the short-term cost to agriculture. Substantial out-migration reflects the large cost of the Dust Bowl, and was an important channel through which short-term costs were partly mitigated. The second essay examines the impact on agricultural development from the introduction of barbed wire fencing to the American Plains in the late 19th century. Farmers were required to construct fences to be entitled to compensation for damage by others' livestock. From 1880 to 1900, the introduction and universal adoption of barbed wire greatly reduced the cost of fences, relative to predominant wooden fences, most in counties with the least woodland. Over that period, counties with the least woodland experienced substantial relative increases in settlement, land improvement, land values, and the productivity and production share of crops most in need of protection. This increase in agricultural development appears partly to reflect farmers' increased ability to protect their land from encroachment. States' inability to protect this full bundle of property rights on the frontier, beyond providing formal land titles, might have otherwise restricted agricultural development. The third essay quantifies agglomeration spillovers by comparing the growth of total factor productivity (TFP) among incumbent plants in "winning" counties that attracted a large manufacturing plant to "losing" counties that were the plant's second choice. Five years after the opening, incumbent plants' TFP is 12% higher in winning counties. This effect is larger for plants with similar labor and technology pools as the new plant. We find evidence of increased wages in winning counties, indicating that profits increase by less than productivity.

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This thesis consists of three independent essays that examine the role of incentives for innovation in organizations. Chapter 2 studies the provision of incentives when workers explore new work methods in parallel. In such a setting under-exploration may result as workers attempt to free-ride on the new ideas of co-workers. Optimal incentives for routine activities take the form of standard pay-for-performance where only individual success determines compensation while optimal incentives for parallel innovation tolerates early failure and provides workers with long-term group incentives for joint success. Using data from a controlled laboratory experiment I show that this link between incentives and innovation is causal. Innovation success and performance is highest under a group incentive scheme that rewards long-term joint success. In Chapter 3 which is co-authored with Gustavo Manso, I provide evidence that the combination of tolerance for early failure and reward for long-term success is effective in motivating innovation. Subjects under such an incentive scheme explore more, get closer to discovering the optimal business strategy, and produce higher average revenues than subjects under fixed-wage and standard pay-for-performance incentive schemes. I also show that the threat of termination can undermine incentives for innovation, while golden parachutes can alleviate these innovation-reducing effects. Finally, in Chapter 4, I investigate the choice of organizations to conduct interim performance evaluations. When ability does not influence workers marginal benefit of effort, the choice between giving workers feedback or not depends on the shape of the cost of effort function. However, when effort and ability are complementary, feedback policies have several competing effects. They inform workers about their relative position in the tournament as well as their relative productivity. In addition, performance appraisals create signal-jamming incentives to exert effort prior to performance evaluation.

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This dissertation contains three essays on household decision making in the areas of education and health in developing countries. The first chapter explores intra-household decision making in the context of conditional cash transfer programs in education. This study provides an empirical test of whether the recipient of the incentive-either the parent or the child-affects outcomes. I conduct this test through a field experiment in Gurgaon, India where an incentive to achieve a specific reading goal was randomly assigned to be received by either the parent or by the child. I find that incentives to parents result in worse outcomes than incentives to children when parents are less productive in their children's education, measured through lower initial test scores. Conversely, incentives to parents result in better outcomes when parents are more productive, measured through higher initial test scores. In the second chapter, written jointly with Leigh Linden, we estimate the effects of peer networks on the enrollment and attendance patterns of children in a community-based education program in India. The program is open to all out-of-school children, and we randomly assign a subset of the eligible children to be actively encouraged to participate. We find that active encouragement increases participation among selected children by 30 percentage points. Having a treated friend increases participation by about 20% of the main effect. The effect of treated friends comes primarily from bilateral ties, where both the child and his friend indicate that they spend time with each other. The third chapter, written jointly with Nava Ashraf and Jesse Shapiro, explores how households make decisions to purchase and use health products in developing countries. This study tests whether higher prices can increase use, either by targeting distribution to high-use households (a screening effect), or by stimulating use psychologically through a sunk-cost effect. We develop a methodology for separating these two effects. We implement the methodology in a field experiment in Zambia using door-to-door marketing of a home water purification solution. We find that higher prices screen out those who use the product less. By contrast, we find no consistent evidence of sunk-cost effects.

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In the first chapter of this thesis, I study Japanese municipal mergers using a political coalition formation model. Political coalition formation games can describe the formation and dissolution of nations, as well as the creation of coalition governments, the establishment of political parties, and other similar phenomena. These games have been studied from a theoretical perspective, but the models have not been used extensively in empirical work. This paper presents a method of estimating political coalition formation models with many-player coalitions, and then applies this method to the recent heisei municipal amalgamations in Japan to estimate structural coefficients that describe the behaviour of municipalities. The method enables counterfactual analysis, which in the Japanese case shows that the national government could increase welfare via a counter-intuitive policy involving transfers to richer municipalities conditional on their participation in a merger. In the second chapter, I examine selection effects in the cross-country state system. The countries present today are only part of a larger set of potential countries. Since many modern states originated as colonies, colonial data can be used to examine correlates of independence. During decolonization, larger and more economically successful colonies were more likely to become independent. This selection effect may explain why, despite commonly held opinions about efficiencies of scale, small countries appear to have higher GDP both in terms of growth and levels. The estimated selection model implies that analysing only currently independent countries can introduce substantial selection bias. An example of this is presented with the Frankel and Romer trade-instrument regression, where the selection effect biases the coefficient on the instrument upwards, and a regression on an unselected sample yields a negative and statistically insignificant coefficient. In the third chapter, I examine the endogeneity of linguistic fragmentation, assuming that national borders have already been fixed. Users of ethnic fragmentation indices generally assume that fragmentation is constant and exogenous. In many countries, however, linguistic fragmentation has decreased a great deal over the past two centuries, and frequently-used measures of ethnic fragmentation rely heavily on linguistic differences to distinguish ethnic groups. Previous qualitative research suggests that linguistic homogenization is correlated with administrative centralization. This hypothesis is tested empirically using the population of the largest city in each country in 1900 as a proxy for centralization, along with the population of the country as a whole and its surface area. Using these proxies produces a statistically significant relationship between centralization and linguistic homogenization. Furthermore, when these variables are included in regressions predicting economic growth the coefficient on fragmentation is halved and becomes statistically insignificant. Similar results are obtained when the relationship between fragmentation and corruption is examined.

MIT\_Dept. of Economics.\_2492

This dissertation consists of three essays studying the impacts of income and wage taxes. Chapter One examines how income tax changes differentially affect the pre-tax wages of different industries based on the injury and fatality rates of those industries. This chapter recognizes that compensating differentials are a function of the income tax rate and uses this observation to introduce a new methodology for estimating compensating differentials with a specific application to the estimation of the Value of a Statistical Life (VSL) parameter. When taxes change, the pre-tax wages of risky jobs should shift relative to the pre-tax wages of safe jobs in a manner proportional to the VSL. This strategy yields VSL estimates between $50 million and $75 million, an order of magnitude higher than the previous literature. Chapter Two studies the link between taxes and occupational choices. Just as taxes distort the labor-leisure decision, they also distort the wage-amenity decision. Few papers have isolated this effect. This chapter introduces a two-step estimation strategy to isolate the elasticity of occupation choice with respect to tax rates, testing whether workers select higher (lower) wage jobs when tax rates decrease (increase). The final estimates find a statistically significant overall compensated elasticity of 0.05, implying that a 10% increase in the net-of-tax rate causes workers to change to a job with a 0.5% higher wage. Chapter Three focuses on the tax elasticity of labor income. Because governments can tax labor income separately from capital income, it is critical to isolate the tax elasticity of labor income. Furthermore, governments can use non-linear taxes so the mean elasticity :is not the relevant statistic. In this chapter, I introduce a new quantile estimator useful for panel data and applicable in an IV context. I find evidence of significant heterogeneity in the compensated elasticity. The importance of this heterogeneity is most evident for men as the elasticity is much larger at the top quantiles. The elasticity also appears to be larger at lower quantiles for both men and women.