

14.731: Economic History

A Summary of All Knowledge
2006 Edition

Entering Class of 2006
Department of Economics, MIT

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Part I

Agrarian Economies and the Industrial Revolution

1 Ancient Rome

1.1 *The Economy of the Early Roman Empire, Temin*

- Very little data about ancient times - typically wrote by incising on perishable wood, so few records remain.
- Using estimates of urbanization drawn from archaeological records to infer GDP, Temin estimates that Roman Italy was about as wealthy as the Netherlands or Spain around 1700 (i.e. the most advanced countries prior to the industrial revolution) - slightly lower incomes outside Italy
 - Doesn't mean standard of living was just as high - Rome had lower life expectancy (around 25 years) and was ravaged by disease (especially malaria)
- Why no Industrial Revolution in Rome?
 - Information transmission was expensive - no printing press
 - Calculation was expensive - Roman numerals are a pain in the ass
 - Perhaps wages not high enough to fuel consumer revolution.
- Temin's central claim: Rome was relatively prosperous due to flourishing political and market institutions.
 - Political institutions: security, Roman law \Rightarrow pax Romana
 - Tests market institutions: does the market for grain extend across the empire? If it does, we should expect prices to decrease as we move proportionally further from Rome since demand is highest in Rome
 - Only six data points, but T-statistic above 3
- Labor markets in early Rome
 - Wages moved to clear markets - in Egypt, when a plague reduced labor supply, real wages rose
 - Extant employment contracts
 - Insurance arrangements between landowners and tenants
 - Even slaves earned money through hard work (peculium), and were frequently freed (manumission) - 10% freed after 5 years
- Financial markets
 - Written evidence of loan contracts, understood that interest was necessary due to opportunity cost - also evidence of a market rate of interest
 - Most loans to merchants to finance trade
 - Banks inherited from Greeks, and many religious organizations acted as banks, loaning out their endowment to earn interest (Temin later says, "Banks were the canaries in the Roman market economy" before recounting how they collapsed due to inflation - I don't know what this comment means.)
 - No government debt - ran on a cash basis.

2 The Industrial Revolution: Description

2.1 *The Industrial Revolution, Ashton*

- This book contains a hodgepodge of facts about the industrial revolution. In short, a wave of inventions swept over England.
- Interest rates fall and markets for allocating capital and labor become more efficient throughout the 18th and 19th centuries. This was a key ingredient for the Industrial Revolution in Britain and likely the reason why it occurred here instead of elsewhere.
- A lot of technological advances: steam everything, spinning jenny, Arkwright water frame (spins and winds yarn simultaneously), canals, steel.
- Ashton argues that low interest rates and "sloshing" capital allowed all this to happen simultaneously.
- "The industrial revolution was an affair of economics as well as technology: it consisted of changes in the volume and distribution of resources (economic allocation) no less than in the methods by which these resources were directed to specific ends (technology). The two movements were closely connected. Without the inventions, industry might have continued its slow-footed progress - firms becoming larger, trade more widespread, division of labor more minute, and transport and finance more specialized and efficient - but there would have been no industrial revolution.
- Capital: the growth of savings and facilitation of its investments allowed technological advances to be put to extensive use. Sources:
 - Retained earnings: people reinvested in their own businesses and ran out of investment opportunities in their own firms so found other places to put their money. Anecdotes of merchants becoming big land-owners, industrialists becoming canal builders, etc.
 - Mortgages: growing capital market allowed physical assets to serve as collateral for loans made across large distances within Britain, freeing up mercantile capital for industrial investment.
 - Why was it so hard to raise capital: full liability. Partners liable for the debts of their firm up to their "last shilling and acre."
 - Lines of credit expanded: suppliers started offering credit lines for working capital. Why?
 - Banks
 - * Uncommon outside of London in early 1700s, and London banks oriented to trade and treasury.
 - * Provincial banks become more common in 1760s, with their notes becoming common currency in local communities, but still insufficient for substantial industrial growth.
 - * Act of Parliament in 1826 makes possible branch banks open outside of London in the 1830s. The Bank of England gets in on act.
 - * Stock exchange of London opens in 1773
 - Foreign capital inflows: drawn by Britain's relatively high interest rates (rates were high relative to Holland, but at the same time had fallen considerably within England).
 - Conclusion: Huge increases in size and efficiency of capital markets and mobility. Lots of capital "sloshing around." Britain was in search of projects.
- Labor: trend from agriculture and small cottage industry to working in manufacturing "establishments." Why?
 - Technology: many new products, e.g. smelted iron, couldn't be made at home. Processes also required division of labor, which in turn led to economies of scale at plants.
 - Fixed costs, e.g. water wheel, lead to further economies of scale.

- Need for processes monitoring drew workers to factory.
- Some impediments to this transformation:
 - Unsafe intercity travel due to highway crime
 - Poor Laws tied to parish created disincentive to migrate to work
 - Poor Relief dulled incentives
 - Labor market inflexibility (quasi-apprenticeship system was a barrier to entry)
 - New things are scary
 - By the 1830's, the labor force had changed. It is not really clear why. The poor laws were gone.
 - Wages adjusted more rapidly to supply and demand and became more closely correlated across industries.
- Individualism and Laissez-faire
 - Rise of individualism was a myth. If anything, collective behavior increased: collusion in industries, organized labor, industrialist charity, government action
 - State was largely withdrawing from economic activity.
- The Course of Economic Change (Chapter 6)
 - The troubles often attributed to the industrial revolution were the result of other forces, the most important of which were:
 - * Price instability due to reduced output of consumer goods (initially) as resources redirected towards capital, money supply instability, external events (war) which caused large variations in price of imports, poor weather, and crop failure.
 - * Fluctuations in labor demand: export volatility due to events "abroad," war, etc.
 - * Presumably a lot of this was due to the industrial revolution.
 - * The government increased taxes on grains and restricted grain imports.
 - Key question: did the Industrial Revolution raise the quality of life? Ashton says yes. Eventual increases in consumer goods (goods produced were not luxury goods), improved diet, employment of women and children decreased and wages rose. Downside: long hours and poor working conditions.
- Note Ashton's opinions on population change and the industrial revolution:
 - Rapid growth in population during this time was due to reduction in mortality, not increases in birthrate as posited in other papers.
 - * He attributes fall in mortality to many other things, including reduction in "excessive indulgence in cheap gin," higher use of cotton underwear, higher vegetable and wheat consumption.
 - Industrial revolution in the UK allowed these increased masses to be absorbed without the nation suffering hunger, disease and/or mass migration as seen in neighboring Ireland, or more recently in places such as India.
 - Refutes two views on links between Industrial Revolution and population growth:
 - * Population growth did not promote the industrial revolution by increasing demand. Population growth was rapid throughout Europe at this time, but no other country experienced an industrial revolution. If this were the case, we might also expect to see an industrial revolution in countries such as India, China, and Egypt in the 19th century.
 - * The industrial revolution did not promote population growth. Since Ashton takes the view that birth rates did not change, but rather population growth was induced by lower mortality, it is unlikely that the industrial revolution was the cause of lower mortality. (As in Crafts, the industrial revolution probably promoted higher mortality in cities.)

3 Early Modern Europe

3.1 *The Great Divergence in European Wages and Prices from the Middle Ages to the First World War, Allen*

- Allen compiles an overview of real wages in European cities from 14th century to World War I with four goals in mind:
 - Explaining seemingly contradictory observations: marked improvement in variety and quantity of "luxury" items among artisans and farmers in England and the Netherlands during the 17th and 18th centuries while real wages have been presumed to be falling across Europe during this period
 - The relationship of stature and income: would a more distributionally sensitive measure of income (like the real wage) be a better predictor of heights, which in turn is considered to be a proxy for well-being?
 - Where did England's lead in per capita income as of 1850 come from? Wages didn't grow much in England from 1770 to 1850.
 - Place the standard of living debate in an international and long-term context
- Main conclusion: the dominant pattern in early modern Europe was income divergence. England and the low countries had somewhat higher real wages than the rest of Europe in the 15th century. Over the next three centuries, real wages declined by almost one half in the rest of Europe, but stayed roughly stable in northwestern Europe. Only between 1870 and 1913 did the standard of living in the industrial part of the continent rise appreciably above early modern levels.
- Data:
 - From 19 European cities
 - Wages: nominal in building sector (construction workers and craftsmen. Note that there may be issues with using construction data due to the effect of the London fire on construction demand.) Relies on the assumption of functioning labor market. While urban wages were higher, differences in rent worked to bring some convergence between rural and urban real wages.
 - Price data: from institutional buyers (orphanages, armies, etc.). Didn't have bread data (probably the number one expenditure!), so constructed it based on mark-up over grain prices (often not a market because institutions baked their own bread).
 - Constructed a Laspeyres (initial weights) price index for each city. This index might be fine prior to the 19th century, but technological innovation during the Industrial Revolution weakens its validity.
 - Calculates real wages based on this.
- Results: dispersion lowest in the early 16th century. Over the next 250 years, London wages went up while the wages in Antwerp and Amsterdam stayed the same, and the rest decreased.
- Why did the Industrial Revolution take place in England? Wages were far enough above poverty line to fuel a consumer revolution. Elsewhere in Europe, wages were often not much above subsistence.
- Possible causes: 1) The glorious revolution, 2) Emergence of private bankers, 3) Higher wages implies higher productivity.

3.2 *Coordination, Commitment, and Enforcement, Milgrom, Weingast*

- Use repeated game model to conclude that the merchant guilds emerged during the late medieval period to allow rulers of trade centers to commit to the security of alien merchants.
- Commercial revolution of the middle ages: 10th through 14th centuries.
- Trading centers needed to be organized in a way that secured property rights of traders. Edward I recognized the public goods problem: merchants put off coming to the detriment of the kingdom.
- Simplest view of state as an institution that enforces contracts and property rights and solves a public goods problem poses a dilemma: a state with the power to do these things also has the power to confiscate wealth. Rulers could gain by breaking contracts with some traders when traders were poorly organized.
- Merchant guilds emerged to enhance the ruler's ability to commit and in doing so laid important foundations for growing trade in the period.
- Merchant guilds took various forms. Generally, merchants from a single area who some control over trade in their own land, but they could also monitor overseas treatment of their countrymen. They had access to information and resources to enforce trade boycotts on their own members. Examples:
 - Germany: Hansa developed out of the Kontors. Traditional Kontors had the power to coordinate boycotts, but only among those towns that chose to participate. As it became clear that for boycotts to be effective, towns needed to coordinate, several German Kontors worked together to enforce boycotts.
 - In Italy, no such formal institutions arose. Cities in Italy were large enough to have effective individual boycotts, so intercity coordination was not necessary. Intra-city coordination was handled by a subdivision of the city administration.
- "Maghribi Traders" were Mediterranean merchants. Members ostracized and retaliated against agents who violated their commercial code. Interrelated contractual arrangements motivated merchants to participate in collective retaliation against cheaters.
- This article gives various examples of breach of contract that highlighted the need for "institutionalized commitment to security."
- Formal model:
 - Players: cities (trading center) and large number of small traders
 - Payoffs: The city incurs cost per unit traded when providing protection. Traders incur costs per unit of trade. Costs are such that net value of trade is positive. Net value achieves maximum at a certain optimal level of traders defined as the "efficient volume of trade." The city levies a tax on traders. The city can also break contract by extracting taxes from traders without providing protection. Protected traders earned positive profits; unprotected traders lose trading costs and taxes. Traders have the option of not returning the following year.
 - Game 1: Traders have no information about treatment of others and thus make decisions about future periods based entirely on own treatment. No Nash equilibrium can support host trade at the efficient level because, at the efficient level, the cost to the city of cheating is very small relative to the gains.
 - Game 2: Small circle of traders who find out if one trader is cheated. There is still no Nash equilibrium at the efficient level of trade, even if all the traders with information about cheating threaten not to return next year.

- Game 3: Introduces guild to disseminate information. If the city cheats anyone, the guild finds out with positive probability (increasing in the number of traders cheated), and announces boycott to all traders. This leads to a perfect public equilibrium in which (1) the city does not cheat unless the guild announces boycott, then cheats everyone after boycott is announced, and (2) the traders only trade with the city in the no boycott stage. Note that the results are counterintuitive, because the city could benefit by attracting and trading honestly with a small number of traders once the boycott is announced. With some model restrictions, there is a SGPE with the city protecting only those traders that it has never cheated before and traders continue to trade if they have not been cheated.
 - Game 4: Informally discussed. This one considers guilds with the ability to enforce boycotts. The results are similar to game 3, but traders must participate.
- The authors realize the model is highly stylized. Guilds are more complex than modeled, but this demonstrates the potential benefits of guilds to both states and traders.
 - The need for guilds diminished as political systems developed. For example, eventually English kings enforced embargoes among English merchants themselves; the Bank of England, after the Glorious Revolution in 1688, had the ability to announce a credit boycott and to punish lenders who attempted to lend to the government.
 - The guilds became monopolistic (e.g. the Hansa in Germany) and crushed new trading groups without regard to their relative efficiencies. This hindered expansion in the pre-modern period.

4 European Expansion

4.1 *Guns, Germs, and Steel*, chapter 18, Diamond

- The main question of this book is, "Why did the Europeans conquer the Americas and not the other way around?"
- The European conquest of the Americas wiped out 95% of the native population. Diamond argues that this was the result of the differences between the two parts of the world dating back to 11,000 B.C.E.
- Four proximate explanations:
 - Biological differences
 - * Variety of animal species: Eurasia had an abundance of large mammals used for nutrition, wool, transportation, war vehicles, power for agricultural and industrial production.
 - * Variety of plant food production: Both quality of plant species suitable for domestication and the benefits of animal power. In 1492, most Americans were still hunter-gatherers. Eurasian agriculture yielded more calories and protein per person-hour of labor.
 - * Differences in harmful germs: European diseases, which evolved from close contact with domesticated animals, killed a substantial portion of Americans during the post-Columbian collisions. Also, village settlements appeared much later in the Americas.
 - Technological differences
 - * Metal use: Iron, copper and bronze versus wood, stone, and bone
 - * Military technology: use of animals and metals in warfare
 - * Machinery: wheels are a big difference
 - Political differences: by late medieval and Renaissance times, most of Eurasia was separated into states. History of conflict and warfare. Only the strong survived. They also gained military experience. In contrast, the two large American empires, the Aztecs and Incas, had almost no history of large conflict.
 - Cultural differences: "literature bureaucracies." Writing facilitated political administration, economic exchanges, guilding, exploration, conquest, extending human knowledge.
- Ultimate explanations
 - Head start: Eurasia occupied about one million years earlier
 - Wild animals and plants for domestication
 - Geographic differences: east-west versus north-south; fragmentation and aridity of much of Americas

4.2 *The Colonial Origins of Comparative Development*, Acemoglu, Johnson, Robinson

- What are the fundamental causes of large differences in per capita incomes across countries? While it's obvious that institutions matter, AJR (Acemoglu, Johnson, and Robinson) look for a way around the endogeneity issue:
 - Rich economies may be able to afford or prefer better institutions
 - Omitted variables may be causing both
 - Institution measures created ex post and analysts may have natural bias in assigning "better institutions" to richer places
- AJR believe that differences in mortality rates faced by European colonists provide exogenous variations. The argument is that potential settler mortality affected the types of settlements, which affected early institutions, which in turn affects current institutions and hence current performance.
- Need some assumptions: persistence of assumptions, that 19th century mortality rates are a good proxy for mortality rates at the time of colonization (may not be a good proxy), that factors other than mortality rates (size of existing population, religious freedom, etc.) were unimportant in determining the type of settlement.
- Assume high mortality rate led to extractive institutions, whereas low mortality rate led to "European" (i.e. English) institutions.
- They test their hypothesis by regressing current performance on current institutions, instrumenting for current institutions with settler mortality rates.
 - They include controls to deal with some potential problems: climate and current disease environment, geography, and some other potential determinants of income. Main potential problem: Lots of individual country variation not captured here.
- Data come from 64 countries. Per capita income is used as a measure of long-term economic performance.
- Strong first-stage between settler mortality and current institutions: interesting by itself.
- Authors caution that results do not imply predetermination. Colonial experience affects institutions. It does not determine them. Also, they do not address which institutions are important.
- Conclusion: Different colonization strategies associated with different institutions. These institutions persisted and explain a great deal of current differences in development. In the U.S., Australia, and New Zealand, institutions developed that enforced the law and encouraged investment. In places where Europeans were less likely to settle due to high mortality rates, like Africa, they set up extractive institutions.

5 Malthusian Demography

5.1 *The World We Have Lost*, chapters 4-5, Laslett

- These chapters give us some demographic background on England from 1570-1870.
- Population grows by 25% between 1570 and 1600 and then the rate of increase drops off until the 1780's when the growth rate surges. Between 1780 and 1810, population grows by 40% and then grows by 50% between 1810 and 1840. Between 1840 and 1870, population grows by 44%.
- Data from marriage license applications to Canterbury diocese from 1619 to 1660 (1007 observations).
- Marriage ages were high (average for men 26.5 and 23.5 for women.) No one under the age of 21 could be married without parental permission.
- Women in gentry married, on average, 2 years earlier than average.
- Menarche average was 15.6 years in Manchester in 1835.
- Approximately 1/8 of the population was in service at any time.
- Don't see large, multi-generational households. Couples formed new household upon marriage. Laslett notes that the poor and very poor were more likely to live in extended family units.
- The relative cost of housing was less than it is now.
- Not all women married.
- Young people needed to get a job to afford marriage. This led to more mobility of working age, pre-marriage population, which in turn led to greater spatial consistency of prices and improved information.
- Brides brought dowry and savings from work in service and perhaps ability to continue to earn through other skills, usually spinning and weaving. Women with few resources had a hard time marrying.
- Needed to wait until a "slot in society" opened up. Work for an experienced apprentice or cottage.
- Russia was different. More on the Asian family system (extended) and marriages took place quite early.
- England low-pressure population regime.
- Lots of breakup and dislocation of families due to death of husband (rendered family unit unviable) or wife.

5.2 *An Historical Perspective on Economic Aspects of the Population Explosion, Lee*

- Tests the Malthusian hypothesis that (1) high population growth leads to low wages and that (2) low wages lead to low population growth.
- Data comes from 404 English parishes from 1540 to 1800.
- Model:
 - Two-sector (industry and agriculture), closed economy model
 - Share of industrial and agricultural output in national income stay constant when valued at current prices.
 - Ignores capital
 - Investment in agriculture left exogenous and constant. There's a weakness here because agricultural investment and technical change were probably more rapid when rents and agricultural prices were relatively high and these amounts depend on population.
 - Assumption: Other sources of long-run economic change (technology, capital accumulation, etc.) formerly weakened or absent, so we have ceteris paribus situation.
- Results
 - The real wage is very sensitive to population change, with an elasticity of -1.5.
 - This elasticity is consistent across subperiods.
 - No significant acceleration in the trend of the relationship between population and wages in 18th century. (Early stages of the Industrial Revolution.)
 - Demand for labor increased significantly after 1810
 - Lots of short run variability
 - In pre-industrial Europe, population swings were largely autonomous, not a response to economic variation. Mortality is closely related to population change, but fertility is not closely related to economic changes and mortality is largely exogenous.
 - Evidence supports the claim that high population growth implies low wages. The economy could only absorb population growth of 0.4% with little effect. Changes relative to this had dramatic consequences for wages.
 - No relationship between wages and population growth (part 2 of Malthus); concludes that exogenous variation in mortality accounted for most of the variation in the population growth rate. Some endogeneity in fertility and mortality rates from wages, but small amount of total variation (15%).
- Problems:
 - Something seems wrong here, in that support is much too strong. Estimate η of -1.5 is inconsistent with any Cobb-Douglas predictions.
 - Have flow, but not stock data (e.g., don't know age distribution to get number of women of child bearing age.)
 - Don't have migration data
 - Parish records exclude people outside the Church of England.
- Policy implications: can't expect demographic adjustment mechanism to act as break on population growth.

5.3 *The Life Table and its Construction, Chiang*

- Life tables, in short, let us know who dies and when
- Two forms of life tables:
 - Cohort life tables: records the actual mortality experience of the cohort from birth until death of the last member.
 - * Difficult to construct in reality - never have enough good data
 - Current life table: considers mortality experience of a given population during one short period of time, e.g. California in 1960
 - * Projects the lifespan of each individual in a hypothetical cohort using actual death rates in the given population.
 - * Gives a fictitious pattern.
- Two levels of detail:
 - Complete life table: functions are computed for each year of life.
 - Abridged life table: deals with age intervals greater than one year.
- Common columns in a life table:
 - Age interval: $[x, x + w)$, e.g. $[5, 6)$ then $[6, 7)$, etc.
 - * Final age interval is half open, e.g. 85+
 - * For simplicity, I assume $w = 1$, as for a complete life table.
 - Proportion dying in interval: q = proportion dying in an interval $[x, x + 1)$
 - * Probability that someone who is exactly age x will die during the interval $[x, x + 1)$
 - * Sometimes reported as death per 1000 population (or following Dora's notes, you can make two columns: one with deaths per 1000 people, and one with the death rate per one person. Try making both columns for extra multiplication practice.)
 - Interval width $n = (x + w) - x$ (here, I assume $n = 1$)
 - Number alive at age x : I
 - * They call the first number in this column (i.e. number of babies alive at age of 0) the "radix."
 - * The "radix" is frequently arbitrary and often set to 100,000 for convenience
 - Number of dying in interval $[x, x + 1)$: d
 - * These numbers also depend on the radix
 - Average fraction of last year of life for age x : a'
 - * Each of the d people who die in $[x, x + 1)$ live for a fraction of the interval a
 - Number of person-years lived in interval $[x, x + 1)$: L
 - * Every member of the cohort who survives the entire interval contributes n to this interval, while each member who dies contributes on average a
 - Total number of years lived beyond age x : T
 - * Sum L starting from period x until the end of the life table
 - Observed life expectancy at age x : $e = \frac{T}{I}$
 - * Number of years yet to be lived by a person now aged x
 - * MOST important column in the table
 - * Generally decreases with age after the first year of life
 - Age-specific death rate $M = \frac{d}{I-d+ad}$
 - * The ratio of the number of people who die over the total number of years lived during the interval $[x, x + 1)$ by the I people who reach age x .

6 The Demographic Transition

6.1 *Malthus Was Right After All*, Boyer

- Why did birth rates rise in England in the late 18th century?
- This paper tests the hypothesis that outdoor relief (aid to poor people not living in state facilities) to able-bodied workers promoted population growth. The aspect that is presumed to have the strongest effect is the payment of child allowances to laborers with large families.
- Malthus strongly argued against poor relief, believing it would increase fertility, remove natural checks, and ultimately increase poverty.
- Variance in child allowances across parishes comes from the level at which the allowance kicked in (> 3, > 4, or > 5 children).
- Boyer tests this hypothesis using birth rates across parishes in southeast England (where child allowances were particularly widespread) from 1821-1830. He estimates

$$\text{birthrate} = \text{income} + \text{density} + \text{housing} + \text{ChildAllowances} + \text{other stuff}$$

- Boyer finds that when other socioeconomic determinants of fertility are taken into account, child allowances, incomes and housing availability did indeed promote population growth. Child allowances at 3 kids implies an additional 25% birthrate!
- Data also suggests that Malthus was correct in other matters:
 - Agricultural laborers' income had a positive impact on fertility (note that this directly contradicts Lee's findings.)
 - Birthrates were checked by unavailability of housing
 - Density had a negative impact on birthrates
 - This does not support Malthus' assertion that availability of farm land allotments would increase birthrates.
- Questions:
 - Exogeneity of Poor Laws. Boyer tests for exogeneity of child allowances and concludes they are (but this seems a bit odd).
 - Good chance that measurement error is leading to spurious correlation.
 - Housing variable: why are there uninhabited houses?
 - Problems with using parish birth data, including:
 - * Not everyone belongs to the Church of England
 - * Not all births may have been recorded.
 - * Does not track migration
 - * Flow, but not stock, so must estimate birth rate using births over families residing in the parish.

6.2 *Some Dimensions of the 'Quality of Life' during the British Industrial Revolution, Crafts*

- This paper measures a broad concept of living standards. It is possible to improve on one scale (e.g., GDP per capita) while falling behind on others (height). Clearly, there are important components of living standards that are not captured by either income or heights.
- Takes idea of Human Development Index to 19th century Britain and Europe.
- Since aggregation is difficult if not impossible, he looks for Pareto dominance or Borda iterative dominance.
- Using alternative measures, height included, does not strengthen argument that living standards worsened in Britain in the mid 19th century. 1850 Pareto dominates 1820, which in turn dominates 1790, but any comparison of 1850 to 1830 depends on the weighting of life expectancy and infant mortality (both of which worsened from 1830 to 1850).
- Calculating these indices for other European countries, Britain tops some measures, but performs poorly in mortality measures, which Crafts attributes to rapid industrialization.
- Temin: during the Industrial Revolution, despite the significant rise in population, English wages did not fall. Did the Industrial Revolution offset downward pressure on wages from population growth? Possible, but perhaps high wages were needed to draw people into jobs in the filthy urban environment.
- Real GDP per capita alone is not a satisfactory measure of living standards; correlation with other measures was weaker in the mid-19th century than it is now.
- Crafts believes, based on evidence from the success of legislation such as the Public Health Act of 1875, that appropriate government intervention, costing less than 3% of GNP during the second quarter century of the 19th century, could have significantly improved mortality measures and overall well-being.

6.3 *A Theory of Technophysio Evolution, Fogel, Costa*

- A bit of a wandering article, but here are the highlights:
- Over the last 300 years, but particularly the last 100, technology ("techno") has made possible changes in the human body ("physio") including a 50% increase in size and improved "robustness."
- Mortality rates:
 - Have plunged, particularly at the start of the 20th century. This deals the blow to the Malthusian theory that "subsistence is a cliff." There are multiple nutritional equilibria.
 - Two waves of life expectancy growth in England and France: c. 1700-1820 and 1870-present. From 1871-1930 alone, life expectancy in Britain increased by 20 years. Only 10% of decline is due to decline in "crisis" mortality (famine, etc.)
- Food production in Britain and France in 1790 wasn't sufficient to provide survival level of calories for people of today's size. Patchy data suggests they were smaller. Even accounting for smaller bodies, data suggest that the poorest 20% would have been incapable of meaningful work. This is consistent with suggestions that 1 in 5 was a beggar.
- Waaler surfaces plot iso-mortality curves through height-mass space
 - Suggest changes in height and weight explain a substantial portion of mortality declines
 - Also suggest that there's further room for improvement
 - Theory behind Waaler surfaces has to do with improved nutrition altering chemical composition of organs and nervous system function to improve life expectancy.
- Combined effect of increases in dietary energy and increased efficiency in transferring energy to work accounts for roughly half of British economic growth since 1790. (Until when?)
- The idea that there are genetic constraints on life expectancy carries less weight now.

7 English Financial Institutions

7.1 *Constitutions and Commitment, North, Weingast*

- Political factors, including rules governing exchange, enforcement mechanisms, and the ways these rules can be changed, underpin economic growth and the development of markets.
- To increase the expected returns of investment, government must establish relevant rights and make a credible commitment to them.
- Commitment to rights comes in two forms:
 - Setting a precedent of "responsible behavior" (this one is very seldom seen)
 - Constraining self to obey a set of rules that do not permit leeway for violating commitments.
- Before the Glorious Revolution in 1688, fiscal needs of wars led to increasingly arbitrary rule, with sovereign continually redefining his rights to collect money from subjects. This led to civil war, but with only partially successful changes. Sovereign brought back but another civil war started 25 years later.
- Winners want government to be more credible in honoring agreements: secure property rights, protection of wealth, elimination of confiscatory government. Parliament (which represented the wealthy) approval was required for sovereign to change agreements. New institutions also constrained Parliament from just replacing crown and acting irresponsibly themselves.
- North and Weingast cite increasing availability of funds to government after reforms as evidence that lenders perceived an increase in government credibility and security of rights.
- Key assumption: rulers have strong preference for current utility (high discount rate) due to demands of war.
- Pre-glorious revolution institutions that superseded Parliament
 - Royal prerogative: allowed crown to issue new rules, enforced by the prerogative courts, not by common law court.
 - Star chambers: combinations of executive, legislative, and judicial powers. Under certain circumstances, would reverse decisions against crown.
 - Personal responsibility for day-to-day government, e.g., paid the judges.
- After the civil war, in 1641, the Star Chamber was dissolved, restrictions against monopolies enforced, a regular standing Parliament was established, and the royal administrative apparatus was dismantled. However, abolition of monarchy and House of Lords failed and Stuarts were restored in 1660. While new rule had many differences, one key similarity remained: arbitrary action by the king. This leads to the Glorious Revolution.
- Following Glorious Revolution: parliamentary supremacy, new central role in fiscal matters for Parliament, curtailing royal prerogatives. King still more than a figurehead, but more balance in government, including an independent judiciary.
- Why didn't parliament become just as bad as the king?
 - Centralized administrative apparatus was dismantled.
 - In a group setting, may have been difficult to act completely in self-interest. There likely would have been some checks on bad behavior. The larger the group, the less likely the ability to get a majority to sign on to myopic strategies. Commercially minded Whig coalition had power at key time. (Leading to political constraints)
 - Creation of politically independent judiciary.

- Cost of conferring private benefits higher in committee setting.
- Fiscal revolution: before the Glorious Revolution, government borrowings often not repaid and sovereign arbitrarily reduced interest rates. After: expenditure veto by Parliament, earmarking of taxes limited discretion. Key result: interest rates that the government had to pay to borrow declined while amount borrowed went way up.
- But, an alternative hypothesis is that it wasn't the Glorious Revolution that led to fiscal changes, but rather King William's need for large armies to fight France. Data available are insufficient to pinpoint when rates changed.
- Other contrary evidence: newer literature upgrades France's economic performance prior to their revolution (1789), putting it on par with that of Britain, detracting from the importance placed on common law and democracy by the author. In other words, the argument put forth by some is that despite France's authoritarian rule, its economic progress was on par with that of "democratized" England.
- The authors reply that the government of Louis XIV did not repress economic activity as one might believe. But, the Neil and Quinn article seems to imply that arbitrary governance in Paris lay in contrast to the environment in London and Amsterdam and the ability to enforce "fair play" in financial markets.
- North and Weingast argue these changes had a parallel effect on private markets.
 - Government wasn't crowding out.
 - Increasing range of projects became economically feasible.
 - Beginning of large-scale trading in private securities and formation of banks.
 - Query: Where did the money come from? Improved capital markets? Increasing savings rate? Switch to formal savings from burying money?
- Summary of key institutional changes
 - Limited crown's legislative and judicial powers led to less arbitrary power.
 - Parliamentary interests took lead in taxation issues.
 - Parliamentary role in allocation of funds and expenditure monitoring with credible threat of removing sovereign who got out of line.
 - Created balance between Parliament and crown - rather than eliminating the crown as happened after the civil war - thereby limiting Parliament's own ability to act arbitrarily.

7.2 *Networks of Information, Markets, and Institutions in the Rise of London as a Financial Centre, 1660-1720*, Neal, Quinn

- Bill of Exchange: A credit instrument drawn on the importing merchant by the exporting merchant to (i) finance trade between production and sale and (ii) exchange currencies. Bill accepted by agent of exporter and could be sold or transferred.
- A contrast to North and Weingast's hypothesis on why financial markets developed in England.
- Financial markets developed in London during the period from 1660 to 1720 in response to increasing international trade.
- In contrast to Amsterdam, London lacked a specific institution to coordinate information on bills.
- London-based bankers developed the ability to take advantage of favorable exchange rate differentials (both geographical and type of payment) through a network of merchants and bankers that spanned nations, religious, and trade specializations.
- This reduced London bankers' risks in dealing with international bills of exchange. Their overseas agent owed a substantial part of their business to the respective London banking house and, therefore, had significant incentives to maintain a reputation for fair and prompt dealings.
- Overseas agents were monitored by a diverse group of British and foreign merchants who remitted bills of exchange between London and abroad in part to finance trading activities.
- In response to this classical principal-agent problem, London bankers focused on establishing accounts with proven and reputable associates in key trading centers such as Paris, Amsterdam, and Cadiz.
- As they widened their network, they outgrew the ability of foreign agents to sanction behavior by religious or family ostracism or by collective action with other merchants in a foreign port against an expropriating prince or merchant.
- London bankers and agents only subject to domestic law at each port.
- Foreign bill exchange arbitrage was already well established prior to the Glorious Revolution. The implication, and the London-based financial revolution was a product of these merchant networks and not the Glorious Revolution.
- In merchant controlled cities of London, Amsterdam and Hamburg, merchant law governed the settlement of disputes arising from protested bills of exchange; by contrast, in Paris and Madrid the often arbitrary law of the monarch ruled.
- Authors can use case study rather than market data.
- "Bill of exchange" system first developed in Amsterdam in the 17th century (strong governments and monopoly bank in Holland). The system spread to London in the 18th century. It works best in balanced trade.

7.3 *Rediscovering Risk, Brunt*

- This paper makes two points. The first is that the best way to understand some eighteenth-century English country banks is not to look at them as prototypes of modern banks, but rather *as prototypes of modern venture capital firms*.
- This follows from the fact that these country banks shared more characteristics with modern venture capital firms than with modern banks:
 - Small client base (both in terms of numbers of contributors and borrowers)
 - Large savings of each person and borrowings of each business.
 - Long-term contributions.
 - Ownership structure: partnerships of up to 6 people, with unlimited liability.
 - Borrowers had some kind of special link with the bank. (Insider lending) For some banks, this was a strategy for risk reduction (since there was little reliable information on prospective borrowers). But some other banks - and this is the contribution of this paper - were not interested in minimizing risk. Rather, they were high-risk investment vehicles for wealthy people who were looking for high returns in growth industries.
 - Pattern of investment: high-risk, innovative industries, with prospect of high payoff.
 - Very little diversification (follows from previous points)
- Main difference between country banks and venture capital firms: country banks were legally constrained to hold debt and not equity, which limited their potential for upside gain.
- As an example of all these points, the case of Praed & Co. of Truro is analyzed in detail. This bank financed the Cornish copper mining industry at a time when the mines were borrowing to purchase the new Watt steam engines.
- The second point of this paper is that if we think of the country banks as proto-venture capital firms, then their activities become much more comprehensible and reasonable. The country banks offered a high-risk investment alternative in a financial market that was saturated with low-risk securities. Thus, a failure should not be interpreted as a sign of incompetence or lack of caution by the bank.
- Finally, as a bonus, the paper's evidence supports the idea that English banking became more conservative during the nineteenth century in a way that may have hindered economic growth. The banking industry changed from being characterized by local country bankers making decisions based on their personal knowledge to professional managers with little discretionary power. Investment strategies became conservative. Thus, banking stability may have come at a cost in terms of innovation and growth.

8 The Industrial Revolution: Analysis

8.1 *The British Industrial Revolution in Global Perspective, Allen*

- Main point: Basically stated in the title, "How Commerce Rather than Science Caused the Industrial Revolution and Modern Economic Growth." - it was economics, not science that drove the Industrial Revolution. Science just helped; economics provided the incentives.
- Two goals:
 - Explain why the famous inventions all occurred in the eighteenth century and in Britain.
 - How the process of their invention has "transformed the world."
- His argument:
 - The industrial revolution was primarily a technological revolution (as opposed to financial/political, etc.)
 - We can understand the IR if we understand the causes of technological revolution. "Scientific discoveries and scientific culture... may have been necessary conditions for the IR, but they were not sufficient."
 - Inventions were a response to the relative costs of labor and energy in Britain. Allen's assumption is that the motive for inventing technology was making money.
 - * Labor was expensive relative to capital/energy in Britain. This was not true in other countries.
 - * All the inventions substituted capital and energy for labor. Thus, they were profitable in Britain, but not other countries.
 - * Why was labor expensive relative to energy?
 - High real wages in Britain relative to other countries, due to higher purchasing power (same wage in silver can buy higher living standards). A boom in trade starting in the late 16th century contributed to high wages. Wages high relative to capital prices and to energy prices. (The latter was especially true in northern and western Britain).
 - Cheap energy, due to extensive coal reserves and mining (especially Newcastle)
 - Extensive coal reserves provided cheap energy. The large number of mines also created incentives to invent mining technology that substituted capital for labor.
 - High (and rising) wages provided incentives to invent labor-saving technology in general. The reduction in costs the inventions provided was the greatest in British factor prices, which is why they were adopted there, but nowhere else.
 - After the initial adoption, these inventions were improved even more, making them profitable to be adopted in other countries. Their use spread to other countries in the late 19th century.
 - Case studies of coke smelting, the spinning jenny, and the steam engine, show that their development was driven by economics and that these inventions were labor-saving devices.
 - Why did this growth continue and spread? Three reasons: general mechanization of industry (continued growth), railroads, steam powered iron ships (spread). The coal and cotton industries were vital for sustaining the initial phases of growth.
- Competing explanations and why they're wrong.
 - "Legal changes." The Glorious Revolution of 1688 that changed the political structure and property rights in Britain.
 - * No detected change in the financial system after 1688.
 - * Property rights were just as (or more) secure in France and possibly China.

- * There was patent protection in Britain, but the law remained practically unchanged since 1624 and thus cannot be considered the driving force of the inventions.
- "Macro-inventions" - the inventions were "acts of genius or serendipity," not responses to incentives.
 - * Two tests: were inventions a development of existing ideas or did they suddenly appear? Did their development program make sense in relation to the economic opportunities?
 - * Allen finds that inventions looked more like "micro-inventions."
- The inventions were applications of scientific discoveries, made for scientific/ideological, not economic, reasons.
 - * Allen: only the steam engine can be linked to scientific discoveries. It was invented *only* in Britain, because it was profitable *only* in Britain.
- The inventions occurred because of the "spread of scientific culture" in Britain.
 - * Allen: there is no evidence that the British had a culture more conducive to invention in general.

8.2 *Credit Rationing and Crowding Out during the Industrial Revolution, Temin, Voth*

- Crowding out: Macroeconomic phenomenon which occurs when the government increases its borrowing (in order to finance higher expenditure, to cut taxes, etc.), in effect "crowding out" private sector investment by way of higher interest rates and hence lower rates of return.
- Growth during the 1st Industrial Revolution in Britain (1stBIR) was puzzlingly low, possibly not exceeding 1.5% annually from 1750 to 1850.
- Two interpretations of the role of government finance in the 1stBIR:
 - Prior to 1750: North and Weingast (1989), Acemoglu, et. al (2002) argue that better institutions and public debt management after the Glorious Revolution favoured growth.
 - 1750-1850: Williamson (1984) and other authors argue that increased government borrowing to finance several wars crowded out investment, reducing the rate of capital accumulation and harming growth. Temin and Voth explore this path.
- If the crowding out theory is true, we should observe increases in the real interest rate due to increased government borrowing, but empirical evidence of this is extremely weak. Temin and Voth argue that this is due to "usury laws" which put a cap on nominal interest rates.
- Temin and Voth observe that given prices controls, a quantity adjustment by credit rationing is expected after an increase in public borrowing (for example, to finance a war) because:
 - Banks will shift loans from the private sector to the government.
 - Banks will be able to lend less overall because customers and shareholders will shift their savings and equity to public debt as the rate of return for "Consols" (standard government bonds) was not controlled.
- Also, wars caused major shocks to liquidity when enemy countries withdrew their funds.
- Temin and Voth look at the records for the period of Hoare's bank, a London investment bank. They regress private lending (PL) on public borrowing (PB), controlling for several macroeconomic variables and using instrumental variables to account for the fact that some unaccounted for shocks could jointly affect both private lending and public borrowing.
 - Evidence is found of crowding out through credit rationing, as there appears to be a strong negative effect of public borrowing on private lending for the years after 1750 (7-16% below trend), although crowding out is less than 1:1 ($\Delta PB : \Delta PL$) and more around 4:1. Also, they estimate an impulse-reaction function and find a negative (around -5%) and persistent (significant for four years) effect on public borrowing and private lending.
- Is Hoare's Bank representative of the whole British banking industry? After all, it survived a lot longer than other banks, and it was closer to the government seat than others and thus more exposed to pressure to lend more to the government. Temin and Voth find a positive correlation between deposits at Hoare's bank and at the Bank of England and a very similar volatility, so they argue that it is reasonable to think that Hoare's was not subject to fundamentally different forces and is thus representative of the overall industry.
- Finally, did crowding out through credit rationing affect economic performance? Temin and Voth find a negative correlation between public debt growth and output from the late 18th century to Waterloo (end of Napoleonic Wars, 1815). The impulse response from a VAR model shows a persistent negative effect of government debt on output from years 2 to 5 (lagged and persistent). They also find that there was +3.1% above trend growth during peace-time and -4.6% below trend during war-time. Using Hoare's Bank as a proxy for overall private lending, they find that below trend lending is correlated with slower economic growth (-9%).

8.3 *Time and Work in Eighteenth-Century London, Voth*

- Uses witness samples to garner information about working hours during the Industrial Revolution in England.
 - Important conclusion - work hours increased dramatically in second half of the 18th century, accounting for much of the growth in production and dampening claims of high productivity growth during the Industrial Revolution.
- However, also important to note that marginal returns to labor did not fall even in the presence of incredible population growth, likely owing to technological progress. Accounts of court witnesses and random hour recall method to estimate the change in working hours between 1750 and 1800.
- Results:
 - The pattern of daily life remained basically unchanged; the timing of daily events as well as the hours spent at work were essentially the same.
 - The pattern of time use during the week and year changed substantially, leading to a substantial estimated increase in yearly hours worked.
 - * The practice of "Saint Monday" (taking Monday off) appeared to be fairly common around 1750, but was much less common around 1800.
 - * The observance of Holy Days also declined between 1750 and 1800.
- Questions:
 - Is the sample representative? The sample from around 1800 seems representative of the working-class population, but there is no way to test this for the 1750 sample.
 - Timing of crime?
 - Memory decay?
- Used evidence from work on Cheshire canal as test of performance of court data around 1800. Finds that St. Mondays and Holy Days were not observed.
- Implication: Industrial Revolution may not have sprung so much from technical change as increased labor input - it was an "Industrious Revolution."

Part II

The Spread of Industrialization

9 Northern Europe

9.1 *Economic Backwardness in Historical Perspective, Gerschenkron*

- Note: Temin loves this article.
- Thinking about industrialization is often dominated by the idea that the development of currently backward countries is taking a path that closely follows that taken by the now advanced countries when they developed.
- Gerschenkron acknowledges that while this may have validity in a very broad sense, backwards countries have shown considerable differences in:
 - Speed of industrialization
 - Productive and organizational structure of emerging industries
 - Application of institutional instruments
 - Intellectual climate (ideology) in which industrialization takes place
- Before industrialization is possible, obstacles such as peasantry or serfdom and the absence of political unification must be eliminated.
- Possibility of industrialization creates tension between actual and potential state of the country. This tension is increasing in the amount of technology that could be adapted from advanced countries.
- This paper may explain the timing of the spread of industrialization from England to New England to France to Germany, and finally, to Russia. What sets off periods of faster growth?
 - Revolution can lead to changes in institutions which in turn can lead to growth.
 - Maybe it is distance: Britain, then France, then Germany, then Russia.
 - * What about the U.S.? Trade (and therefore technology sharing) is easier across water than over land at this time.
- Although labor is abundant, the industrial workforce is scarce. This is one reason why countries tend to industrialize using most modern and efficient technologies that are mostly labor-saving. Also note that since advanced countries are not continually modernizing, this may give the developing country some initial advantage in a particular industry (e.g., Germany focused on iron rather than textiles and soon overtook Britain in the design of blast furnaces). How does this relate to China today?
- Because of complementarity and indivisibility (coal mines need railroads, financial markets need industrial growth, and industrial growth needs financial markets, etc.) and indivisibility (e.g. building half a railroad won't do), industrialization tends to proceed quickly and on a large scale along a number of industrial fronts.
 - Only when the "tension" between backwardness and progress is large, and the obstacles keeping industrialization in check are broadly suppressed will industrialization begin. Further, it will begin with a bang, not a whimper.
- Example 1: France and Germany
 - In Britain, industrialization proceeded smoothly, without the need of banking for long-term investment purposes because of more gradual nature of progress and existence of accumulated capital. Banks in Britain served mainly as a source of short-term capital.

- To industrialize fast and on a large scale, France developed a different banking system with investment banking as an institutional device to provide long-term capital. These types of banks become more commonplace in other countries as well.
- In Germany, the French approach was modified by combining long- and short-term lending in universal banks, which were financially sounder than the French banks.
 - * A very close relationship developed between German banks and industry, with banks playing an important role in entrepreneurial and management decisions.
 - * German banks primarily attracted to "heavy industries" such as coal and metals.
 - * Later concentration in banking induced cartelization of industry.
- Illustrates that relatively backwards countries may use different institutional devices to develop.
- In Russia, banks did not work well because of bad institutions and scarce savings. The government had to force savings by heavy taxes.
- Russia:
 - The state was the prime mover of economic growth and policy, and its motivation mainly stemmed from military needs.
 - Private capital virtually nonexistent in Russia because of poor business honesty practices, including frequent fraudulent bankruptcies. State had to take over this function at first until St. Petersburg banks emerged.
- Delays in industrialization allow sinister social tensions to develop (e.g. Soviets). Example of Russia.
 - Late eradication of serfdom (1861) inhibit any industrial revolution.
 - Industrial revolution not until 1880's; focus is on heavy industry, similar to Germany, supporting Gerschenkron's assertion that more backward economies adopt newest technologies and industries.
 - Because of widespread corruption, extreme scarcity of capital and lack of trust within nation, the government played the same role in pushing forward industrialization that big banks played in central Europe. Another illustration of different institutional devices developing.

9.2 *How Do Patent Laws Influence Innovation?*, Moser

- This paper uses data from two 19th century world fairs to test the effect of patent laws on the direction (not magnitude) of technological change.
- The problems with using patent data:
 - Patents are not a good measure of quality of innovation
 - Patents do not include innovations that are not patented
- The hypothesis is that industries that depend more on patent protection will develop more in countries with patent laws.
- Patent laws are exogenous because they depended more on "legal tradition." Local patents mattered more for local innovation, because foreign investors were heavily discriminated against.
- The patterns of patenting are similar between the US and England, (even though patenting in England was much more expensive) and between "winning" innovations and non-winning innovations.
- The main comparison is between the industrial composition of innovations in Northern European countries. Switzerland and Denmark, which were the two countries without patent laws, were found to be more innovative in industries in which secrecy can protect innovation.
- Between the two fairs, the Netherlands abolished patent laws for ideological reasons - this is something of a natural experiment. Their innovation becomes more focused on industries that are less dependent on patents.
- Moser constructs a synthetic "Switzerland" and a synthetic "Denmark" from countries that have similar characteristics to them with patent rights, and she tests whether the difference in the industrial composition of innovation is as predicted by her model.
- Her findings support her claim that patents do have an effect on the direction of technological change.

9.3 *The European Grain Invasion, 1870-1913, O'Rourke*

- Temin is not a big fan of computational general equilibrium models. (He believes they tell more about the model than the economy.)
- European claims to the New World raised the endowment of land per European capita six-fold. This had long-run implications for European living standards and income distributions. It led land rents to fall, increased the relative benefit to labor and capital. It was a disaster, however, for European landowners.
- This article focuses on the effects of cheap grain on European wages, profits, rents, etc., and the political-economic response.
- Less demand for domestic grain led agricultural wages to fall. Labor then migrated into cities, and industry expands and nominal wages fall.
- Distribution: capitalists gain unambiguously from falling wages, landlords lose. The effect on labor is ambiguous because wages fall, but so does the price of food. This should benefit workers in more industrial countries (like Britain) and hurt those in the more agricultural (like France).
- Facts: price gaps narrowed from 1870-1913 (from 54% to nothing for wheat, U.S. to Britain) largely due to declining transportation costs. Tariffs kept some spreads (U.S. to France). From 1870 to 1913, real cereal prices fell by 35% in Britain and 20% in the tariff countries such as France, Germany, and Sweden.
- O'Rourke computes a two-sector computational general equilibrium model to predict the impact of different policies as well as a regression model to estimate the long run elasticity of land prices with respect to wheat prices.
- The differences may explain varying trade policies.
 - In Britain, which was more industrialized, cheap grain meant higher urban real wages because of lower cost of living, although land rents did decline.
 - In other countries where agriculture played a large role, land rents would have declined much more than they did in the absence of protection.

10 Southern Europe

10.1 *Economic Crises and the European Revolutions of 1848, Berger, Spoerer*

- Economic misery and hunger led to the revolutions of 1848. While radical ideas undoubtedly shaped the form of the upheaval, they were not the main cause.
- The point of this paper is to explain why economic misery operated with a delay on the politics.
- Around 1850, poorer households spent between $\frac{2}{3}$ and $\frac{3}{4}$ of their budget on food and were very sensitive to price changes. Possibilities for substitution were limited because prices tended to move together.
- Since nominal wages were fairly stable in the first half of the 19th century, nominal wage/grain price is a decent proxy for purchasing power.
- This paper considers a grain price shock to be any movement greater than two standard deviations (only England and Sweden didn't have cost of living shock just prior to 1848 _./ The definition depends on the choice of confidence level, so one needs to be careful here.
- By 1848, agricultural prices were falling. How did this lead to a delayed revolution?
- Agricultural shocks led to a widespread drop in real income because agriculture is relatively a large share of the economy. (If manufacturing was large, this shock could lead to increases in real incomes) These shocks reduced demand for industrial products and industrial investment, and thus many businesses failed. The pain translated to the cities and we see, where data is available, industrial production shocks.
- It was the misfortunes of urban residents, not that of rural residents, that led to the revolutions. The 1848 revolutions happened at an unusual historical moment when the manufacturing sector was not too small, but food spending was still big enough.
- This paper shows that agriculture shocks Granger cause manufacturing declines. There is limited data (7 observations) to test industrial shocks causing revolution, but the correlation is perfect.
- The form of "revolution" (violent or peaceful regime change) depended on whether or not the existing political regime was oppressive.
- The weaknesses of this paper are the fault of the data, not how they used it.

10.2 *Making Democracy Work*, chapter 5, Putnam

- The differences between Northern and Southern Italy are substantial and are best explained by historical differences starting in the 12th century.
- Different institutions (South: authoritarian, North: republican) persisted to modern times making the north more ready to capitalize on the industrialization of the 19th century.
- In the 12th century, the south was relatively advanced but fell under authoritarian rule of the Norman kingdom. The North saw flourishing self-government.
- By the 17th century, the northern states ceased to be republican and, in many cases, independent, but the heritage of communal republicanism was transmitted in the form of civic involvement, social responsibility, and mutual assistance among social equals.
- Italy politically reunified in 1870. New charitable and educational associations, as well as numerous mutual aid societies and cooperatives were founded.
- Such societies were widespread in the north but rare in the south. The mafia grew in the south in response to the absence of credible state enforcement of laws and contracts and the "ancient culture of mistrust."
- Quantitative measures of the durability of civic traditions, such as membership in mutual aid societies, are presented.
- There is a high degree of durability of civic traditions.
- There is a strong correlation between civic traditions early in the 20th century. This led to institutional performance and socioeconomic development in the 1970s. Putnam doesn't find that the development in the 1900s Granger causes institutions in the 1970s and 1980s.
- In fact, economic development in the 1980s is better predicted by civic institutions in the 1900s than by economic development in the 1900s.
- One problem is that the civic index is constructed by many parameters, but the economic index consists of only one parameter. (Labor force in manufacturing industries.)

10.3 *Monetary Union, Institutions, and Financial Market Integration, Toniolo, Conte, and Vecchi*

- Executive summary:
 - **Financial market integration in Italy:** Measured by price convergence of government bonds.
 - **Slow convergence and little price transparency.**
 - **Structural break in 1887** marks completion of financial market integration.
 - **Regressions show nothing but trend:** Neither improvement of communication, monetary unification, nor market volume trading help explain price convergence or structural break.
 - **Institutions matter:** Authors give up regression analysis. The structural break in 1887 coincides with the introduction of a law allowing freer entry into the trading profession and trading over cables. This, they believe, broke the local stock exchange's oligarchy and allowed market integration.
- **Historical background:** Monetary union - took a decade to succeed (1862-1874)
 - High information costs. Before unification in 1862, 270 types of legal tender coins in circulation.
 - Monetary unification was partial and slow. The south allowed to continue using own coins.
 - Stringent bank supervision (The Banking Act of 1874) accompanied by fiscal discipline stabilized the expectation of the lira, making it *de facto* universally accepted only by the mid-1870s.
- **Data and method:**
 - The **Law of One Price and Financial Market Integration.** Toniolo et al use price dispersion of the Italian Government bond (the *Rendita*) across Italian bourses as a measure of financial market integration.
 - The **Rendita -5% bond is a good measure**, because it is traded in high volume and did not change its characteristics over time (homogeneous good),
 - 1863-1905 **measures of price convergence** across six financial markets
 - Test for **structural break** - clearly identify 1887 as structural break in price dispersion.
 - **Data problems a central point** to the article. Authors find that the prices for the government bond were published in different ways across local markets - hindering price comparisons and slowing integration.
- Analysis of financial market integration - took 25 years to complete (Started in 1862, completed in 1887)
 - **Three hypotheses:** Convergence explained by
 - * Information technology progress - proxied by # of telegraph offices,
 - * Slow monetary (rather than financial) unification - proxied by the ratio of old currencies converted
 - * Market size - proxied by volume of outstanding stock of the Rendita.
 - **No support for these hypotheses.** None of the proxies add explanatory power to the trend regressions.
 - **Authors drop regression and start to argue:**
 - * **Institutions matter:** Commercial Code restricted entry into the position as "public middlemen" - the people who were allowed to enter and trade at the bourses and the only ones allowed to deal in state bonds. There was a large variation in how this code was implemented across stock exchanges. Further, there was a large variation in business practices, price fixing, and price reporting behavior.

- * **New commercial code, enacted in 1886 broke trading oligarchy** by opening entry into the trading profession and allowing cable based contracts/trading significantly regulated and allowed entry.
- **Structural break coincides with enactment of new law.** Authors interpret this causally: the law opened and integrated the market. Authors' lesson: Europe's "regulatory Balkanization" today is possibly hindering financial market integration.

11 Latin America

11.1 *Factor Endowments, Institutions, and Differential Paths of Growth Among New World Economies, Engerman, Sokoloff*

- Factor endowments lead to different institutions, which in turn lead to development outcomes.
- Factor endowments had a profound and lasting influence on institutional structure.
- Certain resources: climate and soil suited to sugar, coffee, tobacco, cotton, etc., or mineral resources led to extractive institutions (large plantations employing slave labor or concentrated landholdings with poorly compensated mine labor because of increasing returns to scale.)
- Grain producing areas attracted a higher proportion of European indentured servants rather than African slaves because of constant returns to scale. Had more equal distribution of income and human capital, which led to more participatory institutions and hence market economies.
- Sokoloff and Engerman divide the Americas up into three categories: sugar isles, Spanish America, and the temperate regions.
- Problem: if we allow the possibility that the islands are unusual, there are no off-diagonal elements. Resource rich areas are Spanish or Portuguese and Catholic. Also, what explains the difference between a country such as Argentina that has a similar climate to Canada, and Canada? Classification implicitly moves beyond geography.
- Early industrial productivity growth came from productivity increases not (dramatic) capital investment.
- Innovation, as evidenced by patent records, came from all levels of U.S. society. Relatively equal wealth distribution was important. Also meant that people had disposable income to buy new manufactured goods.

11.2 *Exports and Inequality, Frank*

- Frank tests the dependency theory argument that reliance on exports and foreign investment as sources of economic development in Latin America led to an increase in inequality.
- Frank uses data from Mato Grosso, a frontier state in western Brazil, to show that exports and foreign investment contributed much less to inequality than is claimed by dependency theorists, and they probably contributed to economic growth.
- He looks at wage ratios between skilled and unskilled workers as a proxy for income distribution. (state treasurer versus his receptionist, rural school teacher, etc.) In all cases, pay ratios are stable and do not indicate that export-led growth raised inequality.
- Wealth distribution is expected to be more unequal than income. Frank gets data from probate records (which may be subject to a selection bias) and constructs Gini coefficients to show that while the area was very unequal (Gini = 0.76-0.78), inequality didn't increase during export led growth and many of the fortunes were made in industries closely related to foreign trade.
- Did not find that foreign ownership of land was not necessarily associated with outward orientation. Further, although foreign ownership could increase land inequality, it was not a driving force behind this inequality.
- Conclusion: there's not necessarily a trade-off between growth and inequality.

11.3 *Mexico Before 1982, Haber*

- **Key question:** How did institutions and the political economy interact in Mexican history from independence until liberalization?
- **High level answer:** Two major authoritarian regimes contributed to economic development, but also sowed the seeds of their own demise through cronyism and distortionary policies and institutions.
 - Pre-1982 Mexican political history dominated by two major authoritarian regimes:
 - * Porfirio Díaz (1876-1911)
 - * Institutional Revolutionary Party (PRI) (~1920-2000)
 - * These regimes had several common features
 - Long periods of stable government, with strong presidency
 - Protectionist economic policies
 - Unequal distribution of benefits of economic growth due to political favoritism
 - Independence (1821) to Revolution of 1910
 - * Through 1876, political instability (75 presidents), secessions, invasions
 - * In 1876, Porfirio Díaz took power in a coup
 - Created political stability through rigged elections, oppression, cronyism
 - This period saw large economic growth
 - Result of selective specification and enforcement of property rights
 - Politically connected industrialists favored
 - Revolution of 1910-1920
 - * Direct result of Díaz' policies - unrest from displaced small farmers and elite outside of Díaz' political circle.
 - * Even after Díaz' forced exile, political instability, warring factions, until eventually the PRI took control of the government.
 - Hegemony of the PRI
 - * Broad, nationalist political class dominated political life
 - * Maintained power in a variety of ways: fraud and violence, control of the media (controlled newsprint) and patronage
 - To small farmers: far-reaching land reform
 - No titles (instead used rights to parcel of an *ejido*), no ability to buy or sell, limited access to private credit (no collateral), discouraged private investment
 - Bottom line - agricultural productivity suffered
 - But - efficiently assured votes for PRI, since ejidos were dependent on government
 - * Organized industrial workers and public employees
 - Job security - support unions, support unionized industries
 - Social welfare programs only for these groups
 - * Informal alliance with Business elite
 - Very low level of taxation - lack of taxes on capital
 - Industry trade protection
 - * Extensive trade restrictions
 - Led to a great deal of foreign direct investment by US firms (Ford, Palmolive) during the 1950s.
 - This led to pressure for the government to limit FDI - "Mexicanization" - this started to drive out multinationals by 1970s
 - * Alliance with banking and finance

- Effective partnership of banks and largest commercial and industrial enterprises.
- Government owned development banks effectively subsidized politically favored enterprises
- * Main accomplishments of PRI's hegemony
 - Rapid growth in industry
 - Increase in worker productivity, although compared to similar OECD countries, Mexico fared worse.
- End of the PRI Hegemony
 - * Weakness of system summarized by low taxation, but high spending: high deficit spending by 1960s, financed by:
 - Increasing money supply: inflation started to accelerate
 - Increasing reserve requirement at Central bank: interest paid on deposits dropped, driving capital out of private markets
 - Borrow from abroad: these were essentially gambles on high oil prices, discoveries, and low interest rates
 - All of these gambles went badly, and Mexico became unable to repay loans
 - Private banks expropriated
 - Decision made to open foreign trade and FDI, but this undermined the political support for PRI
- **Link to Gerschenkron:** Mexico fits into Gerschenkron's model of a relatively backward economy, industrializing late, and therefore characterized by a strong central government facilitating the development of the "commanding heights" of heavy industry and banking at the expense of other sectors of the economy.

12 Africa

12.1 *Christian Missionaries and Education in Former Colonies*, Gallego, Woodberry

- Main idea: Exploit historical variation in institutional/market education environments of former colonies to find evidence of persistence of educational outcomes
- There is ample current variability in levels of educational attainment across African countries, which has been attributed to the identity of the colonizer, because British former colonies show much higher educational outcomes.
- Education in former African colonies was based mainly on Christian - both Catholic and Protestant - missionaries. Missionaries became the main education providers, because they had educational experience, and it was a good evangelization strategy.
- The control of different African colonies by different European powers created (exogenous according to the authors) variation in the market structures missionaries faced to provide education. In colonies controlled by Protestant powers, there were no entry restrictions for missionaries, while in colonies controlled by Catholic powers, various degrees of discrimination against protestant missionaries were imposed.
- The result of these was that in the former free entry created a competitive environment in which Catholic and Protestant missionaries had to provide high quality education. In the latter, Protestant missionaries had to deliver higher quality education than Catholic ones to offset their higher relative costs of producing education.
- This should have created variation in the overall quality of education. Colonies where Protestant missions were banned should have produced bad quality education; colonies where some degree of Protestant education was provided should have higher educational quality; colonies where competition was free should have the highest educational quality.
- Empirical strategy: run a measure of schooling against measures of Protestant and Catholic missionary activity, controlling for the type of European power - Catholic or Protestant.
 - First result: Increasing Protestant missionaries in Catholic states by one standard error raises by 7 percentage points primary enrollment rates in 1930.
 - There is also some cross-country evidence confirming the results for Africa.
- Main results:
 - It is not colonizer identity that is responsible for differences in educational outcomes today across African countries, but rather the differences in educational market structures during colonial times.
 - The authors interpret this finding as evidence of persistence in educational outcomes due to historically exogenous differences in institutions set by colonizers. (Colonial institutions \Rightarrow market structure for education \Rightarrow quality of education \Rightarrow educational outcomes in 1930 \Rightarrow persistence \Rightarrow educational outcomes today.)
 - They suggest (but never test) that the channels through which educational persistence happen are
 - * Costliness of setting up institutions, which make them irreversible complementary investments
 - * Intergenerational inertia among cohorts (sounds like explaining persistence with persistence...)
 - * Endogeneity of the accumulation of human capital - investing in education raises the profitability of also investing in other human capital technologies, which then also raise the benefits of investing in schooling.
 - * What did we learn in Africa? Not much...

12.2 *An Economic History of South Africa, chapters 3-4, Feinstein*

- Through the 19th century, blacks integrated to provide labor for the modernizing economy.
 - Started with white farmers' need for herders, servants, occasional cultivators
 - Accelerated by the rise of diamond and gold mining
 - Much lower demand for black female labor in the formal sector, although they contributed informally by helping their husbands in field work when needed and at home.
 - Conviction among whites that whites should not perform manual labor
 - Compulsory means to obtain black labor
 - * (Limited) slavery until 1834, but even after being freed, slaves remained tied to former masters.
 - * Access to land taken away from the nomadic Khoikhoi
 - * Forced child indentured servitude
 - * Imported indentured servants from India and China (Chinese as unskilled mine labor)
 - * Prison labor
 - Other means to obtain labor
 - * Hut or poll taxation - forced young into labor market to earn enough to pay it
 - * "Pass laws" restricted movement of natives, except if for labor. "Master's and servants" laws with penalties for servants leaving masters.
 - * Whites expanded landholdings to limit opportunities for blacks, forcing them to stay on the land.
 - * Blacks developed tastes for European goods and thus needed cash.
 - Uses of black labor on farms
 - * Rent tenancy
 - * Sharecropping
 - * Labor tenancy - blacks provided specified amount of labor in return for a place to live
 - * Wage labor
 - Migrant labor in the mines
 - * Mine labor involved a few skilled whites, supervising approximately 10,000 low-skilled, low-paid blacks
 - * Different mines recruited through single organization to take advantage of monopsony, keeping wages low
 - Paradox of labor shortage and low wages
 - * Possibly backward bending labor supply of blacks - but there is also evidence to the contrary - this was probably just a rationalization for adopting the compulsory means described above of ensuring a labor force.
 - Deteriorating conditions on reserves: rising population, declining productivity, rising infant mortality rates.
- The Color Bar formally kept non-whites from skilled and semi-skilled positions
 - This brought white workers in conflict with profit maximizing mining companies - led to strikes and even violence in 1913-1914, and in 1922 a general strike led to armed rebellion.
 - The subsequent defeat of the workers allowed certain reforms: white wages decreased, blacks were allowed into certain semi-skilled positions
- The "poor white" problem

- Afrikaner farmers in destitution because of rising population land constraints, cattle disease, and destruction of the South African War of 1899-1902
- They were driven into the cities, but were unwilling to compete with Africans for unskilled labor
- This led to the white laborer-friendly Pact government reinstating the Color Bar at the expense of black labor and the mining companies.

13 Ottoman and Russian Empires

13.1 *Estimating Economic Growth in the Middle East, 1820-1950, Pamuk*

- This paper attempts to construct a series of per capita GDP since 1820, filling the gap of data on the Middle East (countries included in the broad definition of Middle East: Turkey, Syria, Lebanon, Jordan, Palestine-Israel, Egypt, Saudi Arabia, Gulf States, Iraq, and Iran.)
- **Big problem:** No country in the Middle East had any sort of official income accounting before WWI. We need to rely on other sources.
- Almost all of this paper is concerned with the analysis of the available data and with different ways to aggregate them. Only at the end does the author draw some conclusions about the pattern of economic growth experienced by the Middle East.
- Analyzing the scant available data requires different procedures depending on the historical period with which we are concerned. There are three possible alternatives.
 - For the period from 1913 to the present, it is possible to proceed backwards, i.e. to start from some recent series (say from 1950 onward) of per capita GDP for each of the countries above and then infer all the missing values from 1913 by using the rate of growth of some countries - most importantly Turkey and Egypt. In this way, we can get some estimates of per capita GDP as early as 1913 for some countries.
 - It is possible to recover per capita GDP for all the other countries in 1913 using available data on taxes, population, agriculture, industry, and trade. (Note: These data come from different sources and are sector-based. The estimates coming from them can be used to check the reliability of the estimates of the previous method.)
 - * Conclusions: on the eve of World War I, the area of the Ottoman Empire which spans today's Lebanon, Syria, and Palestine had the highest per capita GDP. The poorest area was located around the Gulf. Egypt was somewhere in the middle, mostly because before WWI, it attracted the wealthiest individuals in Europe and the Middle East.
 - Finally, to move backward from 1913 to 1820, Pamuk focuses on a variety of different sources, including production, foreign trade, and urban wages. (Note: using wages can be misleading if we think that in the 19th century they were a small category of per capita income.)
 - * Conclusions: During the century before WWI, Syria, Lebanon, and Palestine were growing at a slightly higher rate. Egypt, though, was growing very fast due to the capital inflows and the rapid expansion of cotton cultivation. (It is possible to compare this with Fogel's chapter on the movement westward of the slaves in the US, because of the expansion of cotton cultivation.) The countries on the Gulf were lagging behind.
- **General conclusions:** The Middle East began to participate in the global process of modern economic growth **during the nineteenth century**, though the rate of growth of the region as a whole never exceeded 1% per annum. Furthermore, there is a divergence between those areas linked to the world trade through the Mediterranean and those on the Gulf and the Red Sea.
- The Middle East experienced major political changes after 1914. Most importantly, the Ottoman Empire came to an end, and many of the large parts of the region were incorporated into the British and French colonial empires.
- **In the twentieth century**, though, the pattern of economic growth changes dramatically with the production of oil: from 1950 onward, the region as a whole has been growing at an annual rate of 2.3%. Dividing the sample into two groups, oil exporters and non-oil exporters, helps to shed light on the different performances of the Middle East economies:
 - Oil exporters: Rate of growth of 5.3% per annum (!) from 1950 to 1973. Slowdown with some periods of negative growth from 1973 to 2000 (due to the increase of the price of oil and to the wars fought by these countries.) Also consider that there are serious distributional issues here.

- Non-oil exporters: More stable growth (2.9% from 1950 to 1973 and 2.4% from 1973 to 2000).

13.2 *Farm to Factory*, chapters 1-2, Allen

- Allen claims that Russia's economic performance (at least from 1928 to 1970) was good relative to many other countries, and that if it had not been for the economic policies of the Soviet Union, economic growth might have been much lower. He supports this statement with the following arguments:
 - The Soviet Union grew at a rate of approximately 5-6% per year from 1928-1970. This outperformed almost all of the world except for Japan during this period. Notably, the USSR outperformed all nations in the OECD (again, except for Japan), even accounting for convergence effects due to the fact that the USSR began as a poorer nation. Growth slowed from 1970-1989, but only South Korea and Taiwan outperformed the USSR from 1928-1989.
 - Russia is not really a European country, and therefore its performance and outcomes should not be compared with Europe. Reasons why Russia was different from Europe:
 - * Russia started from a much lower income level: income of \$750 in 1820 versus >\$1000 for the rest of Europe.
 - * Russia's economy was much less industrial to begin with: By 1913, 75% of the population was engaged in agriculture, versus 25-50% in Europe.
 - * Russia had an Asian demographic regime: in most parts of the country, women married young (before 20) and had large families. This led to greater population pressure.
 - * Russia had very weak civil society institutions, whereas in Europe, civil society was strong. All power was concentrated in the hands of the tsar; the peasants and nobility had no institutions in which to press their demands. This was bad for development.
- In Chapter 2, Allen acknowledges that Russia was growing at the same rate as European countries from 1885 to 1917: 3.3% per year. (1.7% per capita) Would this growth have increased if Russia had remained capitalist, and would it have led to Russia catching up with Europe? Allen says no - it was "a one-off resource boom with a veneer of some tariff-induced industrialization."
 - Russian agricultural productivity increased, but this was due to increased integration with global markets (a one-shot deal), a temporary large increase in wheat prices. Productivity had previously been extremely low.
 - Industrial output increased, but this was driven by three major factors:
 - * Railroad construction for which all inputs were purchased domestically.
 - * Increased domestic rural demand due to (temporarily) high grain prices.
 - * High tariffs on foreign goods. Russian industry was not internationally competitive.
 - * Allen argues that this industrial growth would not have continued, and a capitalist Russia would most likely have stagnated in the 20th century.
 - Real incomes were not rising for Russian urban workers, leading to increased urban social strife (due to inequality) and maintaining the highly rural character of society.
 - The privatization of the communes was causing greater rural inequality and resentment. Increasing returns to scale for farming and other advantages to large farmers led to the division of the communes into large private farms and landless laborers. The remaining communal farmers resented this, and this led to rural revolts. Presumably, these would have been a problem in a capitalist Russia.
- In conclusion, Russia's growth from 1885 to 1913 was a temporary boom that was already coming to an end by WWI due to decreasing grain prices, the end of railroad construction, and increasing social conflicts. If Russia had not become a communist country, it would most likely have ended up at best resembling Latin America, and at worst, resembling India.

13.3 *The Macroeconomics of NEP, Johnson, Temin*

- Why did the New Economic Policy fail? The traditional answer is that it failed because of a malfunctioning of the grain market and that the kulaks sabotaged the system. Johnson and Temin believe that macroeconomic factors can explain the collapse.
- Some history: The New Economic Policy was adopted by Lenin in 1921 as a response to repeated peasant rebellions. Market transactions were legalized, which helped stabilize the social situation. Bolsheviks restricted their intervention in the economy to holding "commanding heights," heavy industry, railways, and the financial system. There was a controversy between this practice and declared ideology, of course. Stalin abandoned the New Economic Policy in 1928.
- Temin and Johnson use data from the finance ministry bulletin, which had some degree of editorial freedom and attracted the best young economists of the day.
- Scissors crisis: high inflation, no price controls. The price of manufacturers relative to agricultural goods rose sharply. Decline in terms of trade curtails food output, so the Bolsheviks think that markets are not good for peasants. The most critical mistake then was that price controls were placed on wholesale and selected (e.g., salt, sugar, paraffin) retail prices in order to make sure peasants benefited from the New Economic Policy.
- Price controls caused losses at SOEs (what is an SOE?); funds to SOEs through loans and discounts increased substantially. These were financed by seigniorage, so money supply increased.
- Interpreted price rise after monetary expansion as evidence of speculation, not the effect of wholesale price controls. As a result, nationalized distribution emerged.
- In October 1927, peasants were withholding output, since they couldn't buy anything. Stalin used this as an excuse to pursue "administrative means."
- Tried to grow economy with monetary expansions, but prices couldn't rise because of price controls on industrial goods designed to benefit peasants. This, of course, led to shortages which were worst in places where prices were most effectively controlled. Most goods were not even available in the countryside. This led private prices to increase, and hence peasants were worse off because the effective terms of trade worsened.

14 China

14.1 *The Early Modern Great Divergence, Broadberry, Gupta*

- Grain wages: advanced parts of India and China comparable to north-west Europe
- Silver ages: substantially lower in Asia: lower purchasing power/productivity in tradeable sectors.
- Europe:
 - Silver wages lower in north-west Europe during the middle ages
 - Silver wage growth during the 17th and 18th century: urban and non-agricultural development
 - Changes not reflected in the grain wages
 - Data: International Scientific Committee on Price History: Abel, Braudel, Spooner, van Zanden, and Allen
- Data for India and China
 - India: Abul-Fazl's document of 1595 (daily wages of unskilled and skilled workers in northern India), English and Dutch East India Companies (17th and 18th centuries), the government (19th century)
 - Southern India: relying on data for unskilled and skilled weavers.
 - Silver wage significantly lower already in the 16th century
 - Grain wage diverged during the 18th century
 - China: monthly price reports on grain prices for the Qing dynasty (1644-1911), but only scattered estimated money wages available
 - Focus on Yangzi delta region: the most advanced part of China, previously argued to be as economically developed as the most advanced parts of north-west Europe (by Pomeranz)
 - Declining grain wages due to population growth, between the late-Ming (1573-1644) and mid-Qing periods
 - Silver wage already much lower by the Ming period
- Potential explanation for higher silver wages in Europe
 - Inflow of bullion from the New World during the 16th century: higher prices without real impact on the standard of living.
 - Not an adequate explanation: inflow to the East via Philippines and via Europe
 - Regional patterns: inflow through Spain, price levels rose similarly in most of Europe, silver wage leadership from Spain to England.
 - Persistence of the disequilibrium of bimetallic exchange ratios, but the silver wage gaps kept on growing despite the return on equilibrium.
 - Grain not internationally tradeable, but one international price for the tradeable commodity
 - * silver wage rate equal to labor productivity in the tradeable sector
 - * price of the non-tradeable commodity depended negatively on the labor productivity of the non-tradeable sector and positively on that in the tradeable sector.

14.2 *The Opium Wars, Opium Legislation, and Opium Consumption in China, Feige, Miron*

- Opium and the history of opium in China:
 - In the 18th century, both the sale and importation of opium were forbidden in China under penalty of death or banishment.
 - The East India Company traded opium in Canton until the Chinese government threatened to stop its profitable tea trade if the opium trade continued.
 - The EIC stopped exporting opium directly to China in 1796 and began selling in Calcutta to private English merchants who then smuggled it into China.
 - During the 1830s, opium was used as a scapegoat for China's recession.
 - In 1836, "Opium debates" were held in which moralists argued that the legalization of opium would result in everyone smoking while those in favor of legalizing argued that the real problems with opium were organized crime and the silver drain in the economy and that legalization could produce tax revenues.
 - The moralists were victorious and opium addiction and trade became capital offenses.
 - The effects of the tighter laws were more aggressive smugglers and constant bribery of Chinese officials.
 - In 1839 an imperial commissioner was assigned to the task of ridding China of the opium problem.
 - Force was used against the traders in Canton and violence escalated until the British sent enough war ships to destroy the commissioner's army.
 - Eventually the British captured strategic points on the coast and fortified and blockaded Canton.
 - This forced the Chinese to surrender and the Treaty of Nanjing was signed in 1842.
 - The treaty gave Hong Kong to the British, opened new ports to British trade, forbade the Chinese from trying British sailors under Chinese law and gave Britain "most favored nation status" in trade.
 - Although opium was not a major focus of the treaty, the British urged the Chinese to legalize and tax opium, but the emperor disagreed.
 - The second opium war broke out in 1856. British ships attacked Canton after Cantonese officials boarded a British vessel accused of piracy and ripped down a British flag.
 - The Treaty of Tientsin, signed in June of 1858, after the British easily won the war, contained no reference to the opium trade but further opened legal trade in favor of the British.
 - After the peace, the British again supported legislation as the only way to control the trade and China finally legalized opium in 1858 with a tariff of about 8%
- Legalization's impact on opium exports and price:
 - The main point of the article is just to show the (lack of) effect of the legalization of opium on its price and consumption.
 - To do so, regressions are run to see the effect of legalization on per capita opium exports from India to China and the effect on the price of opium.
 - This was done using data from the British East India Company's sales at their scales in India. These data were used since it was there that the EIC supplied the merchants who then introduced opium to China.
 - The data start in 1800 and show that, starting in 1820, there is a strong upward trend in per capita exports, which probably reflects increasing population, higher income, or an expanding taste for opium.
 - However, there does not seem to be a change in the trend once opium is legalized.

- Per capita exports are regressed against a dummy for legalization, a dummy for war, price of rice (as a proxy for the inverse of income), population, trend, and trend squared.
- Per capita exports are regressed against a dummy for legalization. When controlling for the underlying trend and the rest of the variables, the effect of legalization is not significant.
- Similarly, when the price of opium is regressed against the same set of variables as the exports, it is found that the legalization of opium had no significant effect on the price.

14.3 *Economic Change in China, chapters 2, 4, 7, Richardson*

- These chapters include a bunch of facts about China.
- Output growth: 18th century China experienced considerable economic growth while maintaining social stability. The population grew by 40% without apparent declines in per capita income. There was westward migration and new crops emerged. Agricultural expansion exceeded population growth. The government assisted expansion with tax incentives to migrants, financed public works programs, and provided military and political security.
- Trade: Most trade still within regions, though there was growth in interregional and international trade with other Asian nations. Trade was legalized in 1684. The legalization of trade led to more cash crops.
- Money: copper for local trades. Silver for regional, national, or international trades. Money supply increased with output from copper mines and trade surplus.
- Problems: no sign of commercial or industrial capitalism. No transition from workshops to factories. No technological innovation. Financial markets did not promote accumulation. Trade did not give rise to a merchant class. As China reached Malthusian boundaries, it remained agrarian and Confucian.
- Population growth: population continued to grow even as agricultural output peaked. Peripheral areas could no longer sustain large immigration. This led to tensions between immigrants and indigenous minorities and the worsening of ecological conditions.
- Economic deterioration: Between 1820 and 1850, the money supply contracted and prices fell by 40%. One quarter to one half of silver inflow was lost to opium imports. Copper depreciation pressured farmers, who were paid in copper, to produce more. Tax obligations were paid in silver.
- Political instability: budget surplus exhausted by rebellions. There was inability to finance public works, tensions of population growth, and corruption.
- Conclusion to chapter 3: population growth was an impetus for both economic growth and decline. Rulers thought China was going through familiar internal problems and wanted to deal with it through traditional means, but they could not pursue such ends in isolation. They needed a new response to confront the rapidly industrializing West.
- Increased trade: The first Opium War (1830s) ended the ban on opium, increased the number of tradeable commodities, widened the number of legal entry ports, and partially deregulated trade. The treaty of Nanking gave foreigners rights of residence and set a 5% import duty ceiling.
- "Commercial Revolution": Complexity of Chinese market and dynamism of Chinese commercial sector forced western merchants to employ Chinese intermediaries. By the 1860s, the intermediaries began to adopt western practices and this quickened the pace of commercial innovation. Trade increased 20-fold from 1833 to 1913. Imports: still opium but diversified into cotton, metals, petroleum, machinery and chemicals. Exported silk, tea, and bean products.
- Maintained positive trade balance, with patterns similar to advanced economy, until 1890s when the deficit grew in manufactured goods.
- Prices: Remained on silver standard until 1930s, which led to a long term price depreciation.
- Effects of depression: drying up of foreign markets for silk and bean products.
- Was there a dual economy, a trading enclave on the coast with no effect on country? Similarity of rice prices throughout the country suggests not.
- The State's role: by the mid-1800s, factions of reformers sought to restore the power of the state: increase revenue, build a western military, increase public works. Failed due to "ideological constraints," financing difficulties, and rampant corruption. Regionalism rose. China's lack of modernization was evident in the defeat in the Sino-Japanese war in 1894.

- The Qing Dynasty ended in 1911 and was replaced with the republican government of Sun-Yat Sen. Perhaps just bad luck of the timing, but strong republic did not emerge. China disintegrated into political instability. The fight between nationalists and communists still ensures. Japan annexed Manchuria.

15 Japan

15.1 *The Japanese Economy, chapter 2, Flath*

- Tokugawa shogunate, which ruled Japan from 1603 to 1868, ended civil wars that had long ravaged the nation.
- Tokugawa, though in theory administering on behalf of the emperor, reserved for himself the right to establish foreign policy, issue currency, establish national standards of measurement, and to remove other daimyo, local rulers sovereign in own domain.
- Imposed far reaching controls.
 - Caste system
 - * Restricted mobility and therefore exploitation of comparative advantage in different trades.
 - * Delayed marriage because of increased incentive to accumulate assets.
 - Forced alternate attendance in Edo, basically a hostage system. Turns Edo into a major consumption center and Osaka into a commercial center with rice banks approximating fractional reserve banking.
 - Group responsibility tax system based on rice output hindered private ownership.
 - Seclusion: Only Dutch and Chinese traders allowed in order to prevent alliances between other European countries and daimyo, to suppress Christianity, and to preserve quasi-monopoly on imports.
 - Gradually eliminated gun production to increase government monopoly on violence.
- Because of forced isolation, never saw benefits of British industrial revolution.
- Treaty with U.S. and other western powers leads to depreciation of currency, inflation, political crisis and ultimately revolution.
- Meiji Restoration begins in 1868: Tokugawa system replaced with forward-looking reformers.
 - Free trade and migration permitted.
 - Taxes remitted to the government in Tokyo, not through samurai
 - New currency: the yen
 - Monetary land tax and assurances of private land ownership
 - Cast system abolished. This led to samurai rebellion and the Satsuma war.
- Matsukata financial reforms:
 - Full convertibility of currency.
 - Establishment of central bank in 1882 to better control the money supply.
- By the turn of the 20th century, commercial banks and joint-stock companies are common. Private manufacturing, especially cotton spinning and silk-reeling, had begin to displace agriculture. Japan began to open up to foreign technology.
- Forces opening of Korean ports in 1876. Sino-Japanese War in 1894-1895, China capitulates. Russo-Japanese War in 1904: Japan prevails and both sides accept intermediation of Teddy Roosevelt in 1906.

- Japan fits Gerschenkron's framework only if we regard it as one of the less backward nations at the time of its first industrialization. Growth in manufacturing was steady but not dramatic. Factory labor was relatively abundant, so industry was mainly "light" with efficient methods substituting labor for capital, rather than the reverse. Industrialization involved little government direction and only limited intermediation by banks. Meiji era characterized by Laissez-faire; more similar to England and France than to Russia or Italy.
- However (Temin argued), there was nearly a four fold increase in growth during industrialization (1885-1898), signalling that there was in fact a fairly dramatic period of growth, and that it came through textiles as opposed to heavy industry works against the Gerschenkron thesis.

15.2 *An Empirical Assessment of the Comparative Gains from Trade, Bernhofen, Brown*

- Basic goal: to quantify the welfare gains of opening up trade using the case of the Tokugawa-Meiji transition in Japan.
- They find that opening up to trade created welfare gains that were at most 8-9 percent of GDP. They use this result to critique previous research that said it was around 65%
- Their big take-away lesson is that we should be skeptical of the wisdom of how great free trade is. Specifically, they argue that large changes in the price of commodities does not necessarily translate into large welfare gains.
- They also argue that we shouldn't justify the gains to trade using static comparative advantage, but should rather study it dynamically.
- Specific measure: the welfare measure they are interested in is the equivalent variation: $e(\text{prices under autarky in the 1850s, counterfactual consumption bundle in 1850s if there had been free trade}) - e(\text{prices under autarky in the 1850s, consumption bundle under autarky in the 1850s})$
 - Basically they want to estimate how much money one would have needed to give the Japanese economy so that they could afford the consumption bundle that was attainable, were they engaged in free trade.
 - They actually compute something similar, the DDN index of comparative advantage - which is just the sum over all goods of net imports of that good, times the autarkic price for that good. This is an upper bound for the welfare gains of trade.
- Empirical strategy
 - In order to estimate the DDN index, they need the following data:
 - * A vector of autarkic prices in the 1850s (this is not counterfactual)
 - * An estimate of the counterfactual net imports of each of these goods were the economy open to free trade
 - * An estimate of GDP in the 1850s to normalize (the GDP measure is not counterfactual)
 - * Then the DDN is the inner product of the price and counterfactual import vectors, divided by the GDP
 - They have somewhat incomplete data on the prices of 52 commodities that were involved in trade - autarkic price data is available for 96% of what eventually became exports, and 60% of what were imports. This included stuff like cloth, shoes, etc.
 - They do not have autarkic data on guns or woolens because these were never produced under autarky so they have to use virtual price as proxies - this data comes from when the market was just opened. They then take this price and "convert" it into an autarkic price for guns and woolens using various deflations, etc.
 - To get the counterfactual vector of net imports in the 1850s, they basically just use the real vector from the late 1860s when the market actually was open. The justification is that the spirit of their experiment is that nothing changed in the economy during the years they examine except for the opening to trade.
- Potential problems
 - There's always the data problem - they don't have real prices on lots of the goods in the consumption bundle they define.
 - When they do currency conversions from the Mexican silver dollar to the Japanese ryo, they mention that no one recorded the actual exchange rate. There was also a minor hyperinflation going on during the final years of autarky.

- It might not be a good idea to use the net imports vector from after the opening of Japan to proxy for the counterfactual because technology transfers might have changed the form of what people demanded. The authors argue that this is not the case.
- They don't really have GDP data and have to proxy the entire country's GDP in the 1850s based on some observations from 1840 and 1870.

Part III

The United States

16 Industrialization in the North

16.1 *The Aftermath of Hamilton's 'Report on Manufactures', Irwin*

- Alexander Hamilton wrote a "Report on Manufactures" (requested by the House of Representatives) in 1791, with numerous recommendations to the US government
- The most important point is that the report called for the promotion of domestic manufacturing. The specific recommendations included:
 - Higher tariffs on 20 final goods. For example: iron, nails, firearms, linens, glue, printed books, starch.
 - Lower tariffs on some raw materials: wood, copper, cotton, silk, sulfur
 - Production subsidies (a.k.a. bounties): coal, raw wool, sail cloth, cotton, glass (not enacted).
 - Policies to promote skilled immigration (not enacted).
- Why is this important? It has been long believed that Congress largely ignored the report and Hamilton didn't promote it very aggressively; thus, that all the anti-laissez-faire recommendations were not enacted. Irwin argues that this is not true.
- Why did Hamilton want Congress to step in? Essentially, because other countries were helping their manufacturers and not helping would put the US manufacturers at a disadvantage.
- "Hamilton worked to ensure that Congress enacted virtually every tariff recommendation in the report within five months of its delivery." His proposals were quite moderate, however. The tariffs he proposed were small relative to what was to come later.
- Hamilton suggested subsidies, financed by import duties, but Madison and Jefferson (not yet presidents by then, but working in the government) thought these were unconstitutional.
- Evidence that Hamilton's suggested tariffs were enacted: Congress took action in those industries suggested by Hamilton, but not in others where he did not suggest change (e.g. gunpowder and lead).
- Hamilton also wrote a Treasurer's Report in 1792 (also on request) suggesting ways for Congress to raise money. His favored suggestion was through tariffs and he repeated some (but not all) of his previous tariff proposals.
- Madison and Jefferson did not want to see the rise of manufacturers; instead, they favored a largely agrarian economy. However, they enacted even larger trade barriers, especially against Britain, which was subject to partial trade bans and complete embargoes at some points from 1806 to 1812. This was not done to promote manufacturing, but had that effect.
- "After the war [of 1812] Madison and the Republican Congress did not want these new [recently grown] industries to disappear as a result of renewed competition from Britain." This led to the first truly protectionist tariff (Hamilton's were viewed as promoting, rather than protecting, domestic industry).
- In the end (18-teens), Madison and Jefferson became much more pro-manufacturing. "[E]xperience has taught me that manufactures are now as necessary to our independence as to our comfort." (Jefferson)

16.2 *Women, Children, and Industrialization in the Early Republic, Goldin, Sokoloff*

- "the rapid growth of the manufacturing sector was associated with a disproportionate increase in the demand for women and children as workers, because the spread of new large-scale methods of production greatly facilitated the substitution of unskilled for skilled labor."
- Temin: Refutes Habbakuk hypothesis that expensive male labor led to increased capital intensity; in fact, may have led to substitution of cheaper female labor. The basic argument is that abundant land in the north led to a higher reservation wage for men, which led to the need for labor saving devices/methods and hence large factories (division of labor by skill). These factories were better suited for the employment of women and children, i.e. their labor could be productively used in factories. This increased the demand for women and children labor.
- Using U.S. data from the Census of Manufactures and McLane report (another manufacturing survey) find that women and children grow from 10% of northeastern labor force in early 1800s to 40% in 1832. This declines thereafter, but remains above 30% in 1850.
- Why the increase?
 - Women's marginal product in agriculture in the north lower than in the south, so lower wages for women relative to men in the north.
 - Temin finds this unconvincing; behavioral argument about accumulating dowry as factory girl in the north and house servant in the south.
- Employment of women and children was associated with the production process in large firms (women represented over 50% in many large firms) in a range of industries
- Through industrial development, the wages of boys and women increased relative to those of men.
 - Productivity ratios improved due to industrialization
 - Increase in demand for female and child labor drove increased use of women and children.
 - Females in the south prior to industrialization had relatively higher wages than those in the north. Goldin and Sokoloff claim this is due to different physical requirements in the local agriculture.
 - Test compensating differential hypothesis, that higher wage rates for women and children reflect bad working conditions. They don't find support for this.
- Massachusetts had particularly high female labor force participation. Was this due to migration or different behavior of Massachusetts natives? Data suggest that migration didn't play a major role before 1830, by which point Massachusetts already had high participation.
- Decline in female labor force proportion after 1850 is probably due to increasing shift in men from agriculture to manufacturing, and perhaps due to a slowdown in female-intensive industries (most notably textiles).

16.3 *Is Deposit Insurance Necessary?*, Calomiris

- Why were U.S. banks so unstable?
- Calomiris contrasts banking insurance with their alternative in U.S. history, branch banks, as schemes for protecting payments. He concludes that deposit insurance was not necessary.
- Failures in New York, Vermont, and Michigan. Common features: fraud, poor and ineffectual government supervision allowed large risk takers to free ride on other banks, moral hazard (excessive risk taking because of government backing) and adverse selection (sound banks retreated from insurance)
- Successes in Indiana, Ohio, and Iowa: largely self-regulating, aligned incentives and authority to regulate, and made insurance protection credible through unlimited mutual liability among banks.
- In early 20th century, a number of incurred banks increases dramatically, compounding earlier failures. Supervisory authority with government, not member banks, and often use was politically motivated. Compulsory insurance banks grew quickly in the halcyon days for agriculture, 1914 to 1920, but when agricultural prices fell, they had higher failure rates than the uninsured, larger asset shortfalls, and greater delays in liquidating insolvent banks.
- Banks in states that allowed branch banking recorded lower failure rates and responded better to external shocks (e.g., agricultural crisis) by consolidating banks and expanding branches.
- Conclusion: unlimited branch banking and privately administered insurance programs (such as those used in antebellum Indiana, Ohio, and Iowa) would have been adequate to protect payment system from shocks. Unit banking and ill-conceived government controlled insurance were the greatest threats to system stability. These problems are likely even more pronounced under today's federal insurance program.

17 The South and Slavery

17.1 *Without Consent or Contract*, chapter 3, Fogel

- Presents several economic issues regarding the U.S. slave market.
- Profitability and prospects of the slave market in the British West Indies and the U.S.
 - West Indies slaveholders generally received a higher rate of return on their investment (as high as 50% per year in Barbados in the 1650s). Average rate was about 10%
 - In the U.S., hard to measure underlying return to slavery because it is obscured by the disruptive effects of the American Revolution and the cyclical misfortunes of rice and tobacco markets.
 - Prices of slaves shifted according to fluctuations in commodities they were used to produce, but demand for slaves never declined for sustained periods.
 - In the western cotton states, demand for slaves didn't turn down even during depression decades; from 1810 to 1860 demand in the West increased twenty-fold.
 - Demand outpaced natural population growth, and the price of slaves doubled between mid-1840s and the Civil War. Fogel argues this reflected "the high level of immediate profits and bounding optimism of the slave owners regarding future prospects."
- Slave supply
 - Fogel argues that slaveholders' responsiveness to commodity price fluctuations, particularly cotton, shows that the slave market was a "flexible and highly developed form of capitalism." South had many devices for gathering and distributing economic intelligence (crop prices, etc.)
 - Increasing cotton demand induced the movement of 835,000 slaves to the western cotton states between 1790 and 1860. The main exporting states were Maryland, Virginia, and the Carolinas. The main importers were Alabama, Mississippi, Louisiana, and Texas.
 - This westward shift of slave populations was facilitated by transportation breakthroughs, particularly the steamboat and the railroad.
 - No one agrees on whether slaves were traded westward or moved out with their owners. Estimates of those traded range from 16% to 60%.
 - Price of slaves varied systematically by age, gender, health, skills, and reliability. Data is collected from probate records and slave sale invoices
- Relative efficiency of slave labor
 - Compares efficiency of slave labor to that of free labor
 - Since relative to free labor, slave labor included more women, children, elderly, and disabled, the unit of labor efficiency measurement is the "equivalent prime hand." For example, three boys in late teens are considered the equivalent to two prime-aged males.
 - Average output for equivalent prime hand was higher for slave plantations for free laborers, but this measure is biased. Slave plantations tended to have better soils and more capital than free plantations. Accounting for these differences, Fogel concludes that slave labor was still more efficient than free labor on large plantations.
 - Large plantations were also more efficient than small ones, regardless of the type of labor, due, Fogel claims, to use of the gang system (requires scale of large plantation), labor specialization, and a higher degree of regimentation.
 - There is also significant regional variation. Highest level of efficiency among most classes of farms in states with bulk of interstate slave traffic. Average farm productivity in the South is 35% higher than in the North. Free farms actually less productive in the South, so Fogel attributes 90% of technical advantage to slavery.

- The "Paradoxes"
 - Slaves worked an average of 2800 hours per year, which is about 10% less than free northern farmers.
 - Fogel argues that the mix of crops, livestock, and growing season determined the length of the workday and that slaves were exploited through intensity of work in the "gang system"
 - Fogel finds that slave wages were 15% higher than free farmers' wages, but their "equal-efficiency" wage was 33% lower.
 - Intensity of work was characteristic of gang system. This system of forced work, and not inherent superiority of slave workers, accounts for productivity differences, in Fogel's view.

17.2 *A Peculiar Population, Steckel*

- Steckel claims that although slave children were not well nourished, the adults were.
- Looks at data from: slave ships (with some approximations), mortality rates from plantation records, and compares to growth curves for other 18th and 19th century and underdeveloped 20th century populations.
- Slave children were much shorter than modern children. At age $4\frac{1}{2}$, boys and girls were only at 0.2 and 0.5 percentile, respectively. But there is sustained catch-up (more so for U.S. rather than Caribbean slaves), reaching 27.1 percentile and 28.4 percentile for adult males and females. (problem: not following a given slave throughout life.)
- While young slave children appear worse off than children in the poorest of developing countries today, adults fared much better. Adult slaves were actually taller than 18th and 19th century free laborers.
- Why malnourish children but nourish adult slaves?
 - less breast feeding so mother can work
 - saved money by feeding children vegetarian diets
 - children did not produce enough to cover costs (additional benefits to meat not worth cost, although Steckel's model overlooks mortality effect of diet)
 - malnourished children grow to be more docile adults.
- The implications of malnourishment of children on intellectual development may have affected the post-Civil War experience of blacks.

18 The Aftermath of Slavery

18.1 *Paternalism in Agricultural Labor Contracts in the U.S. South*, Alston, Ferrie

- Paternalism is an "implicit contract whereby workers exchange dependable (long term commitment) labor services for a variety of goods and services." These goods and services include housing, interceding in commercial transactions, medical care, judicial issues, and, most importantly, protection from violence (although this last point sounds a lot like a protection racket).
- Period of paternalism lasted from late 19th century (note that it did not start immediately after the Civil War) until the 1960s (passage of the Civil Rights Act).
- After the Civil War, the end of slavery created a labor shortage in the South. The government attempted to stabilize labor markets with the Freedman's Bureau, writing long-term contracts. This was initially successful, but after a few years, planters and freedmen tried to circumvent the Bureau because its contracts were too restrictive. They succeeded, but neither employers nor employees fulfilled their labor contracts.
- Alston and Ferrie argued that in response to these labor shortages, some planters chose to be honest, providing housing, protection, etc., in order to get "good and faithful" labor. System allowed them to tie black workers to the land. The main benefits were:
 - Reduced cost of monitoring labor effort
 - Discouraged labor turnover, which was important due to farm-specific knowledge
 - May have encouraged productivity improvements in the land.
- Throughout the period of paternalism, planters had an interest in maintaining a racist state and preventing federal interference in race and labor issues, because the threat of violence made the protection they offered more valuable. (Note that this points out that in the south, blacks lacked civil rights and Southern society tolerated violence against them.)
- Economics of paternalism: not only tied workers to land, but reduced monitoring costs (through long-term contracting).
- Politics of paternalism: in order to maintain paternalism, Southern rural elite needed to prevent federal interference. Government substitutes for paternalism, such as welfare, would have raised monitoring costs and caused out-migration of labor (easier to move). Since southern politicians were very powerful, largely due to committee influence due to seniority, they were successful in blocking government changes.
- With mechanization, economic incentives for paternalism wane. Alston and Ferrie would like to look at time-series of paternalism versus mechanism, but they don't have it. They argue the following:
 - Mechanization leads to a decline in tenancy, which leads to a decline in paternalism (because of its association with tenancy). Tenancy declined due to mechanization because:
 - * Monitoring costs fall with standardized techniques
 - * Labor demand softens (unemployment due to mechanization)
 - * Farm-specific knowledge becomes less valuable and thus turnover less costly.
 - * Alston and Ferrie claim this link between mechanization and tenancy decline has been well established by other authors
 - Perceptions by blacks of race relations. Mechanization led to changes in race relations. As tenancy was replaced with wage labor, blacks' economic power and consequently their self-confidence increased and diminished deference to whites. These changes signaled erosion of paternalism.

- Southern political power. Southern Congressmen retained a near "stranglehold" on committee power, yet the welfare state was allowed to expand. This wouldn't have happened if paternalism was still important to Southern business interests.
- Welfare laws encouraged out-migration by alleviating poverty in Northern urban areas.
- Finally, let us not forget that civil rights were coming to the South, whether white Southerners wanted them or not.

18.2 *Slavery and the Intergenerational Transmission of Human Capital, Sacerdote*

- Main point: Sacerdote compares "outcomes" (literacy, schooling, occupation, and occupational socioeconomic status) of children and grandchildren of slaves and free blacks (freed before 1865). He finds that in two generations the former group converged with the latter. (Note that this is not converging with the average, because whites are not included.)
- Before 1880, there was a gap between former slaves and free blacks in terms of literacy, schooling and occupational income that disappeared in two generations (around 1920).
 - Sacerdote justifies this with a parent-child income transmission.
 - Differences between blacks and whites between 1865-1920 were only partially reduced.
 - Possible explanation: The institutional barriers are instituted to discriminate against blacks, and this makes intra-black convergence easier to achieve than black-white convergence.
- Related literature that continues the story finds that there is a wage convergence process between blacks and whites between the 1940s and the 1970s. This process has been halted since the 1980s. (e.g. Heckman, et. al.)
- Empirical problem: Sacerdote has to take into account that the conditions for convergence (institutions, access to schools, etc.) in the South were harsher and a vast majority of slaves lived in the South.
 - He compares families that moved out of the south and families that were already outside the south.
 - * Criticism: the sample of people moving out of the south is not representative of all the freed blacks in the south! This may overstate the effect of convergence.
 - Another method he uses to separate the effect of being born in the South from the effect of the slavery is to use whites to estimate the baseline effect from being born in the South.
 - * "The only problem" is that in his regression he attributes all the effects of being born black in the South to slavery (which doesn't take into account post slavery institutions!). He makes his estimations using both methodologies.
- Empirical results (using both methodologies):
 - Literacy: the literacy gap between blacks disappears in one generation (controlling for region).
 - Schooling: in two generations there is no statistically significant differences between former slaves and free blacks, controlling for the region.
 - Effects of female headed household status have persisted into the twentieth century: female headed households are associated with less human capital. This can be a persisting effect of slavery.
 - Effects on occupation and home ownership are less significant.
 - The transmission coefficients: Essentially consist of regressing child's outcome on parents' outcome (and grandparents' sometimes.) Coefficient of transmission : In 1880, from mothers to children is 0.32 for white children and 0.45 for black children. In 1920, coefficient much smaller. In general terms, however, black have higher transmission rates of income and literacy than whites.
- Conclusion: The descendents of slaves caught up to the descendents of free blacks in terms of the outcome measures, namely literacy, schooling, and occupation. This result is especially strong amongst the blacks of the South. However, when one measures the progress of free blacks and slaves relative to whites born in the same regions, one finds partial, but not complete, convergence.

18.3 *Determining the Impact of Federal Antidiscrimination Policy on the Economic Status of Blacks, Heckman, Payner*

- Three major - and not necessarily mutually exclusive - explanations to the growth in aggregate black male earnings found in the post-1964 US data
 - Federal antidiscrimination activity
 - Human capital formation
 - Rising cost of discrimination in tight labor markets
- Although the last two explanations are not really controversial, "two decades of research have failed to produce professional consensus on the contribution of federal government civil rights activity to the economic progress of Black Americans." Reasons:
 - Lack of convincing measures of federal civil rights activities
 - Reliance on notorious fragile macro time-series data.
- This paper: look at this question using a unique body of data on employment and wages by race and sex for the manufacturing sector of South Carolina.
- "External validity": trends in black economic progress in South Carolina are typical of trends for the South as a whole.
- Results for manufacturing industry:
 - Black employment is a stable fraction of total employment between 1940 and 1965
 - Suddenly, in 1965, the proportion of black employment begins to grow
 - Same for wage series, although less dramatic
 - Evidence is more clear for textile than for non-textile, non-apparel sector of manufacturing
- These results suggest that antidiscrimination laws were effective in increasing employment and wages of blacks in the textile industry
- However, we need to rule out alternative explanations:
 - Data are suspect
 - * Textile and apparel firms report the data analyzed. It may be that they have lied about black employment after 1965 to avoid federal intervention and before 1965 to avoid state intervention on behalf of Jim Crow laws.
 - * They compare their data with the US census of population and do not find any discrepancy
 - Supply shift because of decline in South Carolina agriculture
 - * Look at US census data
 - * Although black agricultural employment declined by 60,000 during the 1950s, black manufacturing employment increased by only 1200.
 - * During the 1960s, black agricultural employment decreased by 38,000, and black manufacturing employment increased by a similar amount. However:
 - Black males accounted for most of the decline in agricultural employment (28,000), but...
 - ... for less than half of the increase in black manufacturing employment (10,000).
 - Education
 - * Blacks already had enough education for the textile industry before 1965
 - * Estimate the probability of being employed in the textile industry as a function of being black and other individual characteristics.

- Under the human capital story, controlling for education, black dummy should be zero before and after 1965.
 - After $6\frac{1}{2}$ pages of tables, find that prior to 1960, black males are not underrepresented in *any* industry *except textiles* (after controlling for individual characteristics.)
 - In the 1970 regressions, however, younger cohorts of textile workers are no longer underrepresented.
- Labor market was unusually tight after 1964.
 - * Look at several counties and see that breakthroughs occur at the same time in all of them.
 - * Argue that they do not form a single labor market. In this case, synchrony of the changes provides evidence against the tight labor market hypothesis.
 - Government activity
 - * Synchrony is consistent with uniformly applied government policy. Look at defense contracts.
 - * Estimate reduced form employment by race equations for textiles using the county-level data. Interested in the effect of defense contracts.
 - * Although the estimated defense coefficient is statistically significant, the contribution of defense contracts to black employment is numerically weak.
- Conclude that antidiscrimination laws played an important role in black economic status, but cannot rule out that these laws were precisely a consequence of tight labor markets.

19 Labor Participation

19.1 *Understanding the Gender Gap, chapters 4-5, Goldin*

- Women are paid less than men for the same work. When and how did this begin?
- Goldin looks at the manufacturing sector from 1888 to 1907 and the clerical sector in 1940.
- Simple ratio of earnings is insufficient to establish the failure of the labor market to reward workers impartially, because earnings formed into ratios may not hold enough factors constant.
- Better way: compute dollar value of various characteristics in labor market, then compute how much women would receive if they were men, take the ratio of actual earnings to this predicted earnings.
- "Wage discrimination" is not the same as "discrimination." Two types of discrimination:
 - Taste discrimination: distaste for associating with another person because of some characteristic unrelated to intrinsic aspect of productivity
 - Statistical discrimination: groups have different average characteristics. If inability to discern individual characteristics, each individual may be assigned group mean.
- Around 1900, women in manufacturing: > 75% unmarried. Entered labor force around age 15 and worked until married, an average of 6 years. Such a short expected working lifetime can explain many differences in male and female jobs, because it is the total expected job experience that matters for occupational choice.
- Using methods described above, Goldin finds 35% wage discrimination, but attributes some of this to shorter job ladder for women. Even in unskilled, menial work, men earned about 15% more than women. Taking this as a lower bound for productivity differences, she concludes 20% wage discrimination.
- Clerical sector: sector shifted to heavily female from 1890 to 1930, hiring female workers, many straight out of high school. Mechanization reduced gender gap, but this gap widened with every year of experience. Goldin again attributes this to different career tracks; promotions widen earnings gap from 14% to 40%.
- Temin: discrimination today takes form of lower wages rather than constraints on job types.
- Labor force participation for married white women has increased continuously from 1890 to the present, but the big upturn started in the 1950s. From the 1950s, married women's participation grew by 10% per decade.
- Attributes change in labor supply to preference changes: the consciousness of the feminist movement, reduced number of children and hence family responsibilities, reduced time cost of producing household goods (food, cooking, clothing), income of other family members, and family assets.
- Demand side changes: sectoral changes (increases in clerical and sales forces), use of complementary capital, changes in technology increasing substitutability between male and female labor, formal education replacing on-the-job training, and the taste changes by employers and employees (reduced discrimination).
- Goldin solves general model of married women's labor supply. Fitting aggregate data, she finds that female labor supply was relatively stable from 1890 to 1980. Demand increase was responsible for most of increase in female labor supply, assuming that parameters (income elasticity, wage elasticity of supply, etc.) stable over time. But, data show these parameters were not stable. Looking at these changing parameters she finds:"
 - From 1890 to 1930, supply was shifting rapidly outward, leading to increased participation

- From 1940 to 1960, demand shifted outward while supply actually shifted backwards
 - From 1960 to 1980, demand growth remained strong but supply also moved outward
 - Finds the direct impact of World War II was small, because most of the effect can be explained through the war's effect on fertility and on postwar increased demand for all workers.
- White women's prediction of their labor force participation were similar to their mothers' actual experience. When young women underestimate their future labor market roles, they tend to underinvest in job training and schooling, which could later reveal itself in lower wages for women compared with men.

19.2 *Pensions and Retirement, Costa*

- During the 20th century, there has been an increase in retirement rates and a general decrease in the retirement age. This might be explained through income effects, changes in societal attitudes about retiring, increased demand for leisure, or a shift in production to factories and manufacturing (from agriculture?).
- Costa uses the income effect of the Union Army pension program as a nearly exogenous increase in income to estimate the income effect on retirement (cannot test for effect of program like social security, because everyone receives it and must be retired to receive it, whereas only some received this pension regardless of labor force status.)
- Data from 712 men linked to 1900 census in Ohio and New York. After some effort to control for disabilities, prisoners of war, etc. and comparing to Confederate veterans, who did not have pensions, Costa finds that the Union Army pensions had a large impact on retirement rates. The elasticity of labor force participation with respect to the pension was estimated to be 0.73.
- Tests by comparing Union veteran retirement rates to Confederate veteran retirement rates, assuming similar incidence of disability (problematic). Finds that veteran status is not a significant predictor of retirement in the South, but it is in the North.
- If this income elasticity persisted through the 20th century, increased income could explain 60% of the increase in retirement rates in this century; however, there are good reasons to think this elasticity may have changed. In particular, as leisure grows more attractive due to a growing array of less expensive leisure goods, this elasticity must fall.
- Changes in transfer policies alone may not induce large increases in labor force participation rates among the elderly.

20 The Modern Corporation

20.1 *Scale and Scope*, chapter 2, Chandler

- Another Temin favorite.
- Presents an explanation of the creation and continued growth of the "modern industrial enterprise."
- What characterizes a "modern business enterprise" (MBE):
 - Contains a number of distinct operating units
 - Is managed by a hierarchy of full-time salaried executives
 - Big
 - Private
- The modern industrial enterprise (MIE) is a sub-species of the MBE. It carries out modern production processes through a collection of operating units, each with its own specific facilities and personnel, whose combined resources and activities are coordinated, monitored, and allocated by a hierarchy of middle and top managers. (However, lots of modern businesses don't have multiple facilities.)
- Why the MIE developed
 - Needed to invest in production facilities large enough to capture the full potential of economies of scale and scope that technological advances (think railroad, Bessemer steel, oil refining, cigarettes, and sewing machines) brought.
 - Invest in product-specific marketing, distribution and purchasing networks. (Singer integrated forward to have spare parts and technical skill at point of sales and service.)
 - Recruit and organize managers with capabilities to meet challenges of ever-changing technologies and markets.
- Competitive advantages of MIEs were far fewer in labor-intensive, rather than capital-intensive, industries. MIEs clustered in food, chemicals, petroleum, primary metals, and certain machinery groups. Relatively few in textiles, apparel, lumber, etc. Critical step in creating an MIE: constructing a plant of optimal size to exploit economies of scale. This optimal size varied from industry to industry.
- Why did the MIE appear suddenly in the last quarter of the 19th century?
 - In the 1880s and 1890s, new mass-production technologies, those of the Second Industrial Revolution, brought a sharp reduction in costs as plants reached minimum efficient scale.
 - Not until the 1870s, with the completion of modern transportation and communication networks - the railroad, telegraph, steamship, and cable - and of organizational and technological innovations necessary to operate them as integrated systems could materials flow into a factory or processing plant and finished goods move out at a speed, volume, and precise timing to achieve significant economies of scale. In short, the revolution of transportation and communication created opportunities for a revolution in production and distribution.
- Investment in product-specific marketing, distribution, and purchasing networks.
 - Large volume manufacturers had economies of scale previously reserved to distributors.
 - New products often required specialized skills or facilities for marketing or distribution (e.g., training people on sewing machines or refrigerating foodstuffs)
 - As scale produced natural oligopolies, manufacturers could no longer rely on intermediaries who made their profits handling the products of multiple manufacturers.
 - Integrate into purchasing because of need for specialized buying skills (more advanced inputs, too), importance of coordinating flows, and volume discounts obviated the need to pay a middleman.

- How the MIE continued to grow
 - Horizontal combination: acquiring others in similar markets
 - Vertical combination: backwards or forwards integration
 - Geographic expansion
 - Product diversification
 - Recruiting, first-mover advantages.

20.2 *Monopolization by "Raising Rivals' Costs," Granitz, Klein*

- Standard oil monopolized the petroleum industry during the 1870s by cartelizing petroleum transportation, the only stage of production in which entry was difficult.
- In 1871, three railroads decided to enlist the cooperation of several oil refiners to enforce a collusive rail freight pricing agreement. They set up the Southern Improvement Company, owned jointly by the largest refiners in each of the refining centers. Standard Oil was the SIC member in Cleveland.
- Refiners allocate petroleum shipments so that each railroad earns a fixed, agreed-upon share of shipping market. Thus, railroads could not gain market share by cutting rates. In exchange, railroads would give deep discounts to these "eveners."
- Crude oil producers were able to block the formation of Southern Improvement Corporation.
- Granitz and Klein observe that Rockefeller's acquisitions of his Cleveland competitors took place after SIC was set up and before agreement was blocked. They offer evidence that Rockefeller was able to use the threat of the SIC agreement to buy rivals cheaply.
- Price discounts from railroads changed normal merger for monopoly scenario: sellers no longer had incentive to hold out for higher price due to potential for price squeeze. (Transportation was roughly 40 percent of kerosene export price)
- So Standard rolls up Cleveland and then, in 1874, secretly merges with the largest refiners in Pittsburgh and Philadelphia, controlling 40% of U.S. refining capacity.
- Eventually controlled 90% of refining capacity. Used capacity shifts to punish Pennsylvania Railroad during a rate war in 1876-1877.
- Standard had to move quickly into pipeline technology or risk losing its transportation monopoly.
- Discovery of new fields outside of oil regions, in particular Texas, weakened cartel.
- Conclusion: Vertical relationship between Standard and railroads required horizontal market power or collusion.

Part IV

The Twentieth Century

21 The Great Depression

21.1 *Lessons from the Great Depression*, chapters 1-2, Temin

- What changed from 1913-1920:
 - International credit positions
 - * US became largest creditor nation
 - * Britain spent much of its capital
 - War reparations requirements (even though Germany avoided most of these)
 - Gold standard abandoned and painstakingly rebuilt.
 - France and Germany had large real financial changes
 - * France had large inflation during war. Weren't willing (lots of farmers) to suffer devaluation. Undervalued franc and accumulated gold.
- Temin's thesis: While most have tried to find the cause of the Great Depression in the propagation of a small impulse to an unstable system, the source is better described by a severe shock attributed to the First World War. Policy makers, blindly faithful to the ideology of the gold standard that no longer fits the times, exacerbated the shock through a determination to adhere to contractionary policies.
- There was a general fear that abandonment of the gold standard would lead to a depression. Temin argues just the reverse.
- Depression was not the inevitable result of World War I. Had economic planners seen that institutions of Edwardian era were no longer viable (in particular, the gold standard), things would have been different. The Great Depression was not inevitable in 1929 or even after the first large fall in production.
- Inefficient balance of gold supply: both France and the U.S. had excessive gold reserves. World would have benefited had they taken the following course:
 - Inflate currency \Rightarrow higher nominal income \Rightarrow more imports \Rightarrow gold outflows \Rightarrow more efficient distribution of gold
- Financial powers drew conclusion that floating interest rates after abandonment of Gold Standard led to economic chaos. Got causality wrong.
- Temin takes on offered explanations for propagation of the Great Depression
 - Stock Market Crash: Crashes had occurred before without economic disaster. Crash of 1929 reduced private wealth by 10%, but this alone cannot explain output declines of the 1930s.
 - Smoot-Hawley Tariff in 1930: should have been expansionary in the U.S.
 - First banking crisis: Americans had experience with short-term restrictions on payments. There was no substantial rise in interest rates after initial failures, and no increase in bank failures outside of the two banks in question (see Bernanke)
 - Collapse of commodity market prices: real effects depends on status as net importer or exporter. U.S. effect was mixed.
- Countries clinging to gold standard, Germany, U.S., Britain, and France, tried to take the following path:

- Depress currency \Rightarrow import less \Rightarrow increase gold reserves \Rightarrow economy reinflates
- This didn't work because everybody was trying the same thing. Even France and the U.S., with excess gold reserves, followed orthodoxy of gold.
- Temin concludes that contractionary monetary policy designed to protect gold standard and root out speculation was the cause of the Depression.
- Distinguishes between static and dynamic effects of deflation:
 - Static effect: same nominal amount of money buys more goods. This type of deflation "substitutes for depression."
 - Dynamic effect: Expectations of continued deflation will cause individuals to postpone consumption until future periods, when prices may be even lower. People choose not to borrow out of fear of paying back loans with dollars worth more than at present. This type of deflation "causes depression."
 - Results of deflationary policies: seen in the U.S. after continued with deflationary policies. At first, static effect dominates and conditions briefly improve, but dynamic effect takes over and depression follows.
- German situation: allows inflation in the early 1920s, in part to reduce real value of WWI reparations. By 1930, fear of another outbreak of hyperinflation drives contractionary reaction to economic downturn. Neither French nor Americans willing to help out the Germans.
- British situation: After being the lynch pin of pre-war Gold Standard and main impetus to return, Britain is the first to abandon gold, doing so in 1931 (U.S. leaves gold in 1933 and France in 1936). Considered a failure and a "beggar thy neighbor policy." Devaluation stops British contraction. Production increases through export boost. But rather than pursuing expansionary policy, now possible with monetary policy freed from gold, adheres to contraction in the belief that this is what the world needs. To respond to comparatively low American interest rates, Britain sells dollars, choosing contraction over expansion.

21.2 *Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression, Bernanke*

- Temin thinks this is a great paper because:
 - It tells a simple, convincing story
 - Readers believe the conclusion before they see the data
 - He expands on the model verbally (he had the intuition before the formal model was developed by others.)
 - Introduces a simple term: "cost of credit intermediation."
 - Very well-written and modest article
- Bernanke observes that financial crises coincide with adverse developments in the macroeconomy.
 - It does not appear that adverse developments cause financial crises
 - * Financial crises come first
 - * Many financial panics unconnected with output declines.
 - Monetary explanations for the effect of financial crises on the macroeconomy seem insufficient to explain the Depression.
 - * Theory cannot explain why monetary causes had such a long-lasting effect on the economy. Empirics show reductions in the money supply can't explain the depth of the Depression.
- Bernanke considers a nonmonetary explanation for the effect of financial crises on output.
 - Intermediation between some classes of borrowers and lenders requires market-making and information-gathering services.
 - Banks had a comparative advantage in these services: bank failures increased the "cost of credit intermediation," making the financial sector less efficient.
 - As the cost of credit intermediation increased, some borrowers (households, small firms, and farmers) found credit to be expensive and difficult to obtain, leading to a decrease in aggregate demand that turns the severe, but not unprecedented downturn of 1929-1930 into the Depression.
 - Explains length and depth of the Depression without assuming irrationality.
- Model
 - Lenders must distinguish between good borrowers with socially optimal project and bad borrowers with no project.
 - Cost of credit intermediation (CCI): cost of channeling funds from savers into the hands of good borrowers; includes screening, monitoring, and accounting costs as well as expected losses inflicted by bad borrowers.
 - The two types of financial crises (bank failures and debtor crises) raised the CCI
 - **Bank failures:** banks minimize CCI through their expertise in evaluating borrowers, having long-term relationships with borrowers and using loan conditions to induce self-selection of good borrowers by loan conditions.
 - When banks failed, borrowers switched to other lenders with less experience and higher CCIs.
 - **Debtor crises:** screening becomes more costly as fall in money and prices increases the debt/collateral ratio.
 - As CCI increases, banks limit the supply of credit to small borrowers (those for whom credit intermediation is most costly); large corporations are largely unaffected.
- Empirics:

- Using monthly data from 1919-1941, Bernanke regresses output on money and price shocks: they explain less than 50% of the output decline.
- Then he adds in a proxy for the financial crises (deposits of failing banks and liabilities of failing businesses) on the right hand side of the equation.
- This does not change coefficients on money and prices (suggesting that this nonmonetary channel augmented the effects of money and prices, not substituted for it). But it adds a lot of explanatory power to the regression.
- Sensitivity checks: he uses other proxies for the extent of the financial crisis: (1) 2SLS, instrumenting for rate of loan growth with suspended bank deposits and failed firm liabilities, and (2) the difference between the Baa corporate bond rate and the U.S. government bond rate.
- Key identifying assumption: bank and business failures are not caused by anticipation of future output changes. He argues this is reasonable because businesses fail due to insolvency (past performance), and idiosyncratic factors cause bank failures.
- His story can explain the depth and the length of the Great Depression (the decrease in availability of credit lasted from 1931 to 1935.)

21.3 *The Macroeconomics of the Great Depression, Bernanke*

- Temin: Was the depression caused by falling aggregate supply or aggregate demand? Since both prices and quantities fell, we would guess that demand was the culprit.
- Notes that most discussion of the causes of the Great Depression have focused on America. Bernanke takes a comparative approach.
- Argument: monetary contractions were the main cause of the Great Depression. The gold standard prevented central banks from conducting expansionary policy. As monetary shocks are nominal demand shocks, one needs to explain why these shocks had real effects (an upward sloping rather than flat aggregate supply curve). On the supply side: credit constraints caused monetary shocks to have real effects and interventionist policies led to rigid nominal wages.
- One nifty equation forms the basis of the whole paper:

$$M_1 = \frac{M_1}{Base} \cdot \frac{Base}{Reserves} \cdot \frac{Reserves}{Gold} \cdot P_{Gold} \cdot Q_{Gold}$$

- Some observations on each component:
 - M_1 falls particularly strongly in those countries on the gold standard.
 - $\frac{M_1}{Base}$ (the money multiplier) falls sharply due to bank runs.
 - $\frac{Base}{Reserves}$ (the inverse of the gold backing ratio): gold backing had a legally binding minimum (a maximum $\frac{Base}{Reserves}$ ratio) in most countries, forcing central banks to intervene if this fell below. But it didn't have a maximum, so $\frac{Base}{Reserves}$ could fall sharply. $\frac{Base}{Reserves}$ tends to fall in countries that experience increases in Q_{Gold} , reflecting the fact that central banks generally sterilize the impact of increases in the quantity of gold.
 - $\frac{Reserves}{Gold}$: falls sharply due to exchange rate crisis; i.e. central bank with its currency under attack loses international reserves as it defends currency.
 - P_{Gold} : didn't change much during period in question.
- Bernanke concludes that banking crises, foreign exchange crises, and the sterilization of increases in the quantity of gold caused the contraction of M_1 . Also finds that banking crises only occurred in countries still on the gold standard. (Mundell-Fleming: gold standard removes central banks' ability to function as a lender of last resort.)
- Given that countries abandoning gold standard removed external constraints on monetary reflation, seems that they would enjoy stronger and quicker recoveries than those that adhered to gold. Bernanke notes that any endogeneity bias in the selection of exchange rate regimes would bias estimates of the effect of the gold standard negatively: we'd expect that financially weaker countries abandoned gold first.
- Bernanke's panel regressions suggest that the gold standard could be responsible for contraction.
- Conclusion/summary: analysis supports view that monetary contraction was leading source of Great Depression and that monetary reflation was the source of recovery. Furthermore, on the supply-side, wealth redistribution (caused by debt deflation) may have had aggregate effects in the redistribution, and this was enough to cause financial panics. Empirical evidence suggests that slow adjustment of nominal wages was an important factor leading to monetary "non-neutrality."

22 Recovery

22.1 *Lessons from the Great Depression, chapter 3, Temin*

- By shifting to a new policy regime of expansionary intervention, the U.S. and Germany lifted themselves out of the Great Depression. This suggests a tendency towards capitalism at times of prosperity and socialism in times of distress.
- Regime shifts versus isolated actions: continuing a theme of the book, Temin asserts that policy actions alone were insufficient to "stem slide into the abyss." More important than any particular policy change was the indication of a fundamental shift in attitude by U.S. and German governments around 1933. Expansionary ideas had replaced contraction. This shifted individual expectations and paved the way for investment and consumption increases.
- Comparing the recovery in Germany and the U.S.: Temin thinks depression ended in both in 1933. Recovery in Germany is led by consumption, as Germans expand through increasing employment at the cost of lower wages. American boom derives from investment, with policy that focuses on maintaining wages at the expense of employment.
- Wages and employment: Temin argues that favoring employment over wages leads to short term gains, as increased national wealth can be redistributed to the general benefit. In the long run, however, Temin seems to believe that maintaining wages wins out, owing to greater rewards for innovation and technical progress.
 - Some statistics: Germany lowers unemployment from 30% to 2% between 1933 and 1938 (some of this comes from pushing women out of the workforce). In the U.S., unemployment falls from 24% to 14% in 1937, before climbing up to 19% in the recession of 1938.
- Characteristics of the socialism of recovery
 - Regulation of ownership or the "commanding heights" of the economy (transit, communications, utilities, etc.)
 - Heavy involvement of the government in wage determination.
 - Redistribution of "social dividend." The last feature has been the most enduring. Social Security and Medicare in the U.S. and Health Services in Britain are barnacle-like national institutions.
- Aside: Temin likes to refer to the period from 1914 to 1945 as the "Second Thirty Years War," highlighting the tensions of the interwar period, characterized by French and American hoarding of gold.

22.2 *The Great Depression as a Watershed, Obstfeld, Taylor*

- Main framework to understand the history of capital mobility: Macroeconomic Policy Trilemma, i.e. only two of the following are consistent. (Cannot have all three at once.)
 - free capital movements
 - fixed exchange rates
 - domestic monetary policy
- The main political lesson from historical experience: The Great Depression was caused by ill-advised subordination of monetary policy and Bretton Woods regime is based on cooperative agreements (with seed of destruction)
- Phases of capital mobility: high in pre 1914 times (gold standard), low in the Interwar Period (IP), improving in 1950-1970 (Bretton Woods) and high in recent periods with floating exchange rates.
 - Empirical evidence based on current account ratios ($\frac{S-I}{Y}$) (low in IP), covered interest rate parity (Sterling bills in US as forward instrument) (high dispersion in IP), real interest rates (high standard deviation in IP)
- WWI and IP
 - Pre 1914: Britain and central banks' commitment to free trade make convertibility credible. This equilibrium is destroyed by WWI
 - Controls in the 1920's with floating exchange rate (hyperinflation and chaos of war) and 1930's with fixed exchange rate (exploit domestic monetary policy to fight depression)
 - Countries staying on fixed exchange rates ("gold bloc") had more severe crises
- WWII and Resurgence
 - Experiences of IP cause disillusionment with floating exchange rates and laissez-faire. Hence: Aim for international cooperation that solves the trilemma by *international* controls and cooperative revaluation.
 - The 1970s showed us that capital controls are not sufficient to deal with speculative attacks (especially when revaluation is expected)
 - Bretton Woods is abolished in 1973 and the trilemma is solved by floating exchange rates
 - Lessons: In times of international market integration and liberalization of *domestic* financial markets, capital controls have little power.

22.3 *Interpreting the 'One Big Wave' in U.S. Long-term Productivity Growth, Gordon*

- Fact: Growth rate of multifactor or total factor productivity (MFP/TFP) decelerated sharply in the US and most other industrialized nations around 1973.
- Why? Other single-cause explanations of this "productivity slowdown" include:
 - Fluctuations in energy prices
 - Inadequate private investment
 - Inadequate infrastructure investment
 - Excessive government regulating
 - Declining educational test score
- Time has rejected these as complete answers, although they may contribute.
- Rather than a slowdown, Gordon sees "one big wave" - high growth (MFP/TFP) from ~1913 to ~1973 relative to the pre-1913 and post-1973 lower, relatively stable growth in MFP/TFP.
- Gordon disagrees with the assumptions in the original data series, so he adjusts them: Composition adjustments for labor and capital.
- Labor: Increase in the labor force share of females, teenagers (lower earnings weights) gives us slower growth during 1964-1979.
 - The time path of growth of education and decrease in growth of hours/year of education decreases TFP growth.
- Capital: Capital investment shift from "structures" to "equipment" leading to slower growth due to higher depreciation rate (about 4x) of equipment (upgrades, durability, etc.) Buildings just last longer than machines.
 - More recently, TFP falls even more with short-lived computer capital. Quality changes increase capital retirement rates. Smaller machines require less structure.
 - How does this change affect productivity? Get more services per dollar invested in equipment.
 - Omitted capital (Government owned, privately operated GOPO plants from WWII) and government owned infrastructure (public highways, airports, etc.) boost the growth rate of capital input.
- What is the source of this one big wave? Also, why does this wave go away? Four big inventions:
 - Electricity
 - Internal combustion engine
 - Petroleum and other processes that "rearrange molecules" (i.e. plastics, petrochemicals, pharmaceuticals)
 - The complex of entertainment, communication, and information innovations.
- Other hypotheses:
 - Immigration and codependency of productivity and real wages: immigration depresses real wage increases. Mass immigration waves (and baby boom to labor force growth) vary inversely to the "wave." (female, teenager hypothesis of Gordon magnifies this.)
 - Real wage convergence (reduction in inequality) in 1940s and subsequent divergence.

- Growing openness to trade - convergence due to trade slows down leading countries while speeding up growth in trailing countries. Trade-restricting legislation in 1920s and 1930s increases TFP over time, decreases TFP later.
- "Heavy" and "Light" technology - innovation toward space-saving (using same structure space with more machines.)
- Conclusion: Big wave smoothed out (shifted) somewhat, but still remains.

23 The Economics of Wars

23.1 *Cowards and Heroes*, Costa, Kahn

- Analysis of the effects of social capital as an incentive device to motivate effort and reduce shirking in a historical context: the degree of loyalty by members of the Union Army in the Civil War.
- Main question: Why did most soldiers (90%) enroll voluntarily if pay was low and irregular and why did they not defect if punishment mechanisms were weak?
- Dependent variable: degree of loyalty measured as whether or not a soldier has deserted, been arrested, or been absent without leave (AWOL)
- Possible causal explanations or motivations: individual characteristics, community (company) characteristics, ideology, and morale.
- Uses a competing risk hazard model in which hazard ratios give the change in the probability that someone deserts, is arrested, or goes AWOL
- Most significant results

Motivations	Some proxies	Major econometric findings
Individual	occupation, wealth, nativity, age, marital status	<i>less</i> loyal if younger, illiterate, poor, Irish and British, not German, married
Community	birthplace, fragmentation, age diversity, own nativity	<i>less</i> loyal if more heterogeneity in company
Ideology	volunteer status, pro-Lincoln country	<i>more</i> loyal if volunteer and from pro-Lincoln counties
Morale	% in company dying, numbers of victories	<i>less</i> loyal if more people dying, <i>more</i> loyal if winning in battle

- Observations: almost all coefficients appear to be significant
- Conclusions:
 - Social capital and fear of loss of honor substituted for incentive pay
 - Same type of variables that predict commitment to organizations in civilian life predicted loyalty in the Union army in the past
 - Community heterogeneity appears as an important factor to determine participation. More heterogeneous companies tended to have more desertion
 - Social capital helps organizations: self-enforcing peer-pressure, self-esteem tied to the group, endogenous altruism

23.2 *How Much Did the Liberty Ship Builders Learn?, Thompson*

- This paper considers what was previously thought to be one of the "cleanest" examples of "learning by doing" (a la Arrow), in the Liberty shipbuilding programme of World War II
- Undertakes a growth accounting exercise to determine the contribution of "experience" to the extraordinary productivity growth shown over duration of the programme (average annual rate of 40 percent)
- Key observation - studying of learning where the factors that may be correlated with time or with cumulative production are omitted could cause attribution of their effects to learning, resulting in an upward bias in perceived role of learning.
- This paper contains two innovations through "new" data.
- Physical capital investment (on a shipyard level, based on smoothed data on capital authorisations from the US Maritime Commission.)
- Quantitative measures on vessel quality (on individual ship level, based on recorded incidents of fracturing from various sources.)
- Previous studies (e.g. Rapping 1965, Argoe et al 1990) attributed virtually all productivity growth in the Liberty ship programme to learning (reflecting absence of good capital data)
- Use of number of authorised ways in each yard as proxy not good (exhibited little time variation, whereas other measures of machine/crane expenditure did)
- Process of capital deepening over life of programme was extensive, clearly correlated with cumulative output
- Estimation issues
 - Incremental investments were direct and immediate responses to increases in scope of Emergency Program, rather than reflecting the effects of learning being embodied in capital; thus can treat desired capital as exogenous
 - Labour demand in large part also unresponsive to productivity shocks (firms had limited incentives to adjust labour inputs and substantial incentives to hoard labour), so can again treat as exogenous.
 - Also allowed for changing shift practices over time
 - "Experience" measured by both cumulative output (possibly subject to finite sample bias) and cumulative labour input
- Results:
 - Introducing capital data into regressions uniformly induces a significant reduction (close to half) in estimated impact of experience on productivity - ceteris paribus doubling of experience raises monthly output falls from 41 percent to 20-22 percent (former if adjusted for capacity utilisation)
 - Evidence of quality-quantity trade-off in Liberty ship production - reduction in labour hours/time expended on production strongly associated with an increase in likelihood that ship subsequently develops fractures; hazard rates declining with time in service indicates defects rather than stress in service as significant cause of fractures.
 - Extent of mismeasurement induced by omitting quality factors perceived to be small (estimates no more than 6 percent of measured productivity growth) with gap between measured and quality-adjusted productivity growth diminished markedly after the 1943 design changes.
- Caveats

- Cumulative capital investment and experience highly correlated, so separating effects reliably is difficult.
- Possibly more omitted variables in analysis (e.g. research and training programmes, development of new welding machines.)

24 Assessing US Growth

24.1 *New Estimates of Prewar Gross National Product and Unemployment, Romer*

- Revises pre-war data on GNP and unemployment
- Romer finds that previous work by Lebergott and Kuznets (in the 1960s) overestimated volatility.
- Lebergott used commodity price and production data to interpolate GNP data for the intercensal years. Problem: Assumed fluctuations were 1-for-1.
- Lebergott also calculated unemployment rates for the same period, which were also commonly used (and believed). The problem was that he failed to account for the cyclical nature of the labor force when calculating the unemployment rate (but he did account for the cyclical nature of the number of unemployed). Romer tries to correct this as well.
- Romer regresses changes in GNP on changes in commodity production for the period for which we have good data and finds that the coefficient on commodity prices should be about $\frac{1}{3}$.
- Why this is important:
 - These results challenge the belief that the 40 years before the Great Depression were more volatile than those in the postwar era.
 - Also challenges the notion that business cycles are lengthening; by smoothing prewar fluctuations, some cyclical lows disappear.
 - Note that Romer qualifies that these results do not challenge the severity of the Great Depression. (In contrast to Costa's findings)

24.2 *Estimating Real Income in the United States from 1888 to 1994, Costa*

- The CPI has a bias prior to 1970. When we correct for this bias, we need to rethink some of our long-held beliefs about real wage movements.
- Because of taste changes, relative price changes, changes in shopping patterns (particularly buying at discount stores), quality improvements of existing goods, and the late introduction of new products into the CPI, the CPI likely overstates the true cost of living.
- This is especially a problem during the 1930s, when (according to Field) there was a huge increase in the number of new products. (i.e. the consumer's bundle was changing rapidly in the 1930s.)
- How Costa came to notice this was a problem: found in another paper that the share of expenditures on entertainment was rising during the 1930s. However, the real income elasticity of entertainment is generally thought to be greater than 1.0. What was going on?
- Uses Engel curves and household expenditure data to look at food and entertainment expenditures, because they have income elasticities substantially different from 1.
- Finds inconsistencies between trends in total real expenditures (adjusted by the CPI) and trends in food and recreation expenditures, especially in the 1920s-1930s and the 1970s-1980s. Believes that this can be partially explained by CPI biases.
- CPI bias was minimal before 1919. Rose to 0.7% per year between 1919 and 1935 and as high as 2.7% per year from 1972-1982.
- Key implications: real incomes were rising during the Great Depression so real expenditures in 1935 were above their 1919 levels. Real income growth rates in the heretofore-considered-stagnant 1970s were as high as they were in the 1980s. (4%)

25 Inequality

25.1 *The Great Compression, Goldin, Margo*

- "Great Compression" describes the wage narrowing that occurred in the U.S. during and after WWII. Wages narrowed by education, job experience and occupation, and wage variance within categories of workers declined as well.
- Emphasize that this phenomenon was in many ways similar to wage stretching that occurred after the 1970s.
- Considering only white men, the ratio of log weekly wages of 90th percentile to those at the 10th percentile fell from 1.45 to 1.06 between 1940 and 1950. The same measure was 1.46 in 1985.
- One hypothesis for the change is that the National Recovery Act and National War Labor Board may have played a role through the minimum wage, limiting raises, etc.
- Main source of data is the census (and PUMS). Use available industry specific data with finer date ranges to attempt to get at effects of war board.
- They find that although there is some data suggesting that the compression began before the 1940s, it appears in their data that returns to schooling may not have been reduced until the 1940s.
- Find that wage structure did not immediately rebound to pre-war levels after WWII the way it had after WWI. Attributes this persistence to:
 - Relative demand for less educated workers.
 - Strength of American labor movement.
 - Increases in the supply of educated labor served to depress the price of skilled labor.

25.2 *Decreasing (and then Increasing) Inequality in America, Goldin, Katz*

- MAIN POINT: Data on wage structures, skill differentials, and the return to education indicate that measures of inequality in America fell sometime between 1890 and 1940, most likely in the late 1910s.
 - Authors review old data and present new data indicating that the first half of the 20th century (not just the 1940-1950 WWII "Great Compression") was characterized by decreasing levels of inequality.
 - This other compression also likely occurred during wartime - WWI
 - Issue: The US Census didn't start asking questions on education and income until 1940. The authors assemble a variety of other data sets to look at earlier period.
 - Large increase in inequality in US since the 60s (especially during the 80s). Authors note that "Economic inequality and the returns to years of education are as high today as they were sixty years ago, at the end of the Great Depression and at the start of World War II"
 - * Based on comparison of 1940/2000 Census data
 - * Used other data to conclude that 1939 was not an anomalous year, despite it leading WWII and tailing the Great Depression.
- Findings on **wage structures**
 - 1905-1930 skill ratios calculated for machinists, building trades, printing compositors, printing electrotypers, and printing machine operators
 - * big drop in ratios 1916-1920
 - Comparison of complete wage distribution in 1890 and c.1940 from 1890 Census of Manufactures and BLS "wage and hours" series (1940)
 - * More compressed wage distribution c.1940
 - * Conclude compression happened somewhere over the 50 year period.
- Findings on **skill differentials**
 - Also find declines for white collar to manual worker wage ratios
 - * White collar/manual wage compressed in late 1910s/early 1920s
 - * College professors/production employees in manufacturing
 - Again reduction late 1910s/early 1920s (ratio spiked up during the depression but went down afterwards)
- Findings on **returns to formal schooling**
 - "High school movement" - 1910-1940 - tons of Americans started going to high school
 - Data from 1915 Iowa state census - very detailed educational info
 - * Iowa was a leader in educational enrollment
 - * Using 1940 and 1950 Census data, argue that Iowa data is probably a good proxy for US trends
 - * "Mincerian" earning functions (i.e. $\ln(\text{earn}) = \alpha + \beta_1 \text{edu} + \beta_2 \text{exp} + \beta_3 \text{exp}^2$) augmented to allow variation in return to different types of schooling
 - Return to post-elementary education higher in 1915 versus 1940, especially for younger people.
- Finally, the authors speculate on why the wage structure changed as it did
 - Between industry and within industry shifts in demand favoring more educated workers

- * Skill-biased technological change
- Argue that compressions weren't just the war, although wars played a very big part
 - * Persistence of compression in U.S. notable
 - UK had only short lived compression in wages after WWII
 - Argues that market forces at work in U.S. kept compressions around

25.3 *The Wage and the Length of the Work Day, Costa*

- Dora investigates the relationship between wages and hours worked per day over the hundred years from the 1890s to 1991.
- Main results:
 - 1890s: highest paid workers worked fewer hours than the lowest paid
 - 1973: all worked approximately the same
 - 1991: highest paid worked more than lowest paid
 - * So two major changes in the distribution of hours worked by different wage deciles: sharp compression between 1890s and 1973 (most of it presumably already by 1920) and then reversal of who worked longer between 1973 and 1991
 - Note, though, that hours worked decreased in absolute terms from around 10 hours and 6 workdays a week in 1890s to 8 hours and 5 workdays in 1973
 - These findings are fairly robust, even within industries, occupational groups, or wage deciles.
- What data/method does she use?
 - The analyzed groups are prime-aged men and women (married and unmarried)
 - Analysis restricted to nonfarm, single-job-holder wage and salary workers
 - Data for 1890s
 - * Come from various cross-sectional surveys available from California, Kansas, Maine, Michigan, Indiana, and Wisconsin
 - * These surveys asked for hours worked daily, workdays per week, and wages
 - * Hourly wages are reported only for hourly paid men
 - Taken as one wage variable
 - * For all others, she constructs hourly wages, e.g. for those paid daily just divide the daily wages by hours ;), for yearly paid, she assumes 307 workdays per year
 - * Some workers were paid by output. These are just deleted from the analysis
 - * Since the data is from different years, wages are adjusted to real 1895 dollars
 - Data for 1973 and 1991
 - * These come from the Current Population Surveys in these years
 - * Here the hours per day had to be constructed from hours per week
 - * Again, there are two wage variables: one for those who were directly paid by the hour, another constructed from weekly earnings
 - In her regressions, she controls for demographic variables (age, foreign birth, number of dependents, state fixed effects, etc.)
 - She also decomposes the data (1) into different occupational groups (2) into different industries, and (3) into different wage deciles. All analyses don't change the results significantly.
- What caused the compression/reversal in hours distribution:
 - Possible explanations are
 - * **Unionization:** unions are in favor of shorter workdays. More people in the unions implies that all get the same workdays. However, there is no evidence for this!
 - * **Hours Legislation:** unlikely, since most of the decline and compression already occurred before 1920s, and hours before 1935 were only regulated for women and for some dangerous jobs. Also, the overtime regulation (in place since 1938) cannot be identified as causing the widening of the distribution after 1973.

- * **Weekly, Yearly, and Life-Cycle Hours:** Maybe in the 1890s, high seasonal unemployment for lower paid, and they made up for it by working longer days when employed. Dora tests this hypothesis and finds no evidence for it.
 - * **Work Intensity and Synchronization** (Likely explanation): Work schedule synchronization within a firm \Rightarrow more efficient production processes, better planning. Work schedule synchronization among firms \Rightarrow e.g. with suppliers, also affecting white-collar work. Demanded by workers to synchronize with family members, friends, store opening hours. Work intensity higher because of higher efficiency led to less hours being required.
 - * **Labor Supply** (also a likely explanation): Strongly negative correlation of hours to wage in the past could have been due to income effects being much larger than substitution effects (i.e. higher wages translated into higher consumption of leisure), since under the working conditions, longer days were just horrible. Also, the access to saving devices to smooth consumption and maybe retire earlier were limited. Although it is hard to estimate labor supply elasticities for the 1890s, some suggestive evidence for this hypothesis exists.
- Why do we care?
 - Changing hours/wage relation has implications for earnings inequality
 - * 1973-1991: 26% of the increase in earnings inequality for men between the 90th and 10th wage deciles can be attributed to differences in hours worked.
 - * For women, all of the earnings inequality can be attributed to differences in hours worked.
 - * In the 1890s, the lower earners worked longer, so this led to more earnings equality. From the 1970s on, the higher earners worked longer hours, exacerbating the wage inequality.
 - * Bottom line (literally): studies of income inequality must take hours worked into account.