UNILAB NETWORK

ECONOMIC HISTORY READINGS

Class 16

HANDOUT

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READINGS FOR THE FIRST PARTIAL

Allen, R. C.; Global Economic History, Chapter 1, "The Great Divergence"

Overview

Main topic: Why did the Industrial Revolution happen in Britain, in the eighteenth century?
Theories talk about:

- Technological change as the immediate cause of growth: steam engine, the cotton spinning machinery, and the manufacture of iron with coal and coke
- invention on this scale was unprecedented, and it inaugurated an era of industrial expansion and further technological innovation that changed the world
- Consequences of technology: rapid urbanization, capital accumulation, increases in agricultural productivity, the growth of income

Allen's explanation two parts:

1) Expansion of the early modern economy (1500-1750): unique structure of wages and prices in 18th century Britain.
    1. Wages remarkably high
    2. Energy remarkably cheap
2) Industrial revolution: Steam engine, the water frame, the spinning jenny and the coke blast furnace increased the use of coal and capital relative to labor.
    1. adopted in Britain because labor was expensive and coal was cheap, and they were not used elsewhere because wages were low and energy dear
    2. Invention was governed by the same considerations
    ➔ The Industrial Revolution, in short, was invented in Britain in the eighteenth century because it paid to invent it there, while it would not have been profitable in other times and places.

End of industrial revolution (1830/1850): railroad and steamship and then novel manufactures like Bessemer steel appeared on the scene.

- The cotton mill and the coke blast furnace were invented in Britain because they saved inputs that were scarce in Britain and increased the use of inputs that were abundant and cheap. For that reason, these techniques were not immediately adopted on the continent or anywhere else in the world
- Landes (1969): period up to 1850 = "continental emulation" → French, Germans and Belgians were only beginning to use British techniques and pre-industrial practices remained dominant

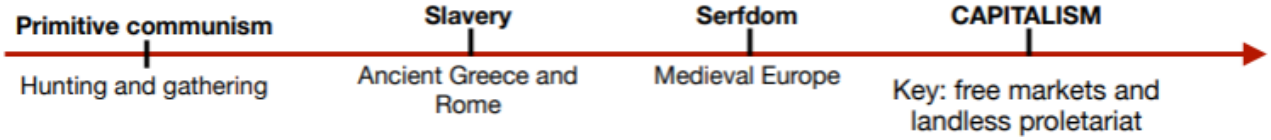
Closing gap (1850-1873): modern technology displaced traditional methods, and European industry could compete on an equal footing with British

- British engineers studied the steam engine and the blast furnace and improved them in order to lower costs → profitable to use new technologies everywhere.
- By the middle of the nineteenth century, the genius of British engineering had improved the technologies, thereby eliminating the competitive advantage they had given Britain.
- Global diffusion marked the end of the Industrial Revolution

Explaining the Industrial Revolution

Social structure

Marx: stress the importance of social structure
Society evolved through stages:



Markets are necessary to guide economic activity, and the bulk of the population must lose its medieval property rights so that it is willing to move to the cities and for agricultural productivity to grow.
Since Marx, new discoveries about medieval world:

- Studies of grain prices show that markets were wide- spread and as efficient as they were in the eighteenth century
- Economy of cities and towns was vibrant and commercial
- Cropping patterns were responsive to environmental and commercial opportunities, and productivity was much higher than once believed

BUT:

- For most of the middle ages, a majority of the English were serfs and held land in villeinage (could only litigate in the manorial courts presided over by their lords)
- no secure public protection against violence by their lords
- subject to a variety of assessments that reduced economic incentives
- Labor mobility was inhibited, since a serf could not leave the estate without permission
- Tallage: assessment initially to random the lord, but convenient and elastic revenue source that became routine.

➔ The emergence of capitalist institutions was a necessary, if not a sufficient, condition for modern economic growth.

Constitution and property rights

Liberals → favor "minimal government" → parliamentary checks on the executive, the security of property rights, the flexibility of the legal system.
Glorious Revolution of 1688: consolidated parliamentary ascendancy, limited royal prerogatives and secured private property.
→ favorable climate for investment → Industrial revolution
Critiques: - No banking and interest structural break → ↑investments were not manifest in finance

- UK property rights were at least as secure in France (almost too secure: some projects only undertaken after French Revolution → power to national assembly)
- Taxes were higher in Britain than across the Channel

The Scientific Revolution (17th Century)

- Started in Italy with Galileo and ended in England with Newton
- 'Naturalists' could benefit the economy by inventing new products and solving production problems - Boyle (1671): possibility of inventing engines to mechanize production
- While a lot of historian do not believe it, scientific discoveries underpinned important technology in the Industrial Revolution

Critique:

- Scientific discoveries that mattered for the Industrial Revolution were made before 1700 and not after 1760.
- Most important: atmospheric pressure related (weight, possibility to condense it to form a vacuum)
    - Culmination: Thomas Savery's steam pump invented in 1698 and Thomas Newcomen's steam engine of 1712.
- Discoveries of seventeenth-century physics were necessary conditions for the invention of the steam engine, but they were not sufficient
- Turning the scientific knowledge into working technology was expensive → worthwhile investment only in Britain where high demand for drainage thanks to coal.

Superior rationality?

Max Weber:

- Modern people are characterized by their superior rationality, The Protestant Ethic and the Spirit of Capitalism (1904–5) → Reformation let to Western rationality → Great Divergence
- Low agricultural productivity in less developed countries because of farmers' irrationality.
- Response to changes in agricultural prices and their willingness to adopt new techniques → same rationality level in developed and non-countries.

Science as culture

Max Weber:

- A scientific attitude had to replace superstition for technological progress to occur
- Pre-modern people attributed events in the natural world to the interventions of supernatural beings
- Influence of spirituality stood in the way of the empirical, scientific outlook necessary for technological and social progress.
- Need for "the disenchantment of the world" → world as a material realm → focus on discovering its empirical regularities and natural laws → Technological development

Why did the West give up superstition?
Jacob (1997): Scientific Revolution transformed popular culture. → widespread interest in science → change of human nature.

- New person: generally a male entrepreneur who approached the productive process mechanically → mechanization of production
- Britain's lead over France was due to 'the marked differences in the scientific cultures found in Britain in comparison to France or the Netherlands'.

Why? Brits first smelted iron with coke, invented the steam engine, and discovered how to spin with machines.
Mokyr: Enlightenment connects the Scientific to Industrial Revolution. → "Industrial Enlightenment":

- application of the scientific and experimental methods to the study of technology
- belief in an orderly universe governed by natural laws that could be apprehended by the scientific method
- expectation that the scientific study of the natural world and technology would improve human life
- Industrial Enlightenment was more fully realized in Britain than on the continent.
- Easier and more fruitful communication between savants and fabricants
- Britain was more abundantly supplied with skilled mechanical artisans than France, so it was easier for engineers to realize their inventions

Scientific worldview influenced the second and third tiers of inventors critical for the elaborating and applying breakthrough technologies.
Jacob (1997): even factory operatives had to become Newtonians → mechanical knowledge needed for invention and effective exploitation of mechanical devices.

- Knowledge spread though provincial 'scientific societies, academies, Masonic lodges, coffee house lectures' etc.

Between 1500-1800: two gradual but important changes in popular attitudes → secularization and politicization.

- Growing concern of creating a better life in this world
- Pursue of Wealth and status as sign of salvation (Weber)

Culture and the economy: cause or effect?
Three cultural evolutions thanks to economic changes:

- spread of literacy and numeracy (with urbanization): cities, rural industry and commerce required more skills + printing reduced price of books → more reading for pleasure. Arithmetic studied for its utility (ship commerce)
- Emergence of consumerism (for work)
- Postponement or deferral of marriages when it was economically convenient

→ big steps in the emergence of modern men and women.

18th century level of human capital is an important reason why Industrial Revolution did not happen before.

Consumerism and hard work

- evolution of the economy also increased the incentive to work hard → availability of new consumer goods → people want income.

Mathias and De Vries: 'industrious revolution' → Steuart's "Men are […] slaves of their own wants"

- New consumerism: necessary but not sufficient to explain economic progress. → pursuit of income to buy novel consumer goods (often coming from abroad thanks to globalization) = cultural basis for industrial revolution.

Marriage and Children

Northwestern Europe developed a distinctive pattern of marriage that contributed to high living standards and a broader sphere of personal independence.
Hajnal (1965): line from St Petersburg to Trieste → on the East and South all women married, most in their teens. On the West and North 1/5 never married and most who did wait until their twenties. S-E pattern: high fertility and low living standards
N-W → European marriage pattern: low fertility and high standard of living → facilitates savings and economic growth.
Malthus: standard of living of most people was higher in England than in China because the English deferred marriage when incomes were low.
Why EMP?

- high wage economy after the black death.
- strong demand for labor → young women could support themselves apart from their parents and control their lives and marriages

The emergence of modern culture

- Culture possibly became more secular and more concerned with economic success
- Chase after new products
- Rise of modern attitudes

An economic approach to the Industrial Revolution

- Focus on demand for new technologies
- Britain's high wages and cheap energy increased the demand for technology by giving British businesses an exceptional incentive to invent techniques that substituted capital and energy for labor.
- Population at large was better placed to buy education and training than their counterparts
- High rates of literacy and numeracy contributed to invention and innovation

Habakkuk's (1962): American inventions had a labor-saving bias that accelerated the growth in output per worker→ attributed high wages → economize on labor
Abundance of land and natural resources → high wages

The transformation of the European economy, 1500–1750

Middle-Age:

- European manufacturing and commercial center was the Mediterranean (+Belgium)
- Most of British population lived in countryside → agriculture. Low productivity and income.

16th - 18th century:

- By the 18th, the economic center of gravity shifted to the North Sea.
- In the 16th and 17th century: Dutch Republic pulled ahead
- By the 17th century: British incomes pushed past France and the Habsburg Empire.
- By the 18th century: Britain overtook the Dutch

→ Reconfiguration of European economy was precipitated by increase in international Trade –

- 16th-17th: shift in location of cloth production → North Sea
- 17th-18th: intercontinental trade expansion → English and Dutch established world empires (manufacturing and commerce)
- Spanish → acquired Latin American Silver → inflation → uncompetitive production

1500: share of agriculture was for many about 75% (similar to the one of less developed in 20th century)
1500-1800: agriculture shares decreased. (England biggest drop, Spain least). Poland and England had biggest urban revolution.
Note: because of data availability countries are defined in terms of modern economy, but artificial since many of the countries were fragmented.

1500: Europe was a backward economy (3/4 of people in agriculture in England, Austria-Hungary, Germany, France and Poland). Small cities (<10% of population): 50000 people in London. Limited nonagricultural employment. Leading economies: Italy, Spain and Belgium (with a 19-30% urban fraction) → Agricultural revolution in England → rise in both urban and non-rural → Protoindustrialization

- In many parts of Europe, manufacturing industries developed in the countryside (production in workshops or at home)
- Merchants signed up rural residents as piece rate workers, brought them raw materials and collected the finished products → sold to other merchants who shipped them to the rest of Europe.
- Regions were intensely specialized (Woolen Cloth: Norwich and West Riding Yorkshire, metal buttons fitting and implements: Birmingham, stockings: Leicestershire, blankets: Oxford.

- The expansion of rural industry in northwestern Europe was associated with the emergence of new economic leaders because it came at the expense of established producers
- Dutch and English's clothes became the "new draperies"
- England successful: Black Death → fall in population → reversion of much good farmland to pasture → feed supply for sheep → their wool was longer and better suited
- Refugees from the continent brought skills that improved the quality and variety of English products

Early Modern England:

- Improvement of agriculture → tax countryside income and spent it on urban and naval areas → Rapid urbanization
- Some of the urban growth was due to manufacturing; London center of English publishing and furniture-making
- Most of the growth of cities was due to trade and commerce (intra-European trade was the basis of London's expansion)

16th century: Portugal most successful European Power in South Asia: spice trade and colonies.
Early 17th: Netherlands took "spice islands" from Portugal establishing Indonesian Empire → Amsterdam = wholesaling center for tropical produce. Trade with India → + tea + cotton

Early modern Low Countries:

- Second most successful economy
- Less than 1/2 of population was engaged in agriculture and urban and non-agricultural shares were high - Flanders (Belgium) had been highly urbanized and a leading manufacturing center in the middle ages.

Dutch Economy:

- Most advanced in the 17th: agricultural revolution → growth of urban and manufacturing economies.
- New draperies, manufacture of light cloth
- Manufacturing and rural industry were also formidable - English only overtook Dutch in late 18th

Rest of continental Europe (North of Alps and Pyrenees):

- France and Austria were major military powers
- Poland was united in 1500 but dismembered in the next three centuries
- Germany remained divided into many states throughout the period
- Prussia: international actor
- Modest development in early modern period
- Agriculture shares dropped to 60% (similar to Italy and Spain in 1500)
- Rise in proto-industry share
- Important rural manufacturing industries
- Urban shares scarcely increased → sets them apart from England and Low Countries.

- For a time, the French had some valuable colonies, but they were lost in the Seven Years War and the Revolution.

Spain and Italy:

- Absence of structural change between 1500 and 1800.
- No movement in the end of middle-age lager urban and small agricultural shares.
- Absence of growth in rural manufacturing → no proto industrialization
- Italy no foreign possession, Spain yes but only brought inflation.

From early modern expansion to Industrial Revolution

- Industrial revolution = result of long process of social and economic evolution running back to the late middle ages.
- Commercial and imperial expansion of Britain was a fundamental feature of this evolution, but not its totality.

➢ Black Death: population fall increased labor mobility by generating many vacant farms, and that mobility undermined serfdom.
➢ High wage economy: benefits of high consumption were not confined to people: sheep ate better as well → better wool → "new draperies" → exports
➢ London growth: rapid growth in the city's population and the rise of the coal industry to provide the capital with fuel.
➢ Trade boom: extended to the Americas and Asia in the 17th and 18th centuries by England's mercantilist expansion of trade and acquisition of colonies.
➢ Larger cities: advances in agricultural productivity, division of labor, greater efficiency and higher wages.

The expansion of the early modern economy was underpinned by favorable institutional and cultural developments.

- End of serfdom + establishment of a stable legal environment → capitalist enterprise → growth
- Gradual decline in superstition and medieval religion → rise of a scientific attitude → research for practical solutions
- Demand for trade and drop in book prices → spread of numeracy and literacy.
- New products (from abroad) → ↑ aspiration to consume → ↑ incentive to work and earn higher incomes

Upshot of the commercial expansion: unique wage and price structure in England in the 18th High wages and cheap energy → incentives to invent technologies that substituted capital and coal for labor → inventions → Industrial revolution
Evolution of law and culture → favorable supply response → international expansion → Industrial revolution.

Allen, R. C.; Global Economic History, Chapter 2, "The high wage economy of pre-industrial Britain", pp. 25-56

High level of prices in Britain. Workers said they had a subsistence wage, but flexible term: it is not that everybody lives at a minimum psychological level. Top wages in Britain and Low countries, followed by the rest of Europe and Asia.

Explanation: demography

- Malthus: the population expands until births and deaths equal. At this outcome → subsistence wage
  - In the positive check of the theory birth rate is always at its highest while death rate declines as wages rose.
  - In the preventive check of the theory also fertility dropped as income raised so that births and deaths equaled each other at a higher subsistence rate, depending on customs and habits and marriage pattern

Malthus argued that the preventive check on the population applied in England to all the classes of the community → late marriage retrained fertility, keeping the wages high, while in Asia positive and not preventive check, so high fertility rate and low wages.

Analysis on unskilled workers and peasants: English ones enjoyed better lifestyle than Italian, French, Indian and Chinese ones.

Benchmarks to define the standards:

- Psychological minimum: diet with enough calories to survive but no more. Cheapest grain and some legumes, quasi-vegetarian diet and very little else purchased.
    - Poor people in England had anyway better living conditions than their counterparts

Good life in the Low countries (they study consumption in orphanages), in France almost only cereals (consequences: widespread nutrition diseases), bad situation in Italy with mainly corn and polenta, Chinese within mainly rice and fish but less then Europeans and Indians being the poorest

Wages and prices

Historians study institutions such as churches or hospitals to see the price of their appraisements. The study reveals that Britain Is a high wage economy in preindustrial times

1) British wages were among the highest in the World at the exchange rate
2) Higher living standards, they could buy more
3) Higher wages relative to the price of capital in Britain than elsewhere
4) Higher wages relative to the price of energy in Britain than elsewhere

Point 1 and 2 are considered later
Point 3: silver coins are a way to compare wages across Europe. Higher inflation on silver coins in Britain and low countries even though most of the silver arrived in Spain and France. Better life in England than in the rest? It depends on the cost of living → comparison of baskets of goods

- Respectability basket: with also protein and some meat and fuel…
- Subsistence basket: just to survive

There are then two ratios: respectability ratio (income/price of the respectability basket) and subsistence ratio (income/price of the subsistence basket). The respectability ratio was overall low in Europe in the 16th century but started to grow in England and in the Netherlands from mid 1700s. the only region exceeding the northeast European standards was the northern America (advantage in primary products which were exported and produced with cheap labor of slaves and then they imported manufactured goods, and higher wages as cities began to become larger and further increase after independence)

Wage convergence in Britain

As London grew, the labor market tight and rising wages attracted immigrants from other countries. By the late 17th century the high wage economy spread in other parts of the country (York and Oxford), and the gap closes with the industrial revolution.

Skilled workers

Even though in general skilled workers always had a greater wage with respect to normal laborers, by the 2nd half of the18th century the real income for craftsmen in Valencia and Florence had dropped below one, while in Paris and Vienna it was just above one, while in England and low countries it was around 3! While in income higher wages spread to the north, there is no evidence of geographical spread in Europe.

High wages and quality of life.

Purchasing power beyond basic needs. It influenced mainly:

- Food quantity
- Food quality: sugar and tea added to the diet, more protein,
- Physical well-being, health and stature: in the recruitment for the army the average required height for English was around 10cm more than the one required to Italians and French

- Consumer revolution (18th century): statistical evidence of increased consumption in luxury and novelties. The major purchasers were the upper and the middle class, but demand for workers too. Workers purchased from probate inventories, and they bought some kind of commodities such as tea and porcelains.
- Education and learning, skill differentials (human capital formation)
    - Literacy: more people could sign their names! Reading for pleasure and economic reasons, mainly in the cities to better do trade, also connected with urbanization. Also Gutenberg' printer, even though there's not a clear pattern regarding more protestants reading with respect to Catholics
    - Numeracy: increase trade in arithmetic and geometry books, mainly for trade and navigation
    - Trade skills: apprenticeship → very expensive but rewarding at the end: more skilled and able to find a good job

High wages and economic growth

High wages lead to higher levels of consumption and education in the 17th and 18th century and the economic growth coming from this allowed the fact that new technologies to economize on expensive labor were invented

Allen, R. C.; The British Industrial Revolution in Global Perspective, Chapter 3, "The Agricultural Revolution", pp. 57-79

Population in England and Low Countries recovered slowly from the Black Death, which means that a smaller population needed less grain to survive and higher wages could buy non-necessities. Given that per capita food consumption is not constant, we must adjust these increased wages to a new nutritional basket containing more proteins and dairies, now affordable thanks to the increase in wages. Having adjusted the data, then, we can additionally state that the estimated ϵfood manufactures equals 0,1.
This shift in nutrition also caused a shift from grain cultivation to animal grazing, an activity fundamental for the usage of draft animals by farmers (a technology change that – together with the application of manure – increased labor productivity).
Aside from improved technology, the biggest push received by English agriculture was the change in institutions: from open fields to enclosures and the replacement of peasant cultivators with large scale capitalist farms operated by wage labor. This change ensured greater food production and lower farm employment, which together led to a bigger manufacturing production and economic growth.
The rising trend in production can be divided into three phases:

1) from the 16th century to approximately 1730, in which the original output doubled.
2) from 1740 to approximately 1800, in which growth was static (only 10% increase).
3) from 1810 to 1850, in which output jumped of 65%.

By looking at the output per worker, three different patterns can be distinguished. Firstly, though, we can define output per worker by dividing the estimates of farm production by the agricultural population. To give an idea of how big that was, by 1800 an English farm worker could produce enough two workers in manufacturing and services.
The patterns are the ones found in:

1) Belgium: medieval Flemish agriculture was especially efficient and it could support a large urban population. Although it declined slowly during centuries, it was met with difficulty by other countries.
2) Netherlands and England: neither had high productivity before Agricultural Revolutions occurred between 1600 and 1750, but after that period they reached and exceeded Belgian standards.
3) Italy and the remaining countries showed a rise and fall after the plague but never recovered back or experienced an Agricultural Revolution.

To analyze the output per worker, we can split it into an equation:

$$\frac{OUTPUT}{LABOR} = \frac{OUTPUT}{IMPROVED\ AREA} * \frac{IMPROVED\ AREA}{TOTAL\ AREA} * \frac{TOTAL\ AREA}{LABOR}$$

1) The ratio shows the yield per area of cultivation. "Improved area" includes the average of arable, meadow and pasture. Output per improved area rose in the early modern period since the productivity of crops and livestock increased.
2) Share of cultivated land, based on increase in productivity given by the improved area on total area. An example is all the Dutch acres reclaimed from the sea.
3) Total area per worker, whose reciprocal is labor per acre, has been affected by various trends:
    a. improved area pushed up employment (pasture was more tended).
    b. enclosure of lands cut agricultural employment.
    c. employment also depended on prices of farm products.

The importance of enclosures, opposed to open fields, is fundamental for the agricultural revolution. In large enclosed fields, efficiency was brought by:

- economies of scale due to the dimension of the consolidated holdings;
- capital investments to economize labor;
- improved quality of soil due to long lease of acres.

To summarize the impact of increased productivity, we can use the following:
In conclusion, we can say that the extra output made it possible to feed a larger urban or proto-industrial population and hence fostered the growth of manufacturing, in addition to the institutional change in the countryside that caused the growth.
We should add, though, that causation runs more strongly in the opposite direction: the proto industrial sectors pushed the growth, their expansion raised wage rates and drew labor out of agriculture.

Allen, R. C.; "The cheap energy economy", Economic History Review, Vol. 64, No. 2, pp. 80-104

Britain had the cheapest energy in the world and learning how to use it was a big incentive to technical change. Britain had been advantaged with respect to other countries by the presence of coal, which was not there as a natural resource in other places.
From 1560, rapid growth of London and of output. The only other place with a large industry was Belgium, but Britain was leading, and a result energy was super cheap. The price was lower in Britain in the mining districts (in Newcastle, cheapest, 1/8 than the price in London, transport costs). In Europe, it was more expensive where also wood was lacking. Coal was important for Britain on several levels: inexhaustible and cheap energy source, for technological spinoffs, and for the mechanization of industries. [Nef: the success of coal is due to the timber crisis → Allen: some truth but what really explains the growth of coal industry of Britain's success in the world economy, leading to the expansion of London and its high wages, and enormous growth in the demand for fuel and due to the redesign of residential housing.]

The growth of London and the rise of the coal trade

Nef: the trigger for adopting coal was a timber crisis in the Tudor period, with shortage of wood in the whole island, and England cut down its forests before the continental countries. Was this the case, the price of timber should have risen a lot and above the general level of prices but

- the real price of wood duel was higher in the second half of the 16th century than it had been before and rose again after 1650
- before 1550, little difference between the prices of coal and wood fuel
- slump in the price of coal in the next half-century, also considering better transports, but then increased again in the 17th century

- after 1550, the price of charcoal was double the price of coal and this gap led to the surge in coal consumption

The increase in wood fuel prices is due to the enormous city growth. Demand very concentrated but supply extremely dispersed. To provide enough wood, lot of land had to be used for that and shipping it was very expensive (less to London since there was the river and you could do it by water, but still. As the demand and the city grew, wood had to come from further and further so more expensive.
Difficulties to the transition wood-coal:

- coal better to lime burning and blacksmithing but considered inferior because it introduces impurities in the objects → 50% discount is what it was needed to induce buyers to get it
- coal is a backstop technology: it can provide a vast amount of power at a constant cost ad it is unlimited, and it did not happen that as the market of coal increased then it became expensive again

Good timing: the coal trade took off when London got big enough to make it profitable to mine coal in Northumberland and ship it to London. The growth of trade was the result of the growth of capital and not of a general shortage of wood → Britain's early exploitation of coal was due to her success in the international economy, and the fact that coal was in the ground is a necessary condition but not a sufficient one

Learning to heat a house with coal

The technology of consumers of energy had to be reinvented in order to be adapted to the use of coal, and the main application was residential heating (half of the coal produced was used for this in the 1700s). but complex design problems. Mediaeval houses: fireplace in the middle for the family to gather and to reduce the risks of burning of wood walls, while to burn coal efficiently chimney and small and close fireplaces were needed → new design
Trial and error process to complete the new design of the house: no coordination and research and development. Design innovation left to decentralized markets with no patentable innovations so experiments were carried on on commercial houses and then when they worked also copied and applied to the next ones. → collective invention, and the rate of experimentation depended on the number of houses one could build, which was a lot and within a small area so that information could travel easily

The growth of coal production outside the northeast coast fields

At the beginning, no difference outside of London in the price of wood because more supply and less demand (smaller cities) so prices changed depending on demand. Before mid-1500s, coal was already half price with respect to wood but the demand was low because there were not coal burning houses. There is a reciprocal relationship between the cheap coal which was an incentive to replace old wood-burning houses and building new houses increased the output of coal

British energy in the world perspective

Coal and wood were the main sources of thermal energy. In 1700, coal was already more important than wood in thermal energy supply and supplied more than a half of the overall energy, including the one from peat and by the 1800 almost all the thermal energy came from coal.
Consideration on the worldwide situation:

- energy was more expensive in the cities that elsewhere, and Asia and Spain had on average the higher prices, while Germany was middle (no evidence for Nef's timber crisis theory)

Dutch urbanization and the "timber crisis"

Netherlands: untense urbanization based on international commerce, high wage economy but: no growth of population in Antwerp as in London
Amsterdam: same situation than in London but peat, no coal! Peat was Dutch's backstop technology: easier to extract, pretty cheap and easy to transport due to canals. The reason why coal did not work is that because it would have had to float the coal of the Ruhr down to the Rhine to power Amsterdam, but transportation costs were too high and political decision impeded the movement. Only in Antwerp a similar pattern to the English one developed, because peat was too expensive

Conclusion

The cheap energy economy was a foundation of Britain's economic success. Inexpensive coal provided the incentive to invent the steam engine and metallurgical technology of the Industrial Revolution. The cheap energy economy also sustained the high wage economy. One of the puzzling features of the high wage economy was how British firms could pay more for their labor than French firms, for instance, and yet remain internationally competitive. One reason is that British firms developed labor-saving machinery even before the Industrial Revolution. A second is that cheap energy offset the burden of high wages. (This relationship is the 'factor price frontier' of neoclassical economics.) Contemporaries were aware of this advantage. The shift from charcoal to coal in industrial processes during the seventeenth and eighteenth centuries – a shift that required the solution of many technical problems – gradually lowered the average price of energy in the English economy and underpinned the rise in the average wage.

Allen, R. C.; "Why the Industrial Revolution was British: Commerce, Induced Innovation and the Scientific Revolution," Economic History Re- view, Vol. 64, No. 2, pp. 357-384

Apart from the technological advances and the Enlightenment change of perspective, economic incentives had been a crucial reason for the Industrial Revolution to take place in Britain. The empirical base on which this can be stated is the comparison of wages and prices: wages were high – compared to other parts in Europe or Asia – while prices for energy and capital were very low, making the British price structure unique. The same structure affected the demand for technology by giving British businesses an incentive to invent technologies that substituted capital and energy for labor (because they cost less). The high real wages stimulated product innovation since Britain had now a broader market for non-necessary goods. The supply of technology was also stimulated by high real wages: population was better placed to buy education and training than in the rest of the world. High rates of literacy contributed to innovation and invention.
Since invention is an economic activity, its pace and character depend on factors that affect business profits, like input prices. It is easy to understand, then, why Britain as birthplace for the Industrial Revolution if we look at its particularly high wages and cheap energy economy. High wages were not "high" compared to today's standards but can be deemed as such for different reasons:

1) At the exchange rate, British wages were higher than those of its competitors. After the 16th century there has been a three way in wage trend:
    a. Wages fell in southern Europe,
    b. Wages levelled out in the Low Countries,
    c. Wages continued to rise in London.
    d. From the late 17th century onwards, London wages were the highest recorded;
2) High silver wages meant higher living standards than elsewhere: English workers could afford from 3 to 5 times their barebones survival basket of goods, thus spending their incomes on a better diet and more non-food items;
3) Wages were high relatively to capital prices, because from 1650 ca. labor in England became relatively more expensive than capital, reflecting the rise in nominal wages, while in the rest of Europe the trend was opposite. Therefore, the incentive to mechanize was much greater in England than in the rest of Europe;
4) Wages were high relatively to energy prices, comparing labor cost to the cheapest energy sources available in Europe, Newcastle emerges as the city having the highest ratio of labor to energy costs.

Britain's unusual wages and prices combination was due to two main factors:

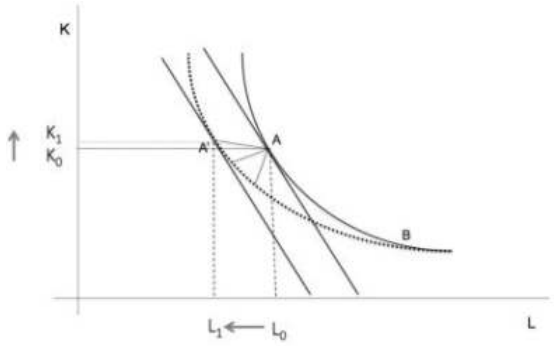
1) The success in global economy, which was in part result of state policy: the English boom started in the late 16th century with the trade of cloths made in East Anglia. Between 1500 and 1600 population in London grew from 50,000 to 200,000 in response to the trade induced growth in labor demand. By 1800 it reached one million.

In the 18th century urbanization picked up throughout England as colonial trade increased and manufacturing oriented to colonial markets expanded. Econometric analysis shows that the greater volume of trade explains why high wages were maintained (or increased) even as population grew;

2) Britain had vast and readily worked coal deposits. Coal was not only abundant, but it was also cheap: the only additional cost to it was the shipment from northern regions (quickly decreased by improvements in canals and maritime routes). Except, perhaps, southern Belgium, no area in the world had the same combination of large population and cheap energy. Cheap fuel was important for two reasons:
    a. Inexpensive coal raised the labor to energy price ratio, therefore increasing the demand for energy using technology,
    b. Coal was an important production factor for bricks and metals.
    It was the growth of London in 16th century that caused the coal industry to take off. Coal was a "natural" resource but the industry using it was not a natural phenomenon, being characterized by:
    a. Extensive use of complex machinery,
    b. Usage of inanimate sources of power (coal especially),
    c. Widespread use of materials that do not normally occur in nature (especially processed metals),
    d. Larger scale enterprise in most industries: deep division of labor within the firm.

The transition to coal as a source of energy was gradual: it started in England around 1650 when prices of wood and charcoal began to rise sharply. By the 18th century the transition was almost complete.
The Dutch cities provide a nice counter example that shows why the Industrial Revolution happened in Britain and not in the Low Countries. The counterparts of the Northern British coal mines in continental Europe were in the Ruhr region and were as accessible and as useful. Also, urbanization did happen there as well, leading to a rise in demand for fuel. In the first instance, though, it was met by using Dutch peat reserves. By the time maritime trades with England were well established – also through canals improvement – it was cheaper to buy British coal than exploiting the German Dutch one.
The theory of Biased Technical Change: at first, in premodern era, countries chose technologies that best fit their factor endowments. So, countries with abundant labor but insufficient capital or natural resources adopted labor intensive technologies. Instead, capital and resource rich countries chose labor saving solutions. But then technology became biased over capital:

- Industrial technology was labor saving so it could only be adopted where relative price of labor was high,
- New technologies did not pay off in countries where the labor to energy prices ratio was lower (e.g. France),
- Over time, micro inventions made new technologies so efficient that productivity gains outweighed factor price differential.



An example of this is the pin production, which was different in France than in England. When it was invented, British technology was profitable to use only in Britain.

Allen, R. C.; "From the industrial revolution to modern economic growth", Chapter 11, pp. 272-275

Why did the inventions that worked were British? And why didn't Italians or French invented important inventions as well? The other countries had inventions that improved productivity but did not translate in sustained economic growth. The industrial revolution instead turned into modern economic growth, because the scientific knowledge increased enough to allow continuous inventions. The competitive advantage for Britain was that its invention was very transformative.
Britain invented a large engineering industry that could mass-produce productivity rising machinery, consequences of this were:

1. General mechanization of the industry
2. The railroad
3. Stem powered iron ships

1: raised Britain's productivity

2, 3: create the global economy and the international division of labor → higher standards of life across Europe

19th century engineering industry connected to the coal industry: because all 3 developments abovementioned depended on the steam engine and cheap iron, both related to coal.
The famous inventions of the British Industrial Revolution were responses to Britain's unique economic environment and would not have been developed anywhere else
Mokyr: there were inventions before the Industrial revolution, but the result was a one-shot rise in productivity that did not translate into sustained economic growth.
19th century was different: First Industrial Revolution turned into Modern Economic Growth
Mokyr underlines that scientific knowledge increased enough to allow continuous invention.
Incomes continue to grow for 100 after 1815 because Britain's pre-1815 were transformative.

Cotton:

Gerschenkron (1962): economic growth in advanced countries was based on the expansion of consumer goods, while growth in backward countries was based on producer goods.

- it grew to immense size -> consequence of global competition
  - Early 18th century: Britain produced only a tiny fraction of the world's cotton
  - Main producers were in Asia
  - price elasticity of demand for English cotton was extremely large
  - Mechanization led to enormous expansion of production -> replacing India and China
  - huge industry, widespread urbanization and a boost to the high wage economy
- cotton was a global industry with more price-responsive demand than other textiles
- The history of the cotton industry was one of relentlessly improving machine design
  - Carding and spinning then weaving
  - initial dependence of cotton manufacturers on waterpower gave way to steam-powered mills

Engineering:

The British Industrial Revolution the first large engineering industry that could mass-produce productivity-raising machinery.
Three developments that were the immediate explanations of the continuation of economic growth:

- the general mechanization of industry: ↑productivity in the British economy itself
- the railroad
- steam-powered iron ships

Steam technology accounted for close to half of the growth in labour productivity in Britain in the second half of the nineteenth century.

These developments depended on:

- Steam engine: invented to drain coal mines, and it burnt coal

- Cheap iron: required the substitution of coke for charcoal and was prompted by cheap coal
- More connections: railroad was a spinoff from the coal industry -> to haul coal in mines and from mines to canals or rivers -> continuous experimentation to improve roadbeds and rails -> locomotives

George Stephenson developed the Rocket for the Rainhill trials -> tested designs by incorporating them in locomotives he was building for coal railways

➔ R&D expenses were absorbed as normal business costs

Global industrialization:
British inventors improved their machines -> rest of the world adopted them too.
Ex: the steam engine became more fuel-efficient -> used in more countries even where coal expensive
In that way, the Industrial Revolution spread around the globe. The genius of British engineering undid Britain's comparative advantage.

Important:
British inventions of the 18th were so transformative, because French technologies were not.
French innovations did not lead to general mechanization or globalization.
British technologies opened to further improvement more than French.
The British were not more rational or prescient than the French in developing coal-based technologies: The British were simply luckier in their geology.

Mokyr, J.; "The European Enlightenment, the Industrial Revolution, and Modern Economic Growth," Max Weber Lecture Series

Two fundamental assumptions are taken for granted about the Great Divergence:

1) Modern economic growth started in western Europe (i.e. selected economies in the northern Atlantic region);
2) Britain was a leader in this process and continental Europe a follower (albeit a rather quick one).

The assumption debated is that countries in 1914 were part of the Convergence Club were also subject to the European Enlightenment. The Enlightenment affected the economy through two mechanisms:

1) The attitude towards technology and the role it should play in human affairs;
2) Institutions and the degree to which rent seeking and redistribution should be tolerated.

The Enlightenment changed the outlook of key persons on their natural environment, and their inventions and discoveries turned what might have become another technological example of development into a huge change starter in economic growth. The importance of the Enlightenment to the subsequent economic development of western Europe is consistent with both the temporal and geographical pattern of growth but such correlation alone does not constitute proof of the link between the Enlightenment and the Industrial Revolution.

The industrial revolution and modern growth

The Industrial Revolution (in its classical definition: a counterfactual technological/technical evolution that emerged between 1750 and 1800) did not suffice to generate sustained economic growth. The change that went with it was the approach to this technological evolution. Before 1750 many path breaking inventions were made and engineering existed well before then, but prior to the Industrial Revolution all the techniques in use were supported by very narrow epistemic bases.
This lack does not mean that improvement was not possible (it was, especially through trial and error) but it made much more slow and costly the subsequent adaptation and development so that economic growth is not sustainable (because if I don't understand how something works, how can I effectively ameliorate that?). Yet scholars found it difficult to link the main technological breakthroughs of the Industrial Revolution to the scientific discoveries of the time. The solution to this can be divided into:

1) Timing: while the first advances of the Industrial Revolution (in the period between 1760 and 1800) were weakly based on science, in the subsequent momentum they increasingly became to depend on the better understanding of the propositional knowledge underlying the inventions;

2) Epistemic base of inventions does not only include a modern definition of science but a broader definition of knowledge including simply catalogues of phenomena and irregularities that could be relied upon even if the underlying processes were not quite understood.

Growth was possible through capital accumulation, increasing trade, freer markets, etc. but all of these would eventually run into diminishing returns: is technology that remains at the foundation of modern economic growth. The fundamental assumption of the Enlightenment, then, was that the growth of useful knowledge would bring prosperity: the expansion of useful knowledge would solve technological problems and that the dissemination of knowledge to more and more people would attain substantial efficiency gains.
Not all was abstract science (e.g. Laplace and Lavoisier's findings), but it was clear that growth had to be carried out collectively through a "division of labor" in which specialization was carried out at levels far higher than before. Over the 18th – 19th century the interaction between propositional ("what") and prescriptive ("how") knowledge became much tighter: it is this phenomenon that prevented the fallout of the Industrial Revolution and enabled it to become the base point of modern growth.

The enlightenment and technological progress

The Enlightenment had the assumption that society was improvable and that the process by how this could be attained can be summed up into four headings:

1) Agenda the "Baconian program" ("produce innovations of which nature unaided is not deemed capable" – Zagarin, 1998) served as the key agenda of researchers at the time. The already stated idea was that knowledge was supposed to be useful and society was improvable by it. Supposedly, it had to help in solving practical problems and to satisfy human curiosity. Consequently, many 18th century scholars known for their contributions used their insight to attack problems of production even though the connection between the discoveries to science is not always apparent. Description and organization mattered as much as everything else, as Bacon had argued: many investigations of the century followed the "three Cs" rule (counting, cataloguing, classifying). In this way, information recorded could not be lost and could be passed on;
2) Capabilities the scientific revolution advanced in part because of the existence of new tools – such as the telescope, the barometer and the air pump – that allowed new experiments and observations possible. Another increased capability came from mathematics: advances in math added new instruments – such as mathematical functions – useful in engineering, ballistics, navigation, etc.;
3) Selection innovative ideas were selected from the broader pools of ideas proposed to the people, which was a new concept introduced thanks to the Enlightenment. Knowledge and beliefs were regarded as contestable at every level and tolerance was raise to the level of principle (inquisition and other historical methods of censorship were not present in the countries interested or were in minor part). Free entry into the market of ideas and the absence of repression were a high priority on which all Enlightenment thinkers were united. In addition to this, two main check systems for ideas were introduced, on which the new scientific selection criteria were based:
    a. ex ante selection (i.e. peer review before wide publication of a theory), by which successful ideas at the time were a result of signaling of credible "reputation" as a scientist/researcher among equals,
    b. ex post selection, by which all theories available to the public were always further debatable;
4) Diffusion knowledge resembles a contemporary open-source technology. Open science was key to the rapid changes in the market for ideas because its purpose was, exactly, to disseminate new concepts and offer them to the marketplace. Knowledge is a non-rival good and, in theory, the source can share it costless. In practical terms, costs of access were made up by costs of diffusion (higher than today). Those costs were brought down drastically by the usage of paper, printing and the telegraph, as well as by improvements in transportation and postal services. Moreover, newly born encyclopedias were an important factor in spreading knowledge, as well as places such as coffee houses, societies and academies which sold culture freely to the public.

Intellectual property rights and the enlightenment

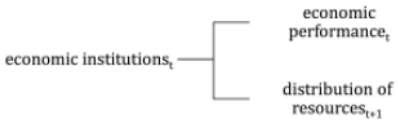
It was recognized that invention was costly and risky (because of time consumption and unpredictable returns on investments), and if that society wanted to generate a continuous stream of technical improvements, it had to make the activity that generated innovation financially attractive. Moreover, knowledge is a non-excludable good, therefore some might have wanted to keep secrecy on inventions as to avoid others exploiting them.
The patent system was deemed a solution to these adverse factors because:

- it protected intellectual property rights by asking a fee for usage and recognizing paternity of an idea;
- it eliminated secrecy with the obligation to divulge the existence of the invention, once patented.

Acemoglu, Johnson, and Robinson; "Institutions as a Fundamental Cause of Long-run Growth", Chapter 6, pp. 385-472

Institutions are "the rules of the game in a society or more formally are the humanly devised constrains that shape human interaction" (North, 1990). Of primary importance are economic institutions because they influence the structure of economic activities in society (incentives in exchange between humans). Moreover, they help allocate resources efficiently and determine property rights. Economic institutions are endogenous as they are at least partly determined by (a segment of) society.
The argument of the role of institutions can be summarized as:

- the major differences across countries are determined by institutions (although cultural and geographical factors matter) and they do not determinate only aggregate economic growth potential of the economy but also an array of economic outcomes, such as the future distribution of resources;



- economic institutions are endogenous, they are determined as collective choices of the society (of groups within the society, hence a conflict of interest) defined by the actual political power

$$\text{political power}_t \longrightarrow \text{economic institutions}_t$$

- individuals who have political power cannot commit not to use it in their best interest and this creates inseparability between efficiency and distribution;
- political power can be distinguished into:
    - De jure (institutional), which is originated by political institutions

$$\text{political institutions}_t \longrightarrow \text{de jure political power}_t$$

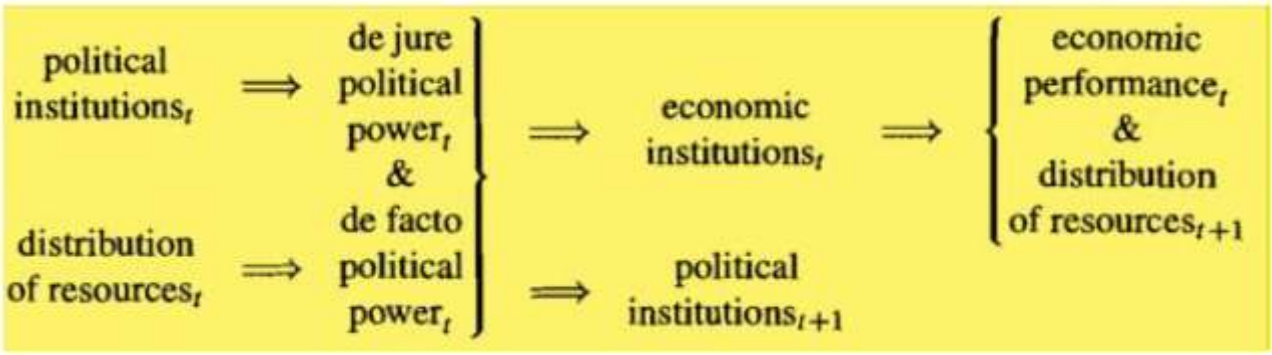
    - De facto, which is originated from group's allocation of resources (and moreover, their use and misuse of them and their option of using force against other groups);

$$\text{distribution of resources}_t \longrightarrow \text{de facto political power}_t$$

- Also, political institutions are endogenous and therefore evolve (through slow changes), determined by political power (both de jure and de facto).

$$\text{political power}_t \longrightarrow \text{political institutions}_{t+1}$$

This can be represented as:



Fundamental causes of income differences

We can outline three main causes for cross country differences:

1) Economic institutions: differences in economic institutions are based on the ways human decide to organize themselves in a society, whether they prosper in it. This idea goes back to Adam Smith and his discussion on mercantilism and the role of markets: societies are economically successful when they have good economic institutions and they are cause of prosperity;
2) Geography, climate and ecology determine both the preference and the opportunity set of individual economic agents in different societies
    a. Climate may be an important determinant of work effort;
    b. Geography may determine the technology available to a society, especially in agriculture;
    c. Climate may also define the "disease burden" on a population;
3) Culture, viewed as a key determinant of the values, preferences and beliefs of individuals and societies and, consequently, of differences among them that shape economic performances. An example of this is the Protestant reformation and its link to industrialization: with the rise of Calvinism a precise set of ideas – like the exaltation of work and the good in not wasting time and saving – found place within western societies and formed a basis for capitalism.

Institutions matter

An interesting example of how determinant institutions could be it is the "Korean experiment", which comes close to a natural experiment and has a series of similarities: geography (border established strongly after the II W.W.), culture and pre-existing institutions, although current institutions are totally different (communist/capitalist heritage after the forties). As per today, South Korea under the American tutelage has a higher GDP per capita level compared to North Korea.

Reversal of fortune

Another case that can be considered is the fate of the former European colonies: they shared the same colonial past but had divergent outcomes. The regions that were relatively more developed and richer before colonization, with respect to other colonies, are nowadays the less developed. In this analysis:

- geography does not matter since tropical areas were initially more developed than temperate areas;
- culture also of little significance because the same pattern can be found across colonies of the same European nations.

This can be explained by the different inherited institutions that were set up by the colonial powers: "extractive" institution for resource rich and density populated (labor to exploit) colonies and "inclusive" institution for settler colonies (place where people had to be motivated to transfer, leaving their motherland). To maximize gains the colonies used two different approaches:

- extracting existing resources in rich countries (more profitable that developing them);
- new settler populations developed instead economic resources and therefore institutions to protect them.

Theory of institutions

Actual political power is the joint outcome of both de facto and de jure power. There are seven points that outline a theory for political institution:

1. individuals have preferences regarding economic institutions because of the allocation of resources that these institutions induce;
2. preferences typically do not agree because efficiency and distribution are inseparable;
3. problem of commitment, since there is no third party to enforce the decision of the State;
4. the equilibrium structure of economic institutions will be determined by who can create and sustain economic institutions that benefit themselves;
5. political power has two forms that can influence themselves;
6. the distribution of de facto power depends largely by the distribution of resources;
7. political institutions are also endogenous.

The relationship between institutions can be summed up by the graph:

Inclusive political institutions	Inclusive economic institutions
Extractive political institutions	Extractive economic institutions

The theory in action

We can consider two more examples that further demonstrate the theory of institutions: the rise of constitutional monarchy in Europe and the rise of mass democracy in Britain.

The rise of constitutional monarchy

In the Medieval period, most European nations were governed by hereditary monarchies. However, as the feudal system started to collapse, various political groups tried to reduce the autocratic power of monarchy in England, the process began in 1215 when King John was forced to sign the "Magna Carta".
In other countries, parliaments were also erected to discuss taxation or warfare but their power was limited (an example of the opposite trend was France, with an absolute monarchy that lasted until the revolution). In England from the Tudor monarchies (ex. Henry VIII and Elizabeth I) and with the first Stuarts, the monarchs tried to establish an absolute power but were mainly blocked by the parliament: the constitutional outcome was settled after the glorious Revolution in 1688. The Netherlands faced a similar development after the won of Independence war in 1648. Both England and the Netherlands were developing limited constitutional rule; while Spain, Portugal and France were going in the opposite direction.
What all these nations had in common was the Atlantic Trade, i.e. overseas trade and colonial activity unleashed by the discovery of the Americas and the rounding of the Cape of Good Hope. However, they vastly differed in the specifics of trade (implying also vast differences in corporate organization, political institution and subsequent economic growth):

- in England and the Netherlands trade was brought on by individuals and small partnerships, there was quite a free entry into the merchant class;
- in Portugal and Spain, instead, a trading crown monopoly was established with the aim of directly controlling the inflow of silver and gold into the State accounts.

The source of differences in the organization of trade reflected the different political institution of these countries: while in Spain, Portugal and France trading enriched the monarchs, in England and the Netherlands it helped the merchant class to emerge. It is no coincidence that the Civil War and the Glorious Revolution in England coincided with the great expansion of English mercantile groups into the Atlantic. In conclusion, we can say that the distribution of economic resources changed significantly during the 16th century because of the new economic opportunities presented by the rise of the Atlantic trade, and these changes were crucially influenced by the existing economic institutions. Furthermore, the change in the balance of political power (due to the gain of the facto power by the mercantile class) led to the changes in political institutions through the English Civil War, the Glorious Revolution and the Dutch Revolt.

The rise of electoral democracy in Britain

In the early 19th century, European countries were run by small elites: the franchise was highly restricted to males with relatively large amounts of asset income or wealth. However, as the industrial revolution progressed, the political monopoly was challenged by the disenfranchised, who engaged in collective action to force political change. The elites responded to this in the three ways:

1) using the military to repress the opposition (e.g. revolutions of 1848);
2) making economic concession to buy the opponents off (e.g. welfare state in Germany by Bismarck);
3) expanding the franchise if the two above proved ineffective: this created the precedents for modern democracy.

In England, the path to the First Reform Act (1832) was opened by a series of episodes of rioting, which happened in the decade before (when the Industrial Revolution was well under way), like the luddite riots and others. The motivation behind the reform was in major part to avoid disturbances, in part catalyzed the July 1830 revolution in Paris and in part maneuvered by the new middle class which was entirely excluded from political power. From then on, social disorder functioned as spark to push onwards the inclusion in politics: with the Reform Acts (1867-1884), the 60% of adult males were enfranchised.
Economic institutions also began to change: liberal and conservative governments introduced an amount of labor market legislation, in addition to health and unemployment insurance, government financed pensions, commitment to redistributive taxation, etc. Meanwhile, the education system was opened to masses (before it was only for the elites) with the Education Act of 1870 (and subsequently made free in 1891).
Mass democracy, to conclude, emerged from economic and social changes connected with industrialization (e.g. rising inequality) and urbanization which increased the de facto power of the disenfranchised. In exchange they demanded political rights, in particular: changes in the institutions which would allocate future political power to them. These changes were in many ways the direct cause of the changes in economic institutions. Whether increases in the de facto power translated into democracy depends on several factors, in particular: how difficult and costly it was for the elites to use repression to counter the increase in power of the masses and how costly the prospect of democracy was.

Add on: institutions

There are different types of institutions.

1) Inclusive:

- Bigger, more decentralized;
- Vibrant civil society with lots of permanent and strong NGOs higher proportion of public spending on education and welfare;
- Economic opportunities and gains are redistributed relatively equitably Robin Hood Paradox: redistribution least present when most needed;
- Inclusive political institutions create incentives, reward innovation and allow participation in economic opportunities creating a virtuous circle:
    - Economic success thus created in sustained by governments accountable and responsive to citizens,
    - Strong cheeks on the ability of elutes to usurp political power by arbitrarily intervening in the economy,
    - If wealth generated is shared broadly, citizens are more inclined to spend on public goods, which in turn increase inclusivity.

2) Extractive:

- Smaller, centralized governments dominated by elite coalitions;
- Predominance of social relationships organized along personal lines lack of social affinity as developing countries tend to be socially and ethically more heterogeneous;
- Privileges, social hierarchies, laws are enforced unequally small preparation of public spending on transfers as the elites are not compelled to redistribute their gains;

- Extractive political institutions induce extractive economic institutions that limit economic participation;
- Extractive institutions undermine the rule of law – additionally extractive institutions are likely to persist in economies where both wealth and political power is concentrated in the hands of few, who are the least strongly related, if not identical groups – because elites could be overthrown by other elites interested in maintaining extractive institutions.

Moreover, economic historians define institution as efficient if the net gain from institutional change is positive (e.g. abolition of slavery). Institutions can improve efficiency by:

- lowering transactions costs (market efficiency);
- helping to spread risks and enforcing contracts.

Dudin, Morys and O'Rourke, "The Cambridge economic history of modern Europe", Globalization 1870-1914, pp. 6-29

19th century globalization involved increasing transfers of commodities, people, capital and ideas between and within continents. The most visible evidence of this is the growing volume of these international flows.

Trade

European international trade in current values grew at 16.1% a year between 1830 and 1870 and at 4.1% between 1870 and 1913. Price evidence shows also impressive international integration during this period: for example, the wheat price gap between Liverpool and Chicago fell from 57.6% to 15.6%.
International trade grew for many reasons. International freight rates declined steadily because of constant technical improvements and the growth in the use of faster steamships, especially after the opening of the Suez Canal (1869). Moreover, since overland transport was very expensive, the development of railroads has been a crucial reason. In addition, peace between the main powers between 1871 and 1914 promoted trade. The development of European formal and informal empires increased extra European trade through the reduction of trade barriers, the inclusion of colonies in currency unions and the better protection of (European) property rights.
Meanwhile, the gradual spread of the Gold Standard dampened exchange fluctuation rate and reduced uncertainty in trade.

Focus on Gold Standard

1. Functioning mechanics:
   a. Gold standard: central banks pledge to exchange currency into gold at the fixed parity,
   b. In principle, trade imbalances must be settled in gold,
   c. The money supply is limited by the supply of gold;
2. What made the GS work?
   a. Gold exchange standard: Sterling was 'just as good as gold',
   b. Gold supply increased rapidly, mostly in British empire,
   c. Major central banks cooperated not to run out of reserves.

As regards the pattern of trade, Europe as a whole was a net exporter of manufactures and a net importer manufactures and a net importer of primary products, although this masks important differences among regions: at one extreme, U.K. – massively dependent on imported food and raw materials – and at the other, southern Europe – exporter of primary products and importer of manufactures.

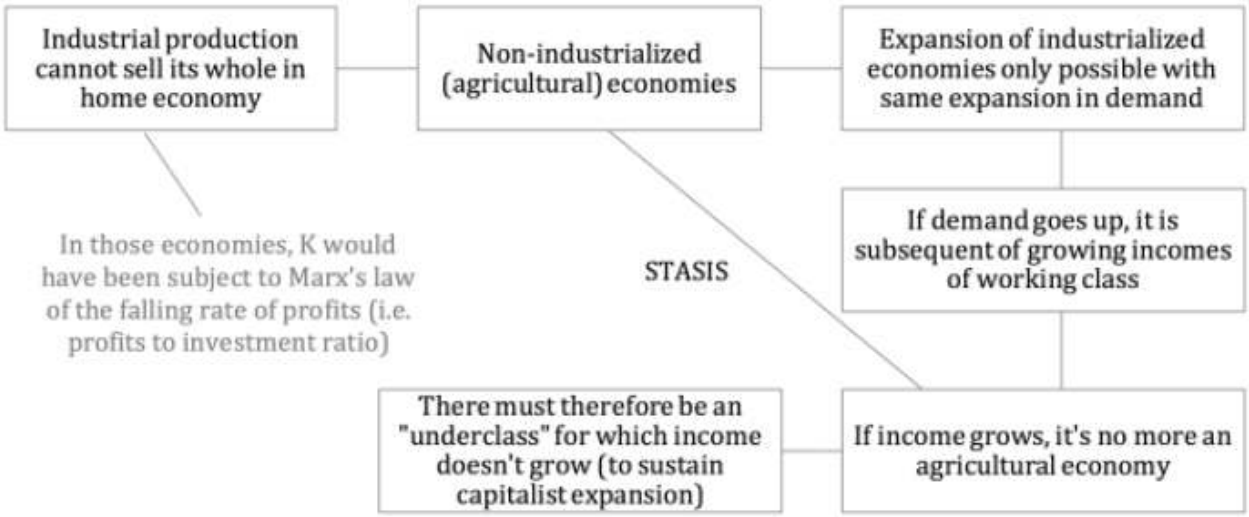
Capital flows

International capital market integration was extremely impressive during this period. Europe was the world's banker and the regions with easy access to its capitals (e.g. U.S.A., Australia, Canada, Argentina) prospered most between 1870 and 1913. There was also a smaller but significant transfer of capital from the western Europe core to the more peripheral economies. The U.K. committed on average 4% of its GDP to capital formation abroad over a period longer than 40 years. Europe as a whole dominated foreign investment.

What can explain the late 19th century capital market integration?

- Absence of major conflicts between the Franco Prussian war and the WWI;
- Presence of Gold Standard
    - It eliminated exchange rate risks,
    - It brought with it the pursue of sound fiscal policies making returns for investors reasonably safe.

Another suspected reason for integration was the Marxist theory of imperialism, which regards advanced capitalism as a source of high-income inequality, from which derive excessive domestic savings. For this reason, underdeveloped countries were needed as outlets, as domestic investment would have been subject to Marx's law of falling rate of profit.
The following is a very simplified explanation of the Marxist Imperialist Theory. The main idea is that if a country produces Y, the whole cannot be sold in the same economy (because it would saturate it). Therefore, an outlet is needed: a non-industrialized economy. But the more is sold into the non-industrialized economy, the more it becomes advanced. Thus, the falling rate of profits to investments in the home country and the need of imperialism to sustain capitalist growth.



Nowadays, the interpretation of imperialism is less drastic:

- Colonization was not so extractive;
- Secured property rights for European investors and stable currency lowered interest rates;
- European colonial governments and religious missions promoted education.

Where was capital directed?

1. Over 50% of British capital exports went to areas of recent settlement where natural resources could be exploited, not where labor was cheap (e.g. Africa and Asia). If these areas were to produce primary products for the homeland, railroads, land and infrastructures had to be provided and improved there;
2. Econometric evidence (Clemens and Williamson, 2004) shows that British capital exports went to countries with abundant supplies of natural resources, immigrants, young, educated and urban populations.

What drove capital flows?

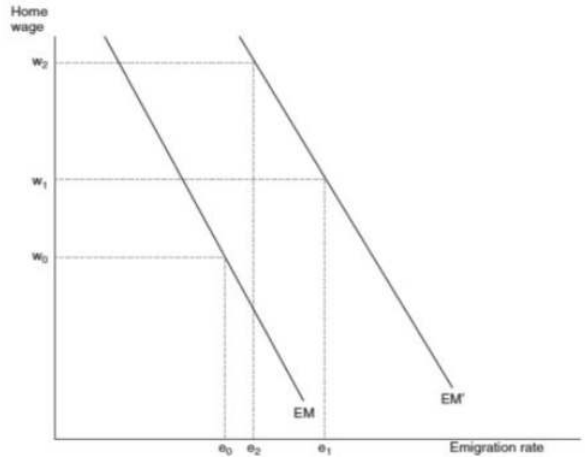
1) Colonies were not so important:
    a) Main colonial powers invested most of capital exports in independent periphery,
    b) Colonies were not vital markets,
    c) Little public investment before WWI
2) Gold Standard (for the reasons already mentioned above);
3) Capital flows followed trade:
    a) Core invested in periphery producing important raw materials,
    b) Investment dominated by railway construction.

Migration

The period considered show one of the greatest migration flows in history: 40 million people crossed the Atlantic from Europe. Emigrants came mainly from south eastern countries (like Italy
and Spain, with a few exceptions: Ireland, Norway) even though the wave started from British Isles, Germany and Scandinavia. The reasons for this are:

- Higher land to labor ratio in New World rather than in Europe: higher wages;
- Declining transport costs;
- Liberal immigration policy;
- Cultural ties to new settlement areas;
- Population pressure in Europe due to high fertility.

Emigration flow can be explained by a simple fit it all model as an auto regulating movement, starting at e0 and finding economic equilibrium at e2.



Migration within Europe was a smaller phenomenon if cross country migration is considered. Nevertheless, mass migration was present within countries (e.g. from Ireland to U.K., from East Prussia to Rhineland, from South to North Italy).

Trade in knowledge

Technology circulated relatively freely in the late 19th century. Ship building, iron and steel, telegraph technologies transferred quickly, unless slowed down by adaptation issues. Europe was internally exchanging new technologies and receiving them at the same time. Several factors helped this:

1) Immigration was easy;
2) Entrepreneurs could easily invest overseas;
3) Declining transportation costs;
4) Explicit policies encouraging domestic technological emulation (e.g. Japan replaced English textile machinery with its equal own). To prevent this some firms established themselves directly into foreign countries, becoming the first form of multinationals;
5) Creation of international scientific and technical organizations, as well as other institutions with different aims (e.g. Red Cross, International Postal Union).

The effects of globalization

Globalization and factor price convergence
How did commodity trade and mass migration influence the income distribution within countries? By the end of the 19th century, the wage/rental ratio converges at the same level for Europe and the new world:

- w/r ratio in the new world should have declined as farmers exported more and manufacturing suffered from foreign competition

- w/r ratio in Europe should have increased as workers were hired by expanding manufacturing industries and land rents were undermined by cheap food imports
- ➔ real land prices fell in European countries and soared in the new world, and substantial relative factor price convergence (link between trade and factor price trends)
- ➔ decline in transport costs meant cheaper food and therefore higher wages

migration had the greatest impact on European workers' living standard in the globalization context. Emigration lowered the labor force in some countries and therefore living standards rose there (and wages as well).
Capital flows, peripheral development and core welfare
Assuming identical production functions with capital and labor as the only inputs: lower wages in the European periphery should have been due to lower capital-to-labor ratios, which in turn should have implied higher returns to capital. But evidence proves that while in Sweden and Scandinavia in general this was the case, in the other European countries is hard to tell
Why was it hard for European peripheral economies to attract more capital from the European core? Lucas paradox: capital usually flows to rich countries, even though poor countries have lower wages.
Explanations:

1. lower labor productivity can explain why capital did not flow there → so why labor productivity there was lower?
2. Non-adherence to gold may have persuaded investors
3. These countries were not as attractive as the land-abundant new world

Effects of capital flows on welfare levels on capital-exporting countries
Britain: controversial situation because they had lots of capital foreign investments and this potentially harmed their economy, because it took more for the industry to grow in the second industrial revolution, even though foreign investments for railroads and so on at the end benefited anyway the European countries
Imperialism and European welfare
Lenin: the European system can only be sustained through colonialism → fake: Europe was almost self-sufficient in everything and lots of raw materials came from the US, which were independent already. For sure one of the driving forces behind imperialism was the influence of European traders.
Was imperialism bad for European colonies? Analysis of the British Empire as the biggest and as the one with more economic advantaged colonies. To determine the effect, look at the counterfactual: would Africa. Canada and south Asia have been more developed without European intervention? Or America would have taken the control on them? Overall, small and uncertain benefit effect form imperialism on colonies

Globalization backlash

After 1870s, the European trade policy did not reinforce the impact of falling transport costs anymore but several countries enacted pretty protectionist policies, and just some small countries remained relatively liberal (Denmark, Belgium, swiss). Also the UK remained relatively liberal maintaining free trade policies, since it was less vulnerable to the rent and price reductions which were implied by globalization (agriculture had already shrunk enough and a further decline had little impact on the overall economy)
Immigration
While emigration benefited European workers, mass immigration hurt their counterparts overseas. Many large effects:

- Lower wages for unskilled workers → political backlash with restrictions on immigration (including literacy tests to limit the number of unskilled workers), with a result that the European interwar countries did not have emigration has a safety thing anymore

Democracy, the gold standard and capital flows
The golden standard had been overall accepted before 1913 by everyone, meaning a commitment to a policy of external balance, even when that coexisted with domestic economic imbalances (such as unemployment). After 1918, problem with the reintegration of the gold standard: the political franchise was bigger and therefore it was not clear that gold standard discipline would have worked. Democratization undermines the gold standard and with that the foundations of the pre-war financial system. Today most of the countries in which the capital circulates are not connected by fixed exchange rate, but they have autonomous currencies so that they can pursue both internal and external objectives.

Domestic policy responses
Governments did not have a binary reaction to open/close barriers and so on but put in place a wide range of policies to find the right balance.

- Strong interventions in European labor markets and raised welfare state (no work at night for women and children, no children under a certain age…)
- Introduction of unemployment and illness insurance schemes
- Unions were persuaded to support free trade to get more pro-labor policies

READINGS FOR THE SECOND PARTIAL

Feinstein, C. H., P. Temin, and G. Toniolo, The World Economy Between the World Wars, Chapter 2: 'The Legacy of the First World War'.

The economics of total war

The first world war works as a watershed between then 19th and the 20th century, in particular when considering the theme of international economic organizations.
Late 19th century: well-functioning international payment system based on the gold standard, cooperation among bank, almost perfect mobility of factors of production, falling transportation costs.
The war itself is considered to be an economic revolution: before 1914, governments spending was very limited and the idea of a short war was diffused in all governments due to the fact that they wouldn't have been able to sustain a war for long, since the resources available were limited.
Revolutionary traits:

- shift of resources from consumption to arms production: in 1917 military expenditures in UK were 38% of the GDP (4% before) and 53% in Germany.
- Labor transferred in military service and armament factories and chemical industries
- Female and child labor in the countryside

Total war: governments organize commissions that control military supplies and distribution and industrial reorganization (creation of cartels and industrial giants). The productive effort was sustained through scientifically organized workforce, progress in products and production processes (internal combustion engine vehicles, submarines…). Another change: general conscription of men, causing the afterwar mass movements and the reorganization of the countryside.
General weakness of empires:

- The German empire was dissolved and the republic was established
- The Austro-Hungarian empire collapsed in small countries
- The Russian empire was reorganized in the soviet empire
- The Ottoman empire collapsed, with only turkey and Egypt emerging as strong independent countries
- The British and the French empires suffered the independence movements that started to grow overseas
- Only the Japanese empire emerged stronger from the war, due to a costless alliance with the entente.

The war caused two major developments:

1. The displacement of the agricultural sector in the belligerent countries led to the lifting of import duties to gain access to the cheapest overseas supplies
2. Financial cooperation was undertaken by the entente powers in the form of inter-allied loans

The economic consequences of the war – the two exogenous shocks

1. Major disruption of the real economy: great shifts in production and consumption patterns

2. Overproduction after the war: difficulties to shifts back to peacetime economy and industry, since major investments were done in specific industry (e.g. shipbuilding) and lots of fixed assets were destroyed (fields, transports, factories…)

Change in world markets: japan and the U.S. who were little affected by the world invaded European markets with their products, since European country only focused on war production while countries like India and Latin America stimulated domestic production to substitutes for imports from Europe. International relations were further disrupted by the end of empires in the middle east and eastern Europe: tariff barriers were introduced, less cooperation among banks, hyperinflation.

A more rigid economic environment

Labor market: Wage flexibility was reduced after the war, since many decisions were centrally negotiated, also due to the increase in the membership and strength on trade union movement (consequence of the growth working class militancy)

Goods market: less flexibility on prices and incomes, due to an increase in government intervention and control in economic life, and the strengthening of cartels and trade associations.
→ the war accelerated the trend toward larger business units, to escape the increasing competition of shrinking markets and falling prices.

A weaker financial structure and international monetary system

Note issue and bank credits were immensely expanded, but without increasing taxes nor borrowing high public debts in all European nations.
Gold standard soon abandoned after the war declaration and development of inter-allied loans and payment systems to sustain the level of imports required to achieve the maximum military contribution to the common cause. As soon as the war was over, no more cooperation among countries. The creditor countries asked to pay the debt, while European victorious powers insisted on huge reparations expenses on the defeated countries.

The economic consequences of the postwar settlements

The shock of economic restructuring and social unrest

The return to peacetime economic organization and production entailed a huge process of resource reallocation that required a long period of time and was also met with resistance on vested interests that were created during the war. industrial restructuring implied closing of several plants and unemployment, plus a general dissatisfaction of households that had saved during the war → recession of 1920/1921
Social unrest can be considered as the main postwar problem: explosion of working class struggles everywhere, due to two main factors:

1. Growth of strength and organization (unions) of the working class: the army and the conscriptions promise better life conditions after the war and it allowed for the creation of a mass society (socialist propaganda proved to be more effective and people from different areas and conditions gathered and worked together)
2. The Russian revolution exercised considerable influence on working class movements

Economic impact of social developments differed from country to country depending on the strength of economies and governments:

- In Germany, social reforms were undertaken to undermine working class support for revolutionary movements (mines and metal-making industries were nationalized and trade unions were fully recognized)
- Hungary got effectively governed by communists, while other defeated countries assisted stronger socialist and communist movements (e.g. Bulgaria)
- In Italy workers took over the management of several companies during the "red biennium" (1920/21), but then the working class split between the communist party and the reactionary forces of Mussolini

The economic consequences of the peace treaties

Peace treaties were signed in 1919 with Germany (at Versailles), Austria (at St. Germaine-en-Laye), and Bulgaria (at Neuilly), and in 1920 with Hungary (at Trianon) and Turkey (at Sévres).

An effect of these treaties was the redrawn of the political borders of the states of central and eastern Europe, disrupting long-standing economic relations and creating new barriers to trade.
Main territorial changes resulted from the breaking up of the Austro-Hungarian empire with the creation of six nations: Czechoslovakia, Poland, Romania, Yugoslavia, Austria and Hungary. Also the German, ottoman and Russian empires were either dissolved or redimensioned, ending with the presence of 38 independent nations in Europe in 1919, 12 more than 1914. This result was driven by the national self-determination principle, rather than an economic one, and foreign trade was affected by the new frontiers, currencies and trade barriers. Many new states independent monetary and fiscal policies to protect their domestic industries.
The international economy was strongly affected by these new political borders and nations, but also by the Russian revolution, which caused a complete separation of Russia with Europe on trade and capital markets. The dismemberment of the Dual Monarchy, the splitting off of parts of the German and Russian empires, and the latter's autarkic evolution all represented a major shock to the international economy. These developments caused widespread resource misallocation, resulting in lower output and higher prices. In due time, markets adjusted trade and capital flows to the new situation, but this structure was less conducive to economic efficiency than the one that prevailed before the war. Moreover, such adjustments were slow to come about, with the market process always taking far longer than economists are ready to admit. The adjustment was made even slower by uncertainty regarding the stability of the new regimes, fear of revolution, the persistence of endemic conflicts, lack of information in western capitals about the new leaders, and the incompetence of some among the latter.

The end of financial solidarity among the allies

High need for financing through Europe:

- Defeated countries suffered food emergencies, but did not have foreign capital to pay for agricultural imports
- In France, Belgium and Italy reconstruction required a considerable amount of capital
- Overall, finance to reallocate resources from war-related to peacetime production.

France and Britain demanded soft landing to the US, with the continuation of financial assistance form the U.S. and slow relaxation of wartime controls on exchange rates and international economy, but France also proposed high and harsh conditions on the defeated power, especially on Germany. Reparations should include not only war pensions and reconstruction in France, but also the repayment of France's debt to the US. The US, being now the leading power, authorized the government to open credit to foreign countries only for the purchase of goods directly or indirectly belonging to the government, and of grains the price of which was guaranteed by the United States. Europe was thereby provided with a safety net against a fall in food consumption below subsistence levels, but it was denied U.S. credit for reconstruction and for postwar industrial conversion to peacetime production
After the war, all the European currencies, including the entente ones, has lost lots of their value and the colossal exchange rate devaluation ended up feeding hyperinflation. On one hand, this situation was caused by domestic policies and situations in each country, but on the other hand the retreat from the wartime financial solidarity was too abrupt, uncertainty about the amount of reparations increased volatility in international markets and the idea of recreating an international monetary system was left to central banks rather than central governments.

Reparations

Reparations can be considered the most controversial issue in the peace treaty with Germany, since can be considered a critical element underlying the political and economic failure of the interwar period. Germany was considered responsible for the war, and therefore had to pay war-related material damaged: reconstruction was included, but ambiguity regarding the compensation for personal losses. Keynes was the first to condemn reparations as economically irrational and politically unwise. Another problem with reparations was that no fixed sum had been fixed by the treaty, and only in 1924 it was reached an agreement for a reasonably stable system of international payments (Dawes plan).

Feinstein, C. H., P. Temin, and G. Toniolo, The World Economy Between the World Wars, Chapter 6: 'The onset of the Great Depression', only until 109.

The course of the crisis

Some of the principal features of the world depression can be considered the collapse of international trade, the imposition of deflationary policies to improve financial orthodoxy in the leading gold-standard countries, forcing world trade into a vicious downward spiral, the growth of tariffs and exchange controls and the decrease in agricultural prices.

Restrictive monetary policies → decrease output → decrease exports → decrease in purchases of coal, cotton and metal by manufacturers.
The volume of goods trade fell by a quarter and their price by half, with prices of primary products falling more steeply. The descent was stronger in north America than in Europe, but every nation in the continent was hit by a severe fall in demand.
The decline in industrial output, in primary product price and in world trade drove unemployment to unprecedent heights (see chapter 7 for more).
Closer examination:

- How were currencies and banking systems affected
- How did governments and central banks react to the crisis

The U.S. Banking crisis of 1930

Started in 1930 and lasting until 1933, longest crisis of the world. The first bank to fail in December 1930 was the bank of the United States. After that one, many others failed, even though they were smaller in comparison. Many Americans started to shift their money holding from bank deposits to cash in the same period, reducing money supply, but there is no evidence that this change in preferences relates to the failure of the abovementioned banks. An economic effect of the failure of the banks was the increase cost of credit intermediation because less banks could work as intermediaries between lenders and borrowers and because these last ones were more suspicious of banks. Also, the stock of money decreased.

The currency crises in Austria and Germany

In 1929 the U.S. ceased to supply capital to Europe as before and by the 1931 long-term borrowing was not done anymore.

The crisis which eventually undermined the currencies of central Europe started in Vienna in 1929, when the second-largest bank failed. In 1931, also the largest bank failed, because it had invested in unprofitable industries and had not considered the fact that it had lost all the market share of Czechoslovakia, and it was forced to reorganize with the help on international credit. But the collapse was enough to make the Austrian shilling fell and make the government imposed foreign exchange controls.
The German crisis of July 1931 was not connected with the Austrian one. Two views on this are considered: either banking problems caused by overextended lending brought down the currency, or the budgetary problems of the Weimar republic brought down the currency (the problem can be considered either economic or politic).
Germany had huge reparations to pay and was highly depended on international credit, which soared in June 1931, causing the central bank to run out of money and finish its gold reserves. The crisis was augmented by international political tensions and lack of international cooperation, causing no international loan to be given to Germany. In July 1931 Germany abandoned the gold standard.

Disintegration of the gold standard

Sterling under pressure

As Germany abandoned the gold standard, the British pound was under pressure and its inability to sustain the gold standard was also due to the weak balance of payments Britain had.

- Current account: financially weak due to the collapse of the export markets of manufacturers, the sale of lots of overseas investments, the return to gold at the prewar parity and the effect of the fall in primary product prices
- Capital account: financially weak because it was not able anymore to be an exporter of long-term capital to developing countries and that UK was forced to offset the outflow by borrowing from abroad

Britain abandoned the gold standard in September 1931, after having borrowed from the U.S. and France, because it could no longer sustain the parity.
France and Belgium were the last to abandon the gold standard and this can be explained with the fact that both spend a lot on domestic investments and the expansion of the banking sector.
The bank of England reduced interest rated in 1932, together with devaluation, which positively broke the grip of the gold standard on economic policy but did not point the way towards international cooperation.

The dollar under pressure

The financial panic spread from Britain to the US, with more and more banks failing and with the fed losing lots of gold. The Fed increased interest rates to protect the value of the dollar during the great depression, because this is what it was supposed to do under the gold standard. The fed had chosen international stability rather than domestic prosperity (in contrast with the choice of the bank of England), causing deflation and an accelerated economic decline, adding deflationary forces in Europe and putting pressure on the fragile Weimar republic.

Collapse of the gold standard

After Britain left the gold standard, other 24 countries followed this decision, while some others decided not to formally suspend the gold standard but to make it ineffective by the imposition of a range of exchange controls and restrictions (Germany, Austria, Hungary, Bulgaria…). Only the US, France, Belgium, Netherlands, Portugal, Italy, Poland, Swiss and Lithuania remained on the gold standard, and these countries did much more poorly than those which abandoned gold earlier.
Many countries, including Britain, increased tariffs in the attempt to protect their economies against the effects of the great depression and the failure of international cooperation.

Currencies and bank in other countries during the depression

Spain: it avoided the worst excesses of the great depression thanks to the fact that it never got the gold standard back after the WWI. The banking system did not face panic and failures as abroad, and the bank of Spain worked as a lender of last resort, since it was not bound by the inflexible standards of the gold standard and did not have to raise the interest rate to protect the currency.
Greece and Portugal: just few banks failed, as this was mainly since they had heavily invested in unprofitable industries. Even though the central banks were unable to work as lender of last resort, banks were better able to sustain liquidity and solvency, due to mixing banking.
Italy and Poland: no general banking crises, even though they were on the gold standard, because they had different policies. The Credito Italiano, one of the main banks in Italy, was transformed from a universal bank to a commercial one by the government, avoiding its failure, and the same happened with Banca Commerciale, which was a universal bank then restricted to only short-term activities. In both cases, the banks were transformed because the government took part in the financial activities, avoiding their failures, and it also was possible due to secrecy in these operations. Similar operations happened in Poland, with the government taking over troubled private banks. Italy and Poland, being on the gold standard, both experienced great deflation and falling production but they were able to break the "golden fetters" of the gold standard to avoid the deflationary spiral.
Japan: it entered the gold standard only in 1930 to solve domestic economic troubles and to reevaluate the yen but noticing the impossibility of the mission abandoned gold already in 1931, avoiding the worst of the depression.
Latin America: Argentina was the leading economy, it rejoined the gold standard in 1927 but abandoned it just two year later, avoiding the worst of the great depression. Most of the other countries of south America defaulted, mainly due to the lack of foreign capital exports.
Africa and Asia: most of the people were hit by the fall in world agricultural prices and lack of foreign capital

The end of the contraction

The ideology of the gold standard was very strong and it was hard for leaders to abandon it, also because it was not possible for them to understand that that was the problem. Only when the national economies were freed of these constraints could the economic contraction be halted.
The change in policy regime can be seen most clearly in the US: Hoover followed an orthodox regime in 1931-32, supporting the gold standard and eventually increasing deflation. The Fed stepped towards expansionary monetary policies only in March 1932, but it was halted when the open-market purchases alarmed other central banks and threatened the solvency of member banks by lowering returns on bank portfolios. The Glass-Steagall Act of 1932 reiterated support for the gold standard. A change in policy started to took place in 1933, when Roosevelt began considering devaluation to raise commodity prices, then causing the run-on banks and the "bank holiday". Roosevelt also imposed controls over all foreign-exchange trading and gold exports, he ended private gold ownership and took control over the sale of all domestic gold production and he was then able to safely devaluate the dollar, coordinating fiscal and monetary policies.

Feinstein, C. H., P. Temin, and G. Toniolo, The World Economy between the World Wars, Chapter 8: 'The fragmented world of the 1930s', sections 8.1-8.3

Attempts at international cooperation

The Lausanne conference on reparations

The conference opened in June 1932, with the French opposing substantial concessions and the Italians, British and Germans favoring a clean slate on reparations. After lots of discussion, the convention was signed, putting an official end to reparations. Germany was required by France to deposits bonds worth 3 billion marks with the bank for international settlements, and the bonds were to be floated by the bank after 3 years if Germany was judged capable of paying. eventually, the bonds were never issued and Germany was permanently free from reparations obligations.

The 1933 world economic conference

It took place in London after other major obstacles has disappeared: UK had abandoned the gold standard and German reparations had come to an end. France and other European nations asked to president hoover to postpone the payment of the remaining inter-allied debts and after his rejection they simply did not pay for it. Only in 1934 the U.S. made a legislation which put to and end the inter-allied debts, but during the London conference they lack any leadership role, making cooperation impossible at the meeting.
Before the conference: Roosevelt won the U.S. elections and the dollar fell, while France asked to the U.S. and UK to reintroduce the gold standard and fixed exchange rates. The central banks of France, Britain and U.S. decided that the exchange stabilization was possible, and made a secret agreement, with the intent to avoid measures that could interfere with monetary stability. The news on the agreements accidentally leaked to the press, the dollar strengthened and Roosevelt asked to reject the agreement at the conference, causing increasing turmoil. France reacted concentrating pressure on British to rejoin the gold standard and the British answering they wanted currency declaration. The U.S. rejected to sign another declaration regarding monetary stability and an effort to avoid speculation. Roosevelt accused European nations to be interested only in price of their currencies and not in the sound internal economic situation of the nations. After this, failure of the London economic conference, even though the conditions for international cooperation were not present at all at that time, since each country was only interested in its own economic and currency.

The gold bloc

Continental Europe excluding Scandinavia, stayed with gold in two different ways:

- Gold bloc led by France: open currency Exchange at pre-depression values
- Nazi area led by Germany: currency controls formally preserving the value of the mark but abandoning any of the theoretical benefits of the gold standard and enjoying freedom in monetary and fiscal policy

The gold bloc included: France, Italy, Belgium, swiss and other countries of the Latin monetary union → they representatives met in Paris in July stating they would have maintained the gold standard and the stability of their currencies and their current parities. Apart from this strong declaration, the bloc remained a symbolic organization, with little internal cohesion. There countries had a particular slow recovery from the depression since they always had to pursue deflationary policies. While deflation was the option chosen by the gold bloc to protect their trade balances, the Nazi bloc chose exchange controls. The gold bloc did another conference in Geneva in 1934: the gold bloc formally survived, but not major improvements were to be made after it.
After noticing that it was impossible to recover from the depression keeping the gold standard, the gold bloc eventually chose devaluation on currency controls.

Feinstein, C. H., P. Temin, and G. Toniolo, The World Economy between the World Wars, Chapter 8: 'The fragmented world of the 1930s', sections 8.4-8.5

The Nazi trading area

Germany's currency controls

1931: Germany abandoned the gold standard for all practical purposes by imposing controls on foreign-exchange transactions, but without devaluating the mark. In 1932: expansionary monetary policy and from 1933 positive impact on output and employment. With the Nazi party in power, high degree of government control and involvement in economy and foreign trade policies. During the 1930s, Germany increased protectionism, autarky and capital (coming from Jews fleeing persecutions), with a growth GDP per capita rate of 6.6% a year.
At the beginning, trade policies to increase consumption and decrease unemployment, but later focus on preparation for a new war: decrease in import goods and increase in labor intensiveness.
The Nazis initiated several trade agreements of different forms:

- Private-compensation agreements with agencies matching importers and exporters to offset trade, with German exporters obtaining higher prices in terms of marks and foreign importers purchasing marks at a discount rate.
- Bilateral exchange clearing system, attempting to balance credit and debit on a national level. German importers paid marks to the Reichsbank account of the trading partner, where the funds were held until they could be used to pay German exporters for goods sold to the other country. If the accounts held insufficient funds, the exporters had to wait for imports to increase, and if there were excess funds, importers had to wait for increased exports.
- Sonder mark agreements with western Europe, involving partial clearing systems
- ASKI procedure, from 1934 it replaced the private compensation system. The procedure established accounts at German banks where foreign exporters' proceeds were held. Foreign exporters needed to secure permission from German exchange-control authorities to trade with Germany, with German imports limited to only those deemed necessary by the commodity-control
- boards. Two types of ASKI accounts developed: accounts for individual foreign exporters, and accounts for foreign commercial banks that represented a group of foreign traders.

The reorientation of Germany's trade

Germany's bilateral agreements accounted for 50% of Germany's trade by 1938, even though Germany incurred trade deficits with most of its Balkan neighbors during the 1930s. Germany sacrificed terms-of-trade advantages with cheaper, safer and more politically rewarding options such as isolation form the world market, reduced dependance on imports and reorientation to safe trade. Despite the huge investment from Germany in the south eastern Europe to create a trading bloc, these countries never became major trading partners

Italy between Germany and the gold bloc

The Italian lira, after the devaluation of the pound, turned out to be overvalued. Mussolini tried to adjust real wages to compensate for the revaluation of the currency but without much success. Therefore, controls on

capital movements were introduced, and by 1935 exports of gold were prohibited and clearing agreements came. Trade was reoriented towards Germany and those trading partners which would agree on clearing agreements, such as Argentina and Great Britain. In 1935: economic recovery thanks to Mussolini's decision to invade Abyssinia → increase in armament production cause increased employment and the sanction imposed by the league of nations allowed Italy to adopt autarky

Japan as a different mixed case

Japan created its own trading area with expansion and military expenditures internally and devaluation of the currency and gain of expansive domestic policies externally.
during 1920s, japan had to face a strong earthquake and the failure of several bank. The government responded postponing deflation and allowing monetary expansion needed to increase output and employment and only in 1929 the government introduced deflation, austerity and return to the gold standard at the prewar parity, even if it was abandoned in 1932. Recovery came from military expenditure, with the expansion of the Japanese empire in Manchuria.
The devaluation of the yen stimulated exports, while domestic demand for military purposes resulted in an impressive industrial growth. The growth, however, increased the dual character of the economy, composed of rapidly expanding heavy industry and low-wage consumer industry and agriculture.

The united states and Russia as polar opposites

The New Deal in the United States

Roosevelt took office in March 1933, and this event was accompanied by a mass run on American banks, since he rejected to adopt the gold standard. The president closed all the banks proclaiming a "bank holiday": this was the final collapse of the American financial system. Right after, he proposed several bills to the congress known as the new deal.

1. New federal reserve system such that the money stock of the U.S. could expand as gold flow into the country. End of the bank holiday and agreed on the separation of commercial and investment banking (Glass-Steagall Act). Formation of the Deferral Deposit Insurance Corporation designed to avoid future bank runs by insuring the bank deposits of ordinary people.
2. Agricultural adjustment act (AAA): allowed the government to control the production of agricultural commodities. Restricting production and devaluation of the currency increased agricultural prices.
3. National industrial recovery act (NIRA): employers and employees were incentivized to negotiate agreements on working hours and overall working conditions → working hours were reduced in an attempt to spread the work over more people and wages were raised, but because employers were allowed to increase prices.
4. Reciprocal trade agreement act of 1934: reform on tariff policy

Despite all these reforms, the recovery was neither rapid nor continuous enough to eliminate massive American unemployment. Explanations of this phenomenon may be:

- The reforms for in the way of each other: the increase in prices from the AAA and the NIRA absorbed much of the increase in the money stock from capital inflows
- High wages continued for too long
- Unemployment was so large that even a rapid increase in production was not enough to eliminate it

Collectivization in the Soviet Union

After the soviet revolution, the new Soviet Union isolate itself from the rest of the world and Stalin heavily relied on all those resources and trades that were no more available for European countries. The state took on itself the task of modernizing and developing the economy. In 1929, the first five-year plan was launched, with the goal of doubling industrial output by 1932. Economic growth became the only idol to which everything else had to be sacrificed. Stalin's second revolution took lace spreading terror throughout the country.

The first problem was caused by the peasants, who did not want to give away their products because they did not have anything to buy with the returns. They responded to government coercion by killing and eating all the farm animals, causing that animals were not available to work the fields resulting in a famine. The famine did not accelerate economic growth but it facilitated the government control over the peasants.

The strong and carefully executed central planning transformed the Soviet Union from an agricultural economy to an industrial economy, with forced transfer of labor and capital from agriculture to manufacturing and from consumer-goods production to investment-goods production. It is estimated that the GSP per capita increased by 61% between 1929 and 1939. Also foreign trade increased, thanks to the increase in output, and against the world trend of that period. Only few outside the Soviet Union knew of the purges, of the crudely of the police and of the controlling system and everyone was astonished by the incredible growth and employment socialism had allowed to achieve.

Eichengreen, The European Economy Since 1945: Coordinated Capitalism and Beyond, Chapter 3: 'The post-war situation', only pp. 52-70.

The effect of bombings and destruction on European's plant has been overall limited, since in 1947 Europe's productive capital stock was roughly the same as 10 years earlier. But the war increased the existing divergence between the mass-production orientation of the united states and Europe's dependance on batch methods, since, also due to bombings, European nations avoided the creation of long-line mass production industries.
The war's most profound damage was to the economic and social system, with the price mechanism completely bypassed as governments continued to rely on rationing and price controls. Banks had heavily invested in government bonds to finance the war and were then unable to resume peacetime lending.
Uncertain future of the price system, the financial system and the trading system.
The war helped in creating faster growth by clearing away old institutional impediments, and politicians sought to capitalize on the period of extraordinary politics following the armistice by adapting inherited institutions to the new circumstances of the 3rd quarter of the 20th century and preventing the outbreak of another devastating war in Europe.

Reconstruction

Everywhere there were substantial damages superficially, with railroads, railways, ports, houses and plants massively disrupted, but the distribution of damages was strongly uneven, with some areas being able to repair and fix plants and resume production very quickly, thanks to the fact that the whole people was back to work.
The repair of transportation and communication facilities and labor's commitment to the battle for production facilitated rapid revival. Agricultural output took more time to recover, but in 1947 it already was at 80% of the prewar level.

Conditions were most difficult in Germany, where basic services took months before being back, there was little factory production and the country was divided into four zone controlled by the allied powers which won the war (US, USSR, UK and France). German was the economic center of Europe, but the whole situation of crisis and uncertainty had caused investors not to put capital in the industry anymore, with industrial production continuously falling.

The transition to sustained growth

Growth in industrial output and living standard were considered as the main goals from allies → general spending on industrial capacity, in particular in heavy industry (transportation, energy, iron and steel).

Problem: the European nations had sold all their fixed assets to pay for their defense and to import food from abroad, so terrible financing situation, with depressed exports (to balance with imports, exports should have increased by more than half) and impossibility to generate the necessary financing on its own. Another problem was that, since the industry was not recovery fast enough, the true issue was not in increasing exports but rather in decreasing imports. Another obstacle to growth was the extensive price control over wages, products, committees, and banks' activities. Since prices were frozen below equilibrium levels, producers had little incentive to bring their goods to markets and farmers stored their grains rather than selling it. Price distortions and shortages grew worse as the longer governments continues running deficits and printing money, widening the gap between controlled price and black-market prices.

A way to stop this vicious circle was to leave the markets free to interact as before, without controlling prices and trades in each country, but there was a general lack of confidence that this system would have worked, since the last time markets were free to operate in the 1930s they ended up creating the great depression. Furthermore, great political uncertainty: the communist party was very strong in several European nations, with anticapitalism movements, but at the same time fear that private property could disappear. Therefore, entrepreneurs held off investing until they learned more about the status of private property. Investors held off purchasing securities until they knew more about how their dividends would be taxed. Banks hesitated to lend, not knowing whether their principal would be inflated away. Workers hesitated to invest in skills and training until they knew more about the structure of pay and employment.

Normalization and the political economy of the Marshall Plan

In retrospect, the solution to these problems was clear. Restocking the shelves required removing price controls. But to avoid igniting inflation, budgets had to be balanced and the excess of money and credit created by wartime governments had to be removed. Reducing the pressure of demand would strengthen the balance of payments, allowing private enterprise to import raw materials and intermediate inputs. But it would also slow the rate of growth and weaken support for the market system unless the reduction in public investment was offset by a rise in private investment. This in turn required eliminating fears of confiscatory taxation and nationalization. And all of these required political consolidation that strengthened the hand of parties at the center of the political spectrum. After it became clear that extremist parties were not going to rule anymore (due to Nazi and fascist movements and to the fact that the Soviet Union had revealed its true status in eastern Europe), the U.S. finally took a leading position in the international scene and promoted the Marshall plan.

The Marshall plan addressed each of the obstacles to postwar recovery. By providing 13 billion dollars in U.S. government grants over four years, it relaxed the external constraint. The Marshall Plan solved the problem of having to export to pay for imports but being unable to produce for export without first importing materials and machinery. It sustained Europe's strategy of investment-led growth and reconciled the need for investment finance with the insistence on higher living standards. It provided incentives to embrace the market, since countries accepting American aid had to sign bilateral pacts with the United States agreeing to decontrol prices, stabilize exchange rates, and balance budgets. In effect, they had to commit to putting in place the prerequisites for a functioning market economy. This reduced uncertainty about property rights, encouraging investment and initiative. It helped governments to decontrol prices and reduced inflationary pressure.

An important effect of the Marshall plan is that it tipped the balance of political power toward centrist parties, since socialist governments would have not received any financial aid. The plan implied private ownership and free market. Even though governments continue to play a major role in the welfare state, the centralization and the planning of the economy was no more an option. The response to price liberalization was immediate. Stores empty one day were overflowing the next as goods flooded out of hoards. Because workers now had goods to buy, absenteeism fell. These effects were most dramatic in West Germany, but they were seen throughout Europe. The sudden supply of materials from mines and farms provided industry with the inputs needed to expand production. A final effect of the Marshall plan was to encourage European integration against the Soviet Union. A first response was the creation of the conference for European Economic Cooperation (OEEC). Discussions on the destiny of western Germany went on for several year, finally ending in 1948 with the creation of the West Germany and the acceptance that it could participate in the international market without being subjected to industrial ceilings.

German economy and monetary reform

Since the Soviet Union wanted to print its own currency for East Germany and had no intentions to cooperate with the US, Britain and France, and the split with two Germanies was finally reached. The allied printed new currency and founded a new independent central bank, with a new fiscal reform plan which reduced taxes to encourage labor effort. A monetary policy was done to remove the monetary overhang (scaling down the German debt and converting only some part of the reserves in new currency) and with the remove of price controls → absenteeism fell → industrial production increased

Eichengreen, The European Economy Since 1945: Coordinated Capitalism and Beyond, Chapter 2: 'The mainsprings of growth'.

Western Europe grew more than twice as fast from 1950 to 1973, in terms of GDP, while in eastern Europe this was not the case. During the golden age, western Europe succeeded in reducing the gap with the US and converged toward its technological frontier.

Growth was faster in Germany, Italy and Austria and in Greece and Spain in peripheral Europe, while the slowest were UK and Ireland. No big variation in output per capital in eastern Europe due to the presence of economic centralization in the soviet bloc.

Probing deeper

What are the deeper economic factors explaining these patterns?

- Catch-up: rapid growth achieved by reversing the loss of output and destruction of capacity cause by WW II. European countries that had experienced disruption could grow fast by rebuilding the capital stock and expanding employment. At least at the beginning, the rapid growth of the golden age represented a simple return to normalcy after the war and the great depression. Catch up required higher levels of investments. What stopped Europe after 1973?
- Convergence: additional growth achieved by closing the efficiency gap that had opened up with the US. The U.S. had assumed a leading role by pioneering mass production methods, with economies of scale applied in corporations that were allowed to sell in a unitary internal market, resulting in lower production costs and better exports. All this is evident in the gap in GDP per person between Europe and the United States, (from 25 percent in 1870 to 40 percent in 1913). The gap widened further in the 1920s with the adoption of assembly-line methods and the commercialization of new technologies (e.g. the radio). It narrowed in the 1930s due to the severity of the great depression in the U.S. but widened again in the 1940s as the wartime capacity of the U.S. expanded. → the golden age allowed for convergence thanks to an increase in trade integration (thanks to the OEEC, GATT and common market), in technological progress based on science and on the spread of knowledge. More cooperation and sharing among corporations, same levels of literacy and numeracy and the presence of technicians and engineers allowed Europe to close the gap with the US. Technological advance proceeded in Europe itself too, with scientists in R&D departments of European companies. There also was a sharp increase in western Europe labor force, with German and polish coming from the east. The modern industrial sector grew rapidly due to several reasons: small farms adopted new agricultural technologies so that some workers could move from southern to northern Europe without depressing the food supplies.

As contemporaries begun to emphasize these factors, then they began to dissolve: The Berlin wall closed the west German labor market from the east, unemployment declined and structural changes exhausted the supplies of unemployed labor previously made available by the agricultural sector → labor militancy strikes of 1968.

Another explanation for the relatively high investment rates is cyclical stability, with no economic crisis in almost 20 years. Many could think that this stability was due to Keynesian policies, but monetary policy was little used. After the 1970, cyclical instability resurfaced frequently due to both an increase in incidence and severity of shocks (breakdown of the Bretton woods system of pegged but adjustable exchange rates, causing European countries to create new monetary organization that worked only in the 1980s, such as the European monetary system) and the oil shock caused by the price increases by the organization of petroleum exporting countries (OPEC). As a consequence, the commodity prices inflated and interest rate spiked in the US.

Institutional foundations of the golden age

European societies developed neo-corporativist structures: tripartite governing institutions involving government, management and labor to prevent wage increased from squeeze profitability and to reduce labor unrest and strikes. Governments supported this new approach, providing assurances to workers' rights and asking them to limit wage demands to use profits for modernization and capacity expansion. Even though it was

a lot to request, it worked out because cooperation between capital and labor was cemented by a series of institutional bargains:

- codetermination: labor representatives in the supervisory boards of stock joint companies
- rewards and penalties to encourage cooperation: Swedish government regulated the payment of dividends by public companies, German government provided tax breaks for investment but not for firms paying out profits as dividends and Central banks helped to cement the bargain by pursuing low-interest-rate policies that encouraged firms to follow through on their investment commitments.
- Public programs to bond labor: several governments offered benefits to workers if they accepted no limit wage increases demand (pensions, insurances, holidays…)
- European countries moved together also in an international perspective, to open up current accounts to the U.S. markets → governments agreed on removing imports controls and to commit to liberalization, with the support of the US

The ECSC addressed special problems for heavy industry, but fear of the U.S. to be excluded and fear that the fact that the UK was not part of the agreement would have result in the country being left out of Europe. Creating the ECSC entailed establishing a Joint High Authority to monitor production and investment decisions in the six founding member states. In addition, the treaty provided for a Common Assembly as a political counterweight to the technocrats of the High Authority, a Council of Ministers through which governments could approve by qualified majority vote the proposals of the High Authority, and a High Court to adjudicate disputes between the High Authority and the contracting states.

The most enduring transitional institution was the European union: important to sustain the growth of Europe's' trade (reconstitution of the continent's trade pattern, aka the tendency for European countries to trade disproportionately with their neighbors owing to low transport and communication costs). But it also allowed to reconstruct along export-oriented lines, facilitating the adoption of US – style mass-production methods. Undervaluation of the currency was the rule after WWII, except France and Belgium, which stabilized at levels that produced no improvements in competitiveness relative to 1938, also because both countries lagged behind in terms of growth and exports, while in other countries like Germany undervaluation and export growth really was dramatic, reflecting the favorable rate at which the mark was stabilized in 1948.

Competitive labor costs allowed Europe to shift resources into manufacturing, where learning effects and productivity spillovers were strong, exploiting economics of scale and scope. Multinationals were encouraged to invest in Europe, with European firms generating the profits to make investments attractive and increasing savings to strengthen the current account.

Internationally, the GATT system of trade liberalization and the Bretton Woods System of pegged but adjustable exchange rates encouraged the expansion of Europe's trade. The International Monetary Fund was established to lend support—and money—if dislocations arose along the way.

Institution and history

Growth requires markets but also institutions capable of making these markets work, coordinating bargaining across sectors and trade liberalization across countries. The reason why Europe developed a set of arrangements so well suited to these tasks lies partly in its history, with Bentham, Rousseau and many other jurists and ambassadors promoting European integration and cooperation for long time, predisposing the new postwar generation of statemen toward European integration as a solution to the continent's economic and political problems. The United States played an important role in the post war context, due to the Marshall plan and the Truman doctrine, which encouraged the formation of a European bloc against the Soviet Union. European governments played an active role in helping to surmount the obstacles to modern economic growth and preventing countries from falling behind their industrial rivals with potentially dangerous security consequences (e.g. supporting banks to meet the demand for capital requirement, pioneering social insurance to reconcile workers…). During the 20th century, also the political franchise increased and this made governments increase spending on social services.

Corporatist compromises firstly developed in small countries (Sweden and Netherlands as leaders). It had a huge impact in those countries ruled by dictatorships such as Italy, Spain and Germany, because in this way governments could centralize negotiations and control the economy. The war removed from the European scene neither France's influential farm lobby nor Germany's powerful unions, convenient though it may be to assume the opposite. An elaborate set of institutions that developed out of inherited arrangements continued to

shape the interaction of such interest groups. Significant wartime and postwar disruptions there surely were. But, in this case at least, institutional continuity more than institutional disruption provided the backdrop to economic recovery and growth.

The end of the golden age

Toward the end of the 1960s, output and productivity growth began to slow down. Why?

- The rise of the capital-labor ratio that allowed Europe to get super-normal returns at the beginning converged toward a steady-state level
- As technological backlog was exploited, it was harder to increase growth through the system of technology transfer. Sustaining growth became a matter of investment in new products and unproven technologies but the compression of wage differentials between skilled and unskilled workers and high taxes on incomes discouraged acquisition of specialized knowledge essential to an innovation-based economy and R&D spending by companies
- The wage restraint that had supported growth weakened. As memory of unemployment from 1930s faded, a new generation of workers with a new attitude developed and strikes and wage inflation increased by the end of the 1960s. the Bretton woods system was an anchor for exchange rates since any acceleration on inflation had to be halted quickly, workers had limited incentive to ask for wage increases and demand stimulus translated into increased output rather than being lost on inflation. But as the System was abandoned in 1973, unions began to worry that inflation would persist and the demand stimulus was not anymore channeled in employment and growth but in wage demands and inflation

These pressures ultimately slowed down economic growth, together with reduced scope of catch-up and convergence. As growth rates showed signs of falling, the agreement to trade wage restraint for investment proved harder to sustain. European countries responded deepening the involvement of government in the economy, extending the welfare state and accelerating European integration. These responses were meant to reinforce wage moderation, subdue inflation, and stimulate exports and growth. Bur they soon prove to be incredibly costly, with growing public spending, a bloated state sector and evident debt problems. They manifested themselves as high tax rates and welfare-state policies that blunted the incentives for innovation and slowed the pace of labor reallocation.

Amsden, A., The Rise of the Rest: Challenges to the West from Late Industrializing Economies, Chapter 1: 'Industrializing Late', exclude the last section

In 1965, the rest (China, India, Indonesia, South Korea, Malaysia, Taiwan, Thailand, Argentina, brazil, chile and Mexico and turkey) supplied less than one twentieth of world manufacturing output while in 1995 it supplied nearly one fifth of it. Excluding the north America and Europe, we can divide the remaining countries in two sets: "the rest" as abovementioned, including those countries that during the war had developed some kind of manufacturing experience and "the remainder", comprising those countries which had not been exposed to economic and industrial modernization and failed to achieve industrial diversification.

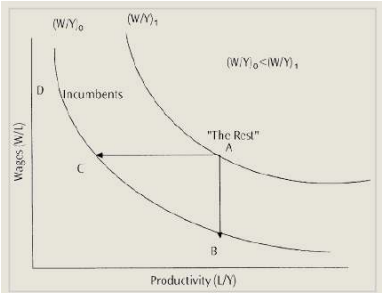
The rise of the rest is a process that occurred in the second half of the 20th century, and it was based on industrialization without proprietary innovations, with only pure learning and total dependence on commercialized technologies in modern countries.

Knowledge-based assets

Economic development consists in moving assets based on primary product to assets based on knowledge (from unskilled to skilled workers), and therefore from primary sector to manufacturing. Manufacturing industry is the main knowledge-based assets one, since it allows the owners to produce and distribute products at a higher price than the market cost. Knowledge-based assets are characterized by three capabilities: production management and engineering, project execution and innovation.

There is then a great reluctance by a firm to sell or lease its intangible assets, since their value may be maximized if kept secret and exploited inside the firm. Even if the technological assets of a firm were to be sold, they remain highly dependent from skilled labor force who know the production process. Given imperfect knowledge, productivity and quality tend to vary sharply across firms in the same industry, and further when in different countries. The model of comparative advantage no longer works for latecomers, because latecomers cannot necessarily industrialize simply by specializing in a low-technology industry. Latecomers governments then have two choices:

- Do nothing and wait for their exchange rate to realign, cutting real wages, even though there is no guarantee that skills will rise or that total costs will fall sufficiently (A → B)
- Subsidize learning to give a sustainable jump to industrialization (A→ C)



Subsidizing learning or cutting real wages. L = labor; Y = output; W/L = real wage per worker; W/Y = unit labor costs. Unit labor cost loci are rectangular hyperbolas, the product of real wage and labor-output ratio. They, therefore, are constants.

The emulators of England during the second industrial revolution never faced such drastic choices because they industrialized together with technological change. American investors had "three-pronged" investments: in manufacturing plants, in managerial and technological capabilities and in marketing. France competition in the textile industry was possible thanks to a well-developed science-based chemical sector (for colored fabrics). Sweden accelerated industrialization with inventions such as the telephone, the separator, several electrical equipment and bearings. Japan entered the orbit of modern industry by innovating new ways to produce traditional products. Japan's lead in textiles and low-tech sectors was sustained by labor-market imperfections, with a smaller wage gap between the informal (labor intensive industries) and the formal sector (capital and skill intensive industries), with respect to its neighbors. In mid and high technology industries of north America entry barriers remained and the same happened for other multinational companies that succeeded in increasing their market power through innovation during the 19th century (Bayer, General motors, Pirelli, Fiat, Mercedes, DEMAG, Olivetti…). Latecomers governments, being unable to compete with western and developed economies, applied downward pressure on wages, even though in some countries governments also opted for a strong institutional solution to prevent the formation of trade unions (Korea and Taiwan).

A new control mechanism

The rest then rose with a new, alternative economic model, governed by a control mechanism in which institutions impose discipline on economic behavior. The control mechanism of the rest was based on reciprocity, with subsidies allocated into manufacturing and with recipients of these intermediate assets subjected to monitorable performance standards, redistributive in nature and result oriented. This mechanism transformed the inefficiency of government interventions in the market into collective goods, minimizing government failure. The control mechanism involved a sensor, an assessor, an effector and a communication network. Industrial policy makers were price takers.

The first engineering experiment by the rest was to fix prices as is there was a free market, to allow manufacturers to buy and sell at world prices. Free trade zones were created to better exploit the low wage economy and to be competitive worldwide. But this policy proved to be effective only in few industries, since others were not competitive at all, neither in prices nor in production.

Economic engineering went a step further: greater subsidies were offered to textile and mid-technology industries to make manufacturing industries profitable. Reciprocity remained ad subsidies were to be tied to a performance standard (for example, meeting exports requirements). Several measures were undertaken to boost the manufacturing industry, including banks giving credit to borrowers only when they directly contributed with their own capital.

Since the late 1950s, the allocation of subsidies in all countries of the rest was systematized: governments did not allow national industries leaders to fail, but allow their owners to go bankrupt, leaving production capacity intact. Another rising problem was corruption, which became endemic. The rest rose getting the control

mechanism right, rather than the prices right. They were eventually able to increase exports and GDP per capita during the golden age and later.

China, India, Korea and Taiwan succeeded in become knowledge-based economies though heavy investments in their own proprietary skills to sustain national ownership of businesses and enterprises in mid technology industries and invade high technology sectors. In contrast, Argentina, Brazil, Mexico and Turkey continued to depend on foreign know-how.

Overall, in step with globalization, foreign investment remained in every country, either to buy technology or to adapt it. In the rest, a division between integrationists and independents emerges: countries like Mexico sought to clone themselves to foreign investors, while other countries sought to create nationalist innovation systems to champion national leaders with their own proprietary knowledge-based skills. The different approach depended on the type of manufacturing experience a country had acquired (history) and on income distribution

Manufacturing experience

Manufacturing experiences create expectations on investors on the success of future manufacturing activities and created the qualified managers and engineers to implement investment plans
Prewar manufacturing experience fell into three main categories:

- Premodern: from artisan handicraft (china, India, Mexico and ottoman empire
- Émigré: from the know-how transferred by permanent emigrants
- Colonial: from colonial ties coming from north Atlantic (India) or to Manchuria, Korea, Taiwan from japan

Manufacturing experience is a stock of knowledge passing a specific historical and institutional filter. The depth of prewar manufacturing experience distinguished the rest and the remained. The type of prewar manufacturing experience distinguished the countries between "the rest". The greater the continuity in the transmission of knowledge before and after the war and the greater the discontinuity in the ownership of foreign firms, the greater the rise of national leaders and national skill formation.

The policy paradox of Income distribution

The primary sectors of "the rest" were highly diverse in terms of production, organization and resources distribution. The most unequal land distribution was measured in Argentina, Brazil, Malaysia, Chile, while Korea, Taiwan, Thailand, China and India had heavily invested in land distribution reforms. Counties that invested most in national firms and national skills also had a better land distribution.

- The flow of resources from agriculture to manufacturing was more sustainable in case of economies with equal land or income distribution, since subsidies could be lower and it was easier for manufacturing activities to succeed
- Intermediate assets (subsidies) may be allocated from the government either to a large number of firms (diffusion) or just to the national leaders firms (concentration), through industrial licensing, performance standards and profit distribution. Paradoxically, countries in the rest with relatively equal income distribution followed the concentration approach, while the ones with income inequality followed a diffusion approach (but the greater the inequality, the more diffusionist the policies and hence the greater the difficulty of creating national leaders with proprietary skills)

Institution building

Reciprocal control mechanism began to develop in the 1950s/1960s in all "the rest" countries, except for Argentina. The synchronization of institution-building in different countries represented and historic moment, defined by decolonization and by the rise in the ideology of development planning. Moreover, when a country adopted a new technology, its neighbor followed it right after (as it happened in Malaysia, Indonesia and Thailand).

Eichengreen, The European Economy Since 1945: Coordinated Capitalism and Beyond, Chapter. 12: 'Europe at the Turn of the Twenty-First Century' (until p. 405).

A global divergence in labor expansion happened, particularly between U.S.A. and Europe, with a sharp decline in labor input in the latter, while there has been labor expansion in the U.S. and especially in Asia.
Firstly, it is important to start from the assumption that GDP is not a perfect measure of welfare in a society and that Europe enjoys lower level of infant mortality, earnings inequality, poverty rates and rates of violent crime.

Europe's GDP per capita has being from more than 30 years and is still today two thirds of the U.S. level. However, Europe's output per hour worked is just slightly lower or – in some countries, like France – even higher than U.S. level.

Unemployment is one of the major European problems nowadays, being twice the American level, and usually seen as the cause of its rigid labor market. However, this is not preventing Europe from dominating the international export market. Bureaucracy, which often constitute an obstacle to the creation of new start-ups, is considered in the meantime the cause of better product standards.

Difference in per capita GDP between Europe and U.S. is determined by three causes, happened after 1975:

1. European lower output per hour worked (although it is converging with U.S. level);
2. Fewer hours worked per employed (1500 hours in Europe against 1800 in U.S.);
3. Lower employment rates.

Despite this, employed labor force in Europe is very productive, mostly marginal workers are unemployed and European workers had a stronger desire to take some of their increased in income in leisure time, than their American counterparts.

There are different arguments trying to explain Europe's shorter hours:

1. The MIT School links them to a cultural preference of leisure over extra pay and states that this preference is accepted by political establishment. However, this is not supported by convincing experimental evidence and does not explain the lower participation rates among women and older men (factors that seem to be determined by differences in social security provision and similar policies);
2. The Minnesota School links them to different tax system (taxes increasing in income), since in U.S. lower taxes imply higher incentives to work. The overall gap in taxes between Europe and U.S.A. is 10% and an excessive tax burden makes people prefer leisure time over work. However, in some countries – such as Ireland – despite the lower level of taxes, hours worked are in line with European trends;
3. Alesina, Glaser and Sacerdote (2005) argue that one reason can be the presence in Europe of powerful unions and a rigid labor market that prevented in the mid-1970s a reallocation of labor (when productivity was declining in certain sectors). Unions in declining sectors encouraged shorter hours and work sharing and, due to coordination externalities (difficult to work if other are not working at the same time), this affected the whole economy.
4. Empirical evidence highlights that correlation is weak within European countries (e.g. Scandinavia has the highest tax rates, but low unemployment and high labor participation). Moreover, income taxes were very high during the Golden Age and this does not explain long term unemployment.

High unemployment is mostly structural, dominantly in declining sectors, there was limited occupational mobility relatively to United States.

Long term unemployment was characterized by workers that were out of employment for years and usually stayed unemployed. There was depreciation of human capital and consequent 'de learning by doing' (working skills, discipline). Youth unemployment was instead a new phenomenon with large differences within the Europe.

But even if unemployment was a problem for the whole continent, three countries can be deemed virtuous examples:

1. Netherlands. Unions, employers and the government decided to freeze wage increase and minimum wage while at the same time reducing labor taxes, thus keeping real wages stable. The government also implemented structural reforms of the unemployment insurance system and of disability insurance system

(tightening qualification requirements), introducing for example part time work for women. This produced an increase in labor participation and therefore broader tax base and, in the end, fall in unemployment rate;

2. Ireland: Government supported the bargaining between trade unions and employers to limit wage increase in exchange for a decrease in labor taxes with the Program of National Recovery (1988). The balance between labor cost and productivity improved and employment rate increased. Moreover, labor supply was augmented by reduction in emigration and return flows from abroad that – with the reform of the educational system – made Ireland an attractive production platform. By 2000, unemployment decreased and GDP per capita rose.
1. Germany and Austria. Dual track educational system (combines apprenticeships in a company and vocational education at a vocational school in one course) and subsidies for low-cost employment and regional mobility.

A lot of favorable factors, such as demographic change in Ireland or currency depreciation (decline of European currency against dollar in the middle 1980s), in both Ireland and Netherlands are nowadays not available, but reducing unemployment is not impossible. In the European Union reforms as to be made, labor costs can be reduced through a limitation in wage growth accompanied by a decrease in taxes, there is the need for expansionary monetary policy, for a more flexible labor market and an action of the government to solve the problem of coordination due to the existence of several different unions, in this process the integration of eastern European countries will be an incentive for labor market reforms (to ensure that domestic producers don't relocate production in low wage countries).

IN COLLABORAZIONE CON