Historical Patterns of Development and Underdevelopment: Origins and Persistence of the Great Divergence


Executive Summary:
The aim of the project was to understand the reasons behind the income gaps that developed between Europe and the rest of the world (Great Divergence) and those between Northwest Europe and the rest of Europe (Little Divergence) implies considerable challenges, both in terms of quantification and analysis. In terms of quantification, the major European challenges were to be found in the pre-1800 period, although much work remained to be done in quantifying 19th and 20th century performance elsewhere. For Europe, the project moved beyond the real-wage evidence that has informed the debate on the European ‘Little Divergence’, and provided more comprehensive evidence based on Historical National
Accounting (HNA). By providing statistics on national income or Gross Domestic Product (GDP), it has been possible to provide a unified approach to quantifying economic development, facilitating comparisons between less developed countries (LDCs) today and European economies in the past, when they were themselves LDCs.

In terms of analysis, the major questions that the project endeavoured to answer were: to what extent can the patterns of growth, convergence and divergence that the data reveal be explained by forces internal to the various world regions, and to what extent are they explained by interactions between these world regions? Was the Industrial Revolution, which provoked the Great Divergence between the West and the ‘Rest’, due to factors purely internal to European societies (e.g. relatively limited government, the Enlightenment, and so on), or to the nature of Europe’s trading and political links with the rest of the world, or to some combination of the two? And what, if any, were the implications of these links, and of the Industrial Revolution, for Africa, Asia and the Americas? What were the effects of attempts by ‘peripheral’ economies to decouple themselves from these global forces? What are the lessons that can be learned by today’s policy-makers, both in Europe and in the developing world?

To answer these questions, the project was divided into two broad themes:

Theme 1: Quantifying the relative growth experiences of the European core, the European periphery, and the rest of the world, from the medieval period to the present.

Theme 2: Analysing the European breakthrough to modern economic growth and the subsequent Great Divergence, focusing both on (a) sources of change internal to Europe; and (b) the impact of interactions between world regions on economic growth, both in Europe and the rest of the world.

The research programme developed to cover these two themes consisted of seven Work Packages, through which the researchers have explored the relations between world regions and the factors shaping different development paths in a historical perspective, focusing on the experiences of Asia, Africa and Latin America alongside Europe. The project assembled eight teams of world-class researchers to collaborate on frontier research, and has facilitated the creation of new models with major implications at a global policy level that will extend beyond the project itself.

The dissemination of project results to the public took place through a combination of channels, including the HI-POD website, publications, and presentation of papers at the project’s conferences – the four agreed at the outset of the project as well as two additional ones – and workshops and other meetings organised by CEPR and network partners under the auspices of the project. These culminated in a final policy conference to disseminate the results to a wide an audience of eminent researchers and stakeholders.

Please note: the HI-POD project ended on 31st October 2012, but before this final report could be submitted the project was frozen for a European Commission audit. Reporting on the project has been described below as of its culmination, i.e. as at end-2012, and the information below is correct as of that date. However, as a result of the time has elapsed while the project was frozen (i.e. approximately five years), some evidence on work completed, such as the project website, are no longer easily accessible. Wherever this is the case, it has been referred to below where applicable.

Project Context and Objectives:
The general objective of HI-POD was to advance our understanding of the causes of development and underdevelopment by quantifying the relative growth experiences of the European core and periphery, and the rest of the world, from the Middle Ages until today, and by analysing the intra-regional and inter-regional causes of these divergent trends.
As the world strives to attain the United Nations’ Millennium Development Goals and the European Union increases its visibility on the world stage as a major actor in international development efforts, academic efforts, naturally, started focusing increasingly on the historical causes of development and underdevelopment. Today’s rich economies did not attain their current levels of development overnight, but rather through a long-run process which has been centuries in the making. In particular, today’s vast international inequalities stem, above all, from the Industrial Revolution of the late 18th and early 19th centuries, which spread very slowly from Europe, and which reached large sections of the Third World only during the last half-century. This opened up enormous income gaps between regions, which have become known as the “Great Divergence” in international living standards. The Great Divergence has been the subject of much quantitative and theoretical work on the part of prominent economists and economic historians and has persisted into the 21st century.

At the same time, Europe and her offshoots are now facing ever-increasing competition from Asia, as the Great Divergence between these continents at last begins to unravel. Understanding the root causes of the Great Divergence thus has much to offer, both to those interested in development issues today, and to those who worry about the consequences for Europe of rapid Asian development.

This project studied the historical roots of the Great Divergence and the reasons for its persistence. It endeavoured to provide a firmer quantitative documentation of the phenomenon and to analyse the Great Divergence not simply on a country-by-country basis, but as a world-wide phenomenon, which took place in a context of widespread economic and political contacts between regions.

One way of understanding the problem of underdevelopment today is to note that most of the world has been poor throughout history. Indeed, the project takes a long-run perspective, rather than the short run view of the analysis of this problem which most of the recent studies have taken. As a result, the project asked the question “why did Europe develop” by looking at the vast web of inter-relationships between Europe and the rest of the world that had been spun over the course of many centuries and how these led to Europe’s development.

Many economic historians focus purely on the western perspective when analysing Europe’s development. However, HIPOD researchers believed it is important to emphasise the web of inter-relationships between Europe and the rest of the world over the course of the centuries which could have been crucial for Europe’s development. It was important to also consider the effect of these inter-relationships on the non-European world and its own development. Just as some Europeans today worry that trade with Asia is undermining their industries and prosperity, so an Asian tradition has always maintained that trade and other interactions with Europe condemned that continent to deindustrialisation and impoverishment.

Did a history of colonialism, or slavery, or any other “dependency” from Europe, mean that when the nations of Asia, Africa or Latin America eventually became independent, they were bequeathed political and institutional structures that proved damaging for their long-run growth prospects?

If Europe is to promote development, it needs to understand the importance of internal and external factors. HIPOD has made full use of historical data to assess the extent to which the success of the rich nations can be attributed to their links with the periphery, rather than to institutional changes that began in medieval and early modern Europe and spread to the Western offshoots. Equally, the project has assessed whether peripheral backwardness can be attributed to the absence of the institutions which permitted modern economic growth in the west, rather than to policies of exploitation or other interactions with Europe and her offshoots.

The transition to higher growth rates that accompanied the Industrial Revolution has been the focus of much theoretical and empirical work. An important recent theoretical development has been the
emergence of “unified growth theory” (UGT), which seeks to provide a general framework that is capable of explaining the long period of Malthusian stagnation and the recent period of sustained growth, as well as the transition between the two. Much work has already been done on the Malthusian era, when an increase in real living standards was only possible if population fell, and the modern era, when real living standards have been able to increase continuously while population growth at first accelerated, then slowed down. The acceleration followed by deceleration of population growth is known as the demographic transition, as the economy moves from a stable population with a high birth rate and a high death rate, to a stable population combined with low birth and death rates. The key variable in unified growth theory is human capital, which provides an important link between the increased per capita income of the industrial revolution and the demographic transition. This is because people have to pay to increase the human capital of their children, and hence face a trade-off between many children with little education and few children with a lot of education. As the industrial revolution occurs, the demand for skilled labour increases and people wish to invest in the education of their children, thus bringing about a demographic transition. However, this occurs only after an initial boost to population growth, as people are freed by technological progress from the subsistence constraint of the Malthusian era, which forced them to have fewer children than they wished.

Underlying most of this work is an assumption that the pre-1750 world can be largely characterised as Malthusian, with little or no long-run growth in living standards. To date there has been insufficient empirical testing of UGT.

The new technologies associated with the Industrial Revolution did not just lead to unprecedented growth in Europe. By dramatically lowering transport costs, they brought markets in different continents closer together than ever before, producing a stark division of labour between a manufacturing “core” and a primary-producing “periphery” that is only now unravelling. The big questions facing development specialists ever since then have been: how can developing countries catch up with the core? Should they do so by exploiting their natural resource advantages, as was successfully tried in the 19th century, or does this leave them excessively vulnerable to fickle international markets, as the interwar experience might suggest? Should they decouple themselves from international markets as many did after 1945, or reintegrate with them as they have done over the past two decades?

In order to provide well-founded answers to such questions, we of course need empirical evidence, and here the economic histories of the 19th and 20th centuries have much to offer development experts and policymakers. Since economic history has already had such a profound impact on policy, it is not hard to see the importance of further work in the field. Thus HIPOD used the lessons of history to assess the various options facing policy-makers in developing countries, wishing to converge on OECD economies today.

In using Europe’s transition to modern economic growth to shed light on the problem of underdevelopment today, it is important to realise that the process occurred at different rates in different countries. Indeed, a “Little Divergence” in living standards between Northwest Europe and the rest of Europe occurred sometime after 1500, i.e. long before the Great Divergence.

Already by the end of the 18th century, real wages and per capita incomes were 50% higher in Britain and Holland than in the rest of Europe, and the share of labour in agriculture had fallen to around 40% in these two countries. It seems as though Northwest Europe did not suddenly rise to prominence in the late 18th century from a long-standing position of equality with the rest of Europe, but had seen its relative standing slowly but steadily improve over the course of several centuries. The project further analysed living standards in early modern Europe and Asia, attempting to better understand the causes of Europe’s
ultimate success.
Understanding these ‘great’ and ‘little’ divergences between Europe and the rest of the world and between Northwest Europe and the rest of Europe, presented daunting challenges, both in terms of quantification and analysis.
In terms of quantification, for Europe, the project moved beyond the real-wage evidence that has informed the debate on the European ‘Little Divergence’, and provided more comprehensive evidence based on Historical National Accounting (HNA). By providing statistics on national income or Gross Domestic Product (GDP), HNA can provide a unified approach to quantifying economic development, facilitating comparisons between less developed countries (LDCs) today and European economies in the past, when they were themselves LDCs.
In addition, the project collected long-run data on other development indicators, including human capital formation, which has been seen by unified growth theorists as playing a crucial role. The project also moved beyond purely European evidence, and includes evidence on the Islamic World, India, China and the Americas. Major progress was made by the project on all these fronts, by bringing together teams of historians and economists with expert knowledge of the economic histories of all these regions.
In terms of analysis, the major questions HIPOD has asked are: to what extent can the patterns of growth, convergence and divergence that the data reveal be explained by forces internal to the various world regions, and to what extent are they explained by interactions between these world regions? Was the Industrial Revolution, which provoked the Great Divergence between the West and the ‘Rest’, due to factors purely internal to European societies (e.g. relatively limited government, the Enlightenment, and so on), or to the nature of Europe’s trading and political links with the rest of the world, or to some combination of the two? And what, if any, were the implications of these links, and of the Industrial Revolution, for Africa, Asia and the Americas? What were the effects of attempts by ‘peripheral’ economies to decouple themselves from these global forces? What are the lessons that can be learned by today’s policymakers, both in Europe and in the developing world?
There are two broad research themes in this project.
THEME 1: Quantifying the relative growth experiences of the European core, the European periphery, and the rest of the world, from the medieval period to the present.
THEME 2: Analysing the European breakthrough to modern economic growth and the subsequent Great Divergence, focussing both on (a) sources of change internal to Europe; and (b) the impact of interactions between world regions on economic growth, both in Europe and the rest of the world.
The two research themes are broken down into a series of tightly defined work packages:
THEME 1: QUANTIFICATION
Work package 1: Establishing the basic parameters of the European development transition from c.1300
This aim of this Work Package has been to build upon several projects to reconstruct the national income of a number of European countries for the pre-1850 period. Under this work package data was also collected on other dimensions of economic development, such as human capital, real wages and urbanization.
Work package 2: Quantifying the relative long-run development of Europe versus Asia
Since historical national accounts do not exist for most Asian countries before the late 19th century, this work package has aimed to provide new estimates of real wages and other indicators of productivity and living standards for a number of Asian economies between the 16th and 19th centuries, and compare them with similar evidence for Europe, thereby allowing us to better understand when Europe started pulling ahead of Asia.
Work Package 3: Quantifying African and Latin American economic performance in the long-run
This work package provided new estimates of economic growth and living standards in Africa and Latin America.

THEME 2: ANALYSIS
Work Package 4: Understanding Europe’s growth transition
This work package attempted to go beyond the highly stylized UGT models that had been used up by economists seeking to understand Europe’s transition to modern economic growth.

Work Package 5: Gender, demography and development
This work package explored the many links between gender, economic development and demographic change. It provided long-run evidence on gender inequality, a topic often neglected by economic historians, and it examined how women’s economic experiences were crucial in shaping the relationships linking marriage choices, fertility, and economic growth.

Work Package 6: Core-periphery relationships: implications for the core
This work package had two main components: the first attempted to better understand the nature of intercontinental trade during the age of mercantilism (i.e. the mid-16th to the mid-18th century), whilst the second looked at the implications of this trade for European growth immediately before and during the Industrial Revolution (i.e. the late 18th to the early 19th century).

Work Package 7: Core-periphery relationships: implications for the periphery, and how it should catch up
This work package looked at the implications of trade, slavery and imperialism for peripheral development before, during and after the Industrial Revolution. It also explored the policy options facing the resource-abundant but non-industrial periphery seeking to converge on the core in the wake of the Great Divergence.

Project Results:
WP 1 - ESTABLISHING THE BASIC PARAMETERS OF THE EUROPEAN DEVELOPMENT TRANSITION FROM C.1300

TOPIC 1.1: BRITAIN AND HOLLAND DURING THE LITTLE DIVERGENCE
Stephen Broadberry (CEPR), Bruce Campbell (TCD), Alexander Klein (Warwick), Mark Overton and Bas van Leeuwen (UU) reconstructed the national income for England between 1270 and 1700 and for Great Britain between 1700 and 1870. The estimates of GDP are combined with population data to track per capita income between 1270 and 1870. The researchers were able to establish that average per capita incomes in medieval England were well above “bare bones subsistence”. The GDP estimates have been built up from the output side, based on an abundance of information available on individual sectors of the economy. The structure of the economy at this time, with a large share of agricultural value added in the pastoral sector, sheds new light on the origins for Britain’s breakthrough to modern economic growth during the Industrial Revolution. Key features of industry during the Industrial Revolution were already apparent in Britain’s medieval mixed agriculture: an emphasis on high value added production, capital accumulation and the use of non-human energy.

Given the large amount of material on the construction of British GDP and the analysis of this material, a decision was taken to write a book on British Economic Growth, 1270-1870. Most of the chapters have now been drafted.

The same team carried out a study that demonstrates that Britain’s labour force industrialised early. Their
research succeeds in resolving a major paradox in British economic history, since recent downward revisions of the growth rate of industrial production during the 18th and 19th centuries together with conventional accounts of a rapid shift of labour from agriculture to industry at the same time seemed to imply faster productivity growth in agriculture than in industry during the Industrial Revolution. The earlier shift of labour out of agriculture reinstates industry as the sector with the fastest labour productivity growth during the classic Industrial Revolution period.

Universiteit Utrecht (UU) carried out a study on the reconstruction of GDP growth in Holland between 1347 and 1807. The team’s research showed that the Dutch economy was characterized by almost continuous economic growth over this long period, but interspersed by crises, so that trend growth was relatively slow.

Please note regarding the costs claimed for this topic: We assert that costs associated with this, Deliverable 1.1 "Britain and Holland during the little Divergence", should be claimed as Broadberry submitted 2 papers as deliverables ("When Did Britain Industrialise? The Sectoral Distribution of the Labour Force and Labour Productivity in Britain, 1381-1851" and "British Economic Growth, 1270-1870: An Output-Based Approach") in line with his contract (Annex H2) and Annex I (Annex H1 – pages 31 and 32 of Annex I) of CEPR’s response to the Draft Audit Report RAIA000025. For this, CEPR paid him €4,500. These papers were part of a project that also received funding from the Leverhulme Trust. However, this funding had no provision for the time spent by Professor Broadberry, which the EC funding for this grant agreement was used to cover.

Papers produced for this topic:

TOPIC 1.2: ITALIAN DEVELOPMENT DURING THE LITTLE DIVERGENCE
The research under this topic was led by Paolo Malanima (CEPR). The purpose of his research was the reconstruction of a yearly series of GDP from the late Middle Ages until Modern Growth in the North of Italy from 1300 until 1913.

This is the first series with yearly data from 1300 onwards. The method presented provides an example to follow in research on pre-modern GDP. It is based on a demand-side approach in order to estimate agricultural output and on data on non-agricultural occupations to reconstruct non-agricultural GDP. One advantage of this approach is that data on the main component series are available for many European countries from the late Middle Ages to the start of modern national accounting in the 20th century. The wider application of this method therefore holds out the possibility of producing a reliable summary measure of economic development for much of Europe from around 1300 onwards.

Papers produced for this topic:
Carlos Álvarez-Nogal and Leandro Prados de la Escosura (UC3M) found that two distinctive regimes can be distinguished in Spain over half-a-millennium. A first one (1270s-1590s) corresponds to a high land-labour ratio frontier economy, pastoral, trade-oriented, and led by towns. Wages and food consumption were relatively high. Sustained per capita growth occurred from the Reconquest’s end (1264) to the Black Death (1340s) and resumed from the 1390s only broken by late-15th century turmoil. A second regime (1600s-1810s) corresponds to a more agricultural and densely populated low-wage economy that grew along a lower path. Contrary to preindustrial Western Europe, Spain achieved her highest living standards in the 1340s, not by the mid-15th century. Although its population toll was lower, the Plague had a more damaging impact on Spain and, far from releasing non-existent demographic pressure, destroyed the equilibrium between scarce population and abundant resources.

On the topic of Spain’s international position between 1850 and 1913, the researchers found that this period has usually been presented as one of persistent deficit on current account, which resulted from her integration into international commodity and factor markets and this, in turn, slowed down the growth of the economy. A preliminary reconstruction of the balance of payments on current account allows a rejection of this view. In fact, a net capital inflow made it possible to meet the demand for investment-boosting economic performance. Current account reversals in a context of macroeconomic domestic imperfections help to explain the economic slowdown at the turn of the century.

Lacking the possibility of constructing detailed agricultural output estimates led researchers at UC3M to resort to another approach which, although indirect, requires a lower number of assumptions than those involved in the demand approach. Alternative estimates of agricultural output for the early modern period have been produced on the basis of tithes in order to test the results obtained in their paper “The Rise and fall of Spain”. In Spain, an aggregate picture at national level or contrast between regions is missing. However, the richness of the available datasets and the implications for the knowledge of the agrarian and economic history of early modern Spain persuaded the UC3M team to accept the challenge of gathering all the available series of tithes, and trying to homogenise them in order to derive aggregate results both at regional and national level. Their approach could be replicated for other continental European and Latin American countries.

On the basis of this research and using grain tithes – the lion’s share of total income – Santiago-Caballero assessed the evolution of income inequality in central Spain during the late 17th and 18th centuries, taking as a case study the province of Guadalajara. His study concludes that inequality decreased during the last third of the 18th century. Such an unexpected result was a consequence of the success of the land reform carried out by the central government in the late 1760s.

Santiago-Caballero also used the study of grains to assess the overall growth of Spain in the period from 1750 to 2009. His research has found that the 18th century was a period of growth for Spain; however the increase was not a sustained process, but one with intense imbalances, with production reaching its peak in the mid-1750s followed by a deep crisis and very weak recovery.

Joan Rosés studied the evolution of Spanish regional inequality from 1860 to 2000 and found that two basic forces were behind changes in regional economic inequality: differences in economic structure and labour productivity across regions. In the Spanish case, the initial expansion of industrialization during the period 1860-1900, in a context of growing economic integration of regions, promoted the spatial concentration of manufacturing in certain regions, which also benefited from the greatest advances in terms of labour productivity. Since 1900 and until 1985, the diffusion of manufacturing and services
production to a greater number of locations generated the emulation of production structures and a process of catching-up in labour productivity and wages. So, in these first 125 years, national market integration and economic growth has been followed by a U-shaped evolution of regional income inequality. Nevertheless, some productivity differentials remained and, from 1985 on, the Spanish entry in the EU generated a new upsurge of divergence in productivity across Spanish regions that could be the start of a new phase of regional income divergence

Carlos Álvarez-Nogal investigated the large public debt created in 16th century Castile and provided a new view of its fiscal system. He found that the main part of the debt was in perpetual redeemable annuities and its credibility was enhanced by decentralized funding through taxes administered by cities that represented the Realm in the Cortes. Accumulation of short-term debt would be refinanced by long-term debt. Short-term debt crises occurred when the service of the long-term debt reached the revenues of the taxes that funded the domestic long-term debt. They were resolved after protracted negotiations in the Cortes by tax increases and interest rate reductions.

Papers produced for this topic:

TOPIC 1.4: OTTOMAN ECONOMIC DEVELOPMENT, 1500-1850

During the course of the project Sevket Pamuk’s (CEPR) research focused on deriving new estimates of Ottoman GDP per capita for the period from 1500 to 1850 for south-eastern Europe and present-day Turkey.

The study began by establishing the relationship between changes in GDP per capita on the one hand, and changes in urban real wages and urbanization rates, on the other in a dozen European countries during the early modern centuries. It then applied this relationship to the Ottoman Empire and used the evidence on Ottoman urban wages and urbanization rates to arrive at estimates of GDP per capita for the Ottoman Empire that begin in 1820 and go backwards in time to 1500.

The results suggest that there was some economic growth in the Ottoman Empire during the early modern era. They also indicate that while there existed a less than 1 to 2 GDP per capita gap between the Ottoman Empire and Western Europe as a whole at the time of the Industrial Revolution, a large part of the present-day per capita income gap between Western Europe and many regions of the former Ottoman Empire emerged during the 19th century. It is hoped that this exercise will also contribute to a better understanding of the economic growth record of Europe, especially of the periphery of Europe during the early modern centuries.
Still focusing on the Ottoman Empire, Pamuk also analysed the evolution of the factor markets in this area during the centuries before the Industrial Revolution. The most important determinants of Ottoman economic institutions and their evolution during this period are to be found in the social structure and political economy. Merchants and producers were never in a position to influence the state elites and push for institutional changes that would favour the growth of the private sector. As a result, many of the key institutions of the Ottoman order including state ownership of land remained intact until the 19th century. In contrast, institutions related to state borrowing changed significantly. This difference in the political power of various groups explains better than anything else the divergence in the trajectory of different factor markets.

Papers produced for this topic:

TOPIC 1.5: HISTORICAL NATIONAL ACCOUNTS FOR EASTERN EUROPE

Alexander Klein (Warwick) worked on the reconstruction of the national accounts in Eastern Europe and on assessing the reasons for the failure of Eastern European economies. This involved the collection of data to calculate a GDP benchmark in an Eastern European economy. The main focus for this research was on Bohemia in 1654 since it offered unique data. Specifically, the 1654 socio-economic census conducted in Bohemia in an attempt to assess potential tax revenues after the Thirty Year War provides socio-economic data which allow the reconstruction of the level of economic activities in agriculture and industry in the whole of Bohemia at that time. During the first half of the project Klein constructed a unique data base of the Bohemian economy in 1654, covering almost the entire population which provided enough information to construct a benchmark of the Bohemian economy in the mid-17th century.

In his paper on landlords and occupational structure under the ‘Second Serfdom’, Klein used the data collected to analyse the changes in the occupational structure in this period. These changes are increasingly viewed as a key component of economic growth long before the Industrial Revolution. The paper focuses on the growing importance of non-agricultural activities during the Second Serfdom, paving the way for economic development in early modern Europe through specialisation, gains from trade and moving economies closer to the production possibility frontier. The rich body of evidence available allowed the authors to analyse the activities in Bohemia, disputing the widespread view of serfdom preventing the undertaking of non-agricultural activities.

Mark Harrison (Warwick) and Andrei Markevich have worked on the impact of Russia’s Great War and Civil War on population and national income, 1913 to 1928. This is the last remaining gap in Russia’s modern historical national accounts. Their work shows that the Civil War was economically the deepest of Russia’s 20th century economic traumas. The Russian economy was growing more rapidly under a market economy before 1914 than previous estimates have suggested. It performed better in the Great War than has been commonly thought, and worse in the Civil War under Bolshevik control. This project has broad implications for the significance of Russia’s 20th century experiment with socialism.

Stephen Broadberry (CEPR) and Alexander Klein (Warwick) endeavoured to overcome one of the biggest difficulties with east European historical national accounts, which is to ensure consistency between the data from the communist and pre-communist eras. They did this by checking that benchmarks for comparative Czechoslovak/UK labour productivity from the interwar period can be linked up with benchmarks from the post-war period using times series that have been adjusted to a western basis. The trends in comparative productivity are then used to identify when the Czechoslovak economy began to fail.
The study also fills a gap in the study of industrial labour productivity, which focuses mainly on industrialised countries of Western Europe. Broadberry and Klein deal with another major problem affecting east European historical national accounts, that of changing boundaries. They made available for researchers series which allow for boundary changes at the end of World War I, the end of World War II and after the fall of the Berlin Wall. The new dataset thus preserves a time series element, but by allowing for major boundary changes, avoids the anachronism of having series for countries which did not exist at the time.

Papers produced for this topic:

TOPIC 1.6: HUMAN CAPITAL FORMATION IN EUROPE: THE AGE-HEAPING EVIDENCE
In the first major study in the field of Quantifying numerical literacy, Brian A’Hearn, Joerg Baten (EKUT) and Dorothee Crayen (EKUT), extended the knowledge of human capital, and numeracy in particular, to times and places where other educational indicators, such as signature rates, are unavailable: back into the Middle Ages and east into Central Europe and beyond. Their estimates of numeracy suggest that the most basic mathematical skills diffused earlier than literacy. In the early Middle Ages, numeracy remained at or below levels observed a thousand years earlier. In Western Europe and in the German speaking lands of Central Europe, there was a slow but steady improvement in late medieval times, bringing several countries to numeracy rates of 70% by the 1600s. This period appears to have been the point of maximum divergence from Eastern Europe, where numeracy rates were only beginning to rise from very low levels. This progress before the era of formal schooling, together with the apparent divergence of Eastern and Western Europe, prompts the conjecture that the spread of market activity fostered the development of quantitative reasoning among ordinary citizens. Commercial evolution can thus be seen as laying the foundations for the subsequent industrial revolution.

Papers produced for this topic:

TOPIC 1.7: ESTABLISHING THE BASIC PARAMETERS OF THE EUROPEAN DEVELOPMENT TRANSITION: OVERVIEW AND POLICY BRIEF
Preliminary estimates of national income for a number of European countries have been produced over the period from 1270 to 1870. They suggest that medieval Europe was not as poor as has often been assumed. They also identify a “Little Divergence” between northwest Europe and the rest of the continent, which predates the Industrial Revolution.

The estimates show that living standards in medieval Europe were never as close to “bare bones subsistence” as in modern poor states. This may owe something to the mixed pastoral and arable agriculture, which was prevalent in much of Europe, but particularly in the northwest. This helped to foster a number of features making for long run development, including an emphasis on high value-added production, capital accumulation and the use of non-human energy. Rather than coming out of the blue at
the time of the Industrial Revolution, modern economic growth was therefore built on a foundation of
centuries of slower progress.
A policy brief was produced for this work package in June 2010 which was submitted on the Commission
portal as a deliverable.

WP 2 - QUANTIFYING THE RELATIVE LONG RUN DEVELOPMENT OF EUROPE VERSUS ASIA

TOPIC 2.1: CHINA AND THE GREAT DIVERGENCE
In their article on the evolution of living standards and human capital in China in the 18–20th centuries,
Debin Ma (CEPR) and Joerg Baten (EKUT) integrated both existing and new data on real wages, physical
heights and age-heaping to examine the long-term trend of living standards and human capital for China
during the 18th to 20th centuries. The findings confirm the existence of a substantial gap in living
standards between China and North-western Europe in the 18th and 19th centuries. However,
comparative examination of age-heaping data shows that the level of Chinese human capital was relatively
high by world standards during this period.
Still focusing on China, Debin Ma reconstructed data series of two and half millennia on Chinese warfare
and durations of political unification and fragmentation. He provides a re-interpretation of the traditional
Chinese political regime from the perspective of institutional economics, demonstrating that monopoly rule,
long time-horizon and large size of empire could lead an absolutist regime like traditional China to a path of
low-taxation, political stability and extensive growth.
In another paper on political institutions and long run economic trajectories, Ma used 2 millennia of
Chinese civilization history to illustrate the historical process of consolidation towards a monopoly of
political power in China. The monopoly of rule predisposed the imperial rule towards a path of low-
extraction coexisting with a relatively free private economy. This, in turn, further reinforced political
stability. 19th century Western imperialism, and its system of inter-state competition, became a challenge
to the traditional Chinese rule of legitimacy. China’s response to Western imperialism was unification and
centralisation, which served as tools for achieving the state’s objective of catching up with the West (and
Japan).
In the paper on incentives and information in the Chinese state and its relation to the Great Divergence”
Ma stressed the importance of institutions as a determinant of the long-run economic trajectory and the
Great Divergence between China and Western Europe in the early modern era.
In similar studies, Ma found that subtle but fundamental differences between the Western and Chinese
legal traditions are highly relevant to the explanation of the economic divergence in the modern era. By
elucidating the fundamental features of the traditional Chinese legal system within the framework of a
disciplinary mode of administrative justice, he highlighted the contrasting growth patterns of legal
professions and legal knowledge in China and Western Europe that would affect property rights, contract
enforcement and ultimately long-term growth trajectories.
In the paper comparing the Yangzi Delta and the Netherlands in the 19th century, Jan Luiten Van Zanden
(UU, with Bozhong Li) looked at how the debate about the long-term economic development of China
compared with Europe has taken a turn following the publication of Kenneth Pomeranz’s book on The
Great Divergence. In the book the author maintained that before the Industrial Revolution the most
advanced parts of China (in particular the Yangzi Delta) were in terms of real incomes on a par with the
richest regions in Western Europe (Great Britain, the Netherlands). The book contradicts previous
estimates that show that there was already a large gap in real per capita GDP between these two extreme
parts of Eurasia. Using the method of historical national accounting, the paper tested these ideas on the basis of a detailed comparison of the structure and level of GDP in part of the Yangzi Delta and the Netherlands in the 1820s, also taking into account differences of purchasing power of the two currencies involved. The results are that Dutch GDP per capita was already almost twice the level in the Yangzi Delta, which is more or less consistent with the existing estimates. The level of agricultural productivity in this part of China was, however, at about the same level as in the Netherlands (and England), but large productivity gaps existed in industry and services (with the exception of government services). The authors also attempted to explain the patterns found, and concluded that differences in factor costs may have been behind the observed differences in labour productivity.

Papers produced for this topic:

TOPIC 2.2: INDIA AND THE GREAT DIVERGENCE
Tirthankar Roy (CEPR) completed a paper on the economic conditions in early modern Bengal, which contributes to the debate on relative levels of living in the early modern world by estimating the income of and probable range of income growth in Bengal before European colonization. The approach involves inferring average incomes from government revenue statistics, using consistent measures of tax-GDP ratios. The exercise yields two conclusions, (a) average income in Bengal was significantly smaller than that in contemporary Western Europe, and (b) there is insufficient basis to infer either growth or decline in average income in the 18th century. The former conclusion is relevant to the discussion on “divergence”, and the latter has relevance to the scholarship that considers the economic effects of political transition in 18th century India.

Roy also explored the sources that could contribute to the construction of long-term indices of per capita access to major consumption articles. Europe-India comparisons tend to be conducted on the basis of real wages. Yet, wages are an imperfect indicator of welfare when the relative and absolute prices of consumption goods changed, as they did during the 19th century. Comparable estimates of consumption can aid the divergence discourse, and are a useful means to check the reliability of trends in income and real wage. This led him to his project on cotton cloth consumption.

This project focuses on the study of economic change issues in colonial India. In his paper on the topic, he estimates average consumption of cloth in India in comparison with Europe and China. The paper revisits three issues central to the quantitative history of comparative development in Europe and Asia. These are measuring trends in levels of living in India in the 19th century, measuring the correlation between production of textiles and consumption of textiles, and consumption of clothing in India in relation to the rest of the world.
The conclusions of the paper revise conventional wisdom on the subject in two ways. (1) It is shown that a large decline in the production of craft textiles in India at this time did not touch consumption, in fact, consumption accelerated from 1880. (2) It also confirms what is now an emerging consensus that the pre-modern level of textile consumption in India was lower than that in Britain, but the gap was narrower than what it later became.

Roy then focused on a project which looks at the causes of growing international economic inequality in the 19th century against the backdrop of globalisation and imperial rule. A large country like India, being composed of regions that differed in geographical and political characteristics, does not fit any one account of inequality easily. Regions within India participated in globalization in different degrees and in different ways. How different were the regions? How did trends in economic change vary between them? With a new dataset, the paper attempts to tackle these issues. The data suggests that geographical differences mattered for regional inequality during the first globalization when agricultural commodity export was a driver of economic growth.

Stephen Broadberry (CEPR) and Bishnupriya Gupta (Warwick) produced a paper on an Anglo-Indian Comparison of GDP per capita between 1600-1871, which updates an earlier version. The paper provides estimates of Indian GDP constructed from the output side for the period 1600-1871, and combines them with population estimates to track changes in living standards. Indian per capita GDP declined steadily. The latest paper makes use of separate data on the government sector, a new cotton price series and additional cross-checks based on historical estimates of per capita cotton cloth consumption. As British living standards increased from the mid-17th century, India fell increasingly behind. Whereas in 1650, Indian per capita GDP was more than 60 per cent of the British level, by 1871 it had fallen to less than 15 per cent. As well as placing the origins of the Great Divergence firmly in the early modern period, these estimates suggest a relatively prosperous India at the height of the Mughal Empire, with living standards well above bare bones subsistence.

Papers produced for this topic:

TOPIC 2.3: ANGLO-INDIAN PRODUCTIVITY DIFFERENCES SINCE 1870: A SECTORAL ANALYSIS

Stephen Broadberry (CEPR) and Bishnupriya Gupta (Warwick) also produced a paper on the historical roots of India’s service-led development. This paper offers an analysis of the trends of India’s GDP between the 1870’s and the 1970’s, compared to the UK. Comparative India/UK labour productivity in agriculture has declined continuously, and agriculture still accounts for around two-thirds of employment in India. Their study showed that agriculture played a key role in India’s falling behind and has subsequently slowed down the process of catching up. The only sector to exhibit an upward trend in comparative India/UK labour productivity is services. India’s recent emergence as a dynamic service-led economy thus appears to have long historical roots. Although India has been characterised by relatively low levels of physical and human capital formation overall, its education provision has historically been unusually skewed towards secondary and tertiary levels. This has provided a limited supply of high productivity
workers who have been employed predominantly in services.

Please note with regards to this paper: A preliminary version of this paper was published in 2007 but a great deal of work was undertaken on this paper during the HI-POD period. All the main time series for output, employment and labour productivity in India and the UK were reworked, incorporating more information, and were rebased on 1950=100 rather than 1929=100 for consistency with the main benchmark year. Information was assembled on capital stocks in both countries, to enable estimation of total factor productivity as well as labour productivity. In addition, a whole section on human capital was introduced, assessing the roles of education levels and literacy to sectoral productivity performance. Therefore costs have been claimed for this work as per Broadberry’s contract - (Annex H3) and Annex I (Annex H1 – pages 33 and 34 of Annex I) to CEPR’s response to the Common Audit Service’s Draft Audit Report RAIA000025.

Papers produced for this topic:

TOPIC 2.4: INDONESIAN NATIONAL INCOME, 1815-2000
Jan Luiten van Zanden (UU) focused his research on the systematic reconstruction of the national accounts of Indonesia. In his work he argues that there is an abundance of data on the demographic and economic development of Java in the 19th century, and that, although some of the information is inaccurate, by integrating the available data, useful conclusions can indeed be made. Van Zanden found that from the 1860s onwards there was a process of growth, albeit slow to start with. This, however, did not correspond with an improvement in the standards of living for the people of Java. Indeed, real wages did not increase, and more evidence of the lack of living standards can be found in the stature data, which reveals that the population’s height did not increase over the same period.

One paper due to be published for this topic by Jan Luiten van Zanden, titled “Economic growth in Java during the 19th century. It is possible – and necessary – to reconstruct the historical national accounts?”, has been delayed, and is due to be published soon.

TOPIC 2.5: COMPARING DEVELOPMENT TRANSITIONS IN ASIA AND EUROPE: OVERVIEW AND POLICY BRIEF
Differences in living standards between Europe and Asia predate the Industrial Revolution. These differences are therefore not simply the product of 19th century colonial relationships, or indeed of the Industrial Revolution, but have their origins in deeper institutional factors, which need to be addressed if development policies are to succeed. India’s recent success in services is linked to long-standing educational policies.

A comparative study of productivity in India and the United Kingdom since 1870 has been completed. In addition, preliminary estimates of national income have already been produced for India reaching back as far as 1600.

A policy brief produced for this work package was published in December 2009 which was submitted on the Commission portal as a deliverable.

WP 3 - QUANTIFYING AFRICAN AND LATIN AMERICAN ECONOMIC PERFORMANCE IN THE LONG RUN
TOPIC 3.1: HISTORICAL NATIONAL ACCOUNTS FOR LATIN AMERICA, 1800-2000
A database has been compiled with the data available for the different Latin American countries since 1800 by the UDELAR team. Preliminary discussions of the results were presented in a paper on the institutions and the origins of Latin American divergence. An international meeting was held in Barcelona in order to further develop a research project to expand the coverage of the research agenda originally proposed. A project was later presented in Spain with the purpose of improving available estimates in a group of selected countries, and to estimate several benchmarks for international comparisons.

Papers produced for this topic:

TOPIC 3.2: INCOME DISTRIBUTION IN LATIN AMERICA, 1870-2000
In the first period of HIPOD, the UDELAR team constructed a database for income distribution in Latin America for a series of benchmark years between 1870 and 2000. This database allowed for Latin America to be included in a worldwide database which will be used to estimate the path of global inequality.

During the final year of HIPOD Luis Bertola (UDELAR) analysed a new historical human development index for a group of 16 countries in Latin America, Europe, the Western Off-Shoots and Asia. His paper on human development and inequality presents a four-component Historical Human Development Index. In it, Bertola suggests that if Latin American countries want to follow a similar path as the developed countries, closing the existing gaps in inequality in education and life expectancy will not be a significant source of catching up. A better way of doing this would be close the gaps in income per capita and income inequality. Bertola insists, however, that catching up is not a guaranteed measure.

Leandro Prados de la Escosura (UC3M) produced a paper on inequality and poverty in the long-run in Latin America. He found that modern Latin America experienced sustained growth since the mid-19th century only brought to a halt during the 1980s. Inequality, in turn, rose steadily until a high plateau on which it has stabilized over the last four decades of the 20th century. A calibration exercise suggests that absolute poverty experienced a long-run decline in Latin America since the late 19th century, interrupted in the 1890s and the 1930s, and only reversed in the 1980s. Growth emerges as the main element underlying the reduction in absolute poverty, and almost exclusively in the second half of the 20th century.

A study of Latin American growth from an anthropometric point of view was carried out by Baten (and Carson (both EKUT). In their paper, they found that during the 19th century welfare levels were impressively high in some countries, with real wage levels coming close to those of Europe. However, during the 20th century, Latin America fell considerably behind European countries. For example, 19th century living standards were high in Argentina and Uruguay, and both countries fell far behind Europe and North America during the 20th century. In contrast, contemporary evidence can be used to study more recent health problems, such as obesity.

The authors found that Latin American anthropometric welfare indices were relatively high during the 19th century, even though the period was characterized by the independence wars, political instability, and civil wars. Clearly, without these events, welfare would have been even higher. Nevertheless, sparse 19th century population densities combined with a nutritional intake that contained a substantial amount of protein, at least in Southern Cone countries (including Southern Brazil). Other countries such as Guatemala and Peru clearly had lower anthropometric values, and the 20th century Latin American
secular height increase was limited. In a next step, Baten and Carson compared three variables that are frequently mentioned in the existing literature, namely national income, the disease environment, and proximity to protein production. Comparing Latin American heights with potential explanatory variables based on the existing literature, they obtain a relatively strong correlation with proximity to protein production, and slightly lower correlations with GDP per capita and infant mortality.

Papers produced for this topic:

TOPIC 3.3: HISTORICAL NATIONAL ACCOUNTS FOR AFRICA, 1870-2000

In a paper on structural impediments and real wages in British Africa, Ewout Frankema and Marlous van Waijenburg (both UU) tried to answer the question: “has African poverty truly been a persistent historical phenomenon?” Recent literature on the historical determinants of African poverty emphasizes structural impediments to growth, such as adverse geographical conditions, weak institutions and ethnic heterogeneity. The evidence is mainly drawn from cross-country regressions on late 20th century income levels, assuming persistent effects over time. Their study casts doubt on this view by providing new insights into long-term African growth trajectories. They push existing African income estimates back in time by calculating urban unskilled real wages in British Africa. They find that real wages were well above subsistence level and rose significantly over time.

Unfortunately, GDP figures for Africa have been unreliable. More dependable information can be found in government expenditure and international trade records. These records, though, provide little insight into non-market output. Leandro Prados de la Escosura (UC3M) made an attempt to draw explicit conjectures on real output per head in pre-independence Africa on the basis of trade data so that conjectures can be established about Africa’s long-run growth. He explored two alternative approaches. One estimated per capita GDP by assuming no increase in output per head outside the tradable sector, for which the purchasing power of per capita exports is accepted as a proxy. Another approach established an econometric association between real per capita GDP and the income terms of trade per head for 1950-1990 and, on the basis of the prediction equation’s parameters and the values of the RHS variables, infers real output per head for 1870-1938. Trends in real output per head were then drawn for Africa and its main regions. By comparing these trends with those from other developing regions, some conjectures about Africa’s relative position over time are put forward. It emerges that economic growth started earlier than usually assumed and there is continuity in growth before and after colonial independence. Sub-Saharan Africa’s retardation is a gradual process, as growing and falling behind took place simultaneously. But it is in the period 1975-1995 that the worst setback in modern Africa’s history took place. Furthermore, since development is widely seen as a multidimensional phenomenon, how has Africa behaved in terms of non-income dimensions (health, education)? The human development approach that stresses, beyond the conventional measure of wellbeing (GDP per head), its health and knowledge dimensions, provides a useful historical tool to assessing African long-run performance. Prados de la Escosura presented long-run trends in Africa’s well-being on the basis of a new index of human development, as an alternative to the UNDP’s HDI. He found a sustained improvement in African human development that falls, nonetheless, short of those experienced in other developing regions. Within Africa,
Sub-Saharan Africa has fallen steadily behind the North since the mid-20th century. Human development improvement is positively associated with being coastal and resource-rich and negatively associated with political-economy distortions. Contrary to the world experience, in which life expectancy dominated, education has driven progress in African human development during the last half-a-century and, due to the impact of HIV/AIDS on life expectancy and the arresting effect of economic mismanagement and political turmoil on growth, advances in human development since 1990 have depended almost exclusively on education achievements. The large country variance of the recovery during the last decade suggests being cautious about future prospects.

Papers produced for this topic:

TOPIC 3.4: NUMERACY AND LITERACY IN AFRICA AND LATIN AMERICA
Kerstin Manzel (EKUT) and Joerg Baten (EKUT) have made a first systematic attempt to estimate the long-term development of human capital, measured in terms of basic numeracy, for six Latin American countries from the 17th to the 20th century. They assessed a large number of 19th and 20th century censuses. The large time span permits new insights into the socioeconomic development of the New World.

Overall, numeracy increased during the period under study in all Latin American countries. They found that Argentina, Mexico, and Peru started in the 17th century with relatively low numeracy levels, but began to catch up with Western Europe and the U.S reducing the gap from around 50 to 30 percent around the 1780s. Hence, Latin American countries performed well until the late 18th century in terms of numeracy. Starting in the late 18th century and especially during the time of the independence conflicts (1810s/1820s), however, numeracy levels stagnated in many countries. Given the rapid development in European human capital, this implied a divergence between Europe and Latin America.

In the late 19th century, differences in numeracy within Latin America increased. While Argentina, Uruguay, and Lima (Peru) experienced favourable development, Mexico and Colombia showed slower progress. Brazil had stagnating numeracy until the 1860s, but was able to improve its performance afterwards. The countries with important immigration from Europe, in particular, had a more rapid numeracy development. Numeracy in Mexico and Colombia in the late 19th century, however, stagnated, and these two countries also received relatively less immigration, a fact which allows a better understanding of their long-term histories. Another main determinant of numeracy growth, investments in public education, also grew substantially during the late 19th and early 20th century, sometimes in interaction with immigration.

In the study on anthropometric inequality and the estimation of skill premia with anthropometric indicators from Baten and Blum, several facets of inequality were analysed and described, such as differences between ethnicities, genders, regions, social groups, differences caused by unequal institutional systems, and rural-urban differences. The authors discussed the relationship between skill premia and inequality indicators based on height variation. Skill premia describe the wage gap between an unskilled and a skilled building worker, while height CVs display the variance in net nutrition. Baten and Blum (EKUT) found that the two measures are correlated and that CV values are suitable to estimate skill premia. The authors supplemented the existing literature by an additional tool, namely the estimation of skill premia
based on the coefficient of height variation. This allows extending the study of inequalities in general and skill premia in particular by more than a century.

With a continued focus on Latin America Joerg Baten, together with Dacil Juif (EKUT), assessed the hypothesis of a “pre-colonial legacy” for the case of the Andean region, contributing to the literature on the genesis of inequality in Latin America. In order to do this, they studied the human capital of Inca Indios, using age-heaping-based techniques to estimate basic numeracy skills. Significant inequalities in the highly stratified society of the Inca Empire were found. In addition, Peruvian Indios showed only around half the numeracy levels of the Spanish invaders and the educational gap between the indigenous and the white population living in Peru remained high in the two centuries following the Conquest.

Christina Mumme and Joerg Baten explored inequality of education by studying school years and numeracy of rich and poor, as well as tall and short individuals. To estimate numeracy, they used the age heaping method for the 17th to early 20th century and schooling data for the more recent period. They tested the hypothesis that globalization increased inequality of education. For the 19th century they found evidence that globalization actually had inequality effects in Latin America, but 20th century globalization showed positive overall effects by reducing educational inequality in a broader sample of Developing Countries. Moreover, they found strong evidence for Kuznets’ Inverted U hypothesis, as educational inequality rose with GDP per capita until 1913 and the opposite after 1945.

Papers produced for this topic:

TOPIC 3.5: COMPARING DEVELOPMENT TRANSITIONS IN AFRICA, THE AMERICAS AND EUROPE: OVERVIEW AND POLICY BRIEF

How has growth affected income distribution in Latin America over the long run? On the basis of the available evidence, growth and inequality trends are established and tentative answers and conjectures are proposed about the long run evolution of poverty.

Modern Latin America has experienced sustained growth since the mid-19th century, brought to a halt only during the 1980s. Inequality, in turn, rose steadily until it reached a high plateau where it stabilized over the last four decades of the 20th century. Absolute poverty experienced a long-run decline in Latin America since the late 19th century, interrupted in the 1890s and the 1930s, and only reversed in the 1980s. Growth emerges as the main element underlying the reduction in absolute poverty. Nonetheless, a lower level of inequality would have allowed growth to have had a deeper impact on absolute poverty reduction.

A policy brief produced for this work package was published in November 2010 which was submitted on the Commission portal as a deliverable.

WP 4 - UNDERSTANDING EUROPE’S TRANSITION TO MODERN ECONOMIC GROWTH
Long before the 20th century, Europeans spent the early years of their lives in training – not in child-
production. This is very different from the Chinese experience, for example, where marriage was universal
and early. Instead, Northern Europeans typically married in the mid-twenties, not much earlier than they do
today. Without such delayed nuptiality, there could have been no investment in human capital. Nico
Voigtländer and Hans-Joachim Voth (CEPR) produced a paper that traces the origins of delayed marriage
to European labour markets after the Black Death. As a result of the major income boost after 1350,
consumption baskets changed. Wheat declined as a consumption item; wool and dairy products, together
with meat, increased. Wheat production was ideal for male labour, since it was intensive in physical
labour. Pastoral production, on the other hand, can often be performed by women – shepherdesses can
tend flocks, milkmaids produce dairy. Northwestern Europe in particular evolved a new institution –
servants in husbandry. They lived year-round with large landowners, and entered into what
contemporaries called “a covenanted state of celibacy”. Women who married or had children were fired. In
this way, fertility was reduced – the later a woman marries, the fewer children she can have. The authors
built a model that demonstrates how these changes fit together to keep fertility low, female labour input
high, and incomes high. Through delayed marriage, they argue, the foundations for the skill-intensive
economy were laid.

Existing studies find little connection between living standards and mortality in England, but go back only
to the 16th century. Using new data on inheritances Morgan Kelly (CEPR) and Cormac Ó Gráda extend
estimates of mortality back to the mid-13th century and find, by contrast, that deaths from unfree tenants
to the nobility were strongly affected by harvests. Looking at a large, new sample of parishes after 1540,
they find that the positive check had weakened considerably by 1650 even though real wages were falling,
but persisted in London for another century despite its higher wages. In both cases the disappearance of
the positive check coincided with the introduction of systematic poor relief, suggesting that government
action played a role in breaking the link between harvest failure and mass mortality. The research
extended to the preventive check: the impact of living standards on marriage and birth rates. The final part
of their project looked at the spatial diffusion of mortality crises during the early 18th century. This research
shows that starvation is a matter of politics as well as of food supply. In terms of contemporary
development economics, these results go against the resurgence of Neo-Malthusian models to argue that
well designed institutions can mitigate the impact of poverty.

In a number of papers during this last period it has been shown empirically that a variety of factors caused
the European growth transition and determined differences in development between regions, mainly:
demography, early educational input, early trade networks, beneficial educational selectivity of emigrants,
political development and growth-conducive institutions.

Dácil Juif (EKUT) compiled a data set that allowed her to analyse differences in human capital caused by
religion. She collected individual data from Inquisition files of the Spanish and Portuguese Inquisition court
for the 15th to 19th century. Individuals trailed at inquisition courts were on average about 11 percent more
numerate and Jewish people performed about 4 percent better than the overall population.

Christina Mumme and Joerg Baten (both EKUT) explored inequality of education in Europe and the rest of
the world by studying school years and numeracy of rich and poor, as well as tall and short individuals.
Inequality in education seemed to rise together with GDP growth in the late 19th to early 20th century and
afterwards had a detrimental effect on per capita growth.

The Black Death marked a turning point for economic fortunes in early modern Europe. It killed between a
third and half of the European population. The plague shock was so big that several generations of
population growth would have been necessary to reverse the substantial wage gains.

Moving on to the institutional underpinnings of growth, international trade places unique demands on local capital markets, demands that can translate into investor protection rights and a richer domestic financial system. However, it can also lead to rent-seeking behaviour on the part of local elites and a crowding out of domestic financial service providers. The proposition that international trade can have profound effects on domestic institutions was explored in the context of medieval Venice circa 800–1350. It was shown that (initially exogenous) increases in long distance trade enriched a large group of merchants and these merchants used their newfound muscle to push for constraints on the executive.

The relationship between land inequality and human capital was analysed for more than 320 European regions in the second part of the 19th and the first part of the 20th century. An equal land distribution turned out to be a significant determinant of educational development, in its turn a driving factor of income growth.

Another factor affecting the European growth transition by initiating a “brain-drain effect” was the educational selectivity of emigrants during the mass migration era.

Papers produced for this topic:
"Living Standards and Mortality Since the Middle Ages", Morgan Kelly and Cormac Ó Gráda, Working Paper, October 2010.

TOPIC 4.2. QUANTIFYING UNIFIED GROWTH THEORY: EUROPE’S HUMAN CAPITAL TRANSITION

In the study “Brain Drain, Numeracy and Skill Premia during the Era of Mass Migration: Reassessing the Roy-Borjas Model”, the authors Baten and Stolz assessed the selectivity of migrants in the era of mass migration. They focused not only on the main transatlantic migration destinations, but also on two European destination countries, the UK and Norway. This study has been the first general assessment of migrant selectivity during this most crucial period of human migration history, using large samples that included a variety of different source and destination countries. The authors confirmed the influence of those economic migration incentives after controlling for a large number of other variables such as “friends and relatives effects”, poverty constraints, economic distance, relative democracy, common language and colonial relationships.

It is crucial to understand the brain-drain processes between source and destination countries, because the stock of human capital determines future growth capabilities. In the case of mid-19th century mass migration history, there were also some arithmetic brain gains for the source countries, because those who left Scandinavia or central Europe around mid-century were often less numerate than the remaining population. For example, there could have been positive growth effects on Germany or Scandinavian countries, because the average numeracy must have increased due to migration. This process was reinforced by remittances. In contrast, Eastern Europe lost a large number of the numerate population, and the migration effects might have been, ceteris paribus, negative for Eastern Europe. Clearly, a large number of other factors were also at work, hence these effects should not be seen in isolation. But understanding migrant selectivity helps to identify an additional and important variable in the global long-term growth record.

Baten, Reis and Stolz provided in their paper on Portuguese Living Standards new data on the 18th century and trace a long-run trend of Portuguese living standards from the 1720s on. They found that the Portuguese were the shortest in Europe, even in the year 2000, despite three decades of favourable
economic development. During the early 19th century the Portuguese still were on a similar level as other European countries. But around mid-century, the record of anthropometric values of many European countries increased strongly but Portugal diverged. From 1890 on, Portuguese were the shortest in Europe. The authors scrutinized the determinants of the retarded height development, by focusing on the period until 1910, which was when the gap had opened up. The modest real wage evolution, given Portugal’s late industrialization and economic growth performance in comparison to the European core, was one of the important determinants. Relative prices seem to have played a minor role. Moreover, the authors found the retarded human capital formation to be of importance.

Voigtländer and Voth analysed how the Europeans restricted fertility long before other parts of the world in their paper fertility restriction in the West. By raising the marriage age of women, the “European Marriage Pattern” reduced childbirths by up to 40%. The authors analysed the rise of this first socio-economic institution in history that limited fertility through delayed marriage. The production of meat, wool, and dairy increased, while grain production declined. The researchers examined the reasons behind the evolution of a system of delayed marriage in Europe, pointing at the Black Death as the key factor. Indeed, fertility restriction emerged as an indirect consequence of high-land-labour rations after 1348-50. The Black Death reduced population by between one third and half, while land labour ratios rose substantially. This translated in an increase of cattle use for meat and milk, whilst sheep were kept for mutton and wool, as these animals used land more intensively.

Papers produced for this topic:
"”Keep them ignorant.” Did Inequality in Land Distribution Delay Regional Numeracy Development?“, Raplh Hippe and Joerg Baten, Working Paper, February 2012.

TOPIC 4.3. TRADE, FINANCIAL INSTITUTIONS AND GROWTH
In the paper on international trade and institutional change, Diego Puga and David Trefler examine the effect of international trade on domestic institutions in medieval Venice. Here the increase in long distance trade allowed a large group of merchants to became richer and more powerful, and, consequently, to exert their power at institutional level, ending the de facto Doge in 1032. The same group of merchants used their position to push for institutional changes which blocked political and economic competition, effectively creating barriers to the participation in long-distance trade to those outside of their group.

Papers produced for this topic:

TOPIC 4.4. POLITICS, URBANISATION AND ECONOMIC DEVELOPMENT
Maarten Bosker (UU), Eltjo Buringh and Jan Luiten van Zanden (UU) studied the divergent development of the economies of the Arab World compared with Western Europe in the 800-1800 period, based on a new dataset of all cities with more than 10,000 inhabitants in that period. Linked to this, they also carried out an analysis of the degree to which parliaments in pre-1800 Europe affected growth of cities. Urbanization is a key feature of economic and social development. How housing markets react to changes
in the demand for dwellings during the rural-urban transition is a pressing question. In cooperation with Juan Carmona and Markus Lampe, Joan Rosés investigated Spain’s response during the first phase of the rural-urban transition using a new hedonic index of real housing prices and assembling a cross-regional panel dataset of price fundamentals. The results of their econometric analysis suggest that housing markets did not face supply constraints, responded swiftly to the growing demand for accommodation and were efficient. In light of this new evidence, Rosés and his collaborators concluded that housing markets were not a burden for Spanish economic development and that Spain’s institutional and regulatory frameworks were suitable for the housing needs at the time.

Under what circumstances can international trade have positive or negative influences on domestic institutions? Diego Puga (CEPR), in collaboration with David Trefler, provided an answer in the context of medieval Venice circa 800-1350. They show that initially exogenous increases in long-distance trade enriched a large group of merchants and these merchants used their new-found muscle to push for constraints on the executive i.e. for the end of a de facto hereditary Doge in 1032 and for the establishment of a parliament or Great Council in 1172. The merchants also pushed for remarkably modern innovations in contracting institutions (such as the colleganza) that facilitated large-scale mobilization of capital for risky long-distance trade. Over time, a group of extraordinarily rich merchants emerged and in the almost four decades following 1297 they used their resources to block political and economic competition. In particular, they made parliamentary participation hereditary and erected barriers to participation in the most lucrative aspects of long-distance trade. Puga and Trefler documented this ‘oligarchization’ using a unique database on the names of 8,103 parliamentarians and their families’ use of the colleganza. In short, long-distance trade first encouraged and then discouraged institutional dynamism and these changes operated via the impacts of trade on the distribution of wealth and power.

Papers produced for this topic:

TOPIC 4.5. THE LITTLE DIVERGENCE AND THE TRANSITION TO MODERNITY
Nico Voigtländer and Hans-Joachim Voth (CEPR) argued that Europe’s differential mortality experience was a key factor for the precocious rise in per capita incomes after 1500. In a Malthusian world, more death spells higher living standards – since one factor of production is in limited supply, population limitation raises incomes. The factors that led to Europe having less population pressure are traced back to the Black Death. It raised land-labour ratios, and thus increased incomes. The question the authors investigated in “The Three Horsemen of Riches” is why this boost to living standards was not temporary, but persisted for centuries. Their answer is that indirect changes following the temporary boost in incomes helped to perpetuate higher death rates. Richer consumers demanded more urban goods; these were produced in cities, which were uniquely unhealthy. Every single European city would have disappeared had it not been for constant migration from the countryside. Together with more trade, and more war – financed by urban wealth – these factors ensured that European death rates were unusually high, given its income, and that land-labour ratios remained high, underpinning high incomes. While well-being was not enhanced necessarily by the death-fuelled origins of Europe’s initial riches, the indirect effects might have been important.

Some costs related to this paper should be clarified. A version of this paper was published in 2009, although, a considerable amount of work was done on it during the HI-POD project. The author has confirmed that the paper has undergone major changes and that the model has been entirely re-done.
Changes that have been made to the 2009 version include: a new model of the link between disease, urbanization, and tax revenue; a completely new, micro-founded model of disease spread in a Malthusian economy; a thorough investigation of implications of our model for relative prices of various; addressing industrial goods; and, a completely revamped calibration section that redefines the capacity constraint for city growth. Additionally, two changes have been implemented since 2009 for the project: in October 2010 and by December 2011.

Together with Bruno Chiarini and Oded Galor, Paolo Malanima (CEPR) analysed the transition to modern Economic Growth. According to these researchers, the transformation of the energy system during the period between the 16th and 19th centuries was the necessary, although not sufficient, condition of modern growth, first in Europe and then in the rest of the World. The transition to alternative forms of energy was prompted by the decline in per capita energy availability in early modern Europe during the phase of population rise from the late Middle Ages onwards. The transformation taking place in the energy system was composed of two significant changes, the first aimed at saving land, and the second labour. Both played a central role in the start of modern growth.

Papers produced for this topic:

TOPIC 4.6. THE ORIGINS OF THE SKILL-INTENSIVE ECONOMY
Kevin O'Rourke (TCD), Ahmed Rahman and Alan Taylor developed a model in the Unified Growth Theory tradition endogenising not only the speed but the direction of technological change. Technological change was unskilled-labour-biased during the early Industrial Revolution, but became skill-biased in the UK about a century later, and is still skill-biased in rich countries today. This is not embedded in extant unified growth models. The model developed in the paper can endogenously account for these facts, where factor bias reflects profit-maximizing decisions by innovators. Endowments (and in particular the abundance of unskilled labour in the 18th century) dictated that the early Industrial Revolution be unskilled-labour-biased. Increasing 'basic' scientific knowledge caused a growth takeoff, an income-led demand for fewer educated children, and the transition to skill-biased technological change.

Papers produced for this topic:

TOPIC 4.7. UNDERSTANDING EUROPE’S TRANSITION TO MODERN ECONOMIC GROWTH: OVERVIEW AND POLICY BRIEF
Recently government expenditures have been greatly expanded because of the economic crisis of 2009. The budget deficits are so large that expenditure constraints or tax increases seem necessary in the near future to bring budgets back into balance. It seems tempting to reduce educational spending, among other issues. However, HIPOD studies on long-run development show that lower educational spending in some countries during the early 19th century led to a divergence between educational levels. Did an educational revolution take place in Europe before the Industrial Revolution? Were numerical skills at the heart of the European growth process? Measurement of numerical cognitive abilities is a natural complement to measuring literacy in the history of human capital. As signature rates, despite their limitations, can proxy for basic literacy, so age heaping can index basic numeracy. Both measures offer a partial view of human capital, and both reflect not only individual but also broader social capabilities.
The new estimates of numeracy suggest that the most basic mathematical skills diffused earlier than literacy. In the early Middle Ages, numeracy may have remained at or below levels observed in antiquity, a thousand years earlier. But a slow but steady improvement appears to have set in by late medieval times, bringing several countries to numeracy rates on the order of 70% by the decades around 1600. A policy brief produced for this work package was published in May 2011 which was submitted on the Commission portal as a deliverable.

WP 5 - GENDER, DEMOGRAPHY AND DEVELOPMENT

TOPIC 5.1. GENDER INEQUALITY AND HUMAN DEVELOPMENT
The activity of the UDELAR team focused on the construction of a database on gender inequality using firm archives, one of the few available sources, in order to study gender wage gaps. In the paper on gender inequalities and development, Maria Camou argues that gender relations interact with institutions, in particular with those that govern the functioning of the economy, and that this makes for an unequal distribution of resources and opportunities among people. In her study she finds that, as well as economic factors, religious precepts and patriarchal customs are a powerful influence on gender inequality. She also concludes that opportunities for women to progress do not necessarily increase or decrease in a linear way as economies develop.

Papers produced for this topic:

TOPIC 5.2. MARRIAGE PATTERNS AND ECONOMIC DEVELOPMENT
The European Marriage Pattern (EMP) emerged in North-western Europe in the Late Medieval Period as a result of the preaching of the Catholic Church of marriage based on consensus, the rise of labour markets, and specific institutions concerning property transfers between generations that enhanced wage labour by women. It resulted in a demographic regime embedded in a highly commercial environment, in which household interacted frequently with labour, capital and commodity markets.

HIPOD researchers argue that a rather odd combination of forces - the doctrines of the Catholic Church, the system of intergenerational transfers, the expansion of the labour market and the effect of the Black Death – lay behind the emergence of the EMP in the late medieval period. It was characterized by relatively low levels of authority of parents over their children and of men over women. The EMP was well adapted to the new commercialized environment that emerged during the same period. Wage labour became an integral part of the life cycle of members of the small conjugal household, and other market transactions (such as the use of credit or the accumulation of savings) became part of their survival strategy. In the authors’ view the ‘deep’ penetration of markets in late medieval and early modern European life – in particular in the region around the North Sea – should be seen in this light.

Papers produced for this topic:
TOPIC 5.3. GENDER, DEMOGRAPHY AND DEVELOPMENT: OVERVIEW AND POLICY BRIEF

New datasets were created to analyse the long-term development of female empowerment in the 19th and 20th century. The main index to study this is the 'Girl power-index' which is based on the average age of women and men at marriage, which measures the 'power' women have in making decisions about their marriage and in marriage, but is also, as has been demonstrated, a good proxy of female rights and bargaining position in general. One of the studies carried out compares marriage patterns in various parts of the world, including the Muslim countries, demonstrating that in recent decades the latter is rapidly converging to the 'modern' marriage pattern found in Europe.

The results confirm the view that women’s empowerment is key to economic development. This was the case in Western Europe in the centuries leading up to the Industrial Revolution; the emergence of the European Marriage Pattern prepared the way for this fundamental transformation of European society. And this is again a fact when looking at recent experiences in economic development. One crucial mechanism for this is via human capital formation and fertility: the level of education of women determines to a large extent the quantity and quality of offspring. Marriage systems – which determine the bargaining power of women – have a large, independent effect on this, but can gradually change under the impact of urbanization, economic growth and increased employment opportunities for women.

A policy brief produced for this work package was published in November 2011 which was submitted on the Commission portal as a deliverable.

WP 6 - CORE-PERIPHERY RELATIONSHIPS: IMPLICATIONS FOR THE CORE

TOPIC 6.1. EURO-ASIAN TRADE BEFORE THE GREAT DIVERGENCE: MERCANTILISM AND COMMODITY MARKET INTEGRATION

Poor countries are more volatile than rich countries, and we know this volatility impedes their growth. We also know that commodity price volatility is a key source of those shocks. David S. Jacks, Kevin H. O'Rourke (TCD) and Jeffrey G Williamson in the paper on commodity price volatility and world market integration explore commodity and manufactures prices over the past three centuries to answer three questions: Has commodity price volatility increased over time? The answer is no: there is little evidence of trend since 1700. Have commodities always shown greater price volatility than manufactures? The answer is yes. Higher commodity price volatility is not the modern product of asymmetric industrial organizations - oligopolistic manufacturing versus competitive commodity markets - that only appeared with the industrial revolution. It was a fact of life deep into the 18th century. Does world market integration breed more or less commodity price volatility? The answer is less. Three centuries of history show unambiguously that economic isolation caused by war or autarkic policy has been associated with much greater commodity price volatility, while world market integration associated with peace and pro-global policy has been associated with less commodity price volatility. Given specialization and comparative advantage, globalization has been good for growth in poor countries at least by diminishing price volatility. But comparative advantage has never been constant. Globalization increased poor country specialization in commodities when the world went open after the early 19th century; but it did not do so after the 1970s as the Third World shifted to labour-intensive manufactures. Whether price volatility or specialization dominates terms of trade and thus aggregate volatility in poor countries is thus conditional on the century.

Papers produced for this topic:
"Commodity Price Volatility and World Market Integration Since 1700", Dave S. Jacks, Kevin H. O'Rourke
TOPIC 6.2. INTERNATIONAL TRADE DURING THE GREAT DIVERGENCE: THE DETERMINANTS OF TRADE FLOWS IN THE MERCANTILIST ERA AND THE TRANSITION TO MODERNITY

Jacks, O'Rourke (TCD) and Taylor made progress in collecting commodity-level data from the English historical archives. This means that they are now collecting data on British trade during the 18th and 19th centuries. The dataset will be finished in 2013. So while papers were not produced for this topic, an extensive dataset is being built that will have wider repercussions for the research frontier here. The Commission Project Officer was duly informed of this.

TOPIC 6.3. INTERCONTINENTAL TRADE AND THE INDUSTRIAL REVOLUTION: RAW MATERIALS AND MARKETS FOR FINISHED GOODS

O'Rourke, in collaboration with Gregory Clark and Alan Taylor produced a working paper on the growing dependence of Britain on trade during the industrial revolution. In this paper, the authors constructed a computable general equilibrium (CGE) model of the world economy, distinguishing between three regions: Britain, North America, and the rest of the world. They then calibrated these models using actual historical data, so that they would match reality in two distinct time periods: the 1760s (i.e. the eve of the Industrial Revolution), and the 1850s (by which time the First Industrial Revolution has already been underway for several decades). They used this model to quantify the impact of trade on the British economy in the two periods, by asking what would have happened to British economic welfare if the British economy had been essentially prevented from trading with the rest of the world. The way that this experiment was implemented was by shrinking the two other world regions by 95% (complete autarky would correspond to eliminating them altogether, but the structure of the model made this impossible).

Papers produced for this topic:

TOPIC 6.4. INTERCONTINENTAL TRADE AND INNOVATION DURING THE INDUSTRIAL REVOLUTION

Klaus Desmet (UC3M) and Parente proposed a unified theory of growth that captures a number of relevant features of countries' transitions from stagnant, predominantly rural economies to vibrant, industrialized economies that have been overlooked by the literature. In their theory, the increasing variety of consumer goods and increasing firm size, which are the consequence of a gradual expansion in the size of the market, sow the seeds for process innovation and an economy's take-off. They demonstrated this mechanism in a dynamic general equilibrium model calibrated to England's long-run development, and explore how various factors affected the timing of its take-off. They operationalised the Desmet-Parente (2006) model which links market size to firms’ decisions to adopt new technologies, and ask: to what extent would innovation have slowed in the absence of overseas markets for European products?

TOPIC 6.5. EURO-INDIAN COMPETITION DURING THE INDUSTRIAL REVOLUTION: THE ROOTS OF BRITISH SUCCESS

By the early 19th century Britain had become the world's most important cotton textile producer,
dominating world export markets, and even exporting to India. This dramatic change in international competitive advantage, which must surely rank as one of the most important developments of the industrial revolution period, is often told entirely in terms of developments within Britain, without any reference to India, and with little or no reference to factor prices.

Stephen Broadberry (CEPR) and Bishnupriya Gupta (Warwick) showed that, in the early 18th century, wages in Britain were more than four times as high as in India, the world’s major exporter of cotton textiles. This induced the adoption of more capital intensive production methods in Britain and a faster rate of technological progress, so that competitive advantage had begun to shift in Britain’s favour by the late 18th century. However, the completion of the process was delayed until after the Napoleonic Wars by increasing raw cotton costs, before supply adjusted to the major increase in demand for inputs. This work demonstrates that competitive advantage does not always shift away from high wage economies.

Papers produced for this topic:

TOPIC 6.6. THE IMPORTANCE OF CORE-PERIPHERY RELATIONS FOR EUROPEAN GROWTH: OVERVIEW AND POLICY BRIEF
An extensive dataset has been created showing English (later British, and later UK) trade with the rest of the world at the commodity level. Researchers have also developed analytical models studying the impact of foreign trade on the British economy during the Industrial Revolution. For example, Desmet and Parente developed a unified theory of growth which captures a number of hitherto under-explored features of countries’ transitions from stagnant, predominantly rural-based economies to dynamic, predominantly industry-based economies. The key feature of their model, which is capable of empirically tracking several key features of the British economy during this period, is a process whereby the expansion of the market leads to larger firms and an increase in innovation.
A policy brief produced for this work package was published in May 2012 which was submitted on the Commission portal as a deliverable.

WP 7 - CORE-PERIPHERY RELATIONSHIPS: IMPLICATIONS FOR THE PERIPHERY, AND HOW IT SHOULD CATCH UP

TOPIC 7.1. TRADE AND ASIAN DEINDUSTRIALIZATION DURING THE GREAT DIVERGENCE
Nick Crafts (Warwick) has been working on a paper for this topic, featuring a quantitative analysis of textiles industries. However, the author’s progress has been slower than expected, due to a delay in collecting data. The paper is due for completion in 2013.

TOPIC 7.2. COLONIALISM, INSTITUTIONS, AND AFRICAN UNDERDEVELOPMENT
Diego Puga (CEPR) proved that geography, through its impact on history, can have important effects on current economic development. He focuses on the historic interaction between ruggedness and Africa’s slave trades. Although rugged terrain hinders trade and most productive activities, negatively affecting income globally, within Africa rugged terrain afforded protection to those being raided during the slave trades. Since the slave trades retarded subsequent economic development within Africa ruggedness has also had a historic indirect positive effect on income. Studying all countries worldwide, Puga estimated the differential effect of ruggedness on income for Africa and shows that the differential effect of ruggedness is
statistically significant and economically meaningful, it is found in Africa only, it cannot be explained by other factors like Africa’s unique geographic environment, and it is fully accounted for by the history of the slave trades.

Rima Ghanem (EKUT) analysed the development of human capital in Egypt between the end of the 18th and the middle of the 19th century with a newly created data set and by employing the age-heaping technique. She was able to capture an educational boost of the overall population and especially the generation that had attended school after several progressive reforms were introduced by Mohammad Ali Pasha.

In assessing the relationship between Peru and its Spanish colonists, Dácil Juif and Joerg Baten (both EKUT) found that the educational gap between the indigenous and the white population living in Peru remained high in the two centuries following the Conquest.

Christina Mumme and Joerg Baten found evidence that globalization had inequality effects in Latin America, but 20th century globalization showed positive effects by reducing educational inequality.

Papers produced for this topic:

TOPIC 7.3. STRUCTURAL CHANGE, PROTECTIONISM AND GROWTH

Leandro Prados de la Escosura and Joan R. Rosés (both UC3M), in their paper on stabilization and growth under dictatorship, added a historical dimension to the ongoing debate by assessing the economic impact of market-oriented reforms undertaken during General Franco’s dictatorship, the 1959 Stabilization and Liberalization Plan. Using an index of macroeconomic distortions (IMD) the relationship between economic policies and the growth record is examined. Although a gradual reduction in macroeconomic distortions was already in motion during the 1950s, the 1959 Plan opened the way to a new institutional design that favoured a free-market allocation of resources and allowed Spain to accelerate growth and catch up with Western Europe. Without the 1959 Plan, per capita GDP would have been significantly lower in 1975.

Lehmann and O’Rourke (TCD) have published a paper on the structure of protection and growth in the late 19th century. The paper looked, for the first time, at the relationship between agricultural, industrial, and revenue tariffs and growth. The finding is that industrial tariffs were positively correlated with both industrial and overall growth rates in a panel of ten advanced countries during the late 19th century. This relationship is economically significant and robust. They also found somewhat weaker evidence that agricultural tariffs were negatively related to growth during the same period. The implication is that in evaluating the implications of trade policy for growth, the structure of protection is as important as its overall level: what you protect is important.

Papers produced for this topic:

TOPIC 7.4. CORE-PERIPHERY RELATIONSHIPS: IMPLICATIONS FOR THE PERIPHERY, AND HOW
IT SHOULD CATCH UP: OVERVIEW AND POLICY BRIEF

Apart from the “Asian miracle” of recent decades, the international trend during the last centuries has been one of increasing divergence. The current levels of international inequality are still extremely high, as compared to those prevailing 200 years ago.

The dominant approach to the Little Divergence and the Great Divergence is one that focuses on the particular institutions prevailing in Europe during the main part of the last millennium. Even if geographical and “pure” economic interpretations based on relative price movements and technology have added to the interpretation of this process, most policy recommendations for the periphery to catch-up with the core economies have focused, in one way or another, on the idea that the periphery should adopt Western economic institutions.

The idea of a single universal pattern of growth which all the countries have to follow, has been challenged by different approaches that focus on the existence of hierarchical international relations. These approaches have stressed that followers have to find their own institutional arrangements to catch-up and develop.

A policy brief produced for this work package was published in September 2012 which was submitted on the Commission portal as a deliverable.

Potential Impact:
IMPACT

By bringing together researchers who publish their research in top international journals and allowing them to focus on such an important topic as patterns of development and under-development in an historical and comparative perspective, the project was able to generate a flow of research that has extended the frontier of scientific knowledge. The consortium was created to unite experts from across Europe, drawing also on Latin American expertise. Such diversified knowledge could not be found in any single country. The ambition of the project, however, went beyond pure academic research: it aimed at having an impact in the policy arena, given that it addresses very topical issues in employment, migration, trade and development. Interest can indeed be expected from within policy circles (development ministries and international development organisations) as well as the knowledge-producing sector (universities and research institutes, private research institutions).

Various team members have extensive experience in ‘connecting frontier research with policy questions’ related to the project. At the time of the project’s culmination, Nicholas Crafts, for example, has extensive experience as a policy adviser to UNIDO, the IMF, EBRD, and the UK government departments of HM Treasury and the Department of Transport. Joerg Baten is Board Member of the Institute of Applied Economic Research (IAW), Tuebingen, and actively participates in its policy advising function.

The goal of this project has thus been to produce frontier research on the topic and to use it to produce policy conclusions that will be the basis of further engagement with stakeholders by the research and policy communities.

Below we describe the potential impact of HIPOD’s findings.

WORK PACKAGE 1

The work of Stephen Broadberry (Warwick), Bruce Campbell (TCD), Alexander Klein (Warwick), Mark Overton and Bas van Leeuwen (UU) on the reconstruction of national income for England between 1270 and 1700 and for Great Britain between 1700 and 1870 has led to major findings. The HIPOD team was able to establish that average per capita incomes in medieval England were well above “bare bones
subsistence”, and that key features of industry during the Industrial Revolution were already apparent in Britain’s medieval mixed agriculture.

Preliminary estimates of national income for a number of other European countries have now been produced, including Holland between 1348 and 1809, Italy 1300-1913 and Spain 900-1850. They suggest that medieval Europe was not as poor as modern poor states. This may owe something to the mixed pastoral and arable agriculture which was prevalent in much of Europe, but particularly in the northwest. This helped to foster a number of features making for long run development, including an emphasis on high value added production, capital accumulation and the use of non-human energy. Rather than coming out of the blue at the time of the Industrial Revolution, modern economic growth was therefore built on a foundation of centuries of slower progress.

Their findings were presented at conferences and seminars in St-Gallen (August 2010), Tokyo (September 2010), Evanston (September 2010), Lund (October 2010), Amsterdam (November 2010), Montevideo (December 2010), Venice (March 2011), London (April 2011), Reading (March, 2011), Dublin (September 2011, London (November 2011).

WORK PACKAGE 2
Differences in living standards between Europe and Asia predate the Industrial Revolution. These differences are therefore not simply the product of 19th century colonial relationships, but have their origins in deeper institutional factors, which need to be addressed if development policies are to succeed. India’s recent success in services is linked to long-standing educational policies, which in turn have their roots in the caste system. An understanding of such deep seated institutional features of an economy is essential to the development of policies to encourage growth.

WORK PACKAGE 3
High inequality is not a permanent feature of Latin America’s history. Inequality experienced a long-run rise since the late 19th century until reaching a stable plateau by mid-20th century. Openness usually increased inequality and in globalization phases poverty reduction resulted from growth. In phases of isolation Stolper-Samuelson forces led to inequality decline and, hence, to poverty reduction. Absolute poverty experienced a long-run decline in Latin America since the late 19th century, its evolution shadowing that of per capita income growth. Long-run poverty reduction in Latin America was led, but not exclusively conditioned, by the growth in average incomes, especially in the second half of the 20th century.

Thus, it is not only growth what is needed to eradicate poverty. The experience of Latin America indicates that in a context of lower inequality, growth would have had a larger payoff in terms of poverty reduction.

WORK PACKAGE 4
Measurement of numerical cognitive abilities is a natural complement to measuring literacy in the history of human capital. As signature rates, despite their limitations, can proxy for basic literacy, so age heaping can index basic numeracy. Both measures offer a partial view of human capital, and both reflect not only individual but also broader social capabilities – a sort of administrative capital.

Focus is placed on human capital by drawing out the way in which the importance of this factor suggests that European development was driven more by internal factors than by inter-regional relationships. The development of human capital in Europe and China from 1500 to 1800 was a path-dependent process and in most regions probably even more important for European development than intercontinental trade.
The new estimates of numeracy suggest that the most basic mathematical skills diffused earlier than literacy. A slow but steady improvement set in by late medieval times, bringing several countries to numeracy rates on the order of 70% by the decades around 1600. This period appears to have been the point of maximum divergence from Eastern Europe, where numeracy rates were only beginning to rise from very low levels. This progress before the era of formal schooling, together with the apparent divergence of Eastern and Western Europe, prompts the conjecture that the spread of market activity fostered the development of quantitative reasoning among ordinary citizens. Engendering the early, widespread diffusion of numeracy in the West, commercial evolution can thus be seen as laying the foundations for the subsequent industrial revolution.

WORK PACKAGE 5

The results of the HIPOD research in Work Package 5 confirm the view that women’s empowerment is key to economic development. This was the case in Western Europe in the centuries leading up to the Industrial Revolution; the emergence of the European Marriage Pattern prepared the way for this fundamental transformation of European society. And this is again a fact when looking at recent experiences in economic development. One crucial mechanism for this is via human capital formation and fertility: the level of education of women determines to a large extent the quantity and quality of offspring. Marriage systems – which determine the bargaining power of women – have a large, independent effect on this, but can gradually change under the impact of urbanization, economic growth and increased employment opportunities for women.

WORK PACKAGE 6

The Industrial Revolution was facilitated by a number of crucial factors. These include a high (and growing) level of agricultural productivity, policies or institutions leading to lower fixed costs for firms, and market size.

The model in Desmet and Parente suggests that market size was crucial in spurring the transition to modern economic growth. In a relatively small economy like Britain, this implied an important potential role for international trade, which expanded the size of the market, and led to larger, more innovative firms. However, trade did not just increase the capacities of economies to innovate; it also increased their incentive to do so. Broadberry and Gupta show how the exposure to imports of cotton textiles from India spurred a process of innovation in Britain which ultimately led to the Industrial Revolution. The fact that British wages were so much higher than Indian wages led to a shift towards more capital/machine-intensive technologies in Britain, which in turn permitted a more rapid process of innovation. The complex patterns of interaction between what would become the European core and the non-European periphery (including both potential competitors in Asia, and captive markets in the New World) were a crucial ingredient in Europe’s transition to modern economic growth.

WORK PACKAGE 7

The role of the State is central for any development strategy. Western European development was a process of creating strong national states. The Asian miracle shows that the state played a central leading role. While populist States were common among developing countries, this kind of State is more an expression of the weakness of the State itself, rather than of its power. Weak States are easily captured by lobbying groups of any kind. In particular, post-colonial States have, more often than not, been poor in
terms of finance, human resources and capabilities in general. The so-called “Structural reforms” often weakened State capabilities and enhanced certain group’s tacit power, leading to the development of predatory States, used by the elites in their favour.

Industrial policy may be needed. It can help to redefine market incentives to promote growth and structural change. Industrial policy is sometimes needed to change the bad signals of the market, when they tend to reinforce lock-in effects. Industrial policy can help to direct investment towards innovative activities, to promote diversification of the export basis, to promote catching up in strategic sectors.

The Robin Hood paradox suggests that in developed economies the public sector has been pro-growth and redistributed income. But developing countries that most need public expenditures in health and education, are those which have less resources to do so and invest less. Moreover, frequently the tax and spending structures of the government still heighten inequality. Not only do these countries have less financial resources, but they also have fewer capabilities to manage these resources. Rather than reducing the size of the State, what is needed is the enhancement of its capabilities and the strengthening of its political power and representativeness, in order to raise more fiscal resources and use them efficiently in the direction of structural change and equity.

Social policy cannot be isolated from policies for structural change: if the productive structure does not change towards more knowledge intensive sectors, the dynamic sectors will not be able to finance increasing social demands.

Most natural-resource exporting countries are subject to high volatility due to a combination of factors: high export concentration, volatile products, high concentration in markets, pro-cyclical capital flows, pro-cyclical fiscal systems, Dutch disease and balance of payments constraints. Institutions may be able to tackle this problem with countercyclical policies and with increased control of capital flows. Central bank policies may also be able to deal with employment targeting and the Real Exchange Rate may be controlled in order to avoid damaging overvalued currencies.

National states have also been very weak in relation to multinational enterprises. Searching for capital investment, the quality of the investments and the interplay with the domestic productive structures and development of domestic sustainable capabilities have been generally neglected, with tax exemptions being the main policy tool.

Regional integration may play a crucial role in promoting structural change in the Latin American region. However, even if progress has been made, it seems that the lack of state leadership has held back the process of economic integration, giving too much space to domestic lobbying. The lessons of the European experience have not been learned.

Europe, in turn, can learn from Latin America and other developing regions. A process of fast conditional convergence took place in Europe during the postwar decades until recently, due to technological catching-up, financial and commercial integration and significant capital flows. However, once this catching-up potential has been exhausted, every country finally relies on its own competitive capabilities. Structural heterogeneity is huge at the European level. While countries at the technological frontier tend to be much more successful than others and contribute to setting a high real exchange rate, the negative impact on the less advanced regions via a process of Dutch disease finally impacts negatively even on the more advanced regions.

**DISSEMINATION OF RESULTS**
The organisation of workshops/conferences and dissemination of research was undertaken by the Centre for Economic Policy Research (CEPR). Dissemination activities undertaken in HIPOD included sharing
research under the working paper series of the participating institutions, as well as sharing events through the project website and CEPR’s policy portal, VoxEU.

Policy Report: The final policy report includes a description of the main findings for each of the seven Work Packages and to summarise the policy conclusions of HIPOD.

Economic History Initiative (EHI): CEPR has developed an Economic History Initiative, which aims to make CEPR the focal point for cliometric research in Europe. The aim of the Initiative is to facilitate interaction between quantitative economic historians and the rest of the economics profession in Europe, by promoting the development of a more ‘presentist’ economic history, which uses history to speak to contemporary debates about globalization, the international financial architecture, deflation, and other pressing policy issues. As part of this initiative, a series of conferences on ‘Past, Present and Policy’ have been organised, bringing together policy makers and leading economists and economic historians to explore lessons of history for a variety of contemporary policy issues. Many of HIPOD’s papers were presented at EHI events.

PROJECT MEETINGS
A number of conferences and workshops were organised during the four years of HIPOD. These include the four conferences and Final Conference as set out in the agreed work programme, as well as two additional conferences:

The first HIPOD workshop took place at the University of Warwick in Venice from 15-16 April 2009. The principal aim of this workshop was to bring together researchers working on the reconstruction of national income before the mid-19th century in individual European countries, so that the work could be consolidated into a more pan-European framework to shed new light on the long run economic development of the continent.

The second HIPOD conference gathered a group of leading scholars in the field of inequality and development. The main focus of the conference was to promote a comparative analysis of inequality in Latin America and Europe, in order to help assess whether inequality really has been a distinctive aspect of Latin American development for centuries, what form that inequality has taken, and whether and how it has been an important factor explaining its relative backwardness. Comparisons between European and Latin American experience since pre-industrial times helped to enrich our understanding of both. The conference also gave space to papers containing comparative studies of Europe and/or Latin America with other regions.

The 3rd HIPOD workshop focused on the role of human capital and education in economic history. Many different questions of human capital formation were addressed, such as: What caused rapid human capital development, what retarded it? Can we distinguish between schooling, cognitive abilities, and other determinants? Is there a special role for selective migration in the human capital formation process? What about inequalities, for example, between occupational groups and genders?
This event was the 4th HIPOD conference, organised by the Uruguayan team with the scope of presenting research across the seven Work Packages.

This event was additional to the conferences agreed at the start of the project. It included academics interested in comparative research into the historical evolution of gender inequalities. Whilst the focus was on Latin America, research from other countries was welcome. Due to the lack of gender disaggregated statistics for periods prior to the 1980s, innovative techniques and methodologies were required to reconstruct the indicators. To foster this approach, the organisers set up a virtual platform to promote the fluid sharing and exchange of information among the different research teams and researchers in the various phases of the project. All network members had access to the information base.

The second additional conference brought together the HIPOD team working on the Great Divergence (Stephen Broadberry, Bishnupriya Gupta, Tirthankar Roy, Jan Luiten van Zanden, Debin Ma and Sevket Pamuk) with a select group of leading Indian-based economic historians (Om Prakash, Najaf Haider, Rajat Dutta, Indrajit Ray, Shireen Moosvi, Neeraj Hatekar), to examine India’s place in the Great Divergence. This built on the HI-POD team’s successful earlier visit to China to attend the Asian Historical Economics Conference, which has resulted in the establishment of a number of productive working relationships. In the case of China, linkages to the international economic history community have helped to boost the position of economic history and begin the processing of the wealth of statistical material which exists in archives and which is needed to form the basis of a robust account of long run economic development. The situation was in many ways similar in India, where there had been relatively little processing of the data that exist, both in the archives of the European trading companies and local institutions such as temples.

[7] Final conference of HIPOD, the Residence Palace, Brussels (10 September 2012)
The event was organised by CEPR and a number of academics and policymakers were invited to listen to the presentations on the seven Work Packages.

EXTERNAL EVENTS
Other HIPOD findings were presented at a number of external events such as:
In addition, a number of HI-POD team members attended the Asian Historical Economics Conferences. This type of meeting provided invaluable spillovers between specific topics and helped to cement the
cohesiveness of the HI-POD researchers working on Europe-Asia relations but also a tremendous opportunity for HI-POD to build up links with the emerging community of scholars working in this area, including researchers based in Asia, with whom it would be very difficult to engage in Europe.

POLICY REPORT
A final policy report was produced at the end of the project, “Historic Patterns of Development and Under Development: Origins and Persistence of the Great Divergence, HI-POD Final Report”. The report drew on the presentations given at the final policy event in Brussels, summarising the main findings for each of the HIPOD work packages.

List of Websites:
http://hipod.cepr.org/
The project website was available via: http://hipod.cepr.org/ to publicise the work and results produced within project. This website, which was regularly updated with all public information, was intended to facilitate contacts and exchanges with other research on the relevant topics. Publications delivered within the framework of the project were available on the project website.
In the time that has elapsed since the end of the project, this website was archived. Please see attached documents from an archive tool providing evidence the site was live over the duration of the project and the user guide developed by CEPR for the consortium to help collaborate their research and on other project deliverables.

Related documents

- [final1-user-guide-hi-pod.pdf](http://hipod.cepr.org/)
- [final1-hipod-225342-website.pdf](http://hipod.cepr.org/)

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