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Economic Challenges for
Global Governance

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Abstract

Trade and investment liberalization policies put in place in the 1980's ushered in a new era of globalization and currently form the mainstay of global development policy. However, underdevelopment itself originated in the context of globalization in the 19th century. I first summarize the salient facts of global economic growth and development since the Industrial Revolution, namely: the central roles of productivity, trade and foreign direct investment (FDI), the concentration of innovation, the deindustrialization of the periphery, the Great Divergence, persistence of middle per-capita income levels, miracle growth, the demographic transition, the role of institutions and conditional convergence. I then present, in diagrammatic form, a model of endogenous technological change explaining how trade and FDI raise the world growth rate but focus innovation in advanced and larger countries, thus generating multiple steady states in economic growth. The theory explains the simultaneous historical emergence of development and underdevelopment. So long as underdevelopment persists this generates a polarized, rather than an equal, form of globalization. Nevertheless, an adequate orchestration of the forces of globalization ensuring that technological change accrues equally across countries can break the cycle of inequality and generate economic development everywhere. Such policies, based on export promotion, technological adoption, human capital formation and infrastructure investment, not only are economically favorable to all, tending to raise the world growth rate, but also tend to strengthen democratic institutions everywhere, to accelerate the demographic transition in the Third World, and promote a more harmonious global economic integration.

Keywords: Globalization, Economic Growth, Development, Underdevelopment, Governance.

JEL codes: F13, F15, O10, O11, O19

Resumen

Las políticas de liberalización del comercio y la inversión establecidas durante la década de los ochenta desencadenaron una nueva era de globalización. Éstas continúan siendo el eje de la política de desarrollo global, sin embargo, el subdesarrollo mismo se originó en el contexto de la globalización en el siglo XIX. Este trabajo resume primero las características sobresalientes del crecimiento y desarrollo económicos globales, a saber: el papel central que han jugado la productividad, el comercio y la inversión extranjera directa (IED), la concentración de la innovación, la desindustrialización de la periferia, la gran divergencia, la persistencia del ingreso per cápita en niveles intermedios, el crecimiento milagroso, la transición demográfica, el papel de las instituciones y la convergencia condicional. Después presenta en forma gráfica un modelo de cambio tecnológico endógeno, que explica cómo el comercio y la IED elevan la tasa de crecimiento mundial, pero concentran la innovación en los países avanzados y de mayor tamaño. Esto genera estados estacionarios múltiples en el crecimiento económico. La teoría explica el surgimiento histórico simultáneo del desarrollo y el subdesarrollo. Mientras persista el subdesarrollo, la globalización tomará una forma polarizada, en lugar de igualitaria. No obstante, una orquestación adecuada de las fuerzas de la globalización que asegure que el cambio tecnológico se genere igualitariamente a través de los países, puede romper el ciclo de desigualdad y generar desarrollo económico en todas partes. Tales políticas, basadas en la promoción de las exportaciones, la adopción tecnológica, la formación de capital humano y la inversión en infraestructura, no solamente son económicamente favorables para todos al tender a elevar la tasa de crecimiento mundial, sino que también tienden a fortalecer las instituciones democráticas dondequiera, a acelerar la transición demográfica en el tercer mundo y a promover una integración económica global más armoniosa.

Palabras clave: Globalización, crecimiento económico, desarrollo, subdesarrollo, gobernabilidad.

Códigos JEL: F13, F15, O10, O11, O19

Introduction

The acceleration of globalization in the 1980's began with the revival of classical liberal economics, as Keynesian policies reached their demise. Faced with the stagflation crisis of the 1970's and the first oil crisis, Ronald Reagan and Margaret Thatcher restarted economic growth by freeing trade and investment. They cut income taxes, especially for the wealthy, deregulated and privatized the economy, reduced the power of trade unions, weakened the welfare state, and lifted barriers to trade and investment at home and abroad, therefore raising incentives for investment. Many underdeveloped countries faced similar crises at the time, especially those following import substitution models,¹ and fell into debt through rising interest rates and oil prices. Essentially the same macroeconomic and growth policies were applied in underdeveloped countries, following what became known as the Washington consensus.² In addition, when the Berlin Wall fell in 1989, the end of the Cold War created a global market economy. As free trade and investment treaties proliferated, globalization accelerated. In particular, foreign direct investment (FDI) increased worldwide at an average rate of almost 28% a year from 1983 to 1998.³ Thus, freer markets and a reduced government role in both developed and underdeveloped countries released a fresh wave of globalization. The new schools of economic thought produced theories implying that free trade and FDI would lead to the equalization of growth rates and production levels across countries. However, these predictions were realized unevenly, with many underdeveloped countries obtaining poor results. As the new theory of economic growth developed, inquiry into the long-term persistence of income inequality between and within countries underlined the importance of dynamics in population, technology and institutions.

The purpose of this article is to synthesize some of the findings regarding long-term economic growth, incorporating findings from a theory of globalization (Mayer Foulkes, 2007b) that focuses on the interaction between

¹ Import substitution is a strategy for economic development that replaces imports with domestic production. It may be motivated by the infant industry argument, and it contrasts with export promotion.

² The *Washington Consensus* was described by Williamson (1990) as a list of policy proposals including ten points: fiscal policy discipline; redirection of public spending from subsidies toward broad-based provision of key pro-growth, pro-poor services like primary education, primary health care and infrastructure investment; tax reform—broadening the tax base and adopting moderate marginal tax rates; Interest rates that are market determined and moderately positive in real terms; competitive exchange rates; trade liberalization—liberalization of imports, with particular emphasis on elimination of quantitative restrictions (licensing, etc.); any trade protection to be provided by low and relatively uniform tariffs; liberalization of inward foreign direct investment; privatization of state enterprises; deregulation—abolition of regulations that impede market entry or restrict competition, except for those justified on safety, environmental and consumer protection grounds, and prudent oversight of financial institutions; and, legal security for property rights.

³ Data concerning FDI are taken from UNCTAD (1999), unless otherwise specified.

technological change, international trade and FDI. The theory explains the simultaneous historical emergence of development and underdevelopment, and their persistence in the context of globalization. In fact, most of the history of modern economic growth occurred in the context of globalization. The First Great Era of Globalization lasted from about 1820 to 1914. The Great Divergence of incomes (Pritchett, 1997) began in this very context and continues to this day (Maddison, 2001; Mayer Foulkes, 2006). Our theory shows that much of the multifaceted nature of economic growth—including episodes of miracle growth— can be understood in terms of multiple steady states describing virtuous and vicious cycles in economic growth. Multiple steady states are distinct equilibria with possibly distinct equilibrium rates of growth that represent different types of trajectories of economic growth. I use these various types of steady states or equilibria to describe development and underdevelopment. The theory's links with the literature also show that globalization has important interactions with both population and institutional dynamics, each of which plays a central role in a contemporary line of research on economic growth.

The main finding in Mayer Foulkes (2007b) is that trade and FDI tend to favor the concentration of innovation in advanced and larger countries, and to inhibit it in smaller and more backward countries, whose trajectories of economic growth can therefore lag permanently in levels or in growth rates. This tendency also compounds institutional and demographic differences, thus contributing to the polarized economic performance. For globalization to pull countries out of underdevelopment effectively, it is necessary to counteract these asymmetric incentives to innovation. This has been achieved by the East Asian tigers, and more recently China, through the combination of export promotion and technology adoption, obtaining high rates of economic growth. However, the success of these policies depends on country size, institutional strength and geopolitical circumstances. Their implementation for smaller and more backward countries, often competing with each other for FDI, requires design and application at a global level, with the support of the global institutions that regulate trade and FDI. Such global development policies can be beneficial for all, because innovation is not a zero sum game. While the world growth rate is raised by trade and FDI, it is maximal when all countries are developed.⁴

In the absence of such global development policies, poor outcomes represented by the continuance of lower steady states can persist under globalization. Whole groups of countries may lag permanently in income levels or in growth rates. What this means is that a highly polarized world can subsist indefinitely. At lower steady states, demographic transition towards lower birth rates and institutional development tend to be slower. Under

⁴ Maximizing the world growth rate can maximize knowledge and resources for all economic objectives, including equity and ecological wellbeing.

these conditions, economic integration under globalization tends to subdivide production according to factorial specialization (cheap labor and resources *vs.* technology, physical capital and human capital), rather than sectoral specialization, as occurs between core countries. Altogether, a politically more unstable panorama tends to emerge, one that can generate conflict, and challenge the viability of globalization.

Innovation is driven by incentives derived from market power. For this and other reasons, such as the presence of fixed costs in trade, transnational corporations (TNCs) play a central role in globalization. While aggregate world exports reached U.S. \$7 trillion dollars in 1998, aggregate sales of foreign affiliates of TNCs reached U.S. \$11 trillion dollars.⁵ Two thirds of world trade is conducted by transnational corporations, and half of this is intra-firm trade. Transnational corporations carry out one fourth of global production, two third of which takes place in the host countries. By contrast, they carry out nearly all of their research and development (R&D) in their countries of origin or in developed nations.

The prominent role played by TNCs in globalization has raised their importance as well as their impact, especially on technology transfer, inequality, labor conditions and the ecology. Thus, implementing global development policies requires the capacity to regulate the role of TNCs on a global scale.

It is interesting to recall that the policies that strengthened markets and weakened government in the 1980's also raised inequality in the U.S. During this period the income share of the top U.S. percentile, no doubt related to TNCs, doubled from about 2.5% to about 5% (Piketty and Saez, 2003). The corresponding shift in political power has led to a decline of the public role in research, education and health. Democracy in the US is at a relative low, as measured by the responsiveness of public policy to urgent needs such as green energy research. So also is the independence of the press, as has been apparent in the discussion of issues related to the Iraq war.

Conversely, when insertion into globalization economically empowers large segments of the population in underdeveloped countries, this is conducive to the type of institutional development that promotes economic growth. Such institutions include not only functioning markets, but also democratic institutions with sufficient power to promote adequate investments in human capital and public goods. As a rule, however, the presence of TNCs does not automatically contribute to such benefits; these are a function of host countries' regulation and negotiation. It follows that policies for global

⁵ Today, at the beginning of the 21st century, transnational corporations are truly gigantic. According to Anderson, Cavanagh and Lee (2000), transnational corporations have expanded their activities throughout the globe. Here are some examples. The Swiss electrical engineering giant, ABB, has facilities in over 100 countries. Royal Dutch/Shell has offices in 64 nations and refineries in 34. Cargill, the U.S.'s largest grain company, operates in 59 countries with 105,000 employees. ICI, Great Britain's front line chemical company, employs 36,000 people in 200 plants in 55 countries.

development imposing limits on economic concentration and adequate controls on large corporations would be favorable to maintaining and developing democratic institutions in both developed and underdeveloped countries.

Summarizing, this article outlines how trade, FDI, technological change, institutions and the demographic transition interact. It explains development and under-development in the context of globalization. Both trade and FDI can generate asymmetric incentives for innovation concentrating innovation in advanced countries and therefore generating multiple steady states in economic growth. This means that economic polarization can persist under globalization. Nevertheless, an adequate orchestration of the forces of globalization ensuring that technological change accrues equally across countries can break the cycle of inequality and generate economic development everywhere. Such policies, based on export promotion, technological adoption, human capital formation and infrastructure investment, not only are economically favorable to all, tending to raise the world growth rate, but are also favorable to accelerating the demographic transition, strengthening democratic institutions and promoting a more harmonious global economic integration. These are the economic challenges of global governance.

While the current wave of globalization arose as the result of freeing markets and reducing the role of government, now that a global economy has emerged, global institutional development must rise to the challenge. How strong do these institutions have to be? The answer is straightforward. They have to be stronger than the markets they seek to regulate (as is the case in developed countries), so that they can exercise the necessary control over the world economy by channeling the forces of globalization.

In what follows, I will first outline the stylized facts of the history of economic growth and the main mechanisms of long-term growth discussed in the literature. I will make a comparative summary of the historical and current importance of trade and FDI. Then I outline the impact that trade and FDI have on innovation incentives. This explains how globalization can generate economic advantages for leading countries, independently of other country differences such as institutional or demographic characteristics. I argue that forces in the areas of technological change, human capital formation, institutional development, and the demographic transition complement each other in giving rise to development and underdevelopment as distinct steady states. I then discuss current global development policy in the light of these findings. Finally, the conclusion follows.

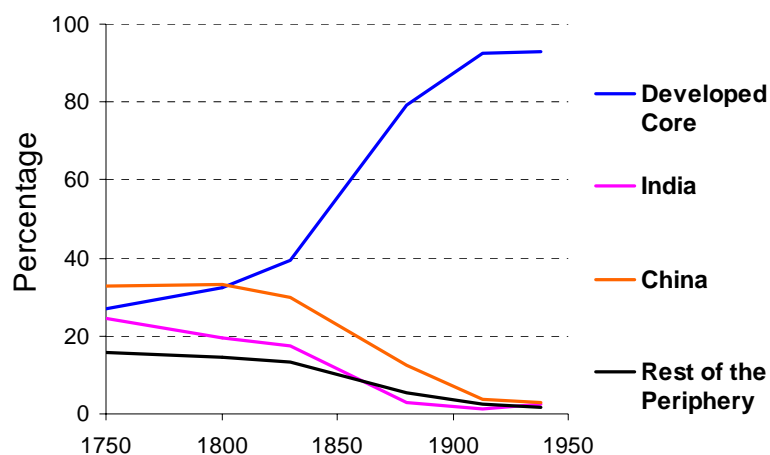
1. Salient facts in the history of globalization and economic development

Modern economic growth begins with the Industrial Revolution in the second half of the 18th century. When Great Britain took off, it became the leading military and industrial power. It prided itself as the *Workshop of the World*, trading industrial goods for raw materials, and established a Pax Britannica lasting through the 19th century and up to 1914.

1.1. Deindustrialization

Deindustrialization was one of the main economic impacts suffered by the periphery as a consequence of its trade with the core between 1750 and 1913.⁶ For example, while India had been a major textile exporter in the early 18th century, by the middle of the 19th century it had lost all of its export market and much of its domestic market. While India produced about 25 percent of world industrial output in 1750, this figure had fallen to only 2 percent by 1900 (Clingingsmith and Williamson, 2005). Figure 1 illustrates the process of deindustrialization of the underdeveloped world, whose proportion of manufacturing production declined dramatically.

FIGURE 1. DEINDUSTRIALIZATION
MANUFACTURING PRODUCTION 1750-1938



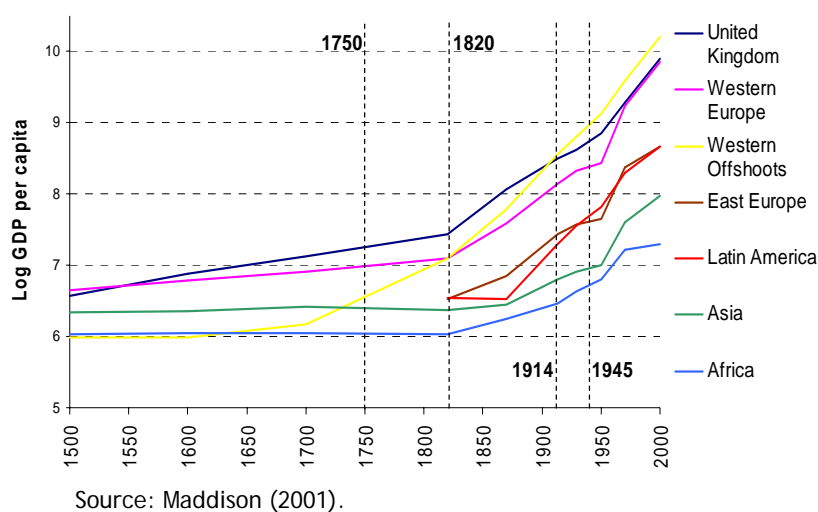
Source: Williamson (2004), Table 1.

⁶ For a summary of this topic and references see Williamson (2004, 2005); Dobado González, Gómez Galvarriato and Williamson (2006).

1.2. The Great Divergence

Economic growth in the 19th and 20th centuries was characterized by the Great Divergence in per capita income between the poorest and the richest countries. Pritchett (1997) estimates that the proportional gap in per capita incomes of the richest and poorest countries grew by a factor of five from 1870 to 1998. Similarly, according to Maddison (2001), the proportional gap increased from 3 to 19 between 1820 and 1998. The Great Divergence originated during the First Great Era of Globalization, and it continues to this day. The proportional gap between the per capita income of the richest and poorest groups of countries increased by a factor of 1.75 from 1950 to 1998 (Maddison, 2001), and between the richest and poorest convergence groups reported in Mayer Foulkes (2006) by a factor of 2.6 from 1960 to 1995 (see the discussion on Figure 5 below). Figure 2 shows the Great Divergence by graphing the per capita income of different regions of the world.

FIGURE 2. THE GREAT DIVERGENCE



1.3. The Role of Productivity

Capital accumulation was traditionally considered to be the main engine of economic growth. Later theories complemented this with human capital. Nevertheless, increasing evidence shows that income differences between countries are mainly due to productivity differences (Knight, Loayza and Villanueva, 1993; Islam, 1995; Caselli, Esquivel and Lefort, 1996; Klenow and Rodríguez Clare, 1997; Hall and Jones, 1999; Easterly and Levine, 2002; Martin and Mitra, 2001; Parente and Prescott, 1999). A way of stating the economic importance of productivity is to emphasize that it is technology (rather than capital) that seeks labor while also providing the incentives for

capital accumulation. Technological convergence is now considered an engine for convergence between countries, as illustrated for the OECD by Dollar and Wolff (1993).

1.4. Concentration of Innovation

Throughout the history of modern economic growth the concentration of innovation has been very high. Table 1 gives an approximate idea of this, showing that the majority of noteworthy inventions from the 17th century to the present were conducted in the U.K. and the U.S.

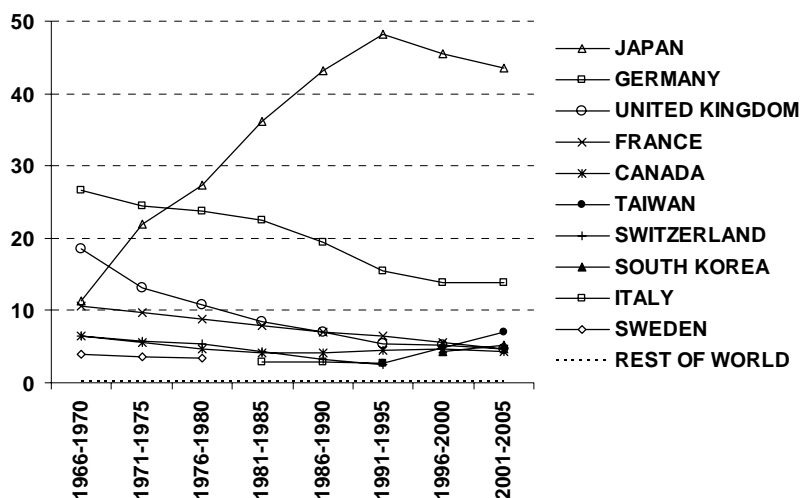
TABLE 1. INVENTIONS BY COUNTRY OF ORIGIN (PERCENT)

	17th C	18th C	19th C	1900-1949	1950-1999	Average
U.S.	0.0	17.4	32.1	51.5	67.3	33.6
U.K.	55.6	52.2	37.0	20.6	16.4	36.3
Germany	11.1	4.3	9.9	11.8	0.0	7.4
Russia	0.0	0.0	1.2	0.0	9.1	2.1
France	18.5	17.4	12.3	4.4	0.0	10.5
Total (%)	85.2	91.3	92.6	88.2	92.7	90.0

Source: Web page by Kryss Katsiavriades and Talaat Qureshi.⁷

A closer look at more recent innovation is provided by patent data. Figure 3 shows, on the one hand, that two or three countries hold most foreign patents in the U.S., and on the other that attaining development is related to holding patents.

FIGURE 3. PERCENTAGE OF FOREIGN U.S. PATENTS



Data Source: U.S. Patent Office.

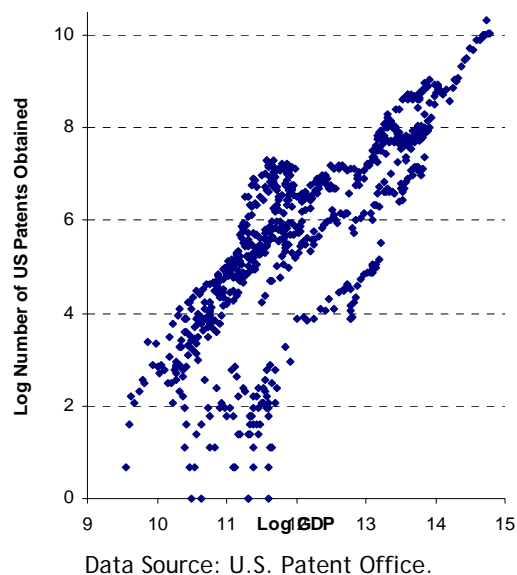
⁷ <http://www.krysstal.com/inventions.html>

Figure 4 shows a scatter plot of the logarithm of the number of U.S. patents held by a foreign country against the logarithm of its GDP, the data ranging over the years 1963 to 2006. The highly significant slope is 1.42, showing that, at least ex-post, innovation is an increasing function of GDP.

Patent application data is also available from the World Intellectual Property Organization. During the period 2003-2006, five countries accounted for 75% of the applications: the U.S. (33.5%), Japan (17.8%), Germany (11.6%), Korea (4.5%), France (4.1%) and the U.K. (3.6%).

The theoretical model outlined below suggests an explanation for innovation concentration and its relation with trade and FDI.

FIGURE 4. PATENTS HELD IN U.S. VS. GDP



1.5. The Role of Trade and Foreign Investment in Economic Growth

Trade has played an important role since the early days of modern economic growth. It is one of the crucial aspects analyzed by Maddison (2001) in his depiction of the economic ascent of Western Europe from the year 1000 to the present, passing through Venice, Portugal, The Netherlands and Great Britain. Cotton exports (the leading sector in the Industrial Revolution) in late 18th and early 19th centuries England grew from 6% of total British exports in 1784-1786, to a high of 48.5 in 1834-1836 (Chapman, 1999). The growth of this sector, and the incentives to increase its productivity, were directly linked to low-priced imports of raw materials from India at this initial juncture of the Great Divergence (Broadberry and Gupta, 2005). Trade played an important role in the development of institutions before 1750. The Dutch West India

Company, for instance, was founded in 1602, together with the Amsterdam Stock Exchange. It was the first company to issue shares. In 1609, the Bank of Amsterdam introduced debt with interest. The consolidation of England as a country (1529-1660) was also connected with its naval and commercial development. In 1632 monopoly law was introduced, and in 1694 the Bank of England was established.⁸

Propelled by manufacture based on the steam engine, Great Britain embraced free trade in order to obtain raw materials and to sell its industrial products. Thus, the First Great Era of Globalization emerged, lasting from approximately 1820 until 1914. Free trade turned out to be a more efficient policy for enrichment than colonialism (Beaudreau, 2004; Semmel, 1970), and this was the motivation behind gunboat diplomacy. Large scale FDI was prevalent by the end of the 19th century.⁹ Investments in colonized and dependent countries were an extraordinary source of revenue, thanks to the extremely low price of labor and raw materials. In his book, *Imperialism, the Highest Stage of Capitalism* (1916), Lenin criticized the vast amounts of capital invested abroad at rates of return that were much higher than those of the countries of origin. In 1914, British assets in other countries reached sums of between 124 and 180% of its GDP. Of the total British investment between 1865 and 1914, approximately the same amount went to the underdeveloped countries of Africa, Asia and Latin America (29.6%), as to the United Kingdom (31.8%) (Ferguson, 2003). Svedberg (1978) estimates that of the 19 billion dollars of accumulated investment in developing countries during 1913-1914, between 44 and 60% was direct foreign investment.

The process of globalization was interrupted from 1914 until 1945 because of the two World Wars and the Great Depression, and also due to changes in hegemony. During the postwar period, a second stage of globalization emerged, this time led by the United States. By 1960, the United States owned nearly half of the world's direct foreign investment. Between 1950 and 1970, direct American investment in European manufacture rose almost fifteenfold, while between 1970 and 1993 direct investment—both American investment abroad and foreign investment in the US—grew fivefold (Graham, 1995). Today, foreign investment is possibly a more powerful force for globalization than trade. All modern “free trade” agreements are treaties on free trade as well as on investment, thus allowing globalization to proceed at full strength. FDI has grown enormously since the eighties.¹⁰ Outward flow increased worldwide by an average of almost 28% annually from 1983 to 1998. This is three times the growth of world exports. Even so, FDI has not reached

⁸ For an analysis of the historical development of trade and modern economic growth, see Mayer Foulkes (2006a).

⁹ By 1899, large corporations like the United Fruit Company controlled 90% of banana imports in the United States. In 1914, Royal Dutch/Shell produced 20% of Russia's oil. Corporations like Standard Oil of New Jersey, Singer, International Harvester, Western Electric, and (around 1914) Ford Motor Company, owned important production facilities outside the U.S. (Beaudreau, 2004).

¹⁰ All data concerning FDI are taken from UNCTAD (1999), unless otherwise specified.

the relative levels that characterized the first period of globalization. The amount of American FDI in 2001 was around 13.6% of the GDP,¹¹ far below the corresponding British amount in 1914.

The following numbers give an approximate idea of the relative importance of trade and FDI today. As mentioned above, aggregate world exports reached U.S. \$7 trillion dollars in 1998, while aggregate sales of foreign affiliates of TNCs reached U.S. \$11 trillion dollars. Two thirds of world trade are connected with transnational corporations. Internal trade for these companies amounts to one half of this. Transnational corporations carry out one fourth of global production, one third of which takes place in countries of origin. Approximately 26.3% of United States' FDI in 2000, and of global FDI in 1998,¹² flowed to the underdeveloped world, where about 21.2% of world income was generated in 1997.¹³ By contrast, transnational corporations carry out nearly all of their research and development (R&D) in their countries of origin or in developed nations.

When analyzing the asymmetric impact of trade and FDI innovation incentives, our discussion goes beyond much of the theoretical analysis of the impact of trade on innovation and economic growth. Most theories, whether of economic growth or of trade, imply that free trade and FDI will equalize the growth rates and levels of productivity of different countries (Helpman, 1993; Eaton, Gutierrez and Kortum, 1998; Eaton and Kortum, 2001, 2003, 2004). However, Rodríguez and Rodrik (1999) find little evidence that policies of trade openness are significantly linked to economic growth. In his research on international technology diffusion, Keller (2004) finds that international diffusion is neither inevitable nor automatic, rather, it requires investment inside the country. In fact, as already pointed out, the Great Divergence—whose main dimension is productivity, and which continues today—happened in the context of globalization itself.

1.6. Miracle Growth

Another distinctive characteristic of the history of economic growth, especially in the 20th century, is miracle growth, which means a relatively long period—up to several decades—of an accelerated growth of at least 5% annually. The majority of countries that attained industrialization and development went through a phase of miraculous growth. Such are the cases of Denmark, Sweden, Italy, Japan, South Korea, Taiwan, Hong Kong, Singapore, Ireland, Germany in the 19th century, Western Germany after the War, Cyprus, Iceland, Spain, Malta, Portugal, Israel and currently China and India. Some countries experienced periods of miraculous growth without fully

¹¹ Data taken from the US Bureau of Economic Analysis, based on historical costs.

¹² The proportions of flow of FDI out of Western Europe, the United States and Japan are 68.3, 22.3 and 4.0% respectively (UNCTAD, 1999).

¹³ Author's estimate based on the World Bank database.

reaching development, as in the case of Argentina, India, Nigeria, Brazil and Mexico in the sixties and seventies. Pipitone (1995) conducts a series of case studies of this phenomenon from a historical perspective. In Wan's (2004) comparative economic case studies of the Asian Tigers' growth experiences, the reference convergence trajectories include at least two decades of growth higher than 5%, viewed explicitly as a transition to a higher stationary state.

All of these experiences strongly suggest that miracle economic growth represents the transitional path between two steady states: underdevelopment and development. The policies applied by these countries, *i.e.* technology transfer and export promotion, directly indicate the nature of the barriers they overcame.

1.7. Persistence of Middle Income Levels

Underdevelopment is a diverse phenomenon. The theory outlined below predicts the existence of two types of lower steady states. The lowest type, *divergence in growth rates*, represents lagging economies with lower growth rates than the leading economies, accounting for long-term divergence and for contemporary semi-stagnant economies, as in the case of Sub Saharan Africa. Any policy that improves the innovation rate, either directly or indirectly, will have growth effects. The second type, *divergence in levels*, represents middle steady state economies that maintain a fixed relative lag in relation to leading countries, with policy improvements yielding effects in levels. These represent a not sufficiently well recognized stylized fact: the persistence of middle income levels. For example, the average per-capita income of 19 Latin American countries relative to the US actually decreased between 1960 and 1999 from 0.25 to 0.20. The relative level 0.20 represents a lag of around 80 years behind the US, assuming what would seem an unattainable catch up rate of 2% per year above the US growth rate. The importance of this middle income persistence tends to be neglected. It is believed that since these countries grew at an average rate of 1.5% instead of 2.1%, it must be just a matter of fine tuning to get at least parallel growth, which is deemed to be a sufficient objective. The point is, however, that if a trap is maintaining the level difference, or the divergence, unlocking it would lead to miracle growth and enormous welfare gains. Ignoring it, on the contrary, may doom proposed economic policies.

These mid-level trajectories have a long history with quite different rates of divergence. According to Maddison's (2001) data, between 1820 and 2000 income per capita multiplied by 3.6 and 5.7 in India and China, 8.6 and 9.5 in Brazil and Mexico, and 22.3 in the U.S.

1.8. The Demographic Transition

After the Industrial Revolution, advanced countries experienced a period of high population growth followed by a decline in birth rates that stabilized the population. This process is known as the demographic transition. Before this transition, it is thought that a Malthusian equilibrium obtained, with incomes at subsistence levels and population levels dictated by current technologies. The achievement of high per capita income levels depended on reduced birth rates, the result of a preference for fewer educated rather than many uneducated children (Galor and Weil, 2000). However, lagging countries experienced delayed and more explosive demographic transition (Chesnais, 1992; Lee, 2003; Doepke, 2006). This is because due to the impact of trade with advanced countries, lagging countries tend to escape the subsistence restriction with lower incentives for choosing quantity over quality (Galor and Mountford, 2006, 2008). The theory we outline explains how globalization contributes to this, by generating asymmetric incentives for innovation that favor advanced countries.

1.9. The Role of Institutions

In a series of papers, a strong case is made for the role of institutions in economic growth (Acemoglu, Simon and Robinson, 2000, 2004, 2005; Acemoglu and Robinson, 2006; Rodrik, 2005). First, European Atlantic trade is found to have had an impact on institutional formation in Europe. Second, in the colonies, the type of colonial intention (*e.g.* extraction of resources *vs.* adoptive home) is found to have had a permanent impact on institutional formation. Third, a theory is developed thanks to which the distribution of *de facto* power, itself influenced by the income distribution, can sustain or lead to changes in *de jure* regimes favoring democracy.

The importance of the extension of property rights, a basic market institution, to wide segments of the population as an antecedent of the Industrial Revolution, as well as the impact of trade, is also documented in Richardson and Bogart (2008).

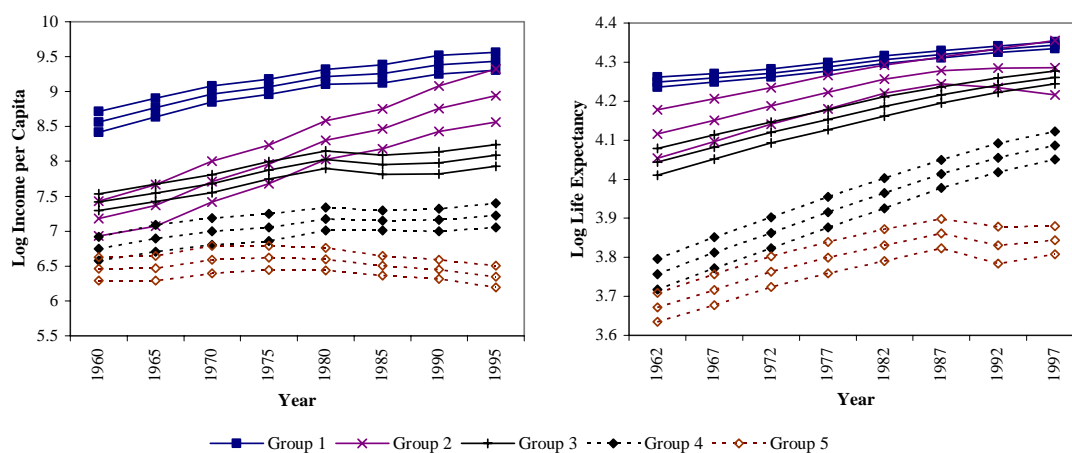
Engerman and Sokoloff (1994a, b) suggest that the types of natural resources found in Latin America may have resulted in specialization in activities with a low demand for human capital, leading to the formation of deficient institutions less conducive to the formation of such capital. Such deficient institutions also influence the shape of tax institutions (Sokoloff and Zolt, 2006). In effect, an unequal distribution of income leads to institutions that are less democratic, do not protect property rights and tend to defend ruling elites.

1.10. Convergence

Last, but not least, convergence must be mentioned as one of the salient facts of economic growth. An important body of literature finds that, although there is no absolute convergence (which is hardly surprising, in the face of the Great Divergence), there is conditional convergence. This means that each economy has a tendency to converge to an equilibrium *growth trajectory* that depends on its characteristics and initial conditions. This conclusion corroborates the predictions of models with diminishing returns to the accumulation of physical capital, human capital and/or technology. However, when multiple steady states exist, either in growth rates or in levels, conditional convergence occurs *within* and is consistent with divergence *between* steady states.

In the presence of multiple steady states, true *convergence* occurs when an economy so modifies its dynamics that it transitions from a lower to a higher steady state. This is what Wan (2004) argues occurred in East Asian countries, as they experienced miracle growth. By combining income and life expectancy data, Mayer Foulkes (2006) gives econometric evidence for the existence of low, middle and high steady states, with some groups of countries remaining in these steady states and others transitioning between them (Figure 5).

FIGURE 5. INCOME AND LIFE EXPECTANCY GROWTH TRAJECTORIES FOR FIVE COUNTRY GROUPS
(CORRIDORS REPRESENT MEAN AND THREE STANDARD DEVIATIONS FOR EACH GROUP)

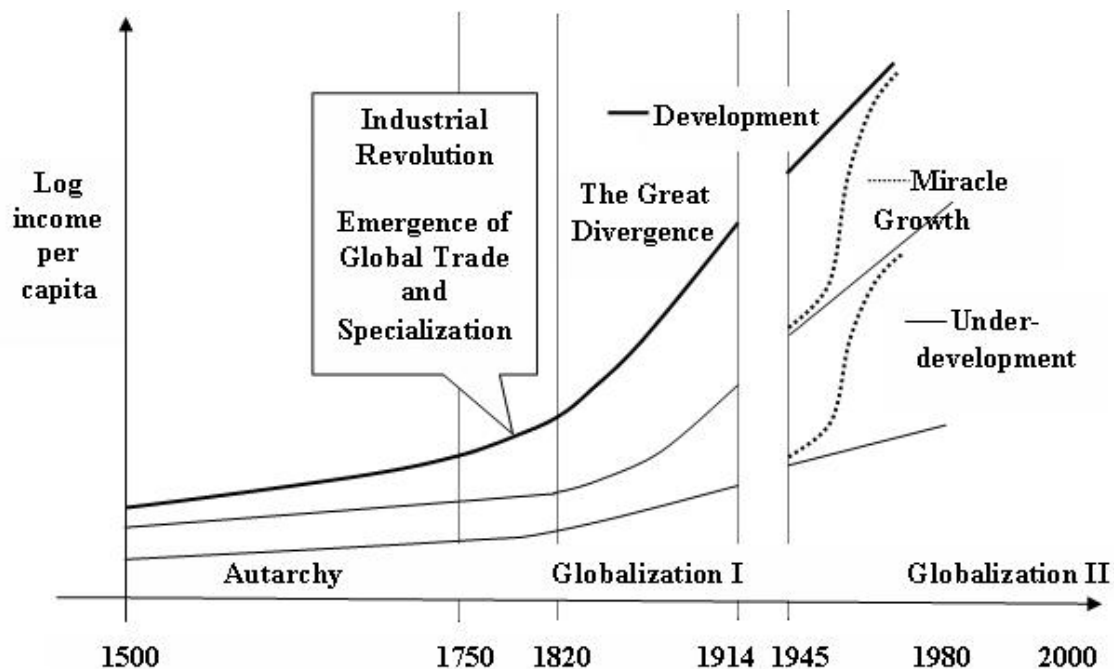


Source: Mayer Foulkes (2006).

In Figure 5, Group 1 represents developed countries with high per capita income and life expectancy. It consists mostly of Western European and North American countries. Group 2 represents a set of countries transitioning from underdevelopment to development, attaining high levels of income and

consolidating high levels of health. It consists mainly of East Asian countries. Group 3 represents underdeveloped countries with middle income levels and relatively high life expectancy. It consists of most Latin American and Caribbean as well as Middle Eastern and North African countries, plus Turkey. Group 4 represents a set of underdeveloped countries with both income and life expectancy transitioning upwards towards middle levels. It comprises most South Asian countries including India, and the top third of Sub-Saharan countries. Group 5 consists of the bottom two thirds of Sub-Saharan countries, with low income and health levels. This study confirms that the Great Divergence continued into the 20th century, and also gives strong evidence for the existence of multiple steady states in economic growth and human development.

FIGURE 6. DIAGRAMATIC RENDERING OF LONG-TERM HISTORY OF ECONOMIC GROWTH AS EMERGENCE OF MULTIPLE STEADY STATES



1.11. Summary

Summarizing, when modern economic growth emerged with the Industrial Revolution, it did so in the context of trade. A process of deindustrialization occurred in lagging countries. Economies specialized either in industry or in the production of raw materials and world wide commodity market integration took place (Findlay & O'Rourke 2001; O'Rourke & Williamson, 1999). As the advanced countries consolidated their economies, foreign direct investment also emerged, taking a role at least as important as trade, and

strengthening asymmetric incentives for innovation, as will be explained below. During this time, income per capita rose much faster in the developed than in the underdeveloped world, and invention and innovation concentrated in the most advanced countries. These countries experienced a demographic transition, while in lagging countries this transition was delayed and more explosive, due, at least partly, to the differential impact of trade. Even before the Industrial Revolution, trade had an impact in institutional formation in Europe, specifically on the formation of market and democratic institutions. In lagging countries, lower incentives for human capital slowed institutional formation, which depends on more equal income distributions leading to a more democratic distribution of *de facto* power.

This summary of the long-term history of economic growth, including the simultaneous emergence of development and underdevelopment, is rendered diagrammatically in Figure 6. The Industrial Revolution in Great Britain (with approximate dates 1750-1820) ended global autarchy and originated globalization and the Great Divergence. Modern economic growth took place in the developed world, while the rest of the world entered underdevelopment, experiencing divergence in levels and in growth rates. Development and underdevelopment are understood, according to our theory, as distinct types of trajectories of economic growth, converging to different equilibria. When countries caught up, they overcame barriers holding them to lower equilibria and experienced miracle economic growth.

Discussions about the interactions between technology, population and institutions are common in the literature. What is different and specific to the current argument is that 1) development and underdevelopment represent distinct steady states in economic growth trajectories, and 2) trade and FDI contribute to their formation by generating asymmetric incentives to innovation. This explains why, after European countries had accumulated an initial technological and institutional advantage –partially gained through trade during the period 1500-1750, when the Industrial Revolution took off simultaneously with global trade– a polarized economic specialization characterized by technological differentiation (industry vs. raw materials) emerged after 1820. Development and underdevelopment emerged simultaneously.

2. Trade, FDI and Innovation Incentives

Let us take a look at how trade and FDI can generate asymmetric incentives to innovation that favor advanced countries, thus contributing to the existence of multiple stationary states in economic growth.

2.1. Schumpeterian Theory of Technological Change

The Schumpeterian (Schumpeter, 1934) conception of economic growth has for its basis intentional innovation that seeks technical improvements with the aim of increasing returns. It is accompanied by the *creative destruction* of competitors. When modeling this process, a clear distinction is made between knowledge for production, that is, technology and the use of human capital for both production and research (Aghion and Howitt, 1992, 1998). These models describe the basic dynamics of technological change conceptualizing it as a force that produced incentives for capital accumulation. Howitt's (2000) multi-country model shows that the diffusion of production knowledge can constitute an engine for growth and convergence. The diffusion of ideas amounts to an *advantage of backwardness* through access to advanced technologies developed by other countries (Gerschenkron, 1952).

In its beginnings, the endogenous theory of technological change concentrated on R&D,¹⁴ so its relevance was circumscribed to developed countries. However, using a broad conception of innovation, the theory has gained acceptance as a description of technological change in general. It can thus be used to address problems that generate divergence and underdevelopment. For example, if human capital thresholds are involved in going beyond implementation to achieve R&D, multiple steady states can result that can explain long-term divergence (Howitt and Mayer Foulkes, 2005). Financial development can determine technological absorption rates and also explain long-term divergence (Aghion, Howitt and Mayer Foulkes, 2005). Essentially, a *disadvantage of backwardness* results when resources for technological change are proportional to current technological levels. If initial conditions are too low, countries will not converge to the higher steady state but instead will converge to a lower steady state, which maintains a permanent technological lag in levels or in growth rates.

¹⁴ The term *endogenous* means that the economics theory explains quantitative and qualitative decisions taken by agents, as the result of the incentives they face. Thus, the endogenous theory of technological change puts forth a set of assumptions based on which a rate of equilibrium for technological change can be established.

2.2. Trade and Innovation

I begin from the proposition that trade assigns production across countries according to comparative advantages pertaining either to the production of specific goods or to factor prices such as labor and capital. From this starting point, I outline why this assignment of production leads also to an assignment of innovation across countries. I then further discuss the impact of FDI. This discussion is formalized in Mayer Foulkes (2007a, b).

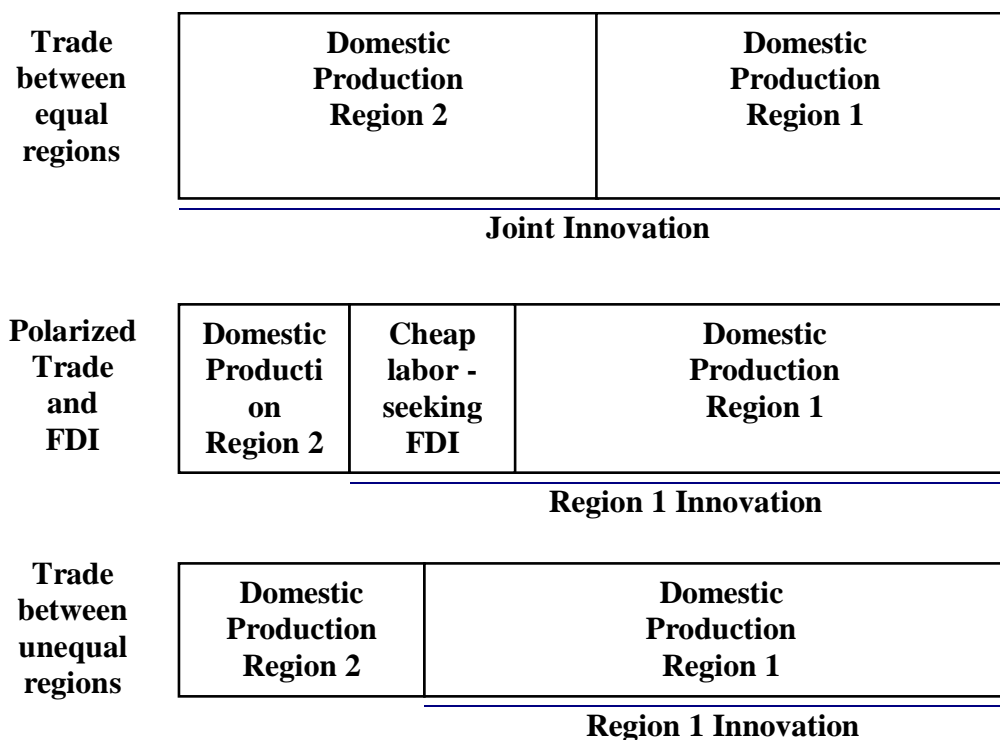
Let us take as reference a very simple case. Consider a subdivision of the world economy in two regions, Region 1 and Region 2, trading domestically produced goods. Suppose that there is a continuum of sectors of production, and that each region has a specific, common technological level across all these sectors. Suppose that Region 1 is more advanced than Region 2. Suppose also that there is a gradient of comparative advantage across these sectors, so that some are relatively easier to produce in Region 1, while others are relatively easier to produce in Region 2. Suppose that all production is performed for the world market, and suppose, for simplicity, that consumer preferences imply an equal level of expenditure across all sectors. Finally, suppose that there are constant returns to scale in production.¹⁵ Under trade, an equilibrium will result in which one set of sectors is produced in Region 1, while the remaining sectors are produced in Region 2. Such an equilibrium is indicated in the bottom panel of Figure 7, *Trade between unequal regions*. The base of each rectangle indicates the set of sectors produced in each region, while the height of each rectangle indicates the amount of production in each sector. This will be higher than under autarchy, because production is specialized according to comparative advantage. The area of each rectangle indicates the GDP of each region, and the total world product is the sum of the areas of both rectangles. In each region the consumption of the goods produced by each sector is proportional to the areas of the rectangles. Each region will produce in the sectors in which production is most economical given its resource mix (including the relative abundance of labor vs. capital). Supposing that capital accumulates in proportion to technological levels (which determine its productivity), the main determinants of economy size will be the technological level and population size of each region. Note that in Region 2, having a lower technological level, more labor will be assigned to production in each sector. Finally, price equalization of goods in both regions will imply that wages are proportional to the productivity of labor, which, as mentioned, is given by the technological level. Sectoral profits, on the other hand, will tend to be proportional to aggregate production and therefore equal across sectors in both regions.

An important conclusion is that, other things being equal, the number of sectors produced in each region (the rectangle base) is proportional to its

¹⁵ Constant returns to scale means production can be replicated as often as desired, encountering neither decreasing returns nor advantages to large scale production.

aggregate income, which depends on its technological level and population size. Now, observe that any innovations in production in each sector must be implemented in the region producing it. Hence, other things being equal, each region will implement a number of innovations proportional to its aggregate income. As a result, trade concentrates innovation in larger and more advanced countries.

FIGURE 7. ASSIGNMENT OF PRODUCTION AND INNOVATION BY TRADE AND FDI (SEE TEXT)



We now extend this simple framework to include FDI. Specifically, suppose that in some sectors it is possible to use the technology of Region 1 to produce in Region 2, where labor is cheaper. Thus, we consider labor-seeking FDI. Resource-seeking and market-seeking FDI can be thought of similarly. Thus, in a given subset of sectors, investment by foreign firms from Region 1 is feasible in Region 2. The reverse does not make sense, because Region 2 can only take less advanced technologies to Region 1. The feasibility of FDI may depend on a variety of country-specific and exogenous factors, including geographical factors, the possibility of transport, of setting up production facilities, of using the advanced technology, and so on. In the middle panel of Figure 7, *Polarized Trade and FDI*, the middle rectangle represents those

sectors for which FDI is feasible. These employ labor from Region 2 and produce with technologies from Region 1. Since this labor is more productive, aggregate world production is higher, so the demand for goods from all sectors is higher. For this reason the rectangles in the middle panel are higher than those in the lower panel. GDP of Region 1 is now the sum of its own rectangle plus the profit component of the FDI rectangle, while GDP of Region 2 is now the sum of its own rectangle plus the labor component of the FDI rectangle. In an extreme case, all production in Region 2 will be carried out by FDI; no domestic sectors will exist. This would model a banana republic.

Note that in the presence of FDI, Region 1 will implement innovations in a higher, and Region 2 in a lower number of sectors than under free trade. Region 1 investors, owning better technologies, can threaten local innovators with setting a price below their production cost. Therefore, they face no competition in production or innovation. Thus, domestic innovation is crowded out in the sectors occupied by FDI. On the other hand, such investors can pay lower local wages and, thus, obtain extraordinary profits. As a result, higher incentives for innovation operate for Region 1 in these sectors, and FDI contributes to concentrating innovation in more advanced countries.

In our analysis of innovation we make some standard assumptions about cross-country technological change. First, as stated above, we assume that each country or region has a specific technological level. Note that when countries are highly integrated, as in the case of the European Union, the discussion may only apply to the union as a whole in relation to other countries. Next, we assume that technological change is costly, and that the cost of a proportional change is proportional to the technological level. This implies that dedicating a constant proportion of income to technological change will result in a constant rate of growth. The incentives for investing in technological change derive from the market power yielded by new knowledge. The simplest assumption is that each sector is a world monopoly, although it is enough that some degree of world market power be present. In our analysis, each FDI sector is a world monopoly run by a TNC. Finally, we assume that there is an *advantage to backwardness*, in the sense defined by Gerschenkron (1952); that is, the presence of technologies from more advanced countries makes technological change cheaper in less advanced countries.

We concluded above that trade and FDI assign both production and innovation, and that they concentrate innovation in larger and more advanced countries. Now we make our main assumption: the more sectors a country innovates in, the easier it is to innovate in each sector. In this respect, I say that there are *sectoral innovation externalities*. Several mechanisms may cause these externalities. We will mention three here. The first is that new ideas may be useful in more than one sector, and therefore will be more productive in countries innovating in more sectors. The second is that general

knowledge, formed through diffusion from all sectors, is needed for innovating in any sector, and is more easily formed when more innovation sectors are present in the same country. A third mechanism is that, in order to sustain innovation, it is necessary, to support a scientific infrastructure at a fixed cost (proportional to any given technological level) to be shared by all production sectors.

Since trade and FDI concentrate innovation in larger and more advanced countries, it follows that, in the presence of sectoral innovation externalities, they will make technological change easier in those same countries, creating a *disadvantage of backwardness*. This disadvantage constitutes an economic force for divergence between countries.

The existence of such a mechanism is supported by the stylized facts pertaining to the concentration of innovation mentioned above, including the higher than 1 slope reported for log patents held by foreign countries in the U.S., and their log GDP (see Figure 4).

The possibility that FDI can crowd out innovation is illustrated in Table 2 for world automobile production and consumption. Automobiles represent a fairly mature product with a not-particularly-impressive rate of innovation. Many middle income countries are quite capable of engineering and producing a line of automobiles. However, doing so while facing the competition of established and advanced producers may be impossible. What does Table 2 show? Those countries in Europe and North America that developed the automobile continue to produce and trade it, both with each other and with other countries. By contrast, the new producers —mainly Japan and Korea—do not import automobiles. These countries developed their capabilities in automobile production by promoting their exports and performing a full import substitution, eliminating competition from FDI in automobiles. On the other hand, Latin American countries that supposedly “substituted for imports” by allowing FDI in automobiles did not develop their own industries. East Asian development policy harnessed exports to ensure its own technological development.¹⁶

¹⁶ See Wan (2004) for a comparative study of East Asian development that explains how technological transfer was achieved. A summary, and a discussion of India and China, is presented in Mayer Foulkes (2007b). FDI only played an important role in Singapore.

TABLE 2. CONSOLIDATED WORLD MOTOR VEHICLE PRODUCTION BY NATIONALITY OF ORIGIN AND CONSUMPTION, 1998 (THOUSAND UNITS)

		Consumers							Total
		Developed				LDC's			
Producers	Origin	NAFTA	European Union	Japan	S Korea	Other Asia, Pacific	Other Europe and Turkey	South America	
	Developed	American	9508	3846	0	0	350	52	611
European		3636	11881	0	0	520	1077	1240	18354
Japanese		2851	811	10049	0	1251	88	39	15089
S Korea		0	0	0	1954	28	150	0	2132
Pacific		0	0	0	0	756	0	0	756
LDC's	Other Europe	0	0	0	0	0	792	0	792
	South America	-	-	-	-	-	-	-	-
	Total	207935	214994	130637	25402	37765	28067	24570	

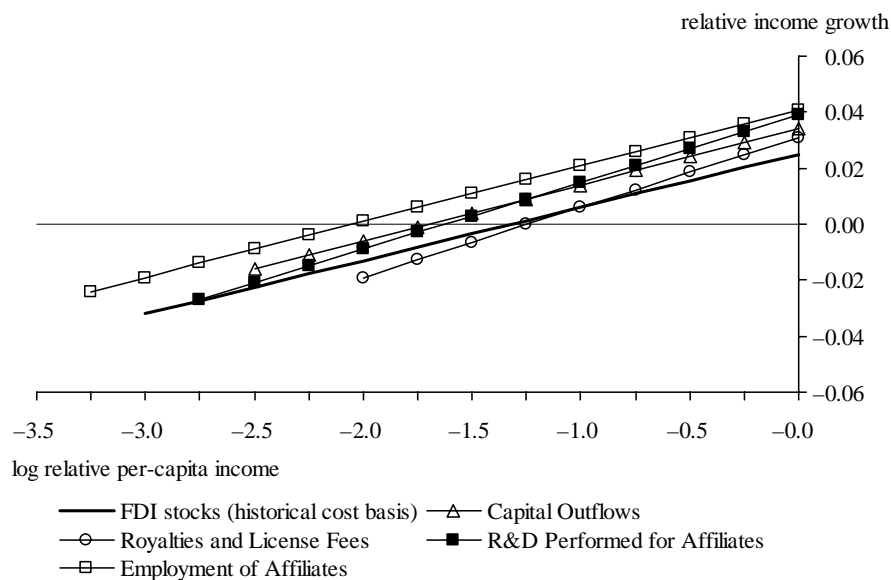
Source: ILO (2000).

While FDI can crowd out innovation, on the positive side its presence may produce technological externalities favorable to growth. However, such externalities have been found to depend on local absorptive capacity (Xu 2000; Görg and Greenaway 2004). Examining a series of variables from the U.S. Department of Commerce Bureau of Economic Analysis, Mayer Foulkes and Nunnenkamp (2007) find that, overall, U.S. FDI has positive effects for economic growth in developed countries and a negative effect for underdeveloped countries (see Figure 8).

To summarize, trade focuses innovation in advanced countries and creates asymmetric incentives to innovation if there are positive externalities to innovation between sectors. FDI creates asymmetric incentives to innovation favoring advanced countries that could be counterbalanced by the presence of strong enough technological externalities for the host countries. If the asymmetric innovation incentives are strong enough, multiple steady states may emerge, with divergence in levels or growth rates.

How does trade impact the world growth rate? The answer to this depends on the growth rate of the leading technological level. Consider first the lower panel in Figure 7. The presence of comparative advantage raises market size and therefore the incentives and resources available for innovation. On the other hand, a reduction in the number of sectors under innovation by leading countries may reduce the positive externalities between sectors.

FIGURE 8. ESTIMATED IMPACT OF US FDI ON RELATIVE GROWTH RATES ACCORDING TO THE RELATIVE PER CAPITA INCOME OF THE HOST COUNTRY¹⁷



Source: Mayer Foulkes and Nunnenkamp (2007).

What is the impact of FDI on the world growth rate? The answer is given by the middle panel of Figure 7. The market for each sector is now larger so there are higher incentives and resources for innovation than under just trade. Finally, what would happen if Region 2 were brought to full development? The answer is in the higher panel in Figure 7, *Trade between equal regions*. Market size and world aggregate product would increase even more, again increasing the incentives and resources for innovation. On the other hand, externalities between sectors would be reduced in Region 1 and increased in Region 2. However, if the two regions integrate into a single knowledge block, then the externalities would be highest, leading to an optimal rate of economic growth. Trade between equal regions is qualitatively different from trade between unequal regions because specialization between countries follows a sectoral rather than factoral structure. Comparative advantages are no longer based on the cost of labor. Both trade and FDI would not seek cheap labor but instead reflect specialization in different sectors.

Finally, suppose that a leading country is open and innovates in most sectors. For a backward country, how does autarchy compare with openness? According to the model, other things being equal, the answer depends on the size of its production relative to the leading country. If it is closed, incentives

¹⁷ According to the World Bank classification of countries according to income, high-income countries have a log relative per-capita income of -1.4 or higher (relative to the U.S.), while log relative per-capita income of upper middle income countries lies between -2.5 and -1.4 (about 8–25 percent of U.S. income).

for innovation will be limited by its market size. Thus, closed economies can at most converge to a steady state lagging in levels. If it is open, however, it will only converge towards the leading economy if it is large enough. Otherwise, it may diverge in growth rates if, by opening to trade, its innovation becomes limited to a very few sectors.

3. Discussion

While globalization has accelerated in the last three decades, the history of modern economic growth has been a global history since its origins. This history has been characterized by deep polarization between countries. Technological change, institutional development, the demographic transition, and human capital formation all concentrated in developed countries and lagged behind in underdeveloped countries.

To explain this polarization it is necessary to go beyond theories based on competitive markets and diminishing returns, which predict equalization in growth rates and productivity under free trade and investment. Innovation, the engine of economic growth, is driven by incentives derived from market power. It is a travesty that free trade and investment are defended on the principles of perfect competition, when in fact market power is very evidently present in globalization, and has been strengthened by it. Much of international economic exchange is in the hands of huge corporations for which economic models based on perfect competition do not apply. By ignoring this fact, free market policies, in effect, support corporate interests, whether by design or not (Stiglitz, 2002). Conversely, from this point of view, development policy compensating for asymmetric innovation incentives has a component of competition policy.

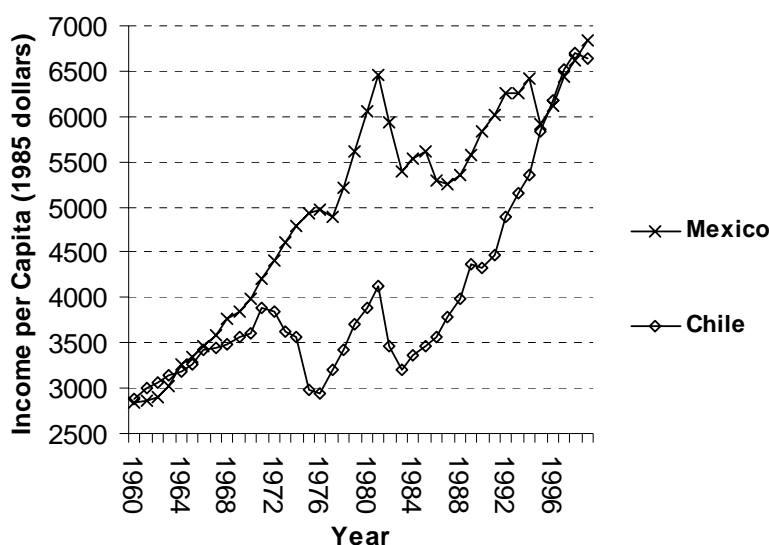
The data show that FDI may be the main component of globalization, playing a larger role than trade. Moreover, we have shown that FDI generates asymmetric incentives to innovation. A series of studies show that it is questionable to automatically expect a positive impact from FDI. By contrast, in the presence of regulation and negotiation, mutual benefits are certainly possible, as is shown in the case of China. We have also shown that, in assigning production, trade assigns innovation and, therefore, concentrates it in the most advanced countries. Thus, both trade and FDI—that is, globalization—have a strong impact on the distribution of innovation, and this can generate multiple steady states and make technological differences persistent.

Low incentives for technological change compound the other dimensions of the polarization observed between developed and underdeveloped countries. By generating a low demand for human capital in underdeveloped countries, low innovation incentives prolong the demographic transition and retard institutional development. Combined, these elements make the existence of

multiple steady states possible. This implies that the economic growth that market forces can deliver is constrained. The concentration of knowledge in advanced countries and low institutional development in lagging countries keep the incentives for technological change and human capital accumulation low in lagging countries, and makes inequality persist.

It is fair to say that current global development policies consist of letting markets guide free trade and investment.¹⁸ Such market policies can only be defended under the assumption that there is essentially a single steady state for all economies. If it is true, however, that the presence of multiple steady states characterizes the global economy, such market policies are not sufficient to produce development.

FIGURE 9. INCOME PER CAPITA FOR MEXICO AND CHILE, 1960-1999



Source: World Bank Development Indicators (2001).

To illustrate what the presence of multiple steady states may imply, I compare Mexico's and Chile's growth from 1960 to 1999 (Figure 9). From 1960 to 1982, Mexico used an import substitution strategy and grew at an average rate of 3.9%. After this, came a series of crises lasting until 1994. Since then, following the current globalization policies, Mexico has grown somewhat weakly. Chile, on the other hand, experienced a collapse after Pinochet overthrew Allende in 1973, and only recuperated growth when it followed the Chicago liberalization policies that Reagan and Thatcher also espoused, growing at an average rate of 4.9% between 1984 and 1998. At this point, it almost exactly caught up with Mexico. Its income growth under liberalization was quite comparable to Mexico's under the import substitution

¹⁸ Developed countries applied quite different policies to attain development. The same is true when they fall into trouble, as in the current credit crisis, cf. Stiglitz' comments on financial hypocrisy (Economist's View, 11/20/2007).

industrialization strategy. Both countries seem to converge to approximately similar long-term growth trajectories.

What is common to both countries' economic policies is that they did not follow export promotion. Mexico pursued import substitution until this strategy reached the limits afforded by its domestic economy. Chile liberalized trade and investment, taking a neutral stance on exports. Finding itself so far below its potential economic equilibrium, these policies were enough to make it converge to its steady state –which appears to be very close to Mexico's. In a recent paper on Chile, Maloney and Rodríguez Clare (2007) find evidence for innovation shortfalls as compared to the OECD. This finding supports the theory outlined above on asymmetric innovation incentives under trade and FDI, which explains the observed innovation gap, impeding convergence to full development.

Understanding underdevelopment as a steady state also explains the long-term ineffectiveness of foreign aid in producing development. What is needed is export promotion and technology adoption, not just trade (or aid). This will be of mutual benefit, just as the development of the East Asian countries and China has been beneficial to the U.S. and Europe –in spite of the competition.

An alternative to export promotion would be policies effectively bridging knowledge gaps between advanced and backward countries. In addition to the Millennium Development Goals, a concerted effort for development should include Technological Development Goals aimed at reducing the huge productivity gaps that exist between countries. Indeed, workers in the field ensuring the availability of primary education for all are already asking, "how will we now increase productivity?"

Promoting development for all is equivalent to promoting a globalization characterized by equality rather than polarization. Such a globalization will tend to reduce the wage competition between the populations of developed and underdeveloped countries, which has put pressures on the lower and middle classes of advanced countries that might, in themselves, become the source of a globalization backlash. In Obama's campaign in the US, these pressures have resulted in a call to subsidize corporations not to export their business to import cheap labor, and to reduce corporate power in setting the Washington agenda. By operating outside the reach of national laws, TNCs tend not to shoulder their full burden of responsibility. The time may have arrived to channel extraordinary profits from globalization¹⁹ to fund global governance, global development (reducing poverty and compensating for asymmetric innovation incentives), and the provision of global public goods (such as a healthy global ecology). This would promote equal, rather than polarized globalization.

¹⁹ Extraordinary profits from globalization, unmatched by equally high investments in less developed countries, may be the funding source for the sequence of bubbles we have witnessed in investment markets.

Conclusions

Throughout this article I have made a case for understanding development and underdevelopment as multiple steady states in economic growth that can coexist within the context of globalization. Such an understanding can explain the joint origin of development and underdevelopment, which took the form of the deindustrialization of the periphery under the impact of trade with the core, generating the Great Divergence. It is also consistent with the phenomenon of miracle growth (the usual way in which countries join the developed club) and with the persistence of middle income levels, because several types of steady states may exist, diverging in levels and in growth rates. I have highlighted the role of technological change as the main motor of economic growth, and an important variable of polarization between countries, showing, specifically in relation to trade and foreign investment, that there are dynamics in the economic sphere that generate polarization through the presence of asymmetric innovation incentives. These elements of polarization are complementary with those that other authors have pointed out regarding the interaction of trade and human capital with the demographic transition and the formation of institutions conducive to growth.

If it is the case that development and underdevelopment represent distinct steady states of economic growth, then it is imperative to design development policies accordingly. On the other hand, current development policies based on the invisible hand rely on the existence of a single steady state as an article of faith.

Policies liberalizing free trade and investment must not be confused with policies promoting exports and the transfer of knowledge. The first allow for the persistence of inequality, while the second were successful in the development of East Asia. Both trade and FDI have tremendous potential as instruments for the transfer of technology. But their impact on underdeveloped countries is usually successful only when aided by policy. Their implementation, especially in the case of smaller and more backward countries, requires global coordination.

The theory explains how the world growth rate is maximized when all countries are developed. This shows that policies pulling countries out of underdevelopment by promoting their exports, technology transfer, and the diffusion of knowledge, are of mutual benefit. This accords with experience in that every country's development has strengthened wellbeing throughout. It is remarkable that these development policies are consistent with promoting human capital formation, market and democratic institutional development, and the demographic transition everywhere, as well as with reducing the conflict that is generated by the persistence of low wages in underdeveloped countries and the division of production according to a technological

polarization. Last, but not least, increased access to knowledge and resources should be helpful in constructing an ecologically sustainable development.

Although the present wave of globalization emerged from a weakening of domestic governments and a strengthening of *laissez faire*, successful globalization will require effective global governance. Market economies have always needed sufficiently strong institutions to control them. For a global market economy to work, the same is needed: sufficiently strong global institutions to ensure the provision of economic development for all. This is the economic challenge for global governance.

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