

# **GLOBALIZATION: PAST, PRESENT AND FUTURE**

**Manuscript of the lecture; Part III**

**Information & Communication Technology  
(ICT): A New Globalization?**

**by  
Prof. Dr. Karl-Heinz Paqué**

**Otto-von-Guericke-University Magdeburg  
Winter Term 2018/19**

**This manuscript is for internal use of students only. Quotations or any other use must be cleared with the author ([paque@ovgu.de](mailto:paque@ovgu.de)).**

**CONTENTS****III Information & Communication Technology (ICT): A New Globalization?**

1	Richard Baldwin's Four-Phase Theory of Globalization (2016).....	2
2	The ICT-Revolution.....	4
2.1	Driving Forces.....	4
2.2	Impact on Manufacturing .....	5
2.3	Impact on Trade and Trade Policy.....	6
2.4	Policy Recommendations .....	7
3	Critical Assessment of Baldwin's Theory.....	7

### III Information & Communication Technology (ICT): A New Globalization?

#### 1 Richard Baldwin's Four-Phase Theory of Globalization (2016)

In a fascinating book with the title “The Great Convergence: Information Technology and the New Globalization” published in 2016, trade economist Richard Baldwin develops a “Four-Phase Theory of Globalization”, which covers basically the whole of human history from Paleolithic times to the present. The four stages are visualized in FIGURE III.1 – taken from his book as all other figures that follow in this Chapter III. The phases are the following ones:

##### *Phase 1: Pre-Globalized World – “Humanizing the globe”*

In its first stage, this was the world of the Paleolithicum, a world of gatherers and hunters that existed until roughly 12.000 B. C. It was a time of high costs all round, i. e. high trade costs, high communication costs and high face-to-face costs (meaning the cost of getting in direct personal contact) – with the consequence that production and consumption coincided in any individual person or household. There was virtually no trade and thus no “unbundling” of production and consumption.

In its second stage, in the Neolithicum, people began to settle in stable places, till the land and thus engage in agriculture and create the first urban civilizations, notably in the fertile valleys of great rivers: the Nile in Egypt, Euphrat and Tigris in Mesopotamia, yellow river and Yangtse in China and Indus and Ganges in India. Trade, communication and face-to-face costs remained high, but some trade in light-weight-high-value luxury goods began to grow across the Eurasian land mass, notably along the silk road connecting the Eastern Mediterranean and Black Sea region via the Caucasus, southern Russia, the northern Indian subcontinent to the eastern shores of China. To be sure, this type of structure roughly survived until the Middle Ages, though with a trough in the Dark Ages that followed the decline and demise of the Roman Empire. Even if there have been some improvements in the later Middle Ages and in early modern times, the high-cost structure fundamentally remained.

##### *Phase 2: First Unbundling – 1820ff: Industrialization and Steam Power lower trade costs*

From around 1820ff, industrialization set in, and with it came steam power, which lowered trade costs – massively for sea and river transport, but revolutionary for land transport with the rise of the railroad. This process went on – continuously and dynamically – up to World War I, that is for a whole century, a period that Baldwin calls “Act I” of the unbundling. Then followed the unfortunate “Act II” of the Interwar period, which Baldwin calls a “rebundling”, and then after

the end of World War II in 1945, “Act III” another wave of continuous and dynamic “Unbundling”, which lasted until around 1990 when a new phase was ushered in. Up to then, the by-now classical form of globalization can be diagnosed with a worldwide integration of product markets, from which mostly the “western” world profited, i. e. those countries that were participating in the first wave of industrialization that began in the 19<sup>th</sup> century.

*Phase 3: Second Unbundling: The rise of ICT lowers communication costs*

Around the year 1990, the rise of information and communication technology (ICT) led to a massive decline of global communication costs (note: with face-to-face costs still remaining high!). This had huge consequences:

- Within about two decades – for the first time since 200 (or even 500) years – it massively lowered the share of the rich countries in the world in total world income, as shown in FIGURE III.2 for the G7-countries United States, Canada, Japan, Germany, the United Kingdom, France and Italy. The share had peaked in the eighties at around 60 to 70 percent, from which it declined to less than 45 percent in the recent past. Historically, this is altogether remarkable: after a long-standing rise from roughly 20 percent around 1820 to about 45 percent in 1990 to 60–70 percent in the years before 1990 a sharp drop by a margin of 20 percent in just two to three decades thereafter. If anything, a sea change!
- Similarly, the share of world manufacturing production of the G7-countries sharply fell in the last two decades – after a much more moderate decline since 1970 until 1990 (FIGURE III.3). Today, the share is roughly 45 percent – after about 70 percent in 1970 and 60–65 percent in the late eighties. Conversely, the share of major large newly industrializing countries – Baldwin calls them the I 6 (FIGURE III.3): China, India, Indonesia, South Korea and Thailand plus Poland – rose from less than 5 percent in the early seventies to still less than 10 percent in 1990 to well above 25 percent in recent years. Note that, in the developing world, the catching-up process is heavily concentrated on these countries as the “Rest of the World” (RoW in FIGURE III.2) does hardly change its share.

So much for the basic fact: the “Great Convergences” that Baldwin diagnoses. It gives his book the name and the main punchline of argument. Note that he also, but rather vaguely forecasts a Phase 4 to come in the future, namely the decline of face-to-face costs on top the decline of ICT-costs, but he thinks we are quite far from there, maybe a couple of decades. This will be

the time when ICT will also allow to massively reduce the cost of classical face-to-face operations, i. g. in medical surgery. To be sure, this is still futurology.

## **2 The ICT-Revolution**

### **2.1 Driving Forces**

There is no doubt: The “Great Convergence” since about 1990 is a well-established fact. The question remains: What exactly are its causes and reasons as well as main driving forces? Baldwin mentions three, in his interpretation: in ascending order of importance.

The first and most obvious is widespread trade liberalization in developing countries. FIGURE III.4 and III.4f show that this was a general trend that swept over the whole world – from South Asia, Middle East & North Africa, Sub-Saharan Africa and East Asia to Latin America. What the G7 had been doing for a long time now finally arrived in the rest of the world, which turned many of the countries there from the status of “developing” into that of “newly industrializing” ones. The deep rationale for this sea change of policy was an “ideological shift” from import substitution to export orientation strategies. The former had become unpopular due to the general demise of left-wing Marxist political philosophy and, even more importantly, to their very poor economic performance records. The latter, once only the policy strategy of a few small Asian countries (the “tigers” Hongkong, Singapore, South Korea and Taiwan) was becoming the norm, not the exception. Note also that genuine efforts were made to reduce the scope and power of state bureaucracies, which in many countries had massively hindered economic development.

Secondly, parallel to the opening up to trade, there was a virtual explosion of the number of bilateral investment treaties (BITs) concluded – as a logical complementary policy step (FIGURE III.5). beginning around 1990, the barriers to entry for foreign investment were systematically lowered in developing countries, exactly because they were newly industrializing and needed capital and technology to move into their countries. After the completion of the Uruguay Round of multilateral trade talks in 1993 and the stagnation of the Doha Round after its launching in 2001, it became ever more clear that only bilateral agreements were promising to path the way to a massive rise of foreign direct investment. In fact, the contents of these agreements were far-reaching as FIGURE III.6 shows. They covered more or less the whole array of legally and economically relevant matters that could not be dealt with comprehensively in the multilateral WTO-framework. By the later half of the 2000s, most NICs (newly industrializing countries) had concluded all necessary BITs with their major potential trading and investment partners so that the number of new BITs levelled off and declined. By and large, the world had now been covered by a dense BIT-network that stretched over the advanced G7-countries and most NICs.

Thirdly, and most importantly, there was the ICT-revolution, in Baldwin's terminology: the "second unbundling". In his view, this was by far the most important force because it massively facilitated the flow of information and skills from the technologically advanced to the newly industrializing countries. In Baldwin's interpretation, ICT opened the gates for a massive knowledge transfer between "North" and "South" – thus leading to an enormous speeding up of the South's economic catching-up and a "New Globalization". To illustrate the point, let us quote Baldwin:

"A sports analogy helps explain how this could so thoroughly transform globalization's impact. Imagine two soccer clubs sitting down to discuss an exchange of players. If a trade actually occurs, both teams will gain. Each gets a player of a type they really needed in exchange for a player of a type they needed less. Now consider a very different type of exchange. Suppose on the weekends, the coach of the better team starts to train the worse team. The outcome of this will surely make the league more competitive overall and it will surely help the worse team. But it is not at all sure that the best team will win from the exchange – even though their coach will profit handsomely from being able to sell his know-how to two teams instead of one. The parallels with globalization are plain. The Old Globalisation can be thought of swapping players. The New Globalization is more like the cross-team training with the offshoring firms playing the coach's role." (p. 6)

Note that ICT plays a pivotal role because "offshoring" works like an ideal transmission instrument and mechanism between North and South. To quote Baldwin again:

"Putting it differently, ICT-enabled offshoring created a new style of industrial competitiveness – one that combines G7 know-how with developing-nation labor. Because this high-tech, low-wage combination turned out to be a world beater, the easier movement of ideas sparked massive North-to-South flows of know-how. It is exactly these new knowledge flows that make the New Globalization so different from the Old Globalization." (p. 6)

There are two major distributional consequences of the transition from the "Old" to the "New". Firstly, the North (say, the G 7) loses and the South (say, the I 6) gains. Secondly, within the South, those countries with attractively big internal markets and/or located close to established industrial centres gain because they tend to profit most from offshoring and thus the North's knowledge transfer to the South; other more remote countries may be left behind or even lose in absolute terms.

## **2.2 Impact on Manufacturing**

Baldwin's theory has far-reaching consequences for the pattern and path of structural change in and between industries in advanced countries (the "G7"). He mentions six of them:

- The traditional distinction between "sunset" industries (those that have surpassed their peak of expansion and are bound to shrink) and "sunrise" industries (those that are still

trendily expanding) breaks down. This is so because, at the high speed that the technology transfer proceeds, even “high-tech” branches in advanced industrial countries may quite easily and quickly turn into “standard-tech” – and thus from sunrise to sunset.

- In general, competitive conditions in world markets change fast and often in an unpredictably disruptive way, which makes it very hard for policy makers to deal with their consequences.
- The fundamental notion of a “comparative advantage” of nations as whole becomes increasingly obsolete because firms with strongly transnational investment patterns are the real carriers of “comparative advantage” and act in a rather footloose fashion.
- The link between technological progress and the dynamics of wage growth breaks down because of the dominance, speed and unpredictability of international knowledge transfers.
- Regional and local distance become ever less important as borders and administrative units matter ever less for knowledge transfer.
- Generally, economic policies of all kinds – and notably targeted industrial and technology policies – become much more difficult.

All in all, Richard Baldwin sees “Globalization” turn into a much more erratic process, which is very difficult to steer and affect.

### **2.3 Impact on Trade and Trade Policy**

In this new world of globalization, as Baldwin paints it, there is clearly a vast new potential for political conflict. In fact, the sports analogy Baldwin uses already contains the seeds of this conflict. If the coach of the better team stands ready to train the so far worse team over the weekend (and, incidentally, earning good money for his/her service), then it is very likely that those left behind with the so far better team recognize that they lose in the process. They may resist the cross-country-fertilization altogether and call for a stop of the technology transfer from “North” to “South”.

In fact, this kind of logic is typically the baseline of thinking of modern right-wing populists who resist globalization altogether. The victory of Donald Trump in the American presidential elections in 2016 and the rise of many populist parties in Europe may be explained by trends that can be described by Baldwin’s story. In a way, his theory delivers a kind of rationale for their resistance.

## 2.4 Policy Recommendations

To be sure, Richard Baldwin's insists on delivering a purely positive theory, not a normative-policy recommendation for populists. To the contrary, he deliberately makes liberal recommendations that do not try to turn back the clock of globalization. For our purposes in this lecture, it suffices to conclude that his policy recommendations are very much in line with the general thrust of welfare, education and labor market policies in advanced industrialized countries that are already in place for a long time in Germany and other continental European countries – though not in the United States or the United Kingdom.

## 3 Critical Assessment of Baldwin's Theory

Returning to Baldwin's grand line of theory, the question remains: Is Baldwin right? In particular: Is the enormous weight he puts on ICT to explain recent trends really justified? On closer inspection, some major facts and trends show that his tale – though quite intriguing – is not really empirically convincing. At least, there are three empirical points that put the explanatory power of the theory in doubt.

First of all, it is important to note that, decades before the ICT-revolution forcefully set in, there has been a limited number of countries that succeeded completely a strongly dynamic process of catching-up – catapulting them from a miserably poor starting-point of developing country to the heights of a top technological performer. In particular, the four Asian “tiger” countries Hongkong, Singapore, South Korea and Taiwan did so, and that within just one generation from the 1960s to the 1990s (and beyond). Note that Japan did it even earlier – and Germany and the United States did it in the 19<sup>th</sup> century, though clearly at slower pace. What the Asian countries did was just “opening up” and switching to a deliberate policy of export orientation – in terms of trade and foreign investment. Given this piece of economic history, it is at least doubtful whether the existence of ICT is really a necessary condition for fast catching-up, not to speak of it being sufficient.

Secondly, in Baldwin's theory, one major channel through which the international technology transfer from “North” to “South” works is foreign direct investment (FDI). Figure III.7a shows how large the FDI-flows – as share of GDP – have been since the mid 1980s for China and India, two huge countries and presumably major recipients of FDI, juxtaposed against the FDI-inflows into the G7-countries and the United States alone. Remarkably enough, the FDI-inflow into China has been persistently larger than into the other nations in the picture, but the difference is far from dramatic and exciting. Only in the mid 1990s the Chinese FDI/GDP-ratio peaks well above the others: at about 6 percent (with the other nations below 1 percent). For all the rest of the period 1984–2014, the difference is modest – in the range of 2 percent and less.

Note that India, the second largest country of the world in terms of population – performs much worse than China; if anything, it receives less in terms of FDI relative to GDP than G7-countries and the US. Note that these conclusions are even reinforced when looking at the share of FDI in total investment (FIGURE III.7b), which – for most countries in most times – lies well below 10 percent. Again, China is only unusual for the mid 1990s, and India – if anything – underperforms by the standard of the G7 countries. All in all, it is very hard to read so much into these numbers as Baldwin does with his theory. Apparently, the channel through which knowledge flows is just too small for Baldwin's theory to stand on it.

Thirdly, in Baldwin's theory, it is not only FDI that matters for the knowledge transfer from North to South, but also personal contacts through learning and education – Remember his sports analogy with coach teaching the originally inferior team. Obviously, the "skill export" is even harder to measure than FDI, but there are some reasonable proxies for it, notably the number of Chinese students abroad (FIGURE III.8). In fact, from 2000 to 2015, it rose massively – from less than 50.000 to more than 500.000, but even this number is still small in relative terms. It means that 0.04 percent of the Chinese population studies abroad, a not unusually high share. In turn, the number of foreigners in China was 600.000 in 2010, 200.000 of them in business – again, numbers that are not unusually high in a Chinese population of 1.4 Billion people.

All in all, it seems that China provides a lesson that is quite different from Baldwin's message. It is the strong dynamics of the Chinese economy and society itself that fuelled the enormously powerful push towards prosperity, not the "foreign share" of FDI or in education. Investment grew extremely fast – *pari passu* with the economy, and the foreign part in it kept pace, but not more. Similarly, education was massively extended and expanded within the country, as Figures III.9 and Figure III.10 show: from 2000 to 2014–15, total educational spending in China rose from less than 100 Bio. Dollars to more than 500 Billion Dollars in real terms, and the number of universities in China climbed up from roughly 1.000 to over 2.500 in the same period.

To sum up: the Chinese experience shows quite clearly that the learning process that drove the growth of the country was probably much more home-made than imported as Richard Baldwin wants us to believe. In all likelihood, the same applies to all other countries that he considers, including all other five nations in his I6-sample.

That said, Baldwin's theory and his book deliver a most inspiring and provocative contribution to the globalization debate. Sure enough, his model is well-taken and important, but maybe it explains much less than he pretends. After all, the ICT-revolution has had a much more limited effect on "the great convergence," with traditional elements like trade liberalization plus investment in physical and human capital playing a much greater role for technological advance and fast growth.