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The Great Convergence: Information Technology and the New Globalization

by **Richard Baldwin**

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There is no need to convince anyone that globalisation is a fact. Taking that into account, writing a book about globalisation means focusing to something specific about it. Robert Baldwin is straightforward: "This book aims to the change way you think about globalization" (p. 1). Fair enough, at least readers know what they can expect, but the mystery remains: how does the author know what are the reader's thoughts about globalisation. Perhaps a working assumption, a concept commonly used in economic theory, is made about the conventional wisdom on globalisation. One way or the other, at the end of the book the author hopes that "…this book serves as a reminder that today's globalization does not resemble your parents' globalization. And tomorrow's globalization is very likely to be quite different from today's" (p. 301). One thing is undisputable: Baldwin aims to achieve a change in the understanding of globalisation, its content and consequences; this is definitely a positive analysis - as opposed to changing the reader's value judgment or personal perception of globalisation.

In the introduction to the book Baldwin steps forward and spells out six effects of the New Globalisation as he see them: "(1) it affects national economies with a finer degree of resolution, i.e. it is more individual; (2) its impact is more sudden and more uncontrollable; (3) it denationalises comparative advantage; (4) it partly ruptured the compact between G7 workers and G7 firms; (5) it changed the role of distance; (6) it should change how governments think about their policies" (p. 11-13). Well, now readers know all the consequences of the New Globalisation, though not in detail, and they can make up their mind whether to read the book and learn about mechanisms, evidence about them and their details.

The book starts at earnest with its Part I (*The Long History of Globalization in Short*) with the history of what happened, and with the beginning of globalisation, traced back to 200,000 BCE. Phase One of the globalisation, which lasted up to about 10,000 BCE, is basically the story of humanising the globe. With prehistoric transportation technology it was easier to move people to the food rather than food to the people. In that phase, globalisation, according to the author, "meant a burgeoning human population travelling to exploit ever-more-distant production sites" (p. 18).

The author's obsession with transportation technology and costs can be spotted early in the book. For him, not only are these costs important, but they explain (almost) everything. For him, this stage of human activities of hunting and gathering was organised in this way not because there was no technology that could provide food and clothing in some other way, but because of the transportation costs. It is true that there was little trading at that time, but one can hardly blame transportation costs for that.

Further on, Phase Two of the globalisation (10,000 BCE to 1820 CE) meant localising the global economy, beginning with the agricultural revolution, with both production and its consumption occurring in the same locations, and very little trade between the locations. Incidentally, the agricultural revolution was not about transportation costs. This phase is rather heterogenous with three stages, according to the author: the rise of Asia (10,000 to 200 BCE), Eurasian integration (200 BCE to 1350 CE), and the rise of Europe (1350 to 1820), with the Black Death being considered a watershed event for Europe, destroying the bad equilibrium of the Middle Age - an explanation borrowed from Ronald Findlay and Kevin H. O'Rourke (2009). The concept of proto-globalisation (1450-1776) is introduced with the Renaissance and the Enlightenment, the Age of Discovery and the Columbian Exchange as the main segments. It is puzzling that the proto-globalisation is introduced as a phenomenon of the mid-15th century, within the framework in which globalisation started 200 millennia ago. One way or the other, Phase Two, according to the author, established the global distribution of the population.

Phase Three of the globalisation (1820 to 1990) is the one that many others will consider the actual beginning of globalisation. Three stages, described by Baldwin as three acts, are identified as Act I (1820 to 1913), Act II (1914 to 1945) and Act III (1946 to 1990). The driving force of this globalisation is decreasing trade costs, (transportation and transactions cost together), mainly due to the steam revolution, both on land (railways) and sea (steamships). This phase in globalisation provided the first globalisation unbundling: production is separated from consumption. The trade costs went up in the Act II, due to protectionism and war, but Act III brought the decisive drop in trade costs due to the GATT and the introduction of containers, which lowered shipping costs. Baldwin's framework for consideration of globalisation consists of three types of costs: costs of moving goods, the costs of moving ideas, and the costs of moving people. This gives him a perspective of three cascading constraints. Within his own analytical framework, Phase Three of the globalisation was created by the decreasing cost of moving goods, while the other costs (moving ideas and people) remained the same.

This phase of globalisation, within the Baldwin's taxonomy, is what many pundits consider the first globalisation or the old one. In a seminal paper on the history of globalisation, O'Rourke and Jeffrey G. Williamson (2002) argue that the proper indicator of globalisation should be the international convergence of prices and, according to this indicator, it started in the 1820s. One way or the other it was this first globalisation that enabled nations to become specialised along their comparative advantage, which benefitted all. International trade volumes soared. That, according to Baldwin, created the "Great Divergence", i.e. the North-South income divide, described in the book as northern industrialisation and southern deindustrialisation, though it would be more precise to describe the southern situation as the lack of industrialisation, rather than deindustrialisation. The problem with this view is that, by focusing entirely to trade costs, it eliminates technological progress - the industrial revolution, i.e. the technological progress in production that created new methods of production and entirely new products. There are disputes about details of the engines of industrial revolution and their mechanics, for example why it happened in England (Robert C. Allen 2009 and Joel Mokyr 2017), but there is no doubt that globalisation, specified as the decrease of trade costs, was neither a necessary nor a sufficient condition for industrialisation. As for the soaring volumes of international trade, that would not have occurred without industrial production, the introduction of the supply of industrial goods, and diversification of that supply, irrespective of the trade costs and their dynamics.

Baldwin refers to Phase Four of the globalisation as the new globalisation or globalisation's second unbundling - this time the unbundling of production. The new globalisation is based on the ICT revolution, which substantially decreased the costs of moving ideas. Few laws describe the ICT revolution: Moore's Law on computer chip performance doubling every 18 months, Gilder's Law which states that bandwidth doubles every six months, and Metcalfe's Law - that the usefulness of a network rises with the square of the number of users. These laws explain the diminishing costs of moving information around the world. The new globalisation is also based on the improved air cargo service as it allows manufacturers to know that intermediate goods could flow among distant factories almost as surely as they flow among factories within a nation. Not surprisingly, 40 percent of the parts and components imported to the US are imported by air (David L. Hummels and Georg Schaur 2013).

The content of the new globalisation made possible by the ICT revolution is the unbundling of the production. The mechanism is simple: since substantial wage differences exist between the North and the South, companies from the North have strong incentives to transfer their know-how to the South and to offshore some stages of the production process. Although this mechanism is universal, most of the offshoring occurred in manufacturing and most of it went to a relatively few countries - the new globalisation has not been truly global. Baldwin identifies a group of countries that benefited most from the offshoring in manufacturing and called them Industrialising Six (I6): China, South Korea, India, Indonesia, Thailand, and Poland. It is a rather strange choice of counties, which contradicts some of the findings in his own book. Mexico is not in this group, although it is used in the book as the country role model of offshoring from North America. South Korea, on the other hand, is in the group, although it became an industrialised country well before the new globalisation and is used in the book as example of old style unbundled industrialisation.

The greater problem, though, is the explanation of geographically focused offshoring. Baldwin emphases that offshoring of manufacturing created Factory Asia (mainly SE Asia), Factory Europe (predominantly CEE), and Factory North America (predominantly Mexico). Definitely not Factory Africa, or Factory World for that matter. The author labels this pattern as the spatial paradox. His explanation of the paradox is simple: high costs of moving people, so nations that are offshoring manufacturing are doing so to the locations that are close to them. The problem is that this explanation is not convincing. If this is true, then the whole story of manufacturing unbundling and offshoring due to the decreased costs of moving information collapses. Furthermore, if this is true, then all the offshoring in China should have been from Japan (and it is not), all the offshoring in CEE should have been from Germany and other EU industrial powerhouses (and it is not), and all the offshoring in Mexico should have been from the US and Canada (and it is not). The problem stems from Baldwin's ardent desire to squeeze in the reality in his mental model in which only costs of moving (goods, ideas and people) exist and everything else is neglected. The point is that successful offshoring requires many necessary conditions to be fulfilled, starting with economic institutions, both formal and informal, the level of human capital, both general and specific, political institutions, providing some political stability, etc. It is evident that not all countries of the South fulfil these conditions, irrespective of in which region they are located. It is perhaps the lack of political stability in civil war-torn African countries that has something to do with the lack of offshoring to them, rather than their distance from the North.

One way or the other, the new globalisation has brought about the increase of manufacturing in developing countries, and their substantial economic growth based on industrialisation. That is the basis for the "Great Convergence", although many countries are not part of it. Besides, that very pattern of economic growth led to the surge of demand of the developing, newly industrialised countries for commodities, hence commodity exporting developing countries, and developed countries of this kind, such as Australia, experienced growth based on that surge. As for international trade, the trade of intermediary goods surged, a rather expected consequence of the unbundling of manufacturing. Today it is not only North-North trade that exists and that dominates world flow of goods, especially of intermediaries, it is now North-South trade that is significant.

Baldwin considers another impact of the ICT revolution - the one on the policies of developing nations. His conjecture is that policy makers in those countries immediately realize all the potentials for industrial offshoring, which is the reason why they have decided to decrease tariffs and, in that way, trade costs, supporting for the globalisation process. Not only that, but they strengthen bilateral investment treaties as a way of encouraging FDIs, as the main method of offshoring. It is rather puzzling that countries in which protectionism was so deeply entrenched, as well as second thoughts about the "heavy hand" of multinational corporations, have suddenly pursued these policy changes. Furthermore, the question remains open as to why developing countries opted for an overall tariff decrease, as it is only intermediate goods that are relevant for offshoring. With substantial experience in import substitution strategy, this was obvious to decision makers in developing nations. On top of this, no political economy narrative was given to something that is political economy question *par excellence*. Pity.

Economic theory is introduced to the consideration of globalisation in Part II (*Extending the Globalization Narrative*). It starts with Ricardo's concept of comparative advantage, which is still a workhorse of international economics. New economic geography is added to the theoretical foundation for considering globalisation and its explanation of international division of labour and the heterogeneity of space (Paul Krugman and Anthony Venables 1991), endogenizing comparative advantages. Industrial export creates industrial clustering and in turn this clustering creates at least conditions for industrial innovation, which creates comparative advantage. Be that as it may, the chicken and egg problem, a metaphor that Baldwin extensively uses in the book, remains. What is the source of industrial export? There must be some initial, exogenous comparative advantage. Hence new economic geography is more about the virtuous circle created by industrial export and facilitated by falling trading costs; effectively it is about multiple equilibria that a country can achieve.

There is an interesting causality from industrial clustering to industrial innovation. Obviously, externalities are at work in the form of agglomeration economies. The mechanism is spelled out by the author in what could be labelled as "spatial theory of innovations". Spatial dispersion of production (the one that existed prior to 1820) dampened innovations. On the demand side "a brilliant idea meant little if only a few dozen families could exploit it" (p. 116); on the supply side "innovation flourishes when many people look at similar problems from dissimilar angles, so spatially separating problem-solvers across many villages hindered the supply of innovations" (p. 116). This is a good example of Baldwin's approach to globalisation. Nothing but a single dimension - space - exists: no economic institutions, good or bad, no differentiated incentives that they crate, such as incentives for research and development, no endogenous growth mechanism, such as the Schumpeterian model, no intellectual property rights, no price mechanisms in both product and factors markets, no investments in physical and human capital, nothing of the kind - only space.

Considering the notion of mental models, Baldwin quotes Karl Popper and his *The Open Universe*: "Science may be described as the art of systematic oversimplification - the art of discerning what we may, with advantage, omit" (p. 111). The problem with the application of this principle is that the crux of the art is the advantage that is gained by omitting irrelevant or not so relevant factors from consideration. Baldwin, nonetheless, omits all but one relevant factor. This could be a proper approach to some specific theoretical model, focused to producing answers about the mechanism of a given particular causality. This book, however, is about "changing the thinking" about globalisation - a truly global phenomenon. The abuse of oversimplification is definitely not methodologically appropriate.

Nonetheless, this part of the book provides some very interesting and thought-provoking insights, very useful for understanding the new globalisation. Production unbundling and offshoring segments of the production has created a new concept, the "factoryless goods producer" (Andrew B. Bernard and Teresa C. Fort 2015). Production of goods is fragmented to various services needed before the production of goods starts (pre-fabrication services), such as the design of the product, organisation of its production, financing issues, etc., as well as various services after the production of the goods (post-fabrication services), e.g. marketing, post-sale services, etc. The added value of these services of substantial, greater than the fabrication itself. With the offshoring of the production itself, and substantially lower labour costs, the added value of production drops relative to the production services - a "servicification" of manufacturing. And the jobs in the sector of production services, to a great extent, are not offshored, i.e. they stay in developed countries, with the HQ of the multinational companies. These jobs are good jobs, highly paid and "sticky", i.e. not movable, but they require a high level of human capital.

Another important insight is that fragmentation of the production process and information sharing, i.e. transfer of know-how to developing countries, is completely and strictly controlled by the firms from developed countries, i.e. multinational companies. It is the calculation of their overall profitability that drives the flow, and they allow only the flow that maximises their overall rate of return. Since they control the know-how transfer, they are not afraid that transferring know-how to firms in the developing newly-industrialised countries will enable them to become their global or even local competitors. The firms that share their know-how know very well what is the tipping point, i.e. the point beyond which the other firm can get out of its value chain and become a competitor. That makes them confident in the whole offshoring process and hence they have no second thought about it.

A crucial consequence of the ICT revolution is that fragmentation of the production process created new, much smaller indivisible units of the production process, i.e. units that can be organised in different ways and be brought to the international market and competition - slicing up the value chain. It is no longer about production as such, but rather about its ingredients: task, occupations, stages, and only then production, with jobs, it seems, being somewhere between tasks and occupations. A single task can be offshored if the costs of its performing are lower in some other (developing) country, primarily due to lower wages. This is "finer degree of resolution" of the new globalisation. The competition is not (only) production vs. production, but it is now internationally competitive provision of the tasks within a production. That means more opportunities to outcompete foreigners, and definitely means more competitive pressure for those who perform these tasks. This makes globalisation more individual.

Baldwin identifies two corollaries of this individuality of the new globalisation. The first one is undermining unions' bargaining power, as labour unions are organised by sector and/or skill group. Some of the sectors or skill groups will be better off, due to the globalisation, and some will not, since the decisions are made at the level of tasks. Hence, unions cannot make unequivocal requests regarding the globalisation of the labour market. The second corollary is what Baldwin calls "breaking up the national team" (p 169). The statement "what is good for General Motors is good for the country" is no longer true, if it was ever true at all. What is good for General Motors is to offshore some jobs, to move them by using ICT to the labour markets in which these specific labour costs are lower and to increase its profitability.

The author stops right there, failing to point that due to offshoring a segment of the added value chain is removed from the US, GDP decreases *ceteris paribus* and some jobs are lost with substantial political economy consequences. Irrespective of the long-term consequences of this, there are adverse short-term consequences for people who lost their jobs, with most of these jobs requiring low level of skills. With a low level of human capital, the alternative is low productivity service industry jobs with miserable wages. This creates the interest group of losers, without the need to organise themselves as a group, as populist political programs are already on the market. President Trump voters make up one of these groups, trying to undo the new globalisation and its effects. It remains to be seen whether their champion will be successful. Alas, there was no mention of this or other similar political projects in the book. Pity.

The new globalisation is more sudden, argues Baldwin, because of the nature of the ICT technological progress. It is less predictable because offshoring of some activities can be done in days, as well as because it is unbundling factories and offices with many ways of that unbundling. The new globalisation is less controllable, because "very little of this technology development is controlled by governments" (p. 174).

Nonetheless, as it is pointed out in Part III of the book (*Understanding Globalization's Changes*) technological progress can work against the new globalisation and the unbundling it generates. The point is that ICT can also be unbundled into information (I) and communication (C) technologies. The latter, labelled by the author as "coordination technologies" and their technological progress, enables production fragmentation and its offshoring. Nonetheless, technological progress in information technologies can have a countervailing effect. Two advances in the field, CIM (computer integrated manufacturing) and 3D printing (additive manufacturing) integrate the production process and allow a single worker to perform all the tasks simply by operating a single machine. Baldwin suggests that types of advanced manufacturing should be called "compufacturing" since "rather than machines helping workers make things, the workers are helping machines make things" (p. 200). One way or the other, this type of technological progress undermines production unbundling and globalisation based on it.

Part IV of the book (*Why It Matters*) is about policies. The author suggests a very useful two-dimensional framework for evaluation of production factors, with dimensions being the potential for positive spillovers (external economies), and international mobility. Government involvement in improving these factors should be focused on those that have high positive spillovers and low international mobility. The lowest international mobility, according to Baldwin, is a feature of social capital, tacit knowledge and medium-skilled labour. The positive spillovers of these factors are ranked in the same way: high for social capital, tacit knowledge in between, and low for medium-skilled labour. Apparently, the area for government involvement and active policies are in the first two. Social capital or informal institutions, in Douglass North's terminology, is the first task of the government, especially taking into account that informal institutions depend to the great extent on formal ones, hence it is the first job of the government to design proper institutions of that kind. Baldwin's conclusion ("Human Capital Is Key") deals with the tacit knowledge factor, though a cynical reader would say that the author suddenly drops his "costs of moving" paradigm as the only explanation for offshoring.

As to industrial policy, the author, admitting that there is very little room for it at all, point out that there are actually good manufacturing jobs without manufacturing, those in providing pre-fabrication and post-fabrication services, and that the dilemma that developed nations face is whether to lose some job or to lose all of them. The crux of the trade policy should be the elimination of all trade barriers and barriers of capital flows, and regarding social policy "governments need to provide economic security and help workers adapt to changing circumstances" (p. 237). A reader definitely expects more than this rather vague outline of these policies.

Contrary to that, the section of the book on rethinking development policy is very well elaborated. In short, traditional thinking about industrial development is misplaced today. Not only as there is no need for a "big push", but it is also counterproductive. There is rather good news in rethinking industrialisation in modern times, because stage-level industrialisation under the auspices of the new globalisation is much easier than the previous sector-level one. The main reason for this is that the new industrialisation is less lumpy, as the scale and the range for a single stage are much smaller than in the case of industrial sectors. This industrialisation focuses on the production of components and intermediaries and their export: a turn of the tide compared to previous industrialisation, based on import substitution, with the importing of components and production of final goods within the country, for the domestic market only. Furthermore, finer resolution of the new globalisation means stronger comparative advantage and in that sense greater gains from trade. Finally, since the know-how movement is by stages, not by sectors, firms from developed countries are not reluctant to engage in such transfer, as it will not create competitors for them in the international market. In this sense, the new globalisation is a world of cooperation rather than competition. This is all good news for developing countries.

Furthermore, there is no need to consider what is known as the "development ladder", i.e. putting sectors in order, such as the textile industry in the first stage of industrialisation and heavy machinery in the second. In other words, as Baldwin emphasizes, sequencing is disrupted, and comparative advantages became much more a regional and less of a national concept. This is just a casual observation. There is no detailed description, let alone an explanation of the latter. Nonetheless, Baldwin steps forward with new policy questions: (i) the global value chains entry question; (ii) the expansion question; and (iii) the sustainability question. Before the author immerses himself in to these questions, he is honest to the reader: "But don't get your hopes up. I don't have the answers" (p. 271). He is right. The conclusion of this part of the book is equality enlightening. "In short, there is nothing easy about development, but what is clear is that the world needs much more research on how developing nations can make global value chains work for them" (p. 277). This line belongs in conventional political speeches, for instance at the UN General Assembly, not in a serious book.

Part V of the book (*Looking Ahead*) is about the future. Baldwin starts off with consideration of the future course of separation costs, i.e. the costs of unbundling the production process. The very first question is whether trade costs rise or fall substantially. The author is convinced that there will be no rise of protectionism and he finds grounds for such a view in the aftermath of the 2009 Great Recession. "Joblessness shot up and politicians were under pressure to do something. Massive 1930s-style protectionism, however, did not materialize. If protection was not triggered by this mammoth shock, it is hard to see what would trigger it" (p. 284). The author adds that the rise of international production networks has deeply changed the politics of protection, at least for the nations that are involved in these networks. Again, no political economy considerations of a political economy question. The optimism displayed in the book could be played down by insights of rising populism precisely in the "nations that are involved in these networks", about politicians strategically playing with "job losses", and political incentives "to do something" about that, as not to suffer a decline in ratings.

Baldwin is rather sure that G7 governments, however strong the anti-globalisation sentiment in their countries might be, are rather reluctant to disrupt the information flow that enables offshoring and even if they are willing to move in that direction, they do not have the means to accomplish it. Be that as it may, one should never underestimate the capacity of populists to destroy things. The new global architecture of sliced value chains is vulnerable, and it can be undermined on many fronts. Populist entrepreneurship is definitely innovative and capable of spotting every weakness in that architecture.

The other possible constraint for further unbundling and even for it reversal is technological progress in the information technologies that are integrating the production process. Baldwin points out that the integration and automation of tasks "does not stop at the factory gate" (p. 287). Obviously, it is impossible to say what will be the impact of this technological trend, not only on globalisation, but also on society at large.

The major technological innovation that can decrease the last of the moving costs - the cost of moving people, i.e. face-to-face costs as labelled by Baldwin, is the "virtual presence" revolution, a technological breakthrough that will enable "holographic telepresence", as an emulation of the real world face-to-face meetings. That "telepresence" will obliterate the need for travelling and physical presence, and it will enable low wages professionals to be integrated into virtual offices in developed countries. Another technological innovation is telerobotics, basically remotely controlled robots performing various jobs, enabling remote provision of low-cost labour services. With wages much lower in developing countries, the services provided in this way would definitely be cheaper. Again, no physical presence, but the cost of moving people, or rather their services, will decrease substantially. According to Baldwin, both changes will have a dramatic impact on changing societies, simultaneously in developed and developing countries.

An interesting puzzle for a reader is whether these technological changes, which will provide jobs and enable increase of wages of "teleoperators" in developing countries, will undermine incentives for international migrations. It seems not, since strong incentives for the people to move from developing to developed countries is provision of public goods, something that many governments in the developing world are not very interested in.

Baldwin ends the book with a quip: "Things have changed so much that not even the future is what it used to be" (p. 300). Indeed, we do not know what will be the nature of technological progress and whether it will boost further globalisation, fragmenting value chains or not. Indeed, we do not know what will be the political economy constellation that will bring about the institutional changes of the future and whether these changes will be supportive of globalisation. Indeed, we do not know what will be the intensity and stamina of the populist hysteria that is so obvious in developed countries, and whether it will bring back some protectionism, this time of the new kind. It seems that the author did not provide enough intellectual ammunition for the kind of optimism about the future of globalisation with which the book shines.

Has the aim of the book, to change the way readers think about globalization, been accomplished? Readers are a heterogenous bunch, so it is difficult to say. Perhaps the most important point made is that old-style industrialisation is over; it is no longer feasible nor desirable. Korea was the last successful case. Protectionism, import substitution strategy and the infant industry argument are dead for good. Some readers understand that, and they are grateful to Baldwin for making the case in a very clear and convincing manner. Some readers do not understand that. What kind of treatment they deserve is a question that is beyond the scope of this review.

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