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SHIFTING TOWARDS A CONSUMER-CENTERED ECONOMY AND THE IMPLICATIONS FOR INTERNATIONAL TRADE

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Abstract

Globalization has radically changed the way in how goods and services are produced. The impact of globalization on production has been driven mainly by two determinants: In a first phase, a quick fall in transportation costs between countries and in a second, more recent phase, a drastic lowering of international communications costs. In this paper we argue that we are currently witnessing the start of another epochal change. Advances in communication and information technology enable companies to have more and more knowledge about the individual consumer. As a consequence, products and services can be marketed more specifically or can be customized according to the preference of the consumer. We call this new era the consumer-centered economy. The consumer-centered economy is challenging our standard trade and development theories in which consumers are typically assumed to be identical. We predict that the success of countries and firms will depend on how well they are able to integrate consumer information into the process of value addition. Producing standardized goods and services will offer little perspectives for economic development, even when integrated into regional value chains.

Keywords: international trade, trade costs, production networks, consumer, customization

JEL Classification: F14

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1. INTRODUCTION

The invention of the internet in the 1990s brought about a sea change for communication. It lowered communication costs drastically and thereby offered new ways to organize the production of goods. Currently, we are witnessing a start of the new revolution based on the improved connectivity of people and things. It is expected that by 2020 the number of connected things will reach 50 billion worldwide (Financial Times, 2016). The founder of the World Economic Forum, Klaus Schwab, predicts this jump in connectivity and other technological breakthrough will lead to the forth industrial revolution (Schwab, 2016) which will be based on smart factories which are highly flexible and respond to consumer demands almost in real-time.

The purpose of this paper is twofold. First, we aim to better understand how this connectivity revolution is impacting the production of goods and services. And second, the paper explores the main implications of this paradigm shift on international trade.

We argue that the enhanced connectivity based on new information and communication (IC) technologies is currently radically changing the production and consumption patterns. Most importantly, transaction and communication costs between producers and consumers are shrinking constantly thanks to an increased used of new IC technologies. The economy of tomorrow will be much more consumer oriented than today. The survival of companies will less depend on their productivity, but on the capability to collect data on consumers and to integrate them into the production and delivery process. Finally, the role of retailers and wholesalers will be change fundamentally. In a consumer-centered economy, pricing will be less determined by market mechanism in general equilibrium. Instead, as products will be directly marketed to individual consumers and or custom-made, the bargaining will be more localized or one by one.

We predict that moving towards a consumer-oriented economy has several important implications for international trade: First, given the focus on consumers, the production of goods and services will be located ever closer to the final markets. Closeness, both in terms of IT connectivity as well as shipping connectivity, will be as important as factors as prices. Second, value chains will be more often reconfigured and changed due to a faster turnover of products and services. Successful companies will be the ones which are able to adapt their international value chains to changing demands. Third, the border between the production of goods and services will become increasingly blurred. Success in international trade can no longer be based on the most efficient production of goods. Services embedded before, during and after the production will determine competitiveness.

The connectivity revolution will also have profound impact on economic development. First, in a world of internet of things, automated machines and robots will increasingly dominate the production process. The share of labor in the global value chain will shrink continuously. As a consequence, low labor costs will no longer be enough to integrate global value chains. The availability of skilled labor and capital will be the dominant factor to join global value chains. Second, reliable and affordable connectivity among firms and consumers will be crucial. It is no longer suffices to be able to provide goods and efficient transportation and communication links to export oriented companies. The whole economy, companies and consumers alike, need to be connected. Third, developing countries need to improve financial inclusion in order to enable everybody to participate in the global marketplace. Firms can only cater to the consumer if they are brought into the realm of finance. Fourth, the size of an economy

is less important to its success as long as it can provide three fundamental ingredients at low costs: connectivity, skills and finance.

2. FROM THE PRE-GLOBALIZED WORLD TO THE 2ND UNBUNDLING

2.1 The Pre-globalized World: Local Production and Local Consumption

In the world preceding globalization and industrialization (up to the 19th century) the economic structure was marked by decentralization and local autarky. The main reason was that trade costs were excessively high, making a large-scale exchange of goods and of services across borders impossible. Not only transportation costs were high during that period, but other trade barriers equally hindered a smooth exchange of goods. For example, in the territory of today's Germany one was confronted with over 1800 borders in the year 1790. Borders implied costs in terms of customs duties, but also meant the existence of numerous non-tariff barriers, such as different measurement units. In such as border-filled world the vast majority of exchanges of goods and services remained contained within a small location.

However, even in this highly fragmented world, trade took place across countries and even across continents. For example, in medieval Europe trade was flourishing among cities located around the Baltic Sea. Furthermore, we have ample evidence of trade routes connecting Africa, Asia and Europe. The famous silk route allowed for the exchange of goods between Europe and Asia. And not only goods crossed borders, services were exchanged on a considerable scale. For example, Italian painters embellished churches in Germany. German musicians entertained the court of England. International trade in goods and services was thus not uncommon at that time, but the scale was small and trade costs remained excessively high. Only goods and services of high value were worthwhile the high trade costs.

The largest part of the economic activity had a local origin and destination. Predating industrialization and its mass production, it also meant that many goods were tailored to the needs of the customer. Clothing, shoes, furniture, equipment, and many other products were either tailor-made or adapted to the use of local consumers. The same logic applied to services which closely responded to local needs. As we will see later in this paper, the 21st century will have surprisingly similar production and consumption patterns: Both will be marked by a strong orientation towards the consumer.

2.2 1st Unbundling: Industrialization and Transport Revolution – Local Production and Global Consumption

At the beginning of the 19th century the industrialization was gaining ground in Europe. Industrialization was based on the principle of mass-production turning away from medieval manufacturing practices. Mass productions allowed for economies of scale and thus lowered dramatically prices of a number of commodities. The industrialization went hand in hand with a transport revolution. The invention of railways and steam-ships brought trade costs drastically down and allowed to ship the mass-produced goods out. At the same time, the outcome of the Congress of Vienna (1814–1815) reduced considerably the number of borders in Europe. Two decades later (1834),

German Zollverein was created unifying the customs and toll agreements across Germany.

The outcome of this facilitated trade was a surge in international trade flows. Countries started to specialize on the production of commodities for which they enjoyed a comparative advantage Ricardo (1817). Industrialization combined with international trade transformed many countries in Europe and elsewhere, including the United States and Japan, during the 19th century. During these times, manufacturing was concentrated in factories or industrial centers within countries. Due to high communication costs, the manufacturing process was not split up across borders. However, consumption of was already internationally dispersed. Standardized products manufactured in one location were shipped to consumers around the world.

Case Study: From Hand-made Harmonicas to Mass-Production

One good example of the move from pre-globalized manufacturing to the first unbundling is the German producer of harmonicas, Matthias Hohner, in the South West of Germany. Within his lifetime he became the largest harmonica producer in the world. Traditionally, music instruments were built by specialized workshops in limited pieces and high price. Following this concept, Matthias Hohner started his company in 1857 with his wife and a single employee and produced 650 harmonicas a year. Following the logic of dividing the production into smaller tasks, the efficiency of production quickly improved and production expanded. In 1877, 86 employees produced almost 90,000 instruments. The introduction of steam machines helped to further boost productivity and the output surged to over 1 million instruments by 1885 (Berghoff, 2006, p. 74).

Matthias Hohner quickly realized that not all tasks needed to be undertaken at the main site. Several tasks were labor intensive and required little machinery (Berghoff, 2006, p. 76). Farmers could perform those tasks at home and earn a second income. Other tasks could be performed in decentralized production centers. Matthias Hohner thus decided to open small production sites (10–40 workers) in nearby villages benefitting from lower labor costs. As a consequence, the production became increasingly decentralized. By 1896 only 160 employees of the 700 worked on the main sites. Until 1914 the production was spread across 40 decentralized production sites.

The sale of harmonicas was organized through a dealer network, which mainly covered the South-West of Germany and neighboring countries. Harmonicas were also frequently shipped through the postal network. As the international popularity of harmonicas quickly increased by the end of the 19th century, the sales expanded quickly across Europe and the Americas. By 1905 Hohner's sales to the USA and Canada reached almost 45%. The UK accounted for 17%, the British colonies, West and Northern Europe for another 17%, Russia for 3%. Sales to Germany were only 16.7% (Berghoff, 2006, p. 76). By 1920, the Hohner music instruments shipped to 50 countries across the world.

The example of Hohner's harmonicas nicely illustrates the dramatic impact that the 1st unbundling had on economic production and distribution. First, the example shows that the division of tasks and the decentralization of the production process were already used extensively in the 19th century. Tasks were outsourced following very similar considerations (such as wage levels, proximity, transportation costs) like today, but typically stopped at the national border. Second, the distribution of goods was already highly international. Due to a drastic fall in transportation costs, ordinary goods could travel thousands of kilometers before reaching the final consumer.

2.3 The 2nd Unbundling: Information and Technology Revolution – Global Production and Global Consumption

The second sea changed happened in the 1970s when international transport costs started to fall drastically thanks to the introduction of containerized shipping (Bernhofen, 2013), followed by a slow but continuous fall of international communication costs. It therefore became increasingly cost efficient to split the production process across borders taking advantage of wage differences between countries. Yi (2003) and Notteboom and Rodrigue (2008) underscore the role of lower international trade costs in facilitating the disintegration of the production process across borders. Baldwin (2011) calls it the second unbundling. The resulting international structure of manufacturing is more commonly known as global value chains.

Hundreds of empirical papers have demonstrated the existence and magnitude of regional and global value chains (e.g. Choi 2015). Companies headquartered in advanced economies were originally the main drivers behind the expansion of value chains. Today, more and more companies from emerging countries are establishing cross-border value chains. Asia and Eastern Europe are the two world regions that have been most successful in building and integrating global value chains (Amador et al, 2015; Helble and Ngiang, 2016). Today, joining global or regional value chains is considered as one of the key factors of economic development. Recent evidence shows that joining global value chains was associated with increasing employment and a rise in real income (Kiyota et al. 2017).

The second unbundling has been an era of mass production. For example, German cars of the 1990s were increasingly produced with parts and components from neighboring countries. In the 2000s the Asian emerging economies followed and produced consumer electronics using inputs from various countries and split up the manufacturing process across several locations. Baldwin (2011) derives several implications of the 2nd unbundling. First, whereas previously countries needed to build up full supply chains domestically, today, countries can join global value chains by offering one task competitively. Their tasks can only be marketed if the border administration, transport and communication infrastructure is efficient. Furthermore, companies need to have access to related services supplying value added to the goods sectors. Finally, he conjectures that the manufacturing stages have the lowest value added compared to research and development as well as post production services (such as sales services). This stylized fact therefore creates the so-called smile curve with the highest value added in the pre and post manufacturing stages. Baldwin and Evenett (2014) label the 2nd unbundling as the value creation and trade in the 21st century manufacturing. However, in the following we will argue that the 21st century manufacturing will be marked by a new arrangement of production: a consumer-centered economy.

3. THE CONSUMER AT THE CENTRE OF THE VALUE CHAIN

3.1 The Fall in Trade Costs between Consumers and Firms

The main contribution of the international trade literature has been to unveil the main determinants of the spatial distribution of the production of goods and services across countries. Apart from different endowments of countries, economists have identified another key driver, namely trade costs (Anderson and van Wincoop, 2004). Trade costs can come in different forms such as shipping costs or communications costs. Baldwin (2011) argues that the falls in transport costs resulted in the 1st unbundling and the fall in communication costs in the 2nd unbundling. One can argue whether this is an overly simplistic view. Nevertheless, it provides a compelling case to better understand the waves of globalization.

What lacks Baldwin's (2011) model is the consumer side, which is typical for the international trade literature as it was always focused on the production side. Trade theory first started by explaining international trade by different technologies between countries, so called Ricardian models (Ricardo, 1817). Later trade was explained by differences in factor endowments (Heckscher, 1919; Ohlin, 1933; Heckscher and Ohlin, 1991). More recent firm heterogeneity trade literature since Melitz (2003) focuses more on market penetration costs. Preference and information of consumers are idiosyncratic across countries. Compared with domestic producers, this often requires foreign producers to pay higher costs such as advertisement costs, sales-promotion costs and customer-care costs. In other words, fixed exporting costs in Melitz model is now interpreted as market-penetration costs (Arkolakis, 2010). Larger market demand requires exporters to pay more sunk costs for market penetration (e.g. Akerman et al, 2013). What this recent literature tells us is that firm heterogeneity as well as demand heterogeneity (heterogeneity in consumers' preference and demand) are important to better understand the current world economy.

Another recent brand-new branch in the trade literature is a series of studies started by Antras (2003), which explains outsourcing production or in-house producing of parts and components in intermediate input production. The vertical production linkages are relation-specific and thus products are order-made. This theory is based on contract theory, explaining firm boundaries and intra-firm trade. What this recent literature tells us is that customer-base/relation-specific demand is important in international trade.

In this paper we argue that the consumer should no longer be ignored or modeled as a homogenous agent. The introduction of new information technology tools, such as the internet and smartphones, has substantially lowered the communication and transportation costs between producer and consumer. Consequently, the interaction between the two agents is simpler and faster. The interaction today is not limited to marketing and selling of goods and services, but goes in both directions: from producers to consumers and from consumers to producers. As we will explain later, the consumer has become an integral part of the entire production process, starting from the design stage, to the production and marketing. Furthermore, in addition of lower communication costs, the physical transportation costs between consumers and producers have become lower. For example, parcels are delivered faster, more reliably and at lower prices to consumers.

Our addition to the existing literature is to bring the trade costs between firms and consumers into the picture. We argue that four kinds of trade costs shape the international production and consumption of goods and services: Transportation and communications costs between firms as well as between firms and consumers (Table 1). The current trade literature mainly considers trade costs between countries.

Table 1: The Changing Trade Costs and Its Implication on Trade

	Trade Costs Between Firms		Trade costs between Firms and Consumers	
Type of trade costs	Transportation Costs	Communication Costs	Transportation Costs	Communication Costs
Pre-globalized	High	High	High	High
1st Unbundling	Low	High	High	High
2nd Unbundling	Low	Low	High	High
Consumer-centered Economy	Low	Low	Low	Low

Source: Author.

3.2 The Short History of Mass-Customization

The standard assumption in trade theory is that firms produce standardized goods and market the later to anonymous consumers. This assumption is still reasonable for a number of goods and services. However, more and more firms have started to customize their products to the individual need and preference of the consumers. This trend has started already more than 20 years ago.

By the end of the 1990s car producers worldwide offered an ever wider range of options to customers. By allowing the customer to personalize the car, the cars were supposed to perfectly correspond the customers' preferences and needs. Automobile companies probably underestimated the consequences of this large choice: At the beginning of the 2000s Mercedes Benz produced roughly 400,000 cars every year in their plant in Sindelfingen; none of the cars was identical. The trend of customization cars continues until today. In 2015, Volkswagen offered 117 different steering wheels and 341 different front seats for the Golf model (Financial Times, 2015), not to mention all the different other options.

How are the automobile producers able to cope with this high degree of personalization? They early introduced sophisticated IT system throughout their production lines. The IT system is connecting production processes not only within the firm, but also with part and component suppliers as well as the sales outlets. Today, for automobile companies the survival does not only depend on being the most productive producer for a standardized product, but also to respond to consumer needs in the most cost-efficient and fastest way.

And while the high degree of personalization has started with goods of high value, the current ICT revolution is bringing the costs of personalization further down. Previously only furniture in the higher price segments could be customized. For example, a producer of expensive lounge chairs offered various types of woods, leathers and fabrics. Even if this product seems simple, offering various woods, leather and a multitude of fabrics can give rise to several hundreds of varieties. Today, custom-built furniture has become available in ever lower price segments. For example, in PRC Home Koo offers custom-build furniture online (The Economist, 2015c). Recently, we

have witnessed the emergence of companies that even offer customized clothing. The Chinese company Red Collar lets customers choose the design of their clothing and place the order online (The Economist, 2015c). Even for traditionally ordinary products bespoke versions can be found. For example, a new start-up (Function of Beauty) in New York has begun to offer personalized haircare (shampoo and conditioners) to customers.

In order to production to respond quickly to customized demands, the entire production process needs to be fully integrated. ICT integration is needed across all production stages, some of which will take place in different locations, including different countries. Seemingless ICT integration is needed within and across firms and includes all forward and backward linkages.

Another type of customization is based on the idea of offering a platform on which the consumer can build its preferred mix of services. The most common example are smartphones. Apple was able to sell over 1.2 billion iPhone from 2007 to 2017. Apple offers only a limited range of model options, such as the color and size of storage. The hardware of many iPhone is therefore exactly identical. However, it is probably correct to conjecture that every iPhone hold by a private person in this world is different when it comes to the application software. Smartphones are individualized by downloading and installing specific applications. Today, millions of applications are available. Some applications are for free others are for pay. Smartphones constitute a platform on which consumers can build their individualized services. One might compare smartphone with personal computers of the 1980s and 1990s. However, the difference is that the number of programs/applications has increased dramatically. Another difference is that the smartphones are constantly connected to the internet. Most applications constantly provide data on the usage back to the developer of the application. The smartphone user thus becomes an invaluable source of data.

Another important product group that is potentially affected by customization are medicines. Medical services have traditionally been highly customized as every patient is different. However, more and more drugs will also be produced to correspond to individual patients' needs. For example, gene therapy can be developed based on a person's individual DNA outside the human body and later infused (The Economist, 2015a). Customization offers the advantage of targeting diseases more efficiently.

Services have always been an industry where customization has always played an important role. However, in several services' sectors the level of adaptation to customer preferences has been rather low. For example, banking and financial services typically offered standardized products to their customers. Some tourism services, such as hotel nights, were offered at a standardized price.

In many services' industries we are currently witnessing a strong trend towards customization. Tourists are offered options to tailor their trips to their needs, or they just do it themselves. As "Armed with smartphones and wealth of online information, tourists are creating itineraries that fit their tastes to a T." (Ono, 2017). Financial institutes try to find out more about their customers. It helps them to better adapt their services and at the same time to improve the performance of their borrowing. In China, several financial institutes make active use of the browsing history of potential customers to determine their creditworthiness (The Financial Times, 2016). For example, using information about in due to customers' credit and tailor their offers accordingly.

3.3 New Roles of the Consumer

The ever closer relationship between producer and consumer has redefined the role of the consumer. The consumer is no longer an anonymous and passive agent. Today, the consumer fulfills at least the following three new roles in the economy: (i) The consumer as passive information provider; (ii) the consumer as active information generator; and (iii) the consumer as producer.

3.3.1 The Consumer as Passive Information Provider

Instead of being an anonymous agent, more and more information is available about the consumer. Information is collected whenever she/he undertakes an economic transaction, be it online or offline. In Japan, every cashier in the convenient stores run by the main retailers collects information on the age bracket and sex of the costumer. This type of information gathering can be easily enhanced by using customer fidelity cards. The name and address of the customer are then matched with the shopping profile, such as the types and quantity of items bought. Furthermore, the day of the week and time of the day unveil additional information about the behavior of consumers. The US supermarket chain Target is able to tell whether the female customers are pregnant and the stage of the pregnancy (Duhigg, 2012). Today, all major retailers analyze the costumer data that they collect to uncover their behavior and to more efficiently market to them.

Online transactions happen either through the smart phone or internet. Both are formidable source of data on customer behavior. In contrast to the offline market, the internet holds much more detailed information to analyze the customer's profile. Internet retail companies can analyze the entire purchasing process, from the initial screening of various products to the final decision. They can analyze how much time was spent on each product, even on which detail of the product, the customer spent most time. For example, they know whether the customer is rather interested in different color options or in technical aspects of the product.

3.3.2 The Consumer as Active Information Generator

The consumer is not only producing valuable information passively. In the new economy she/he has increasingly become an active producer of information. An interesting example is where smart phones are actively used as a tool to know the customer needs. For example, a make-up producer offers an application to gauge the tone of your skin. The customer takes a picture of the skin and sends it to the make-up company who then produces cosmetics that match the given skin tone (Boyd, 2016).

Furthermore, consumers enjoy giving ratings to both products and services. We rarely find a product in online stores that has no rating. As for services, consumers rate not only the service of hotels, restaurants, or airports. The online ratings have expanded to lawyers, medical doctors, and many more professions, including university professors. The rating is typically done without expecting a monetary compensation. The consumers act on a voluntary basis to inform other potential consumers. These ratings are not without problem, in particular the risk of fake consumer ratings. However, this risk is limited as long as a sufficiently large amount of original consumers' feedbacks are available. Overall, customer ratings add information on products and services that was not available previously. Certain online market places are particularly successful because they provide many customer ratings.

3.3.3 The Consumer as Producer

In the last ten years, we have witnessed several examples where the consumer has become a producer at the same time. The most obvious examples are Facebook and YouTube. In both cases, internet users are consumers and producers at the same time. This allows the companies to keep the content generation to a minimum. Their role is basically to ensure that the flawless function of the platform.

Another example of the consumer being part of the production process involved 3D printing. With the help of 3D printers consumers can buy blueprint and produce the actual good at home. These goods can be range from simple plastic objects, such as lamps or iPhone cases, to more complex structures, such as glass objects for decorative or utilitarian use (The Economist, 2015), or even cars (Moss, 2017).

4. IMPLICATIONS FOR PRODUCTION OF GOODS AND SERVICES

The new roles of the consumer as well as the firm-consumer proximity are radically transforming the way how goods and services are designed, customized, produced, marketed and distributed. The consumer her/himself is getting into the center of the value chain. In the following we look at how this happens in the three main stages that define every production process:

(i) Pre-fabrication services, such as research and development

(ii) Fabrication

(iii) Post-fabrication services, such as marketing and after-sales services

4.1 Prefabrication

The direct connection to the consumer allows for constantly adjusting and improving the prefabrication of goods and services. For example, a clothing company sells a new design throughout its shops worldwide. The IT systems will report the daily sales to the headquarters and the fashion designers can then immediately integrate this information in their design work on the next collection. Another example are smartphone applications. The consumers might notice defects or other problems with the software. The feedback is either given automatically or the customer is asked for this experience with the service. In all these cases, the consumer is directly linked to the pre-fabrication stage in the production.

4.2 Fabrication

As explained above, the production of cars and other goods is already highly customized. The customer can choose among a multitude of options and as a result, a car can be configured in millions of ways. When the customer places the order, the information is immediately handed down to the plants involved in the production. These plants can be within the company or outside, such as component suppliers. The consumer preference thus directly enters the production process. The product is thus no longer mass produced, but tailored to the consumer's preference. Furthermore, in the future, one could imagine that thanks to 3D printing technology, the actual production takes place at the consumer place. He/she will simply buy the blueprint of the object and then print it at home.

4.3 Marketing

Marketing today is becoming increasingly consumer oriented. As more and more information on the individual consumer is available, the marketing can be much more targeted to the individual consumer. Previously, marketing campaign could target certain large consumer groups, such as readers of certain newspaper or residents of specific neighborhoods. Today, marketing can be much more focused and even target individual consumers. A good example of consumer-focused marketing is Amazon. Amazon records the browsing and purchasing history of every customer and adapts the website and product offers accordingly. Another example is Netflix. Based on previously chosen movies, the company offers new movies to its clients. Internet-based companies have a considerable advantage in the area of consumer-focused marketing, as they are able to collect valuable information online from their customers and adjust their offers accordingly.

However, even traditional retailers try to make use of new technologies. For example, in 2016, the Swiss supermarket chain Migros introduced a new pricing system based on the idea of pricing to the customer. Customers that are frequent shoppers of specific goods are offered a price reduction at the cashier. The supermarket chain uses the information collected through their customer cards to establish the corresponding shopping profile of customers (Metzler, 2016). Even ordinary supermarkets can thus do marketing and pricing to individual customers, instead of unified marketing and pricing.

In a consumer centered economy, goods and services are tailored to customers' needs and preferences. Table 2 summarizes how customer orientation has changed in the four phases. The first, pre-globalized phase was marked by a high degree of customization for both goods and services. The high transport and communication costs made the shipment of goods and services very difficult. The 1st Unbundling allowed for mass-production of goods that were shipped worldwide. In contrast services remained predominantly local and thus more costumers oriented. For example, banking services would be offered locally. The 2nd unbundling has been a period of mass production and thus low customer orientation of goods. Goods were produced in regional and global value chains in order to minimize costs for each task. Services also became less tailored to customer needs and increasingly trade across borders. For example, Indian IT companies offered their services to cooperate customers in the United States. Today, in a consumer centered economy, we observe that both, goods and services become increasingly customized.

Table 2: Customer Orientation in the Four Phases

	Customer-tailored Goods	Customer-tailored Services
Pre-globalized	High	High
1st Unbundling	Low	High
2nd Unbundling	Low	Low
Consumer-centered Economy	High	High

Source: Author.

5. TRADE IMPLICATIONS OF THE CONSUMER-CENTERED ECONOMY

As the consumer moves into the center stage of production, companies benefit to be close to the consumer. Proximity can either be physical (e.g. services network), virtual (e.g. through the internet) or both. Consumers typically prefer to receive the products purchased as quickly as possible. For companies the implications of a consumer-oriented economy are far-reaching.

First, the production process needs to be optimize in terms of finding the right mix between economies of scale, scope and time. During the period of the 2nd unbundling, the competitiveness was mainly built on cost performance considerations. In the phase of the consumer centered economy, the organization of the production has become more complex. Depending on the time sensitivity, intermediate goods might need to be sources nearby or even within the company. Furthermore, some well-off clients may expect first class service that might only be provided locally or in high wage countries.

Production in the stage of the consumer-centered economy requires an increased use of robots and machines, as customizing final products consisting of thousands of parts and components, such as cars, is a highly complex process. Firms in developing countries will only be able to access these sophisticated value chains, if they have at their disposal the required capital and human resources. In addition, transportation costs (both in terms of money and time) need to be low as well as communication costs. Firms in developing countries with poor educational achievements, small capital endowments, poor trade logistics and substandard communication facilities will find it increasingly difficult to become part of regional or global value chains.

As final goods are becoming more and more customized, firms need to be able to have access to an increasing number of components. This should lead to an increased international trade in parts and components.

Logistics services, covering domestic and international deliveries, need to be flawlessly integrated into the production process. International trade in logistics services will take new forms. Instead of predominantly mass shipments, future logistics services need to be more flexible and offer various solutions to deliver goods within or across countries. But the logistics services not only need to better connect businesses (B2B). As the consumer moves into the focus, improved connectivity is required between businesses and consumers (B2C). Both, online and brick and mortar retailers, are now offering direct delivery to the consumer. Whereas the B2C connections are predominantly domestic, an increasing share is international. Overall, the distribution services are becoming ever more capillary as e-commerce is booming.

Similarly, the availability of affordable and reliable communication services are key to succeed in the era of the consumer-centered economy. Given the fact that the consumer is no longer anonymous customer, but increasingly heterogeneous, the number of relations between firms and between firms and customer is grows dramatically. The more choice the customer is offered, the more firms are potentially involved in the production process. As a corollary, the number of firms involved in the production process and the communication among them also increases. Furthermore, as the market segmentation will become ever more precise, the need to communicate with ever smaller consumer groups or even individual consumers increases hand in hand. The IT revolution and especially the emergence of the internet and smartphones have drastically lowered the corresponding communication costs, including cross-border communication costs.

However, other barriers, such as different languages or different legal systems, have not fallen in a similar way. These barriers still separate markets and impose considerable costs for firms. Intermediate goods need to fulfill different standards across countries. The problem is even more significant for final goods. For example, even though a German automaker is able to customize the car to the preferences of a Japanese customer, the car still needs to fulfill Japanese standards that apply to all cars. The consumer-centered economy will therefore not imply a borderless world with heterogeneous customer, but a world where nontariff barriers still play a role and add to production costs.

Furthermore, the services provided by intermediaries between consumers and producers are becoming more important. Intermediaries that help collect information on consumer or platform that bring both together are thriving. Amazon and Alibaba are the best example. These companies use the internet as a platform to match demand and supply. Another crucial service for all economic transaction are financial services, especially online payment systems. Traditional physical outlets of banks are less needed, as many online payment systems allow for international payments.

In the 21st century the assets of firms are less and less physical items, but knowledge. The knowledge can take the form of improved information and analytical tools to understand data or intellectual property rights. Information on customers is one crucial item that will also be traded across borders. Another item are blueprints for products and services. Firms can buy them across borders. And even consumers will buy blueprints online and print products at home due to the 3D printing technology.

In the era of the consumer-centered economy will move towards services. In many fields, individual consumer needs can be serviced across borders. For example, in the field of health services, the consultations can take place online with a patient in one country and the doctor in another country. Today, technologies exist to undertake even surgery across borders. In the field of education, students are increasingly taking online classes that are offered by universities in different countries.

In summary, in the 21st century firms will shift move towards customization. They will constantly need to find an optimal solution between economies of scale, economies of scope and the degree to which they offer tailored products. The physical part of the production remains central. However, whereas in the past, cost considerations have been the prime concern, in the consumer centered economy it is a mix of factors. Furthermore, the frontier between producer and consumer will become more blurred. Today, consumer preferences enter the design of a product. Consumer can also print products at home using 3D printing technologies.

6. CONCLUSION

In this paper we argue that the latest breakthrough in information technology has allowed to move the consumer to the center of the economy. IC technologies not only connect firms among them, but increasingly firms and consumers. This allow for more customization and market segmentation. It also leads to a servicification of the production. The consumer-centered economy has become possible due to a considerable reduction in communication (mainly through the internet and smartphones) and transportation costs (mainly through improved logistics) between firms and consumers, domestically and internationally. Today, consumers are an integral part of global production.

The shift towards a consumer centered economy has important implications for trade theory and policy. The central question in international trade theory has always been why countries produce and exchange goods and services. The trade theories that we have currently at hand focus on the supply side. Trade stems from differences in the productivity of countries, sectors or firms. The consumers are assumed to be homogenous across countries. [1] However, in a consumer centered economy firms will market to and serve heterogenous consumers. Their competitiveness will be defined to a large part on how much data they have on consumers and how efficiently they exploit it.

New trade theories need to be developed. One possibility could be to build a model based on the idea that one producer is matched with one customer and pricing is determined by a bargaining process, rather than a market mechanism. With respect to international trade, matching frictions could be assumed to be higher across borders.

Novel trade theories will trigger efforts to find empirical evidence for the new hypothesis. However, as for now, most international trade data is usually available at the country level. For a few countries, firm level trade has been collected and extensively analyzed (e.g. France, China, etc.). Trade data disaggregated at the consumer level are still unknown to the best knowledge of the author and thus calls for additional efforts to improve trade data collection.

Moving towards a consumer centered economy holds also various implications for trade policy. First, trade facilitation measures gain in importance. Goods and services need to be able to quickly cross borders. The rapid and full implementation of the WTO Trade Facilitation Agreement would help achieve this goal. Second, in a consumer-focused economy the direct delivery of goods to the consumer should be as cost-efficient as possible. Healthy competition in the delivery services industry will ensure that both firms and customers can fully benefit from a connected economy. Foreign entry of delivery service companies should be encouraged. Third, as more and more payments are being done online, access to finance of consumers, especially to electronic payment systems, is crucial. Opening financial services to foreign financial banks can accelerate financial inclusion. Finally, as described above, consumers are willing to share certain personal information. However, it should be up to the consumer which data is shared or even made public. Stringent consumer data protection laws will therefore be important. In trade agreements, corresponding provisions need to be included.

One of the central question for future research will be to better understand the implications of a consumer centered economy on developing countries. In this paper we predict that will no longer be enough to offer the lowest costs for mass-produced goods. The competitiveness of countries will be defined by a more complex mix. The core elements of the competitiveness will be the capacity to “harvest” consumer data, to translate it into corresponding goods and services and to deliver those efficiently and quickly. The development strategies of many emerging economies might need to be adapted soon to this new paradigm.

[1] Very recently, Auer et al. (2018) developed a first trade model with heterogenous consumers that consume goods of different quality level.

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