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Argentina's first ever training activity on the state of the art in alternative food production systems, "Artificial Meat: Innovation in the Era of Production 4.0," was held on May 5, 2017, at the INTA Auditorium in Buenos Aires. More than 100 people attended the event, which was organized jointly by INTAL/IDB and Argentina's National Institute of Agricultural Technology (INTA).

Due to importance of putting this emerging meat production model on the agenda and raising its profile, the event was attended by Argentina's minister of agroindustry, Ricardo Buryaile, INTA president Amadeo Nicora, and other government officials.

To provide a global perspective on the development of this alternative, technology-based meat production system, the panel of speakers included experts from the local public and private sectors: Ignacio Peña, a specialist in strategy, technology, and innovation; Federico Trucco, CEO of the biotechnology firm Bioceres; Alejandro Ramos, senior integration and trade specialist at the IDB; and Aníbal Pordomingo, coordinator of the INTA Anguil Agricultural and Livestock Experimental Station National Program.

International expert Peter Verstrate, CEO of MosaMeat, also took part in the event at the invitation of INTAL/IDB. Mr. Verstrate, who works on the Cultured Beef program at Maastricht University, is a global leader in research and development into lab-grown meat. He and his partner Mark Post created the MosaMeat company and first presented meat produced through this new model in London in 2013.

Sustainable Production

The seminar was mainly attended by government officials and INTA researchers and was opened by Gustavo Beliz, director of INTAL/IDB, Mr. Nicoa, and Diego Gauna, director of INTA's Institute for Prospective Studies and Public Policies, all of whom mentioned the disruptive potential this technology has. Mr. Beliz warned of the need to avoid both techno-utopianism and techno-skepticism. "Changes are coming and we need to be prepared to see them not as a threat but as a development opportunity," he said.

The other experts then presented their views. First, Aníbal Pordomingo looked at the current state of affairs, future prospects, and the different scenarios that are posing challenges to beef production in Argentina. He also discussed the growing demand for beef in the world, how the supply side is behaving, and Argentina's main

competitors in global trade. “Demand is growing more than supply, which is interesting for producer countries,” he argued. The challenge that Argentina is facing, according to Mr. Pordomingo, is not just producing more meat for export, “but also for the domestic market.” Looking to the future, livestock farming needs to “provide environmental quality and good management while minimizing negative externalities.”

Peter Verstrate discussed the issue of environmental sustainability, which has prompted the quest for alternative meat production systems, then went on to describe the model that MosaMeat uses. Their product is developed by extracting muscle cells from live cows through a biopsy then cultivating these in the lab. In Mr. Verstrate’s view, this system is more sustainable than traditional beef farming. His aim is to “find truly transformative solutions.” He argued that the MosaMeat method makes less of an environmental impact, improves food security and the transparency of the productive process, and solves controversies related to animal welfare. According to Mr. Verstrate, for example, over 18% of greenhouse gas emissions are related to livestock farming. Other related ecological problems include high levels of water consumption and deforestation. At the same time, improvements in per capita income mean that the global demand for meat will soar between now and 2050. The challenge, therefore, is meeting this growing demand while maintaining solid environmental practices.

That possibility is not far off. Lab-grown meat will reach the market within four or five years, Mr. Verstrate predicts. “It will be introduced by us and some of our competitors who are also working on this technology at present. It will initially be manufactured on a small scale, as a premium, high-cost product. But the technology will then improve and spread throughout the world.”

In addition to technical feasibility, in recent years the production costs for artificial meat have come down significantly. According to data provided by MosaMeat, while in 2013 it cost US\$350,000 to produce 1 kg of artificial meat, current technology has brought this price down to US\$64. “The cost factor is extremely important as it obviously has to be competitive in comparison to traditional production systems,” Mr. Verstrate argued. He added, “this process is more transparent than the current production system.” Through tissue engineering, “our mission is to be able to produce low-cost meat, but we need to make the process faster and more scalable.” Although the company is hoping to supply its local market, its main source of profit will be selling its technology. Other companies such as Memphis Meats and Modern Meadow are also exploring these new meat production alternatives. Mr. Verstrate reasoned that “the main markets for lab-grown meat are those that already consume meat, which is a product that people find hard to remove from their diets.” But he added that “we are also interested in large emerging markets, such as China or India, where incomes are rising and people are starting to consume more meat.”

But the main questions revolve around consumer acceptance of synthetic meat products. According to a survey that MosaMeat carried out in the United States, over 50% of people are willing to try cultured meat products. However, between 10% and 15% reject the idea outright. What lies ahead would seem to be the coexistence of the two productive systems.

Partnerships between the scientific sector and private companies are key to creating an innovation-based economy. Bioceres CEO Federico Trucco, who expressed an interest in investing in synthetic meat projects, said that there was a need to “partner with scientists to build knowledge-based agriculture. We need to think about the innovations that cause entrepreneurs to create disequilibrium.”

The event also looked at the current state of the beef industry from a MERCOSUR perspective. The volume of trade and sector-specific integration indicators were among the statistics on the dynamics of the bloc’s agricultural sector that were analyzed, using data from INTrade. Alejandro Ramos discussed “agricultural integration” and shared his views on how the MERCOSUR livestock farming sector will behave. His final words were on the institutional architecture in the MERCOSUR and he put forward a “positive agenda” to improve this.

The consultant Ignacio Peña discussed the “post-artificial meat scenario” in Argentina, once such products are commercially available. He described it as “a revolution that will transform our economy.” In Mr. Peña’s opinion, this production model could form part of a wider range of applications of cellular agriculture technology that will contribute to developing more food for the country’s population.

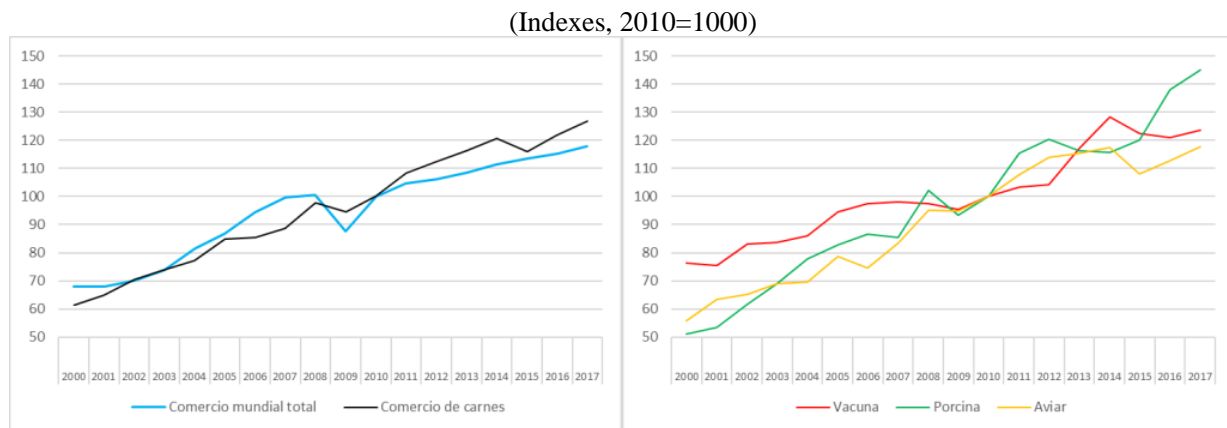


The Recent Dynamics of the Global Meat Trade

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While the growth in global meat production has stabilized (and even shows some signs of stagnation)[1], trade in these products is growing at a higher rate than that of global trade in general (figure 1).

Figure 1. Global Trade in Meat, 2000–2017



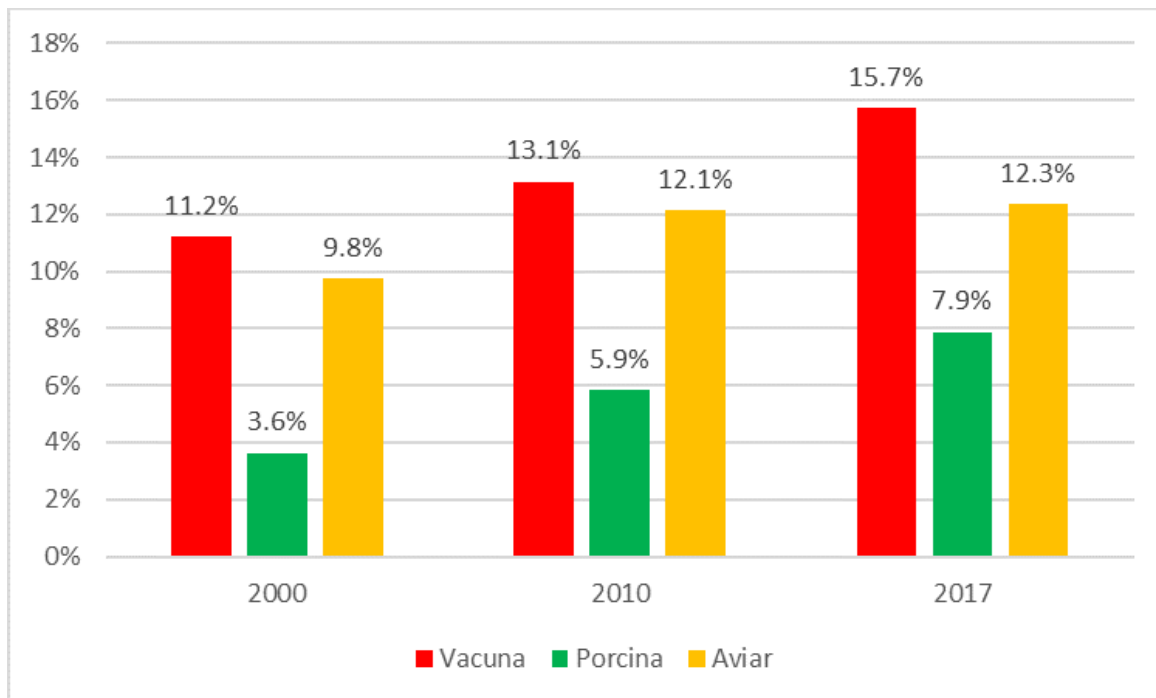
Note: Trade in meat represents the physical trade flows that were exported. Total global trade is an estimation at constant 2010 prices. The figures for 2017 are projections. Source: Prepared by the authors using data from the US Department of Agriculture and the Netherlands Bureau for Economic Policy Analysis (CPB).

In the run-up to the global financial crisis (2001–2007), global trade volumes grew at a rate of 5.7% per year, while exports of the meat products included in this analysis grew at a similar rate, 5.4% per year on average. The sharp downturn in global trade after 2010 brought growth rates down to around 2.4% (2011–2017 average).[2] Although the trade in meat has also been affected by the lethargic evolution of trade in recent years, it has still grown at 3.5% per year, which outstrips the average for global trade in general.

It is interesting to observe that this behavior is linked to a growth in the share of production that is channeled through international trade (figure 2).

Figure 2. Export Share in Production, by Meat Type, 2000–2017

(In percentages).



Source: Prepared by the authors using data from the US Department of Agriculture

Since the year 2000, there has been a sustained increase in the export share of production for all three meat types. Beef production is on the brink of contraction; however, it is the meat product that is most likely to be exported—in 2017, nearly 16% of total beef produced was sold on the international market. Poultry also has an export coefficient that is above 10%, while pork is the least traded of the three, although it accounts for the greatest share in production.

These differences may be explained by how difficult it is to obtain these products on the domestic market, given each country's natural resource endowments. One interesting case is that of China: although it imports pork, it seeks to produce this on the domestic market and makes up for its lack of resources for doing so by importing raw materials such as soybeans. In this case, potential meat imports are replaced by imports of a commodity to manufacture protein concentrates, as domestic inputs for this sector are limited.

The Beef Market

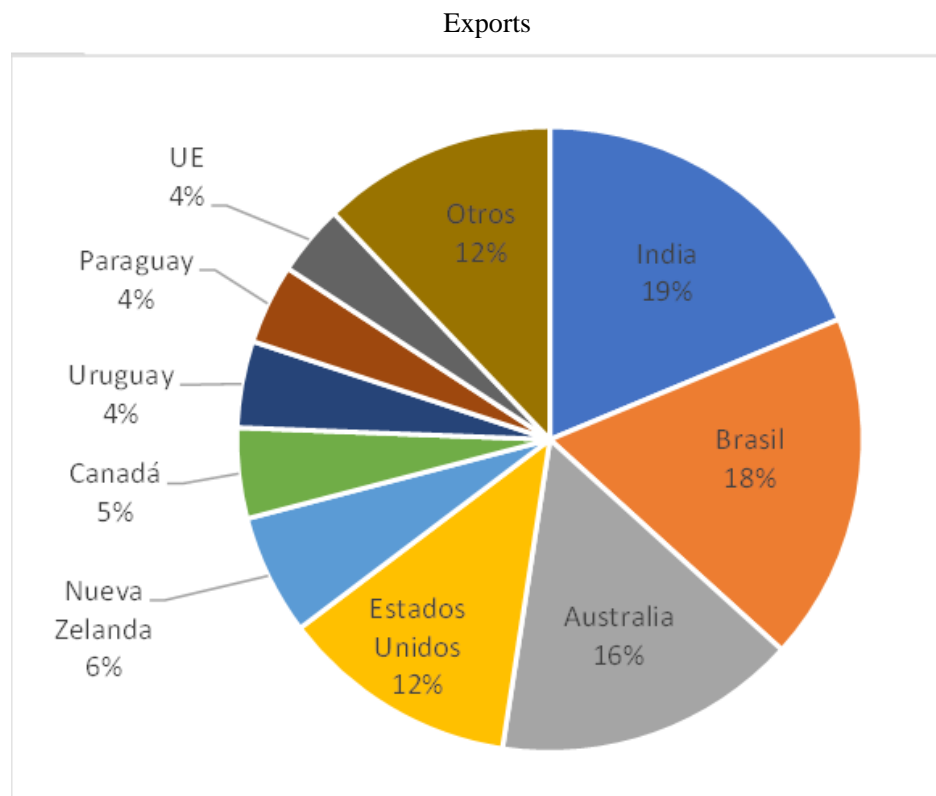
On the exporter side, most of the beef market is split between two groups: one made up of emerging countries and the other of advanced economies (figure 3). The latter includes countries from South America (Argentina^[3], Brazil, Paraguay, and Uruguay), which account for nearly 30% of global exports. India's share is now at 19%,

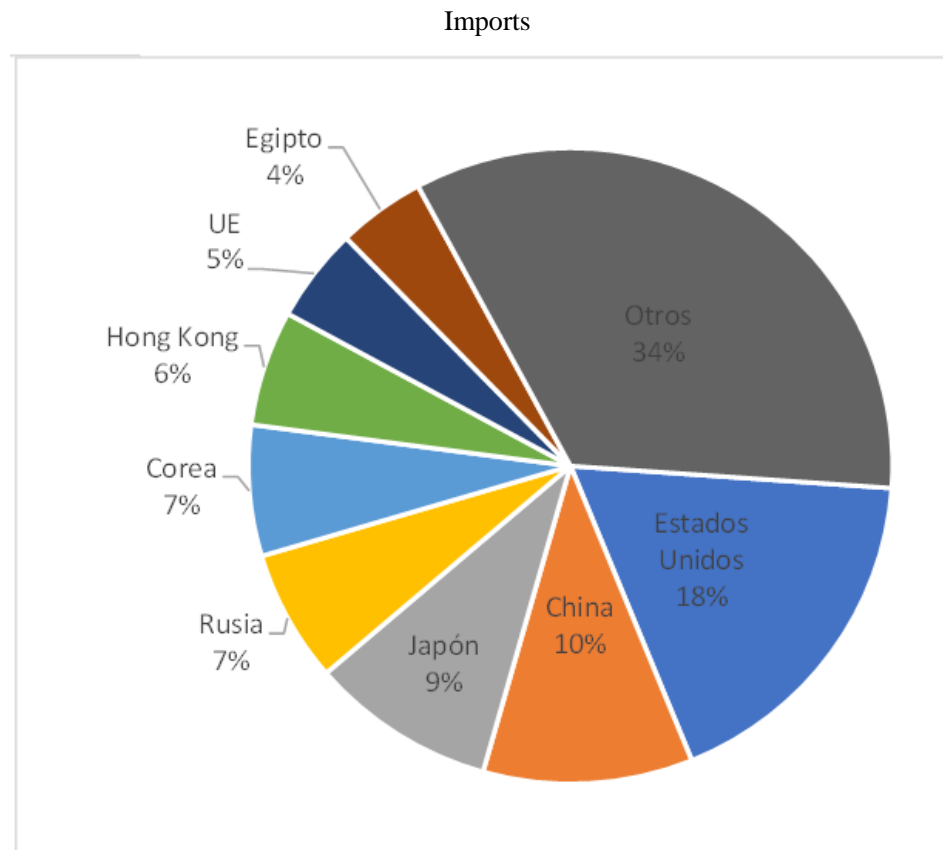
which makes it a major beef exporter. The developed country share combines a relatively low contribution from the United States and the European Union (16%) with that of three developed economies that specialize in natural resources, Australia, Canada, and New Zealand. These countries' beef exports account for 27% of the global market, a similar figure to that of the South American countries.

More advanced countries play a much more significant role as importers than as exporters: the United States and the European Union together account for 23% of purchases. If Japan and the Republic of Korea are included in this list, 39% of global demand for beef is accounted for. The second-largest importer is made up of a group of emerging economies: China (including Hong Kong), Russia, and Egypt represent 27% of global imports.

In other words, this is a market that is essentially supplied by emerging countries (in South America and India), as well as Australia, Canada, and New Zealand, all of which together explain 72% of export supply. More advanced countries play a more minor role as suppliers. In contrast, these are the main drivers for demand, along with a handful of emerging economies, notably China, which also accounts for a sizeable share.

Figure 3: Markets of Origin and Destination Markets for Trade Flows in Beef, 2016
(In percentages).





Source: Prepared by the authors using data from the US Department of Agriculture.

The Pork Market

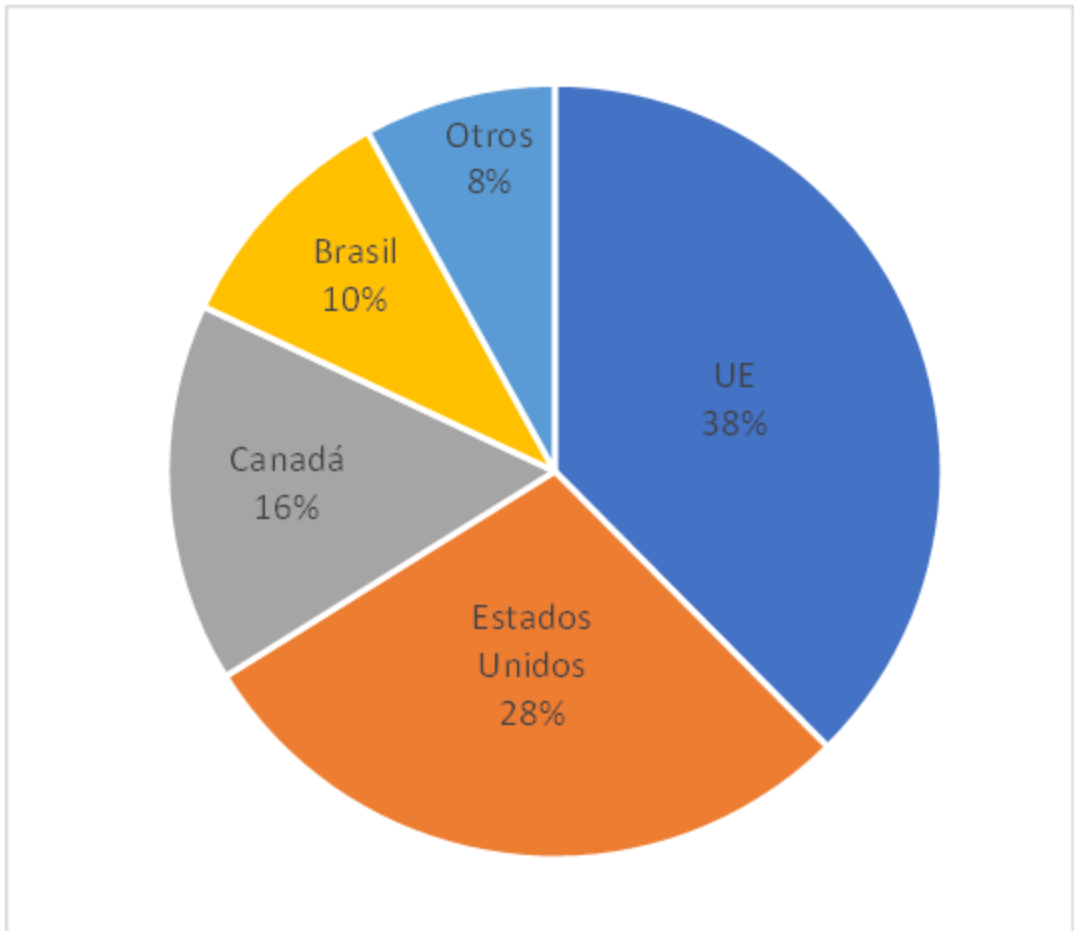
Unlike the beef market, an appreciable share of pork exports come from advanced countries (figure 4). The United States and the European Union dominate the market, accounting for 66% of sales, a share that goes up to 82% if Canada is also included. Brazil is also a pork exporter but accounts for just 10% of the total.

The most significant importer is China (including Hong Kong) with 33% of the share. China has not managed to cover its domestic consumption, despite being the number one global producer. Including two other Asian importers (Japan and the Republic of Korea) in this group explains 58% of global demand for pork, which occupies a prominent position in these countries' preference structures. Mexico is a significant buyer, accounting for 13% of the global total.

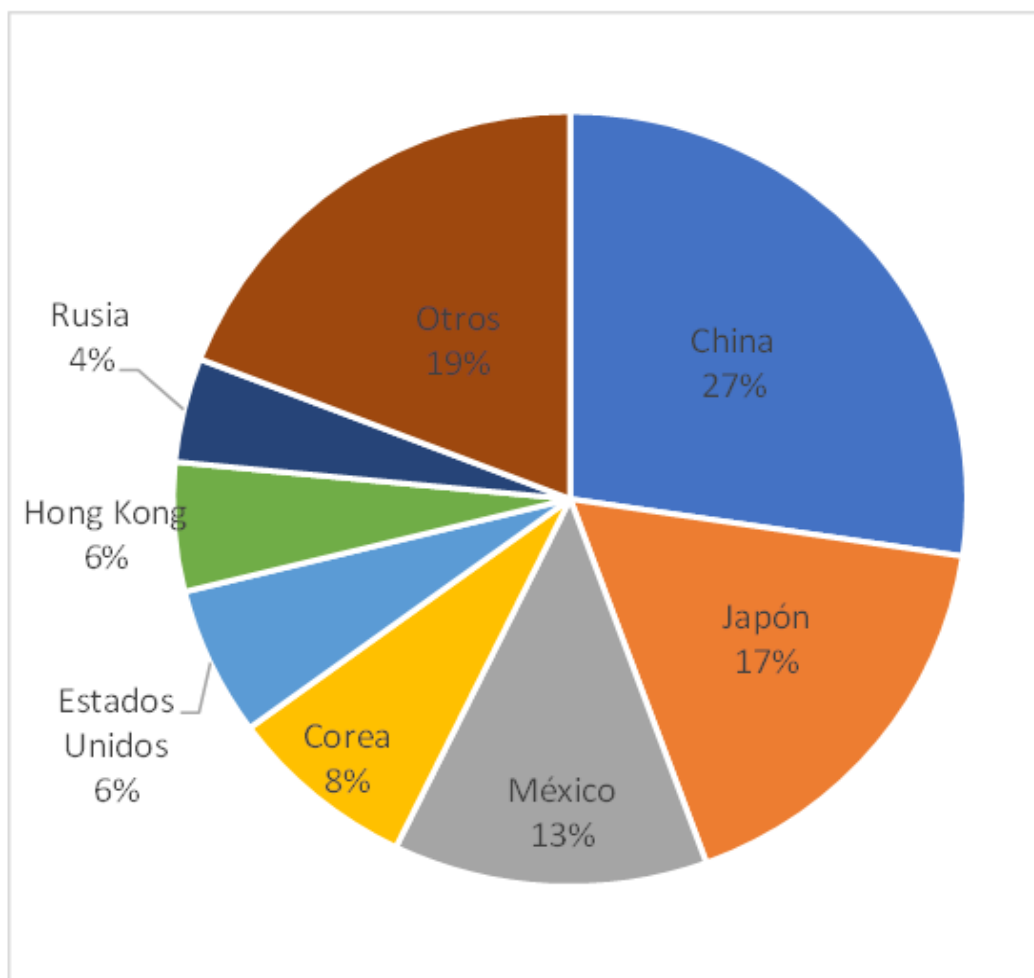
Figure 4: Origins of and Destination Markets for Trade Flows in Pork, 2016

(In percentages).

Exports



Imports



Source: Prepared by the authors using data from the US Department of Agriculture.

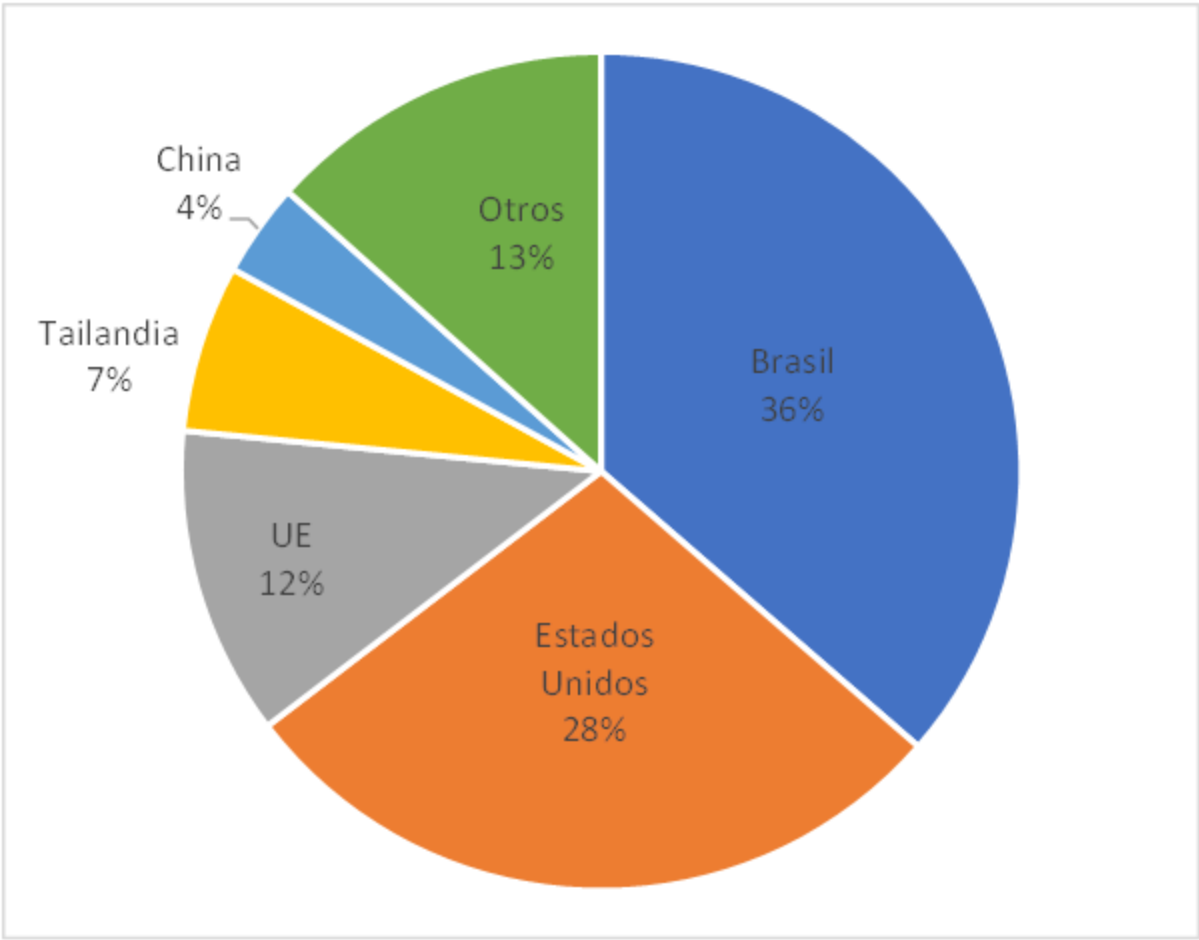
The Poultry Market

Although the United States and the European Union account for 40% of sales in this market, Brazil has achieved a similar position, representing 36% of total sales (figure 5). Purchaser countries are much more scattered, which is possibly due to the more widespread preference for poultry meat.

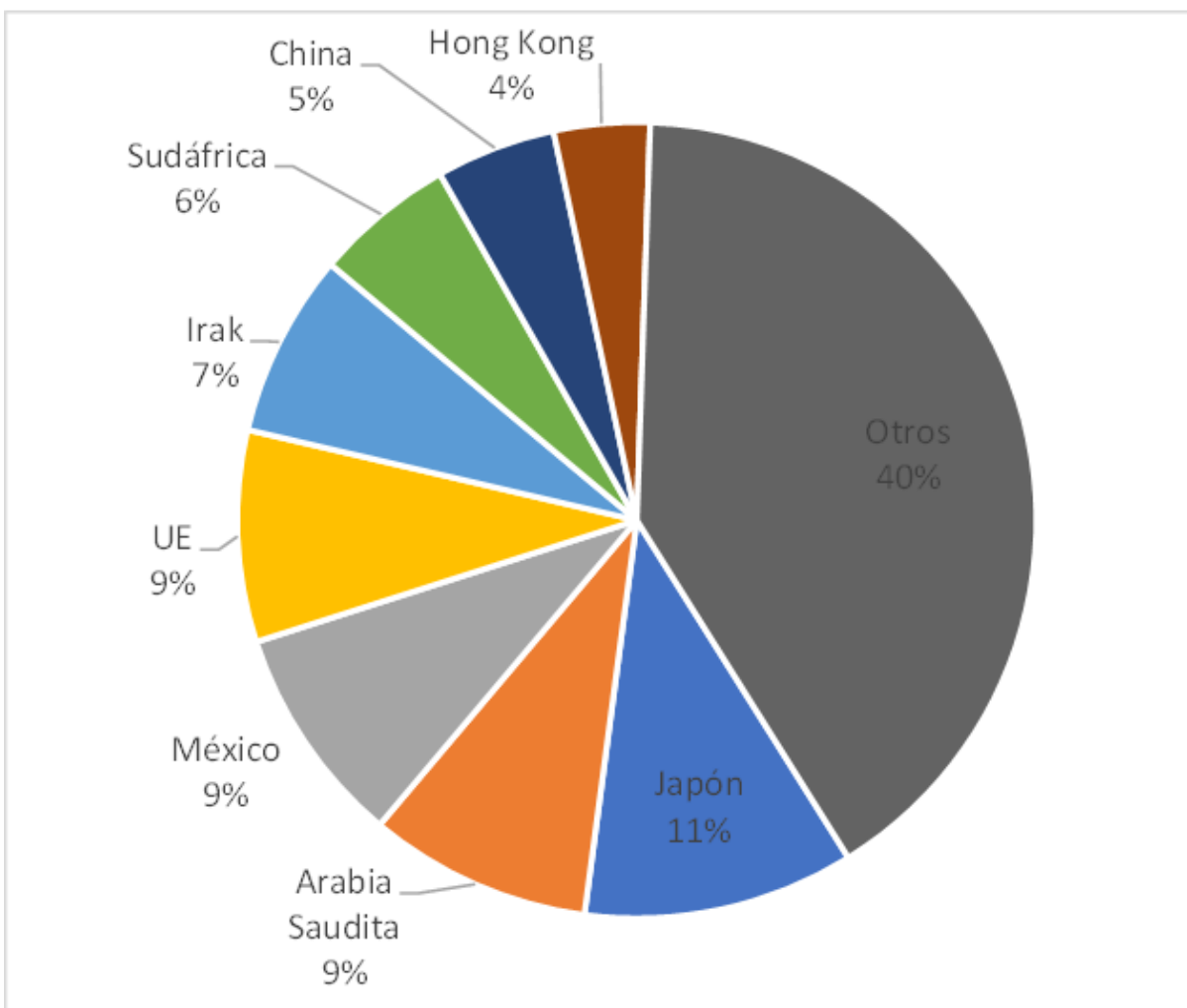
Figure 5. Origins of and Destination Markets for Trade Flows in Poultry Meat, 2016

(In percentages).

Exports



Imports



Source: Prepared by the authors using data from the US Department of Agriculture.

Conclusions

Running against the trend toward a certain cooling off in the productive expansion of the meat sector, global trade in meat products is growing at a higher rate than global trade in general. Beef and poultry have the highest export coefficients.

Very different supply and demand patterns prevail in each of these markets. While Latin American countries are significant suppliers of beef, more advanced economies continue to dominate pork exports. Brazil has made successful inroads into the poultry market, but it still plays a much lesser role than developed countries.

[1] See the article 'Global Meat Production: The Nutrition Transition and the Key Role of Emerging Countries,' also in this issue of INTAL Connection.

[2] Giordano and Ramos. 2016. [Downshifting](#). Latin America and the Caribbean in the New Normal of Global Trade.

[3] In 2016, Argentina accounted for 2% of global beef exports.

Inspiring Activities

Workshop on Negotiations at the WTO

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The Institute for the Integration of Latin America and the Caribbean (INTAL) held a high-level workshop to prepare for the 11th WTO Ministerial Conference (MC11), which will be held in Buenos Aires in December 2017. INTAL organized the event in partnership with the [World Economic Forum](#) (WEF), the [World Trade Organization](#) (WTO) and the [Ministry of Foreign Relations of the Netherlands](#). The event took place in Geneva on May 31 and June 1, 2017, and was facilitated by the [Centre for Multilateral Negotiations](#). It brought together major experts on global trade, and topmost WTO officials, and high-level officials from the Argentine government who will be responsible for organizing the 11th Ministerial Conference.

Over the course of two days, those present shared best practices from earlier trade negotiations and looked at the challenges the upcoming conference posed to Argentina. Another focus was the country's role as a host during the conference itself and during the preparatory negotiations that will take place in the coming months. The host country's effective handling of negotiations will contribute to the meeting being an opportunity to achieve mutual interests, promote multilateral cooperation, and reach constructive outcomes that help develop international trade.

The WTO General Council, which is presided over by Roberto Azevêdo, decided that Argentina would be the first country in South America to host the meeting of WTO trade ministers, which is the organization's topmost decision-making body and meets every two years.

The Geneva Workshop served as an informal forum where experts and Argentine government officials could openly discuss key issues in the negotiations.

Following the progress made at the meetings in Bali in 2013 and Nairobi in 2015, MC11 will seek to achieve specific results relating to some of the unresolved issues from the Doha Round. It will focus on establishing new regulations for multilateral trade and, possibly, on other spheres such as e-commerce, the integration of SMEs into global trade, and investment facilitation. These issues are increasingly important but also move away from the WTO's traditional focus on tariff negotiations.

Those at the workshop also explored best practices to facilitate global agreements in complex international scenarios and to build institutional cohesion between the WTO Secretariat, the President of the General Council, and the host country in the run-up to MC11.

The workshop was based on the premise that better a understanding of the dynamics that are generated by well-managed negotiations can help participants to understand how multilateral negotiations evolve and the varying levels of success with which they conclude. Discussions covered issues such as transparency and inclusiveness during negotiations; communication strategies during the negotiation process to ensure that all members and groups are represented; and the constructive development of solutions.

Those present also presented lessons learned from the Paris Agreement on Climate Change, the Stockholm Convention on Persistent Organic Pollutants (POPs), and the government of the Netherlands in relation to how civil society and the private sector can contribute to the negotiation process.

The workshop concluded with a discussion of the policy framework in which current trade negotiations are carried out, with a focus on the trade policy context for MC11.

[Bio of participants](#)

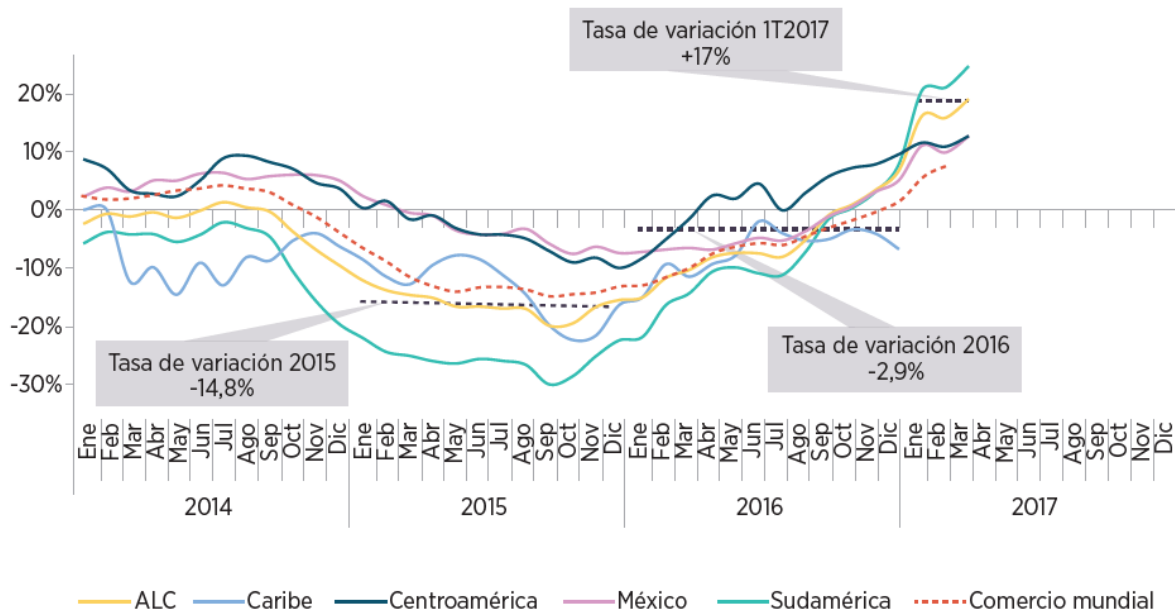
Exports from Latin America and the Caribbean Have Grown for the First Time in Four Years

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After four consecutive years of downturn, exports from Latin America and the Caribbean are back on the path to growth. In the first quarter of 2017, the value of exports grew at a year-on-year rate of 17%, after having plummeted to an annual rate of 2.9% in 2016. According to an Inter-American Development Bank (IDB) study that includes detailed data for 25 countries in the region, the main explanation for this is the stabilization of commodity prices.

According to the latest update of the annual [Trade Trend Estimates: Latin America and the Caribbean](#), exports from the region behaved similarly to global trade as a whole in 2016, while the recovery in the first quarter of 2017 has been more intense (figure 1).

GRÁFICO 1 - VALOR DE LAS EXPORTACIONES DE AMÉRICA LATINA Y EL CARIBE Y DEL COMERCIO MUNDIAL
(Tasa de variación interanual, promedio móvil de 3 meses, porcentaje, 2014-2017)

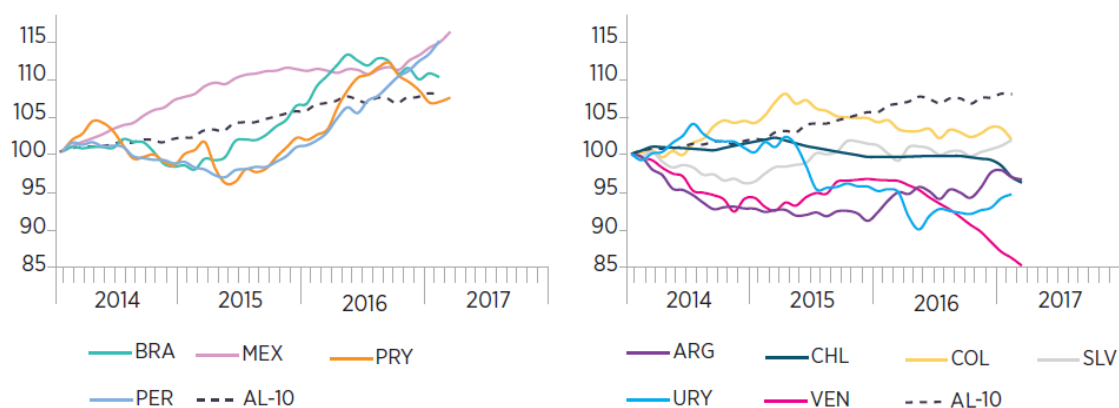


“This reversal of the downward trend in exports is excellent news for Latin America and the Caribbean. However, given the current circumstances, we should not underestimate the factors behind this upturn in trade,

which are still fragile and have not yet spread to all the countries in the region,” said Paolo Giordano, principal economist at the IDB’s Integration and Trade Sector, who coordinated the study.

Countries with a high share of energy and mineral products in their export supply achieved the greatest growth due to the rallying of commodity markets. Meanwhile, the region’s export volumes grew only slightly, at a rate of 2.2%, and were concentrated in a handful of economies (figure 2).










GRÁFICO 3 - VOLÚMENES DE LAS EXPORTACIONES DE AMÉRICA LATINA
(Índices enero 2014=100, promedio móvil de 12 meses, 2014-2017)



Fuente: BID Sector de Integración y Comercio elaborado con base en fuentes oficiales nacionales y estimaciones propias. Ver la Nota Metodológica para detalles.

The countries of South America experienced the most marked recovery, seeing average growth of 23%. The most noteworthy examples of growth in this group include: Venezuela (75%), Peru (39%), Ecuador (34%), Colombia (31%), and Brazil (24%). Meanwhile, Mesoamerica (Mexico and Central America) and the Caribbean saw increases of 11% and 12%, respectively.

VARIACIÓN DE LAS EXPORTACIONES POR PAÍSES SELECCIONADOS
(Tasa de variación interanual, porcentaje)

GRUPO DE EXPORTACIÓN / MIEMBRO	TASA DE VARIACIÓN (%)	
	1T2017 VS 1T2016	2016 VS 2015
MESOAMÉRICA	 11	-1,5
México	 11	-1,8
Centroamérica	 11	0,9
Costa Rica	 8	7,8
El Salvador	 11	-2,7
Guatemala	 12	-2,0
Honduras	 23	-1,6
Nicaragua	n.d.	-1,1
Panamá	 -2	-8,6
Rep. Dominicana	n.d.	2,3
SUDAMÉRICA	 23	-4,6
Argentina	 2	1,7
Bolivia	 4	-18,7
Brasil	 24	-3,1
Chile	 4	-2,6
Colombia	 31	-13,0
Ecuador	 34	-8,4
Paraguay	 12	2,1
Perú	 39	7,7
Uruguay	 4	-8,4
Venezuela	 75	-24,1
CARIBE	 12	-5,7
Bahamas	n.d.	-14,7
Barbados	 -16	5,0
Belize	 25	-24,9
Guyana	n.d.	25,3
Haití	 3	-20,5
Jamaica	 32	-9,2
Surinam	 13	-12,4
Trinidad y Tobago	n.d.	n.d.
AMÉRICA LATINA Y EL CARIBE	 17	-2,9

Fuente: BID Sector de Integración y Comercio con base en fuentes nacionales oficiales.

Notas: Las tasas de variación anual referidas al primer trimestre del 2017 se presentan redondeadas a la unidad. Las flechas indican la comparación entre las tasas interanuales acumuladas al último mes disponible de 2017 y el dato acumulado a diciembre de 2016. Véase Estimaciones de las Tendencias Comerciales de América Latina y el Caribe – Actualización 1T 2017 para información adicional sobre los procedimientos, los períodos temporales y las fuentes de datos utilizados en las estimaciones.

This upturn in export growth marks the end of the longest recession in the region's recent history, one that lasted 24 months. Even with these improvements, export values are still 10% below the high point of 2014. For this incipient and unstable recovery to become sustainable, factors that have been generating uncertainty in the global economy need to be significantly reversed, as was documented in the [Trade and Integration Monitor 2016](#). The real growth of China, the United States, and the European Union could sustain the recovery of regional exports in the coming quarters. However, initiatives that are oriented toward promoting competitiveness and regional integration need to be stepped up, while the risks of adopting protectionist trade policies must be clearly identified.

Global Meat Production: The Nutrition Transition and the Key Role of Emerging Countries

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Food: Growth and Nutritional Transition

In recent decades, the agricultural sectors have been positively impacted by innovation and the growing technological density that has also affected many other activities. At the same time, there have been major changes to the global structure of agriculture, which is one of the areas in which emerging economies have been gaining prominence in both production and trade. New and established trends in the demand for agricultural goods have translated into changes in the microeconomic composition of supply. Meat, in all its varieties, is a fundamental source of protein for humans and has not been immune to these shifts.

In fact, meat is just one of the products that are immersed in the major changes that have been sweeping eating habits in the last few decades.^[1] First, there has been steady increase in production capacities for a wide range of food products for at least 50 years. A variety of technological achievements has driven per capita food consumption throughout the world. Greater supply has brought down price pressures and expanded the range of goods. Rapid income growth (particularly in China and India) has given growing swathes of the population greater purchasing power, which has partly been channeled towards food.

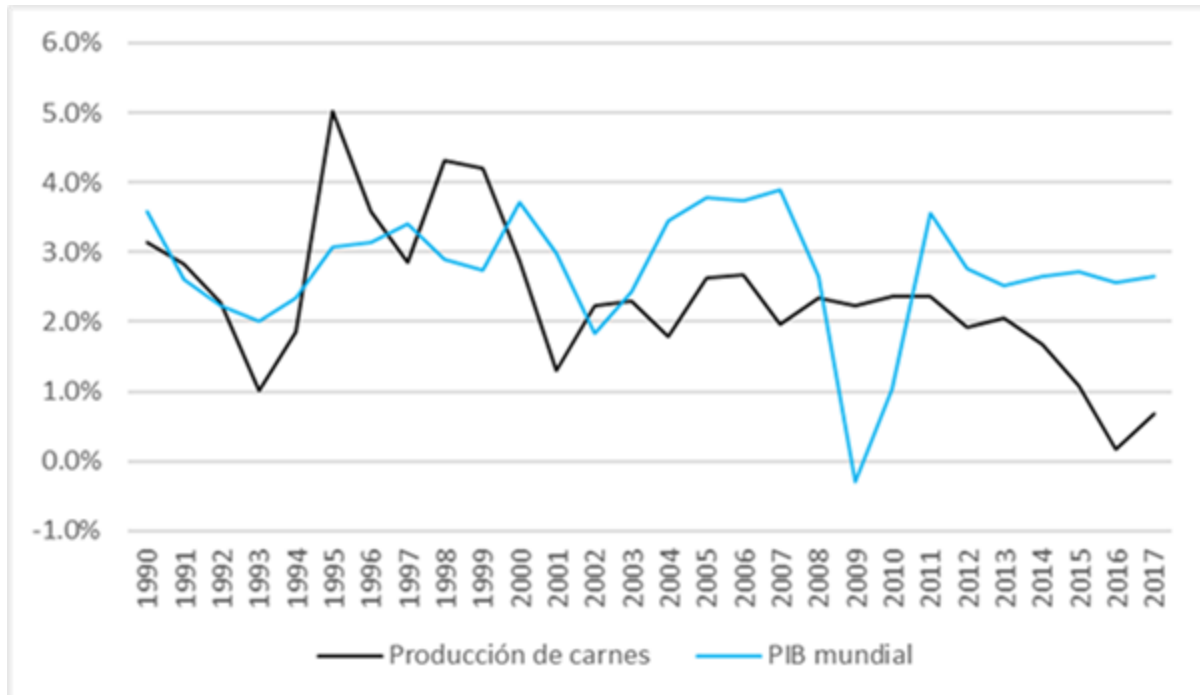
Second, since the 1990s, there have been qualitative changes in the composition of diets which some analysts describe as a “nutritional transition.” In part, this signifies that products with high nutritional density have become more important—in other words, those with more proteins, minerals, and vitamins per calorie. At the core of this change is a leap in consumption of low-carbohydrate vegetables, fruits, and vegetable oils, to the detriment of grains, pulses, and starchy roots. In the case of meats, the global “nutrition transition” has not implied substitution but rather the consolidation of a positive trend in consumption and production that began earlier. In any case, although the global diet now tends to contain higher proportions of animal protein, this shift has slowed somewhat in recent years in comparison with two decades ago.

Changes in the Dynamism of Global Meat Production

Global meat production can be expressed through a physical production indicator that groups the three main varieties of meat that are consumed (beef, pork, and poultry) as one relatively homogenous good.^[2]

Comparing the dynamics of aggregate output with those of global GDP (figure 1) provides an initial overview of the evolution of meat production in the global economy.^[3]

Figure 1. Meat Production and Global GDP, 1990–2017
 (Biannual moving average of annual rates of change, in percentages)

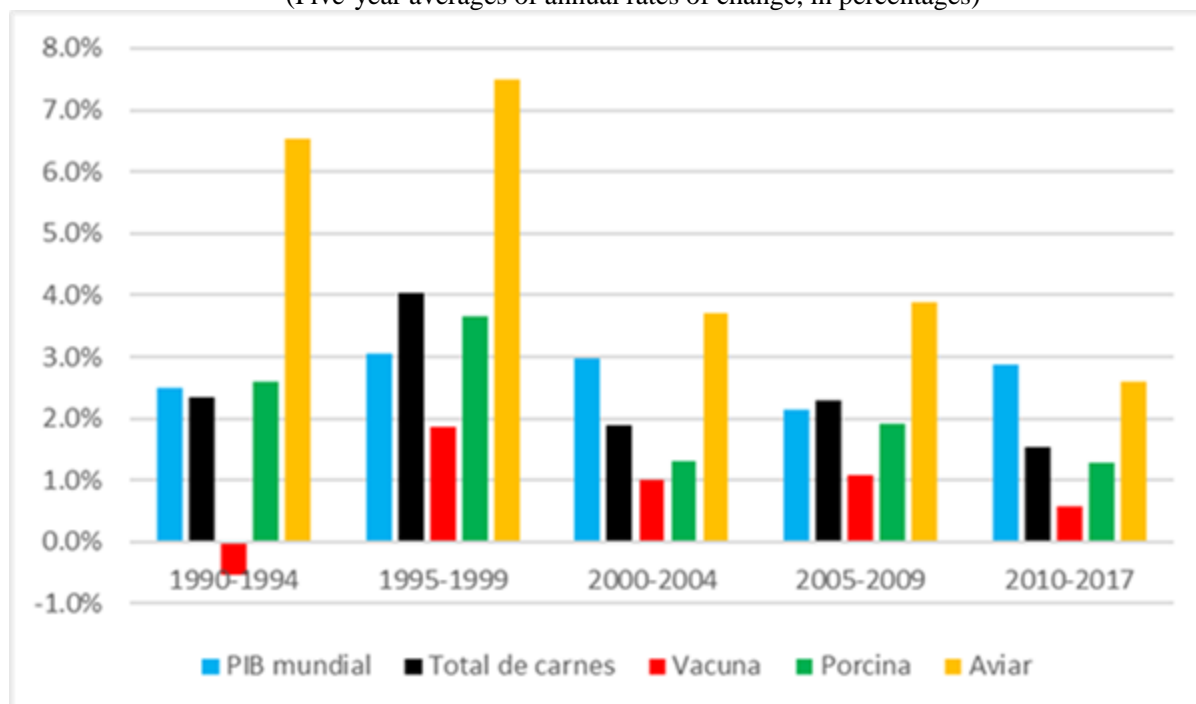


Note: Meat production represents an aggregate of the physical production of beef, pork, and poultry, measured in metric tons; global GDP corresponds to a series that aggregates national estimates at constant prices through market exchange rates, 2000=100. In both cases, the figures for 2017 are projections. Source: Prepared in-house using data from the US Department of Agriculture and the IMF.

Two clearly defined periods in the relative behavior of global meat production can be distinguished. The first spans the 1990s, when the sector's output grew at rates that often outstripped global GDP growth. From 2000 onwards, however, the sector's growth rate sunk below that of the global economy and remained relatively stable up to 2014 (around 2% per year). In the last year, there has been a cooling off in production, which appears to be stagnating.

Figure 2. Global GDP and the Production of Different Types of Meat, 1990–2017.

(Five-year averages of annual rates of change, in percentages)



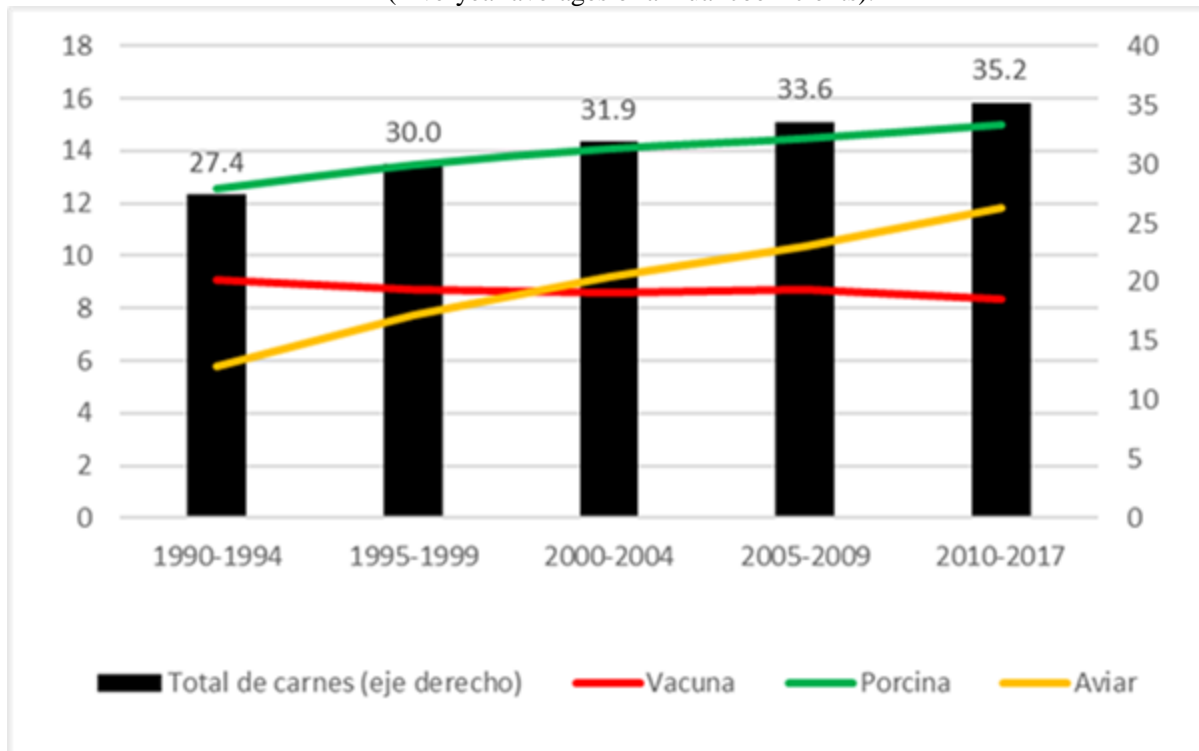
Note: The final interval spans eight years; the figures for 2017 are projections. Source: Prepared in-house using data from the US Department of Agriculture and the IMF.

The accelerated growth of the sector in the 1990s was driven basically by poultry and pork production, as the pace of beef production in those years remained below that of global output measured at constant prices. This trend was sustained after 2000, although, strictly speaking, only poultry production continued to outperform the global economy. From that point on, the aggregate growth profile for the global meat sector moved into a more mature phase that left the almost explosive expansion of the 1990s behind it.

Meat production per inhabitant provides another indicator of how the sector has evolved.

Figure 3. Production (in Kg) per Inhabitant of Different Types of Meat, 1990–2017.

(Five-year averages of annual coefficients).



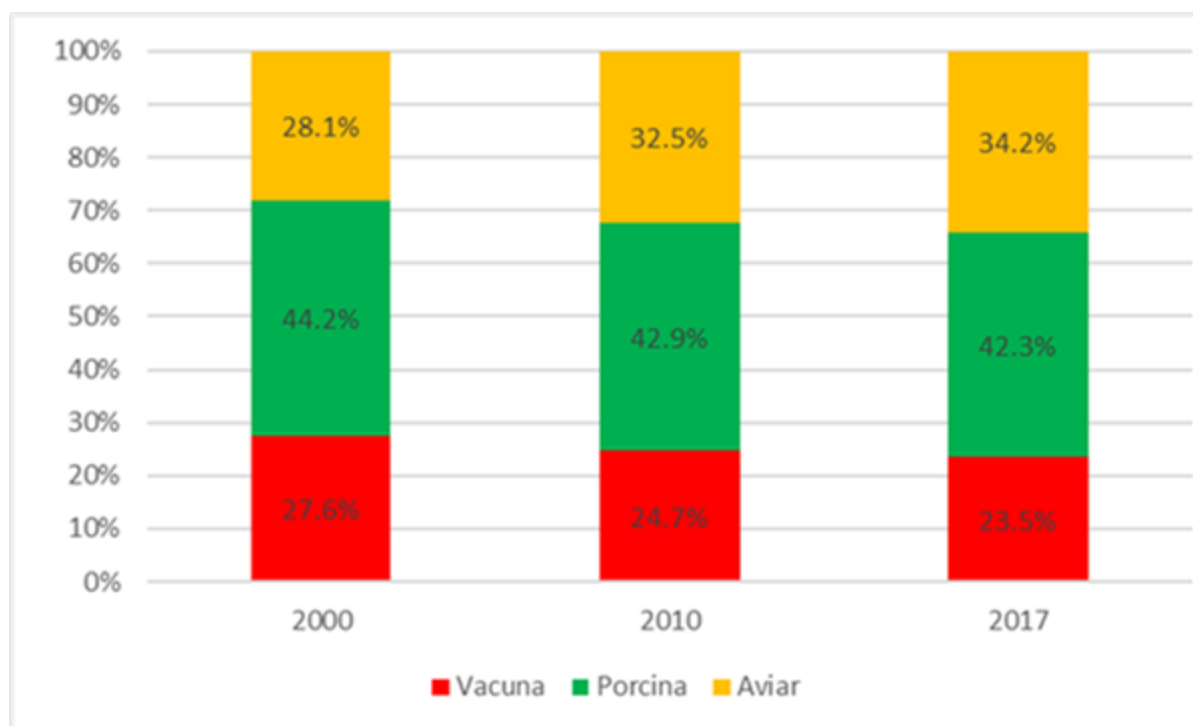
Source: Prepared by the authors using data from the US Department of Agriculture and the World Bank.

Between 2010 and 2017, an average 35.2 kg of meat were produced per inhabitant per year. This figure is 28.5% above the same average for the first five years of the 1990s (27.4 kg per inhabitant). In other words, in just two decades, the animal protein content of the average global diet (from these three sources^[4]) went up by nearly one third. Of course, this has been a very varied process, one that has certainly largely been shaped by the addition of meat to the consumption baskets of groups that previously consumed little or none.

Two aspects of this spectacular global result stand out. First, per-inhabitant growth in meat production has settled down somewhat. Between the first and second half of the 1990s, growth rates bordered on 10%, whereas between 2010-2017 and the previous five-year period, they stood at just 5%. Furthermore, it is clear that this increase has come about through a reshuffling of the importance of different meats within the consumption basket. Beef production went from 9.1 kg per inhabitant in the early 1990s to 8.4 kg per inhabitant in the most recent period. In fact, production structure has seen some major changes from the year 2000 onwards (figure 4).

Figure 4. Composition of Meat Production by Type, 2000–2017

(In percentages)



Source: Prepared by the authors using data from the US Department of Agriculture.

Poultry's current share in consumption has come at the expense of that of beef, mainly, but also of pork. In any case, pork continues to be the most produced type of meat.

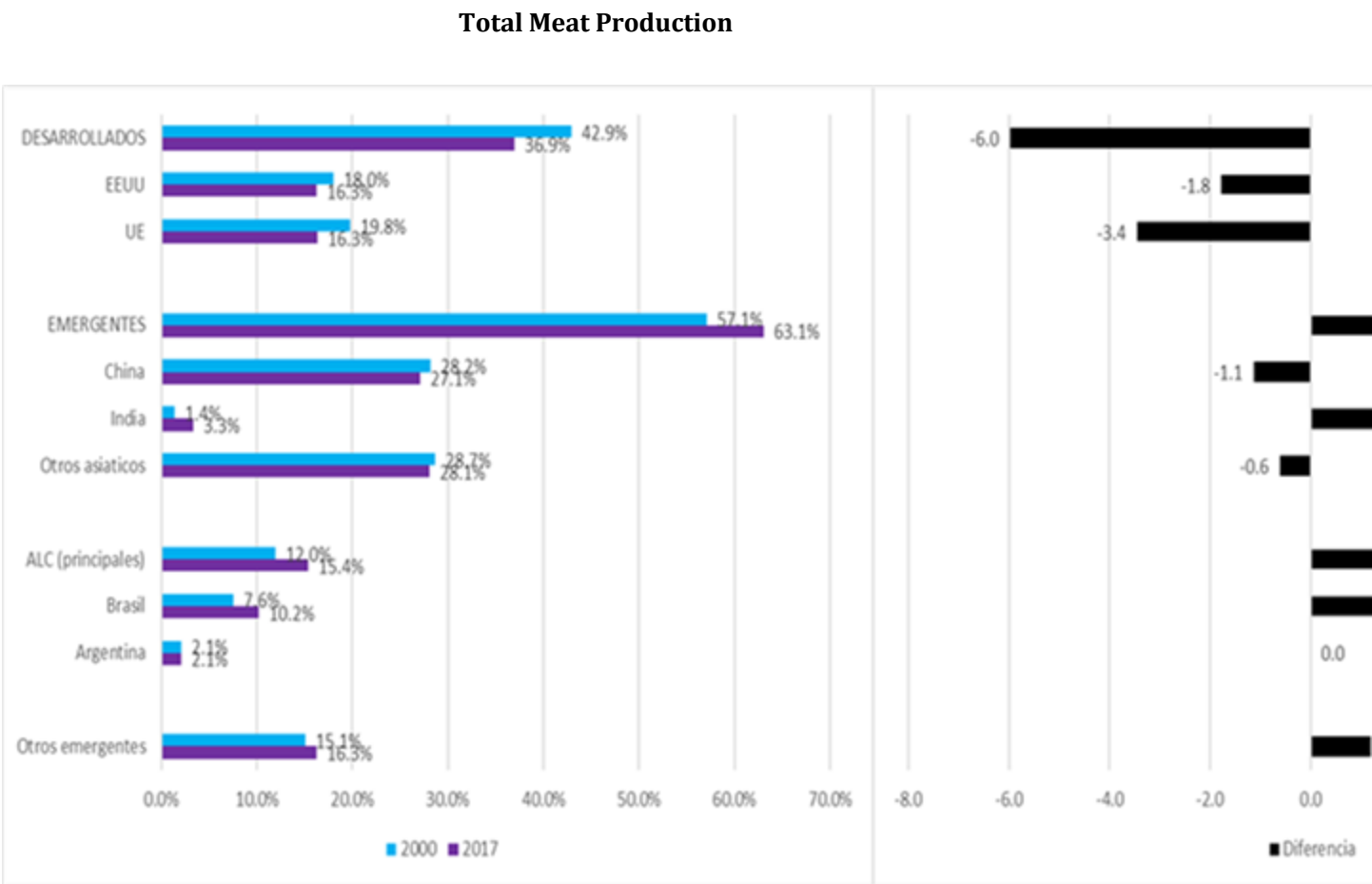
The Role of Emerging Countries in Production

The global meat sector has expanded in parallel with a significant shift in different countries' shares in production (figure 5), principally an appreciable increment in those of developing countries in relation to developed ones. Between 2000 and 2017 (which takes the year in which the sector's growth began to stabilize as a baseline), emerging economies went from accounting for 57% of global production to 63%. Half of that increase (3.4 percentage points) is due to the growth in meat production in Latin America, especially in Brazil. The most striking change in Asia is India's increased share (2 percentage points, driven by beef and poultry), while China lost 1.1 percentage points.

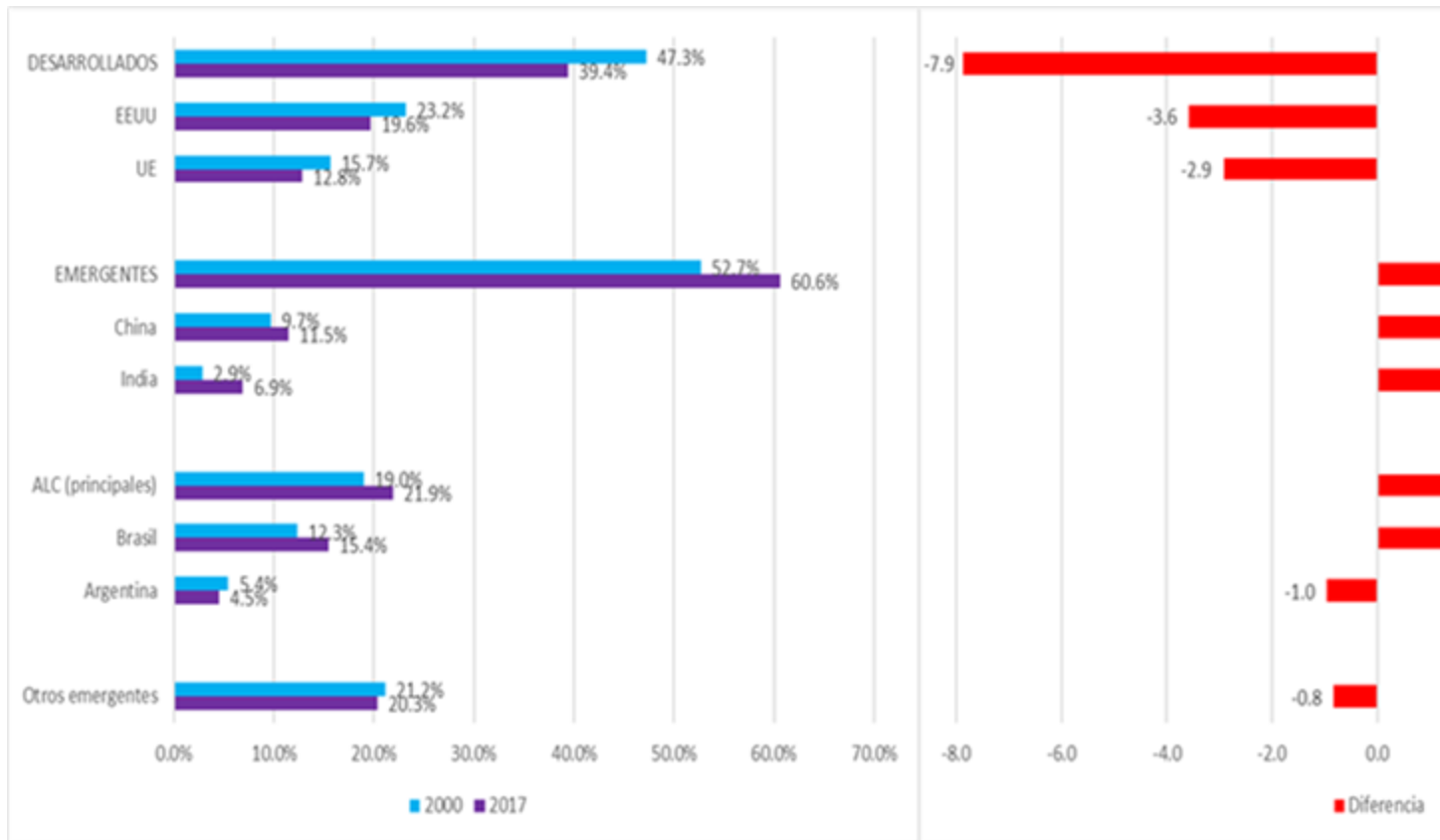
The latter result is related to the composition of production in China: its pork and beef sectors grew at higher rates than the global average, but this was not true of its poultry sector, although this was the sector that grew the most globally during the period. In 2017, China accounted for 48% of global pork production, having

increased its share by almost 1 percentage point since 2000. During the same period, the country’s share in global poultry production dropped by nearly 4.9 percentage points.

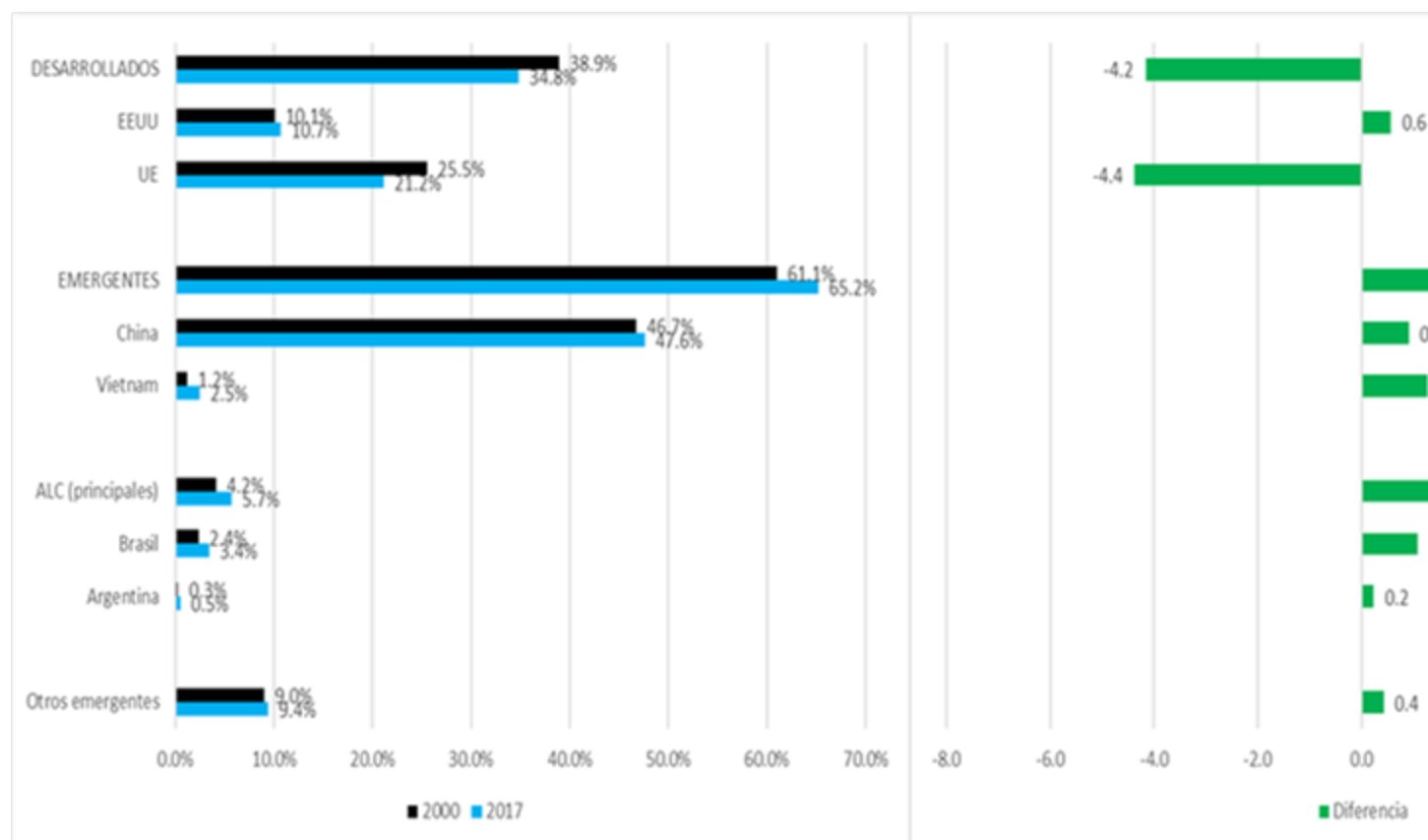
Figure 5. Selected Countries’ Shares in Global Meat Production, by Product Type, 2000–2017
(In percentages and percentage points)



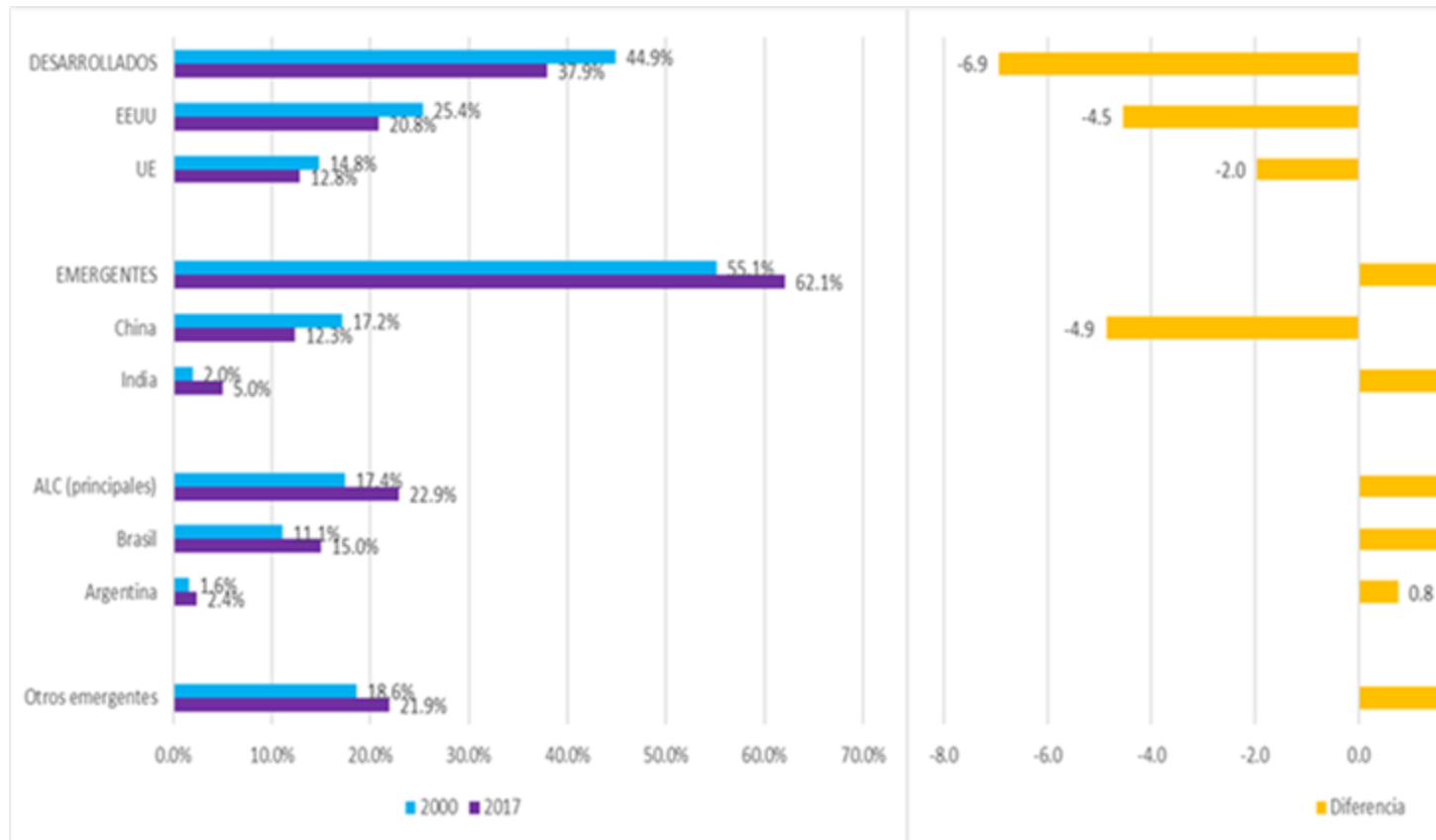
Beef



Pork



Poultry



Source: Prepared by the authors using data from the US Department of Agriculture.

In contrast, the countries of Latin American and the Caribbean now account for 23% of global poultry production, which translates into an increase of 5.5 percentage points in the global share, 4 of which are explained by Brazil.

With regard to developed countries, the most significant feature is the drop in the European Union's share in global meat production. The EU currently represents 16% of the global total, 3.4 percentage points less than in 2000. The United States accounts for a further 16% of the global aggregate, having lost 1.8 percentage points since 2000. This drop affected all three meat varieties in the EU, while in the US beef and poultry production fell and pork production increased marginally (0.6 percentage points).

Conclusions

Global meat production has grown since the 1990s, first at an accelerated rate and then relatively more stably. In the last three years, there have been some signs of stagnation in the sector.

From a long-term perspective, although the growth in meat production has remained slightly under overall global growth, there has been a notable increase in the per-inhabitant production of these products. This is linked to the inclusion of animal protein in the diet of sectors of the population whose income has increased in the last 20 years.

This increase has not been uniform across meat types. The most dynamic sector has been poultry while beef has lost relative market share. Pork continues to outrank the other meat types despite some loss of market share.

Production has become even more concentrated in emerging countries, among which Latin American economies play a significant role, particularly that of Brazil.

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[1] [Ramos and Vilella](#) (2017).

[2] The other major source of animal protein is fish, which is not discussed in this article. This indicator comes from the database of the Foreign Agricultural Service at the US Department of Agriculture (USDA). This database is available at the [USDA website](#). More information is also available in its twice-yearly newsletter (published in April and October), *Livestock and Poultry: World Markets and Trade*.

[3] Of course, the indicator for meat production is a measurement in physical units (metric tons) of gross output in the sector (without considering the economic significance of each type of meat), while global GDP is measured at constant prices and contemplates net output (value-added). All the same, this comparison is an approximation of the sector's relative dynamism.

[4] As was pointed out above, one significant exclusion from this estimate was fish.

Agua Negra Tunnel: Integrating Regional Economies

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On May 10, 11, and 12, 2017, the 2nd Workshop on the Implementation Plan for the Agua Negra Binational Tunnel Territorial Integration Program (PTI) was held. The event was organized by the Institute for the

Integration of Latin America and the Caribbean ([INTAL](#)) and was attended by more than 80 people, including national, regional, and provincial authorities from Argentina and Chile; representatives from the Agua Negra Binational Tunnel Entity (EBITAN), local universities, and business organizations; and officials from the Inter-American Development Bank (IDB).

The workshop was officially opened by the minister of infrastructure and technology of San Juan Province, Julio Ortiz Andino, who stated that the construction of the tunnel has been confirmed. He added, “the tunnel will facilitate and increase integration in the region. The work that we are doing on this PTI is extremely important because it brings together economic, scientific, political, and tourism-related factors—in other words, all the areas involved are working together to take maximum advantage of this project.” The minister thanked the IDB for the support that the two countries have received for implementing the PTI and financing the project.

Lidia Zapata, a regional councilor and the president of the Land-Use Planning and Infrastructure Committee of the Coquimbo Regional Council, said that “there has been talk of the Agua Negra Tunnel and the benefits it will bring for years. Although many people know about the project, particularly in San Juan Province, we still have a lot of work to do in the Coquimbo Region. *The authorities responsible for this project must make the information available on it as transparent as possible. This is why we have discussed the need to finance a Visibility Plan for the Agua Negra Tunnel in the Coquimbo Region while we build the technical skills needed to continuously monitor the PTI.*”

How Different Sectors of Society Perceive the Tunnel

The focus of the Agua Negra Binational Tunnel PTI is to complement the planning process in the local areas on each side of the tunnel—San Juan Province in Argentina and the Coquimbo Region in Chile—to further social, economic, and productive development within the binational integration project. The main productive sectors along this bi-oceanic corridor will play a key role in this regard, as will local universities.



The corridor that will be created between Porto Alegre and Coquimbo will be extremely important for the private sector, which is well aware of this. In this sense, the meeting helped consolidate private sector involvement in the thematic PTI group which is responsible for defining and implementing production-related economic initiatives.

In the private sphere, it is hoped that the construction of the tunnel will favor the development of local capacities and promote the hiring of firms, workers, and professionals from the region while connecting these with external markets. The issues discussed included local production, mining development, and environmental studies.

One point of note was the presentation given by representatives from the Port of Coquimbo, who analyzed current accessibility issues, which are related to the port's location in the La Serena–Coquimbo conurbation. They indicated that the access roads to the port are being improved and that alternatives for connecting the tunnel and the port are being analyzed. They also discussed their vision for the future, when the port will be a leading provider of sustainable, competitive, safe infrastructure on a human scale. In connection with this, they announced works to increase the depth of the port so that it can be used by larger boats.

From the world of academia, the representative from the Catholic University of Cuyo presented the results of a study entitled *Economic Complementarity around the Central Bi-oceanic Corridor (Coquimbo–Porto Alegre)*. This included an analysis of the provinces and regions affected by the corridor in question, the transit times between different overseas destinations, different economic complementarities, destination markets for production, main product origins, and export volumes. The study drew attention to issues such as the need for a

social license for the project and identified sectors with productive potential, including soy, energy, limestone, and fish and seafood.

The speaker also stressed that universities in the area will contribute to developing the two countries' competitiveness by providing training and education. Looking toward 2030, capacities in the fields of energy, mining, and sustainability will need to be improved if the regions are to take full advantage of the benefits the tunnel will bring, so a capacity-building project was presented. It includes six core areas: human capital and managing the transition; curriculum harmonization and postgraduate degrees in technology; R&D and linkages with industry; trade in technology and entrepreneurship; international alliances and mobility; and associative governance and synergies that increase the flexibility of capacity development.

On the matter of tourism development, government officials from the Coquimbo Region and San Juan Province gave their views on the sector's characteristics and potential. They underlined the growing numbers of tourists using the Agua Negra border crossing, especially going from Argentina to Chile. The average number of users has gone from 12,000 to 54,000 tourists over the last 10 years. The current limitations for the sector were discussed, as were the planned developments. These included the need to create a more proactive tourism promotion policy, develop a binational project to this end in which the private sector plays an active role, and move toward tourism products that include both countries. As evidence of the sector's development potential, a new air connection between San Juan and Santiago de Chile was announced.

New Management System



The Management System for the [Agua Negra Binational Tunnel Territorial Integration Program](#) was also presented at the workshop. This online system is designed to inform the general public and the region's inhabitants about each of the actions implemented as part of this program and the progress that has been made on them. Its objective is to store technical information on the more than 100 actions included in the PTI implementation plan. During the first stage, this will only be available to the expanded binational work team, that is, those officials who are responsible for implementing the actions and monitoring the program. After the presentation, participants took part in training sessions and began to upload and update information on the project.

The Agua Negra Tunnel is the IDB's Largest Investment in Latin America and the Caribbean

At the meeting, Juan Manuel Leño, an IDB transportation specialist for Argentina and Chile who is working exclusively on the Agua Negra Tunnel, confirmed that this investment project is the IDB's largest in the region. He also explained that the bank has issued two loans of US\$20 million, one to Argentina and one to Chile, the objective of which is to fund additional studies and strengthen the organizations that will monitor the tunnel project.

EBITAN estimates that the contract for the project will be awarded in November 2018 and signed in December 2018. Another announcement concerned the creation of an executive committee of professionals with experience in tunnel construction.

A Visit to the Agua Negra International Border Crossing



On the first day of the workshop, participants traveled over 300 km to visit the Agua Negra International Border Crossing. The aim was to get first-hand experience of the conditions of the surroundings where the tunnel will be located and to reflect on the difficulties that workers will face during the construction phase. The visit confirmed the security measures and the services that the corridor needs to provide users, and participants also appreciated the natural beauty of the surrounding landscape, which is a significant tourist attraction. The national director for international territorial integration planning, Atilio Alimena, said that “this visit made us aware of the scale of the project and the impact it will have on integration, which will lead to real development for the region without affecting surrounding areas.”

Conclusions from the Meeting



During the three-day event, the technical teams from Argentina and Chile analyzed progress on the implementation of initiatives that seek to leverage the benefits of improved physical connectivity; protect cultural heritage and biodiversity; and foster productive economic activities such as mining, industry, and tourism while the tunnel is being built and when it is subsequently in use.

To provide an institutional framework for the two countries' commitment to this initiative, a Binational Coordination Committee has been created to articulate PTI actions and the tunnel project. The PTI is based on a collaborative approach that aims to implement medium- and long-term initiatives that complement sustainable economic development in the Coquimbo Region and San Juan and La Rioja provinces on the basis of land-use planning.

An Industry Takes Shape

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Although this figure is still far from the initial expectations which promised a 3D printer in every home in the near future, additive digital manufacturing has brought solutions and business opportunities for numerous industries. Indeed, by developing new applications and demand for innovation in materials and inputs, it is the corporate sector that is currently driving global growth in the market for the printing of three-dimensional objects.

According to the consultancy firm IDC, global purchases of 3D printers, materials, software, and related services were worth US\$30.2 billion in 2016. In 2020, it is estimated that total spending will reach US\$28.9 billion. The United States accounts for a quarter of the income in this market between 2015 and 2020, while the three largest regions (Western Europe, the Asia Pacific excluding Japan, and Japan) explain over 50% of turnover.

“Between 2014 and 2019, the market for these units will have grown at an average 37% per year. Within the technology industry, if we compare it with mature technologies like PCs or smartphones, which are growing at moderate or even negative rates, 3D printing is experiencing really robust growth,” argues Luciano Crippa, head of research and consulting at IDC Latin America. “The major challenges for the industry are developing new materials and cutting down printing times.”

According to Mr. Crippa, 30% of turnover in the global 3D printing industry originates in the automotive sector, where it is still mainly used for design and prototyping. Next on the list are the aerospace and defense sector (17.8%), the industry of designing and printing components for assembly processes (7.5%), and the sphere of architecture and design (6.9%). Other, smaller industries are growing quickly. “The medicine sector is very significant: for example, the use of 3D printing in prosthetics is growing at 60% per year while that of medical implants is growing at over 50%,” says Mr. Crippa. There is even a market for printing food which, although still small, is doubling each year, he says. “Use in the architecture and design sector are growing by over 30% per year, and the technology gives designers unprecedented creative capacity. Although some of these printers are used in the corporate sphere, there has been an increase in firms that supply 3D printing services to end users. These suppliers to focus on personalized entertainment or gift products and SMEs who outsource their printing services,” Mr. Crippa explains.

In 2016, the consultancy firm EY looked at 900 firms from 12 countries and predicted growth in 3D printing of over 25% per year up to 2020. According to the survey, 24% of firms have experience using this technology and a further 12% are considering adopting it. “Many managers still associate additive manufacturing with prototyping. However, looking to the future, the potential growth of this technology lies in the development of

products and components for industries such as tools and machine components. The manufacture of high-quality products and the variety of new ingredients that can be used in 3D printing, such as metal, ceramics, and organic matter, is encouraging companies to consider this technology. Many are already taking advantage of this opportunity,” says the report. According to EY’s survey, one in three companies with experience in 3D printing are already applying this technology to their manufacturing processes, while 20% are manufacturing end-use products and components through 3D printing. “These are mainly companies in the plastics, automotive, aerospace, medical, and pharmaceutical industries,” the report says.

Small-scale use only represents a marginal share of the global 3D printing market, IDC says. “Home users account for only 3.3% of the global market,” Mr. Crippa explains. “Our short- and medium-term expectations are that it will not grow fast enough to change the current outlook,” he adds. “There is certainly a prospect of users having 3D solutions within their own homes. It just may not be as close as was initially thought,” he concludes.

New Materials

“The industry is moving forward very quickly, but the input and materials segment is developing fastest in terms of innovation,” says Irene Presti, president of the Argentine Chamber of 3D Printing and Digital Manufacturing. “New materials for creating objects appear each month. Although most are still made of plastic, manufacturers are combining this with other inputs to create new properties that improve the product’s hardness, flexibility, or resistance,” Ms. Presti explains.

Other materials with different properties that are used for printing today include glass, ceramics, and different types of polymers. “In the industrial environment, printing with metal is really important, as it can withstand high temperatures. Another key printing material is sand to make casting molds in complex shapes,” she adds. According to the EY report, the material that is currently most in demand for 3D printing is metal (52% of cases), followed by polymers (31%), and ceramics (6%).

“Other developments include biomaterials, such as hydroxyapatite for bone regeneration, hyaluronic acid for skin regeneration, and mother cells. But most are still at the research stage, due to regulatory limitations,” Ms. Presti warns.

So far, 3D printing is mainly used in firms in the areas of design and prototyping, as this technology significantly accelerates development times. It is also used to quickly manufacture industrial machinery components that have broken or to create specific products to high levels of precision that are hard to obtain from an outside supplier. “There are gains in both time and the quality of the product. The digital creation process allows you to generate highly complex designs,” says Ms. Presti. “It is very disruptive.”

Continual R&D into materials, inputs, and printing techniques, along with the possibility of printing new objects—including working human organs, which is still at the experimental stage—suggest that this industry has a long future ahead of it.

Tacna–La Paz: On the Road to Development

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In 2010, the presidents of Peru and Bolivia established a bilateral commitment to pave more than 300 km of the highway between Tacna (Peru) and La Paz (Bolivia). The initiative aims to strengthen bilateral integration and make this into a major route for bilateral trade and the transit of people and vehicles towards the Pacific Ocean (Ilo Declaration, 2010).

The countries' commitment to the project was confirmed in 2015 at another presidential meeting which ministers from different areas also took part in, based on the understanding that this road corridor contributes to the social and economic development of people living near the border. To this end, those present drafted a binational action plan to complement and support the paving of the highway, which includes specific work groups and activities on the environment and cross-border water resources; security and defense; economic development, social

policies, and institutional strengthening; and integration and development infrastructure (Isla Esteves Declaration, 2015).

The highway crosses Tacna Department in Peru and La Paz Department in Bolivia. Together, the two departments have a surface area of 150,000 km² and are home to 3.5 million people. They have a combined GDP of over US\$10 billion, according to 2014 estimates (COSIPLAN, 2016).



This integration road corridor is made up of two road projects from Project Group 5 of the Central Interoceanic Hub in the [COSIPLAN Portfolio](#) (link in Spanish). In Peru, the highway connects the city of Tacna with Collpa on the border with Bolivia, where it stretches from Hito IV to La Paz. Both projects have been divided into sections for the paving work.

On the Peruvian side, the [Tacna–Collpa highway](#) is divided into four sections, the first of which (up to Km 43.6) is paved and asphalted. The second section is 50.4 km long and represents an investment of US\$79 million. Work began in August 2016 and will be completed in February 2018. The third section is 52.2 km long and represents an investment of US\$43 million. Work began in September 2016 and will be completed in April 2018. The final section, which reaches the border with Bolivia, is 41.2 km long and represents an investment of US\$45 million. Work began in February 2016 and will be completed in October 2017.

In Bolivia, the [La Paz–Hito IV](#) highway is also divided into four sections and the first of these is paved up to the Capiri Rail Crossing. The second section, which runs between Capiri and Central Chama is 25.25 km long and represents an investment of US\$16 million, which was financed by CAF. Work on it will be completed in February 2018. The next stage entails paving the 27.44 km of road between Central Chama and Nazacara. Work on this section is also underway, representing an investment of US\$21 million, and will be completed in 2017.



The fourth section, which connects Nazacara and Hito IV, was divided into three subsections. The contracts for work on the first two have already been awarded. The first subsection runs the 25 km between Nazacara and San Andrés de Machaca and represents an investment of US\$32 million, financed by FONPLATA. The second subsection is the highway between San Andrés de Machaca and Santiago de Machaca, which is 32.7 km long and represents an investment of US\$37 million, financed by the IDB. Finally, the Santiago de Machaca–Hito IV subsection, which is approximately 50 km long, is currently being tendered and will represent an estimated investment of US\$66 million.

This connection with the Peruvian coast is complemented by two other projects from the COSIPLAN Portfolio. The construction and upgrading of the Camaná–Matarani–Ilo Road is currently underway. The project represents an estimated investment of US\$438 million and will improve connectivity between the ports of Ilo and Matarani. Work will be completed in April 2017. The second project is the expansion, upgrading, and modernization of the Port of Ilo, which aims to establish the port as a modern, multipurpose terminal. A private initiative is being evaluated for the design, construction, operation, and maintenance of the terminal. It represents an estimated investment of US\$230 million.

[V1] Soledad: esto está bien? Si ya se concluyó, habrá que cambiar la frase: Work was completed in April 2017.

Technology for Financial Inclusion

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A seminar on [The Challenge of Digital Finance](#) was held on April 6 and 7, 2017, at INTAL-LAB. The main speaker was digital banking expert **Chris Skinner**, who writes the blog [The Finanser](#). Organized by [Minders Group](#) in partnership with INTAL, the conference attracted executives from banks, insurance companies, and credit card companies along with government officials and academics, who came together to analyze the **latest technological trends being applied in the world of finance**.

During his keynote speech, **Chris Skinner** argued that the digital revolution will play a huge part in improving **financial inclusion**: “today everyone can be part of the financial system and benefit from integration,” he argued. “Some countries are already moving toward digital ID schemes. This could mark the end of the current exclusion of 2.5 billion people from the global system.” He also added that FinTech services will help “reduce inefficiencies, facilitate financial customer service, and microcredit through cell phones.”

According to Mr. Skinner, these technological advances will bring the state other benefits, such as “reducing asset laundering by 90% and improvements to financial security.” But he also remarked that there would be a negative impact on employment: “One third of employees in the banking sector could lose their jobs in the next 10 years.”

Although he posited that banks are essential to the functioning of the economy, he warned that “we are experiencing a profound paradigm shift.” He added, “Anyone who doesn’t adapt will eventually find themselves outside the system.” In this sense, he invited banks to “join in, support this process, and become part of it.”

Mr. Skinner said that the greatest advances in the FinTech industry will take place in Asia, Africa, and the Middle East, where the “financial system is agiler and has less ingrained vices.” He also recommended paying attention to Dubai, which has set out to be the next “global financial leader, bringing together the markets of South America, North Africa, and China.”

Blockchain Technology

Bitcoin is a virtual currency that does not depend on a central bank or government and that is based on open source code, security, decentralization, and digital signatures. For transactions to be made, the currency is based on blockchain technology, a huge shared, immutable database that records and stores all operations in blocks of information on different servers.

For Chris Skinner, this is a revolutionary tool that implies “the reinvention of the financial system by allowing billions of low-value transactions to be made across the globe in real time.”

The event also included discussions of other technologies. SocialMetrix entrepreneur **Gustavo Arjones** looked at Big Data as the capacity to collect and process large quantities of information at a reasonable cost. He remarked that up to a few years ago, this tool was only being used by major players, but it is now accessible to small start-ups, too. Today, Big Data technologies are applied to customer loyalty projects, but Mr. Arjones said that the intention is to soon go from being “**reactive companies to predictive ones that are one step ahead of the client and focus on creating more value for them by recognizing behavior patterns.**”

In a similar vein, **Gabriel Celemin**, a partner at Giro54, called for a **user-centered approach** to designing FinTech tools. “Don’t ask people what they want; watch what they do,” he advised.

New Services

During the conference, different entrepreneurs from the FinTech industry explained their services and their organization’s value proposition.

Sebastián Cadenas, CEO at Increase the winner of the INTAL D-TEC competition, explained how his company organizes and optimizes information **on credit card payments and balances from different shops**. **Bruno Ferrari**, cofounder and CTO at 123Seguro.com, explained how this platform allows users to access **multiple online insurance quotes** quickly and easily, providing advice and handling all claims or other operations while the policy is active.

Loans are another key market area. **Alejandro Cosentino**, president and CEO at Afluenta, described how his company connects credit-seekers with investors, a process which allows loans to be granted faster than through a bank, at a lower cost, and with better outcomes and less red tape.

Bitcoin operations also have their own space on the local market, especially among younger people and investors. **Sebastián Serrano**, CEO at Ripio, presented the region’s largest Bitcoin exchange platform, which is looking to consolidate itself as a financial service network that will focus mainly on providing credit for online purchases.

The payment sector is another heavyweight player outside the traditional financial system. **Mariano Garrasino**, director of business development and marketing for Latin America at MercadoPago, listed the platform’s benefits for optimizing transactions and improving security and transparency.

Pacific Alliance Seeks to Strengthen Financial Integration

- [America](#)
- [Inspiring Activities](#)
- [Integration in Motion](#)
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- [Regional Panorama](#)

The **13th Meeting of Pacific Alliance Finance Ministers** ([link in Spanish](#)) took place in Washington, DC, and was attended by Rodrigo Valdés (Chile); Mauricio Cárdenas Santamaría (Colombia); José Antonio Meade (Mexico); and Alfredo Thorne (Peru).

At the meeting, the ministers reviewed the progress made by the technical teams from the Council of Finance Ministers who are responsible for implementing the **financial integration** agenda set out in the **Frutillar Declaration** ([link in Spanish](#)) and the **Puerto Varas Declaration** ([link in Spanish](#)).

They began by discussing the drafting of a roadmap to implement a “passport for funds” that would allow funds to be distributed between the four markets once this had been authorized by one of the supervisors from the four countries. They also confirmed that they would begin to explore ways of deepening financial integration that might come from technologies that provide support for the financial industry (**Fintech**).

The ministers then agreed on the importance of promoting greater **investment** in infrastructure in the region and planned a meeting in Mexico to this end. They also agreed to hold a public/private workshop on **trade in services** in Santiago, at which they will discuss tax, customs, and financial barriers that currently limit service **exports**, with the aim of creating **jobs** and **economic growth** for the bloc.

Finally, those present celebrated the creation of a high-level public/private group that is responsible for regulating the relationship between the public and private financial sectors within the Pacific Alliance. The group held its **second meeting** ([link in Spanish](#)) a few days later in Lima.

MERCOSUR Makes Headway on Trade Negotiations with Japan

- [America](#)
- [Integration in Motion](#)
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- [Regional Panorama](#)

As part of the [4th MERCOSUR–Japan Dialogue](#), Ambassador Yasushi Takase, director for Latin America and the Caribbean at Japan’s Foreign Ministry, was welcomed by Ambassador Daniel Raimondi, who was representing the MERCOSUR as Argentina is currently *pro-tempore* president of the bloc.

At the meeting, the officials reviewed their ongoing **trade negotiation** agendas and exchanged information on progress. They also tackled specific issues relating to **trade** in goods and services, **sanitary and phytosanitary measures**, **barriers to trade**, trade defense mechanisms, and rules of origin.

The delegates underlined the importance of the event, which renewed relations between the MERCOSUR and Japan, and agreed on the importance of continuing this dialogue. In 2016, **MERCOSUR exports** to Japan reached US\$5.32 billion while **imports** were worth US\$4.76 billion.

Panama Resumes Imports of Meat Products from Brazil

- [Caribbean](#)
- [Integration in Motion](#)
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The **Panamanian** Food Safety Authority ([AUPSA](#)) ([link in Spanish](#)) has lifted the [disqualification of sanitary records](#) ([link in Spanish](#)) for processed meat products from Brazil as they are unrelated to the investigation currently underway there.

AUPSA issued a resolution in March 2017 that temporarily disqualified sanitary records for Brazilian meat products as a preventative measure.

After carrying out the necessary investigations and receiving notifications from **Brazilian** sanitary authorities, AUPSA established that the Brazilian meat products that are imported and sold in **Panama** are not connected to the investigations into irregularities in meat processing plants in various Brazilian states.

A resolution issued on May 5, 2017, re-authorized sanitary records for meat products, allowing firms to sell them once more.

Sanitary regulations are a fundamental aspect of the competitiveness of the [beef export sector](#), as several analysts have pointed out.

Progress on Customs Union between Honduras and Guatemala

- [Central America and Mexico](#)
- [Integration in Motion](#)
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- [Regional Panorama](#)

The end of the pilot testing phase for the **Central American** Invoice and Single Declaration Program [has been announced](#). The testing process with real companies is expected to begin soon.

The government of Guatemala [reported \(link in Spanish\)](#) that the pilot tests for the format of the **Central American** Invoice and Single Declaration (FYDUCA) have been successful and are now moving into the review stage. The FYDUCA is a document that records the purchase and legal possession of goods in both Guatemala and Honduras.

Guatemala's deputy minister of foreign trade, Enrique Lacs, led Guatemala throughout the week of work that the round entailed and took part in joint meetings with his Honduran counterpart.

Progress on what will be the first customs zone in Latin America is especially important because Honduras is one of Guatemala's main trade partners.

According to data from the [Secretariat for Central American Economic Integration \(SIECA\) \(link in Spanish\)](#), fully implementing the customs union between **Guatemala** and **Honduras** will bring additional annual GDP growth of 1%.

It is expected that the final tests on migration-related issues will take place during the second week of May 2017, and the process of real trials with companies will begin at the same time.

The two countries tested the notification process for sanitary and phytosanitary issues, and the sending and approval of digital notifications was successfully implemented and approved.

In 2016, trade between the two countries was worth approximately US\$1.27 billion and included around 6500 products. Of these, 79% will be duty-free once the customs union enters into force, according to official data.

Costa Rica Uses Big Data to Combat Tax Evasion

- [Central America and Mexico](#)
- [Integration in Motion](#)
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By analyzing and cross-referencing historic information from multiple **databases**, the **statistical** model used by the [General Tax Office \(link in Spanish\)](#) attempts to predict which firms are more likely to evade tax payments, depending on their historical behavior as measured through transactions, tax statements, and other data. By linking this information, the model can identify behavior patterns that are similar to those of other firms that have evaded taxes in the past.

The model also [determines \(link in Spanish\)](#) whether the income people report to the state matches the economic capacity that they demonstrate in their daily life. If an individual's tax declaration is very low but the Treasury detects that they have frequently left the country, imported goods, own new vehicles and properties, or pay fees at private educational establishments, the alarm bells go off. If the taxpayer can prove that these trips and vehicles were paid for by justifiable legal means, the investigation is closed. If they cannot, legal action begins.

All data is cross-referenced and filtered using specific searches. For example, to identify false suppliers, investigators will check if there is a blood relationship between the client and the supplier, whether they are one-off clients or one-off suppliers, and even the supplier's age.

This is a good example of how new technologies can be used to improve the efficiency of the state.

ASEAN and Pacific Alliance Strengthen Cooperation

- [Central America and Mexico](#)
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The third meeting of the **ASEAN** Committee of Permanent Representatives and the **Pacific Alliance** Group of External Relations took place in May 2017 in Indonesia. Recent bilateral relations [were reviewed \(link in Spanish\)](#) and both parties agreed on the orientation of major measures to promote cooperation between the two regions.

ASEAN hopes that the PA will be a gateway to connect with Latin America, especially in the areas of trade and cultural exchange.

PA delegates expressed their appreciation for **ASEAN**'s role and experience in regional connectivity and reiterated their interest in greater cooperation with member countries in Southeast Asia.

In the short term, **ASEAN** and the **PA** committed to working together to effectively implement the framework document for cooperation between them.

They agreed to draft a work plan for 2017–2018, which would include organizing seminars on the two blocs' potential, cultural outreach activities, and scholarships for students.

This step is part of a process of rapprochement between the two regions which aims to explore new forms of integration beyond the **Trans-Pacific Partnership (TPP)**.

To this end, they proposed that the **Pacific Alliance** countries [should act jointly](#) and in unison to improve and expand its free trade agreements with countries and **trade blocs** from the **Asia-Pacific** region.

The **Pacific Alliance** is a regional integration initiative that was established in 2011 and comprises **Chile, Colombia, Mexico, and Peru**. The bloc's combined population is 216 million people and its per capita GDP stands at US\$9,900.

ASEAN was founded by five members in 1967 and currently includes Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Laos, Singapore, Thailand, the Philippines, and Viet Nam. The bloc's economy is the third largest in Asia and has a GDP of US\$2.6 trillion.

Mexico Seeks to Seal New Trade Agreements with Argentina and Brazil

- [Integration in Motion](#)
- [n249](#)
- [Regional Panorama](#)
- [Southern Cone](#)

Mexican government officials and members of the business community were brought together by the [Ministry of Agriculture, Livestock, Rural Development, Fisheries, and Food \(link in Spanish\)](#) (SAGARPA) to take part in an [official trade mission to South America \(link in Spanish\)](#) in search of new contacts and agreements that would enable [Mexico to strengthen and expand its trade in agrifoods](#).

The delegates met with **businesspeople**, exporters, and ministers from Brazil and Argentina. Talks centered mainly around the possibility of these two countries **exporting** yellow maize, wheat, and soy to Mexico, which would help the latter diversify its supply of these inputs, which currently come mainly from the United States.

In [Argentina \(link in Spanish\)](#), the Mexican delegation took part in the forum on Business Opportunities in Connection with Supplying Mexico with Agrifood Products from Argentina, where they got to know more about Argentina's logistics systems for **trade** facilitation. They also met with authorities from the local grain exchange.

Later, in [Brazil \(link in Portuguese\)](#), the delegation also held a business round at which Brazilian **businesspeople** were able to pitch their products and describe supply conditions in detail. The Mexican government has guaranteed that **tariff** and **phytosanitary** requirements will not be an obstacle to grain shipments.

The Mexican poultry industry uses some 10 million tons of corn and 3 tons of soy meal as animal fodder each year, said the president of the National Union of Poultry Farmers, César Quesada Macías. Mexico does not produce sufficient yellow corn to feed its poultry and depends on the ties it has established through the **North American Free Trade Agreement** (NAFTA) for its supply.

Argentina and Chile Make Headway on Trade Liberalization Agreement

- [Integration in Motion](#)
- [n249](#)
- [Regional Panorama](#)
- [Southern Cone](#)

Between May 8 and 10, 2017, the undersecretary for economic integration in the Americas and the MERCOSUR at the Ministry of Foreign Affairs and Worship, Daniel Raimondi, traveled to Santiago the Chile with a delegation of negotiators to meet with DIRECON's director of bilateral economic affairs, Pablo Urria, and hold the [2nd Round of Negotiations between Argentina and Chile \(link in Spanish\)](#).

The meeting focused on moving toward a full **trade liberalization** agreement. Although work remains to be done on the final draft, the outcome was positive as many chapters of the agreement were concluded, including those on **e-commerce, gender, services, SMEs, and cooperation**.

The delegations agreed on the importance of continuing to open up to trade in a way that would benefit their current economic ties. Likewise, the officials expressed their commitment to moving forward with this process. It is hoped that the next round will be held in Buenos Aires in June 2017.

Chile's economic relations with Argentina are currently governed by [Economic Complementarity Agreement no.35 with the MERCOSUR \(link in Spanish\)](#), which has been in force since 1996. It is expected that this new agreement will complement the existing one as it includes issues that will modernize relations and give greater legal certainty to trade operators from both countries.

Chile Signs Agreements with China and Joins the Asian Infrastructure Investment Bank

- [Integration in Motion](#)
- [n249](#)
- [Regional Panorama](#)
- [Southern Cone](#)

As part of their official visit to take part in the [Belt and Road Forum on International Cooperation](#), Chile's minister of foreign relations, Hernando Muñoz, and President Michelle Bachelet [met with Chinese officials \(link in Spanish\)](#) to formalize different **agreements**.

The officials began by attending the seminar on **Agribusiness Opportunities: Trade, Investment, and Innovation (link in Spanish)**, which brought together **businesspeople** from both countries to promote business opportunities. Ms. Bachelet said that "our hope is to become a platform for **trade** between the Asia Pacific and South America (...) We have an extensive network of **trade agreements** that allow **tariff-free** access to over 63 countries for practically all industrial products."

The Chilean delegation was then received by the president of the [Asian Infrastructure Investment Bank](#) (AIIB), Jin Liqun, to officially announce Chile's entry into this **financial** organization. "We are very happy to have been accepted as members and, of course, we must now do our part as a government to ratify full membership," Ms. Bachelet added.

Other agreements signed during the visit to [China](#) related to the Antarctic, agricultural cooperation, freight shipments, the capital market, research, and **technology**, among others.

Special Customs Treatment Is Approved in the Andean Community

- [Andean Group](#)
- [Integration in Motion](#)
- [n249](#)
- [Numero carta](#)
- [Regional Panorama](#)

The Commission of the Andean Community (**CAN**), which is made up of **Bolivia, Colombia, Ecuador, and Peru**, [has passed \(link in Spanish\)](#) Decision 817 on special customs treatment for patterns, measuring instruments, reference materials, and aptitude testing material between CAN member countries and between these and other countries.

The decision establishes special customs treatment that will prevent agents from incorrectly handling or damaging the metrological features of patterns and measuring instruments, reference materials, and test equipment used to carry out interlaboratory comparison programs, aptitude testing, calibration programs for measurement patterns, and the certification of reference materials.

The new regulations are important because they will facilitate activities of this sort, which improve the technical skills of testing and calibration laboratories within the subregion and foster the mutual recognition of results published by CAN assessment bodies. This will improve competition and the supply of quality [infrastructure](#) in the Andean Community.

Honduras Strengthens Bilateral Trade with Peru

- [Central America and Mexico](#)
- [Integration in Motion](#)
- [n249](#)
- [Numero carta](#)
- [Regional Panorama](#)

On January 1, 2017, the **free trade agreement** (FTA) that **Peru** and **Honduras** signed in Lima in May 2015 entered into force. This FTA [is part of](#) the two countries' **trade** strategies to improve conditions of **market access**. It also establishes rules and procedures to promote **trade** in goods and services and investments.

Four months after the entry into force of the [FTA \(link in Spanish\)](#), **Peru's** secretary of **trade** acknowledged that it had allowed **Peruvian** products immediate, duty-free access to the Honduran market, making specific mention of products such as asparagus, artichokes, grapes, pineapples, mangoes, avocados, quinoa, kiwicha, cañihua, paprika, coffee, Cuzco corn, and purple corn.

In this way, not only are many Peruvian SMEs gaining recognition, they are also placing their products on another market.

The two countries are also adopting decisions to implement the commitments established in the **FTA**. The decisions made were on Rules of Procedure and the Code of Conduct for Dispute Settlement.

Peru's deputy minister of foreign **trade** stressed that exports to Honduras are currently structured as follows: 81% are non-traditional products and 19% are traditional products.

The main non-traditional Peruvian products exported in 2016 to Honduras included: prepared animal fodder; boxes, cases, cages and similar plastic articles; aluminum plates, sheets, and strip; and sweet biscuits. The traditional products included zinc ores, lubricant oils, and butane gas.

Bolivia Analyzes Alternative Zones

- [Andean Group](#)
- [Integration in Motion](#)
- [n249](#)
- [Numero carta](#)
- [Regional Panorama](#)

Representatives from different [Bolivian ministries \(link in Spanish\)](#) visited Argentina and Paraguay to carry out on-site checks of the alternatives these countries' governments are offering to help improve Bolivia's physical infrastructure conditions and to facilitate and optimize its foreign trade logistics through the use of alternative ports on the Atlantic Ocean. These would [provide a solution to](#) its current landlocked status.

In late April 2017, the delegation traveled to the city of Rosario, Argentina, to visit the free trade zone that has been granted to Bolivia and other options the Argentine government is offering in Villa Constitución, some 59 km from Rosario and near the Port of Rosario.

The delegation also traveled to Asunción, Paraguay, to inspect the bonded warehouse and free storage area in Puerto Villeta and the three alternatives that Paraguay is offering in Capitán Carmelo Peralta, Pilar, and the dry dock at Chaco-I.

The Agreement for the Establishment of a **Free Trade Zone** for Bolivia in the Port of Rosario was signed on June 4, 1969, and ratified by Bolivia through [Supreme Decree 9243 on June 4, 1970 \(link in Spanish\)](#).

Silk Road International Forum

- [Integration in Motion](#)
- [International Scenario](#)
- [n249](#)
- [Numero carta](#)

On May 14 and 15, 2017, the [Belt and Road Forum for International Cooperation](#) took place in Beijing. The event discussed progress on the New Silk Road initiative that China presented in 2013. It was attended by heads of government and authorities from international organizations.

The purpose of the forum was to strengthen a **trade** and **infrastructure** plan that would connect Asia better with Europe, Africa, and Latin America. Its name is a reference to the [age-old sea and overland routes \(link in Spanish\)](#) that connected Europe and Asia for centuries. The main [areas of discussion](#) were **infrastructure**, **investment**, **economic and financial cooperation**, **energy resources**, **cultural** exchange, maritime **cooperation**, the **environment**, and **sustainable development**. President Xi Jinping emphatically defended **free trade** and guaranteed that approximately US\$5 trillion would be invested in building the project, US\$113 billion of which would be for **infrastructure** works: roads, ports, and high-speed trains. In his presentation, [President Macri argued \(link in Spanish\)](#) that the UNASUR, which Argentina holds the *pro-tempore* presidency of this year, has decided to achieve greater, more sustainable **physical integration** through the [Initiative for the Integration of Regional Infrastructure in South America \(IIRSA\)](#). “We would like to articulate the One Belt, One Road initiative with IIRSA to develop connectivity, which will be a key factor between our regions in the 21st century,” he remarked.

President Macri and [President Michelle Bachelet \(link in Spanish\)](#) were the only Latin American heads of state who took part in the forum. They drew attention to the joint **trade** initiatives that the **Pacific Alliance** and the **MERCOSUR** are currently negotiating. In her speech, Ms. Bachelet said that “Chile is ready to be a bridge country between Latin America and Asia. Chile welcomes the great effort led by China to search for new mechanisms to bring us closer together, in connectivity, **innovation**, and **sustainable development**. The breadth of the initiative and its strategic dimensions highlight its capacity to become the biggest **economic cooperation** project in place today.”

Over the last decade, China has become Latin America and the Caribbean’s [second largest trade partner](#), accounting for 12.9% of **trade** in the region in 2014. It is the main trade partner of countries such as Brazil, Chile, and Peru. This change has been driven by the boom in the exchange of commodities for manufactured goods.

Integration in Motion

From Uruguay to the World Thanks to ConnectAmericas

- [Integration in Motion](#)
- [n249](#)
- [The SME Space](#)

Following a validation process through the IDB's business network for SMEs, the company sent two shipments of beverages that are now being sold at Montevideo's Carrasco airport. In this video, CEO [Ana Claudia Moran](#), discusses her experience, which is a true success story.



Connecting Voices

Synthetic Meat: Innovation in the Age of Production 4.0

- [Connecting Voices](#)
- [n249](#)



Interview with Peter Verstrate, CEO at MosaMeat



Interview with Ignacio Peña, strategy, technology, and innovation specialist



Interview with Federico Trucco, CEO at Bioceres



Reading Material on Integration

INTAL-LIB's Recommended Reading

- [n249](#)
- [Reading Material on Integration](#)
- [Reviews](#)



[Electrical Integration in Central America: The Origins, Benefits, and Outlook for the SIEPAC Project: Central American Electrical Interconnection System \(link in Spanish\)](#)

Abstract The year 2016 marked the 20th anniversary of the signing of the Framework Agreement for the Central American Electrical Market (1996) by the presidents of the six nations of Central America, and the 40th anniversary of the first electrical interconnection between two countries on the isthmus (Honduras and Nicaragua in 1976). This prompted the Inter-American Development Bank (IDB) to develop this publication, which aims to present the process of electrical integration in Central America comprehensively and coherently by tracing its origins, analyzing achievements and benefits to date, and contemplating the prospect of greater integration in the future. The publication provides evidence that regional electrical integration makes economic sense. It also shows that balance and symmetry prevail among the countries of Central America that are involved in the initiative and among the public and private stakeholders within them. It includes economic assessments of the different levels of electrical integration in Central America and complements this with an analysis of the political and institutional viability of implementing these, studying the costs, benefits, and different obstacles that may hamper the development and consolidation of this process.



[Leaning Against the Wind: Fiscal Policy in Latin America and the Caribbean in a Historical Perspective](#)

Summary: This report by the World Bank’s Office of the Chief Economist for Latin America and the Caribbean (LAC) studies the region’s fiscal policies. After reviewing LAC’s growth performance, Chapter 1 provides an account of its financing needs in the 21st century to understand how such a diverse region ended up with fiscal deficits across the board in 2016. Chapter 2 goes back to the 1960s and assesses the cyclical properties of fiscal policies. Like most developing countries and in contrast with most developed economies, LAC has exhibited procyclical fiscal policies. The 2000s brought good news: one in three economies in the region became countercyclical, which helped improve credit ratings. However, fiscal policy is complicated by our inability to know if current economic conditions are temporary or permanent. The report argues for a prudent stance that would err on the side of saving too much during upswings and perhaps borrowing too little during downturns.



[Rethinking Infrastructure in Latin America and the Caribbean: Spending Better to Achieve More](#)

Summary: Latin America and the Caribbean does not have the infrastructure it needs, or deserves, given its income. Many argue that the solution is to spend more; in contrast, this report has one main message: Latin America can dramatically narrow its infrastructure service gap by spending efficiently on the right things.

Robots and the Future of Work: Is Technological Unemployment on the Horizon?

- [Impact Assessment](#)
- [n249](#)
- [Reading Material on Integration](#)

[Robots and Jobs: Evidence from the US](#) by the economists Daron Acemoglu and Pascual Restrepo discusses the partial results of their research into the problem of how robotization impacts jobs and salaries, which they have approached using a model focused on local labor markets in the US.

According to their estimates, “an extra robot per thousand workers reduces the employment-to-population ratio by 0.18-0.34 percentage points and wages by 0.25%–0.5%” which is equivalent to about three workers losing their job for each new robot. “This effect is distinct from the impacts of imports, the decline of routine jobs, offshoring,” and other applications of IT.

As is well known, estimates of the possible impact of automation unemployment vary wildly. For example, “Frey and Osborne (2013), classified occupations by how susceptible they are to automation and concluded that 47% of US workers are at risk in the next 20 years. McKinsey (2016) claims the same statistic is 45%, and the World Bank estimates that this number for the OECD as a whole is 57% of workers. Arntz et al. (2016), however, disagree. They argue that, within an occupation, many workers specialize in tasks that cannot be automated easily, and so their estimate for OECD jobs at risk is only 9%.”

Costs to employment and wages cannot be estimated based solely on the direct effects of robotization. The net impact would depend on the cost of automation, the wage savings this implies, and the possibility that “productivity improvements may create new jobs in the firm, or other occupations might be able to expand.”

To analyze this point, Acemoglu and Restrepo focused on local labor markets and established indicators for the different levels of exposure to robots that these may have.

They found that, in effect, in the areas where exposure to robots was greater, both employment and wages declined in a robust and significant way between 1990 and 2007. “The introduction of a new robot per thousand workers in a commuting zone reduced the local employment-to-population ratio by 0.37 percentage points and local wages by 0.73%. This is equivalent to 6.2 workers losing their jobs for every robot.”

This direct effect of robotization is “strongest for routine manual, blue-collar, assembly and related occupations, and for workers with less than college education.”

If the model also contemplates the compensatory effects that come from the introduction of robots, which derive from efficiency gains that increased trade between different local markets or commuting zones, it is still the case that “each new robot per thousand workers reduced the employment-to-population ratio by 0.34 percentage

points and cut wages by about 0.5%.” In other words, the direct effects of robotization on employment are tempered but each new robot still will imply the loss of three jobs.

However, the authors argue that “so far, there are relatively few robots in the US economy, and so the number of jobs lost due to robot has been limited to between 360,000 and 670,000 jobs. If robots spread as predicted, future aggregate job losses will be much larger. For example, BCG (2015) has an ‘aggressive’ scenario in which the world stock of industrial robots would quadruple by 2025.” According to the estimates of Acemoglu and Restrepo, this “would imply a 0.94-1.76 percentage point lower employment-to-population ratio, and 1.3%–2.6% lower wage growth between 2015 and 2025. These are sizable effects. But it should also be noted that even under the most aggressive scenario, we are talking about a relatively small fraction of employment in the US economy being affected by robots.”

Acemoglu, D., and Restrepo, P. [Robots and Jobs: Evidence from the US](#). CEPR. 2017.

The Space Economy in Argentina

- [n249](#)
- [Reading Material on Integration](#)
- [Reviews](#)

The study “[Al infinito y más allá: una exploración sobre la economía del espacio en Argentina](#) [To Infinity and Beyond: An Exploration of the Space Economy in Argentina]” ([link in Spanish](#)) looks at the “space economy” in an attempt to understand how it has developed, its current state, and its future prospects. It was directed and published by the Buenos Aires Interdisciplinary Institute of Political Economy at the University of Buenos Aires.

The study presents a brief overview of the global and regional context for this industry. Its ultimate objective is to understand the sector’s opportunities for generating positive impacts and to explore the challenges it faces.

The authors’ analysis focuses not only on the main players and technological achievements but also on the productive linkages and externalities the sector could generate. The study aims to identify the weaknesses, strengths, and potential of the industry in the local, regional, and global contexts.

Based on this analysis, the authors put forward a research agenda and some suggestions to frame the strategic decisions about the space industry that are made from this point forward.

The publication argues that high-technology sectors play a weak role in Argentina’s productive structure. This feature is made particularly clear by their limited share in exports. In the foreseeable future, it would be hard for the satellite industry *per se* to generate exports that make a difference from the macroeconomic point of view.

The satellite industry contributes to building skilled human capital and can develop productive linkages with suppliers, partners, and clients. Developing it would thus sow the seed for potential technological spillovers that would have a positive effect on the competitiveness of other sectors. It would also enable the emergence of businesses based on satellite services, such as those involving the use of images, telecommunications, etc.

This is not just a matter of economic repercussions in the private sphere. Developing the space industry also entails potential social benefits that include: better control over natural resources, internet service provision to areas that cannot be reached by fiber optics, faster reactions to natural disasters, monitoring the evolution of meteorological variables, better fire risk index and air quality forecasts, coastal monitoring to detect oil spills, border control, scientific research, and the provision of navigation or geolocation services.

The successful implementation of these transformations could substantially increase both the size and the impact of the space industry on the rest of the economy and society.

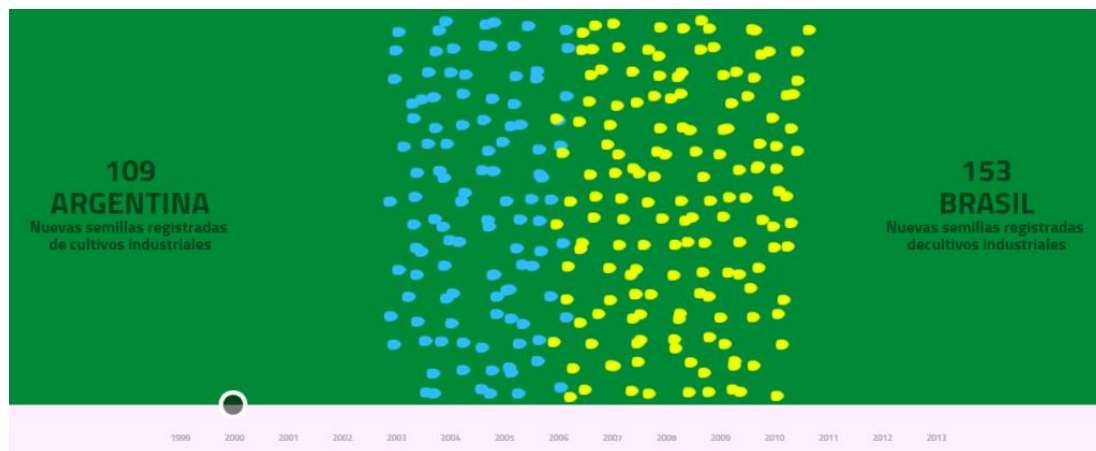
Lopez, A; Pascuini, P; and Ramos, A. “[Al infinito y más allá: una exploración sobre la economía del espacio en Argentina](#)” ([link in Spanish](#)). IIEP-BAIRES: 2017.

Trade Thermometer

Technoplanting

- [n249](#)
- [Trade Thermometer](#)

[Natural resources play](#) a major role in Latin American economies. Their contribution to development has been underestimated historically because they are usually associated with low technological intensity, among other factors. However, this perception has gradually been changing in recent years due to transformations in global demand, technologies, and regulations, all of which are driving factors behind an increased need to innovate in the natural resource sector and greater opportunities to do so. The major changes that the agricultural sector and other related activities have experienced in Argentina and Brazil are an interesting example of this. The sector has grown significantly in recent years, leading to rising levels of innovation, bringing progress, and transforming key activities in the sector such as seed development. Despite the dominance of a small handful of multinational companies that supply standardized solutions that are incorporated into the seeds themselves (such as herbicide resistance), some domestic firms have also benefited significantly from this expansion. However, to continue taking advantage of these opportunities, we need to develop institutions and policies that focus on these new natural resource-related opportunities, along with the challenges they also entail.



Editorial

Editorial Staff

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