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PAPER

Dual Technologies Sectors Innovation and Growth Civil and Defence Industries in Europe versus U.S. and China*

*The 11th CEA (Europe) and 30th CEA (UK) Annual Conference "China's Industrialization and the Expansion of Global Value Chains" 1-2 September 2019, in Stockholm, Sweden at the Royal Swedish Academy of Engineering Sciences

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Keywords: Civil-Defence industrial sectors; Growth and International trade; Dual Technologies: two Sectors same Ingredients, different Shape; European Union, China and US leading international trade

JEL Classification: F50; H56; E24; G32; O32; H11; H41

In the last twenty years, the silent uprising of new, advanced, sophisticated technologies pushed for decisive changes in the strategies of the main civil and defence "actors" of the geopolitical and military world scenarios. It impacted as a rude awakening call in Europe but resulted into an increased international competitivity and growing shares of the global markets in top sectors. The AI perspective, the 5G[1] tensions, the wider acceleration of military defence productions, investments and procurements are in fact the titles of the open competition among main world actors over some of the highest technologies, as this Report from the Euro Parliament pictured[2]. Civil and military equipment, tools, turbines, spacecrafts, satellites, nuclear energy, aerospace, medical applications, new materials. A list never ending. Not to mention the defence and military side scenario. The future recently unveiled shows an impressive evolution.
A process full of implications for Economic, Financial, Industrial studies, researching but for International Relations and Political Governance theories and practices, as well over investments in the defence and civil sectors induced by the forthcoming "dual" technologies, already start to be available on an industrial scale, than modifying on global and regional scale the perspective competitiveness and real balance of power.
We will focus later on technologies, looking now to the very recent conclusions of

[1] https://www.reuters.com/article/us-qualcomm-m-a-broadcom-5g/what-is-5g-and-who-are-the-major-players-idUSKCN1GR1IN

[2] https://www.europarl.europa.eu/RegData/etudes/IDAN/2019/631060/IPOL_IDA(2019)631060_EN.pdf

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the G-20 Osaka and the strong request to abandon tariffs conflicts and enlarge trade competitive market, we have to assume as indicators recent data on the international overall trade in 2018 and beginning 2019, just to stay close to the present. G 7 summit in France in next days will again show the EU determination to operate for a stop of any form of trade wars. Very inspiring are President Donald Tusk's remarks in view of the summit just diffused by the news agencies. "We have to be united to put a stop to trade wars", we read in the text diffused by the European Council on August 24, 2019.

I open a quick window on the last quarter 2019 compared to 2018 both for European Union and China versus U.S. The data for EU is very interesting and not so frequently evoked in official statements or in the media[3]. "The first estimate for Euro area (EA19) exports of goods to the rest of the world in April 2019 was €192.9 billion, an increase of 5.2% compared with April 2018 (€183.4 bn). Imports from the rest of the world stood at €177.2 bn, a rise of 6.6% compared with April 2018 (€166.3 bn).

As a result, the Euro area recorded a €15.7 bn surplus in trade in goods with the rest of the world in April 2019, compared with + €17.1 bn in April 2018. Intra-euro area trade rose to €163.7 bn in April 2019, up by 3% compared with April 2018". Reading the official data diffuse recently by Eurostat, a fully trustable source, EU-China trade moved on in the first part of this year better then in the same part of 2018, with a net margin favorable to China as you can see from the slide.

But what about U.S. *versus* EU and China *versus* U.S.? I asked myself these questions before preparing the draft paper in last July. Let's see quickly.

- U.S. goods and services trade with the EU totaled nearly $1.3 trillion in 2018. Exports totaled $575 billion; Imports totaled $684 billion. The U.S. goods and services trade deficit with the EU was $109 billion in 2018[4]. The EU countries, all together, was ranking 1st export market for the United States in 2018.

And what about China and U.S., in the same y.o.y comparative exercise?

- *Customs core data for the first quarter of 2019.* According to customs statistics, the total value of China's imports and exports in the first quarter of this year was 7.01 trillion yuan, an increase of 3.7% over the same period last year. Among them, exports were 3.77 trillion yuan, up 6.7%; imports were 3.24 trillion yuan, up 0.3%; trade surplus was 529.67 billion yuan, up 75.2%; in dollar terms, in the first quarter, China's total import and export value was 1.03 trillion U.S. dollars, down 1.5%. Among them, exports were 551.76 billion US dollars, an increase of 1.4%; imports were 475.45 billion U.S. dollars, down 4.8%; trade surplus was 76.31 billion U.S. dollars, an increase of 70.6%.

Again, also in the U.S. - China reciprocal overall flows data values are quite far from the two countries U.S. expected ones, as showing until now just a relatively modest retracements of trade deficit, as on the commercial and services data not a real shifting away. The U.S.-China trade and economic relationship has expanded impressively over the past three decades and no the retracing is a reasonable trend until a new deal might

[3] http://trade.ec.europa.eu/doclib/docs/2013/december/tradoc_151969.pdf
http://ec.europa.eu/trade/policy/eu-position-in-world-trade/

[4] https://ustr.gov/countries-regions/china-mongolia-taiwan/peoples-republic-china

be find between Beijing and Washington DC.
In 2018, China was the United States' largest U.S. merchandise trading partner (total trade at $660 billion), third-largest export market ($120 billion), and largest source of imports ($540 billion). China is also the largest foreign holder of U.S. Treasury securities (at $1.1 trillion as of April 2019 2018). However, tensions have grown sharply in recent years over a number of economic and trade issues. The U.S. merchandise trade deficit with China in 2018 was $419 billion (up from $376 billion in 2017), and is by far the largest U.S. bilateral trade imbalance[5].

"Some U.S. policymakers - underlines FAS report - view large U.S. bilateral trade deficits as an indicator of an "unfair" trade relationship. Others, however, view conventional bilateral trade deficit data as misleading, given the growth of global supply chains used by multinational firms.

Products may be invented or developed in one country, assembled elsewhere (using imported components from multiple foreign sources), and then exported. In fact, it's really what we have read in the data of the first semester 2019. But the effective evaluations of the net results for U.S. and China "trade war" will be seen in a longer span of 2020.

Summarizing US trade with China and European Union[6]

In fact, it's really what we have read in the data of the first semester 2019. But the effective evaluations of the net results for U.S. and China "trade war" will be seen in a longer span of 2020.

But is the reality of U.S, trade balance that is negative and not performing as it should. Let us read the very recent dataset of U.S. versus European Union and China and the deficit that appear so evident and not faced with appropriate policies in the last twenty years.

In fact, a sound strategy on competitiveness, innovative products and dual-technology, environment, value chains in wide sectors of advanced industrial production outcomes would give in the medium term much better result than any "trade barrier, dispute or clashes on tariffs".

2019 : U.S. trade in goods with China

Month	Exports	Imports	Balance
January 2019	7,134.3	41,603.8	-34,469.5
February 2019	8,433.6	33,194.4	-24,760.8
March 2019	10,426.5	31,175.7	-20,749.1
April 2019	7,896.3	34,798.9	-26,902.6

[5] US-China Trade Issues – FAS - Federation of American Scientists, https://fas.org/sgp/crs/row/IF10030.pdf; https://www.census.gov/foreign-trade/balance/c5700.html;

[6] https://www.census.gov/foreign-trade/balance/c5700.html ; https://www.census.gov/foreign-trade/balance/c0003.html

Month	Exports	Imports	Balance
May 2019	9,074.5	39,269.1	-30,194.6
June 2019	9,034.7	39,002.3	-29,967.6
TOTAL 2019	**52,000.0**	**219,044.3**	**-167,044.3**

NOTE: All figures are in millions of U.S. dollars on a nominal basis, not seasonally adjusted unless otherwise specified. Details may not equal totals due to rounding. Table reflects only those months for which there was trade

2018 : U.S. trade in goods with China

Month	Exports	Imports	Balance
January 2018	9,902.6	45,765.6	-35,863.1
February 2018	9,759.9	39,020.6	-29,260.7
March 2018	12,652.1	38,327.6	-25,675.5
April 2018	10,503.8	38,303.9	-27,800.1
May 2018	10,428.2	43,965.7	-33,537.5
June 2018	10,860.1	44,612.1	-33,752.0
July 2018	10,134.6	47,120.6	-36,986.0
August 2018	9,285.9	47,869.2	-38,583.3
September 2018	9,730.0	50,015.0	-40,285.0
October 2018	9,139.9	52,202.3	-43,062.5
November 2018	8,606.2	46,500.8	-37,894.6
December 2018	9,144.9	45,972.1	-36,827.2
TOTAL 2018	**120,148.1**	**539,675.6**	**-419,527.4**

NOTE: All figures are in millions of U.S. dollars on a nominal basis, not seasonally adjusted unless otherwise specified. Details may not equal totals due to rounding. Table reflects only those months for which there was trade.

2019 : U.S. trade in goods with European Union

Month	Exports	Imports	Balance
January 2019	27,836.0	39,490.6	-11,654.6
February 2019	28,523.3	37,678.4	-9,155.2
March 2019	30,589.3	44,765.4	-14,176.2
April 2019	27,280.7	44,968.8	-17,688.1
May 2019	28,352.1	45,518.3	-17,166.2
June 2019	27,419.5	41,431.7	-14,012.2
TOTAL 2019	**170,000.9**	**253,853.3**	**-83,852.5**

NOTE: All figures are in millions of U.S. dollars on a nominal basis, not seasonally adjusted unless otherwise specified. Details may not equal totals due to rounding. Table reflects only those months for which there was trade.

2018 : U.S. trade in goods with European Union

Month	Exports	Imports	Balance
January 2018	23,377.4	36,867.7	-13,490.3
February 2018	24,911.6	36,939.2	-12,027.6
March 2018	30,013.1	41,827.7	-11,814.6
April 2018	26,744.1	41,437.6	-14,693.5
May 2018	27,970.4	41,066.3	-13,095.9
June 2018	28,123.2	40,037.6	-11,914.4
July 2018	23,861.2	41,528.7	-17,667.5
August 2018	25,604.5	41,245.7	-15,641.2
September 2018	27,017.6	37,680.0	-10,662.3
October 2018	28,042.1	45,392.0	-17,349.9
November 2018	26,877.7	42,042.9	-15,165.2
December 2018	25,833.4	40,971.3	-15,137.9
TOTAL 2018	**318,376.3**	**487,036.7**	**-168,660.4**

NOTE: All figures are in millions of U.S. dollars on a nominal basis, not seasonally adjusted unless otherwise specified. Details may not equal totals due to rounding. Table reflects only those months for which there was trade.

These datasets are very significant and comment in a remarkable way the scenario in which the dispute on foreign trade between U.S. and China from one side and with European Union on the other side is moving and has great relevance on competitiveness and future developments. For sure any "trade war" might be resolving these unbalances so clearly shown by the data diffused by from U.S. census.gov but only wider global trade policies and negotiations would drive the world into the safe harbour of governance instead of disputes.

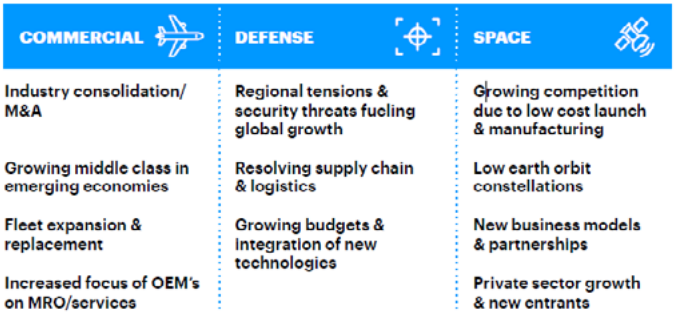
From the world supply chains we go back to our Global Value Chains and surrounding aspects, as in the title of this presentation. I have found very much innovative in approach and Accenture - one of the top main worldwide corporate advisory companies in governance, strategy, consulting, digital, technology and operations, solutions for low-carbon economy and lessening the effects of climate change - diffused a report 2019 with the very telling title for our today Conference: "Harness the Engine of Innovation"[7], that I will focus in the civil-defence multisector understanding of the core of the aims of this 11th CEA Europe seminar on China Industrialization and Global Value Chains at the Royal Swedish Academy of Engineering Sciences.

Accenture preface of aims and scope, by the way, is fitting well to our considerations on value chains here in Stockholm. *"In today's tumultuous times, where aerospace and defense companies are contending with myriad challenges - from insurgent competitors and breakneck technological change to geopolitical instability - being relevant is essential. That's why many in the industry are working furiously to come up with new*

[7] Accenture, Harness the Engine of Innovation, Report, 2019

and innovative ways to serve the needs of their customers, suppliers, partners and workforce at those high-value touch points or "moments that matter." In this way, they are becoming more like living businesses, building and sustaining symbiotic ties with their stakeholders as if those relationships were with dear friends. With every business embracing the importance of digital transformation, companies need to look toward their next opportunity for differentiation momentary markets. Internally, this means preparing the organization to be a truly agile company with the capabilities to identify opportunities and deliver exactly what customers want. In other words, they're striving to become more like living businesses to build and sustain symbiotic ties with every stakeholder in their ecosystem. That granularity of understanding will allow aerospace and defense companies to meet stakeholders in their moment of need in a post-digital world to in fact become a different business to every single customer.

It is all about choosing the right moments. How will your company choose them? By conveying exactly the right message or offer in exactly the right context. And delivering truly intelligent experiences that shape offerings and adapt in real time to the needs and preferences of customers, partners, suppliers and employees. It's about the moments that matter, whether that's using Big Data to predict when an aircraft will need maintenance, or deploying augmented-reality to provide over-the shoulder coaching to field technicians or mechanics on the other side of the world. On another level, living businesses enable responsive innovation, allowing companies to get ahead of the curve in markets by creating a culture and infrastructure that continuously embrace new ideas, behaviors and technologies. Lower-cost space launches from Blue Origin and SpaceX are great examples of responsive innovation. Both enable the acceleration of new communications and earth observation services at revolutionary price points and at an unprecedented pace.



To create intelligent experiences and responsive innovation, companies need to become agile, shifting to a more fluid, nimble and open relationship model that enables dynamism across the organization, its partners and customers. Ultimately, a company's infrastructure will be primed to embrace new ideas and technologies and anticipate and respond to changing customer and market opportunities.

Consider the example of Airbus Aerial, which fuses a space-based, earth observation satellite fleet with unmanned aircraft to create timely and actionable data for its customers, such as disaster response or being able to perform runway maintenance under extremely tight timeframes". And more hints on business models: *"The aftermarket*

*continues to see strong interest by the OEMs (*Original Equipment Manufacturer) *and prime contractors to take a bigger piece of the $175 billion global commercial and military MRO* (Maintenance, repair, and overhaul) *market. Lagging aircraft retirements and additional shop visits for older aircraft will provide more opportunity for cost-competitive maintenance providers.*

Business models such as Boeing's U.S. trainer aircraft award relies heavily on in-service sustainment sales to offset low production prices. Behind all these developments lie the disruptive innovation and new business models reshaping aerospace and defense's future. Across the board, aerospace and defense businesses are investing in digital to drive innovation. They are deploying innovation labs or digital accelerators. In fact, according to our research, 70% of aerospace and defense executives agree social, mobile, analytics and cloud (SMAC) have moved beyond adoption silos to become part of the core technology foundation for their organizations. Aerospace and defense companies are broadening the diversity and combination of advanced technologies that they are explored.

End of Accenture quotation – A summary five slides of the main "Five Technology Trends Reshaping Technology and Defence" is presented in the Annex last pages

Glossary

DLT – Distributed Ledger Technologies

The progress of mankind is marked by the rise of new technologies and the human ingenuity they unlock. In distributed ledger technology, we may be witnessing one of those potential explosions of creative potential that catalyse exceptional levels of innovation. The technology could prove to have the capacity to deliver a new kind of trust to a wide range of services. As we have seen open data revolutionise the citizen's relationship with the state, so may the visibility in these technologies reform our financial markets, supply chains, consumer and business-to-business services, and publicly-held register. (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/492972/gs-16-1-distributed-ledger-technology.pdf)

AI – Artificial Intelligence

Artificial intelligence (AI) is an area of computer science that emphasizes the creation of intelligent machines that work and react like humans. Some of the activities computers with artificial intelligence are designed to including: Speech recognition; Learning; Planning, Problem solving

XR - Extended reality

Extended reality (XR) is a term referring to all real-and-virtual combined environments and human-machine interactions generated by computer technology and wearables. It includes representative forms such as augmented reality (AR), augmented virtuality (AV) and virtual reality (VR).

QUANTUM Revolution8

The integration of quantum technologies currently represents one of the most anticipated advances for armed forces, yet their precise impact remains difficult to predict. Although economical applications and widespread use are still years away, there is little doubt that they will have disruptive effect when they are employed at scale. In May 2018, the head of quantum computing at technology firm Intel suggested that 'if by 10 years from now we have a quantum computer with a few thousand qubits, that would certainly change the world in the same way the first microprocessor did'. (A qubit, or quantum bit, is the basic unit of information in a quantum computer, analogous to a bit in a standard computer) But while quantum technology is expected to eventually have far-reaching effects for military forces, intelligence services, hackers, privacy data protection and law-enforcement agencies, it is unclear how far it will alter the traditional balance of power among states or between states and non-state actors.

DARQ - Digital Audio Record Queue

Dual-technologies, main categories

And we also need to clarify which are roughly the dual-technologies main categories and sectors. This horizon defines already the appropriate concept of an already advanced fourth-generation industrial revolution.

The patent approach looks at whether or not a patent is high-tech and also defines biotechnology patents. The groups are put together on the basis of the International Patent Classification (IPC)[9], 8th edition, as are biotechnology patents. Subsequent technical fields are defined as high-technology IPC groups and I integrated with some other others:

- aviation
- communication technology
- computer and automated business equipment
- lasers
- micro-organism and genetic engineering
- semiconductors
- cars engines and innovative transportation tech
- turbines and engines
- space vehicles
- energy production and altrenatives
- medical high-tech applications

Then we move to the crucial issue: Emerging technology dominance: what China's pursuit of advanced dual-use technologies means for the future of Europe's economy

[8] https://www.iiss.org/publications/the-military-balance/the-military-balance-2019/quantum-computing-and-defence

[9] https://www.wipo.int/classifications/ipc/en/

and defence innovation[10]. And an interesting following question and answers reading: "Risky business? The EU, China and dual-use technology"[11] and SIPRI "Dual-use and arms trade control"[12]

All that said, being the focus of this Conference on "Industrialization and the Expansion of Global Value Chains" with reference to China, I introduce immediately three main question marks in this paper.

Three questions marks and how to avoid conflicts

1. Are the global value chains belonging and managed mainly by national controlled political governance and dominance or by private-public sharing and joint-ventures?
2. Is their competitiveness in dual high-tech sectors value chains, mainly driven by the international markets, representing a so irresistible push at a stage where it is even more crucial and vital than the conditionality of the producing countries?
3. Looking to the "market" of defence dual-technologies - with the presence of a wide segment of the international trade by let say 70-80 main global groups in the more attractive next competitive technological horizon, more and more riding their own strategies and markets in global competition and much less within national political restriction - might the shifting from national to international represents the moment to avoid the trends resulting for some countries that *de facto* try to remain in old fashion oligopolistic cartels and not innovative players, even if operating in the "one" market?

In fact, we might imagine to consider a parallel title to our exercise today: "Clash for free Trade and Technology". We have not to find answers straight now, but we have to seriously keeping in mind these questions marks for the future, the near future. I have myself some personal views today, even if immerged into the fog at this stage still persisting and the experts are divided or silent on these issues. By the way, recent rumors of high tensions and instrumental media coverage of this "technologic clash" on 5G, with a kind of tariffs trade war ignited by U.S. and China spreading around and highering too dangerous collateral stages, where antagonism might result into an "out of control" situation, represent a disturb in the markets, in the existing industrial value chains and for international order. For sure, the good mood of G 20 Osaka conclusions has reduced temporarily the temperature but what's next? We have seen in the last days with new tariffs imposed by China and U.S. just before the G7 summit in France.

As a straightforward researcher, I perceive the conundrum but at the same time the instrumentalization growing together into the main protagonist sides of this confrontation, U.S. China and EU[13]. With Europe moving to a "third player mode" into the substance, as revealed by Huawei case and surrounding implications, a perception of trust in the EU capabilities to look for a fair, positive, safe competition with the

[10] https://www.merics.org/sites/default/files/2018-12/181218_Emerging_technology_dominance_MERICS_IISS.pdf

[11] https://www.iss.europa.eu/sites/default/files/EUISSFiles/op80.pdf

[12] https://www.sipri.org/research/armament-and-disarmament/dual-use-and-arms-trade-control

[13] http://www.europarl.europa.eu/RegData/etudes/BRIE/2019/633149/EPRS_BRI(2019)633149_EN.pdf

major players, new drive that that represents a turning point. I want to underline, 5G[14] can't be imagined as a knowledge in just one advanced technologic hand, as there are a number of very top competitors that can as well perform in the same segments and are developing these technologies as well.

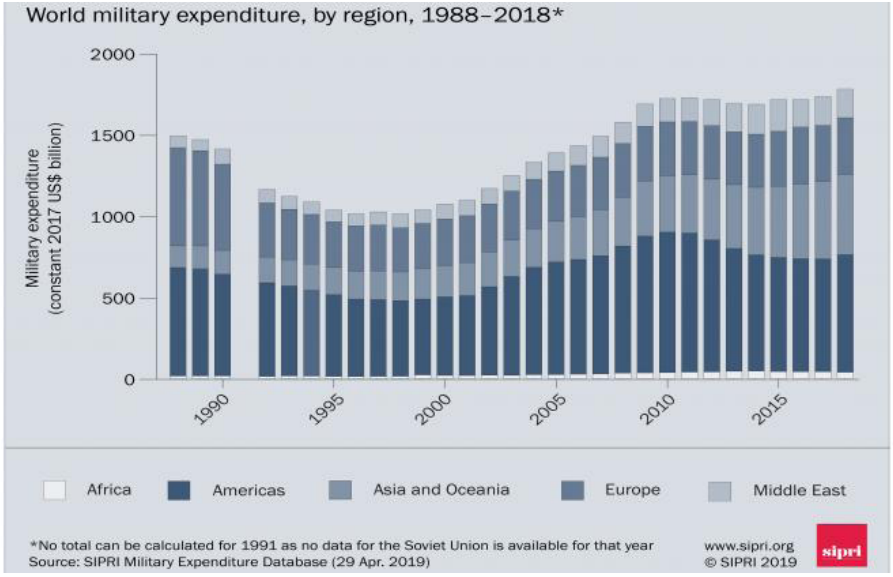
A recent Report from the European Parliament, by the way, gave a full picture on the competitive standing of the European main tech groups on future AI and digital web applications and advancements with 5G[15].

France, Finland, Sweden, Germany, Italy and UK, Spain, just to mention, are growing to higher competitivity. On the other hand, East Asian and Indian basin countries are more and more focusing on the stability and governance in the region, with Japan, South Korea, Taiwan, Philippines, Viet Nam, Malaysia, Singapore, Indonesia, Brunei and fast-growing India, Thailand, Emirates, Iran, Pakistan, Said Arabia highering their regional defence spending and capabilities to readiness in case of future tensions.

The answers are in fact tied to the even more evident differential among economic systems, industrial productions, know-how, organization, market development, civil and defence new generation weapons for an optimal balance of power.

SIPRI jointly with World Economic Forum issued a Report 2018 to alert all of us that Global defence spending is at a record recent history high[16].

World military expenditure grows to $1.8 trillion in 201817



World military spending 1988–2018. Data and graphic: SIPRI 29 April 2019

[14] https://www.reuters.com/article/us-qualcomm-m-a-broadcom-5g/what-is-5g-and-who-are-the-major-players-idUSKCN1GR1IN

[15] https://www.europarl.europa.eu/RegData/etudes/IDAN/2019/631060/IPOL_IDA(2019)631060_EN.pdf

[16] https://www.sipri.org/sites/default/files/2019-04/fs_1904_milex_2018.pdf ;

[17] https://www.sipri.org/media/press-release/2019/world-military-expenditure-grows-18-trillion-2018

Total world military expenditure rose to $1822 billion in 2018, representing an increase of 2.6 per cent from 2017, according to new data from the Stockholm International Peace Research Institute (SIPRI). The five biggest spenders in 2018 were the United States, China, Saudi Arabia, India and France, which together accounted for 60 per cent of global military spending. Military spending by the USA increased for the first time since 2010, while spending by China grew for the 24th consecutive year. The comprehensive annual update of the SIPRI Military Expenditure Database is accessible from today at www.sipri.org.

Total global military spending rose for the second consecutive year in 2018, to the highest level since 1988—the first year for which consistent global data is available. World spending is now 76 per cent higher than the post-cold war low in 1998.* World military spending in 2018 represented 2.1 per cent of global gross domestic product (GDP) or $239 per person. 'In 2018 the USA and China accounted for half of the world's military spending,' says Dr Nan Tian, a researcher with the SIPRI Arms and Military Expenditure (AMEX) programme. 'The higher level of world military expenditure in 2018 is mainly the result of significant increases in spending by these two countries.'

The USA and China lead increase in world military expenditure

US military spending grew—for the first time since 2010—by 4.6 per cent, to reach $649 billion in 2018. The USA remained by far the largest spender in the world, and spent almost as much on its military in 2018 as the next eight largest-spending countries combined. 'The increase in US spending was driven by the implementation from 2017 of new arms procurement programmes under the Trump administration,' says Dr Aude Fleurant, the director of the SIPRI AMEX programme. China, the second-largest spender in the world, increased its military expenditure by 5.0 per cent to $250 billion in 2018. This was the 24th consecutive year of increase in Chinese military expenditure. Its spending in 2018 was almost 10 times higher than in 1994, and accounted for 14 per cent of world military spending. 'Growth in Chinese military spending tracks the country's overall economic growth,' says Tian. 'China has allocated 1.9 per cent of its GDP to the military every year since 2013.'

Three decades of growth in military spending in Asia and Oceania

Military expenditure in Asia and Oceania has risen every year since 1988. At $507 billion, military spending in the region accounted for 28 per cent of the global total in 2018, compared with just 9.0 per cent in 1988. In 2018 India increased its military spending by 3.1 per cent to $66.5 billion. Military expenditure by Pakistan grew by 11 per cent (the same level of growth as in 2017), to reach $11.4 billion in 2018. South Korean military expenditure was $43.1 billion in 2018—an increase of 5.1 per cent compared with 2017 and the highest annual increase since 2005.

'The tensions between countries in Asia as well as between China and the USA are major drivers for the continuing growth of military spending in the region,' says Siemon Wezeman, a senior researcher with the SIPRI AMEX programme.

Increases in Central and East European countries

Several countries in Central and Eastern Europe made large increases in their military expenditure in 2018. Spending by Poland rose by 8.9 per cent in 2018 to $11.6 billion, while Ukraine's spending was up by 21 per cent to $4.8 billion. Spending by Bulgaria, Latvia, Lithuania and Romania also grew (ranging from 18 per cent to 24 per cent) in 2018. 'The increases in Central and Eastern Europe are largely due to growing perceptions of a threat from Russia,' said Pieter Wezeman, a senior researcher with the SIPRI AMEX programme. 'This is despite the fact that Russian military spending has fallen for the past two years.'

At $61.4 billion, Russian military spending was the sixth highest in the world in 2018. Its spending decreased by 3.5 per cent compared with 2017.

Other notable developments

Military spending in South America rose by 3.1 per cent in 2018. This was mainly due to the increase in Brazilian spending (by 5.1 per cent), the second increase in as many years.

Military expenditure in Africa fell by 8.4 per cent in 2018, the fourth consecutive annual decrease since the peak in spending in 2014. There were major decreases in spending by Algeria (–6.1 per cent), Angola (–18 per cent) and Sudan (–49 per cent).

- Military spending by states in the Middle East for which data is available fell by 1.9 per cent in 2018.
- Total military expenditure by all 29 North Atlantic Treaty Organization members was $963 billion in 2018, which accounted for 53 per cent of world spending.
- The largest absolute increase in spending in 2018 was by the USA ($27.8 billion), while the biggest decrease was by Saudi Arabia (–$4.6 billion).
- Military spending in Turkey increased by 24 per cent in 2018 to $19.0 billion, the highest annual percentage increase among the world's top 15 military spenders.
- Six of the 10 countries with the highest military burden (military spending as a proportion of GDP) in the world in 2018 are in the Middle East: Saudi Arabia (8.8 per cent of GDP), Oman (8.2 per cent), Kuwait (5.1 per cent), Lebanon (5.0 per cent), Jordan (4.7 per cent) and Israel (4.3 per cent).

* All percentage changes are expressed in real terms (constant 2017 prices).

Competitive open market drivers leading the global economy

The reality we had been assisting since 2018 is summarized by the prominence of competitive open market drivers - to great extent even in the sectors and segments of the defence groups and industries - within an environment of a limited group of competitive players, let say of the 70-80 industrial main groups and value chains sharing the most part of the knowhow, a wide segment of the global offer and the corresponding valuable market shares.

Here is the divide we have to keep into care, as we have seen recently in the trade tariffs disputes for segments of dual technological productions, specifically touching the core of AI perspectives, computing data and information management. We are learning again that any monopolistic policy will work well at global scale in the long run, as the competitors might be more than several and nobody have to presume to be ahead of the others, for the basic principle transformed into valuable supply chain sectors, with a plurality of top players and markets.

The openness and competitiveness are factors that can't be stopped easily regarding the so-called open market main economy players but might be the case even in the specificity of China so peculiar system, structures and citizens perceptions, from one side, and of Russia heritage possibly shifting from a past system not easily removable to a new, unknown market oriented one. But a fair future is in fact demanding to reduce nationalistic restrictive approaches, even when protecting strategic sectors and technologies. Industrial international partnership, foreign investments and competitive markets had been by the way the pillar of the past forty years incredible achievements, both by already leading countries and new main player and competitors as firstly China for sure but Japan and now India, not to talk of many of the European Union high teach civil/defence industrial sectors.

Political governance, in other words, can't be imagined as uniform and shared at the same ways around the world, as in a rosy but infant colored evocation of a total globalization vision, in presence of asymmetries and political/economic systems not converging as supposed but diverging as we observe at this stage in the world scenario. International trade of technologies, final industrial productions, goods, energy, environment and raw materials are of top crucial relevant tasks for all the countries, unions and alliances. For sure, to rise barriers with tariffs or within international organizations restrictions had often resulted into inconclusive standing and then bringing to tensions if not even possible open conflicts.

While alternative ways to skip the classic tools of limitations or embargo or political enforcing in the procurements fields, for both civil and military sectors, show at work the expertise of producer countries capable to find optional alternatives, even under the format of shadow and not visible registered forwarding, through a wide fan of tricks to circumvent sanctions or bans to official export channels, under complex or even illegal deals and channels. EU had been quite committed and achieving positive even if relative results to keeping a firm attitude[18]

What to forecast for the future? Difficult to say now. I then come back to my paper and leave these complex and frictional issues to the next future, assuming the classic Latin style …." *et posteris judices*", meaning in the future, "posterity will judge".

A third "horse" into the game between U.S. and China: European Union

One point might become a positive sign: there are good premises for a third "horse" into the game between U.S. and China duopolistic attitudes and standing regarding the

[18] https://ec.europa.eu/fpi/what-we-do/sanctions_en

highest technologies, information as AI and 5G[19] but much more in brand new factors of advancement and different scenarios. Since ever and in the last 70 years, long lasting strategic competitive results had been granted by effective, good and firm policies to treat markets disorders, unfair competitiveness, with upgrading financial efficient banks agreements, zero tolerance for money laundering, counterfeiting, rackets and organized criminality interferences and deviations, specifically when too much protected markets are leading.

And of course, Europe can't be considered an outsider, as it is the really nest of very many highest technologies and scientific advancements, let me say both in theories and in practice. Understanding the role of EU and its high competitiveness is the newest approach of the international economy, trade and security studies. I quote the "Global digital leadership: A two horse races ?" from a document prepared by Kevin Koerner for Deutsche Bank Research[20].

Quotation

"In the competition for global leadership in technologies like artificial intelligence, most observers see a two-horse race between China and the United States. But what about Europe? Can it ever catch up to the galloping favorites? It won't be easy. The digital economy in the United States has big advantages: a large domestic market, a risk-taking investment culture, and plenty of innovative companies and world-class universities. US tech giants were first-movers out of the gates, and used the network effects of the platform economy to dominate not only the U.S. but many other markets worldwide". But scenario has changed in the last two decades and competition ramped on quickly. Among the competitors, China had assumed the role of first. "One exception is China. Policies like the "Great Firewall," which limits foreign internet services, and basic state support for home-grown companies, have reined in US tech giants and given China a booming digital economy of its own. Chinese companies are now direct competitors with U.S. firms in the fields of artificial intelligence and robotics, as they jockey for market share and talent. Europe, meanwhile, has fallen behind. Despite its top wealth, qualified workforce and excellent research facilities, Europe still lacks its own competitive tech giants. It boasts the world's second-largest market, but that market is fragmented. New policies that might help the bloc competing globally often falter due to divergent national interests. Venture capital and risk-taking entrepreneurial spirit are still harder to come by in Europe than across the Atlantic".

"But Europe - conclude Koerner - has recently announced major investment packages and launched strategic initiatives like the AI Alliance, designed to get the continent back in the hunt. The continent has also pioneered new standards for regulation, data protection and competition. Whether this kind of regulation spurs or slows the data economy is yet to be seen. But in an era of data scandals and consumer insecurity, it is conceivable that "made-in-Europe" data protection - conclude the researcher of

[19] https://www.ericsson.com/en/blog/2019/5/ai-in-5g-networks-report-key-highlights

[20] https://www.dbresearch.com/servlet/reweb2.ReWEB?rwnode=RPS_EN-PROD$INTERNAT&rwsite=RPS_EN-PROD&rwobj=ReDisplay.Start.class&document=PROD0000000000489430

Deutsche Bank - could become a valuable brand for the third horse into the race".
End quotation

The innovative scenario we stand in front of shows to be applicable *de facto* to European productions and output shares of the global industrial main sectors in almost all the sophisticated areas, within the highly competitive endowment of factors from cybernetics, avionics, cars and trucks productions, medical diagnostic technologies, space programs, *nanotechnologies,* life sciences, environmental emergencies, meteorology and oceans monitoring, medicine, health treatments, computing sciences, agriculture ecologic treatments, diffusion of industrial robotized factories, artificial intelligence, battery and hybrid cars and trucks, aerospace, telecommunications, radar and navigation enhanced systems directly induced from military aviation experiences, not to talk of computers and cellphones entered quickly as protagonist actors of the individual life in the five "connected" e-continents. A long list, just to make full evidence on the standing situation.

A step ahead the new theories of Growth

The "New theories of Growth", the so-called *revised* Solow applied models approaches, around 1990 gave a start to the third millennium, anticipating the forthcoming new basic factors deeply changing the past industrial system and introducing crucial key finally measurable variables directly affecting the industrial production, financial, governance and institutions.

I propose now the original copy of the NBER Cambridge Massachusetts announcement of the master turning point in literature on growth "A Contribution to the Empirics of Economic Growth", by the three authors: David Romer[21], Gregory Mankiw and David Weil

NBER WORKING PAPERS SERIES
A CONTRIBUTION TO THE EMPIRICS
OF ECONOMIC GROWTH 22

N. Gregory Mankiw
David Romer
David N. Weil
Working Paper No. 3541

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue

[21] N. Gregory Mankiw, David Romer, David N. Weil, Department of Economics, University of Berkeley Department of Economics NBER- "A Contribution to the Empirics of Economic Growth" https://eml.berkeley.edu/~dromer/papers/MRW_QJE1992.pdf

[22] NBER- National Bureau of Economic Research, USA

Cambridge, MA 02138
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We are grateful to Karen Dynan for research assistance, to Laurence Ball, Olivier Blanchard, Anne Case, Lawrence Katz, Robert King, Paul Romer, Xavier Sala—i—Martin, Amy Saisbury, Robert Solow, Lawrence Summers, Peter Temin, and the referees for helpful comments, and to the National Science Foundation for financial support. This paper is part of NBER's research programs in Economic Fluctuations and Growth. Any opinions expressed are those of the authors and not those of the National Bureau of Economic Research.

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December 1990

A CONTRIBUTION TO THE EMPIRICS OF ECONOMIC GROWTH
ABSTRACT

This paper examines whether the Solow growth model is consistent with the international variation in the standard of living. It shows that an augmented Solow model that includes accumulation of human as well as physical capital provides an excellent description of the cross—country data. The model explains about 80 percent of the international variation in income per capita, and the estimated influences of physical—capital accumulation, human—capital accumulation, and population growth confirm the model's predictions. The paper also examines the implications of the Solow model for convergence in standards of living-—that is, for whether poor countries tend to grow faster than rich countries. The evidence indicates that, holding population growth and capital accumulation constant, countries converge at about the rate the augmented Solow model predicts.

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Specifically, the two complex variables of technology and human capital were not yet enough focused and even not "isolated": "A" as level of Technology and "H" as a cluster of variables related to knowledge, skills, social factors impacting now as assumed endogenous factors "per se". In other words, the growth crucial GDP and the results into the PPP per capita incomes around the world had been integrated with a

fresh weighting of the technologic factors and the dual-technologies in our case, as we are focusing on civil/military.

In 2018, also Paul Romer (not David Romer's relative) and William Nordhaus shared the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel. Paul Romer[23] was recognized "for integrating technological innovations into long-run macroeconomic analysis." Romer, together with others, rejuvenated the field of economic growth. He developed the theory of endogenous technological change, in which the search for new ideas by profit-maximizing entrepreneurs and researchers is at the heart of economic growth.

Underlying this theory, he pinpointed out that the nonrivalry of ideas is ultimately responsible for the rise in living standards over time. This was written the incipit of the Nobel Prize to the two outstanding economists.

Whereas advances of technology and engineering - broadly speaking, technical knowledge - had usually been taken as given by economists, Romer saw the endogeneity of the aggregate factor "knowledge" as having central economic determinants.

I am proposing again the relevant applied contribution of the Formel-G[24] approach to the theories of Growth as in "Global growth centers 2020 Formel-G", diffused in 2005 by Deutsche Bank Research, a main think tank leader in the advanced forecast analyses.

Here you find in the next two pages to of DBR new Theories of Growth[25] analyses, outcomes and trends map in the original publication. When citations and references are available to be proposed in the original text is very much of great benefit and fair attitude towards publishers.

[23] Paul Romer, Affiliation at the time of the award: NYU Stern School of Business, New York, USA. Previously University of Rochester, University of Chicago, University of California, Berkeley, and Stanford University. He also served as chief economist at the World Bank. Since 2011 he has been associated with New York University.

[24] DBR- Global_growth_new theories of growth.

[25] DBR-new Theories of Growth analyses and outcome: the future ahead

B. Theory and methodology

After the first results have been presented and the analytical framework has been outlined, the next two sections explain the fundamentals of modern theoretical and empirical growth analysis. An important element of *Formel-G* will be derived: the econometric equation.

4. Searching for technological progress

Theoretical foundation: the production function

Growth forecasts must have a solid theoretical foundation. The basis of most growth analyses is the **neoclassical production function** in which **output Y** is a function of **labour input L**, **capital input K** and the **level of technology A** (Solow residual; usually called "total factor productivity"). Growth decompositions divide actual growth into these three components. However, over the long-term, the sole driver of any growth of per capita output is the progress of technology A. It also is crucial for the long-term increase in the capital stock per capita.[10] Therefore, forecasts of economic growth with the help of simple growth decompositions require more or less arbitrary assumptions on technological progress.[11] They do not explain the really interesting variable A but bury it in an assumption. Therefore, simple growth decompositions are not suitable for forecasting.

Production function in the Solow model:

$$Y_t = K_t^{\alpha} \cdot (A_t \cdot L_t)^{1-\alpha}$$

Absolute convergence not a given

The often assumed **absolute convergence** of income levels between countries (i.e. poor countries' GDP grows faster than rich countries') also lacks theoretical and empirical support. There is no automatism: higher income levels do not fall from heaven like manna but require hard work.[12] GDP of a country only converges to the country-specific income level that is determined by that country's growth drivers.

Therefore, any useful model of the future has to explain technological progress. This is easier said than done, however. Mankiw/Romer/Weil made a pathbreaking contribution in 1992 by incorporating **human capital H** as a measure for the quality of labour input into the empirical growth analysis. Human capital describes a person's ability to produce output efficiently and to develop new products. This important additional variable helped significantly in explaining historic income differences across countries.

Production function in the Mankiw/Romer/Weil model:

$$Y_t = K_t^{\alpha} \cdot H_t^{\beta} \cdot (\tilde{A}_t \cdot L_t)^{1-\alpha-\beta}$$

For empirical growth analysis, this was a great step forward but not fully satisfactory yet. Both theoretical and empirical work of the last ten years tried to model the remaining, unexplained share of technological change after human capital is taken into consideration. The objective is **to explain** economic growth **as fully as possible in the model** by incorporating a further policy variable P (or several variables). Exogenous, unexplainable influences are to be minimised.

Production function in *Formel-G*:

$$Y_t = K_t^{\alpha} \cdot H_t^{\beta} \cdot (P_t \cdot \hat{A}_t \cdot L_t)^{1-\alpha-\beta}$$

The search for P gave rise to a flourishing literature dealing with the role of politics, institutions, knowledge and innovation.[13] In their overview, Durlauf, Johnson and Temple (2004) identify 42 "growth theories" using a total of 102 variables – which may be combined in different variations.[14] Although theory does not produce a clear conclusion on the "correct" growth model (the "correct" P) it helps us identify potential growth drivers. The decision as to which additional variables really have a statistically and economically significant link with growth will have to be based on econometric analysis.

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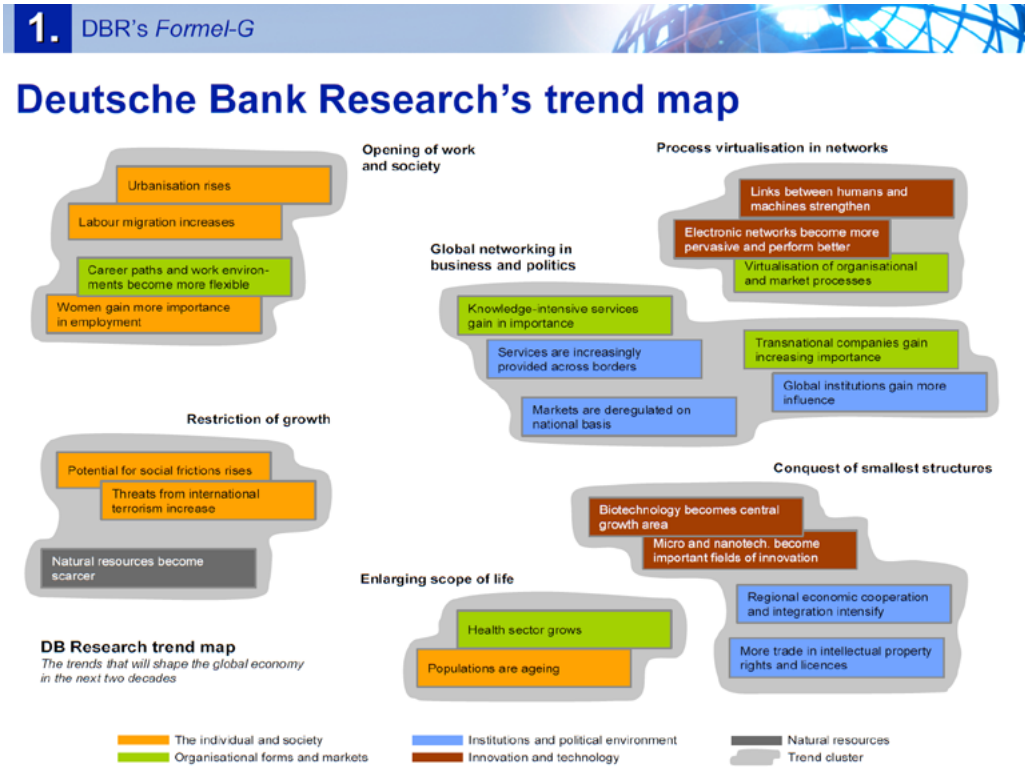
10 This is set out very clearly by Barro, Sala-i-Martin (2004), pp. 457 and 460.

11 For example, filter techniques with averages of the past are applied or absolute convergence with other countries is assumed.

12 Easterly and Levine (2001) even observe a divergence in income levels.

13 The World Bank, the IMF, the OECD and the NBER have contributed many new insights with new data sets and a large number of publications.

14 Temple (1999) also gives an excellent overview.



Presenting my paper, I gave some quick references to the innovative clusters and drivers emerging from the blossoming of analytical theoretical and applied contributions in scholarly books, advanced researches, journals, faculty presentations and experts, all indispensable reading of the evident transition from the past to the future applied economic thinking.

To move a bit further, I had considered many of the best scientific contributions, researches, and main academic and institutional centers. Let us try to introduce the appropriate factors "K - H - P - A – L" of the 2005 Formel-G by DBR, as I just integrally proposed to your attention with the previous pages. These Growth "factors" and variables need to incorporate some further, evolutionary perspectives and strategic peculiarities at present and looking to future 2020-2030. "Dual Technologies Sectors Innovation and Growth: Civil and Military Industries in Europe versus US and China" is the main issue and we need to extend our economic, industrial and civil-defence productions as well as in researches related to high-tech and advanced financial implications.

As is now evident, these issues are complex and "in progress" but not for this reason left in the fog and vague assumptions. From one side, assuming that factors H-human capital incorporating knowledge and related outcomes; A-technological as the unpredictable advancements request to be further investigated; and introducing the new

aggregated variable P-governance policy, so much determinant for a contemporary competitive, open and value chains organized economic regional and transnational successful industrial system.

We are in front to the most important driver of change, to a magnitude that was perceived but even so unexpected so soon at this stage just twenty years ago, in 2000. History always showed that progress in research brings to different outcomes time passing; and this is the age of the fourth industrial revolution.

To make an example, I quote a high representative of the independent scientific approach to the interdisciplinary studies and father of the Law and Economics fast growing school and already established university courses and widespread researching. Let's read Coase critical vision of the crucial "invisible" hand assumed by Adam Smith in his The Wealth of Nations. Ronald Coase was an elegant but to the point critical observer. Here is what he said in the lecture when awarded with the Nobel Prize on 1991: " I will be speaking of that part of economics which has come to be called industrial organization, but to understand its present state it is necessary to say something about the development of economics in general". And Coase was "critical of economics for being simply static and preoccupied with formalizing concepts that date back to Adam Smith". He believed that the goal of economists should be to change fundamentally the way we look at a problem. During the two centuries since the publication of *The Wealth of Nations* - he wrote with soft irony – "the main activity of economists, it seems to me, has been to fill the gaps in Adam Smith's system, to correct his errors and to make his analysis vastly more exact".

Other Growth theories, Structural Economics

One approach to be mention as well is the "New Structural Economics", a research area that encountered a wide debate, positive elaborations and critical remarks. Does economic theory provide anything like a concrete set of reliable policies for creating sustained economic growth in a middle-income country? Some contemporary economists believe that it is possible to answer this question in an affirmative conclusion while others remained skeptical.

In fact, scientific schools of thinking are existing for the really purpose to test and find flaws in the other field of theoretical approach. At the end to create a scientific competition among theories and applied policies, institutions and governance. One of this scholar is Justin Yifu Lin. Lin, a leading Chinese economist who served as chief economist to the World Bank in 2008-2012. So Lin has a deep level of knowledge and the experiences of developing countries and their efforts to achieve sustained growth. He believes that the answer to the question posed above is "yes", and he lays out the central components of such a policy in a framework that he describes as the "new structural economics".

His analysis is presented in New Structural Economics: A Framework for Rethinking Development and Policy[26]. Lin's research was intended to be relevant for all low- and

[26] Justin Yifu Lin, Beijing University, New Structural Economics A Framework for Rethinking Development (WB) https://www.bancaditalia.it/pubblicazioni/altri-atti-seminari/2011/paper_lin_economics.pdf;

middle-income countries (e.g. Brazil, Nigeria, or Indonesia); but the primary application was China. His question comes down to this: what steps does the Chinese state need to take to burst out of the "middle income trap" and bring per capita incomes in the country up to the level of high-income countries in the OECD?

Which are the core premises of Lin's analysis of sustainable economic growth? Two are the most basic ones: the market should govern prices, and the state should make wise policies and investments that encourage the "right kind" of innovation in economic activity in the country. Recently he entered the touchy issue of the "Trade War" US vs. China. "If the United States maintains its trade war with China it will miss out on the benefits of the Asian nation's future growth"[27] , the former chief economist with the World Bank and Peking University senior economist. Unlike other emerging economies as Russia, India, Brazil and Turkey, China has good investment opportunities to realize its growth potential, said Justin Lin Yifu, who is also a senior professor at Peking University. And if the US misses out on those opportunities, they will be snapped up by other players, like Japan, South Korea and the European Union", he recently said.

But this is not the unique "case" of tension in international trade. Tariffs are a two sides sword as history can be testimonial. Even U.S. and Europe trade relations are in a light of cloudy forecast as circulating voices of measures might be decide related to Airbus, the leading civil aviation European industrial Group - by the way partner of top UK aerospace industries for avionics and of Rolls Royce for jets turbines - just because with A-320, A321, A-350 the Toulouse based Group accumulated a wide market preference, trust and confidence among almost all the international air carriers. In this depreciable event, the European Union would propose counter measures of tariffs over a companion case regarding U.S. subsidies to Boeing[28].

New Actors and defence concerns in the era of dual-technologies

We are then back to our issues, question marks and to my paper. The main military actors nowadays as U.S., European Union, China and Russia - in the frame of their historical national formats, alliances or in the new geopolitical scenario of bilateral and multilateral developments continuously in progress - had pushed into a growing competition both the long-running military and transnational political institutions, such as NATO or other multilateral less operative and integrated forms of strategic and agreements. And even more by individual players countries growing roles, as the case of France, Germany, UK, Italy, Spain, Estonia, Sweden, Norway and Switzerland as well India, Israel, Japan, South Korea as well as Singapore, Viet Nam, Thailand, Pakistan, Saudi Arabia, Turkey, Egypt, South Africa, Taiwan, Israel, just to mention those particularly in evidence, with an open list for future incoming players. The list is just random, many others are the countries of high profile and performances.

Enlarging the horizon, even the frame related to nuclear weapons had been recently reshaped. Until a possible renegotiation of the INF Treaty (Intermediate range Nuclear Forces, then from 500 to 5,000 kilometers in radius) - after the USA decision to withdraw

[27] http://en.bimba.pku.edu.cn/newnter/news/465514.htm

[28] https://www.wsj.com/articles/u-s-proposes-more-european-tariffs-pending-airbus-case-11562026415

from this nuclear arms treaty signed in 1987 with Russia and the diffused perceptions, in Europe and among the major military powers, that Russia was violating systematically the Treaty - while the push for modernization and technologic upgrade deterrence restarts and mini nuclear weapons are on the stage now. INF said European Union, supported by wide international same thinking, is urgency pushing to repristinate the Treaty or a new version of the previous [29].

Just to recall this not well debated point, INF was in any case the unique arms control agreement banning a full class of strategic weapons both for Russia and the US, a key acquisition of the post URSS détente. It must be distinguished of course INF from the CNTB - Comprehensive Nuclear Test Ban Treaty, this last one signed in 1996 but after not ratified by US and other relevant countries as China, Egypt, Israel, Iran and Yemen just to mention.

The room had been in this way left open for the development of the PrSM-Precision Strike Missile, in anticipation of the future integration and announced operational deployment of hypersonic missiles, vehicles and rockets. Completely new arsenals of high dual-technologies had quickly substituted the previous generations as it shown by regional wars, terrorism, insurgencies not to talk of movies, tv series, romances and a kind of unforgettable one century past bad taste, in good or worst, in peace or epic war, with a human toll of dozen of millions lives lost and horrible ethnic or religious genocides dramas for soldiers and civils victims until peace and reconciliations.

But if we looking ahead, in the perspective of ten, twenty years, with the extraordinary potentiality and application scenario of Quantum computer system, already in experimental process, with data and operational information civil/military capabilities at the “light” speed performance at 300.000 kilometers per second, the rise of a new geopolitical world must be considered already start. Even Einstein would be amazed. Not to forget, in recent years, another new development with a strong impact on previous technologies, the mentioned hypersonic vehicles. [30]

As it had been has been announced - or let be understood to the international community - Russia, China and U.S. as well as *de facto* European Union and Asian key countries, are testing missiles, rockets, jets and vehicles in the atmosphere and stratosphere with speeds up to ten times the sound speed had been successful. The Hypersonic Glide Vehicles[31], with speed capacity up to match 10 match and even more - therefore with performances in the range of 10,000/20,000 km/h - are radically changing the balance of strength and defence capabilities built and developed until now.

The fan of aspects on defence and security impact in the civil-military industrial sectors and the international players companies and groups share of international trade are showing how high technologies are progressively integrated into an increasingly convergent, sophisticated and indivisible system, that will induce relevant advancements to the development of further scientific and operational applications on the forefront of production related to crucial areas of the defence systems and the unstoppable new

[29] https://eeas.europa.eu/headquarters/headquarters-homepage/65439/declaration-high-representative-behalf-eu-intermediate-range-nuclear-forces-treaty_en

[30] https://nationalinterest.org/blog/buzz/hypersonic-war-weapons-future-have-arrived-66587

[2] https://www.nytimes.com/2019/06/19/magazine/hypersonic-missiles.html

implementations through the forthcoming discoveries and scientific advancements. Let us take for instance the tech of the nuclear knowledge applications to civil industrial systems to producing the most advanced equipment, X-rays, other medical and industrial engineering in the use of nuclear advanced upgrade and the existing wide energy production by nuclear energy plants in the waiting for alternative options with new advanced technology and fuels, less complex and potentially dangerous as we have today. As before stated, we experience one of the most sophisticated and global industrial value chains productions ever existing, with competitors and countries also in exercises of old fashion but never abandoned trade and tariffs conflicts. Here we might focus in recent clashes among powers and alliances systems regarding telecommunications, digitalization processes, computing, social networks, privacy and patents urgent protection quests of a better governance for all citizens, companies and financial systems rights, in other words the data protection next clash of civilization. I already mentioned these confrontations ongoing among the great powers and in a more traditional conflicts in many countries and in crucial regions of the world.

Dual-technologies keep far the risks of main conflicts

But in fact many of these tensions are destined to be domed in the medium term by the negative impacts on GDP and real growth for all the countries leading this confrontation, a part the looming of international tensions and incumbent scenarios. The more qualified economics theories and applied researches had mainly announced, in the past two centuries, that the conflictual outcomes of similar policies are bringing in the long run to antagonism and mutual wars, done with deadly weaponry implying horrible human life pay tolls.

While the past had not available any weapons of humanity destroying capabilities power, then war was a extreme but possible option. Today and even more tomorrow the looming of terrific conflicts has a substance but a threatening conditionality. What was in the past even a strategy, today would be resulting in a fatal catastrophic holocaust.
The mission of the great powers must be then to avoiding unpredictable wars induced by nominalist regional disputes, velleitarian shows of force, nationalism and sovranist attitudes of leaderships and poor political elites, offence to international laws and human rights: to finding possible, realistic solutions in unbalancing divides, through negotiation, diplomatic solutions and appeasement represent a “must do” for all the countries worldwide.

Nobody will force anybody in the future geopolitical scenario and in international relations disputes, this is a first conclusion of this paper. Not for virtues but to avoid the following fatal retaliation with the same high-tech weapons. It’s an unavoidable forecast but even a rejection of the part of the negative heritage we European, Asians and Americans should never forget, because the wrong, despotic policies and strategies taken by dictators in the darkness of the past.

Institutional determinants of military spending: "Estote Parati" to guarantee no wars among nations

Daniel Albalate[32] and Germà Bel and Ferran Elias, from the University of Barcelona, elaborated a research published by Springer on Institutional Determinants of Military Spending. "Drawing on a database for 1988-2006 containing information on 157 countries, we investigate the effects on military spending of government form and democracy, electoral rules and concentration of parliamentary parties. From an OLS regression on pooled data, our results show that presidential democracies spend more than parliamentary systems on defense, whereas its interaction with a majoritarian electoral rule reduces the defense burden. Our findings suggest that, in contrast to theoretical predictions in the literature, institutions do not have the same impact on the provision of all public goods".

This means, in other words, that political systems should have great roles in the public good choices, depending their structure and decision-making process. Representative democracies then are less incline to support highering military expenditures while other autocratic institutions and governments - both in liberal democratic systems and not - would be more supportive of military building-up.

The not yet measurable developments of value chains - which implies interdependence but also international order and of course domestic national policies and approaches far from trade disputes and so called "tariff wars" - demonstrate how frictional, incompatible and conflictual for world order might become the pursuing of old fashion strategies and policy choices related to customs and tariffs.

History had already demonstrated by and large how conflicts and wars had occurred really when sharp sovranist and invasive nationalism strategies resulted in military conformations. In front of the present sophisticated military mighty - where the great powers together with growing numbers of intermediate countries with effective high deterrence capabilities - the contemporary governance must assume the responsibility to impede alarming confrontations and menaces. Any major country is an untouchable "island" or "archipelago", no single power might confront and militarily overcome if not at the price of catastrophic retaliations.

This is the severe message coming from the dual-technologies advancements.

Global Military Spending and value chains implications

The data by SIPRI-Stockholm International Peace Research Institute, the authoritative Swedish Institute in the field of military spending of world governments in armaments, in fact demonstrates a progressive expansion of orders and technological cooperation among European industrial groups. Italy as well has an important international technological and production role, ranking at the nine position in the all world countries scale, with industrial groups that have taken leading positions in the main sectors of military production and in the export of weapons systems, often in cooperation with European and US partners.

[32] https://www.sciencedirect.com/science/article/pii/S0147596711000758

I will also comment on the recent findings and reports of the IISS-International Institute for Strategic Studies in London and the SIPRI before mentioned on the main developments and trends in the defence industrial sectors analysed throughout 2018, with particular reference to the challenges on the control of nuclear weapons and in the cyber war sector, with a focus on Quantum and its extraordinary potential in the fields of Defence and in our citizen life and cyber security.

The data will also offer the opportunity to measure an indicative size of the relative civil/military output of the main industrial groups or consortiums worldwide. Starting this year, also China data of the military industrial sectors start to be included into the SIPRI and IISS dataset. By the way, charts show the state of global military spending now at its highest since the cold war[33]

While reducing the challenge focusing on the two more visible powers U.S. and China might be a good mediatic "appealing" reason, the reality shows in fact that other players not less competitive and advanced in capability and strength, first of all Russia and incoming India.

But at the table we have to add a silent even if effectively leading technologic and military power, the European Union, a very advanced, competitive industrial value chain protagonist in all the leading sectors of defense and security, capable already to compete globally.

EU and its most advanced countries have already achieved a degree of competitiveness and standing in scientific applied to defence systems and mighty as its heritage in discoveries and applied technologies is well reflected in the European Union competitiveness, both in civil and defence "common ground" rigorous approach, more and more shifting from the strategy of "understatement" to a visible representation in basic documents and concrete programs of its competitiveness and strategic mighty.

[33] https://www.weforum.org/agenda/2019/04/4-charts-that-show-the-state-of-global-military-spending-now-at-its-highest-since-the-cold-war/

Table 1. The 40 countries with the highest military expenditure in 2018

Spending figures and GDP are in US$, at current prices and exchange rates. Changes are in real terms, based on constant (2017) US$. Percentages below 10 are rounded to 1 decimal place; those over 10 are rounded to whole numbers. Figures and percentage shares may not add up to stated totals or subtotals due to the conventions of rounding.

Rank			Spending ($ b.),	Change (%),	Spending as a share of GDP (%)[b]		World share (%),
2018	2017[a]	Country	2018	2009–18	2018	2009	2018
1	1	United States	649	−17	3.2	4.6	36
2	2	China	[250]	83	[1.9]	[2.1]	[14]
3	3	Saudi Arabia	[67.6]	28	[8.8]	9.6	[3.7]
4	5	India	66.5	29	2.4	2.9	3.7
5	6	France	63.8	1.6	2.3	2.5	3.5
Subtotal top 5			**1 097**	..	..	..	**60**
6	4	Russia	61.4	27	3.9	3.9	3.4
7	7	United Kingdom	50.0	−17	1.8	2.4	2.7
8	9	Germany	49.5	9.0	1.2	1.4	2.7
9	8	Japan	46.6	2.3	0.9	1.0	2.6
10	10	South Korea	43.1	28	2.6	2.7	2.4
Subtotal top 10			**1 347**	..	..	..	**74**
11	13	Italy	27.8	−14	1.3	1.6	1.5
12	11	Brazil	27.8	17	1.5	1.5	1.5
13	12	Australia	26.7	21	1.9	1.9	1.5
14	14	Canada	21.6	12	1.3	1.4	1.2
15	15	Turkey	19.0	65	2.5	2.5	1.0
Subtotal top 15			**1 470**	..	..	..	**81**
16	16	Spain	18.2	−5.2	1.3	1.3	1.0
17	17	Israel	15.9	−5.8	4.3	6.8	0.9
18	18	Iran	13.2	−10	2.7	3.2	0.7
19	24	Poland	11.6	48	2.0	1.8	0.6
20	19	Pakistan	11.4	73	4.0	3.3	0.6
21	25	Netherlands	11.2	−4.4	1.2	1.4	0.6
22	21	Singapore	10.8	13	3.1	3.9	0.6
23	20	Taiwan	10.7	−2.9	1.8	2.3	0.6
24	23	Colombia	10.6	15	3.2	3.9	0.6
25	22	Algeria	9.6	85	5.3	3.8	0.5
26	26	Indonesia	7.4	99	0.7	0.6	0.4
27	29	Kuwait	7.3	39	5.1	4.0	0.4
28	30	Norway	7.1	23	1.6	1.6	0.4
29	31	Thailand	6.8	16	1.3	1.8	0.4
30	28	Oman	[6.7]	69	[8.2]	[7.0]	[0.4]
31	32	Mexico	6.6	36	0.5	0.5	0.4
32	27	Iraq	6.3	58	2.7	2.9	0.3
33	33	Sweden	5.8	18	1.0	1.2	0.3
34	35	Chile	5.6	25	1.9	2.3	0.3
35	37	Viet Nam	5.5	76	2.3	2.3	0.3
36	36	Greece	5.2	−46	2.4	3.2	0.3
37	39	Belgium	5.0	−12	0.9	1.2	0.3
38	38	Switzerland	4.8	6.3	0.7	0.7	0.3
39	43	Ukraine	4.8	69	3.8	[2.8]	0.3
40	46	Romania	4.6	112	1.9	1.3	0.3
Subtotal top 40			**1 683**	..	..	..	**93**
World			**1 822**	**5.4**	**2.1**	**2.6**	**100**

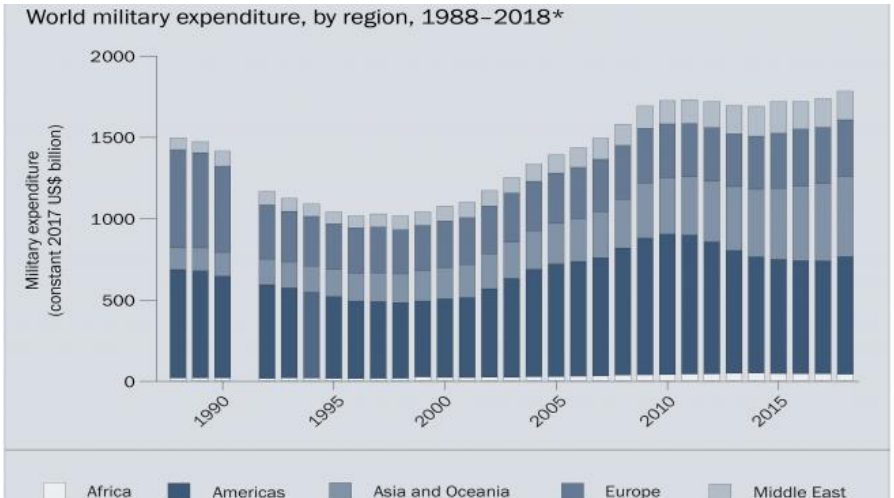
.. = data not available or not applicable; [ ] = SIPRI estimate; GDP = gross domestic product.

[a] Rankings for 2017 are based on updated military expenditure figures in the current edition of the SIPRI Military Expenditure Database. They may therefore differ from the rankings for 2017 given in *SIPRI Yearbook 2018* and in other SIPRI publications in 2018.

[b] The figures for military expenditure as a share of GDP are based on estimates of 2018 GDP from the International Monetary Fund World Economic Outlook and International Financial Statistics databases.

Sources: SIPRI Military Expenditure Database, Apr. 2019; International Monetary Fund, World Economic Outlook Database, Oct. 2018; and International Monetary Fund, International Financial Statistics Database, Sep. 2018.

World military expenditure grows to $1.8 trillion in 201834



World military spending 1988–2018. Data and graphic: SIPRI 29 April 2019

Total world military expenditure rose to $1822 billion in 2018, representing an increase of 2.6 per cent from 2017, according to new data from the Stockholm International Peace Research Institute (SIPRI). The five biggest spenders in 2018 were the United States, China, Saudi Arabia, India and France, which together accounted for 60 per cent of global military spending. Military spending by the USA increased for the first time since 2010, while spending by China grew for the 24th consecutive year. The comprehensive annual update of the SIPRI Military Expenditure Database is accessible from today at www.sipri.org.

Total global military spending rose for the second consecutive year in 2018, to the highest level since 1988—the first year for which consistent global data is available. World spending is now 76 per cent higher than the post-cold war low in 1998.* World military spending in 2018 represented 2.1 per cent of global gross domestic product (GDP) or $239 per person. 'In 2018 the USA and China accounted for half of the world's military spending,' says Dr Nan Tian, a researcher with the SIPRI Arms and Military Expenditure (AMEX) programme. 'The higher level of world military expenditure in 2018 is mainly the result of significant increases in spending by these two countries.'

The USA and China lead increase in world military expenditure

US military spending grew—for the first time since 2010—by 4.6 per cent, to reach $649 billion in 2018. The USA remained by far the largest spender in the world, and spent almost as much on its military in 2018 as the next eight largest-spending countries combined. 'The increase in US spending was driven by the implementation from 2017 of new arms procurement programmes under the Trump administration,' says Dr Aude Fleurant, the director of the SIPRI AMEX programme.

China, the second-largest spender in the world, increased its military expenditure by 5.0 per cent to $250 billion in 2018. This was the 24th consecutive year of increase in Chinese military expenditure. Its spending in 2018 was almost 10 times higher than in 1994, and accounted for 14 per cent of world military spending. 'Growth in Chinese military spending tracks the country's overall economic growth,' says Tian. 'China has allocated 1.9 per cent of its GDP to the military every year since 2013.'

Three decades of growth in military spending in Asia and Oceania

Military expenditure in Asia and Oceania has risen every year since 1988. At $507 billion, military spending in the region accounted for 28 per cent of the global total in 2018, compared with just 9.0 per cent in 1988.

In 2018 India increased its military spending by 3.1 per cent to $66.5 billion. Military expenditure by Pakistan grew by 11 per cent (the same level of growth as in 2017), to reach $11.4 billion in 2018. South Korean military expenditure was $43.1 billion in 2018—an increase of 5.1 per cent compared with 2017 and the highest annual increase since 2005.

'The tensions between countries in Asia as well as between China and the USA are major drivers for the continuing growth of military spending in the region,' says Siemon Wezeman, a senior researcher with the SIPRI AMEX programme.

Increases in Central and East European countries

Several countries in Central and Eastern Europe made large increases in their military expenditure in 2018. Spending by Poland rose by 8.9 per cent in 2018 to $11.6 billion, while Ukraine's spending was up by 21 per cent to $4.8 billion. Spending by Bulgaria, Latvia, Lithuania and Romania also grew (ranging from 18 per cent to 24 per cent) in 2018. 'The increases in Central and Eastern Europe are largely due to growing perceptions of a threat from Russia,' said Pieter Wezeman, a senior researcher with the SIPRI AMEX programme. 'This is despite the fact that Russian military spending has fallen for the past two years.'

At $61.4 billion, Russian military spending was the sixth highest in the world in 2018. Its spending decreased by 3.5 per cent compared with 2017.

Other notable developments

Military spending in South America rose by 3.1 per cent in 2018. This was mainly due to the increase in Brazilian spending (by 5.1 per cent), the second increase in as many years.

Military expenditure in Africa fell by 8.4 per cent in 2018, the fourth consecutive annual decrease since the peak in spending in 2014. There were major decreases in spending by Algeria (–6.1 per cent), Angola (–18 per cent) and Sudan (–49 per cent).

- Military spending by states in the Middle East for which data is available fell by 1.9 per cent in 2018.
- Total military expenditure by all 29 North Atlantic Treaty Organization members was $963 billion in 2018, which accounted for 53 per cent of world spending.
- The largest absolute increase in spending in 2018 was by the USA ($27.8 billion), while the biggest decrease was by Saudi Arabia (–$4.6 billion).

Annex 1. The SIPRI Top 100 arms-producing and military services companies in the world excluding China, 2017[a]

Figures for arms sales and total sales are in millions of US dollars.

Rank[b]		Company[c]	Country	Arms sales, 2017 (US$ m.)	Arms sales, 2016 (constant 2017 US$ m.)[d]	Change in arms sales, 2016–17 (%)	Total sales, 2017 (US$ m.)	Arms sales as a % of total sales, 2017
2017	2016							
1	1	Lockheed Martin Corp.	United States	44 920	41 486	*8.3*	51 048	*88*
2	2	Boeing	United States	26 930	30 132	*–11*	93 392	*29*
3	3	Raytheon	United States	23 870	23 393	*2.0*	25 348	*94*
4	4	BAE Systems	United Kingdom	22 940	22 208	*3.3*	23 490	*98*
5	5	Northrop Grumman Corp.	United States	22 370	21 851	*2.4*	25 803	*87*
6	6	General Dynamics Corp.	United States	19 460	19 635	*–0.9*	30 973	*63*
7	7	Airbus Group	Trans-European[e]	11 290	12 928	*–13*	75 239	*15*
8	9	Thales	France	9 000	8 420	*6.9*	17 799	*51*
9	8	Leonardo	Italy	8 860	8 781	*0.9*	12 990	*68*

10	13	Almaz-Antey	Russia	8 570	7 320	17	9 122	94
11	11	United Technologies Corp.	United States	7 780	7 015	11	59 837	13
12	10	L-3 Communications	United States	7 750	7 791	–0.5	9 753	79
13	12	Huntington Ingalls Industries	United States	6 470	6 862	–5.7	7 441	87
14	14	United Aircraft Corp.	Russia	6 440	6 182	4.2	7 744	83
15	19	United Shipbuilding Corp.	Russia	4 980	4 864	2.4	5 583	89
16	22	Honeywell International	United States	4 460	3 553	26	40 534	11
17	16	Rolls-Royce	United Kingdom	4 420	4 336	1.9	19 346	23
18	17	Leidos	United States	4 380	4 391	–0.2	10 170	43
19	23	Naval Group	France	4 130	3 586	15	4 167	99
20	15	Textron	United States	4 100	4 860	–16	14 198	29
21	20	Booz Allen Hamilton	United States	4 060	4 084	–0.6	5 804	70
22	36	General Electric	United States	3 830	2 532	51	122 100	3
23	35	Tactical Missiles Corp.	Russia	3 600	3 031	19	3 623	99
24	21	Mitsubishi Heavy Industries	Japan	3 570	3 573	–0.1	36 649	10
25	25	Rheinmetall	Germany	3 420	3 373	1.4	6 644	51
26	26	MBDA	Trans-European[e]	3 380	3 346	1.0	3 501	97
27	24	Babcock International Group	United Kingdom	3 230	3 294	–1.9	6 876	47
28	27	Elbit Systems	Israel	3 220	3 313	–2.8	3 395	95
29	32	Russian Helicopters	Russia	3 170	3 139	1.0	3 908	81
30	29	Bechtel Corp.[f]	United States	3 150	2 879	9.4	25 900	12
31	18	Harris Corp.	United States	3 040	4 288	–29	6 182	49
32	28	CACI International	United States	2 980	2 890	3.1	4 468	67
33	34	Safran	France	2 910	2 679	8.6	19 090	15
34	46	High Precision Systems	Russia	2 830	2 324	22	2 907	97
35	31	Science Applications International Corp.	United States	2 760	2 685	2.8	4 454	62
36	30	Saab	Sweden	2 670	2 818	–5.3	3 180	84
37	38	Indian Ordnance Factories	India	2 650	2 442	8.5	2 764	96
38	37	Hindustan Aeronautics	India	2 610	2 635	–0.9	2 764	94
39	39	CSRA	United States	2 580	2 297	12	5 400	48
40	51	United Engine Corp.	Russia	2 570	2 049	25	4 026	64
41	33	Israel Aerospace Industries	Israel	2 480	2 790	–11	3 538	70
42	47	Orbital ATK	United States	2 390	1 960	22	4 764	50
43	41	Rockwell Collins	United States	2 300	2 277	1.0	6 822	34
44	48	General Atomics[f]	United States	2 220	1 950	14	..	..
45	45	Rafael	Israel	2 210	2 127	3.9	2 258	98
46	44	CEA	France	2 170	2 082	4.2	5 640	39
47	–	Russian Electronics[g]	Russia	2 140	1 894	13	3 771	57
48	42	Kawasaki Heavy Industries	Japan	2 140	2 112	1.3	14 035	15
49	40	Hanwha Techwin	South Korea	2 130	2 354	–9.5	3 729	57
50	61	Dassault Aviation Groupe	France	2 120	1 432	48	5 418	39
51	43	AECOM	United States	2 070	2 165	–4.4	18 203	11
52	54	KRET	Russia	2 060	1 929	6.8	2 398	86
53	49	ThyssenKrupp	Germany	1 920	1 831	4.8	46 706	4
54	64	Oshkosh Corp.	United States	1 840	1 378	33	6 830	27
55	78	KBR	United States	1 750	1 113	57	4 171	42
56	80	Krauss-Maffei Wegmann	Germany	1 750	1 086	61	1 803	97
57	52	ST Engineering	Singapore	1 680	1 706	–1.5	4 794	35
58	55	Fincantieri	Italy	1 660	1 653	0.4	5 657	29
59	58	Cobham	United Kingdom	1 580	1 510	4.6	2 632	60
60	56	LIG Nex1	South Korea	1 560	1 674	–6.8	1 558	100
61	68	ASELSAN	Turkey	1 420	1 101	29	1 469	97
62	65	DynCorp International	United States	1 420	1 307	8.6	2 004	71
63	67	GKN	United Kingdom	1 410	1 179	20	13 345	11
64	74	Bharat Electronics	India	1 380	1 232	12	1 616	86
65	60	ManTech International Corp.	United States	1 360	1 491	–8.8	1 717	79
66	53	UralVagonZavod	Russia	1 340	2 013	–33	2 223	60
67	63	Engility	United States	1 300	1 378	–5.7	1 932	67
68	66	BWX Technologies	United States	1 300	1 276	1.9	1 688	77
69	59	Serco	United Kingdom	1 250	1 462	–14	4 244	29

Rank[b]		Company[c]	Country	Arms sales, 2017 (US$ m.)	Arms sales, 2016 (constant 2017 US$ m.)[d]	Change in arms sales, 2016–17 (%)	Total sales, 2017 (US$ m.)	Arms sales as a % of total sales, 2017
2017	2016							
69	59	Serco	United Kingdom	1 250	1 462	*–14*	4 244	*29*
70	77	Turkish Aerospace Industries	Turkey	1 220	1 028	*19*	1 420	*86*
71	73	Aerojet Rocketdyne	United States	1 220	1 205	*1.3*	1 877	*65*
72	82	TransDigm Group	United States	1 190	970	*23*	3 504	*34*
73	76	PGZ	Poland	1 190	1 212	*–1.8*	1 323	*90*
74	–	Hensoldt[h]	Germany	1 160	1200	*–3.3*	1 217	*95*
75	92	Vencore	United States	1 130	878	*29*	1 372	*83*
76	71	Vectrus	United States	1 120	1 215	*–7.8*	1 115	*100*
77	75	Fujitsu	Japan	1 110	1 119	*–0.8*	36 539	*3*
78	70	IHI Corp.	Japan	1 070	1 158	*–7.6*	14 175	*8*
79	88	Sierra Nevada Corp.[f]	United States	1 020	919	*11*	1 600	*64*
80	83	Austal	Australia	1 020	999	*2.1*	1 067	*96*
81	79	UkrOboronProm	Ukraine	1 020	1 148	*–11*	1 053	*96*
82	–	DXC[i]	United States	1 000	1 021	*–2.1*	24 556	*4*
83	87	Nexter	France	960	938	*2.4*	1 014	*95*
84	85	Embraer	Brazil	950	1 055	*–10*	5 821	*16*
85	72	DSME	South Korea	940	1 245	*–25*	9 821	*10*
86	86	Teledyne Technologies	United States	920	929	*–1.0*	2 604	*35*
87	108	Navantia	Spain	910	738	*23*	976	*93*
88	81	Jacobs Engineering Group	United States	900	1 011	*–11*	10 022	*9*
89	89	Precision Castparts Corp.	United States	900	899	*0.2*	9 003	*10*

Rank[b]		Company[c]	Country	Arms sales, 2017 (US$ m.)	Arms sales, 2016 (constant 2017 US$ m.)[d]	Change in arms sales, 2016–17 (%)	Total sales, 2017 (US$ m.)	Arms sales as a % of total sales, 2017
2017	2016							
90	90	Cubic Corp.	United States	890	899	*–1.0*	1 486	*60*
91	98	Curtiss-Wright Corp.	United States	890	807	*10*	2 271	*39*
92	91	The Aerospace Corp.	United States	890	888	*0.2*	973	*91*
93	84	Meggitt	United Kingdom	880	916	*–3.9*	2 599	*34*
94	106	Bharat Dynamics	India	880	782	*13*	877	*100*
95	96	RUAG	Switzerland	870	824	*5.6*	1 985	*44*
96	102	MIT	United States	870	786	*11*	1 015	*86*
97	94	Moog	United States	860	847	*1.5*	2 498	*35*
98	50	Korea Aerospace Industries	South Korea	860	1 842	*–53*	1 833	*47*
99	97	NEC Corp.	Japan	850	789	*7.8*	..	..
100	99	CAE	Canada	840	809	*3.8*	2 181	*38*

.. = data not available; Corp. = Corporation.

[a] Although several Chinese arms-producing companies are large enough to rank among the SIPRI Top 100, it has not been possible to include them because of a lack of comparable and sufficiently accurate data for more than 3 years for some companies and no information at all for others.

[b] Companies are ranked according to the value of their arms sales at the end of what SIPRI considers to be their financial year. A dash (–) indicates that the company did not rank among the Top 100 for 2016. Company names and structures are listed as they were at the end of their financial year. Information about subsequent changes is provided in these notes. Rankings for 2016 are based on the updated arms-production figures. They may differ from those published in any earlier SIPRI publication and elsewhere owing to continual revision of data, most often because of changes reported by the company itself and sometimes because of improved estimations. Major revisions are explained in these notes.

[c] Holding and investment companies with no direct operational activities are not treated as arms-producing companies, and companies owned by them are listed and ranked as if they were parent companies.

[d] To allow comparison with arms sales in 2017, figures for arms sales in 2016 are given in constant 2017 US dollars.

[e] Trans-European refers to companies whose ownership and control structures are located in more than one European country.

[f] The arms sales figure for this company is an estimate with a high degree of uncertainty.

[g] Russian Electronics was formed following the merger of United Instrument Manufacturing Corporation and Russian Electronics. Its 2016 arms sales figures are 'pro forma', i.e. they are the combined 2016 arms sales of both companies.

[h] Hensoldt was created in 2017 as a result of the acquisition by an investment fund (KKR) of a German division of Airbus Group that produces military electronics. Its 2016 arms sales figures are 'pro forma', i.e. they are the arms sales of the division of Airbus Group in 2016.

[i] DXC is the result of the merger of Computer Sciences Corporation with relevant parts of Hewlett Packard Enterprise Services' (HPES) business. Its 2016 arms sales figures are 'pro forma', i.e. they are the arms sales of the estimated arms sales of the parts of HPES included in DXC.

Source: SIPRI Arms Industry Database, Dec. 2018.

Value chains dual-technologies and the fourth industrial revolution

In the sectors of civil industrial technological applications and advanced computing capabilities, hypersonic airplanes, vehicles and military vectors have been undergoing advanced experiments by the US, Russia, China[35] and the European Union long experience and valuable competitive programs, mobilizing technology, skills, industrial capabilities and increasing financial resources in order to successfully build and compete by the horizon 2025.

Many of the most advanced operative technologies are produced in very competitive industrial manufacturing factories even in the highest defence sectors, and can certainly give substance to the political will that is perceived today towards a Europe that extends its competitivity beyond the civil sectors but as well in defence, military sector and top related technologies, as before focused.

The French President Macron and the German Chancellor Merkel had in fact announced for the first time that the preparation of the common project for the new European Future Combat Air System (FCAS) was start as early as on July 2017, with the aim of creating both a fighter jet and a vast array of weapons and associated defence systems, including future generation drones.

Spain had also announced its participation in the implementation and industrial partnership for these European programs. Aeronautical and aerospace industries more than in the past looking for a partnership in these dual-technology high value strategy with the will present the prototypes of the aircraft and turbines that will equip it by 2019 and the new futuristic "Eurofighter" will be implemented and assigned to the partner countries air forces starting the 2025. European aeronautical and aerospace industries are more than in the past looking for a partnership in these dual-technology high value strategy. A target that will expand competitiveness by European players in the aerospace sector such as Airbus, Thales, ThyssenKrupp, Krauss-Maffei Wegmann, British BAE System, Dassault, Leonardo Group, Safran, MTU, Navantia, Aemnova Aerospace, Saab AB (mentioning the most competitive players in defence and aerospace groups, see page 23) but also in the energy, robotics, environment and above all cyber war. All leader industrial groups and countries perceiving the need of joint, advanced competitiveness to shared defence strategies and to challenge the increasingly close interference of antagonistic countries, with the threat to internal security, both military and political.
Some data may better focusing Europe Union position in the defence industry than commonplaces and misguiding "fake news" often circulating in the international arena trying to underestimate, minimized or inventing "no news". "Creating a fully-fledged

[35] http://www.europarl.europa.eu/RegData/etudes/BRIE/2019/633149/EPRS_BRI(2019)633149_EN.pdf

European Defence Union by 2025"[36] is imperative to Europe's security and to build a Union that protects, as I mentioned before. A smooth, efficient and effective movement of military personnel and assets across and beyond the EU will enhance preparedness and response to crises. It will enable EU Member States to act faster, in line with their defence needs and responsibilities, both in the context of the Common Security and Defence Policy missions and operations, and in the frame of national, multinational activities and indirectly but substantially of R&D[37] budget.

NATO[38] currently, cross-border mobility is still hampered by a number of barriers that can lead to delays, disruption, higher costs or increased vulnerability", Jean-Claude Juncker, former President of the European Commission declared firmly on the State of The Union report on 2017. But NATO is the pillar of the Transatlantic special alliance, still the main political and defence bloc all over the world.

European Union has now its new President of the Commission just elected by the Parliament, Ursula von der Leyen[39], a quite determined personality, former Defence Minister of Germany, the first woman leading the governance of EU since the its constitution on 1956 in Rome.

Aerospace and defence relevance for European Union industrial sectors

We will follow the developments on these issues. In fact, Dassault Aviation and Airbus (now the world's leading civil aircrafts manufacturer), have announced that they will implement, by 2024, a new advanced air superiority stealth aircraft - a jet that will replace the French Dassault Rafale and the existing Eurofighter series - with a political decision that will dilute de facto EU countries availability to high numbers in the acquisition of the performing US produced last multitasking stealth F-35, as recently Japan had announced to have already chosen for its air force even if at the same time presenting its 5th generation prototype air superiority first fighter jet Mitsubishi X-2 Shinshin. France, Germany, Spain and other European countries are aspiring to be competitive with a new edition of the Eurofighter and the collateral full equipment.

In the past, the same had happened in the car industrial sectors, until when the European main groups had competitive position. When the competitiveness start decreasing, EU carmakers main groups where well ready to start the acquisition of factories and groups in Asia and in the Americas, starting from U.S. and moving further in other deals, investments, merger and acquisitions.

For the same crucial reasons, the future of the advanced technologies and the values added transferred through the defence and security procurements of the European Union to the partner countries - even beyond the EU members, as de facto also in the past had been successfully developed, to other no-members countries relevant

[36] Creating a fully-fledged European Defence Union by 2025

[37] https://sciencebusiness.net/news/european-parliament-approves-defence-rd-deal-national-governments

[38] http://www.europarl.europa.eu/RegData/etudes/BRIE/2019/633149/EPRS_BRI(2019)633149_EN.pdf

[39] https://ec.europa.eu/commission/biography-candidate-present_en#biography-of-the-candidate-for-president

from the point of view of technologic high competences, research involvement and strategic choices - as the European industrial civil sectors structure competitiveness and high technologic achievements capabilities has a vital integrated value added in the really critical passage of technologic shared standards to other partner countries. Of course, the specificities of the defence and military industrial productions facing with the civil ones have peculiars but not as much as in the far past, when the technologic knowledges divide for the two sectors was a sharp border line, with a limited integration and sharing.

The case of Airbus is an example of industrial successful strategies where France, Germany but also UK (stepping out just few years ago), and now with Italy, Spain and other EU partners are sharing advanced projects the group based in Toulouse.
But after the Airbus let mention one of the others new top ten main player: the Italian Leonardo Group Aerospace, Defence and Security, a really value chain protagonist in these wide dual-technologies industrial sectors: Leonardo Group[40].

Three years ago, Leonardo Group merged and aggregated all the top national industries with consolidated dual-tech knowledges and capabilities, outstanding human capital and constant attention to innovation was launched in 2017, in order to compete and grow in market shares and industrial international partnerships. These factors have led the Italian Group to become one of the top ten players in the world Aerospace, Defence and Security, with revenues of € 12.2 billion last year, 85% of which deriving from international markets.

This Industrial Group global company is a partner of choice for many governments, institutions and Armed Forces, as well as for private customers and entities.

The fan of systems and products offered is wide: products and integrated solutions based on cutting-edge technologies with dual-use applications, to strengthen global security; protect people, the territories, infrastructures and information networks; contribute to the sustainable management of the environment, urban spaces and

[40] https://www.leonardocompany.com/home

climate. Leonardo Group ensures that customers to obtaining the most value from offered systems through innovative support and training services.

Many of the global most advanced defence fighters, helicopters, electronic advancements, air space control and advanced warfare equipment come from European consortium and industrial groups as the one now mentioned.

The convergence into value chains41 (by the way, the main focus of our Conference here in Stockholm) of the most important industrial groups supplying products and equipment both for wide civil output and specific industrial chain and for the defence sectors, moreover, is very supportive in the highest international relations because involving all the main EU countries.

Their most active industrial groups in the defence sector by the way had resulted in many successful outcomes and some few failures. Of course, it was emerging - in the years coming close to the present dual high-tech extraordinary jump ahead, both in civil and military products - some recent frictional approaches between US and EU42 on military industry and defence dual technologies.

To talk of a new industrial revolution might sound pleonastic but in fact we really are moving in an industrial and connected services territory never before experienced, with efficient value chains already well established, specifically for European industries, from main groups to SME's companies.

(https://ec.europa.eu)

Internal Market, Industry, Entrepreneurship and SMEs

European Defence Fund on track with €525 million for Eurodrone and other joint research and industrial projects

Published on: 19/03/2019

The Commission has today adopted work programmes to co-finance joint defence industrial projects in 2019-2020 worth up to €500 million. A further €25 million have been earmarked to support collaborative defence research projects in 2019, with calls for proposals launched today.

41 https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/industry-global-value-chains-connectivity-and-regional-smart-specialisation-europe-overview

42 https://www.iss.europa.eu/sites/default/files/EUISSFiles/7%20US-EU%20defence%20industries.pdf

The **Juncker** Commission is making an unprecedented effort to protect and defend Europeans. From 2021, a fully-fledged European Defence Fund will foster an innovative and competitive defence industrial base and contribute to the EU's strategic autonomy. Through two precursors to the Fund, the Commission is taking steps to make defence cooperation under the EU budget a reality as of now. The Preparatory Action on Defence Research (PADR) continues to deliver for the third year running. And with today's decisions, the Commission kick-starts the first EU-funded joint defence industrial projects through the European Defence Industrial Development Programme (EDIDP). This will focus on areas including drone technology, satellite communication, early warning systems, artificial intelligence, cyberdefence or maritime surveillance.

Vice-President Jyrki **Katainen**, responsible for Jobs, Growth, Investment and Competitiveness said: "Cooperation in defence is the only way to protect and defend Europeans in an increasingly instable world. We are doing our part. Joint projects are materialising. European Defence is happening. On the basis of this successful experience we will scale up funding to have a fully-fledged European Defence Fund in place in 2021."

Commissioner Elżbieta **Bieńkowska**, responsible for Internal Market, Industry, Entrepreneurship and SMEs, added: "To ensure Europe can protect its citizens, we need cutting-edge defence technology and equipment in areas like artificial intelligence, drone technology, satellite communication and intelligence systems. With the EU investments we are launching today, we are going from ideas to concrete projects, we are strengthening the competitiveness of our defence industries."

Joint development of defence equipment and technology:

The first European Defence Industrial Development Programme (EDIDP) work programme agreed with the EU countries provides €500 million in co-financing for the joint development of defence capabilities during 2019-2020. In the coming days the Commission will publish 9 calls for proposals for 2019, and 12 further calls will follow for 2020. These calls will cover priority areas in all domains – air, land, sea, cyber and space:

- **Enabling operations, protection and mobility of military forces**: €80 million is available to help develop CBRN threat detections capabilities or counter drone systems
- **Intelligence, secured communication & Cyber**: €182 million will cover cyber situational awareness and defence, space situational awareness and early warning capabilities, or maritime surveillance capabilities
- **Ability to conduct high-end operations**: €71 million will support the upgrade or the development of the next generation of ground-based precision strike capabilities, ground combat capabilities, air combat capabilities and future naval systems
- **Innovative defence technologies & SMEs**: €27 million will support solutions in Artificial Intelligence, Virtual Reality and Cyber technologies, as well as to support SMEs
- **In addition, two projects have been proposed for direct award:** €100 million to support the development of the **Eurodrone**, a crucial capability for Europe's strategic autonomy, and €37 million to support **ESSOR** interoperable and secure military communications

Financing innovation in defence research:

Today Commission publishes calls for proposals under the Preparatory Action on Defence Research (PADR), the third and final budget tranche under the Juncker Commission. The 2019 Work Programme will dedicate €25 million for research in Electromagnetic Spectrum Dominance and Future Disruptive Defence Technologies - two areas identified as essential to maintain Europe's technological lead and independence in the long-term.

The calls on Future Disruptive Defence Technologies will look at how best the EU can support disruptive technologies in defence that may lead to transformational changes in the military. This will help prepare the ground for the European Defence Fund which could allocate up to 8% of its budget for disruptive technologies.

Next steps

Eligible consortia can apply to the 2019 calls for proposals until the end of August. The first projects will be selected before the end of 2019, followed by the official signing of grant agreements.

With both programmes now operational and running, the Commission is paving the way for a fully-fledged European Defence Fund for the next financial period 2021-2027.

Background

In his political guidelines in June 2014, President Juncker made strengthening European citizens' security a priority. He announced the creation of a European Defence Fund in his 2016 State of the Union address. The Commission presented a first set of actions in June 2017 to allow defence cooperation at EU level to be tested by means of the Preparatory Actions on Defence Research for 2017-2019, as well as through the European Defence Industrial Development Programme for 2019-2020.

In June 2018, the Commission proposed a fully-fledged €13 billion European Defence Fund. The Fund will place the EU among the top 4 defence research and technology investors in Europe, and act as a catalyst for an innovative and competitive industrial and scientific base. The EU institutions in February 2019 reached a partial political agreement on

https://ec.europa.eu/growth/content/european-defence-fund-track-€525-million-eurodrone-and-other-joint-research-and-industrial_en 2/3

European defence industries and aerospace major roles in procurements

With a yearly turnover of EUR 100 billion, 3.000 enterprises and industrial groups, 500 000 directly employed and 1.2 million indirect jobs, the European defence industry is avital industrial sector. It is characterized by economic and technological components that are salient factors for Europe's industrial competitiveness in the world. France and Germany announced this year a 65 million euro contract, equally funded by both countries, to launch the joint program to build the before mentioned sophisticated and highly advanced fighter interdiction jet new-generation, with long-range missions capabilities. But much more to come for the European Defence Fund: 13 billion euro for the next eight years.

For the same crucial reasons, the future of the advanced technologies and the values added transfer through the defence and security procurements of the European Union to the partner countries - even beyond the EU members, as de facto also in the past had been successfully developed, to other no-members countries relevant from the point of view of technologic high competences, research involvement and strategic choices - the European industrial civil sectors structure competitiveness and high technologic achievements capabilities has a vital integrated value added in the really critical passage of technologies shared standards to other partner countries.

In the past, the same had happened in the car factories industries sectors, until when the European main groups had competitive and ready to start the acquisition of factories

and groups in Asia and in the Americas, starting from U.S. and moving further in other deals, investments, merger and acquisitions.

Of course, the specificities of the defence and military industrial productions facing with the civil ones have peculiars but not as much as in the far past, when the technologic knowledges divide for the two sectors was a sharp border line, with a limited integration and sharing.

The case of Airbus is an example of industrial successful strategies where France, Germany but also UK (stepping out just few years ago), and now with Italy, Spain and other EU partners are sharing advanced projects the group based in Toulouse. And even now, many of the European most advanced defence fighters, helicopters, electronic advancements, and air space control, advanced warfare equipment come from European consortium and industrial groups.

Institutional determinants of military spending: peace and not war among nations

This is the severe message coming from the dual-technologies advancements. I will also comment on the recent findings and reports of the IISS-International Institute for Strategic Studies in London and the SIPRI before mentioned on the main developments and trends in the defence industrial sectors analysed throughout 2018, with particular reference to the challenges on the control of nuclear weapons and in the cyber war sector, with a focus on Quantum and its extraordinary potential in the fields of Defence and in our citizen life and cyber security.

These datasets will also offer the opportunity to measure an indicative size of the relative civil/military output of the main industrial groups or consortiums worldwide. Starting this year, also China[43] data of the military industrial sectors and the ongoing modernization start to be included into the SIPRI and IISS data[44].

But this is not the unique "case" of tension in international trade. Tariffs are a two sides sword as history can be testimonial. Even U.S. and Europe trade relations are in a light of cloudy forecast as circulating voices of measures might be decide related to Airbus, the leading civil aviation European industrial Group - by the way partner of top UK aerospace industries for avionics and of Rolls Royce for jets turbines – just because with A-320, A321, A-350 the Toulouse based Group accumulated a wide market preference, trust and confidence among almost all the international air carriers? In this depreciable event, the European Union would propose counter measures of tariffs over a companion case regarding U.S. subsidies to Boeing[45].

As before stated, we are in front of one of the most sophisticated and global industrial value chain productions ever existing, with competitors and countries also in exercises of old fashion but never abandoned trade and tariffs conflicts.

Here we might focus in recent clashes among powers and alliances systems regarding telecommunications, digitalization processes, computing, social networks, privacy and patents urgent protection quests of a better governance for all citizens, companies and

[43] https://www.iiss.org/blogs/military-balance/2019/05/china-defence-spending
[44] https://www.iiss.org/blogs/military-balance/2019/08/china-army-modernisation
[45] https://www.wsj.com/articles/u-s-proposes-more-european-tariffs-pending-airbus-case-11562026415

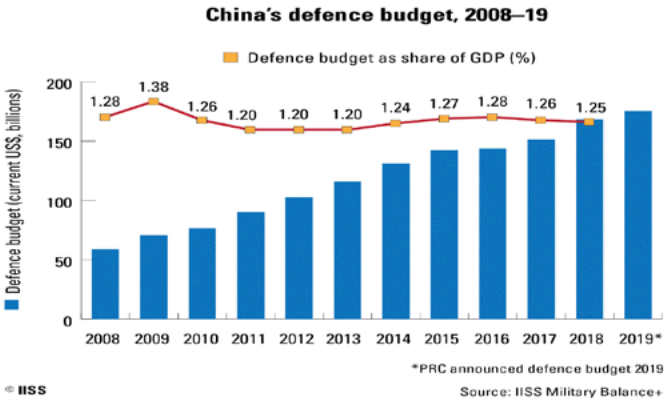
financial systems rights, in other words the data protection next clash of civilization.
I already mentioned these confrontations ongoing among the great powers and in a more traditional conflicts in many countries in crucial regions of the world.

While the past had not available any weapons of humanity destroying capabilities power, then war was a extreme but possible option; today and even more tomorrow the looming of terrific conflicts have a substance but a threatening conditionality. What was in the past even a strategy, today would be resulting in a fatal catastrophic holocaust.
The mission of the great powers must be then to avoiding unpredictable wars induced by nominalist regional disputes, velleitarian shows of force, offence to international laws and human rights finding possible, realistic solutions in unbalancing divides, through negotiation, diplomatic solutions and appeasement.
Nobody will force anybody in the future geopolitical scenario and in international relations disputes, this is a first conclusion of this paper. Not for virtues but to avoid the following fatal retaliation with the same high-tech weapons. It's an unavoidable forecast but even a rejection of the part of the negative heritage we European, Asians and Americans should never forget, because the wrong, despotic policies and strategies taken by dictators in the darkness of the past.

New dual-technologies drive military spending

I will also comment on the recent findings and reports of the IISS-International Institute for Strategic Studies in London and the SIPRI before mentioned on the main developments and trends in the defence industrial sectors analysed throughout 2018, with particular reference to the challenges on the control of nuclear weapons and in the cyber war sector, with a focus on Quantum and its extraordinary potential in the fields of Defence and in our citizen life and cyber security.

These datasets will also offer the opportunity to measure an indicative size of the relative civil/military output of the main industrial groups or consortiums worldwide. Starting this year, also China46 data of the military industrial sectors and the ongoing modernization start to be included into the SIPRI and IISS dataset[47].



[46] https://www.iiss.org/blogs/military-balance/2019/05/china-defence-spending
[47] https://www.iiss.org/blogs/military-balance/2019/08/china-army-modernisation

By the way, previous charts showed the state of global military spending now at its highest since the cold war48 up to 2018[49].

The convergence of the most important industrial groups in the supply of products and equipment both for wide civil output and specific industrial chain and line for the defence sectors, moreover, is very supportive in the highest international relations because involving all the main EU countries.

Their most active industrial groups in the defence sector by the way had resulted in many successful outcomes and some few failures. Of course, it was emerging - in the years coming close to the present high-tech extraordinary jump ahead, both in civil and military products - some recent frictional approaches between US and EU[50] on military industry and defence dual technologies. EU had been accustomed since in the past. Joint ventures to the defence industries sharp competition sharing production parts and crucial sophisticated technologies, both in the frame of NATO allies[51], US and Canada in highest roles but as well with other global advanced industrial partners in Asia worldwide[52].

These are as well the supply chains examples I had chosen to bring to your attention to avoid our CEA Europe and CEA UK Conference should miss these so relevant dimensions of the international industrial value chains.

This paper had been closed on July 24, 2019

[48] https://www.weforum.org/agenda/2019/04/4-charts-that-show-the-state-of-global-military-spending-now-at-its-highest-since-the-cold-war/

[49] https://www.iiss.org › military-balance-wall-chart-china-armed-forces

[50] https://www.iss.europa.eu/sites/default/files/EUISSFiles/7%20US-EU%20defence%20industries.pdf

[51] https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2019_06/20190625_PR2019-069-EN.pdf

[52] ISS_Eva_Pejsova_EU and Asia security cooperation, Paris 2019 - https://www.iss.europa.eu/search-view?search_text=Eva+Pejsova+EU+and+Asia+security+cooperation

ANNEX* slides from Report Accenture: Harness the Engine of Innovation, Report 2019

FIVE TECHNOLOGY TRENDS RESHAPING AEROSPACE AND DEFENSE

This year's Accenture Technology Vision for the aerospace and defense industry highlights five emerging trends that will have a decisive impact on the entire value chain, from aircraft design to passenger or pilot experience. In each trend, digital saturation is raising expectations, abilities and risk across industries, as well as shaping how businesses are seeking new ways to differentiate themselves as the world moves toward the post-digital era.

TREND 1

DARQ Power

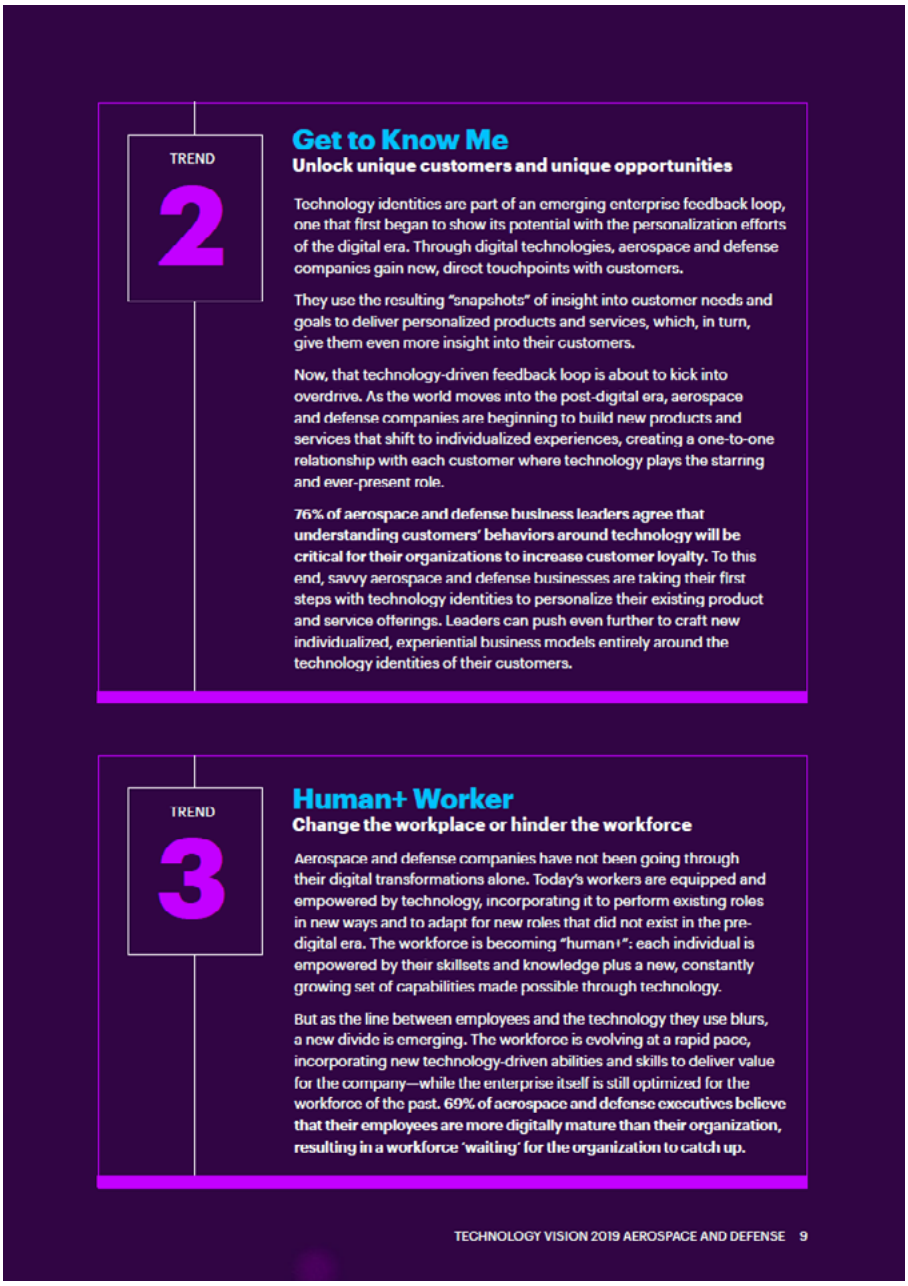
Understanding the DNA of DARQ

The next set of technologies every company will need to master? Distributed ledger technology (DLT), artificial intelligence (AI), extended reality (XR) and quantum computing. In other words, "DARQ" matters.

Individually, each of these four technologies represents opportunities for aerospace and defense companies to differentiate their products and services. Collectively, they will open unimagined new pathways into the future. AI already plays a critical role in optimizing processes and influencing strategic decision making. XR, an immersive technology, creates entirely new ways for people to experience and engage with the world around them. Distributed ledgers will expand networks by eliminating the need for trusted third parties. And quantum technology will usher in novel ways to approach and solve the hardest computational problems.

84% of aerospace and defense companies are already experimenting with one or more DARQ technologies, expecting them to be key differentiators. Each technology is at a different point on the adoption curve, but the first wave of companies using DARQ technologies to drive differentiation is already here.

8 HARNESS THE ENGINE OF INNOVATION



TREND 2

Get to Know Me

Unlock unique customers and unique opportunities

Technology identities are part of an emerging enterprise feedback loop, one that first began to show its potential with the personalization efforts of the digital era. Through digital technologies, aerospace and defense companies gain new, direct touchpoints with customers.

They use the resulting "snapshots" of insight into customer needs and goals to deliver personalized products and services, which, in turn, give them even more insight into their customers.

Now, that technology-driven feedback loop is about to kick into overdrive. As the world moves into the post-digital era, aerospace and defense companies are beginning to build new products and services that shift to individualized experiences, creating a one-to-one relationship with each customer where technology plays the starring and ever-present role.

76% of aerospace and defense business leaders agree that understanding customers' behaviors around technology will be critical for their organizations to increase customer loyalty. To this end, savvy aerospace and defense businesses are taking their first steps with technology identities to personalize their existing product and service offerings. Leaders can push even further to craft new individualized, experiential business models entirely around the technology identities of their customers.

TREND 3

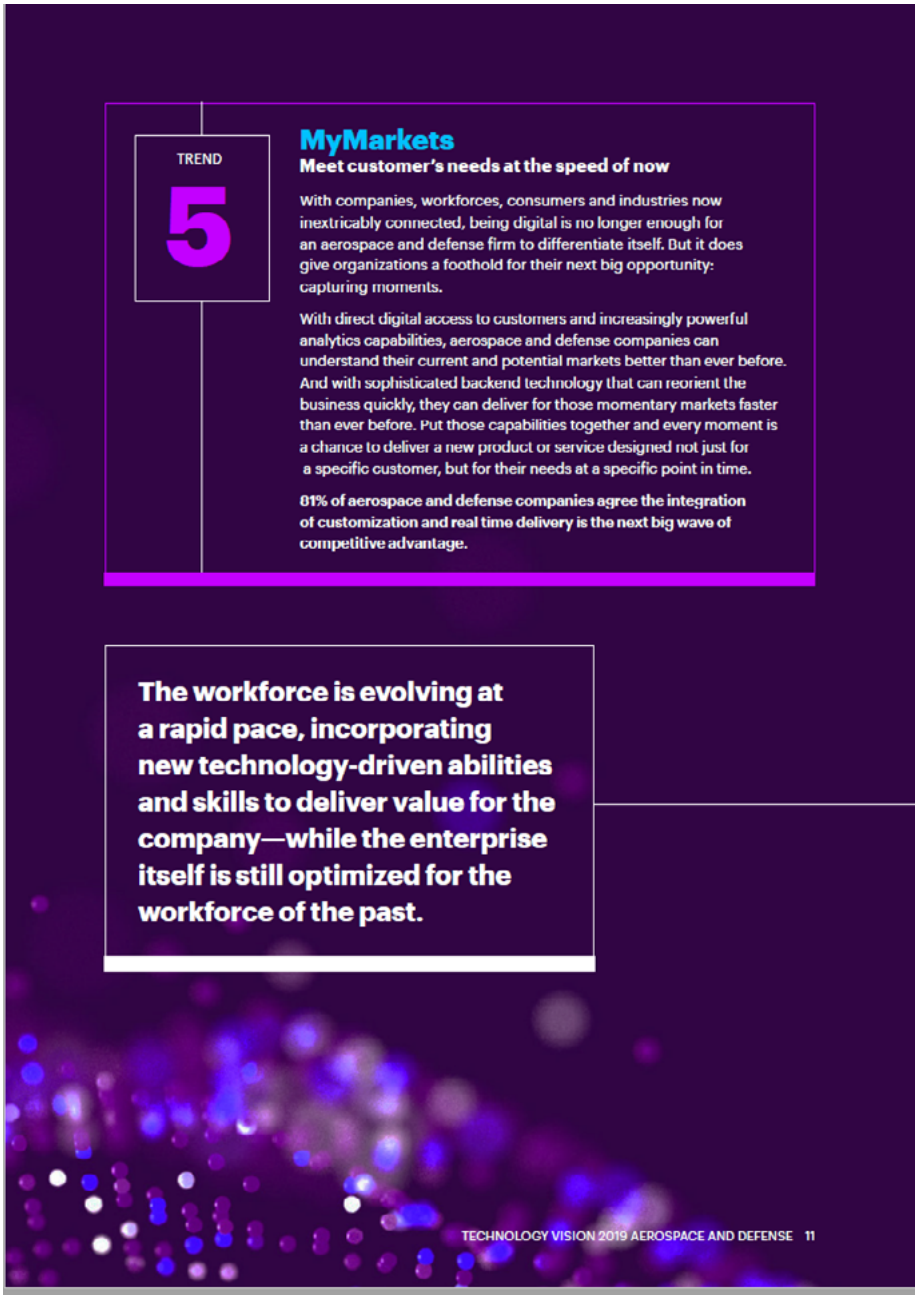
Human+ Worker

Change the workplace or hinder the workforce

Aerospace and defense companies have not been going through their digital transformations alone. Today's workers are equipped and empowered by technology, incorporating it to perform existing roles in new ways and to adapt for new roles that did not exist in the pre-digital era. The workforce is becoming "human+": each individual is empowered by their skillsets and knowledge plus a new, constantly growing set of capabilities made possible through technology.

But as the line between employees and the technology they use blurs, a new divide is emerging. The workforce is evolving at a rapid pace, incorporating new technology-driven abilities and skills to deliver value for the company—while the enterprise itself is still optimized for the workforce of the past. **69% of aerospace and defense executives believe that their employees are more digitally mature than their organization, resulting in a workforce 'waiting' for the organization to catch up.**


TREND
4
Secure US to Secure ME
Enterprises are not victims, they're vectors
Today's ecosystem-dependent business world amplifies the impact of cyberattacks. Incidents that cripple one enterprise can grow rapidly and expand to threaten a company's ecosystem, industry and beyond. As aerospace and defense companies work more and more extensively within complex ecosystems, they are simultaneously extending, and absorbing, their ecosystem partners' risks and vulnerabilities. Those risks include the loss of current and future defense contracts as a result of not protecting client information or failing to comply with national cybersecurity regulations.
Threat actors targeting highly sensitive and proprietary data see aerospace and defense ecosystems as an ever-widening attack surface. But most companies still view cybersecurity as strictly an individual effort. Only 40% of aerospace and defense business and IT executives report that they know their ecosystem partners are working diligently, like they are, to be compliant and build security resilience.
To respond to this dichotomy, organizations must include growing ecosystem dependencies and risks as part of their own security posture and make security a cardinal component of how they build, assess, monitor and manage partnerships. Interconnectedness increases companies' exposures to risks. Leading aerospace and defense companies are recognizing that while they already collaborate to deliver best-in-class products, services and experiences, it is high time security joins that effort as well.
10 HARNESS THE ENGINE OF INNOVATION


TREND
5
MyMarkets
Meet customer's needs at the speed of now
With companies, workforces, consumers and industries now inextricably connected, being digital is no longer enough for an aerospace and defense firm to differentiate itself. But it does give organizations a foothold for their next big opportunity: capturing moments.
With direct digital access to customers and increasingly powerful analytics capabilities, aerospace and defense companies can understand their current and potential markets better than ever before. And with sophisticated backend technology that can reorient the business quickly, they can deliver for those momentary markets faster than ever before. Put those capabilities together and every moment is a chance to deliver a new product or service designed not just for a specific customer, but for their needs at a specific point in time.
81% of aerospace and defense companies agree the integration of customization and real time delivery is the next big wave of competitive advantage.
The workforce is evolving at a rapid pace, incorporating new technology-driven abilities and skills to deliver value for the company—while the enterprise itself is still optimized for the workforce of the past.
TECHNOLOGY VISION 2019 AEROSPACE AND DEFENSE 11

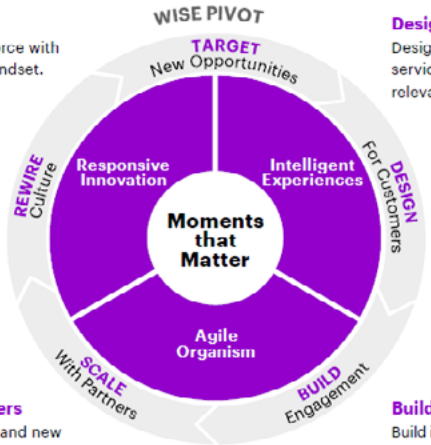
THE ANSWER? A NEW KIND OF LIVING BUSINESS

Aerospace and defense companies have been developing digital capabilities for years. Yet the urgency to harness digital to deliver the "moments that matter" across the organization, partners and customers has never been greater.

PATHWAYS TO A LIVING BUSINESS

Target New Opportunities
Target core and disruptive growth initiatives to fuel responsive innovation.

Rewire Culture
Rewire your workforce with a customer-first mindset.



Design for Customers
Design products and services as hyper-relevant platforms.

Scale with Partners
Scale with a broad and new set of ecosystem alliances.

Build Engagement
Build intelligent marketing and sales experiences.

12 HARNESS THE ENGINE OF INNOVATION

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DOI 10.14665/1614-4007-26-2-002

PAPER

Poverty and Uneven Distribution of Income and Wealth: World and Armenia

Mariam A. Voskanyan*

Abstract Today, the world has a sharp contrast, from the world of high technology to the world of starving people. The uneven distribution of income and wealth in the world is observed not only in terms of the global north-south issue, when the capital is concentrated in high-income countries, but also at the level of different segments of the population, and even individuals.

On the background of an oversupply of financial resources in the world stock exchanges, we observe a high mortality rate from hunger and diseases in countries with a low level of per capita income.

This article is devoted to the analysis and assessment of the problem of poverty and the uneven distribution of income and wealth in the framework of modern realities, as well as the example of the Armenian economy.

Keywords: poverty, inequality, income level, Armenia.

JEL Classification: I32 O15

Formulation of the problem

Poverty and income inequality is an acute problem for many decades in the global economy. A lot of researches are devoted to this issue. Many governments have tried various ways to solve this problem in their own countries. However, the modern world today is characterized by a much greater stratification of income of the population both between countries and within countries.

Many studies are devoted to identifying the causes that determine the level of poverty in the country. Since the beginning of the 18th century, the most famous economists of the world (for example, A. Smith, D. Ricardo, T. Malthus, G. Spencer, J. Proudhon, K. Marx, S. Rountry, FA Hayek, P. Townsend).

Long-term studies have allowed developing certain approaches to the calculation of the level of poverty, which is based, for the most part, on the level of the family

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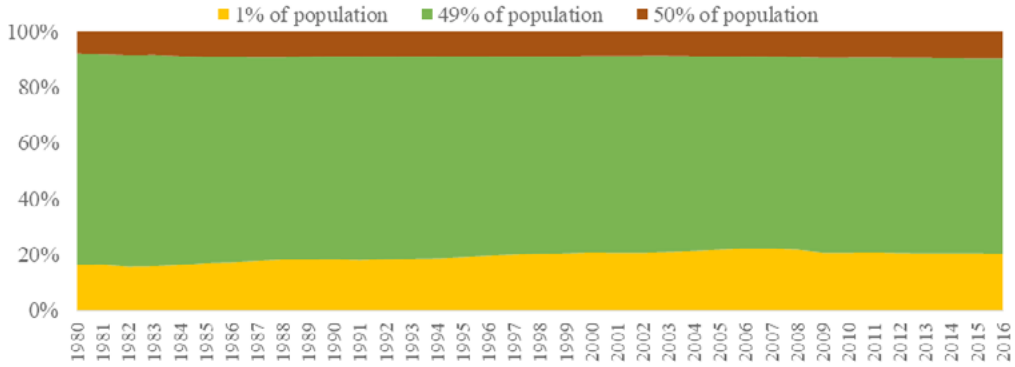
budget, which, under certain parameters, was reflected in the calculations of the criteria for the level of poverty. Modern authors also pay considerable attention to the issues of poverty in the world [2,5,7]. Most of the authors, of course, consider a certain experience of countries or groups of countries, but you can also find studies on the whole issue of poverty in the world. And many of them [1, 4, 6] distinguish the unequal distribution of income and capital in the world as an accompanying factor of poverty, directly linking this factor with an increase in the level of poverty in the world.

Data published in the *World Inequality Report 2018* [3] shows a growing increase in inequality among the distribution of income and capital in the world.

Figure 1. Distribution of world income, 1980-2017



Source: World Inequality Report 2018 - https://wir2018.wid.world/

Statistics show that today more than 20% of world income is concentrated in the hands of 1% of the population, while 50% of the population has a share of less than 10% of total world income (see Fig. 1). In the case of the concentration of world wealth, a similar picture is observed. In other words, the current picture of the world is characterized by a significant income gap among various groups of countries, and this gap is increasing every year. At the same time, considering the dynamics of the number of countries included in one or another group of income levels indicates a reduction of low-income countries and an increase of high-income countries.

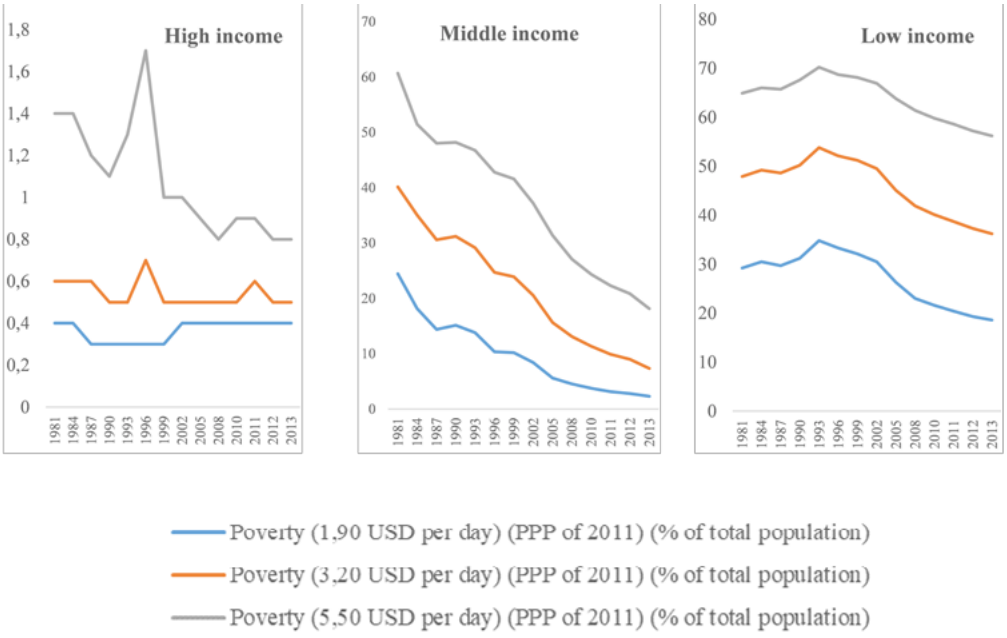
At the same time, the statistics are based on the existing criteria of the WB on income level. Revising the criteria would lead to an increase in the level of concentration of both world income and wealth. Thus, the North-South issue today is much more acute than the current assessment criteria indicate. In this regard, we have reviewed in detail the criteria for assessing the level of poverty and the methods for the distribution of countries based on per capita income.

Poverty and income inequality in the modern world: assessment criteria

It is known that the international community assesses the level of poverty both in the world as a whole and in individual countries, in particular, guided by the standards

developed by the World Bank and a number of other international organizations. However, a question arises - how objective are the indicators developed by the international scientific community assessing the level of poverty and the degree of inequality in the distribution of income and capital in the world in general and in countries in particular? WB criteria divide the poverty level into three main categories, varied by the daily expenditures of the population, adjusted by PPP (see Fig. 2).

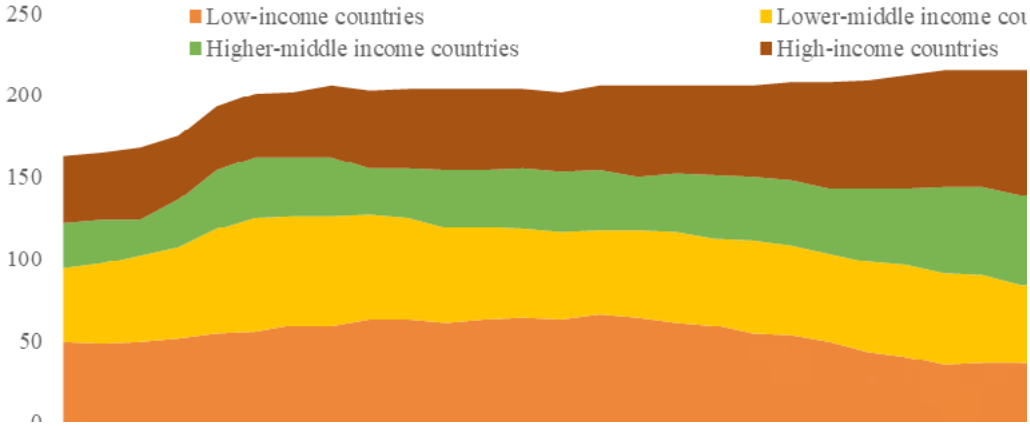
Figure 2. Poverty level depending on income level



Source: World Bank databank - http://databank.worldbank.org

In general, trends in poverty indicators based on the level of profitability of a group of countries are characterized by a reduction, which may be the result of successful policies to fight against poverty in countries. At the same time, initially very high rates in countries with low and medium incomes indicate fairly successful results of the fight against poverty in these groups of countries by 2017. The countries with high and middle incomes as a whole at the present stage practically equalized these indicators. Thus, the problem of poverty is most acute in low-income countries, which generally corresponds to the logic of the distribution of countries into different categories.

Figure 3. The number of countries depending on income level.



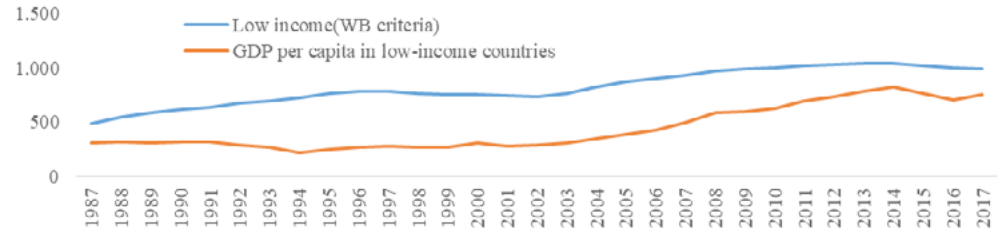
Source: World Bank databank- http://databank.worldbank.org

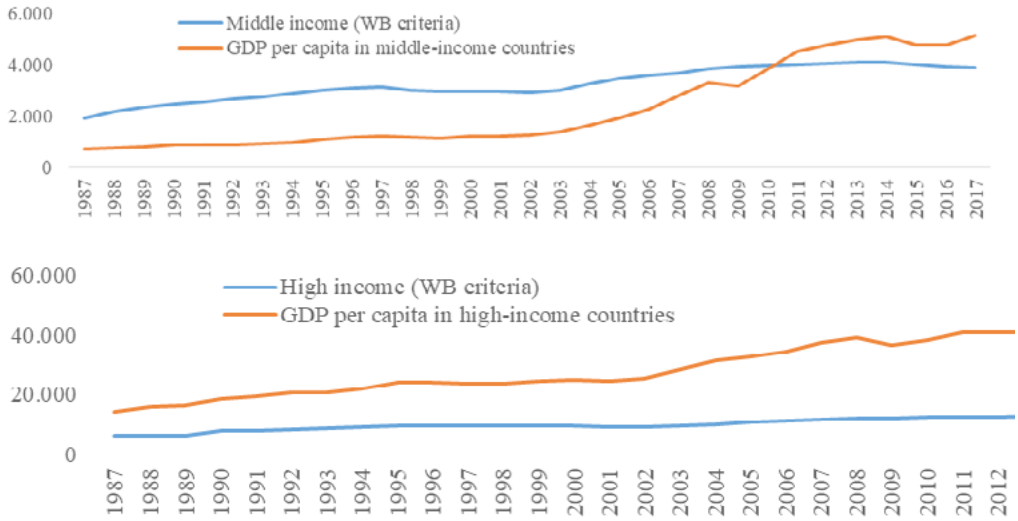
Considering the number of countries included in one or another group in dynamics, we can note that since the beginning of the 2000s, there has been a significant reduction in the number of low-income countries, and along with this the number of countries in the high-income group is increasing (see Fig. 3), which generally leads to conclusions about the improvement of the economic condition of many countries.

However, the criteria that determine the level of profitability of a country are based on GDP indicators per capita, which are also established by the WB (see Fig. 4). Considering these criteria, we can highlight several interesting facts. First, the criteria for the last thirty years have approximately doubled for all groups of countries. Thus, e.g. in 1987 a country was included in the low-income group, if the annual GDP per capita was below $545, the average income in the group was $1,940, and the high income was $ 6,000, then in 2017 these figures were respectively $995, $3,850 and $1,2555 of annual GDP per capita.

In practice, at the same time, the level of GDP per capita in countries with different income levels varied at a rather different rate. Thus, low-income countries improved their average GDP per capita twice in thirty years, middle-income countries sevenfold, and high-income countries three times.

Figure 4. Income criteria of World Bank and actual GDP per capita in the groups of countries in USD.





Source: World Bank databank- http://databank.worldbank.org

From such simple arithmetic, it can be concluded that low-income countries are falling further behind the middle-income and high-income countries every year. At the same time, middle-income countries their population welfare indicators with the highest speed improve, which highlights the high potential of this group of countries, both in terms of economic growth and development in the long term, since it is obvious that economic growth leads to corresponding changes in the level of welfare of the population.

On the other hand, comparing the average level of GDP per capita by groups of countries, we can see that the indicator for low-income countries is two times lower than the established criterion. In countries with an average level, the same trend was observed up to 2010, when the average GDP per capita for that group of countries exceeded the criterion set by the WB. At the same time, high-income countries are characterized by a significant margin of the criterion and average GDP per capita in this group of countries, and this gap widens every year.

Moreover, the difference between the average figures in GDP per capita among groups of countries also varies significantly (see table 1). If the criterion of low income was below the criterion of high 11 times in 1987, then as of 2017 this figure is lower 12 times. Moreover, the difference between the actual average values in countries with low and high income in 1987 and 2017 was respectively 50 and 56 times. Thus, the gap growth is also observed between the level of low and high income.

Table1. Income criteria of World Bank and actual GDP per capita in groups of countries, in USD.

	Criteria, 1987	GDP per capita, average value, 1987	Criteria, 2017	GDP per capita, average value, 2017
Low income	*545*	***318***	*995*	***750***
Middle income	*1940*	***742***	*3895*	***5169***
High income	*6000*	***15888***	*12055*	***41211***

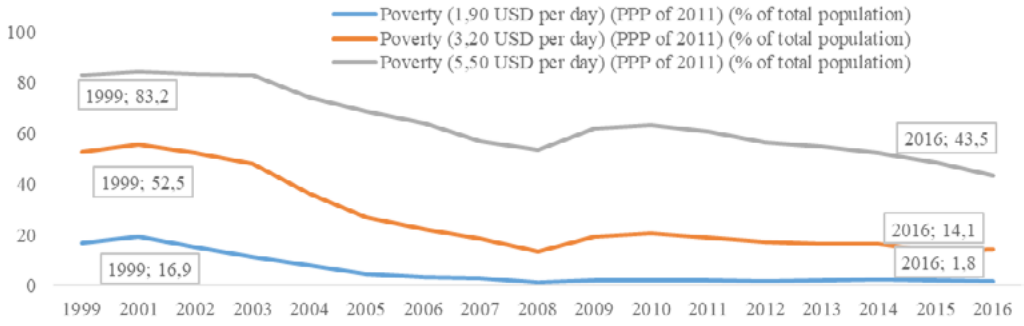
Source: World Bank databank- http://databank.worldbank.org

All of the above points at the need to revise the WB income level criteria, taking into account the actual income indicators in groups of countries, since the existing criteria do not reliably reflect the distribution of countries depending on the level of income.

The case of Armenia

The last decade, the economy of Armenia is characterized by recession and stagnation, which certainly could not but affect the level of welfare of the population. We should note that the basis for determining the level in the country are internationally recognized standards. Considering the poverty level in the country, we can observe two trends (see fig. 5).

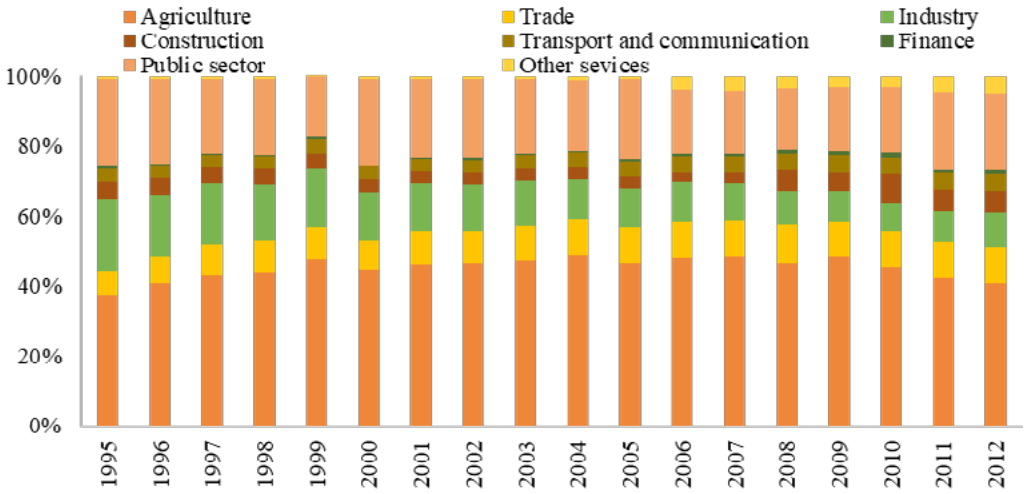
Figure 5. The level of poverty in Armenia, %.



Source: National Statistical Service of Armenia– www.armstat.am

The poverty level (5.5 USD and 3.2 USD per day) decreased from 62.1% and 19.2% in 2009 to 43.5% and 14.1% in 2017, which can be considered a positive trend. However, the indicators characterizing the lowest consumption per day per person did not undergo significant changes and remain at the level of 1.8%.

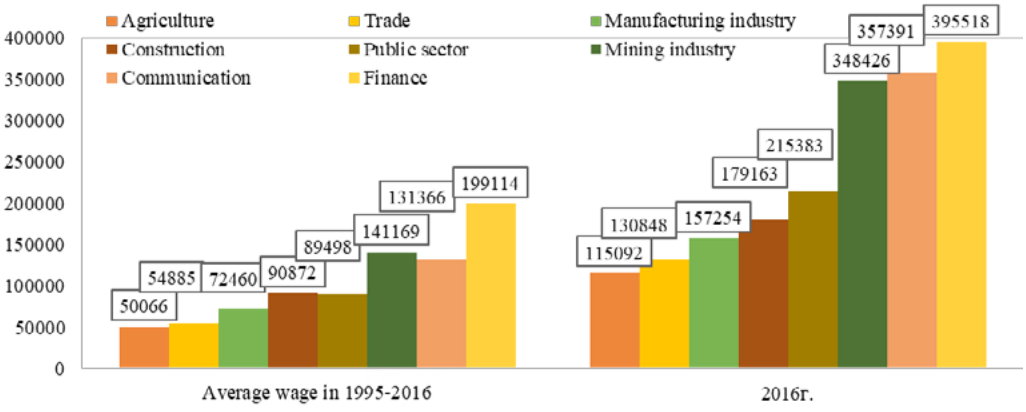
Figure 6. Employment rate by economic sectors in Armenia.



Source: National Statistical Service of Armenia– www.armstat.am

Nevertheless, the issue of poverty in Armenia is much more acute than it can be concluded from the above graph. Considering the structure of employment in the country, we can say that about 30% of the population is engaged in agriculture (see fig. 6). The second place in terms of the number of employees is occupied by the public sector. The smallest number of people are employed in the field of "Finance" and "Information Technology", where this indicator barely reaches a few percents.

Figure 7. Average monthly wage by sectors, in thousand AMD.

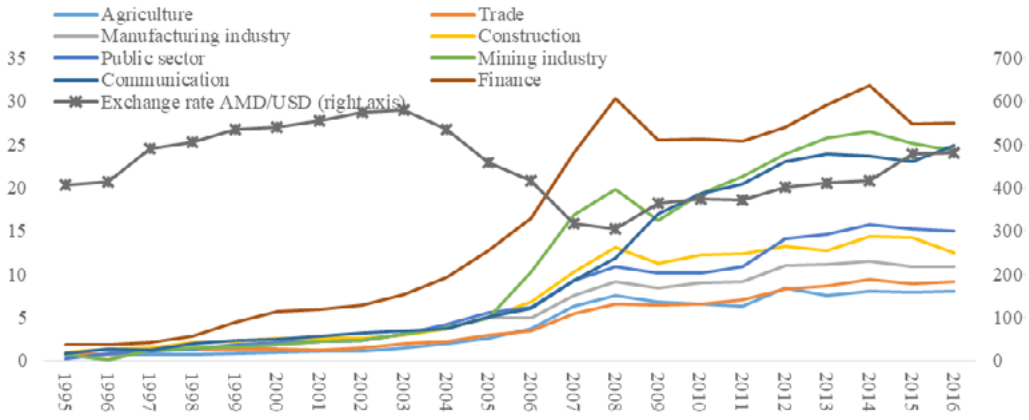


Source: National Statistical Service of Armenia– www.armstat.am

However, the distribution of income between these sectors is very different (see Fig. 7).

The difference between salaries in the "Finance" and "Agriculture" sectors is 4 times. At the same time, this picture does not change in average values over the past 20 years. In other words, a relatively high level of income in Armenia is concentrated in only a few sectors, where a very small proportion of the population is employed.
It is also important to note that the average wages by sectors of the economy have only doubled over the past twenty years. These are rather low indicators, which generally reflects the corresponding standard of living in the country.

Figure 8. Daily consumption of the population by economic sectors, in USD and the exchange rate of USD/AMD.

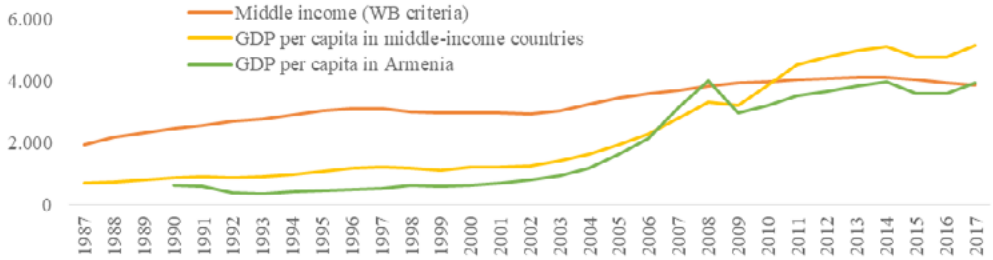


Source: author's calculations

On the other hand, as mentioned above, one of the indicators of the level of poverty is the average daily consumption. In the framework of this research, we calculated the average consumption of the population from accounting for each of the sectors of the economy separately (see Fig. 8). The assumption, in this case, was that the level of savings is zero, which means that all earnings were distributed to the consumption. Thus, we get not the actual, but the potential amount of daily spending of the population by sectors.

As we can see in the figure, the gap between the potential consumption of different sectors is increasing every year. Moreover, the growth rates of expenditures, and hence revenues, are very different for the sectors shown in the figure. At the same time, high growth rates of expenditures are observed in those sectors of the economy where the smallest share of the population is involved (for example, Finance, Mining industry), while in the sector where today more than 30% of the population is employed, the growth in expenditure is insignificant.

Figure 9. GDP per capita, Armenia, in USD.



Source: World Bank databank- http://databank.worldbank.org

Thus, in the economy of Armenia, there is a strong diversification of incomes of the population and uneven distribution of income and capital, which in turn leads to an increase in the level of poverty.

Considering the level of GDP per capita, we can also highlight some interesting trends. First, the indicators of per capita income in Armenia over the past few years have become equal to the established international criteria for countries with middle income. On the other hand, if we consider the average values of GDP per capita in this group of countries, we can observe the opposite situation. If until the mid-2000s, Armenia was very close in terms the actual value of per capita income to the countries with middle income, by the end of 2008-2009 the level of per capita income in Armenia lags further behind every year.

Secondly, the per capita income of Armenia over the past ten years has practically not changed, there has been no growth, which undoubtedly increases the level of poverty in the country. In this sense, the Armenian economy also stands out from the general trend characteristic of middle-income countries over the past decade.

Conclusions

Summarizing, we can conclude that poverty and the uneven distribution of incomes remain an urgent and still unresolved problem both in the world and in Armenia. In addition, the existing criteria for assessing the level of income, and as a result of the degree of evenness of income distribution in the world, require substantial revision, and maybe the development of new approaches to address this issue.

An analysis of the approaches to determining the level of income currently used by international organizations shows that they obviously do not fully assess the real picture of the distribution of the world's income. It is obvious that the criteria of high and medium income need substantial revision, at least in terms of approximation to the average indicators in each group. For example, an approach based on the principle of average GDP per capita in the income group, and a certain corridor within which the country fits, would allow a more realistic assessment of the distribution of countries based on per capita income and would well show the dynamics of the global economy as

a whole, and each individual country in particular. Such an approach would also allow doing a more objective comparative characterization of countries since it does not imply too much variation in the level of GDP per capita between countries in the same group.

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PAPER

Public sector accounting in transition: Changing frameworks and practices among Italian public nursing homes

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Abstract Over the past twenty years, mounting financial pressures and intensifying requests for better public services have often resulted in an increased focus on efficiency, accountability and sustainability within an overall modernization effort of public administration processes. This has led to an emphasis on performance information and to the adoption of new accounting techniques, such as cost and accrual accounting. These new frameworks and standards can supplement or replace more traditional cash- and commitment-based budgetary accounting systems. In some instances, public organizations were given the choice to adopt a harmonized system or to leap-frog to pure accrual accounting. This paper explores what is advisable according to current regulations and the opinions of financial managers at public nursing homes in the Italian Region of Friuli Venezia Giulia.

Keywords: cash accounting; accrual accounting; harmonization; public services; healthcare

JEL Classification: M4; M48

Introduction

In the twenty-first century the public sector has faced an increasing demand for public services, a mounting weight of entitlements, a growing regulatory demand from international institutions while facing fiscal and economic crises which, at the same time, have led to pressures to cut back expenditures, ensure balanced budgets and reduce public debt (Anessi-Pessina, Barbera, Sicilia, & Steccolini, 2016; Kickert, 2012; Peters, Pierre, & Randma-Liiv, 2011). This has led to a search for greater efficiency, flexibility and sustainability of public administration in the implementation of its mission (Lampe, Hilgers, & Ihl, 2015; Lapsley, Mussari, & Paulsson, 2009; Sorrentino 2015).

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Traditionally, public sector accounting results have indicated whether at the end of a financial year there is a surplus or deficit and how much cash is available. Most attention is focused on the budgetary process, that is on the legitimacy of and the comparison between actual and estimated expenditure and on ensuring sufficient funding and revenues (Ter Bogt, 2003). Since the end of the last century, New Public Management (NPM) approaches have introduced innovative processes in the public sector (Anselmi, 2003; Barzelay, 2001; Gruening, 2001; Hood, 1991, 1995) which, with different modes and intensity, have affected most Western countries and are now spreading globally not only to Eastern Europe but also to Latin American and Asian economies (Pina & Torres, 2003; Tickell, 2010). Within these reforms, a fundamental role has been played by changes in measurement and accounting systems, what is often referred to as "New Public Financial Management" (Olson, Guthrie, & Humphrey, 1998; Jackson & Lapsley, 2003; Guthrie, Humphrey, Jones, & Olson, 2005). This is the gradual transition from arrangements built on cash accounting paired with a commitment-based system to control processes and cap expenditure, to a cost and accrual-based framework typical of the for-profit sector and aimed at overcoming bureaucratic obstacles (Barzelay, 1992) and at infusing efficiency, responsibility and result orientation within the complex public realm (Pina & Torres, 2003; Steccolini, 2003). These new techniques can be in addition to or in replacement of more traditional cash- and commitment-based accounting (Hood, 1991, 1995; Lapsley, 1999; Olson et al., 1998; Liguori, Sicilia, & Steccolini, 2012; Sorrentino, 2015).

However, NPM accounting techniques have often failed to replace traditional cash- and commitment-based accounting as the main accounting system in the public sector and in Continental Europe scholars observe a re-emergence of the traditional public administration paradigms (Anessi-Pessina & Cantù, 2017). Their control mechanisms, which focused on individual managers' goals and on an efficient use of resources rather than effectiveness and outcomes, had led to little attention for the attainment of longer-term objectives for organizations and for society at large (Nasi & Steccolini, 2008).
The overall aim of this article is to add another perspective to the debate about the pros and cons of introducing accrual accounting in the public sector and to present some practical implications of switching from traditional public accounting systems to accrual accounting, in particular when developing accounting systems which look at both logics, that is with traditional public administration and NPM paradigms coexisting. This can be of relevance for any country which is still experimenting or tweaking the accounting framework for its public sector organisations.

Research purpose and methods

The adoption of new accounting techniques has been a lengthy and complex process, so much that "the implementation of accrual accounting in the public sector can be conceived of as a dynamic and controversial process" (Bruno & Lapsley, 2016, p. 5). Hence, the purpose of this paper is to offer further insight on such developments in the Italian public care sector. Italy has been depicted as a hesitant adopter of NPM

reforms, because of its entrenched bureaucracy with a legalistic system where public administration has been embedded in politics (Arnaboldi, Lapsey, & Dal Molin, 2016; Hyndman, Liguori, Meyer, Polzer, Rota, Seiwald, & Steccolini, 2018). While other Latin countries such as Portugal and Spain have embraced more enthusiastically accrual accounting (Jorge, Brusca, & Nogueira, 2019), the public accounting reform introduced in Italy in 2011, that prescribed the harmonization of cost and accrual accounting with cash and commitment-based accounting for regional and local authorities, has attracted skepticism and opposition (Mussari, 2012, p. 15). These circumstances make the Italian setting an interesting one for further investigating the development of public accounting. Furthermore, the social and healthcare sector is a particularly worthy area of inquiry, because they are extremely important intervention areas, both because of the social role they play given demographic and social trends as well as in terms of public spending (Bertazzoni & Ranci, 2001; ISTAT, 2015; Modina, 2008). Indeed, they have registered an increasing demand for services, which has translated into an increasing importance for public budgets. This may need to be taken into account when considering public accounting harmonization for the purpose of consolidation and the subsequent control of public accounts imposed by the European Union. Moreover, nursing homes operate in a quasi-market context with accounting information also suitable for cost and accrual frameworks. Indeed, public care providers decide autonomously the fees for their services, which are borne in large part by users since the value of public contributions is less than half (Pesaresi, 2011). In Italy they also face the competition of private providers who can get their services accredited by public authorities, so that people are free to choose between public and private providers while still benefiting from similar allowances.

Therefore, this article considers 1) whether financial managers consider it advisable for public nursing homes to adopt a pure accrual or a harmonized accounting system and 2) how they would prefer accounting standards to develop.

Such an investigation was carried out through a documental analysis of both the relevant literature and current norms and regulations, and an empirical study gathering the opinions and preferences of financial managers in public nursing homes in the Italian region of Friuli Venezia Giulia in North Eastern Italy. 21 financial managers were involved in a participatory process. As accrual accounting is not common knowledge among Italian public financial managers (Hyndman et al., 2018), they were first invited to a training which explained the details of balance-sheets and profit and loss accounts and the differences with more traditional financial statements based on cash- and commitment accounting. The training was followed by a 6-day participatory workshop with focus groups to discuss in detail the most recent laws and the implications of adopting various accounting solutions. Eliciting the views of key actors can help explain whether, why and how accounting innovations are implemented (Jackson & Lapsley, 2003; Hyndman et al., 2018).

The next section will outline the results of the research with the upshot of the literature and normative appraisal and the findings from the empirical exercise. At the end results will be discussed and conclusions drawn to appreciate the rationalities behind different options.

Results

Literature overview and normative changes

In traditional public accounting systems (Weber, 1968), the budget plays a central role: it is a political act and the basis for any negotiation as it translates political goals into appropriations of financial resources (Wildavsky, 1964; Liguori, Sicilia, & Steccolini, 2012). According to Anessi-Pessina et al. (2016) the budget is a multifaceted tool, since it is simultaneously "an important political medium (to bargain and allocate power and resources), a fundamental governance and management device (to plan and decide, steer and control), and a central accountability channel (to strive for transparency and stakeholder involvement)" (Anessi-Pessina et al., 2016, p. 502). Traditional accounting systems offer two results at the end of a financial year: whether there is a surplus or deficit and how much cash is available. Yet, the focus is on the budgetary process, that is on the legitimacy of actual expenditure through its comparison with what was estimated and on ensuring sufficient financial coverage (Ter Bogt, 2003). In other words, "in the traditional model of public administration, accounting is intended primarily to ensure compliance with budget and curtail spending" (Liguori et al., 2012, p. 905).

NPM practices (Hood, 1991, 1995; Olson et al., 1998) have introduced private-like logics and tools with an emphasis on efficiency, effectiveness and results (Ferlie, Ashburner, Fizgerald, & Pettigrew, 1996). Managers have been made more accountable for the results attained, while the accounting focus has gradually shifted from spending and budget allocations to costs and revenues, assets and liabilities. There is a considerable literature on this topic which has steered the debate about the merits of introducing accrual accounting in the public sector. Earlier contributions (Guthrie, 1998; Jones 1998; Barton, 2003), which challenged the relevance of accrual accounting to public administration, were followed by studies which sought to explain in more detail and through case studies the rationale, benefits and pitfalls of implementing accrual accounting in the public sector (Christensen & Parker, 2010; Hyndman & Connolly 2011; Adhikari & Gareth-Nesbakk, 2016; Becker, Jagalia, Skaerbek, 2014; Ezzamel, Hyndman, Johnsen, & Lapsley, 2015) and its variations in different countries (Hyndman & Connolly, 2011; Kickert, 2012; Hyndman et al., 2018). Indeed, even within the same country, there are significant variations the adoption and demise of NPM across tiers of government and public sector organisations (Caperchione, 2012; Hughes, 2012).

NPM is no longer considered the undisputedly dominant logic (Anessi-Pessina & Cantù, 2017; Manes-Rossi, Orelli, & Padovani, 2017). As response to the increasingly complex and plural nature of public policy implementation and service delivery, a New Public Governance (NPG) paradigm has emerged (Osborne, 2010), emphasizing the governance of networks, that is the relationship with the external environment, be it between governments or between public and private sector organizations (Kickert 1993). At the same time, some scholars (Olson et al., 1998; Jackson & Lapsley, 2003; Guthrie et al., 2005) have focused on accounting techniques and financial management tools called New Public Financial Management (NPFM). Moreover, continental Europe may be witnessing the re-emergence of a traditional public logic, although with some

new standards to make the public sector organizations more efficient and accountable (Pollitt & Bouckaert, 2011; Anessi-Pessina & Cantù, 2017).

Although the trend to adopt it in the public sector has had several drawbacks and has not been uniform, accrual accounting has had an increasing impact and can no longer be seen as a prerogative only of English-speaking countries such as Australia, Canada, New Zealand, the United Kingdom and the United States. Even in those countries where historical, cultural and structural issues have limited its diffusion, such as continental Europe and Latin America, nowadays it is hard to find solely cash and commitment-based accounting systems for the public sector (Capalbo & Sorrentino, 2013).

With worsening socio-economic dynamics (Peters et al., 2011; Kickert, 2012), the improvement of public accounting systems has become crucially important, so much that Euro-zone countries have adopted balanced-budget provisions and budgetary accountability across tiers of government and public organizations at large (Anessi-Pessina et al., 2016). The last two decades have witnessed an increasing role for accounting and non-financial performance measures in the public sector (Broadbent & Guthrie, 2008; Liguori et al., 2012; Anessi-Pessina et al., 2016). Since the early 2000s the Public Service Committee of the International Federation of Accountants has encouraged public organizations to move to accrual accounting and adopt International Public Sector Accounting Standards (IPSAS). The Committee maintains that accrual-based statements, rather than cash-based financial reports, provide the most relevant, reliable, comparable and useful information (Public Sector Committee, 2002). In 2011 the European Union with Directive n.85 required all European public sector entities to have "uniform requirements as regards the rules and procedures forming the budgetary frameworks of the Member States". In order to facilitate the harmonization and consolidation of public accounts and thus further their control, "complete and reliable public accounting practices for all sub-sectors of general government" should be reconciled with ESA (European System of Accounts) which relies on information provided on an accrual basis. This pushed those European countries, that had not already done so, to enact new laws and regulations providing for either the harmonization of accrual accounting and traditional public accounting systems or for implementing a full accrual accounting system. In general, Italian legislators favored the former solution. Law 42/2009 and the related Legislative Decree 118/2011 established that regions, provinces, local authorities as well as their instrumental bodies should follow a harmonized accounting system with the new accrual-based and the old cash and commitment-based accounting systems running in parallel (Hyndman et al., 2018). Focusing on public care providers, Italian "Aziende di Servizi alla Persona" (ASPs, care service organizations) are public nursing homes that provide residential and home-delivered social and healthcare services for the elderly, frail and disabled. The role of ASPs is central both in qualitative and quantitative terms in the care of non-self-sufficient people (Modina, 2008; ISTAT, 2015). They were born at the beginning of the century when the Italian government with Law 328/2000 and Legislative Decree 2017/2001 decided that the "Istituzioni Pubbliche di Assistenza e Beneficenza" (IPAB, public welfare and charity institutions) should be converted into proper and independent legal entities. IPAB provided residential services to non-self-

sufficient elderly people, but over time with the reorganization of healthcare services, the rationalization of public health structures and the reduction of hospitalization times, ASPs have increased their range of services to include day-centres, residential services for the critically ill and disabled people, palliative care and home-delivered services such as hot meals, transportation, and therapy implementation. With the constitutional reform of 2001, the Regions were given more legislative competence in the social and healthcare sectors and could decide whether IPAB should be converted into public ASPs or into private associations or foundations or should be left free to choose (Caperchione, 2004). Following Trentino Alto Adige, Emilia Romagna, Lombardy and Liguria, in 2003 the Friuli Venezia Giulia Region enacted Regional Law 19/2003 which regulated the transformation of IPAB in public ASP or in private associations and foundations: out of 46 IPAB, 21 turned into ASPs, 20 were privatized and 5 were shut down as they did not have the prerequisites to become public entities nor enough interest was gathered to turn them into private organizations (Spagnul, 2007). Hence, half remained in the public realm, even though their services are only partly subsidized by public funds and private contributions are significant and prevailing. They continued with a traditional public accounting framework, while those IPAB who converted into private associations and foundations had to immediately adopt an accrual accounting system.

Hence, while ASPs and private foundations or associations born from IPAB are similar entities with the same activities, similar stakeholders and support from public bodies, they differ in their legal nature and were subject to different accounting systems (Caperchione, 2004): IPAB who turned into private associations and foundations had to immediately adopt an accrual accounting system, while ASPs continued with the traditional public accounting framework.

In 2016 Regional Law 24/2016 established that by the end of 2018 ASPs should follow local authorities and implement harmonized accounting systems with accrual accounting supporting cash- and commitment-based accounting so as to reap "the benefits of both worlds" (Nasi & Steccolini, 2008, p. 179). However, in 2017 the Regional Executive Committee decided to suspend the application of such a norm and to leave ASPs free to choose between implementing full accrual or harmonized accounting procedures ("Delibera di generalità", general deliberation, n.14/54, 28.07.2017). Most Regions have taken a similar approach since accounting harmonization and consolidation for social and healthcare providers does not appear to be necessary in the Italian system, as their public funding is already accounted for in regional and municipal budgets and hence it is de facto included into consolidation procedures. Consequently, the impact of the social and healthcare system on national public expenditure is already accounted for and there is no need to force a public care provider to adopt exclusively an accrual accounting system (Anzalone, 2018).

Empirical evidence

In order to understand from ASPs' financial managers which of the two systems would be preferable and whether additional standards should be developed, they were asked to deliberate what accounting rules they would establish for their organizations. Using

a "planning cell" methodology (Dienel & Renn, 1995), they were initially divided into seven groups according to the size of their organizations: one group consisted of financial managers from small ASPs with a turnover of less than 2 million euros; two groups included financial managers from ASPs with a turnover between 2 and 4 million euros; one group consisted of financial managers from ASPs with a turnover between 4 and 10 million euros; three groups were comprised by financial managers from large ASPs with a turnover of over 10 million euros. This was done to ensure that issues could be discussed among people from organizations of similar dimensions, since size can influence their work, their responsibilities, their experiences, their perceptions and their risk aversion. Then the groups reconvened in a plenary session to discuss the regulations they had drafted in smaller teams.

Overall, during the workshop all financial managers favored the adoption of a pure accrual accounting systems, because they found it more straightforward. Abandoning cash accounting would be feasible since, on the one hand, their public funding is already accounted for in regional and municipal budgets and, on the other, according to ESA these entities do not need to be included in the consolidation of public accounts because they are considered a market producer, that is an organization where sales cover at least 50% of their costs over a sustained multi-year period (European System of Accounts: ESA 2010).

At the same time and as suggested by some authors (Gangai Alberton, L.M. Streliotto, & Streliotto, 2002), most participants agreed on the need to develop specific regulations to accommodate the accounting specificities of public entities such as ASPs. In particular, they discussed exemptions and dispensations from specific International Financial Reporting Standards, such as booking public grants for multiyear investments as capital reserve, as normally done with commitment-based accounting, rather than as multiyear revenues, as done for accrual accounting. This issue is not set by any national or regional law, but it is left to be determined by own regulations if need be.

Moreover, in line with some scholars (Caperchione, 2004), financial managers recommended adopting a break-even constraint defined a priori in order to help guarantee a positive cash flow and avoid losses, that is budget deficits and overspending, even under accrual accounting. However, financial managers suggested that such a constraint should be set only for the overall budget and not for individual business or organizational units, so that the system would enjoy more flexibility than under a traditional commitment-based system. Yet, there was less agreement among managers on who should authorize budget changes: most suggested that the managing director should be able to authorize them across business units, while some maintained that the board of directors should approve those variations too. These uncertainties revealed that some financial managers were still skeptical about the benefits of accrual accounting and feared the increased responsibility they would face. At the same time, managers in large organizations appeared less attached to traditional practices and somewhat readier to embrace new frameworks.

In keeping with traditional public accounting rules, most financial managers agreed on the need for more precautionary constraints on specific issues such as indebtedness:

new debts should be contracted exclusively for investment purposes according to all managers except those in small organizations, who would use new debts also to pay back old ones. This is indicative of the comparatively limited funds available in smaller organizations, where debt repayment can become a crucial limitation to spending.
As far as assets are concerned, most financial managers suggested implementing some preventive asset restrictions. They argued assets should be monitored and their use restrained through indicators such as the proportion of own funds to third party funding, the ratio between current assets and current liabilities or between own funds and net fixed assets. This would help monitor capital strength and the solidity of the organisation's assets.

Lastly, financial managers maintained that shifting to accrual accounting would diminish paperwork and bureaucratic procedures. However, they did not wish to give away all formal documents used to allocate budget resources under commitment-based accounting. In particular, they claimed they could not operate without payment orders and collection vouchers without significantly changing the modus operandi and habits within their organizations. In some cases, they suggested keeping these documents at least for a transitional phase during the adoption of the new frameworks. Their awareness of their limited understanding of the technicalities of the accounting changes often made them suggest cautious solutions and doubt the rationale for implementing new practices as suggested by other studies (Bourmistrov, 2017; Hyndman et al., 2018).

Discussion

Carrying out accounting reforms in the public sector in Italy as in many other countries has aimed at introducing accrual reporting in the traditional budgetary accounting system to enhance efficiency, accountability and sustainability in an overall modernization effort of public administration processes. In some cases, such as nursing homes, public entities can choose whether to apply pure private sector accounting practices or run them in parallel to traditional cash- and commitment-based systems.

As we have seen, accrual-based reporting is no longer marginal or as strongly opposed as at the beginning of the reform process (Nasi & Steccolini, 2008). Yet, even when they are free to choose which system to adopt, public managers are still anchored to cash accounting frameworks and standards. An imprint of cash- and commitment-based accounting is still evident and more needs to be done to make managers appreciate the advantages of reforms which also increase their accountability.

Moreover, while accrual accounting is seen as useful, specific public sector needs and managerial control systems suggest maintaining some of the prescriptions of commitment-based accounting. While managers in large organizations appeared less attached to traditional practices and somewhat readier to embrace new frameworks, authorization remains the prevailing strategy in public accounting. This may be due to different logics playing at the same time when attempting to introduce top-down solutions and techniques. Ezzamel, Robson, and Stapleton (2012) found three competing logics ("business", "professional", and "governance") when the UK government

introduced NPM-inspired rules for public educational organizations. While budgeting operated according to the new business logic, it was also shaped by the professional and governance logics already present in the various organizations. Similarly, ter Bogt and van Helden (2011), analyzed the inconsistencies which emerged in a Dutch province between NPM reforms and the way of thinking of the people who were involved in preparing and dealing with the budget. In Italy, public financial managers have often perceived accounting reforms not so much as rational and part of a modernization of public administration needed to improve the management of financial resources, but rather as legitimized by authority, that is as imposed by law, the EU or fiscal stress (Jackson & Lapsley, 2003; Hyndman et al., 2018). the tensions that stem from this interplay of multiple logics reshape accounting systems and generate hybrid solutions.

Final remarks

In general, findings confirm that individual, organizational and contextual factors do affect the use of accounting and performance information in the public sector (Moynihan & Pandey, 2010; Grossi, Reichard, & Ruggiero, 2016; Nogueira & Jorge, 2016). In neo-Weberian contexts (Pollitt & Bouckaert, 2011; Hyndman et al., 2018) with a strong legalistic culture (Arnaboldi et al., 2016) such as Italy, some aspects of the traditional bureaucratic mentality persist and have simply been adapted to accommodate new requirements. In order to overcome this limitation, previous studies in the public sector have highlighted the importance of the presence in public organizations of financial managers with some professional and private-sector experience, who are viewed as "privileged communities" able to understand the new systems (Christensen & Parker 2010) and who would embrace the shift to accrual accounting and NPM reforms more easily (Tickell, 2010; Hyndman et al., 2018). In Italy instead, managers often have a general management or law background (Hyndman et. al., 2018) and such credentials may hinder attempts at implementing changes inspired to the private sector.

From a research perspective, it would be interesting and recommendable to investigate these issues further across countries and administrative cultures with different interpretations and implementations of accounting reforms (Barzelay, 2001; Hyndman & Connolly, 2011; Anessi-Pessina et al., 2016). It would be important to understand to what extent, in countries other than Italy, the modernization discourse has been resisted to and merely grafted onto a predominantly bureaucratic structure that in some ways persists and encloses reforms (Arnaboldi et al., 2016; Hyndman et al. 2018). Further research could also delve deeper into the internal organizational dynamics of change processes related to accounting systems and consider multiple and conflicting logics at play and focus on the role of accounting in the interactions between an organization and its institutional environment.

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PAPER

The Realization of the Right to Work in the Republic of Belarus In the Conxect of International Labour Standards: Issues and Prospects

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Abstract The report will consider the historical aspects of securing the right to work in the Soviet labour law, fixation and interpretation of this principle and freedom of work in the modern constitutions of Belarus, Russia and other EAEU member – states. There will be discussions among scientists on the correlation between the right to work, freedom of labour and the abolition of forced labour. The author will draw attention to a number of problematic issues in the current labour legislation of Belarus, in particularly, some norms which non-compliance with international labour standards on the abolition of forced or compulsory labour. Specific proposals will be made to improve this legislation and further implement the provisions of the ILO conventions and recommendations to the legal order of the Republic of Belarus to ensure decent work for employees.

Keywords: right to work, abolition of forced labour, fixed-term employment contract

JEL Classification: K3

Introduction

The year 2019 marks 100th anniversary of the International Labour Organization (ILO) – one of the world's oldest and most respectful international organizations. Belarus has participated in the ILO activities for 65 years (Byelorussian Soviet Socialist Republic joined the Organization in 1954). On March 15, 2019 there has been 25 years since adoption of the Constitution of the Republic of Belarus[1]. The Document has created fundamental legal principals, which become the basis for all norms and labour law institutions. The above mentioned anniversaries provide good opportunity to look back and see what the Republic of Belarus has done to secure its citizens' right to work, to implement the UN and ILO International Labour Standards

[1] The Constitution of the Republic of Belarus 1994: as amended at the Republican Referendums on 24th of November, 1996 and on 17th of October, 2004.- 10th addition.- National Center of Legal Information of the Republic of Belarus, 2014.

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in the framework of the Belarusian National Labour Law. It is also a good opportunity to contemplate on the future, to discuss what actions the Parliament and the Belarusian Government together with social partners should do so as to enhance employees' labour conditions, to provide these conditions on a decent level and what is the most important here – is to insure legal guarantees for the right to work.

1. The right to work: constitutional, doctrinal, historic and legal aspects.

The Republic of Belarus in contrast to many of the former Soviet countries has preserved the right to work in its Constitution. We want to remind that according to part 1 article 41 of the Belarusian Constitution citizens are guaranteed the right to work as the most decent way to a human's self-affirmation. The right includes the choice of profession and type of work as well as the ability to work according to one's vocation, capabilities, education, professional training and public demand. Part 4 of the same article has enshrined the principle of forced labour elimination, which we are going to discuss below.

Contrary to article 37 of the Constitution of the Russian Federation which ensures the freedom of labour, neither the Constitution of Belarus nor its Labour Code enshrines this freedom, which is considered to be a defect in the Belarusian Legislation. We consider the freedom of labour to be the major moral and legal idea that eliminates the possibility of forced labour and gives an individual the right to decide whether to work or not to work and, if yes, which type of work it should be[2].

With this regard the constitutional principal of the right to work is the most important social and economic right, tightly connected with the principal of the freedom of labour though not equal to it.

2. Public principle of abolition of forced labour and the deviation from this principal in the Belarusian Legislation.

The right to work and the freedom of work mentioned above are closely connected with the principle of abolition of forced labour. Part 4 article 41 of the Constitution states this principle in the following manner: "Forced labour is prohibited with the exemption of labour or service imposed by a court's verdict or in compliance with the law on the state of military emergency."

The International Labour Standards, formulated by the UN and the ILO and directed to deal with the issue of the elimination of slavery, forced or compulsory labour. These Standards are also enshrined in the Belarusian National Legislation. For the clarification of the principle of forced labour abolition it's vital to refer to article 13 of the Labour Code of the Republic of Belarus. This article apart from the actual elimination also contains (part 1) the information on which type of labour is viewed upon as forced labour: labour that an employee is forced to do under the threat of abusive pressure, including such cases when the pressure is used as:1) the means of political influence or part of upbringing or as a punishment for the express of political views and ideological beliefs, that are differ

[2] See detailed: Tomashevski K.L. Labour Law Essays (History, philosophy, problems of system and sources) / scientific proofreading by O. Kuryleva. Minsk : Publishing house BSU, 2009. p. 89-90.

from the established political, social or economic system; 2) the means to mobilize and use work force for the sake of economic development; 3) the means to maintain work discipline;4) the means to punish for participation in labour strikes (part 2).

The rules of article 13 of the Belarusian Labour Code are largely formulated under the influence of the ILO International Labour Standard.

In the present Legislation of the Republic of Belarus there are still some deviations from the principle of forced labour abolition and from the constitutional provision about right to work, in particular:

- unreasonably wide use of fixed-term contracts, that prevent employees to resign (contractual employees are not subject to article 40 of the Labour Code, and in order to resign on employee's demand as stipulated in article 41 of the Labour Code it is necessary to have good excuse or to show that the employer has breached the Labour Legislation or the employment contract's conditions.)
- paid public works for the unemployed, introduced firstly by the Decree № 7 of the President of the Republic of Belarus dated 17.03.1997 "On additional measures to promote employment", article 19 and by the Act of the Republic of Belarus № 125-З dated 15.06.2006 "About employment of population of the Republic of Belarus"[3] part 2, article 25. In reality, the unemployed are forced to do paid public works under the threat to suspend unemployment benefit for 3 months if they fail to fulfill their month's norm of the stated public works;
- compulsory labour of state university graduates who receive their education for free and therefore subject to distribution (article 83 of the Code of the Republic of Belarus on Education; the Decree of the Council of Ministers of the Republic of Belarus № 821 dated 22.06.2011 (amended 12.07.2018) "On some issues of distribution, redistribution, deployment or further deployment of graduates, coverage of states' expanses on their education and targeted preparation of specialists, employees and personnel");
- compulsory labour (including obligatory transfers) of individuals, who are covering state's expanses on child support (the so-called persons under obligation) and therefore directed to employers under a court's verdict or decision taken by labour, employment and social security agencies (part 1 article 16, part 3 article 30 of the Labour Code, the Decree of the President of the Republic of Belarus №18 dated 24.11.2006 (amended 23.02.2012) "On additional measures to protect children from vulnerable families")[4];
- obligation of citizens in compulsory rehabilitation centers (with regard to their age, ability to work, health condition, degree and qualification) to work in these centers or other organizations in the vicinity of the rehabilitation center (article 18 of the Law of the Republic of Belarus № 104-З dated 04.01.2010 (amended 09.01.2017) "On the procedure of sending citizens to rehabilitation centers and on the conditions of their treatment"[5].

[3] National register of legal acts of the Republic of Belarus. 22.06.2006. № 94. 2/1222.

[4] National register of legal acts of the Republic of Belarus. 01.12.2006. № 198. 1/8110.

[5] National register of legal acts of the Republic of Belarus. 20.01.2010. № 15. 2/1656.

3. Fixed-term labour contracts: Belarus's negative experience and the ways to overcome it.

We want to remind that according to article 17, chapters 23 and 24 of the Labour Code of Belarus there are 5 types of fixed-term contracts: employment contract with fixed term of no more than 5 years; employment contract for the term of realization of a specific piece of work, employment contract with a temporary period to cover the absence of the employee, whose job position remains open, seasonal employment contract, employment contract with a temporary employee (up to two months according to the common procedure).

The Decree of the President of the Republic of Belarus № 29 dated 26.07.1999 "On additional measures to improve employment relations, sustain work and executive discipline"[6] (hereinafter referred to as the Decree № 29) has become a significant momentum for the unrestricted use of employment contracts and enabled employers to sign fixed-term contracts with any employees. The procedure of transference from employment contracts with indefinite duration to the contractual system of fixed-term employment was subject only to a formal notice of employees in a month, at the end of which an employee can either sign a contract (usually for minimum term of one year) or an employer can terminate labour relations due to employee's refusal to work under the significantly changed working conditions.

It is necessary to notice that since January 1, 2015 Belarusian employers has received formal grounds to give notice to the employees about the significant changes of working conditions in 7 days, not in a month, which was stipulated in sub-item 3.2 of item 3 of the Decree of the President of the Republic of Belarus № 5 dated 15.12.2014 "On enhancement of demands to managers and employees of organizations" (hereinafter referred to as the Decree № 5). Meanwhile, the term of given notice on the changed working conditions (the contract's conditions as agreed upon by the Parties) is supposed to be the shortest among all the EurAsian Economic Union (EAEU) member-states (in the majority of cases the legislation sets a term in one or two months for such a notice). In 2018 Belarusian trade unions began to worry about the results of a massive monitoring: "experts studied about 1.6 million contracts and found out that more than 30% of these contracts were signed for the term of 1 year"[7].

As we've already mentioned, "(the study of the application of fixed-term contracts after the Decree №29 has showed that a lots of enterprises are beginning to introduce fixed-term employment contracts, which in return negatively impacts the employment stability and leads to increase of the unemployment level. Often contracts are made to practically harass dissatisfied employees or to get rid of these employees without perfectly grounded industrial, organizational or economic reasons)"[8].

Thus situation with widely used fixed-term contracts in Belarus is a really strong way

[6] National register of legal acts of the Republic of Belarus. 06.08.1999. N 58. 1/512.

[7] The Government was criticized for 260 thousand of the unemployed and absence of amends to the Labour Code // URL: https://finance.tut.by/news599666.html?crnd=59881 (date of access: 26.05.2019).

[8] Tomashevski K.L., Voitik A.A. Contractual form of employment // Industrial and trade law. 2001. №4. p.31.

to precarization of labour market of our state. Meanwhile the Republic of Belarus has not yet ratified the ILO Convention №158 "On the Termination of Employment at the Initiative of the Employer" (1982) and formally this Convention has no legal authority in our country. Along with that the Belarusian Parliament and the Government have to take into account the Acts of the 'soft law', particularly the ILO Recommendation № 166 "On the Termination of Employment at the Initiative of the Employer" (1982). Item 3 of the article 1 of this Recommendation has stipulated, for example, the measures in order to protect employees from the use of fixed-term employment contracts:

a. to restrict the use of fixed-term employment contracts in the cases when due to the type of work or the working conditions or employee's interests, the contract can not be signed with indefinite duration.
b. consider all fixed-term contracts to be contracts with indefinite duration (apart from cases stipulated in sub-item 2)a of the present item)
c. consider employment contracts signed with fixed duration and already extended once or twice to be contracts with indefinite duration (apart from cases stipulated in sub-item 2 of the present item).

The EAEU member-states' legislations have all the measures proposed by the ILO and represented in this or that combination. For example, sub-item 3 of item 3 article 1 of the Recommendation are active used in 4 from 5 EAEU member-states (article 95 of the Labour Code of Armenia, part 2 of article 17 of the Labour Code of Belarus, article 55 of Kyrgyzstan and article 58 of Russia).

Conclusion

In conclusion we shall say that this paper is aimed at conducting a comparative and legal analysis of the legislations of Belarus and a number of the EAEU member-states. It is worth mentioning that despite the constitutional right to work and the principle of forced labour elimination, the Belarusian legislation has some deviations from these fundamental legal notions.

Correspondingly, even though Belarus has ratified all eight ILO fundamental Conventions (including Conventions № 29 and 105) , there are still some practical deviations from the principle of abolition of forced and compulsory labour, that are mainly the results of unreasonably wide use of fixed-term employment contracts, disciplinary transfers of persons under obligation covering state's expanses for child support and drives of certain types of transport vehicles.

The above-mentioned problem parts of the Belarusian Legislation require, as we see it, special attention from the Constitutional Court of the Republic of Belarus, which can check whether these parts are in line with the Constitution and the ILO Conventions №29 and №105.

Nowadays the Parliament of the Republic of Belarus is considering and preparing to adopt a bill at its second reading. The bill will amend the majority of provisions of Labour Code of Belarus. We hope that some of the problems expressed in this paper will be solved during this or further legislation reforms.

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PAPER

Competitiveness of Travel and Tourism Sector in Greece and Ukraine: Comparative Analysis

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Abstract The study considers competitive advantages and weaknesses of travel and tourism sectors in Greece and Ukraine. There is a divergence in the sector performance indicators and competitive advantages between the countries. Travel and tourism industry accounts for 7.6% GDP in Greece and only 1.4% in Ukraine. In recent years competitiveness of the sector in Greece improved by several indicators. Meanwhile the travel and tourism industry of Ukraine encountered major challenges under economic crisis and hybrid war initiated by Russia (including losing control over 30% of registered collective accommodation facilities). Both countries prioritized raising price competitiveness instead of further tourism services infrastructure development and business environment improvement relatively to the rest of the world. At the same time Greece made progress in safety and security, industry specific support, environmental protection and ground transport infrastructure development, while Ukraine favoured improvements in human and cultural resources. Greece was able to increase international tourism receipts and especially international tourist arrivals, which fits the forecasts. According to our estimation in Ukraine international tourism receipts are 3-4 times less than the potential level under keeping territorial integrity and no crisis scenario. Nowadays there is a clear imbalance in bilateral tourist flows between Greece and Ukraine in favour of visiting Greece. There is a potential for increasing the bilateral tourism links and several policy recommendations are made for that.

Keywords: international tourism; competitiveness factors; international trade in services; country studies.

JEL Classification F1

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1. Introduction

International tourism is an aggregate of services for the movement of individuals from their country of residence for a period up to one year without earning income in the destination place. The international tourism industry produces a complex product that includes accommodation services, meals, transport, related cultural and recreational services, retail trade, telecommunication, advertising, financial and insurance services, translation and visa services.

Tourism is a special type of services that includes not only economic, but also social and cultural cooperation between the countries. International tourism is an important component of international trade and balance of payments, a source of foreign exchange earnings, means of raising employment and GDP, implementation of social and cultural development policy at the national and local levels.

Tourism existed already in the days of ancient civilizations, including the internationalized economy of Ancient Greece, but mass tourism became widespread only in the postwar period. The XXI century is the age of new technology and IT in tourism, which is characterized by greater individualization of tourism services, development of independent online booking and easier access to the international market for new types of providers of tourist services.

Improving competitiveness of tourism provides protection for a country from negative aspects of globalization and challenges of the XXI century. That's why nowadays most countries try to pay more attention to the prospects of tourism development, especially to inbound tourism, which positively affects the balance of payments, promotes investment, upgrades a country's infrastructure and increases employment.

Greece is one of the most tourism oriented states is the world, which for many years have been practicing comprehensive development of the tourism industry, adheres to international standards and, as a result, has been consistently among the leaders in world tourism rankings. It is necessary to determine the ways to improve the efficiency and competitiveness of Greek tourism by comparing the trends, problems and prospects of its development in Greece and other countries.

Ukraine is one of such countries, with which Greece has close economic, political and cultural relations. In order to understand the objective preconditions for development of bilateral cooperation between Ukraine and Greece at present, it must be emphasized that both countries have strong historical and geopolitical relations lasting for centuries. This applies both to the heyday of the Ancient Greek state and the bilateral relations between Byzantine Empire and Kyivan Rus with the expansion of Christian Orthodox religion and baptizing the Rus people in Kyiv. It must be emphasized that the national liberation uprising in 1821 in Greece was prepared and the struggle of the Greek people against Turkish oppression was financed on the Ukrainian territory in Odessa by the organization "Filiki Eteria". Greek diaspora of more than 250 thousand people have been living in Ukraine for several centuries. More than 20 thousand people of Ukrainian diaspora live in Greece since 1990. The Treaty of Friendship and Cooperation between Ukraine and the Hellenic Republic, which was signed in 1996 in Athens, became

the legal basis for closer bilateral trade, economic, scientific, technical and cultural relations, significantly expanding the scope of interaction between both countries according to the Partnership and Cooperation Agreement between Ukraine and the EU of 1994. Further bilateral agreements concluded between Greece and Ukraine provide a legal framework for the development of economic, transport, tourism and investment cooperation. The legal framework of bilateral relations between Ukraine and Greece includes the Air Transport Agreement of 06.11.2011; Memorandum of cooperation for closer relations between Ukraine and the European Union of 01.12.2009; Agreement on merchant shipping of 06.11.2000; Convention for the avoidance of double taxation and prevention of fiscal evasion with respect to taxes on income of 11.06.2000; Agreement on air transport of 15.12.1997; Agreement on promotion and mutual protection of investments 09.01.1994; Agreement on international road transport of passengers and cargo of 11.11.1996; Agreement on cooperation in tourism of 11.11.1996.

Considering the long-term friendly relations, joint participation in the Black Sea Economic Cooperation Organization, the signing of the Association Agreement between Ukraine and the European Union in Brussels in 2014 followed by the Agreement on visa liberalization in 2017, Greece is interested in development of tourism in Ukrainian market and increasing tourist arrivals from Ukraine. In particular tourism development will be affected by Chapter 6 (Establishment, Trade in Services, and Electronic commerce) of the Title IV (Trade and Trade-related Matters) and Chapter 16 (Tourism) of the Title V (Economic and Sector Cooperation) of the Association Agreement.

Despite the fact that currently Greece has accumulated a rich experience in international cooperation in tourism industry, the issue of increasing the competitiveness of Greek tourism in the Ukrainian market has not been sufficiently explored and requires further scientific analysis and research. We further analyse the competitiveness of the Greek and Ukrainian tourism in the world.

2. Previous Research Review

The first definition of tourism was formulated Hunziher and Krapf (1941): “Tourism - a set of relationships and phenomena arising from travel of non-permanent residents to one’s destination and stay in it, if the stay is not a permanent residence and the travellers are not involved in income generating activities”. Greek researcher Igumenakis (2004), who founded the Greek scientific school of Tourism, wrote that: tourism is a temporary movement of people from their residence place to another place for the sole purpose of satisfying tourist needs or desires. But it is not only a desire or need for recreation and entertainment, it includes also organized efforts to attract, accommodate and provide better services to these people.

Tourism competitiveness factors were analysed in several publications. Song and Li (2008) published a review (meta-study) of 121 research papers modelling tourism demand. Another meta-research work was performed by Peng et al. (2014). The most important factors analysed in tourism demand research are income of potential consumers of tourism services, prices, and exchange rate. The remaining factors are

less popular among researchers. Prices are usually measured by consumer price index in a host country relatively the index in the country of origin of tourists. Alternative indicators are price index for services; hotel price index; weighted average of prices for food, accommodation, transportation, entertainment and other services; prices for air transport; distance; fuel prices. Sometimes researchers compare the prices with prices in competing countries. Exchange rates are also used to indicate the effect of prices. Tourists have better information about exchange rate fluctuations than about price changes (Peng et al. (2014)).

Other factors analysed include promotional expenditure to improve a country's image for tourists, climate change, political instability, foreign direct investment as a determinant of business tourism, unemployment, income inequality (Peng et al. (2014)), cultural factors, quality to price ratio. González and Moral (1995) noted the problem that many factors cannot be directly measured.

For example, Neumayer (2004) has explicitly examined the impact of the various types of political violence (indices that account for acts of terrorism, murder, guerrilla movement, revolution, riots, persecution of the opposition, the external pressure and interference, etc.) or human rights violations (if they allow to avoid large-scale acts of violence) on tourism. It reduces the tourist flows by ¼. This effect is the worst in small countries and those countries which are moderately dependent on tourism. A possible explanation is that those countries have less unique tourism characteristics and are destinations that can be easily substituted. Besides the direct information effect, tourist demand decreases due to recommendations by the authorities in tourists' countries of origin not to visit the countries which are significantly affected by violence. The negative effects of violence can occur over time due to the difficulty in cancelling reservations and psychological inertia. The reduction of tourist arrivals sometimes extends to neighbouring countries and may lead to a reorientation of tourist flows to neighbouring countries (such as Turkey, Greece and Cyprus in the event of conflicts in the Middle East). Authoritarian countries become less attractive to tourists (but only with the lapse of time), because they restrict the free movement of tourists and entertainment opportunities.

Uysal and Crompton (1984) explored the effect of expenditure for promoting a favourable tourist image of the country on tourist demand. They used the case of Turkey and came to the conclusion that the impact was low enough.

Stepchenkova and Eales (2011) applied content analysis of publications in the British media, which influence the image of Russia, to determine their impact on tourist flows from Britain to Russia. They calculated a Dynamic Destination Image Index and used it as a factor in an econometric model, along with other factors. They analysed publications grouped by topics such as culture and history (there is a negative impact of Soviet history), economic development (positive impact), social issues (positive impact), tourism (positive effects after 3 quarters), internal affairs, international relations and security (the latter three topics had insignificant impact).

A special area of research is analysing the effect of specific events on travel demand (such as financial crises, natural disasters, epidemics, terrorist attacks (Song and Li (2008)), the energy crisis and socio-economic instability). E.g. Uysal and Crompton (1984) used

additional dummy variables in their regression to account for those factors.
Early models of tourist included gravitational models, where tourist flows between countries were positively affected by output in the countries and inversely depended on the distance between them (Reece W.S. (2003)).

A model created by González and Moral (1995) for analysing tourist demand in Spain is an example of a typical econometric model in modern research:

$$TE_t = \mu_t + \gamma_t + \delta_1 PRC_{t-1} + \delta_2 PRM_t + \delta_3 INC_{t-2} + \varepsilon_t$$

where TE_t – tourists expenditures;
μ_t – trend component;
γ_t – seasonal component;
PRC_{t-1} – the ratio of prices in Spain relative to prices in the countries of origin of tourists, based on the consumer price index (competition from domestic tourism);
PRM_t – the ratio of prices in Spain relative to prices in the competitor countries (competition with other foreign tourist destination);
INC_{t-2} – income of foreign tourists (geometric average of the index of industrial production in the countries of origin of tourists);
ε_t – stochastic component.

The variables *TE, PRC, PRM* and *INC* are measured in logarithms (therefore regression coefficients represent elasticities). The price indicators are adjusted for exchange rate fluctuations.

Almost Ideal Demand System model is characterized by using the share of destination country in the expenditures of tourists from a selected country of origin. E.g. the model created by Papatheodorou (1999) is:

$$s_i = \alpha + \sum_{j=1}^{6} \gamma_{ij} \ln p_j + \beta_i \ln(x/P^*) + \delta_i \ln t \quad ,$$

where s_i – the share of destination country in the expenditures of tourists from the 6 countries of origin under consideration;
p_j – prices in the destination country adjusted for the exchange rate;
x – expenditures of tourists in the destination country per tourist;
P^* – weighted price index for all the 6 countries;
t – time trend to account for changes in the tourists' tastes, which are not explained by changes in expenditures of tourists and prices, e.g. because the fact that tourists want to see different places.

Peng et al. (2014) conducted a meta-research of 195 tourist demand studies to determine its average income and price elasticities. The average income elasticity was 2.526. Since it is greater than 1, in theory it means that tourism can be considered to be a luxury good (when income increases consumers start to spend disproportionately more on travel services). The average price elasticity was -1.281 (minus means that higher prices negatively affect tourism demand). As for the destination regions, the largest income

and price elasticities are in case of tourism flows to Asia, the lowest ones – to Oceania. This confirms the hypothesis of the influence of the destination country on the elasticity of demand. But it is difficult to say how this study confirms the research by Anastasopoulos (1989), indicating that price elasticity is lower in the case of destination countries, which have unique characteristics (in the case of many similar competing destination countries prices are more important).

Papatheodorou (1999) noted that there are two opposing effects of geographical proximity of competing destination countries on the price elasticity of demand. The first effect (the characteristics effect) means that neighbouring destination countries are close substitutes as they are likely to have similar consumer characteristics. Therefore in case of a rising prices in one country, tourists prefer visiting similar neighbouring countries. The second effect (the voyage effect) means that neighbouring destinations are complements considering saving transport costs. Before prices increase in one country, those tourists who visit it also tend to visit a neighbouring country. But after the price rise they avoid visiting both countries. E.g. Spain and Portugal are considered to be substitutes (because they have similar characteristics), while Greece and Turkey are complements (since there are more distant from the countries of origin of tourists and are less similar).

As for researchers who were involved in the study of the tourism industry of Greece, Louvieris (2002) addressed the issue of forecasting inbound tourism demand for Greece. Borchert (2010) noted that 62% of people who travelled to Greece were involved in sun, sand and sea type of tourism, 40% in relaxation, 24% had adventure holidays, 22% were attracted by natural sites etc. Delitheou, Vinieratou and Touri (2010) analysed capacities for conference tourism in Greece. They noted that 40% of conference events are held in Athens. There were enough infrastructure facilities for conferences, but the problems of transport and marketing activities were to be addressed. Kajzar (2015) considered the ecotourism capacities of Greece.

Bondarenko (2011) provided a SWOT analysis of Ukrainian tourism industry. Development of the industry is favoured by diversified natural and recreation resources and location, and is constrained by seasonality, underdeveloped infrastructure etc. Guk (2008) mentioned that successful use of tourism potential of Ukraine requires addressing the problem of excessive marketing costs (infrastructure development, promotion of domestic tourism product to foreign markets, costs of excessive regulation bureaucracy). Sofiichuk (2018) addressed the modern risks for the tourism industry enterprises in Ukraine. Mihushchenko (2017) described the losses for the tourism potential of Ukraine because of the hybrid war. In particular Ukraine has lost 517 km of the seashore because of the annexation of the Crimea, 6 nature reserves, 600 spa and recreation hotels, 5 ports for cruise ships, etc.

3. Trends in travel and tourism industry

Greece relies much more on tourism industry than Ukraine considering international tourism receipts and the role of travel and tourism industry for the GDP and employment (see the Table 1). But the number of international tourist arrivals differs only two times.

The reason is much lower average receipts per arrival in Ukraine. Thus, Ukraine relies on much cheaper segment of tourism demand.

We also see the upward trend in tourist arrivals in recent years in Greece, although the average receipts per arrival decreased. This evidences about growth of cheaper segment of tourism demand in Greece or prevalence of shorter visits. Despite decrease in absolute travel and tourism industry GDP, the contribution of the sector to the country's GDP and especially employment increased. This evidences in favour of the stabilization role of the industry in the Greek economy and prevalence of cheaper labour strategy to strengthen competitiveness.

Under economic crisis, hybrid war and especially annexation of the Crimea in 2014, Ukraine suffered from a significant drop in both domestic and international tourism indicators. The hybrid war by Russia started as a reaction to the change of geopolitical orientation of Ukraine and allegedly third country effects of the FTA between EU and Ukraine, despite actually it was only a minor challenge for the Russian economy (Shnyrkov, Rogach and Chugaiev (2014)). According to the State Statistics Service of Ukraine (2019) the number of places in registered collective accommodation facilities dropped from 586,6 to 406,0 as a result of losing control over the Crimea and part of the Donbas region (decrease by about 30%). Under such a situation the tourists which had used to visit the Crimea redirected to Odeska, Khersonska oblasts and Western Ukraine. In the 3rd quarter of 2018 the capital city Kyiv accounted for 37% of sales of temporary accommodation and catering services, and Lvivska and Odeska oblasts for 10% each.

According to Hellenic Statistical Authority (2019) in the 1st half of 2016 86.5% of foreigners came to Greece from Europe (66.4% from the EU) – mostly from UK, Germany and Bulgaria. According to the State Statistics Service of Ukraine (2019) in 2017 14.2 million foreigners entered Ukraine. 2.8 million of them were serviced by tour operators. Ukraine was visited mostly by foreigners from Moldova, Belarus, Russia, Poland, Romania, Slovakia, Turkey, Israel and Germany (i.e. mostly from neighbouring countries). 105 thousand Ukrainians visited Greece, while only 19 thousand Greek citizens visited Ukraine. The imbalance in bilateral tourist flows turned out to be stable across many years.

70% foreign tourists arrive in Greece by airplanes, the country has a very developed air transport infrastructure. Ground transport is the second most important mode of transport. The water transport development can contribute to Greek tourism development (including cruise tourism). Foreign tourists arrive in Ukraine mainly by roads and railroads.

Table 1. Travel and tourism industry indicators in Greece and Ukraine.

Indicator	Greece, 2017 Report	Greece, 2013 Report	Ukraine, 2017 Report	Ukraine, 2013 Report
International tourist arrivals, thousand	23 599.5	16 427.2	12 428.3	21 415.3

Indicator	Greece, 2017 Report	Greece, 2013 Report	Ukraine, 2017 Report	Ukraine, 2013 Report
International tourism inbound receipts, US$ million	15 672.7	14 622.6	1 082.0	4 294.0
Average receipts per arrival, US$	664.1	890.1	87.1	200.5
Travel & Tourism industry GDP, US$ million	14 704.1	16 961.0	1 304.8	3 166.6
% of total	7.6	6.7	1.4	2.0
Travel & Tourism industry employment, thousand jobs	400.0	349.9	214.4	350.0
% of total	11.3	8.9	1.2	1.7

Source: World Economic Forum (2013), World Economic Forum (2017).

4. Competitive advantages and strategies

The World Economic Forum Travel & Tourism Competitiveness Reports provide the most comprehensive data about competitiveness factors for the industry. In 2017 the world leaders in tourism and travel were Spain, France, Germany, Japan and United Kingdom. The aggregate data about Greece and Ukraine from the Report in 2017 is shown in Table 2. We should note that the methodology of calculating the index changed in 2017 in comparison to the 2013 Report. Some of the competitiveness indicators were replaced.

Table 2. Travel and tourism competitiveness in Greece and Ukraine in 2017.

Components of the travel and tourism competitiveness index	Greece		Ukraine		Advantages (+) / lagging (-) of Greece	
	Rank	Score	Rank	Score	Rank	Score
	24	4.5	88	3.5	+64	+1.0
Business Environment	103	4.1	124	3.7	+21	+0.4
Safety and security	53	5.6	127	3.5	+74	+2.1
Health and hygiene	11	6.6	8	6.6	-3	+0.0
Human resources	49	4.8	41	4.9	-8	-0.1
ICT readiness	54	4.9	81	4.2	+27	+0.7
Prioritization of Travel & Tourism	15	5.5	90	4.3	+75	+1.2

Components of the travel and tourism competitiveness index	Greece		Ukraine		Advantages (+) / lagging (-) of Greece	
	Rank	Score	Rank	Score	Rank	Score
International Openness	32	4.1	78	2.9	+46	+1.2
Price competitiveness	90	4.7	45	5.2	-45	-0.5
Environmental sustainability	39	4.5	97	3.9	+58	+0.6
Air transport infrastructure	26	4.3	79	2.4	+53	+1.9
Ground transport infrastructure	48	3.7	81	3.0	+33	+0.7
Tourist service infrastructure	18	5.7	71	4.1	+53	+1.6
Natural resources	32	4.1	115	2.3	+83	+1.8
Cultural resources	27	3.1	51	2.1	+24	+1.0

Source: World Economic Forum (2017) and authors' calculations.

The aggregate data shows that in recent years Greece improved its travel and tourism competitiveness unlike Ukraine. Greece outperforms Ukraine in almost all areas except Health and hygiene, Human resources and especially Price competitiveness. The most significant difference is in Natural resources (Greece has longer sun and beach tourism season), Prioritization of Travel & Tourism (the government treats the industry as the economy driver), Safety and security (Greece does not face such security challenges as Ukraine).

Greece is in the top 20 countries by Health and hygiene, Prioritization of Travel & Tourism, and Tourist service infrastructure, which constitute its main competitive advantages. But some business environment indicators are still its weakness. Ukraine turned out to be in the top 10 countries by Health and hygiene indicators and faces weaknesses in Business Environment, Safety and security, and Natural resources.

The more detailed data shows that Greece outperforms Ukraine by more than 70% indicators. But Ukraine demonstrate much better performance by pricing (Hotel price index, Purchasing power parity, Fuel price levels), some labour market conditions (Hiring and firing practices, Pay and productivity, Female participation in the labor force), some IT indicators (Internet use for biz-to-consumer transactions, Mobile-cellular telephone subscriptions), railroad transportation (Quality of railroad infrastructure, Railroad density), procedures for starting business, hospital beds density, comprehensiveness of annual travel and tourism data, costal shelf fishing pressure, and automated teller machines density.

Competitiveness growth in the sector in Greece in 2013-2017 was caused by improvements mainly in business environment and government support, safety and security, price competitiveness and environmental protection. Performance of Greece improved in Business impact of rules on FDI (outpaced 21 countries in the ranking), Cost to start a business (56), Business costs of crime and violence (28), Reliability

of police services (28), Business costs of terrorism (22), Extent of staff training (39), Government prioritization of travel and tourism industry (20), Effectiveness of marketing and branding to attract tourists (56), Comprehensiveness of annual Travel & Tourism data (22), Ticket taxes and airport charges (46), Hotel price index (21), Fuel price levels (22), Stringency of environmental regulations (34), Enforcement of environmental regulations (34), Sustainability of travel and tourism industry development (53), Quality of port infrastructure (19).

At the same time there was a downward trend in Time to start a business (-24), Primary education enrolment rate (-31), ICT use for biz-to-biz transactions (-65), Timeliness of providing monthly/quarterly Travel & Tourism data (-31), Number of World Heritage natural sites (-21). Sometimes this doesn't evidences about absolute worsening. In such cases this means that other countries go forward and outpace Greece, which keeps its performance indicators on the same level.

Ukraine had large improvements in Time to start a business (70), Primary education enrolment rate (33%), Internet use for biz-to-consumer transactions (33), Purchasing power parity (29), Sustainability of travel and tourism industry development (20), Environmental treaty ratification (28), Number of World Heritage cultural sites (27). In particular after the currency crisis Ukraine reached the 2nd place in the world by Purchasing power parity indicator, which reflects the effect of devaluation of the national currency on dollar prices.

Instead lagging behind took place in Business costs of crime and violence (73), Business costs of terrorism (90), Hiring and firing practices (-31), Ease of hiring foreign labour (-21), ICT use for biz-to-biz transactions (-24), Mobile-broadband subscriptions (-40), Timeliness of providing monthly/quarterly Travel & Tourism data (-33), Fuel price levels (-21), Particulate matter concentration (-64), Quality of port infrastructure (-20), Presence of major car rental companies (-40). Thus the main problems were in the area of security and some indicators of labour market, IT sector and transportation.

In order to assess the difference in travel and tourism competiveness strategies we calculated the correlation between ranks of Greece and Ukraine according to the aggregate indicators and their changes. In 2013 the correlation was 0.69 at a significance $p<0.01$. This means that both countries enjoyed largely similar patterns of competitiveness advantages. In 2017 the correlation was only 0.31 and the correlation between changes in ranks was 0.33. Both the correlations were insignificant, therefore we cannot say that nowadays the competitive advantages and competitive strategies for tourism and travel sector in Greece and Ukraine are similar. But they are unlikely to differ too much. The similarity in strategies is that both countries prioritized raising price competitiveness instead of further tourism services infrastructure development and business environment improvement relatively to the rest of the world. At the same time Greece prioritized more safety and security, industry specific support, environmental protection and ground transport infrastructure development, while Ukraine favoured improvements in human and cultural resources.

In Darvidou (2014) there was an assessment of the importance of the competitiveness factors from World Economic Forum (2013) for growth of receipts from international

tourism. The correlation analysis showed that the important factors may include those listed in the Table 3. Other indicators were either excluded from the research for methodological or policy reasons or had an insignificant impact on growth of receipts from international tourism.

Table 3. The core travel and tourism competitiveness indicators in Greece and Ukraine.

Components of the travel and tourism competitiveness index	**2017**		**2013**		**Improvements**	
	Greece	**Ukraine**	**Greece**	**Ukraine**	**Greece**	**Ukraine**
Property rights	87	129	71	131	-16	+2
Transparency of government policymaking			118	119		
Cost to start a business, % GNI/ capita	44	11	100	21	+56	+10
Enforcement of environmental regulation	70	116	104	114	+34	-2
Particulate matter concentration	75	90	73	26	-2	-64
Business costs of crime and violence	51	114	79	41	+28	-73
Hospital beds/10,000 pop.	33	4	36	4	+3	0
Quality of air transport infrastructure	43	102	45	85	+2	-17
Airport density/ million pop.	14	117	15	98	+1	-19
Quality of railroad infrastructure	60	34	67	24	+7	-10
Quality of port infrastructure	47	94	66	74	+19	-20
Quality of ground transport network			42	51		
Individuals using the Internet, %	54	80	51	89	-3	+9

Components of the travel and tourism competitiveness index	2017		2013		Improvements	
	Greece	Ukraine	Greece	Ukraine	Greece	Ukraine
Broadband Internet subscribers/100 pop.	19	64	33	69	+14	+5
Purchasing power parity	107	2	112	31	+5	+29
Hotel price index, US$	61	29	82	110	+21	+71
Quality of the educational system			114	69		
Local availability specialized research & training			91	97		
Extent of staff training	74	92	113	104	+39	+12
Hiring and firing practices	96	47	108	16	+12	-31
Simple Average	58	70	76	69	+14	-6

Source: World Economic Forum (2013), World Economic Forum (2017) and authors' calculations.

If we compare the simple average ranks by core indicators (58 and 70) and the overall ranks according to the World Economic Forum Travel & Tourism Competitiveness Reports (24 and 88) in 2017, the difference in competitiveness between both countries would be smaller. The World Economic Forum is likely to overestimate competitiveness of Greek tourism industry, but it underestimated the progress made. It underestimates the current competitiveness of Ukrainian tourism industry and overestimates the decrease in the competitiveness.

Correlation between ranks of Greece and Ukraine by the core indicators and their changes are at most 0.12. Therefore competitive advantages and competitive strategies for tourism and travel sector in Greece and Ukraine are neither too different nor too similar. As we see Airport density and Hospital beds density are important assets of Greece, while expensive euro and drawbacks in Hiring and firing practices remained important problems. In Ukraine the main advantages included cheap national currency, hospital beds density, low cost to start business, low hotel prices and railroad infrastructure. The main problems were related to insufficient protection of property rights, worse quality and availability of air transport, weak enforcement of environmental regulation, and business costs of crime and violence.

In Greece the main efficient improvements were related to lowering cost to start business, availability of staff training, environmental protection and decreasing costs of crime and violence. At the same time there was no crucial deterioration of

competitiveness factors.

In Ukraine the positive effects of lowering hotel prices and devaluation of hryvnia for competitiveness were insufficient to compensate costs of crime and violence, developments in labour market, lagging behind in transport infrastructure. We should not forget also the negative effect of annexation of the Crimea. The region had generated a substantial part of the value added and international receipts for the tourism industry of Ukraine, which are not available now.

Out of the three models developed in Darvidou (2014) only one is relevant now considering change in the set of published indicators:

$$ITR = 1.592 - 0.592CB + 1.460A + 0.221H$$
$$(0,23) \quad (-1,73)^{*} \quad (3,11)^{**} \quad (2,11)^{**}$$

where *ITR* is three-year growth of international tourism receipts, %;

CB – Cost to start a business, % GNI/capita;

A – Airport density/million pop.;

H – Hospital beds/10,000 pop.

The actual data for the independent variables and the estimated growth of international tourism receipts are shown in Table 4.

Table 4. The data for estimation of international tourism receipts growth.

Indicators	2017		2013		Change	
	Greece	Ukraine	Greece	Ukraine	Greece	Ukraine
Potential annual growth of international tourism receipts, % (95% confidence range)	5.6 (4.0; 7.1)	6.7 (4.0; 9.3)	1.6 (-2.0; 4.9)	6.4 (3.9; 8.3)	4.0	0.3
Cost to start a business, % GNI/ capita	2.2	0.5	20.5	1.5	-18.3	-1
Airport density/ million pop.	4.6	0.3	3.3	0.4	1.3	-0.1
Hospital beds/10,000 pop.	48	90	48	87	0	3

Source: World Economic Forum (2013), World Economic Forum (2017) and authors' calculations.

We used the data of World Bank (2019) to calculate the actual international tourism receipts growth rates. For example in Greece there were three periods of tourism activity in recent years. In 2004-2008 the average annual growth rate for the receipts was +10.2%, in 2009-2012 it was-4.4%, in 2014-2017 +5.1%. Except for a large drop in receipts (-35%) in 2009 Ukraine had a long period of positive growth in 2000-2012.

Unlike revival in Greece the period 2014-2017 was associated with the crisis of inbound tourism in Ukraine. The average annual growth rate was negative (-19.8%). But the data for 2017 is more optimistic: +13.8% in Greece and +16.0% in Ukraine.

There is a strong correlation between the growth rates in the world and the EU (0.89), and the EU and Greece (0.79) in 2000-2017. The correlation for the EU and Ukraine (0.54), and Greece and Ukraine (0.38) are smaller. Besides country specific trends there were years with the negative growth (2009 and 2015) and tourism boom years (2004, 2007, 2011 and 2017) in all the four economies. The receipts are only slightly more volatile in Greece than in the EU, but they are much more volatile in Ukraine. Using 2013 as the base year would result in the projected international tourism receipts in Greece 18.6 billion dollars according to the model, which is very close to the actual data. But the measures in business regulation and infrastructure development since 2013 could increase international tourism receipts growth by additional 4.0%.
In Ukraine potential international tourism receipts growth was more than 6%, but under the disintegration due to the Russia's hybrid war and crisis they decreased. The projected international tourism receipts could reach 7.6 billion dollars in 2017 (the confidence range is between 6.9 and 8.3 billion dollars) under better scenario. The difference with the actual receipts of 2 billion dollars is an approximate estimation of the losses of the travel and tourism industry of Ukraine.

5. Prospects for further development of bilateral tourism links

In order to successfully promote the Greek tourism product in the Ukrainian market, Greece should enhance the country image and its importance in the eyes of the population and the whole international community, tourism is an important factor of Greece's image.

There are many other opportunities besides sun and beach tourism. Greece is not only the keeper of ancient culture, but also of Orthodox culture. Here even the smallest town has at least one temple. There is a large number of abbeys. We should mention that the Greek Orthodox Church distinguishes the concepts of "pilgrimage" and "pilgrimage tourism". Pilgrimage is religious in nature, intended for religious people and means visiting a lot of temples and abbeys, and participation in services. Pilgrimage tourism is sightseeing of the holy places without participation in the religious life. This type of tourism is a promising activity, as a huge religious tourist potential of the country contributes to this. First of all, we should say what places would be good to visit for tourists to develop this branch of tourism. Another promising type of tourism is spa tourism associated with visiting tourism destinations for treatment of various diseases, recreation and rejuvenation (such as the fight against smoking, stress therapy, psychotherapy, physiotherapy, relaxation, diet, aesthetics, etc.). Resorts in Greece are designed for treatment and rehabilitation and are known for their therapeutic properties of thermal waters.

Interviewing Ukrainian tourist agencies suggest that Greece is in the top-8 most popular tourist destinations for Ukrainians. Most Ukrainians are satisfied with holidays

in Greece, because tourist products suggested by the Greek tour operators are really high quality, diverse and accessible enough for the part of Ukrainian population with average incomes. After the economic crisis in Ukraine the price aspect is important for tourism travels. Reduction of prices for travel services in Greece can be drived by increased competition in air transport, depreciation of the euro and use of internet marketing. Lifting the visa regime in the EU for Ukraine in case of short visits already supports development of tourism and can raise tourist arrivals and tourism receipts in future. In order to increase the flows of Ukrainian tourists to Greece, it is necessary to form a modern strategy for promoting tourism products and to settle a number of issues related to bilateral cooperation.

They should:

- develop a modern international cooperation agreement between Greece and Ukraine in tourism (opening new travel routes and airlines, establishing tourist information agencies and joint investment projects in the tourism sector, reducing seasonality by alternative tourism);
- improve the national tourism image of the country; carry out large-scale advertising and information campaign using the latest technologies in the Ukrainian media, organize presentations of tourism opportunities in Greece; participate in conferences and seminars on international and regional tourism policy and strategy; develop marketing and tourism products and its promotion in the Ukrainian market; create a network of information centres for Ukrainian tourists in the places of the greatest tourist flows;
- introduce new technologies in the tourism industry; improve the efficiency of the tourism industry; apply the policy of using local competitive advantages in a rapidly changing environment; create new jobs by means of the tourism sector development; develop air transport as a part of economic development; expand inbound tourism by means of involving new market actors.

On the Ukrainian side it is important that Ukraine should harmonize Ukrainian legislation and regulations in accordance with the EU standards. It is important for the Ukrainian side to develop measures to deregulate tourism and implement public and private partnership between Greece and Ukraine in tourism. Nowadays signing of Association Agreement with the European Union by Ukraine is an incentive for introduction of European standards in the Ukrainian tourism industry in the near future and will encourage the relations between Greece and Ukraine in this area.

Expansion of relations and cooperation between Ukraine and Greece on the one hand, and between Greece and international organizations in the area of tourism, on the other hand, provides new ways to promote the national tourist product in the world market and to use global information space and benchmarking in tourism activities.

Conclusions

Existing studies of tourism and travel industry competitiveness factors mainly consider prices and exchange rate, political factors, country's image, one-off events

etc. A comprehensive data of World Economic Forum enabled to assess the moderate difference in competitive advantages and competitiveness strategies of tourism industry in Greece and Ukraine. But there is evidence that only part of the published indicators in the WEF Travel & Tourism Competitiveness Reports actually affect international tourism receipts growth.

Greece relies much more on tourism industry than Ukraine and has better competitiveness dynamics. Ukraine has faced major security threats and experienced economic crisis in 2014-2015. Therefore its current tourism sector generates inbound tourism receipts which are 3-4 times less than the potential level under better alternative scenario. Greece is in the top 20 countries by Health and hygiene, Prioritization of Travel & Tourism, and Tourist service infrastructure. The main efficient improvements were related to lowering cost to start business, availability of staff training, environmental protection and decreasing costs of crime and violence. Ukraine turned out to be in the top 10 countries by Health and hygiene. It also has low costs to start business and quite good railroad infrastructure. Both countries especially Ukraine were forced to follow price minimization strategy in recent years to attract tourists. Greece hosts tourists mostly from distant EU member states, therefore air transport is more important for it. Ukraine is a destination country for mostly neighbouring countries, so ground transport is more frequently used.

In many cases Ukraine and Greece are not direct competitors in tourist flows and are often focused on different segments of consumers. There is a clear imbalance in bilateral tourist flows in favour of visiting Greece. The Association Agreement with the EU became an impetus for introduction of European standards in the Ukrainian tourism industry. In the future together with the visa-free regime it will encourage relations between Ukraine and Greece in this area.

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PAPER

Panda bonds: opportunity or threat for Europe?

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Abstract We analyse the effect of panda bonds on indebted firms default probability. The theoretical default probability as a function of debt is evaluated in the Black, Scholes (1973) and Merton (1974) framework for various set of parameters values. We consider as benchmark the prevailing default rates for speculative-grade corporate companies based on the last reports by S&P (2019) and Moody's (2018).

Keywords: Capital structure; Credit risk; Bond markets; Chinese internationalization.

JEL Classification; G15; G33

1. Introduction

In 2005 the International Finance Corporation and Asian Development Bank issued the first panda bonds. The two panda bonds were renmbinbi-denominated and their values were 1.13 and 1 billion renminbi respectively (about 133 and 118 million dollars at the exchange rate in 2005). Both bonds had a 10-years maturity and annual returns of 3.4% and 3.34%. It was the first time that foreign issuers were entitled to sell bonds in Chinese financial market. At the beginning, funds collected through Panda bond were restricted to be used in China only. This rule was too binding for foreign companies interested in issuing panda bonds. In 2010 this rule was cancelled and this created a strong appetite towards panda bonds. The first corporate panda issuer was Deutsche Daimler in 2014: the face value was 500 million renmbinbi (about 83 million $ at the time), maturity 1 year and coupon 5.2%. Daimler often repeated the deal (about 14 times, with short-term maturities, usually 1 or three years).

In 2016 Polish Finance Ministry signed an agreement with Bank of China and Poland became the first European Government to issue panda bonds. Now, there are many countries (Governments or governmental financial institutions or single companies) all over the world involved in panda bond project. Recently (march 2019) Italian Cassa Depositi e Prestiti (CDP) and Bank of China planned a panda bond issue with face value equal to 5 billion renminbi (about 750 million $) together with a co-

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financing plan for Italian firms investing in China with value equal to 4 billion renminbi (about 606 million $).

The total deal volume of panda bonds was about 125 billion renminbi at the end of 2017 (Schipke et al, IMF 2019). The outstanding volume in the last year (June 2018-May 2019) was about 24 billion renminbi (source GlobalCapital 2019).

In general, panda bonds issues have maturity from 1 to 10 years and annual coupons from about 3% to about 6% (GlobalCapital 2019).

Panda bonds are important in the development of China's credit bond market and in the process of reforming and opening up Chinese economy. They make part of the Belt and Road Initiative and contribute to the process of Chinese internationalization (Schipke et al, IMF 2019).

From the point of view of issuers, the main purpose is the growth of foreign entrepreneurial projects in China. Many financial analysis state, on one hand, that panda bonds will give relevant advantages in the short term: in particular China will increase liquidity of counterparty governments (or counterparty financial intermediaries, usually governmental institutions).

On the other hand, in the medium or long term there are serious risks. First of all there is the risk of counterparty sovereignty reduction, due to the future influence of Chinese monetary policy on bonds returns and therefore on the issuer value of debt, influenced also by the exchange rate evolution. Another kind of risk is the inducement for non-Chinese firms to reinforce their activities in China and to reduce them in the country of origin.

In this paper we provide an analysis focused on companies that directly issue panda bonds or on firms that borrow money through panda bonds, both with the aim of financing their activities in China. From their point of view, if indebtedness is too much high and the firm is not able to repay debt, China should acquire the control of the firm itself: it is, in some sense, another risk of "sovereignty reduction". In the worst situation, if the firm goes bankruptcy, China could become the owner of the firm. In this paper we focus on the risk of default of indebted firm and therefore on the possibility of Chinese final ownership. From a quantitative point of view the main factors affecting the default probability for indebted firms are debt ratios, the maturity of debt, the coupon (cost of debt), the risk free rate in the country of origin, the volatility of the value of the firm. Another important factor is the foreign exchange rate. We evaluate the default probability ignoring this last factor in the Black, Scholes and Merton framework (Section 2), for various set of values of the main factors. The results are described in Section 3.

In Section 4 we analyze the ex-post annual default rates for corporate non-financial rated companies presented in reports by S&P (2019) and Moody's (2018).
The conclusions outlined in Section 5 discuss the comparison between the theoretical default probabilities and the real ex-post default probabilities reported by S&P and Moody's.

2. Black, Scholes and Merton (BSM) structural approach

This section describes the Black, Scholes (1973) and Merton (1974) structural approach. Merton considers a firm with a simple capital structure, that is the value of the firms' assets Vt is given by the value of equity Et and the value of risky debt v(t,T) corresponding to the present value of a zero-coupon bond with a face value D and maturity T subject to the firm's risk of default:

$$Vt=Et+v(t,T)$$

At maturity *T*, if the value of the firm's assets *VT* is greater than the amount owed to the debt holders (the face amount *D*) then the equity holders repay the bondholders and retain the firm. If the value of the firm's assets is less than the face value, the firm goes bankruptcy. In this case, if there are no costs associated with default, bondholders take over the firm and the value of equity becomes zero, assuming limited liability. In this simple framework, if *Vt* and *Et* follow a geometric brownian motion, using Black, Scholes arguments in presence of a risk free rate *r*, Merton shows that the value of equity is the value *ct* of a European call option on the firm value *Vt* with strike price the face value of debt *D*:

$$E_t = c\,[V_t, D, t, T, r, \sigma] = c_t$$

where σ represents the volatility of the firm.
In the Black, Scholes model the call value, that is the equity value is given by the well-known formula:

$$c_t = E_t = V_t N(d_1) - D_e^{-r(T-t)} N(d_2)$$

with *N(x)* equal to the standard normal cumulative distribution function evaluated at *x* and:

$$d_1 = \frac{\ln\left(\frac{V_t}{D}\right) + \left(r + \frac{\sigma^2}{2}\right)(T-t)}{\sigma\sqrt{T-t}};\; d_2 = d_1 - \sqrt{T-t}$$

It can be shown that the value at time *t* of the probability that the call will be in the money at time *T* is equal to *N(d2)*; in the Merton structural model this means that the firm survival probability is:

$$Prob(V_t > D) = N(d_2)$$

then the probability of default is given by:

$$PD_t = Prob(V_t \leq D) = 1 - N(d_2) = N(-d_2)$$

3. BSM applied to panda bonds

The assumption is that panda bonds can have three final maturities (3, 5 and 10 years). We let 100 the firm initial value and we consider different levels of debt, from 0 to 200. This means that the debt ratio goes from 0 to 200%. We suppose that the risk free return is equal to zero, 1%, 2% or 3%. The firm volatility is fixed to 20%, 25% or 30%. The analysis has been repeated for two level of panda bond coupon (the firm cost of indebtedness), approximately corresponding to the minimum and maximum value applied until now, that is 3.5% and 6%. We discuss the results in two separate sub-

sections.The results show the strong impact of maturity and of the risk free rate on cumulative PD as a function of initial debt. Paradoxically, the volatility seems to have less effect on cumulative PD. In any case, when the debt ratio is greater than 1, the cumulative PD is usually above 80% and it increases over 90% for debt ratio more than 1.5. However, the analysis of annual default probabilities seems to be more valuable. First of all, they are comparable whatever the maturity and they can be compared with the values reported by S&P and Moody's (see Section 4).

3.1 Panda bond coupon equal to 3.5%

The following Figures 1, 2 and 3 show some static comparative analysis using annual PD as a function of initial debt.

Figure 1. Ann. PD: r=0, σ=25%, maturity changes

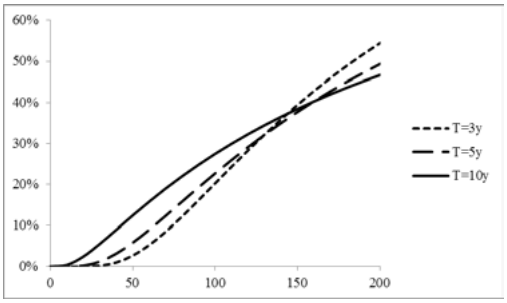

Figure 2. Ann. PD: T=10y, σ=25%, r changes

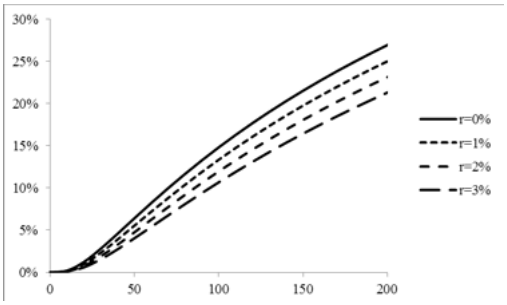

Figure 3. Ann. PD: r=0, T=10y, volatility changes

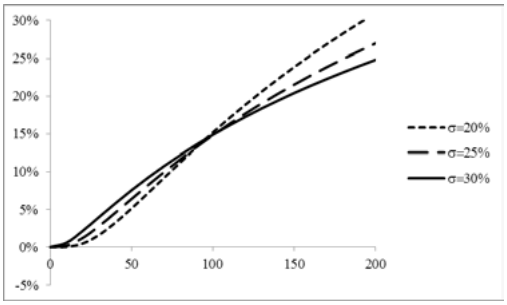

Figure 1 shows the effects of maturity for a fixed level of risk free rate and of volatility. In this case, the annual default probability is 2.7%, 5.8% and 12.4% for T=3, 5, 10 years respectively, with a 50% debt ratio. With debt ratio equal to 100%, the probabilities become 20.2%, 22.7% and 27.5% for T=3, 5, 10 years. The situation changes for debt ratio greater than about 150%: e.g. with a 200% debt ratio, the shorter maturity presents the worst default probability (73%), T=5y and T=10y have, respectively, a 49.3% and a 27% probability. This is due to the effect of the logarithmic component (d1 and d2) in the BSM formula. The combined effect of low volatility and high risk free rate, gives 4.4%, 5.8% and 6.4% default probabilities for the three maturities with 50% debt ratio, 31.4%, 22.7% and 14.8% with 100% debt ratio and 56.6%, 37.7% and 21.5% with 200% debt

ratio. Intuitively, even if a debt ratio between 50% and 150% is considered "normal" (it depends on the kind of firm, sometimes it can reach values greater than 1.5), in our Black, Scholes, Merton application debt ratios greater than 1 give rise to dangerous situations for the indebted firm. This is confirmed also varying the other parameters in the analysis. For example, looking at Figure 2, in the most favorable situation (r=3%) the default probability is 4%, 10.7% and 22% with debt ratio 50%, 100% and 200%.
At the end, changing volatility (Figure 3) for various fixed sets of the other parameters , paradoxically seem to have less impact on the default probability levels.

The following Table 1 shows the results corresponding to some sets of parameters used in the analysis. In particular, it gives evidence of dangerous annualized default probability in case of debt ratios greater than 50%.

Table 1

Firm initial value = 100		r=0%						r=2%					
		σ=20%		σ=25%		σ=30%		σ=20%		σ=25%		σ=30%	
Final debt	Initial	Default probability						Default probability					
maturity (years)	debt	cumulative	annualized	cumulative	annualized	cumulative	annualized	cumulative	annualized	cumulative	annualized	cumulative	annualized
3	20	0.00%	0.00%	0.06%	0.02%	0.42%	0.14%	0.00%	0.00%	0.03%	0.01%	0.30%	0.10%
	30	0.14%	0.05%	1.01%	0.34%	3.18%	1.07%	0.08%	0.03%	0.69%	0.23%	2.44%	0.82%
	40	1.50%	0.50%	4.88%	1.65%	9.65%	3.33%	0.96%	0.32%	3.63%	1.22%	7.82%	2.68%
	50	6.37%	2.17%	12.68%	4.42%	19.16%	6.84%	4.48%	1.52%	10.02%	3.46%	16.17%	5.71%
	60	15.91%	5.61%	23.55%	8.56%	30.11%	11.26%	12.07%	4.20%	19.51%	6.98%	26.22%	9.64%
5	20	0.14%	0.03%	1.11%	0.22%	3.57%	0.72%	0.07%	0.01%	0.68%	0.14%	2.55%	0.52%
	30	1.89%	0.38%	5.92%	1.21%	11.54%	2.42%	1.07%	0.21%	4.09%	0.83%	8.89%	1.84%
	40	7.58%	1.56%	14.77%	3.15%	22.08%	4.87%	4.87%	0.99%	11.02%	2.31%	17.91%	3.87%
	50	17.49%	3.77%	25.87%	5.81%	33.11%	7.73%	12.33%	2.60%	20.43%	4.47%	27.89%	6.33%
	60	29.90%	6.86%	37.40%	8.94%	43.44%	10.77%	22.63%	5.00%	30.85%	7.11%	37.67%	9.02%
10	20	4.70%	0.48%	11.55%	1.22%	19.68%	2.17%	2.32%	0.23%	7.34%	0.76%	14.37%	1.54%
	30	15.06%	1.62%	24.67%	2.79%	33.51%	4.00%	8.85%	0.92%	17.41%	1.89%	26.22%	3.00%
	40	28.12%	3.25%	37.41%	4.58%	45.12%	5.82%	18.53%	2.03%	28.30%	3.27%	36.94%	4.51%
	50	41.05%	5.15%	48.45%	6.41%	54.48%	7.57%	29.37%	3.42%	38.52%	4.75%	46.09%	5.99%
	60	52.47%	7.17%	57.61%	8.22%	61.97%	9.22%	39.96%	4.97%	47.56%	6.25%	53.74%	7.42%

3.2 Panda bond coupon equal to 6%

The new level of coupon rate has obviously a negative impact on default probabilities: they considerably increase. This effect is heightened with medium and long term maturities: in this situations in order to obtain annual PD less than 3% it is necessary to restrict indebtedness below 40%. The following Table 2 replicate Table 1 with the new coupon rate and it allows to compare the two cases.

Table 2

Firm initial value = 100		r=0%						r=2%					
		σ=20%		σ=25%		σ=30%		σ=20%		σ=25%		σ=30%	
Final debt	Initial	Default probability						Default probability					
maturity (years)	debt	cumulative	annualized	cumulative	annualized	cumulative	annualized	cumulative	annualized	cumulative	annualized	cumulative	annualized
3	20	0.00%	0.00%	0.10%	0.03%	0.64%	0.21%	0.00%	0.00%	0.06%	0.02%	0.46%	0.15%
	30	0.27%	0.09%	1.58%	0.53%	4.36%	1.47%	0.16%	0.05%	1.11%	0.37%	3.39%	1.14%
	40	2.55%	0.86%	6.89%	2.35%	12.36%	4.30%	1.68%	0.56%	5.24%	1.78%	10.16%	3.51%
	50	9.54%	3.29%	16.64%	5.89%	23.34%	8.48%	6.93%	2.37%	13.41%	4.69%	19.96%	7.15%
	60	21.72%	7.84%	29.20%	10.87%	35.31%	13.51%	16.98%	6.01%	24.63%	8.99%	31.12%	11.69%
5	20	0.34%	0.07%	1.96%	0.40%	5.30%	1.08%	0.17%	0.03%	1.25%	0.25%	3.87%	0.79%
	30	3.61%	0.73%	9.05%	1.88%	15.57%	3.33%	2.16%	0.44%	6.47%	1.33%	12.28%	2.59%
	40	12.42%	2.62%	20.53%	4.49%	27.98%	6.35%	8.41%	1.74%	15.82%	3.39%	23.20%	5.14%
	50	25.61%	5.75%	33.59%	7.86%	40.10%	9.74%	18.97%	4.12%	27.34%	6.19%	34.47%	8.11%
	60	40.21%	9.78%	46.11%	11.63%	50.84%	13.24%	31.87%	7.39%	39.11%	9.45%	44.91%	11.24%

Firm initial value = 100		r=0%						r=2%					
		σ=20%		σ=25%		σ=30%		σ=20%		σ=25%		σ=30%	
Final debt maturity (years)	Initial debt	Default probability						Default probability					
		cumulative	annualized	cumulative	annualized	cumulative	annualized	cumulative	annualized	cumulative	annualized	cumulative	annualized
10	20	10.03%	1.05%	18.90%	2.07%	27.77%	3.20%	5.52%	0.57%	12.83%	1.36%	21.17%	2.35%
	30	26.15%	2.99%	35.62%	4.31%	43.55%	5.56%	16.98%	1.84%	26.71%	3.06%	35.45%	4.28%
	40	42.71%	5.42%	49.81%	6.66%	55.60%	7.80%	30.85%	3.62%	39.83%	4.95%	47.21%	6.19%
	50	56.71%	8.03%	60.93%	8.97%	64.66%	9.88%	44.15%	5.66%	50.98%	6.88%	56.57%	8.00%
	60	67.62%	10.66%	69.43%	11.18%	71.51%	11.80%	55.61%	7.80%	60.07%	8.77%	63.96%	9.70%

4. Ex-post default probabilities for rated companies

The aim of the analysis shown in this Section is to find effective default rates comparable with the theoretical annual default rate previously described.

In 2019 S&P publishes the last annual report on global corporate default and rating transition. In the introduction, S&P distinguishes rated companies in two main classes: investment and speculative grade. S&P depicts the annual default rates evolution of the two classes and of overall since 1981. Focusing on years from 2006 and on the two classes, S&P shows that at the beginning the investment grade companies default rates are near to zero while speculative are around 1%. In 2008-2009 the rates rise, respectively, to 0.5% and 10%. There are new peaks in 2012 (2.6%) and 2016 (4.2%) only for speculative grade while investment grade default rates remain around 0.1% since 2010 nowadays.

S&P assessed that "*the global speculative-grade corporate default rate fell to 2.1% in 2018 from 2.5% at the end of 2017 … Despite greater market volatility and political uncertainty in 2018".*

Moody's (2018) analyzes the evolution of corporate default rates in the period 1920-2017, showing that in the last years they decreased and fell below historical average. Moody's states that speculative-grade corporate companies has a default rate equal to 2.9% in 2017, while the overall rate is 1.4%.

Even though data refer to companies rated by S&P and Moody's, the estimated default rates can be considered representative of a wide set of corporate companies all over the world.

If we let the entrepreneurial projects of international firms investing in China comparable to speculative-grade corporate companies, we can refer to annual default rate in the range 2.5%-2.9% (S&P, Moody's) and 2.1% in 2018 (S&P). This can be considered a "worst case" estimation of the expected future default rates, keeping into account that both S&P and Moody's forecast a further decline in default rates.

Otherwise, we can consider the average over the last years, excluding peaks if we don't expect new crises or, vice versa, including peaks. Using S&P data and considering, substantially, the last decade, the average over the period 2010-2018 is about 2.6% while that over 2008-2018 is about 3.3%.

5. Conclusions

We analyze the effect of firms financing through panda bonds on firms default probability. We make use of a static comparative analysis varying, in particular, the bond maturity

and the volatility level. The theoretical default probability as a function of debt is evaluated in the Black, Scholes (1973) and Merton (1974) framework. We provide also an analysis of the recent prevailing default rates for speculative-grade corporate companies based on the last report by S&P (2019) and Moody's (2018): it emerges that last default rates are in the range 2.1%-2.9%, while the average on the last decade gives values in the range 2.6%-3.3%.

If S&P and Moody's default rates are considered as a benchmark level, the analysis of the theoretical probabilities suggest that indebtedness levels greater than 50% combined with long panda bonds maturity gives rise to annual default probabilities greater than 6%: this is about two times the default rate of speculative-grade corporate. This situation gets worse when panda bond coupon rate rises from 3.5% to 6% and the precautionary level of debt ratio should be less than 40%. Volatility seems to have a minor impact with respect to maturity, nevertheless it represents another key factor.

Panda bonds can be considered a good financing source if the debt ratio is limited to low levels (40%-50%) and if the bond maturity is short (3 years). At the same time, a careful monitoring of volatility is necessary. We omit the effect of Chinese monetary policies and of exchange rates, but obviously this could have an important effect on firms solvency capacity.

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PAPER

Fintech revolution in transition countries – remittances and mobile money

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Abstract Transition countries experienced massive emigration after the fall of the Soviet Union. Many of them currently rely on remittances from abroad. The number of Remittances Services Providers is constantly growing, some studies speak about the "uberisation" of the remittances market. The paper focuses on six case countries: Armenia, Georgia, Moldova, Kyrgyzstan, Tajikistan and Ukraine. It assesses the potential and current penetration of mobile money services on their remittance market. The paper finds the remittance market in the case countries to be highly competitive in terms of costs and variety of RSPs. Telco operators from the case countries have expanded their services towards certain bank-like and mobile money-like services, but the only true mobile money service so far is present in Armenia. Current portfolios of services offered by telco operators suggests that remittances inflows from Russia are important for future development of mobile money. The remittance market is thus important for mobile money development, but low costs are not the only enabling factor for these services. Other important aspects are convenience, accessibility, speed, transparency of rates, etc. Further development of mobile money in the case countries is highly probable, but it will most likely not be so intense as in other Asian and African countries.

Keywords: remittances, migration, transition countries, mobile money

JEL Classification: F22; F24

Introduction

Remittance services have developed considerably during the last decades. Transfer costs are constantly dropping, new types of Remittance Services Providers (RSPs) entered the market. One of the latest types of RSP are Mobile Money Providers (MPPs) and already had a considerable impact in many countries. This paper focuses on six former Soviet Union countries. They were selected based on their high share

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of incoming personal remittances on GDP (over 10%). After 1990 these countries repeatedly experienced economic downturns and massive emigration flows. This resulted in a considerable dependency on remittances: 13,3 % share of remittances on GDP in Armenia, 11,8% in Georgia, 32,9% in Kyrgyzstan, 20,2% in Moldova, 31,6% in Tajikistan and 10,84% in Ukraine (WB, 2018a). Despite product innovations in financial services are often connected with failures (Avlonitis et al., 2003, Bos et al., 2013), these countries are potentially attractive markets for RSPs. While mobile money had considerable success in some countries (12 MMPs currently operating in India, 18 in Nigeria, 8 in Indonesia), it did not become very popular in the case countries. Russia, the main source of remittances to the case countries, with considerable internal remittances flows has only 3 MMPs (GSMA 2019).

Mobile money transfers are linked to cheaper transaction costs. Both theory and evidence show that remitters are sensitive to changes in transaction fees, e.g. Gibson et al. (2006), Freund and Spatafora (2008), or recently Kakhkharov et al. (2016). This paper assesses the costs of remitting in the case countries and investigates whether mobile money can be competitive in terms of transaction costs. The remittance market is analyzed in detail, focusing on the following characteristics: size and number of potential customers, direct and indirect competitors, possible partners and relevant patterns on the remittance market. To identify current trends, the portfolio of the telco companies in the case countries is analyzed. Their services are divided into specific categories (national and international bank-like, mobile money-like and mobile money services). The detail analysis of potential new payment platforms enabling international retail payments corresponds to the conclusions of Ketkar and Ratha (2008) that innovative financing mechanisms essential for poor countries to increase employment, growth, and reduce poverty, including synergetic effects inducing endogenously driven growth (Adenutsi, 2011). Financial innovations can also be an important determinant in microeconomic decision making as migrants require better control over the uses of their remittances (Yang 2011). The current paper focusing on payment services offered by telecommunication companies extends, thus, still rare evidence of fintech revolution (Gomber et al., 2018).

The paper is organized as follows. The first part of the paper is a survey of existing literature on links between fees, remittance flows and financial environment in the case countries. The second part of the paper offers background on mobile money and summarizes existing literature on mobile money in the case countries. The third part of the paper focuses on remittance-related factors as possible enablers of mobile money services in the case countries.

Remittances and transaction costs: state of current research

Current state of research provides strong evidence that lowering transaction fees leads to rise in remittances and preference of legal transfer channels. There is also strong evidence that remittances positively influence financial environment in recipient countries. From this perspective, introduction of mobile money could have a beneficial effect not only on

direct users, but also on the whole country. Studies assessing the impact of transfer fees on remittances obtain similar results. Gibson et al. (2006) found the costs elasticity of remittances for the New Zealand-Tonga corridor to be 22%. Freund and Spatafora (2008) obtained similar results, a decrease of one percentage point in transaction costs raised recorded remittances by 14-23%. They found remittances to be negatively correlated with transaction costs and positively correlated with the stock of migrants. They also found that in regions with developed financial systems transfer costs were lower and exchange rates were less volatile. Aycinena et al. (2010) led a field experiment on migrants from El Salvador in Waschington D.C. Lowering transaction fees implied an increase in frequency of transactions. Similar results were obtained by more recent studies (Ahmed and Martinez-Zarzoso, 2016). Siegel and Lucke (2009) held a study on Moldovan migrants. They found that the most important factor influencing the choice of remittance channel (official vs unofficial) was transfer costs rather than speed, convenience or security. Illegal migrants prefer informal channels. Kakhkharov et al. (2016) studied the relationship between transaction costs and recorded remittances in 14 post-Soviet economies. They found that remittances grow when transfers costs decrease, lower transaction costs help switching transactions from informal to formal channels.

Beck and Martinez Peria (2011) looked for factors explaining transaction costs. They found remittance prices to be positively associated with the number of migrants and negatively related to the level of income and share of rural population both in the receiving and sending countries. Corridors with more accessibility of financial services have lower costs. The authors found no robust impact of geographic distance, bilateral trade and common language on remittances.

Some studies assess the impact of remittances on the financial environment in receiving countries and find positive evidence. Remittances have a positive influence on bank credit, savings and account ownership (Aggarwal et al. 2011, Anzoategui et al. 2014). Remittance recipients are potential customers for banks, as they receive funds that they need to store, thus they create demand for financial services. Remittance recipients are regarded as less risky, as they have an extra source of income. On the other hands, savings from remittances can substitute credit from formal financial institutions (Ambrosius, 2016). Posso (2015) finds that presence of microfinance financial institutions (MFI) attracts remittances. Typical customers of MFI are closer to remittance receivers than customers of banks, so MFI are more likely to offer financial services to remittance recipients (Ambrosius et al., 2014).

Brown et al. (2013) called the positive impact of remittances on financial environment ‘induced financial literacy hypothesis’. At the micro level, they analyzed the relation between remittances and financial literacy of households in Azerbaijan and Kyrgyzstan. They found a weak positive evidence in Kyrgyzstan and no evidence in Azerbaijan. They explained the results by general conscious decision of local population not to use formal financial services and preference of informal remittances.

Remittances are also a form of insurance, because they are often used for health and emergencies (WB, 2014a, see also Matin et al., 2002). Gerber and Torosyan (2013) conclude that remittances contribute to social capital formation in Georgia. 8,5% of

households with no member abroad receive remittances from other households, while these households are not necessarily relatives. They explain that weak social security provision in Georgia leads to social capital formation by remittances.
Table 1 summarizes relevant papers on costs of remitting to the case countries and implications of remittances for various aspects of the receiving economies. There is evidence of positive impact of remittances on human capital. Positive effect on investment would be enhanced by a better entrepreneurship environment in the recipient country. Some studies find positive remittances to have consumption-smoothing role.

Table 1. Summary of other relevant papers on the impact of remittances on the case countries

Authors	Country	Conclusions
Uzagalieva and Menezes, 2009	Georgia	Remittances have a considerable macroeconomic impact, not all residents are affected equally. In terms of consumption patterns, wealthier persons gain more from remittances than poor individuals.
Grigorian and Melkonyan, 2011	Armenia	Remittance-receiving households work fewer hours and spend less on education of their children.
Buckley and Hofmann, 2012	Tajikistan	Remittance receiving households are not economically wealthier, more stable or entrepreneurial compared to the other households. Tajikistan does not offer viable investment opportunities for remittance recipients, so households do not use remittances effectively.
Gerber and Torosyan, 2013	Georgia	Remittances have a positive impact on the local services sector, retailers and producers; improve human capital by increased spending on education and medical care. Migrant remittances do not create disincentives to work in Georgia.
Matano and Ramos, 2018	Moldova	Remittances increase the probability of pursuing higher education by 5,4 percentage points.
Blouchoutzi and Nikas, 2014	Moldova	Positive impact of remittances on private consumption expenditure, imports and private investment expenditure in Moldova. Targeted policies for better use of use of incoming remittances must be developed.
Ito, 2017	Moldova	Remittances lead to appreciation of real exchange rate and decrease competitiveness of exports. It is necessary to implement policies that minimize the crowding-out effect of remittances. The focus should be importing capital goods, which increase the production capacity of the country.

Atabaev et al., 2014	Kyrgyzstan	Remittances have positive effects on output and imports in the short run, because the country is dependent on imports and remittances have a consumption smoothing character. Remittances would have an impact on the economy in the long run if they would be invested in long-term projects and if consumption preferences would change in favor of local products.

Source: Author's own compilation

There is strong evidence that lower transaction costs increase remittances. Also, remittances impact the financial and economic environment in the recipient country. From this perspective, mobile money could fuel development in the case countries. Positive effects on development should be stronger in countries where remittances are used for investments and savings and lower in countries where remittances have a consumption smoothing role.

Mobile money: state of current research

Mobile money services are electronic financial services processed via a mobile phone. There are three main types: mobile banking, mobile payments and mobile money transfers (IOM, 2014). Mobile banking services are linked to a regular bank account. Mobile payments enable cashless payments and are usually linked to an electronic wallet, which can be connected to a mobile phone account, bank account, etc. Mobile money transfers are not linked to a bank account (Welton, 2009).

Remittances to the case countries are used mainly for consumption (Buckley and Hofman, 2012, Prohnitchi and Lupusor, 2013, Atabaev et al. 2014). It is therefore necessary to have a network of agents who collect and hand out cash from the mobile system is necessary. These can be small retail shops, the telco company's own shops network, gas stations, etc. There are also various models of cooperation between mobile money operators and financial institutions. One transaction can involve several types of RSPs (see ABD, 2014)

The first successful mobile money transfer service was M-PESA. It was launched in 2007 in Kenya, by Safaricom, and was originally designed to microfinance through loans. It turned out that recipients of the loans usually sent the money to people located in other regions. The loans system was re-designed, focusing on money transfers. Remittances were the most important factor leading to the introduction of mobile money services. Mobile money has rapidly expanded to other countries in Africa and Asia. In 2015, mobile payments and transfers were already available in 85% of countries where the number of people with an account at a financial institution was below 20% (GSMA, 2016a).[1] Feasibility of mobile money services depends on many factors. It is necessary to have potential customers and mobile capabilities. Rich countries have enough mobile

[1] For brevity reasons many authors use the term 'mobile money' for mobile money payments and transfers. This paper will use 'mobile money' for mobile money transfers.

capacities, but few potential customers. In poor countries, ownership of mobile phones is common, while access to traditional financial institutions limited, thus there are more potential customers. On the other hand, not all mobile subscribers are potential users of mobile money. Basic mobile transfer services are SMS-based, but more complex services require internet connection. In the CIS countries the mobile phone penetration is high (80%), but mobile internet penetration is quite low (52%, only 7 percentage points above the global average). The penetration of unique mobile subscribers in the CIS countries is near to saturation and it is expected to grow only by 2 percentage points by 2025, while mobile internet penetration is expected to grow from 52% to 72% (GSMA, 2018).

Mobile money services are a relatively recent topic, there is a limited number of research papers focusing on the case countries. Existing studies on mobile money and remittances in transition countries are summarized in Table 2.

Table 2. Summary of existing literature on mobile money in transition countries

Authors	Research area	Conclusions
Welton, 2009	Feasibility study on the use of mobile phones for facilitating international remittances to Georgia.	Recommendations to connecting international remittances to mobile banking services; the author concludes that potential MMPs should cooperate with banks and MPOs in order to (1) offer a denser network of agents and (2) avoid existing cash-out problems due to lack of cash. The legal hurdles for setting a mobile phone-based banking are low.
Parikh et al., 2013	Country report with mobile money services in-country findings for Romania, Georgia, Ukraine, Turkey, Russia, Kazakhstan, Kyrgyzstan	Authors point out the obstacles and opportunities in each country. They focus on mobile money overall (all three types: mobile banking, mobile money transfers and mobile payments). Medium opportunity for mobile money transfer services in Georgia, Ukraine, and Kyrgyzstan, high for Russia and low for Moldova is found.
ADB, 2014	Armenia, Azerbaijan, Kyrgyzstan, Pakistan, Tajikistan, Uzbekistan	The report investigates how mobile money can improve financial access and deepen financial inclusion. It views mobile money in a broad sense (mobile banking, mobile money transfers and mobile payments).
ICMPD, 2018	Armenia	The study assessed feasibility of money transfer systems from abroad in Armenia.

Source: Author's own compilation

To the author's knowledge, there are no other relevant studies focusing on the case countries. The subject is relatively well covered for Armenia. The other countries are

covered sporadically or not at all.

Figure 1. Migrant life cycle stages and financial needs

1: Initial settlement	Survival Debt run-up
2: Legalization	**Remittances** Latent dormant demand of consumers credit and micro credit
3: Stable settlement	**Remittances** Savings products Payment services Loans for: consumption, start-up of economic activities, mortgages Non-life insurance "basic damages"
4: Consolidation	**Remittances (?)** More sophisticated financial needs, including: investments and asset management, life and non-life insurances, pension schemes, loans, mortgages

Source: Adapted from Anderloni and Vandone, 2006

Figure 1 is a systematization of financial needs through the migrant life cycle. It is constructed based on the assumption that migration is legal. After the initial settlement, migrants usually remit during all remaining stages, with probably less motivation to remit during the last stage, when migrants are more integrated and their connections to the home countries loosen. During the fourth stage migrants remit 'because they want', not 'because they must', convenience of the transfer process is thus very important to them. Mobile money could significantly boost remittances during this final stage.

Remittance markets and mobile money in the case countries

WB surveys 15 remittance costs corridors to the case countries. Table 3 shows the most important remittance source countries for the case countries. The Remittances Prices Worldwide (RPW) database is not comprehensive, as it fails to capture intra-CIS remittance corridors, even though they are important. In Moldova 15% and in Georgia 8% of remittances originate from Ukraine. Remittances are highly concentrated geographically. Over half of remittances come from Russia, except for Moldova. The RPW database also monitors several mobile money corridors (32 mobile money corridors in total, to 21 countries from Africa and Asia), but none to the case countries.

Table 3. Main sources of remittances (2017, % of total remittances)

Armenia		**Georgia**		**Kyrgyzstan**	
Russia	64%	Russia	59%	Russia	77%
United States	14%	Ukraine	8%	Germany	11%
Ukraine	5%	Greece	5%	Ukraine	3%
Other (France, Germany, Uzbekistan, Spain, Kazakhstan, Greece, Belgium, Belarus, Czech republic)	17%	Armenia	4%	Other (Uzbekistan, Tajikistan, Kazakhstan, Belarus, United States) Turkey)	9%
		Uzbekistan	3%		
		Germany	3%		
		Cyprus	3%		
		Other (United States, Spain, Israel, Turkey, Italy, Belarus, France, Azerbaijan, Moldova, Austria)	15%		

Moldova		**Tajikistan**		**Ukraine**	
Russia	32%	Russia	76%	Russia	51%
Italy	20%	Kazakhstan	6%	United States	8%
Ukraine	15%	Ukraine	4%	Germany	5%
United States	6%	Germany	4%	Kazakhstan	4%
Romania	6%	Other (Uzbekistan, Belarus, United States, Azerbaijan)	10%	Italy	4%
Germany	4%			Poland	4%
Other (Portugal, Spain, Uzbekistan, Israel, Czech republic, Kazakhstan, Canada, Belarus, France, Greece, Turkey)	17%			Belarus	4%
				Uzbekistan	3%
				Israel	3%
				Czech Republic	3%
				Other (Spain, Canada, Portugal, Moldova, Latvia, Azerbaijan, Hungary)	12%

Note: Highlighted in grey – corridors covered by the RPW Database
Source: WB 2018a, WB 2018b, own calculations

The geographical compactness stands not only for incoming remittances, but also for the number of remitters. Over half of emigrants from Armenia, Georgia, Ukraine and 75% from Kyrgyzstan and Tajikistan head to Russia. Moldova is a specific case

with only 1/3 of immigrants in Russia (WB, 2018b). The proximity of the EU and language similarities with Italy and Spain make these countries a frequent destination for Moldovan emigrants.

Remittances sent to the case countries represent 3% of worldwide remittances, amounting $17,6 billion in 2017 (WB, 2018b). The average amount remitted annually to the case countries in 2017 was $537 per emigrant. The highest level was in Ukraine ($722), the lowest in Georgia ($183). If reduced to remittances from Russia, the highest ones were to Tajikistan ($373), Moldova ($543) and Ukraine ($761) (WB, 2018b). Assuming emigrants remit four times per year, the remitted amount per transaction is around $135. This is relevant for MMPs, as mobile money is highly competitive especially for small transfers (GSMA, 2016b).

Geographic concentration of both remittances and remitters are a possible incentive for mobile services in various indirect ways. According to Welton (2009), the country's small size is an advantage when implementing mobile money, as it is easier to reach a critical (minimum) level of acceptance of mobile services. The absence of geographical dispersion can be an opportunity for MMPs, as they could focus on a limited number of markets and reduce the entry costs (legal compliance, costs for attracting new customers, language barriers, etc.). The number of RSPs in the case countries is relatively high, with Money Transfer Operators (MTOs) predominating the market (Table 4). The average transaction costs of sending remittances range from 1,34% to Armenia to 6,8% to Ukraine (WB, 2018a). Compared to the global average, it is relatively cheap to remit to the case countries. Lower transaction costs can be caused by better financial literary of migrants from these countries (compare to evidence of Karunarathnea and Gibson, 2014). More importantly, transfers from Russia, which is the dominating source country, are highly competitive with an average fee of 1,2%. A possible explanation are migrant networks (see also Beck and Martinez Peria, 2011). Another explanation is the geographical proximity of sending and receiving countries, enabling a circulatory pattern of migration. Many migrants work in Russia illegally, using the possibility to entry the territory without a visa for a maximum period of 90 days within a period of 180 days. They are not allowed to enter the job market without a work permit, but the knowledge of the Russian language, large communities of nationals in the host country, high demand for low-skilled workforce make illegal employment easy. The geographical proximity allows migrants to travel home often, so they can carry cash on them and to rely less on official RSPs. According to Sintov et al. (2010) one quarter of Moldovans working in Russia use to carry cash on them when travelling home. In Armenia the estimate was 17% in 2008 (ICMPD, 2018). If MMPs are to succeed, the key is probably not only to offer competitive fees, but also provide increased convenience (improved accessibility, speed, better exchange rates, no need to go to a branch and to respect the opening hours, which might be problematic for migrants with fulltime jobs, etc.).

Table 4. Characteristics of remittance corridors: RSPs and costs for sending $200

From:	Czech Republic		Germany		Italy		Russia		United States	
To:	Number of RSPs	Total fee (%)	Number of RSPs	Total fee (%)	Number of RSPs	Total fee (%)	Number of RSPs	Total fee (%)	Number of RSPs	Total fee (%)
Armenia										
Bank									1	6,4
MTO							3	1,1	4	6,2
Georgia										
MTO							6	1,2		
Kyrgyzstan										
MTO			8	8,8			7	1,3		
Post office			1	6,1						
Moldova										
Bank			3	21,4	3	5,4				
Bank / MTO			1	14,2						
MTO			10	6,1	13	6,2	6	1,3		
Post office			2	3,6	1	10				
Tajikistan										
MTO			7	6,9			6	1,3		
Post office			1	6,1						
Ukraine										
Bank	5	12,1			3	7,6			1	4,5
MTO	6	9,1	8	6,4	12	5,1	2	1,2	6	6,4
Post office			1	6,1						

Source: WB 2018a, own calculations

Table 5 provides a deeper insight on the remittance market in the case countries. In terms of number of bank branches per 100.000 adults, the highest accessibility is in Armenia, Georgia and Moldova. These countries also have the highest share of urban population, which is important, as branches are often located in cities. On the other hand, this can be misleading. Countries like Armenia, Georgia differ geographically from Moldova or Ukraine. Similar distances in km vary in terms of real accessibility.

Ukraine is a specific case. As a result of the financial sector transformation, the number of banks dropped significantly, from 163 in 2014 to 82 in 2018. Combined with the highest population in the dataset, this results in 0,45 branches per 100.000

adults. Nevertheless, according to the Global Findex Database, the share of adults with a bank account is amongst the highest in the dataset (WB, 2018a). Ukraine has relatively low rates of individuals using the internet (only 57 % in 2017), which is higher than Kyrgyzstan and Tajikistan, but lower than Armenia, Georgia and Moldova. This can also lower the real accessibility of bank accounts and payment channels, as it limits services as internet banking, online payments, etc.

Table 5. Competition on the remittance market

	Armenia	**Georgia**	**Kyrgyzstan**	**Moldova**	**Tajikistan**	**Ukraine**
*Population (millions)**	*2,9*	*3,7*	*6,2*	*3,5*	*8,9*	*44,8*
*Share of urban population**	*63%*	*58%*	*36%*	*43%*	*27%*	*69%*
Number of banks (total number)	17** (CBA, 2018)	15** (NBG, 2018)	25** (NBKR, 2018)	11** (BNM, 2018)	17** (NBT, 2018)	82** (NBU, 2018)
Number of commercial bank branches per 100,000 adults*	23	32	8	27	6,5** (Strokova and Ajwad, 2017)	0,45
Number of MTOs*	8	7	15	17	16	21
Post office offering national and international money transfers	Yes** (Haypost, 2018)	Yes** (Georgian Post; 2019)	Yes** (Kyrgyzpochtasy, 2019)	Yes** (Posta Moldovei, 2019)	No** (Pochtai Tojik, 2019)	Yes** (Ukrpochta, 2019)
Total number of telco operators	3: Ucom MTS Beeline	3: MagtiCom **Beeline** Geocell	3: **Beeline** Megacom O!	3: Orange Moldcell Unité	4: Tcell Babilon-Mobile **Beeline** MegaFon	8: Kyivstar Vodafone Lifecell Intertelecom Trimob Peoplenet Yezzz Lycamobile

	Armenia	Georgia	Kyrgyzstan	Moldova	Tajikistan	Ukraine
Individuals using the internet (% of population in 2017)*	70 %	60 %	38 %	76 %	22 %	57 %

Source: Author's compilation, * WB,2018a ,** for clarity reasons, the source is indicated immediately after the cited information

Besides banks, international money transfer services are also provided by post offices, except Pochtai Tojik in Tajikistan (Table 5). For financially unskilled persons it could be less intimidating to go to a post office. The transfer system is usually provided by an MTO. For example, Posta Moldovei in Moldova has 12 partners, amongst which there are Western Union, Money Gram, Zolotaia korona, Contact, Sigue, Unistream, etc. (Posta Moldovei, 2019). This increases their competitiveness as clients can chose the most convenient service. On the other hand, not all post offices necessarily fulfill the personal and technological requirements in order to provide these services.

Table 6 provides detailed information on services offered by telco companies. They were divided into five categories: no bank-like services (only pure telco services like sms, calls); national bank-like services (limited credit transfer, credit in advance); international bank-like services (bank-like services provided internationally), mobile money-like services (financial services with a third party involved – bank card, e-wallet, etc., telco operators do not have their own e-wallet) and mobile money (telco operators have their own e-wallet with no third party necessarily involved). The current trend is to provide at least basic bank-like services, consisting of providing users credit in advance upon request (they get the credit and pay later, usually within 15-30 days). It is also common to allow for credit transfer from one user to another (usually small amounts, up to $5). Only Unité in Moldova and Yezzz and Lycamobile in Ukraine do not provide this kind of services. Some companies intend to introduce financial services, for instance Orange Moldova has expressed such plans (TV8, 2018).

Table 6. Summary of telco operators and offered services

	Armenia	Georgia	Kyrgyzstan	Moldova	Tajikistan	Ukraine
Telco operators with no bank-like services				Unité		Yezzz Lycamobile

Telco operators providing national bank-like services	Ucom Beeline	Geocell Magticom Beeline	Megacom O!	Moldcell Orange	Beeline	Kyivstar Intertelecom Trimob
Telco operators offering international bank-like services			Beeline		Babilon-Mobile Tcell	
Telco operators offering mobile money-like services					MegaFon	Peoplenet Lifecell (Paycell) Vodafone
Telco operators offering mobile money services	MTS (Mobidram)					

Source: Author's compilation based on BabilonMobile 2019, Beeline Armenia, 2019, Beeline Georgia 2019, Beeline Kyrgyzstan 2019, Beeline Tajikistan 2019, Geocell 2019, Intertelecom 2019, Kyivstar 2019, Lycamobile 2019, MagtiCom 2019, MegaCom 2019, Megafon 2019, Mobidram, 2019, Moldcell, 2019, O! 2019, Orange, 2019, Paycell, 2019, Peoplenet 2019, Tcell 2019, Trimob 2019, Ucom 2019, Unite 2019, Vodafone 2019, Yezzz, 2019

Some telco operators are present on several national markets (Beeline in Russia, Armenia, Georgia and Kyrgyzstan and Tajikistan, MegaFon in Russia and Tajikistan, MTS in Russia and Armenia, etc.). They are in a good position to test new services on one market and eventually expand to other markets. Beeline Russia offers mobile money-like services (possibility to transfer money from the mobile account to a bank account or e-wallet), but it did not expand these services to the case countries (Beeline Russia, 2019). Beeline Kyrgyzstan allows for credit transfers (from 50 to 5.000 Rubles, eg. $0,77-77)) from Beeline users in Russia and charges no fees.

Tight connections with Russia are visible on the Tajik telco market. Babilon-Mobile and Tcell allow for credit transfer from users of MTS, Megafon, Tele2 and Beeline in Russia (up to 15.000 Rubles, transfer fees range from 6,5% to 10,5% depending on the operator) (BabilonMobile, 2019, Tcell, 2019). Tcell also enables credit charge from Kiwi and PayFon24 e-wallets in Russia (Tcell, 2019).

Some telco operators provide mobile money-like services. MegaFon in Tajikistan offers connection of the mobile account with the e-wallet Atlasplay, where users can

top-up account balances, make utility payments, pay in eshops, etc. It also provides mobile payments, consisting of the possibility to use the mobile account as e-wallet and pay for services. Many of these services are free of charge, only the maximum amount of the transactions is limited (Megafon, 2019). Peoplenet in Ukraine offers m-banking for clients of Privatbank (Peoplenet, 2019). These services are not very comprehensive and are limited only to several partners, they however reflect the intentions to provide financial services and are likely to develop further in the future. These are not true mobile money services, as users cannot transfer higher amounts of money to other mobile users without the need to connect to a second party (e-wallet or other financial account), but they exceed basic bank-like services.

Two telco operators in Ukraine provide services very similar to mobile money. Paycell (offered by Lifecell) users can send money from their mobile account to a card (with a fee of 5,5%), pay for utilities, internet, TV, etc. Transactions are limited to 14.000 UAH per month and 62,000 UAH (cca. $2.300) per year. In order to cash out money, the user must send the money to a card and be charged the 5,5% fee, which is quite expensive (Paycell, 2019). Vodafone offers 'Vodafone Pay', which enables payments and money transfers from the mobile account of from the bank card. Users can therefore us their mobile accounts as a e-wallet with very limited services (Vodafone, 2019). These models can be viewed as mobile, but the cash out element is missing. In order to cash out, users must appeal to third party services.

The only telco operator in the case countries that fulfills all attributes of mobile money is MTS in Armenia, offering MobiDram. MobiDram is an e-wallet enabling various operations: account refill, cash withdrawals, transfers, utility payments, microloans, etc. In order to cash out, users must send a withdrawal request (from their mobile or online), then with the withdrawal code and personal ID they can cash out at a MobiDram or Converse Bank branch. Amounts for cash out are limited to 2 million AMD per month ($4.160) with a withdrawal fee of 0,5%. MobiDram e-wallet also allows for microloans. They are provided for a period of one year, charging a daily fee instead of an instead of interest rate. The daily fee is 200 AMD for a 25.000 AMD loan, but it is limited to a maximum of 2.000 AMD per month). MobiDram has a wide range of partners, e-wallets (Qiwi, WebMoney, eMoney, etc.) and telco operators (from Russia, Georgia, Kyrgyzstan, Ukraine). The fee for an international transfer (from/to a partner e-wallet or telco operator) is 1%. These transactions are usually limited to 100.000 AMD ($208). If international remittances are sent to a MobiDram wallet and the user wants to cash out, the resulting fee is 1,5%. This fee is higher than fees charged by MPOs for transfers from Russia, but the difference can be compensated by better exchange rates and higher comfort of transfer.

Telco companies from the case countries appear to follow the current trend of large telco companies moving beyond their traditional mobile and fixed business towards additional services, as fintech, e-commerce, advertising, security solutions, banking services, etc., in order to reduce customer turnover and motivate the customers not to change the provider (GSMA, 2018). Table 7 compares the fees of MTOs and services offered by telco operators in the case countries. The only relevant comparison can

be made in Armenia, even if the maximum amount per transaction is relatively low. If compared to sending MTO $200 via an MPO, mobile money appears to be more expensive. If the recipient would not cash-out, the costs would be slightly lower than those charged by MTOs.

Table 7. Comparison of MTOs and MMPs

From:	**Russia**	
To:	Number of RSPs	Total fees
Armenia		
MTO (sending $200)	3	1,1% (amounts limited to $208/transaction)
Telco (MMP)	1	1,5 % (International transfer with cash-out)
Georgia		
MTO (sending $200)	6	1,2 %
Kyrgyzstan		
MTO (sending $200)	7	1,3 %
Telco (international bank-like services)	1	No fees, amounts limited to $77
Moldova		
MTO (sending $200)	6	1,3 %
Tajikistan		
MTO (sending $200)	6	1,3 %
Telco operators offering international bank-like services	3	6,5 – 10,5 % for credit transfers, max. $241
Telco operators offering mobile money-like services	1	Mainly no fees
Ukraine		
MTO (sending $200)	2	1,2
Telco operators offering mobile money-like services	3	Cca. 5,5 %, amounts limited to $2.300/year

For the remaining countries the comparison has limited interpretations. In general, bank-like and mobile money-like services appear to be relatively expensive, but not in all cases. Some telco operators charge no or very low fees (for instance MegaFon in Tajikistan).

Conclusions

Empirical evidence suggests that lowering transaction costs leads to increase in remittance flows. Furthermore, many remitters to the case countries use informal channels, mobile money might motivate them to switch to formal channels.

The remittance market in transition countries is highly competitive in terms of transfer costs. The Russian remittance corridor is the cheapest worldwide, sending money to the case countries is therefore relatively cheap. MobiDram is an example that MMPs can offer competitive prices even in a highly competitive remittance market, but other telco companies are still reluctant to launch their own mobile wallets. Some attempts are registered, but they are uncomprehensive, have low maximum amounts and are expensive. On the other hand, bank-like services are already standard, only a few telco operators do not provide them. Due to geographical compactness and ease to travel to Russia, the growth of MMPs will probably not be as intensive as in other Asian and African countries, but further development of financial services offered by telco companies is highly probable.

A key factor for the transition countries a whole is the geographical compactness. Population from former Soviet Countries speak Russian as a first or second language, they share certain cultural similarities, which can reduce entry costs to the industry. This is also reflected on the telco market, where some telco operators cover several countries in the region.

In addition to competitive costs, further aspects must be added for mobile money to succeed, like better convenience for the clients (network of agents, partner e-wallets and telco companies, diversify the geographical spread of partnerships). In terms of social and economic impact on the case countries, better convenience of transfers and higher amounts could lead to further positive effects on savings, investment, financial services, access to education and healthcare. This is however conditioned by the environment in the recipient countries. If the entrepreneurial activity is limited, financial sector underdeveloped, positive effects of remittances are low.

A key factor for the transition countries a whole is the geographical compactness. Population from former Soviet Countries speak Russian as a first or second language, they share certain cultural similarities, which can reduce entry costs to the industry. This is also reflected on the telco market, where some telco operators cover several countries in the region.

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PAPER

Economic Transition in Algeria: A Review[1]

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Abstract The issue of economic transition in Algeria was reviewed in this paper. The actions taken by the government to speed up the transition process were examined in light of whether the State was able to move away from protecting old premises of the rentier state and establish a free and productive economic system. The review revealed the contradictions that the planning system of the 1970s had produced and how they eventually led to a transitional crisis. The other finding was that the effectiveness of the transitional institutions, laws, mechanisms, and the dynamism of country's external trade sector were undermined by the inconsistencies of contradictory and often overlapping privatization schemes, the predatory nature of the private sector, and the country's imbalanced external trade and finance. The third finding was that the national natural resources doctrine sustained the mechanisms of the rentier state and became an obstacle to easing up the economic transitional process.

Keywords: Algeria; Economic Reforms; Economic Transition; Market Socialism; Market Economy.

JEL Classification: 020; P27; P35

1. Introduction

Economic transition remains an important issue in debates on how to manage the economy in Algeria. The dominance of the oil sector is considered by many to be the mother of all ills and its state of affairs is often blamed for slowing the transition to a market economy. The aim of this paper is examines the actions taken by the government to speed up the transition process in wake of decreasing oil prices in summer 2014. Specifically, it sheds light on whether the government was able to move away from protecting old premises of the rentier state and establish a free and productive system. Under the rentier state regime, the government of Algeria neglected the restructuring of

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the national economy in favor of new petrochemical projects to finance ongoing budget deficits. Also under this regime, the effectiveness of the transitional institutions, laws, mechanisms, and the dynamism of country's external trade sector were undermined by the inconsistencies of contradictory and overlapping privatization schemes, the predatory nature of the existing private sector, and the country's imbalanced external trade and finance. To address these issues, the paper will be divided into three sections: in the first one, "Algeria's golden age of the 1970s is reviewed in order to reveal the contradictions it had produced. These contradictions are considered by many analysts to have led to the current transitional crisis; in the second section, analyses are advanced on how the national natural resources doctrine had sustained the mechanisms of the rentier state, which is largely believed to be a major obstacle to the establishment of a market economy ; and in the third section the transition process, taking place in the midst of an economic slowdown is analyzed through : (a) the cost of privatization; (b) the ills of the private sector; and (c) the absence of a coherent trade and foreign investment policy and the consequences of this policy on the transition process.

2. Algeria's 'Golden Age' of the 1970's

Algeria gained independence in1962 with an economy lacking both a viable industrial base and a dynamic private sector. The socialistic approach to development gave the government ample powers to plan and execute its ambitious economic and social developmental programs through the pre-plan (1967-1969), the first four year plan (1970-73), and the second four year plan (1974-77). However, "the dominance of industry in Algeria's overall development planning reflects the government's pursued doctrine of putting the industry in the center of all socio-economic activities" (Bouyacoub 2001, p.2). To this purpose, it allocated half of total public investments to the industrial sector, as shown in table 1.

Table 1.—Planned Public Investment: 1969-1977 (millions of DZD*)

Sector	1967-69	%	1970-73	%	1974-77	%
Industry	*5,460*	*50*	*12,400*		*40,000*	*42*
Agriculture	*1,869*	*17*	*4,140*	*45*	*16,600*	*15*
Infrastructure	*1,074*	*10*	*2,307*	*15*	*15,521*	*14*
Education	*0*	*0*	*0*	*8*	*0*	*0*
Training	*1,039*	*10*	*3,307*	*0*	*9,947*	*9*
Transportation	*0*	*0*	*800*	*12*	*6,490*	*6*
Social services	*708*	*7*	*3,216*	*3*	*14,680*	*13*
Tourism	*285*	*3*	*700*	*12*	*1,500*	*2*
Administrative	*0*	*0*	*0*	*3*	*0*	*0*
Equipment	*441*	*4*	*870*	*0*	*1,399*	*2*
Other	*251*	*2*	*0*	*3*	*2,520*	*3*
Total	*11,081*	*100*	*27,740*	*100*	*11,667*	*100*

Source: Ministry of Planning, 1967, Algiers. *DZD: Algerian Dinar

Plans were implemented according to the following criteria:

- An initial industrialization phase would supply the economy with the necessary basic products, such as hydrocarbons, steel, electrical energy, fertilizers, and cement. This phase of heavy industrialization would not create jobs but create capital for the next phase.
- The second phase would lead to creating mechanical, electrical, and petrochemical industries. Built around the basic industries, these industries would be lighter and would absorb unemployed manpower.
- The third phase would involve creating industries for consumption goods and would use more manpower and the outputs of local industries.

The first phase of development planning led to substantial growth of employment in the industrial and construction sectors as table 2 indicates.

Table 2. Growth of Employment in the Industrial and Construction Sectors-Newly Created jobs in 000's (1966-1981)

Year	Industry	Construction
1966	164	73
1977	411	356
1981	439	502

Source: Ministry of Planning and Territorial Management 1979, Algiers; Statistics Year Book of Algeria 1983, Algiers.

The growth of employment in the industrial sector did not necessarily mean high productivity, however. According to Simmon P. Thierry (1980), industrial value added by employees declined from 36,800 million DZD in 1967 to 31,000 million DZD in 1978, excluding the oil sector. Thierry attributed this decline in productivity to the socialistic management of enterprises. The effects of planned investments on the sectorial growth of the Algerian economy, for the same period, are shown in table 3. The data in the table reveal that industry contributed an increase of 15.3 % in GDP in 1984 compared to 12 % in 1979. Also, according the report of the 1980-84 plan, this was due not only to the annual growth of the industrial sector, which grew by 9.5 percent, but also to the better use of existing industrial production units**.**

Table 3. Sectorial Growth of GDP: 1979-1984 (Millions of DZD; Current Prices)

Sector	Value 1979	%	Value 1984	%	Change in Value 1979-1984
Agriculture	10,776	9.5	12,101	8.6	5.0
Industry	13,570	12.0	21,400	15.3	29.4
Hydrocarbons	33,535	39.6	33,070	23.7	-1.7
Housing & public works	18,535	16.0	23,376	16.7	19.8

Sector	Value 1979	%	Value 1984	%	Change in Value 1979-1984
Transport and communication	6,726	6.0	8,758	6.3	7.6
Trade	16,790	14.8	20,744	14.8	14.9
Services	5,105	4.5	6,395	4.6	4.8
Total value added	104,621	92.4	125,848	90.0	79.8
Taxes	6,072	5.4	9,544	6.8	13.0
Customs/duties	2,514	2.2	4,411	3.2	7.2
GDP	113,207	100	139,806	100	100

Source: Ministry of Planning and Territorial Management 1985, Report of the Plan 1980-1984, Algiers.

If the share of the industrial sector in GDP has increased by 30 percent in terms of value added by the end of 1984, the share of the agriculture sector increased by only 5 percent during the same period. The reason behind this small growth of the latter sector was the drought that swept the country during early 1980s. The other sectors show generally a stable to moderate growth. Also the goal of the first five year plan (1980-84) was the creation of more jobs in the agricultural sector, this was not attained according to the same report. As the data in table 4 show, the proportion of the labor force employed in the agrarian domain fell from 32 percent in 1979 to 26 percent in 1984. Meanwhile, the nonagricultural sector, excluding administration, employed 48 percent of all workers in 1979 and 51 percent in 1984.

Table 4 : Employment Structure : 1979-1984

Sector	1979	1984
Agriculture	969,172	960,000
Industry	401,428	503,684
Construction	437,009	652,526
Transport	128,892	165,885
Trade and Services	469,750	603,509
Administrative	615,000	845,000

Source: Ministry of Planning and Territorial Management 1985, Report of the Plan 1980-1984, Algiers.

Bennoune (1988) linked the government's failure to modernize the agricultural sector during the 1980s to the shifting bureaucratic interventionism of the Ministry of Agriculture, the National Bank of Algeria, and the existing of innumerable national boards created more obstacles to farmers instead of providing them with indispensable services.

The disappointing results of the first five year plan (1980-84), in regard to the still-problematic agricultural sector, led the Algerian government to assign realistic objectives to a second five year plan. At the end of the 1984, the planning authorities

decided to enhance agricultural and social services sectors, yet maintain industry as a priority. Table 5 summarizes investment allocations of the new plan. Although the higher share of industrial investment created more jobs, the sharp decrease in oil revenues in the mid-1980s led the government to cut both imports and spending. The decrease in the total value of exports by 41 %, that is from 69.2 DZD billions to 41 billion (MPAT 1988, p.292), led to reduction of imports that affected mainly capital goods and semi-finished products. The former was cut by 29 percent in 1986 and the latter by 31 percent in 1987. These types of imports were essential for enhancing productive activities .The imports of foodstuffs was reduced by 12.6 percent and 11.8 percent during 1986 and 1987, respectively. Despite these cuts, the balance of payments deficit amounted to six DZD billion, that is 5.5 % of GDP in 1986 alone (MPAT 1988, p. 293) .

The reduction of capital goods importation had negative effect on the national economy. The growth of GDP in current prices declined from an annual average rate of 15 % during 1979-1984 to 5.2 % during 1985-1989, and to 2.9 % in 1989, against an annual average rate of 5.8 during the first five year plan (1980-1984). The gross fixed capital formation fell for the first time since independence by 3.4 percent in 1986 and 6 percent in 1987 (MPAT 1988, p. 299). Having said that, it's worth noting that over the period 1968-1980, the rate of gross capital formation in Algeria was over 40 percent, that is more than twice the rate of the industrialized countries (Kichou 2011, p.109). Public investment of the previous two decades has certainly created a new industrial configuration. As of 1991, the 372 existing public enterprises created 404 181 jobs and 151 billion dinars of profits, whereas the 22 382 private enterprises created 99 161 jobs and 28 billion dinars of profits (Bouyacoub, 2001, 2).

Table 5. Second Five Year Plan Investment Structure: 1984-1989 (Billions of DZD)

Sector Billions of DZD %	**Billions of DZD**	**%**
Agriculture	79.00	9.6
Water resources	30.00	3.6
Fishing	41.00	5.0
Forests	1.00	0.1
Industry	174.20	21.28
Hydrocarbons	39.80	4.8
Means of	19.00	2.3
Implementation	15.00	1.8
Transport	15.85	1.9
Storage and distribution	8.00	0.9
Telecommunications	45.50	5.5
Economic infrastructure	149.45	17.7
Social Infrastructure	86.45	10.5
Housing	45.00	5.4

Sector Billions of DZD %	Billions of DZD	%
Education & training	10.00	1.2
Public health	8.00	0.9
Social services	44.00	5.3
Total	818.25	100.00

Source: Ministry of Planning and Territorial Management 1984, Five Year Plan: 1985-1989, Algiers.

However, the shifting priorities in public investments of the two five year plans of the 1980s accelerated the rates of unemployment and underemployment, which were immensely reduced in the 1960s as revealed by Brahimi (1990) and shown in table 6 below. Also, the DZD160 billion invested in industry, outside hydrocarbons, between 1967 and 1991 generated a total of assets that were worth DZD162.5 billion, which shows that these enterprises incurred, in general, a huge debts and had experienced an amountable devaluations of their assets. Moreover, most of the private sector enterprises were small and very small of which only 3.6% employed more than twenty employees (Bouyacoub, 2001, 2)

Table 6. Job Creation Outside the Youth Employment Program1980-1990

Sector	1980-85	1986-90
Industry	107 700	28 000
Public Works	221 000	41000
Services	183 000	89 000
Administration	285 000	173 000
Agriculture	30 000	20 000
Total	824000	310000

Source: Brahimi (1990), p. 332

Lahouari Addi, summed up the results of Algeria's industrialization strategy in the 1970s and the 1980s as follows (Addi 1995, p.3):

- Though investments were large, results were modest- beyond all expectations. Between 1967 and 1978, the GNP grew from 40 billion to 86.8 billion dinars, which was very little given the amount of investments.
- One of the noticeable traits of the Algerian industry was its low return on investment. Industry did not replace hydrocarbons as a major source of revenue, as government planners had wished.
- Newly created enterprises, unable to recoup their original investments or cover their current expenses, generated more debt. The total deficit of state-owned businesses grew from DZD 408 million in 1973 to 1.88 billion DZD in 1978 and reached DZD 110 billion in 1987.
- The massif deficit of the newly created public enterprises generated inflation and tended both to reduce the purchasing power of people living on fixed income and to encourage speculation.

- Imports of foodstuffs made up 17% of total imports between 1967 and 1978, and 19% between 1979 and 1982. Only a huge petroleum income could permit constantly growing food imports, which went up from DZD 731 million in 1967-69 period to almost 9 billion in 1980-84 years. This reflected what many observers were saying: Algeria was literally eating up its petroleum resources.

Furthermore, Addi described how the authorities ignored essential technical, material, and managerial issues in investing income generated from oil exports to create an industrial base (Addi 1995, p. 4):

- Several industries were established in the absence of necessary infrastructure such as water, communication and transportation systems, and skilled labor in the 1960s and 1970s.
- Market equilibrium was not respected as industrialization was realized. Planners, thinking only in technical terms, ignored the equilibrium of the market between production and consumption. As high salaries were allocated to public sector employees, they fueled inflation and reduced the value of workers' salaries but enhanced the accumulation of large fortunes for private businesses.
- The government, for political reasons, refused to face up to fiscal limitations. It failed to pressure workers to increase production and direct management to expand markets and improve product quality for fear that such confrontational actions might lead to the shutting down of state enterprises. By sidestepping these difficulties, the government opted for financing trade deficits, created by more consumer goods imports, thus wasting oil wealth and provoking disequilibrium on the macroeconomic level.
- Algeria's macroeconomic disequilibrium was acceptable until 1985-86 only because of the significant external resources. However, when oil price dropped to $12 a barrel in 1988from to $30 a barrel in 1982, state revenues fail short to support both food imports and service external debt[2] (Addi 1995, p.5). Addi linked the troubles of the Algerian economy, at the beginning of the 1990s, to the rentier state system that was deliberately maintained by a national petroleum strategy that was put in place by the government mainly for political reasons.

3. An Oil Strategy to Sustain the Rentier State

In the above sections, it was argued that the dysfunctions of the Algerian economy during the pre-reforms period (1962-1993) were due to emphasizing the technical aspects of economic planning and ignoring the equilibrium of the market between production and consumption; fuelling inflation because of artificially established high salaries; the government's refusal to face up to fiscal limitations and to workers and management of state enterprises to

[2] Data supplied by Houari Addi (1995), external debt reached $1 billion in 1970, $16 billion in 1980, $13.6 billion 1986, and was estimated by the World Bank 1989-90 report at $24.8 billion. Service on the debt cost reached $8.4 billion annually, compared to annual receipts totaling $10-$12 billion, which led to a deficit in the capital balance of $2.54 billion.

increase productivity and products' quality. By ignoring these difficulties, the government provoked disequilibrium at the macroeconomic level as it opted for financing budget deficits and imports of necessities. Nevertheless, as oil prices collapsed in the mid-1980s, authorities attempted to modify the national petroleum strategy in order to encourage foreign investment in the petrochemical sector and to finance ongoing budget deficits (Addi, 1995, 6).

According to Addi, the new petroleum strategy was not an expression of real economic reforms but to sustain the rentier state, a state regulated by a neo-patrimonial logic and by the redistribution of wealth generated from oil sales. The Algerian national natural resources doctrine, changed with the oscillation of oil prices and the need to maintain the petrochemical sector as the main source of the government revenue. This doctrine started on a solid premise in 1970s that alluded to gaining control of the mechanisms of setting prices, which Algeria and its fellow OPEC members were able to achieve until 1985. However, the oil market has changed to the extent that legal possession of petroleum and gas fields became no longer sufficient to set the price of crude oil. In this situation the nationalist doctrine became ineffective, even counterproductive for Algeria, a country that became in need of more financial and technical means to raise oil and gas production. To achieve this, the national oil company Sonatrach called for foreign participation according to the enacted Petroleum Code of 1986 (Addi, 1995, 7).

The initial version of the 1986 Petroleum Code discouraged all outside investment. It granted foreign companies minority interests for a given period and according to specific conditions. However, modification to this code was introduced in August 1986 allowing access to old, newly discovered as well as currently producing fields. The new code also introduced some modification regarding fiscal policy offering more incentives, with possibilities for reduction of tariffs and taxes on revenue in order to direct exploration efforts towards ignored regions in the Algerian Sahara. The Ministry of Energy and Mines and the national oil and gas company, Sonatrach, felt compelled to change. Sonatrach had neither the technical nor the financial means to put new field into production, despite the existence of proven reserves, and had hard time convincing members of national assembly that this move was just a new oil strategy and not a new oil policy (Addi, 1995, 7).

The new policy was part of a new platform for economic liberalization in Algeria. The government had to choose between two options in this regard: the first meant restructuring the national productive system to render it efficient enough to generate new wealth to meet domestic demand. However, this choice was not easy to implement because it necessitated an openness to compete in the international market and this would eventually lead to the bankruptcy of most Algerian state owned enterprises. No regime could survive the social consequences of such reform. The second policy meant keeping the existing economic apparatus, i.e. generating more state deficits while increasing oil exports[3]. The government leaned towards the second option simply because it was less troublesome for all parties concerned: the state, the society, and the polity (Addi, 1995, 8).

[3] Public budget deficit reached DZD 1,768 billion (1DZD = $0.0092 as of Sept 19, 2016), whereas trade balance deficit amounted to 12 billion dollars according to the same source (Berkouk 2016).

4. Economic Reforms in 1990s

The decline in the productivity of the Algerian industrial sector outside hydrocarbons (see table 7), the collapse of oil prices in the 1986 and the financial crisis of 1993 pushed the government to reschedule external debt and implement economic reforms. By 1994, these reforms took a two way track: macro-economic and medium-term structural adjustment measures. Supported by the IMF, the World Bank, and the European Union (EU), the Arab Monetary Fund and the African Development Bank, these reforms aimed at (Aghrout 2004, p. 91):

- restoring sustainable economic growth and reducing unemployment ;
- bringing inflation down to accepted levels ;
- improving the balance of payments ; and
- limiting the impact of the reforms on the most venerable segments of the society.

Table 7. Public Sector Industrial Production Index

Activity	1989	1994	1999
Hydrocarbons	100	106.1	121.6
Industries outside the hydrocarbons sector	100	84.4	74.8

Source: Bouyacoub, 2001, 5

To achieve these objectives the government adopted several measures, chief among these were: (Aghrout 2004, p. 91)

- realignment of prices through rapid and progressive liberalization;
- adoption of a tight monetary policy;
- adoption of a strong fiscal adjustment;
- liberalization of trade and payment systems;
- liberalization of exchange regime;
- restructuring of public enterprises;
- keeping a manageable debt profile trough rescheduling and prudent debt management; and
- strengthening the social safety net and the establishment of an unemployment insurance scheme.

As early as 1998, the International Monetary Fund's assessment of Algeria's first legislated economic reforms program came out positive. According the IMF, despite the fact that the reform program was launched in a difficult social and political environment, it had been remarkably successful in restoring financial stability and establishing the building blocks for a market economy. However, serious challenges remained in areas such as speeding the pace of sustainable growth, raising the standard of living of the populace and reducing unemployment. (Aghrout 2004, p. 92)

The concerns of the IMF were not off the mark. Data about the performance of the Algerian economy, after five years of reforms, show mixed results as indicated in table 8.

Table 8. Some Socio-Economic Indicators: 1994-2000

	1994	**1996**	**1998**	**2000**
GDP (billion dollars)	42.0	45.6	47.7	53.4
GDP growth rate	-0.9	3.8	5.1	2.4
Per capita GDP (dollars)	1,510	1,581	1,605	1,673
Imports (billion dollars)	9.7	9.1	9.8	9.7
Exports (billion dollars)	8.9	13.5	10.0	21.7
of which Hydrocarbons	8.6	12.6	9.7	21.1
Foreign debt (billion dollars)	29.5	33.7	30.5	25.3
Population (million)	27.5	28.6	29.5	30.4
Active population (million)	6.8	7.8	8.3	8.1
Unemployment (%)	24.4	28.0	28.0	29.5

Source: Adopted from Aghrout 2004, p. 92

Although GDP showed steady increase, inflation dropped from 39 % in 1994 to 0.3 % in 2000, the recorded unemployment stayed at high level of almost 30%, a sign of the inadequacies in the restructuring of the Algerian economy. Reform measures targeted public enterprises and banks to prepare their transition to a market economy. Such measures included, among other things, the liquidation of around 935 loss-making out of 1,324 local public enterprises. Some of these enterprises had their assets transferred to employees, and others, particularly in the commerce and public works, were liquidated. The liquidation process led to a steady increase of the unemployment rate during the first five years of reforms (Aghrout 2004, p. 92).

The reforms of the financial sector, were primarily concerned with the assessment of national banks massive bad loans to Algeria's failing public enterprises. According to the IMF, these banks saw a large influx of liquidity as the government implemented recapitalization and debt takeover measures at high cost to the treasury; about 45% of average GDP for the period 1991-99. Only few banks have reached the capital adequacy ratio of 8% during this period. The government took some steps to enhance competition and improve the financial sector's performance by: (1) allowing and encouraging the establishment of new private banks; (2) opening of capital of existing state owned banks to private minority participation; and (3) letting the gradual entry of foreign banks into the domestic market (Aghrout 2004, p. 93). Despite these constraints, the liberalization of the external sector of the Algerian

economy knew a remarkable progress in terms of eliminating restrictions on trade, payment systems and the exchange regime. However, the improvement of Algeria's foreign exchange stock, estimated to have increased from $21.1 billion in June 2002 to $23.1 billion at the end of the same year was due to an increase in oil prices and the rescheduling of the country's external debt. The burden of the latter has been reduced considerable as the debt to GDP ratio went down from 82% by the end of 1993 to around 22% in 2001. Meanwhile, total external debt went up again in 2002, when it reached nearly $23.1 billion against $29.5 billion in 1994 and $22.6 billion in 2001 (Aghrout 2004, p. 94).

4. Transition in the Midst of Economic Uncertainty

In spite of the economic reforms to liberalize the economy in 1990s, Algeria's business environment was characterized as mostly un-free. In a study by Miles, Feulner, and O'Grady (2004), the country ranked 100 out of 161 countries in terms of easiness of conducting business. Civil disorder that the country experienced in the same decade, led to economic mismanagement, high unemployment, housing shortages, and lack of private business growth. The hydrocarbon sector, in which the government holds a monopoly, constituted 30% of GDP and 95 % of exports. A 15% average tariff rate and bureaucratic time-consuming clearance customs procedures exacerbated any progress towards true opening of foreign trade (Schachmurove 2004, p. 17).

The above observations seem to explain the challenges that Algeria faces in her way to establish a market economy. If these challenges were of structural nature they are of organizational and managerial nature as well. The ills of the private sector, the inadequacies of the banking system, and the ineffectiveness of foreign trade policies all have negatively affected foreign direct investment (FDI) in Algeria.

4.1. The Cost of Privatization

Privation is one the core processes upon which the transition to a market economy is built. It implies "involvement of market forces to ensure greater competition and economic efficiency on the one hand, and reduction in the role of the state as regulator, facilitator, provider, and producer of goods and services on the other" (Gupta, cited in Aghrout 2000). Theoretically, privatization has the support of neoclassical theorists, who contend that the transfer of ownership of economic enterprises from public hands to private ones, within a framework of a competitive environment, leads to greater efficiency and rapid economic growth. Pressed by an inefficient public sector, many developing countries embarked on wave of privatization to achieve a number of goals such as: (Aghrout, 2004 p. 122)

- improving economic efficiency, to be reflected in lower consumer prices and improved product quality;
- reducing fiscal deficits through increased tax revenues on the output of enterprises with a reduction in central government transfers to public enterprises and the benefit from revenue from privatization sales;

- shifting the balance between the public and private sectors and promoting market forces within the economy; and generating new investments (including foreign investment).

In the case of Algeria, the government has committed itself to a policy agenda of privatization. As early as the 1980s the state undertook a series of reforms that targeted public economic enterprises, a task seen to be technically difficult if not unachievable by some analysts at that time. In his study of the Algerian economy, Ahmed Bouyacoub (2001) referred to these enterprises as assets turned into handicaps. He argued that the organizational aspect of industrializing industries[4] policy made the management of these enterprises difficult if not impossible as oil prices collapsed. The vertical integration of industrial public companies carried out by planning authorities produced large industrial entities expected to create economies of scale using high tech machinery and capital intensive production processes. By 1991, these entities employed 80% of the country's labor and produced 82% of the national economy's added value. Out of the 22,754 public enterprises, 62 were in the heavy industrial sector such as oil, iron and steel, building material, and mines. Each sector employed 2,110 people at the average, absorbed 26% of industrial work force, and produced 36% of the industrial added value (Bouyacoub 2001, p.4).

The size of the Algerian public enterprises reflected the importance of industrial concentration in the national productive system. In 1991 the government started the process of dismantling 41 industrial branches where 96% of these branches had a four-enterprise-coefficient of concentration between 80 and 100%. This high coefficient neither produced the wished for poles of growth[5] during socialism nor helped in the restructuring process of public enterprises during the reforms era. In the end, the high industrial concentration created financially imbalanced enterprises kept alive by public deficit financing perpetuated by a rentier state regime (Bouyacoub 2001, p.5). The restructuring of industrial public enterprises continued as the government moved to transform these entities into easily manageable small enterprises. Their number, which was around 150 companies in 1980, increased to 480 corporations during 1982 and 1983. The process of restructuring continued well in the 1990s in the form of financial clean-up of national industrial network. Between 1990 and 1998, the liquidation cost was estimated at over $25 billion by the World Bank. By 2000, the government put up another $15 billion to dissolve non-viable companies, layoff staff, and implement recovery financial schemes, such as debt-equity, swaps, capital injections, debt forgiveness, refinancing, and so forth. The regulatory and institutional framework put

[4] De Bernis' industrializing industries development strategy was rooted in Francois Perroux's growth pole strategy for economic growth. De Bernis, as major consultant of the Algerian States in the 1970s, insisted on integration of the economy by creating a network of primes industries to provide maximum investment decisions and, therefore, economize scarce resources(Gérard D; de Bernis, Deux stratégies pour l industrialisation du tiers monde: les industries industrialisantes et les options algériennes, Revue Tiers-Mondes (July 1971): 545-563).

[5] Perroux coined the term poles of growth in the contrast to the prevailing balanced and steady growth approach to development in the 1950s. Growth, in the Perrouxian sense, would spread to other sectors or industries in the economy from the industrial dynamic sector(Francois Perroux, 'Notes sur la notion de 'pole de croissance', *Economie Appliquée*, 7 (1955): 307-320)

in place to manage the privatization program was initially elaborated during the 1995-98 period. It consisted of a number of organs, such as the Privatization Council and the Commission for the Control of Privatization Operations (CCOP), which proved to be ineffective to carry out the privatization program. But starting in 2001, new structures were established such as the Council for State Participation, which was responsible for, among other things, the definition, examination and approval of policies, program and proposals in connections with privatization (Aghrout 2004, pp. 125-126).

Another structure, the ministry for participation and promotion of investments (MPPI; formerly the ministry of participation in and coordination of reforms), was put in charge of public sector enterprises and the promotion of foreign and local private investment. The MPPI was also assigned the role of determining the valuation of public enterprises and their assets, examining and selecting bids through Public Holding Companies, which were tasked with the mission of managing and divesting the state's assets in various sectors of the economy. These companies, criticized for their rigidity and luck of progress in moving forward with the privatization program, were replaced in 2001 by what was claimed to be a much more flexible and efficient equity management companies (Sociétés de Gestion des Participations; SGPs). The SGPs have in theory been given the responsibility for preparing economic public enterprises for privatization. The setting up of a privatization fund (Fonds de Participation et de partenariat) was also planned in order to speed up and finance privatization operations. The government-sponsored Economic Recovery Plan allocated DZD 22.5 billion to the SGPs (Aghrout 2004, p. 127). In spite of all these measures, the privatization process was criticized for being slow, even inexistent according to an article published in April 2003 in *El Watan,* a respected daily, published inside Algeria. The International Monetary Fund was much less critical of the matter, however. In its assessment of February 2003, the IMF, while expressing its satisfaction about the ongoing reforms, it urged authorities to move ahead with the remaining privatization process, but suggested that it needed to be consistent with a program that should have been continually and appropriately adhered to. Using proceeds from privatization as a benchmark to compare the results obtained in Algeria with the results obtained by some MENA countries (Egypt, Morocco, and Tunisia), Ahmed Aghrout found that these proceeds amounted to $55 million in Algeria, $3,102 million in Morocco, $1,070.1 million in Tunisia, and $523 million in Egypt between 1990 and 1999. Obtaining such low proceeds, Algeria had to make more efforts to catch up with her neighbors in its transition to a market economy (Aghrout 2004, p. 127). Other studies on economic transition in Algeria, revealed similar results as to why there was a gap between the government's goals and the poor state of the country's private sector. In the next few sections, the ills of the private sector, and the inability of the foreign sector to attract FDI will be addressed.

4.2. The Ills of the Private Sector

The private sector in Algeria is composed of three types: one is a learning space for new entrepreneurs; the other is a sector of un-adapt entrepreneurs, i.e., people who go through the motions of entrepreneurship, that is investing money and making profit

yet unable to build a dynamic private sector of their own. The beneficiaries of these two sectors get their capital from the government in order to learn how to be traders, farmers, industrialist, and services providers, but in the process they waste huge amount of resources. Simply put, we cannot improvise to be an entrepreneur without a cost. In Algeria, "entrepreneurship" has been, in the last few decades a means of losing public money and, in many ways, a stopper of economic reforms (Bouyacoub, 2001, 8).

And there is the third type of the private sector in Algeria: the officially excluded one, the informal, yet it is the creator of most jobs in the country. The informal sector in Algeria is where poor people can work illegally but honestly. Honesty here means producing and exchanging in a morally correct environment away from illicit trading, racketeering, trafficking, and the like (Bouyacoub, 2001, 9). One can philosophically agree with Bouyacoub's categorizing of the Algeria's private sector. However, one may add that although it has wastefully benefited from the reforms, this sector is, out of necessity, a major player in the country's economic transition. The question is what can be done to correct its numerous shortcomings in order for it to play its rightful role in this transition. In his study of the economic and political transition in Algeria, Rachid Tlemçani delved into more ills of the country's private sector. Among the 94,438 registered commercial enterprises only 44,041 have submitted their financial accounts and pay taxes. This sector is generally speculative, prefers commercial activities, over productive investments, and *de facto* supported by the rentier state. Although it is fully immersed in the activities of the country's economy, the value added that the sector produces is minimal. The 2009 Complementary Law of Finance, and its legislation regarding the financing of import activities, was promulgated to curb imports, tax evasion, and the transfer of hard currency overseas. However, its application on the ground reduced the volume of bank loans allocated to the importation of consumer goods. Consumers who apply for loans to import cars for personal use are put in the same category as entrepreneurs who import fireworks or cigarette lighters in exchange for hard currency. This law also imposed the use of bank checks for any transaction that exceeds DZD 500.000, the application of such provision many years ago could have solved many the 2009 Law of Finance was put to solve. The lack of such measures rendered the banking system in Algeria one of the least modernized in the world. It ranked 134 internationally by the International Surveys Institute (Tlemçani 2009, p. 2). Abdelhak Lamiri in his comments on the sectorial development provisions of the 2009 Complementary Law of Finance reiterated that this law made it clear that small and medium enterprises had a priority in receiving loans from local banks. Such enterprises were hailed by policy makers as the only way out of unemployment, yet they received a mere 5 to 10% of investment loans in 2009. There are three reasons behind this phenomenon according to Lamiri: one, the decision making processes regarding investments are shared by many ministries and investment agencies, which makes the creation of these enterprises very slow, even difficult at times; two, the prime target of public investment programs, which partnership with such enterprises under many subcontracting schemes, is building the national economy's infrastructure instead of building capabilities in areas such the development of human resources and

enterprising; and three, despite the importance given to small and medium enterprises by planning authorities, there is a remarkable neglect in this area; only 70 SMEs are built for one thousand inhabitant in Algeria, whereas neighboring Morocco and Tunisia created 350 SMEs for the same number of people. And the national agency (ANSEJ: Agence national de soutien à l'emploi des jeunes), put in place to create more jobs for youth, received only 3% of overall loans up to 2009 (Lamiri 2009, p. 2).

Some of the problems mentioned above are simply due to the lack of a 'coordinating brain' as Lamiri put it. Countries like China, India and South Korea have such brain to strategically coordinate investments at the national level. In these countries, government owned banks usually finance strategic economic activities, whereas in Algeria these banks finance international commercial operations, which are by law the domain of private banks (Lamiri 2009, p.3). Others see the roots of these problems to be much deeper than in what has been briefly advanced in this section. Algeria's slow economic transition can be explained, partially, by the country's "protectionist nationalism" and its "static trade structure", which led to its failure to forge strategic trade and financial relations with its traditional and potential trade partners.

4.3 The Consequences of Restrictive Trade and FDI Laws in the 2000s

Hamid Darbouche (2011) articulated the idea of how the restrictive trade and FDI policies were, fundamentally, the result of the Algerian leadership's "protectionist nationalism" in terms of economic policy outlook in the 2000s. According to Darbouche, the arrival of the 'new era' of high oil prices, the repayment of external debt and the restoration of Algeria's international standing during this period led the administration to revert back to its preferred model of economic development, which is centered on the "state as the main agent and the hydrocarbon sector as the main lever." However, the consequences of this outlook had negative implications on the country's external trade relations and FDI inflows (Darbouche 2011, p.7).

In the early 2000s, Algeria renewed its efforts to join the WTO and signed an Association Agreement with the EU. With the WTO accession negotiations falling apart at the end of the decade, the Association agreement with the EU, entered into force in 2005 was due to take place in 2017. However, Algeria demanded that the full entry into force of the free trade area with the EU be extended by three years because it was deemed unbalanced in favor of the EU. Moreover, the government introduced legislation to tighten the rules for FDI in 2006, starting with the upstream hydrocarbon sector and reaching all other sectors by 2010. The 51/49 investment legislation, which gave 51% ownership of all new FDI projects to the Algerian government, and which aim was to promote national production and domestic investment and curb imports, had little effect on changing the country's trade structure and foreign investment inflows (Darbouche (2011, 9). It seems that Algeria's struggle with its transition to a market economy is marked more by the nature of the country's politico-economic system than by the oscillations of oil prices in the international market. Addi's analysis (1995), of Algeria being a 'rentier state' seems to hold if one look at how Algeria's trade structure

and its financial relations with the outside world have been developing during the last few decades. Decision makers time and again relied on oil windfalls to build quickly conceived and implemented 'new development models' to solve deep rooted structural problems of the national economy.

4.3.1 Algeria's Trade Partners: Imbalanced Payments

Algeria's economic trade structure stayed mostly unchanged since its independence from France in 1962. For decades, the country relied heavily on oil exports and the attempt to diversify the economy outside the hydrocarbons sector did not bring about intended results. Change in oil prices always had an immediate impact on how the government changed its trade, monetary, and fiscal policies which itself affected its trade and financial relations with the outside world. The often changing trade policies, particularly towards Algeria's potential partners, can be observed in the emergence of China as a major trade partner. In 2015, imports from the EU decreased from $29.7 billion to $25.3 billion, as imports from Asia diminished by 18.6%. In the same year, Algeria's commercial exchanges with all Middle East and North African Countries (MENA) amounted to only $4.8 billion, a decrease of 24.8% from the previous year, keeping the share the country's commercial exchanges with MENA at 3%. In the same token, numbers for Italy during the first semester of 2016 show that Algeria's exports to this country amounted to $1.505 billion occupying the first position as a recipient of Algerian goods ahead of France with $879 million, Spain with $810 million, Turkey with 328 million, and Canada with $278 million (Imadalou 2016, p.1).

China, on the other hand, became Algeria's prime supplier of capital and consumer goods since 2013. Imports from the Asian giant counted for 18,3% of total imports, following France with 11.82%, Italy with 9.45%, Spain with 7.3%, and Germany with 5.81% for the period 2013-2016. Algerian-Chinese commercial exchanges increased by 47% between 2011 and 2014 which amounted to $10 billion. China's exports towards Algeria increase by 70% which meant that China imported practically nothing from Algeria during the same period. Moreover, China is by no means the first investor in Algeria despite the presence of 790 Chinese enterprises in the country. France is the first investor albeit her low FDI in Algeria. It amounted to only $2.2 billion in first quarter of 2016 despite the latter imports from the former reaching $200 billion in ten years (2004-2014). Morocco and Tunisia did better in attracting investment capital from France. French FDI counted for 50% of total FDI in Morocco in 2014 and French enterprises reached the 1300 mark in Tunisia in 2016 (Imadalou 2016, p.1).

Some experts see the less advantageous position that Algeria has vis-à-vis the EU was due to the delay that Algeria incurred in signing the association agreement that 15 EU members had with 12 Mediterranean partners in Barcelona in 1995. Unlike its neighbors in the Maghreb region, Morocco and Tunisia, who signed two similar agreements in 1995 and 1996 respectively, Algeria did not sign the association agreement until 2001. The suspension of the agreement for four years by Algeria, for political and security reasons, did not work to her benefit and was much more beneficial to Morocco and Tunisia (Begga & Abid 2004, p. 79).

Commercial relations between the EU and Algeria were not beneficial to the latter as some trade statistics between the two entities show. Algerian imports from the EU surpassed $30 billion in 2014 against an average of $9 billion annually between 2002 and 2004. Meanwhile, exports from Algeria towards the EU modestly moved from $500 million to $1.5 billion in 2015, a decrease by 31% in comparison to the 2014 figure which was $2.3 billion (Imadalou 2016, p. 1). However, EU's FDI towards Algeria in the same period were beneficial to the latter as Table 9 shows.

Table 9. FDI in Algeria for 2013-2014 (Billions of Euros)

Indicator	2013	2014	Average annual growth
Stocks: inward	0.9	1.8	88.5
Stocks: outward	13.6	14.1	1.1
Stocks: balance	13.0	12.3	
Flows: in	0.3	0.2	-45.8
Flows: out	2.0	0.7	-63.1
Flows: balance	1.7	0.6	

Source: Algeria Trade Statistics, 2014

Algeria's imbalanced trade situation was explained by not taking advantage of two essential elements of international trade enhancement: geographic proximity and relational proximity (cultural and political). She missed many opportunities to enhance its trade and financial relations with the EU, with MENA, especially Morocco and Tunisia, and with her old strategic partner Russia. However, the country seems to be catching up to enhance its foreign exchanges under new trade schemes such as win-win contracts and long term partnerships.

4.3.2. Algeria's Trade Relations with the EU and MENA: Consequences on FDI Flows

Despite critiques on how disadvantageous Algeria's trade and financial relations with the EU are, statistics of the last few years show an improvement in the matter: six out of Algeria's first eight clients and four of the top five of her suppliers in 2015 were European countries. Percentage wise, Algeria's exports to the EU increased from 55% to 68 % between 2005 and 2010. However, imports from the same block decreased to 50% from 60% during the same period. If China had replaced the EU as Algeria's major trade partner, Europe still supplies 40% of here needed services, which amounted to 3.4 billion Euros in 2015 (Berkouk 2016, p. 3)

In terms of FDI, Algeria's major investors came from the EU. European enterprises were partners in 55% of the projects declared between 2002 and 2015 by the Algerian National Agency for the Development of Investment (ANDI for its French acronyms). ANDI ranked these projects as the top job creators in Algeria. They added 60% of the new jobs' list in the same period, although the EU was challenged by Arabian Golf countries

in FDI flows. Between 2013 and 2014, the flux of European FDI towards Algeria decreased by 2/3 to reach a low level of 0.7 billion Euros. The stock of European FDI in Algeria, however, reached more than 14 billion Euros, whereas the Algerian FDI stock in Europe was in the neighborhood of 2 billion Euros during the same period. Moreover, despite Arab Golf FDI sizable share of 50% of total FDI in Algeria, they created only 30% of jobs between 2002 and 2015. The first investor in Algeria was Qatar with 530 million Euros, an amount superior to that of France and the United States combined during 2011-2013. Qatari investments were mostly in telecommunication, production of military vehicles, and iron ore industries. Qatar Telecom acquired all stocks of Algeria's Alwatania Telecom in 2012 as Qatari investors built the iron ore complex of Bellara in Algeria. Meanwhile, the Emirati Aabar became an associate investor in the production of military vehicles with the Algerian government and her other partners, German companies. All these projects were built under the win-win Partnership scheme (Berkouk 2016, p. 3).

4.3.3. Algeria's Trade Relations with Russia

Old political allies, Russia and Algeria signed a declaration of strategic partnership in April 2001 –Russia's first with an Arab country (Donaldson et al 2014, p. 326). This declaration opened up the way to Algeria's acquisition of Russian-made weaponry, the signing of an agreement to develop natural gas fields, and the establishment of the Algero-Russian commission on trade, scientific and technical cooperation (MENA Forum 2016, p. 2). Trade between the two countries grew from $885.3 Million in 2014 to $2 billion in 2015 an impressive increase in volume in two years period knowing that it was only $175 million in 2002. Despite this jump in commercial deals, some observers see the declaration of strategic partnership between the two countries, revived in a series of Memoranda of Understanding (MoU), would work only in the interest of Russia.

Abdurrahman Mebtoul (2016) sees that the cooperation between Algeria and Russia are merely declarations of intent for several reasons. One, is the five Algero-Russian cooperation agreements signed in Moscow in April 2016 appear not to change the trend of Algeria's commercial dealings with the EU and China. Two, both economies appear to be not necessarily cooperating rentier economies but competing ones, as Russia's giant GAZPROM is in direct competition with Sonatrach for the European gas supply market. Three, there seem to exist a strategic energy related interests between the two countries to stabilize oil and gas prices. Four, Algeria's military imports from Russia would allow this latter country to balance its foreign trade accounts and contribute to the former's setting up a military industry as part of its efforts to establish an import substitution industrial base. Fifth, the new cooperation between the two countries reflect Russia's need for expanding its commercial dealings with the world as a new member of the WTO, as of 22 August 2012, and the freeze put on the OECD process in March 2014 because of geopolitical tensions surrounding the Russian Federation. Sixth, the need for Russia to modernize its economy.

Conclusion

After more than three decades of socialism and a self-generating rentier state system, reform programs were launched in the early 1990s in Algeria to establish a market economy. However, the process of transition, based mainly on the dismantling of public enterprises and the newly created state dependent private sector, is hampered by shortcomings of the reform programs and by the ills of this sector. The recent worldwide drop in oil prices deeply affected Algeria's economic transition, and pushed the state again to return to the premises of rentier state in a new endeavor baptized the 'Algerian new economic model'. In its move towards austerity, the state called on the private sector and the citizens at large to finance its budget deficits through 'l' emprunt obligatoire' or 'forced loans' a form of buying government bonds by private investors. The program has limited appeal so far, and the government is still shying away from foreign debt. However, with a sharp increase of public deficit and a sharp decrease in hard currency reserves, the State has no other choice but to find ways to diversify the national economy with or without a successful transition to a market economy.

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OPINION

Ménage à trois[1]

United States, China and Russia in a dispute for world supremacy

Fernando Ayala*

The rivalry between the great powers is best appreciated by examining them based on their respective power and in relation to how their political or moral actions are evaluated at the international level. What is considered good, ethical or morally acceptable may be so for some, but not necessarily for others, and this is influenced by diverse factors, including cultural ones, in the way of conceiving societies as well as the international order.

The practice and exercise of power by the major players show us that the national interest remains the sole principle on which States act. Actions considered "moral" can strengthen or weaken the presence of a country on the world stage, as we have seen in the case of Venezuela, where various actors – some motivated by supposed moral principles, others by international law - have sought to attack or defend what happens there.

Upon reviewing history, we can examine different periods and see the paradigm changes in the acceptable concepts on what is ethical or moral. Slavery can serve as an example. For thousands of years, it was accepted and considered normal to have slaves and/or enslave the defeated after a war. Until very recently it was legitimate for the European powers to hunt, commercialize and export human beings from Africa, duly regulated by laws and market prices, just because they were black, which allowed the birth of fortunes that continue to exist until today in countries like the UK.

Anti-Semitism was state policy in almost all of Europe, and communities of Jews were often forced to live in ghettos, with a ban on certain jobs, frequently murdered or expelled from civilized Christian countries, up until the extermination caused by Nazi Germany. That the Palestinians have been stripped of their territories, live in refugee camps in third countries, or that Israel continues to extend its settlements in contravention of international legality, is assumed as part of reality and considered almost normal.

No one punishes Israel with an economic, financial or commercial boycott. The

[1] This article is originally published in Wall Street International Magazine, 21 August 2019, https://wsimag.com/economy-and-politics/56178-menage-a-trois. Reprint with Author permission.

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same thing happened when the Jews did not have a country of their own and few claimed for one, as is the case today with the Kurds. The racial segregation in South Africa was maintained for centuries and legally formalized in 1948 until its abolition in 1992. It included the prohibition of sexual relations between races. Only a few countries broke diplomatic relations with Pretoria and instead, Israel established a close friendship with the racist regime after the Yom Kippur War in 1973.

In Guantánamo, more than 40 prisoners - some without being tried or accused - have been waiting 15 years to be processed and to determine if they are guilty. Russia formally annexed Crimea in 2014, without asking anyone, just as the United States decided to invade Iraq in 2003 and start a war with false evidence and without consulting the Security Council. The same has been done in Syria, bombing Damascus in 2018. It was never known how many Chinese students were killed in Tiananmen in 1989, nor what happened to the student who confronted the tanks.

The NATO bombed civilians in Belgrade in 1999, leaving around 5,000 dead, including 88 children and three Chinese diplomats. Nobody sanctioned them. When it comes to talking about human rights and democracy, many countries immediately tend to condemn Cuba, but they keep silent and protect Saudi Arabia, where neither one nor the other is respected. The powers accepted the kidnapping and murder of a Saudi journalist who walked into his consulate in Istanbul and was tortured, dismembered and made disappear.

Nobody criticizes the Egyptian regime, where in 2013 a general overthrew a democratically elected president. This type of actions that for the public opinion can be morally blameworthy, are judged by the governments depending on the glass with which one looks, that is, they are judged based on the national interest.

The hostility of the United States in relation to Russia or the commercial war with China that is just beginning and that no one knows where it will end up, essentially responds to power. Weakening Russia became an obsession for Washington, neglecting the growth and global expansion of China that is increasingly close to dispute the supremacy. In 1972 the world was surprised when President Richard Nixon shook hands with President Mao Zedong in Beijing. It was the national interest that acted on both sides: to weaken the Soviet Union for the Americans, and for the Chinese to seek a powerful ally in case of conflict with Moscow.

Today things have changed, and over the last six years President Vladimir Putin has met 30 times with Chinese President Xi Jinping, noting that they coincide on all global issues. It is the answer to the coercive measures of the United States and of the European Union versus Russia that began in 2014, and since last year also against China and which end up generating the opposite effect. In addition, they stimulate patriotism in those countries that have lived for centuries with material deficiencies.

Chinese cities today are unrecognizable to the previous generation. The same happens in Moscow, where visitors are struck by the cleanliness of the streets, the growth of the automotive park, the renovation of the facades of the buildings and the monumental museums that recall the defeat of Nazism. The Russian capital is today the exact opposite of one of the most beautiful cities in the world, Rome, flooded with

garbage.
While there was a bipolar world, and during the years of the Cold War, the fear of the Soviet Union was understandable. It was thought that the situation would relax with its disappearance in 1991, the unification of Germany, the democratization of the countries of Eastern Europe and especially with the dissolution of the military alliance known as the Warsaw Pact. None of this has happened; on the contrary, NATO, led by the United States, continues to expand its forces and build military bases to encircle Russia. Whilst NATO had 16 member states at the time of the fall of the Berlin Wall, today there are 29 full members.

While Washington was dedicated to building military bases, China invested in infrastructure, participation in European companies and in generous loans in Europe and elsewhere, especially in Africa. Even more difficult to understand is the obsequious pursuit of this policy against Russia by the large countries of the European Union that, pressured by Washington and often against their own interests, end up endorsing it, despite being aware of their uselessness. There are many examples, but it should be enough to point out the case of Kosovo, in which the United States pressured their allies for its recognition as an independent State – a decision which many countries today regret when finding out that it is a failed state. The policy designed by the American power organs and applied by the European Union seems to indicate that membership in the EU with membership in the military pact is practically indissoluble[1].

Although the political body of the alliance, i.e. the NATO secretaries-general, have rotated exclusively between the founding partners of the EU and the United Kingdom, until today all supreme commanders have been generals of the United States.

The differences between the United States and Russia are gigantic in almost all quantifiable planes, except in the extension of territory and nuclear power. The population of the first reaches 320 million approximately, while the second ones are around 150 million inhabitants. The US-economy is 12 times larger than the Russian economy, spending on education is 14 times higher, while defense spending is almost 10 times higher[2]. The nuclear inventory of both countries, according to figures provided by the Swedish agency SIPRI, indicates that Russia has a total of 6,850 nuclear warheads against the 6,450 in the United States. If we remember that only two “small” bombs, compared to the current ones, devastated Hiroshima and Nagasaki to force Japan to surrender in 1945, it does not take much imagination to think that the current nuclear arsenal can erase a large part of the human beings and species that inhabit the planet Earth.

To understand the proportion of nuclear weapons stored by the two powers - of a total of 9 countries that possess these weapons - it is enough to point out that France, which follows them in number, has “only” 300 nuclear warheads, whereas China has 280[3]. These figures can help to understand the European fears regarding Russia, because, in an eventual conflict between the two powers, the first bombs will fall in Paris, Berlin or in London rather than in Washington, New York or San Francisco.

The apprehensions of the United States and the Europeans have their roots in the Russian history. Since the imperial era of the czars, Russia has always had an excuse to seek expansion, but particularly in the twentieth century fears were stirred by the Soviet

Union and the division of Europe agreed upon in Yalta, when the Second World War was ending. The Cold War began immediately upon the partition of Germany in 1945 and aroused Western fears along with the need for defense due to the expansion of socialism in Eastern Europe and the triumph of the Chinese revolution in 1949; the Korean War (1950-1953) that divided the peninsula into two, the collapse of colonialism with the liberation struggles in Africa and Asia along with the triumph of the Cuban revolution in 1959, only 90 miles from the United States. At the same time, the extraordinary economic growth of the United States ended up maturing and breaking into the world, thus imposing a way of life that consolidated it as the first undisputed worldwide power and guarantor of the security of Western Europeans.

The question today is whether it is justified to continue encircling Russia with NATO bases in circumstances that the rival who threatens the hegemony of the United States is China. The Russian invasion of Crimea in 2014 and its conflict with Ukraine has certainly contributed to maintaining fears, but in the same way the expansion of NATO, punitive measures and isolation, feed Russian fears and contribute to stimulate nationalism in a country to which history has also shown twice what it means to be invaded and the costs involved, first with Napoleon in 1812 and then with Hitler's armies in World War II.

Undoubtedly, the Soviet period left a negative image and contributes to today's actions of Russia being judged very differently from those carried out by the United States. One would have to wonder how the world would react if Russia had initiated wars without authorization from the United Nations Security Council or based on false evidence such as that of Iraq in 2003; or if they held prisoners for years without any trial like in Guantanamo, or carried out bombings as NATO did in Belgrade in 1999 and in Damascus in 2018, together with France and the United Kingdom. Clearly, there is no single moral by which to act or judge.

The weight of cultural factors must also be observed carefully. China is being asked to act according to the cultural pattern of the Western democratic political system in circumstances where it has never known democracy in its history. Its international policy has been and is guided by the principles of peaceful coexistence, where it is essential for them not to interfere in the internal affairs of other states. For the Chinese, economic and social rights precede the political rights of their citizens. If we observe China's actions on the international level, we see that it is a country that practically without making use of military force has gained an international presence and a development that brings it closer and closer to the United States. If in 2005 the US economy was 5.7 times bigger than China's, in 2016 the gap had been reduced to only 1.6 times[4]. By 2030, some studies estimate, China will be the first economy in the world surpassing the US in size, followed by India, while the United States would be in third place. By then, Russia will be only the eighth economy[5].

National interest continues to be the engine that moves the international world. Unfortunately, multilateralism has not been able to consolidate in all its dimensions, and the advances achieved today are diminished whenever the powers decide to ignore the fragile international legality. A world without order and without legality favors the law

of the strongest that only benefits the most powerful countries. The future has always been uncertain and will continue to be so. We can clearly see the role played by the leader of a country and how it can change its foreign policy.

The case of President Trump could become a case study: in only three years he has managed to antagonize his neighbors - Canada and Mexico - on trade and immigration issues. He has hit the scientific community, multilateralism and the United Nations by denying climate change and withdrawing his country from the COP, UNESCO, the Human Rights Council and the United Nations Agency for Aid to Palestinians. In view of the disbelief of its EU allies, he abandoned the nuclear pact with Iran that contributes to the detente in the region and was one of the few achievements of its foreign policy.

Contravening United Nations resolutions, he recognized Jerusalem as the capital of Israel; threatens with the withdrawal of his country from the WTO, increases the controversies with his European allies by demanding to raise the military budget, which means they must buy more weapons from the United States. He cancels the nuclear agreement with Russia on medium-range missiles (INF) that gave security to Europe. He starts a trade war with China and recently threatened Mexico with a progressive tax on its exports if it does not slow down emigration. That is to say, the main power of the world does its best to weaken multilateralism, its institutions and the international order that was largely built by the United States.

The question that needs to be asked is whether President Trump's decisions have the support of the State Department, the Pentagon, the CIA, the large financial groups and other institutions that represent US power. The vacuum left by the United States in international organizations seems contrary to their interests and will undoubtedly be filled by China, which is already the second financial contributor to the United Nations and will help consolidate its global power. If both the Russian and Chinese leaders discreetly use the so-called smart power, that is, the combination of hard and soft powers in the already classic categories, President Trump definitively abandoned soft power and is using a kind of arrogant power that weakens the image of his country before its allies and the world, together with seriously eroding the international system. The American president acts like the braggart of the class proclaiming whenever he can, to be the strongest at military level. The German head of government, Angela Merkel, declared before the European Parliament:

The days when we could trust unconditionally in others, are gone. This means that we Europeans must put our destiny in our own hands if we want to survive as a European community[6].

It seems that we are still observing reality with the eyes of the Cold War. For some time now, socialism has ceased to be a threat to the capitalist system that dominates the world. The struggle for global hegemony today is about the control of cyberspace, robotics, artificial intelligence and space conquest, which is where the United States is confronting China. Russia is somewhat further away, but it has defined who its ally is. The applications derived from these advances in economy and science will also find a place in the military industry that flourishes today in a way it used to during the best times of the Cold War, with hundreds of billions of dollars allocated to it. Who cares

about hunger and poverty in the world.

In Moscow, an ambassador pointed out to me that a distinguished European colleague had told him that it did not matter whether there was evidence to blame Russia for the supposed poisoning of a Russian ex-agent in London. It was all about blaming Moscow because "one had to take sides". In Rome, a European ambassador told me that, if the global communications system was going to be intervened, she preferred this to be done by the United States and not by China. To put it in the words of political realism, as long as the international system continues to operate based on national states, national interest will continue to have the last word on the world stage. What is forgotten is that no single power can face the major imminent challenges such as safeguarding human life and the planet. This is why we must redouble efforts to strengthen the multilateral system, its institutions, the cooperation and respect for international legality as the only way to guarantee peace.

[1] The exception has been Sweden, a country with more than 200 years of neutrality and which, being a member of the EU, is not formally a member of NATO, although it has carried out joint maneuvers. In addition, the Treaty of Lisbon of 2007 establishes the obligation of the EU members to help and assist with all their means any other member under attack.
[2] See: Comparar economía países: Rusia vs Estados Unidos.
[3] See: Sipri Yearbook 2018.
[4] World Bank. Quoted from Yan Xuetong in Leadership and the Rise of Great Powers. Princeton University Press, 2019. Pag. 83.
[5] See: These Could Be the World's Biggest Economies by 2030.
[6] See: Merkel Joins Macron in Calling for a European Army 'One Day'.

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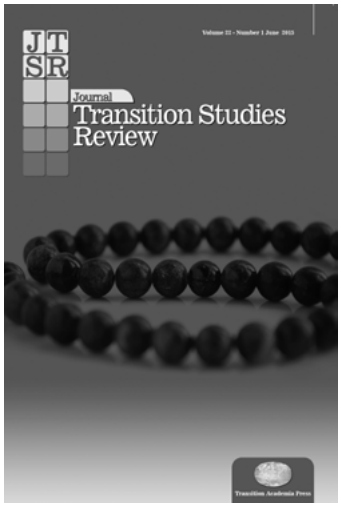

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Aims and scope

Transition Studies Research Network was founded in 2002 as CEEUN-Central Eastern European University Cooperation, with the aim to connect a group of experts and university faculty in a program of cooperation devoted to research programs and specialized international postgraduate and doctoral courses. The Network has grown fast and soon after the scientific "voice" was established with the Journal Transition Studies Review, published initially by the CEEUN, then by Egea - Bocconi University Press, and finally by Springer Wien-New York.

At the beginning, JTSR was focusing on transition in Central and Southeast Europe, interpreting CEEUN purely as a European network. Soon afterwards, the EU enlargement was achieved extending the aims and scope to differentiated forms of partnership with Russia, Ukraine, Caucasus, the Black Sea and Caspian Seas, Mediterranean regions and Near East. Today this approach has dramatically changed following a serious violation of the international laws and agreements by the Russian backed insurgency and later invasion of Crimea and Eastern Ukraine. Today we are facing the most severe crisis of security and confidence between European Union countries and Russia since the Second World War and the reunification of Germany. The future is unpredictable and certainly nothing will return to be as before in the relations with Russia.

CEEUN was launched in Vienna and its first meeting took place at the Institution that was founded by Friedrich August von Hayek and Ludwig von Mises, two great thinkers and economists: the Austrian Institute for Economic Research. Now the scenario is completely different. From 2005 on, a worldwide regional approach looking to Asia, Latin America, Eurasia and Great Middle East has been implemented. TSN-Transition

Studies Research Network has inherited from the previous CEEUN the "aims and scope" which were recently integrated. In the last ten years Transition Studies Research Network has progressively involved more than 400 internationally well known members and 95 university departments, institutes and research centers and is engaged in many areas and programs.

The scientific interests and fields covered are: Europe and the World, future approach to EU enlargement, global governance economic, financial and policy framework and impact, where the focus would be mainly on growth theories, innovation and human capital, cultural and intellectual heritage, main advanced industrial sectors technologies, investments, international affairs, foreign policy choices and security, monetary policy and main currency areas, banking and insurance, development and area studies, social policies, environment and climate, culture and society, juridical and law studies, regional approach to global governance, peculiarities and critical challenges.

The future transition to an open economy and institutional reforms, political and strategic issues and challenges, governance, European, Mediterranean, Asia-Pacific, Middle Eastern, Latin America and Africa perspectives are key topics of this high ranking journal.

Transatlantic and Asia-Pacific relations, security and international order represent, together with applied regional studies, another cornerstone of the Network's activity and of Transition Studies Review's contents as well as of three other Journals covering specific aspects and regions: the Journal of Global Policy and Governance; the Journal of East Asia in World Affairs, in cooperation with Asian universities and the Journal of Welfare Policy and Management at Udine University. The Network is deeply committed to a wide range of transition issues related to quantitative modeling and tools to analyzing and researching economic, financial, strategic studies, social, cultural, environmental, juridical main issues.

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Opinions