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Political disputes, economic sanctions, and use of cryptocurrencies in Iran and Venezuela

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Abstract. The Islamic Republic of Iran and the Bolivarian Republic of Venezuela since the establishment of their current constitutions, in 1979 and 1999 respectively, have publicly and notoriously professed, on the part of their different governments, their disagreement on the foreign policies of the United States. For its role, the American State has severely sanctioned the economies of both countries. The present investigation proposes to show several indicators of the economic and demographic scope to understand the impact of these economic sanctions on both countries. With special attention to the use of cryptocurrencies, in this case, bitcoin, as an alternative to traditional financial mechanisms controlled mostly by the United States. With a detailed narration of recent historical events and all executive orders regarding sanctions, a reconstruction of diplomatic relations is made, which, together with a review of cryptocurrency regulations, allows a better understanding of the evolution of indicators displayed. Finally, it is shown that the change in the trend in the economic indicators of both countries occurs in the years in which sanctions by the United States of America become more acute. On the other hand, given the constant values of the flow of remittances shown by the world bank, an estimate of this amount is proposed through the number of migrants, which shows that there is a high correlation between this flow of remittances and interest in the term “bitcoin” in the popular Google search engine. The finding could suggest that the primary use of said cryptocurrency is the transfer of remittances.

Keywords: foreign trade, sanctions avoidance, bitcoin, Unites States

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Политические разногласия, экономические санкции и использование криптовалют в Иране и Венесуэле

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Аннотация. Исламская Республика Иран и Боливарианская Республика Венесуэла с момента принятия их нынешних конституций — в 1979 и 1999 гг. соответственно — последовательно и открыто выражают несогласие с внешнеполитическим курсом Соединенных Штатов Америки. В ответ США ввело жесткие экономические санкции в отношении обеих стран. Исследование направлено на анализ ряда экономических и демографических показателей с целью выявления последствий этих санкций. Особое внимание уделено использованию криптовалют, в частности биткойна как альтернативного финансового инструмента, не находящегося под контролем финансовых структур, где США имеют доминирующее положение. Путем детального изложения последних исторических событий и анализа всех исполнительных указов, связанных с санкционной политикой, осуществлена реконструкция дипломатических отношений между указанными странами. Предпринятый анализ, в совокупности с обзором законодательства в сфере криптовалют, позволяет глубже понять динамику представленных экономических индикаторов. В заключение отмечено, что изменение тенденции в развитии ключевых экономических показателей в обеих странах происходит в те годы, когда санкции со стороны США усиливаются. В то же время, с учетом стабильных объемов денежных переводов, фиксируемых Всемирным банком, предпринята попытка оценки этого показателя через анализ численности мигрантов. Полученные результаты демонстрируют высокую степень корреляции между объемами денежных переводов и уровнем интереса к слову «биткойн» в поисковой системе Google. Это наблюдение позволяет предположить, что основным назначением рассматриваемой криптовалюты в данном контексте является осуществление трансграничных денежных переводов.

Ключевые слова: внешняя торговля, обход санкций, биткойн, США

Заявление о конфликте интересов. Автор заявляет об отсутствии конфликта интересов.

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Introduction

Iran, whose official name is the Islamic Republic of Iran (In Persian: جمهوری اسلامی ایران, transliterated *Yomhuri Eslāmi Irān*, and pronounced ‘Yomhuriye Eslāmiye Irān’), is one of the oldest continuous major civilizations in the humanity. Currently, it is the 17th largest country in the world in terms of territory, comprising about 1,648 thousand square kilometers, it is a state of the Middle East and Western Asia. It is of enormous geostrategic importance as it has the second-largest natural gas reserve and the fourth largest oil reserve in the world¹.

¹ Iran’s energy overview. *U.S. Energy Information Administration*. URL: https://www.eia.gov/international/content/analysis/countries_long/Iran/ (accessed: 28.02.2025).

Given the large amount of energy resources, it is essential to study the relationship of the Islamic nation with the rest of the countries, especially with the United States of America (hereafter referred to as the USA), which has the largest economy in the world. Relations between the two countries for more than 40 years have been one of the permanent conflicts. The formal start of sanctions by the USA against Iran can be located from the year 1979 [1]. However, it is in 2010 that the Administration of Ex-President Obama with the Comprehensive Sanctions, Accountability and Divestment Law against Iran that extend to various economic sectors, a moment that coincides with the beginning of the second presidency of Mahmud Ahmadinejad in Iran, these sanctions together with other executive orders are later relaxed in 2015 with the Comprehensive Joint Action Plan (JCPOA) of the year 2015 but are re-imposed in the year 2018 under the management of President Trump, which initiates a new wave of sanctions.

Like Iran, Venezuela has traditionally been an oil-exporting country, both countries along with Iraq, Kuwait, and Saudi Arabia in September 1960, created in Baghdad, Iraq, the Organization of the Petroleum Exporting Countries (OPEC) [2]. For 2007, the then President of Venezuela, Hugo Chávez, consolidated diplomatic relations with Iran, including defending its right to civilian nuclear power, in July 2007 with the President of Iran Mahmoud Ahmadinejad, the two presidents declared an ‘axis of unity’ against ‘USA imperialism’. Therefore, the analysis of the relationship between Venezuela and the USA seems to have a certain similarity in terms of affinity with the North American country.

Venezuela, officially named the Bolivarian Republic of Venezuela since 1999, is a sovereign Latin American nation, located north of the South American continent. It is an oil country and with a high degree of cultural syncretism and ethnic miscegenation. It was part of the old Spanish colonies in America. It was the first South American nation to proclaim its independence through a bloody and prolonged war of independence that ended in 1823 [3]. Its territory has around 916,445 square kilometers. It has the largest reserves of crude oil from around the world, the eighths of natural gas, and the second of gold².

One of the most relevant episodes in the history of Venezuela’s international relations with the USA, and inter-American relations, occurs on the Venezuelan coasts with the Anglo-Italian-German blockade of 1902 [4], despite the age of this event, the participation of The USA as a mediator in this event marked the model of intervention that this country would later develop, not only in Venezuela but throughout the region, therefore the importance of his story. In this sense, it is worth remembering the words of the historian Marc Bloch, who points out that ‘the misunderstanding of the present is fatally born from the ignorance of the past’ [5]. These events triggered what is currently known as the Roosevelt Corollary. This amendment affirms that if a Latin American and Caribbean country is under the influence of the USA. Threatened or endangered the rights or property of USA

² Countries with the most natural resources. *WorldAtlas*. URL: <https://www.worldatlas.com/articles/countries-with-the-most-natural-resources.html> (accessed: 28.02.2025).

citizens or companies, the USA government was obliged to intervene in the internal affairs of the ‘lost’ country to reorder it, restoring the rights and assets of its citizens and its companies.

In the recent past, the application of the Roosevelt Corollary, in this case, through the sanctions of the USA against Venezuela, began in 2008 with sanctions related to drug trafficking. However, it is in late 2014 with the Venezuela Defense of Human Rights and Civil Society Act together with the executive order No. 12747 in early 2015, which begins the formal attack on the Venezuelan economy, expanded in 2017 with Executive Order No. 41155 and with the subsequent ignorance of the Government of Maduro with Executive Order No. 509 of the year 2019, where sanctions are applied to all branches of Government except the national assembly.

The purpose of the study is to take into account various indicators in the demographic, economic, and cryptocurrency use areas, specifically bitcoin, for Iran and Venezuela in the period from 2010 to 2019, and study the change in their trends under the magnitude of the sanctions of States United over both countries. The behavior that all the variables have had during this period will be shown, and it will be complemented with a complete historical review of the political and economic events within each country, with particular detail to the executive orders issued by the different governments of the USA, as well as the evolution of regulations in the framework of cryptocurrencies.

To finish the analysis, some estimates will be made regarding the remittances that each country receives, and the cross-correlations between all the variables will be shown, with particular attention to the indicators related to the use of bitcoin. Finally, the results of statistical tests that show how effectively the sanctions imposed by the USA have changed the indicators shown for both countries, with an alarming consequence in the case of Venezuela: its population has decreased. Likewise, the main discovery of this research will show the relationship between related estimates for remittances and searches for the term ‘bitcoin’ in the popular Google search engine. Now a concise definition of the variables to be studied

Materials and methods

The study of USA sanctions has been carried out previously from different points of view; from the legal [6], political-economic [7], or even the consequences of the same on the health of the population in the specific case of Iran [8] and Venezuela [9]. However, none of these investigations carry out a historical account of the events that allow us to understand the evolution of the indicators under study, in the same way, none have taken into account a new element that has gained quite a boom in recent years: cryptocurrencies.

This type of sanctions has been referred to by scholars as “unilateral sanctions” [10], given the origin of implementation. On the other hand, other researchers have found that, although sanctions sometimes inflict massive

economic damage, sanctions tend to bring business and government officials closer together unless pre-existing dynamics are already dividing them [11].

Other shown how the economic sanctions imposed by the United Nations (UN) and the United States affect the target states' GDP growth [12].

In the framework of solutions to the consequences of restrictions. some researchers propose privatization as an important strategy to reduce the vulnerability of the financial system in countries with exposure to sanctions [13]. On the other hand, the birth of decentralized forms of commercial exchanges such as cryptocurrencies seems to represent a valid alternative. In [14] it is described in a country-specific analysis (i.e. when studying the bitcoin price from local exchanges) it shows that bitcoin can be perceived differently in different economies. And, therefore, it appears to be an active haven powered by Venezuela.

Results of the study

Within the framework of the current research, a brief definition of the variables to be used in the study will be made, then in order to understand the context and evolution of both countries, the background of the Islamic Republic of Iran and the Bolivarian Republic of Venezuela will be presented. Subsequently, the use of cryptocurrencies in Iran and Venezuela will be presented, and then the analysis of variables will be carried out, and finally a brief discussion of the results obtained will be made.

Variable's definition

- **Population**

The total population comprises all persons present in the country at the time of the census since censuses are usually carried out every ten years, the estimates of the 2019 Revision of World Population Prospects from the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat [15].

- **Net migration rate**

The net migration can be defined as the difference between immigration into and emigration from the area during the year. If this result is divided for the actual population, the result is the net migration rate [16].

- **Gross Domestic Product (GDP) growth**

The Gross Domestic Product is the value of the goods and services produced in some country, the percentage that GDP change expresses the growth, in this case, the period between each calendar year [17].

- **Inflation rate**

Is the change in the prices of a basket of goods and services that are typically purchased by specific groups of households [18].

- **Google Trends Index**

The index shows how often specific keywords, subjects, and phrases have been queried in the google search engine, over a particular period. The index is normalized to make direct comparisons between terms or locations [19].

- **LocalBitcoins Volume**

Founded in June 2012, LocalBitcoins was created to offer a global tool for trading bitcoins, based in Helsinki, Finland [20].

Findings

This section presents most relevant historical events in relations between Iran and Venezuela with the USA, as well as the internal events in the political and economic order, with special detail in all the Executive Orders issued by the North American country, also the regulations in the field of cryptocurrencies in both countries is presented. At the end of the section the evolution of all the variables to show the change the trend.

Background of the Islamic Republic of Iran

Iran is a constitutional republic based on the principles of Shiite Islam, which is professed by around 20% of the 1.6 billion Muslims in existence [21], more than a third of those of the Shiites in the world live in Iran. Shiism is central to Iranian identity as it provides an understanding of social and political justice. It defines the place of the Iranians in the world, both how they relate to each other and, more importantly, how they relate to the outside world.

After the death of the prophet Muhammad in 632 AD, a conflict broke out over who should be the new leader of Islam. Some (Shiites) said they must be a descendant of the prophet, while others (Sunnis) argued that the community had to be the one to choose the leader. The matter was complex and led to clashes, as well as a separation between Shiites and Sunnis that continues to this day [22].

It is important to understand the religious context of Islam, to understand the reality in Iran, from the Islamic revolution in 1979 the beginning of a theocratic Shiite state in Iran was marked, making it the current center of the Shiites, therefore the religious element is a fundamental aspect of the Iranian Government.

By 1953, a popular uprising led by Prime Minister Mossadeq removed Sha Reza Pahlavi from power. But the USA intervened in the collaboration of a coup d'état that replaced the Shah. The toppled Prime Minister, Mohammad Mossadegh, dared to enter the history books by nationalizing one of the largest oil empires of the time — which would lead to the current BP. The circumstances that led to this outcome began to precipitate when Iran, which received less than 20% of the profits of the Anglo-Iranian Oil Company (AIOC), claimed its share for the exploitation of Iranian crude.

In 1963 the Shah began a modernization campaign to bring the country even closer to the West, and as a consequence, the opposition of the fundamentalists was radicalized. The Shah's policies, the intervention of the USA in government decisions, combined with corruption, increased opposition from fundamentalists.

The religious forces had Ayatollah Ruhollah Khomeini as a symbol of the confrontation with the Shah. He was the visible head of the ecclesiastical hierarchy that fought against the Shah's near-western reforms that were seen as an attempt to strip Iran of its traditions by selling itself to the West. Due to this tension,

Khomeini was forced to leave the country in exile in Paris in the 1970s. During his exile, repression intensifies in Iran. In 1978 Khomeini's supporters, mostly young people of the lower class and left-wing groups, launched mobilizations that will turn into mass demonstrations in early 1979.

At the same time, in 1978, Saudi Arabia and the US boycotted a rise in oil prices proposed by the Shah to offset inflation, which caused an economic crisis that directly impacted the price of transport, energy shortages, high housing costs, waste and corruption of the Government and budget deficits, hurting the bazaars, the middle classes, industrial workers and the unemployed. Between October and November, the country went through an insurrectional general strike that paralyzed everything: refineries, factories, commerce, universities, transport, communications, steel mills, copper mines, railways, and ports.

The pressure of citizens was so high that Reza Pahlevi and his family were forced to leave Iran for exile in the USA. After these events, Khomeini returned from Paris in February 1979 and was received by the population as a symbol of change in Iran. With the mobilization of their forces, the rebels managed to overthrow the regime utterly.

It is essential to understand that in Iran, there was no independence, nationalist, or socialist revolution, it was based on religious ideology without following any doctrine of European origin. With this, the Islamic Republic of Iran was established on April 1, 1979, the system of Government created was inspired by the Koran, subjecting the State to the highest religious authority: The Supervisory Council made up of *Alfaqués*, those who are wise in the laws of the Koran, and Ayatollah Khomeini himself, as Supreme Leader.

In the course of the establishment of the nascent Islamic Republic of Iran in 1979, an event that would change relations between Iran and the USA definitively occurs on November 4, when hundreds of students break into the US embassy for the trip of the Sha to New York, as there was still the memory of the 1953 coup d'état over Tehran. 66 diplomats were taken hostage for more than 400 days. Khomeini originally opposed this measure but ended up supporting the students against the 'Great Satan'

On November 12, 1979, the acting Iranian foreign minister, Abolhasan Bani-Sadr, indicated that the hostages would be released if the USA stopped interfering in Iranian affairs, if the Shah were returned to Iran trial, and if the Shah's assets were declared stolen property. The USA responded by asserting that Iran was free to make financial claims against the Shah in US courts, and further stated that it would support the establishment of an international commission to investigate alleged human rights abuses under the Shah regime; However, as a precondition for such actions, the hostages would have to be returned, these positions did not reach a common point, and the situation worsened when the USA strengthened its position and issued the first executive order of sanctions against Iran on November 14, 1979, under No. 12170. With this, he refuses to buy Iranian oil, freezes billions of dollars of Iranian assets in the USA, and begins to participate during the crisis in a vigorous campaign of international diplomacy against the Iranians.

USA diplomats twice obtained UN Security Council resolutions (on December 4 and 31) against Iran's actions. On November 29, the USA filed a lawsuit against the Iranian Government at the International Court of Justice (which ruled in favor of the USA in May 1980). The consensus of the international community was against the Iranian taking of the hostages, and diplomats from various countries tried to intervene on their behalf.

After two other executive orders in April 1980, Nos. 12205 and 12211, by May 1980, the USA had convinced its closest allies to institute an economic embargo against Iran. However, the embargo alone was not enough to weaken the Iranian revolution, nor did the death of the Shah on July 27 break the dilemma. In mid-August, Iran installed a new government, and the Carter administration immediately sought to extend diplomatic proposals.

Faced with the weakening of Iran's international relations, in Iraq Saddam Hussein invaded the province of Kuzistan on September 22, 1980, to prevent the spread of the Islamic revolution. When Iranian Prime Minister Mohammad Ali Raja'i visited the United Nations in October, it was made clear to him by numerous world leaders that Iran could not expect support in the Iraq conflict while holding the USA hostages.

It is finally through the Iran-USA Claims Tribunal (IUSCT), established by the Algiers Accords of January 19, 1981, where an agreement is reached between the USA and Iran mediated by Algeria to resolve the crisis of hostages, with which executive orders are issued by the USA on January 1981 No. 12276–12284 to reverse the embargo actions.

Despite this, on January 19, 1984, Iran is designated by the USA as a 'State Sponsor of Terrorism' (SST) for 'providing support for acts of international terrorism.' As a result of this designation, Iran is subject to many sanctions and restrictions, including restrictions on foreign assistance from the USA, the prohibition of defense exports and sales, export controls for dual-use items, and financial and various limits.

According to the report 'The Patterns in Global Terrorism' of 1984 [23] the deaths worldwide by terrorism were in the order of 300 people. That was the year in which Iran was classified as a state sponsor of terrorism by the USA. Now, on Sunday, July 3, 1988, almost at the end of the war between Iran and Iraq, the USA missile cruiser USS Vincennes in Iranian waters shoots down Iran Air commercial flight 655 south of the island of Qeshm, killing its 290 occupants, 254 of Iranian nationality. In a single act, the USA caused almost the same number of deaths worldwide from terrorism, only Iran. At the time, the USA was not branded as a terrorist. Some USA officials claimed that Iranian aggression played a key role in the incident. Later in 1996, the USA 'expressed its deep regret' for shooting down Iran Air Flight 655 and agreed to pay \$ 61.8 million to the families of the victims [24], about \$ 215,000 for each deceased.

In parallel, Saudi Arabia, Kuwait, and other oil countries feared the expansion of the Shiite message, which only recognized as descendants of Ali (son-in-law of Mohammed) as legitimate rulers, wanted to avoid a possible wave of popular

uprisings. They supported the fall of the Khomeini's Shiite Government to the extent of financing Iraq to achieve that goal. They did not mind running the risk of Hussein establishing himself as the new regional leader. The death toll on both sides was perhaps 500,000, with Iran's most considerable losses [25]. The oil interests in the Persian Gulf caused fear of the extension of the conflict to other nations, for the year 1987 President Ronald Reagan issues Executive Order No. 12613 against Iran, due to the threat against 'peaceful commerce in international waters of the Persian Gulf and territorial waters of non-belligerent nations of that region', for which a ceasefire was sought that was signed in 1988.

On June 3, 1989, at the age of 87, when about ten years had passed since the 1979 Revolution and the establishment of the Islamic Republic, its founder, Imam Khomeini, passed away, President Khamenei succeeded him in his position as 'Guide to the Revolution'. Hashemi Rafsanjani, a former Speaker of Parliament, was elected President in July 1989 and re-elected in June 1993.

For March and May 1995, the President of the USA at that time, William J. Clinton, issued two executive orders against Iran, Nos. 12957 and 12959 respectively, with which certain transactions with Iran were prohibited, given that 'Iran constitute an unusual and extraordinary threat to the national security, foreign policy, and economy of the USA', measures subsequently extended with the Sanctions Against Iran Act (ISA) of 1996 that requires the imposition or exemption of sanctions against companies that are determined They have made certain investments in the energy sector of Iran and complemented in August 1997 with Executive Order No. 13059. The main objective was to decrease the oil, energy industry, and, in general, the international trade of the country.

In the May 1997 elections, Mohamed Khatami was selected as the new President with 68% of the votes and later re-elected in 2001 with 80% of the votes. Although, since the election of Khatami in 1997, relations between Iran and the USA had known certain moments of improvement, the trend was reversed after the attacks suffered by the USA on September 11, 2001. In January 2002, the USA President George W. Bush included Iran in what he called the 'axis of evil' (along with Iraq and North Korea), considering that Tehran supported terrorist groups and developed nuclear weapons.

In the 2004 presidential elections in Iran, former President Hashemi Rafsanjani and former mayor of Tehran, Mahmud Ahmadineyad, clashed, in which Ahmadineyad won, obtaining 61.7% of the votes. The new President soon announced his firm intention to ensure the maintenance of a model Islamic society, to fight poverty and to continue the development of the current civilian program of atomic energy for peaceful uses that, for the past few years, had been the subject of controversies with the European Union and the USA (from where it was presumed that it could be covering up the manufacture of nuclear weapons). In April 2007, Ahmadineyad announced that Iran could already produce nuclear fuel on an industrial scale.

On June 12, 2009, there are new elections where the nationalist candidate, Mahmoud Ahmadineyad, received 63.3% of the votes (24.5 million), while the

opposition candidate, supported by Western countries, Hosein Musaví received 34.2%, these elections reached a record turnout of more than 80% of the electorate, the opposition led by Musaví did not accept defeat and organized a series of massive demonstrations that led to acts of violence, such as burning and destruction of cars, banks, public buildings and armed confrontations with the police and other authorities.

For 2010 President Barack Obama signed the Comprehensive Sanctions, Accountability, and Divestment Law against Iran (CISADA), which amends the previous 1996 ISA. CISADA considerably expands related activities. With the energy that they are punishable and adds new types of sanctions that can be imposed, with this new law, it issues Executive Order No. 13553 to ‘take additional steps to the national emergency declared in Executive Order 12957 of March 15, 1995’.

Later in 2012, the same Obama administration issued Executive Orders No. 13599, 13606, and 13608 in February, April, and May, respectively. This wave of sanctions was directed against Iranian banks, as well as companies and individuals associated with Iran’s nuclear industry.

Given the pressure on Iran’s nuclear sector, an agreement on its nuclear program was reached on July 14, 2015, with the international mediators of the 5 + 1 Group (United Kingdom, China, France, Russia, USA, and Germany). In exchange for Tehran’s commitment not to develop or acquire nuclear weapons, the EU and the USA agreed to lift international sanctions against the Persian country. Under the agreement, formally known as the Comprehensive Joint Action Plan (JCPOA), Iran disposed of 98% of the enriched uranium it had and kept the enrichment level below 5%, which is required to ensure the operation of nuclear plants with civil purposes.

In August 2018, USA President Donald J. Trump issued Executive Order No. 38939 for ‘Reimposing Certain Sanctions With Respect to Iran’ in his own words from May of the same year indicates ‘As we exit the Iran deal, we will be working with our allies to find a real, comprehensive, and lasting solution to the Iranian nuclear threat, ‘warning that,’ if the regime continues its nuclear aspirations, it will have bigger problems than it has ever had before’. For May 2019, the economic sector of Iron, Steel, Aluminum, and Copper is sanctioned with executive order No. 20761. In June of the same year, the Supreme Leader of the Islamic Republic of Iran is sanctioned with executive order No. 30573. As of January 2020, the suffocation by the USA to the Iranian economy extends to the construction, mining, manufacturing, and textiles sectors with executive order No. 2003.

For its part, the International Atomic Energy Agency (IAEA), despite calling the Iranian Government’s attention in March 2020 when declaring through its Director General Rafael Mariano Grossi that.

To date, the Agency has not observed any changes in Iran’s implementation of its commitments related to nuclear energy under the JCPOA in relation to this announcement, or in the level of cooperation of Iran in connection with the Agency’s verification and monitoring activities under the JCPOA³.

Background of the Bolivarian Republic of Venezuela

Venezuela begins the 20th century with Cipriano Castro recently in charge of the presidency of the Republic and initiates a centralist project, updates the armed forces, and boosts the economy. But already by 1902, there is a civil war, called 'The Liberating Revolution', led by the banker Manuel Antonio Matos, which establishes an alliance between regional leaders and with economic support from European powers. This revolt culminates in the battle of Ciudad Bolívar in July 1903. However, as a result of the defeat of Matos, which had the financing of transnational companies, Germany, England, Italy, and other foreign powers demanded the cancellation of the damages suffered by his allies in Venezuela during the years of the civil war, crossing the coasts and ports of Venezuela with his marines by the end of 1902.

The naval blockade of the Venezuelan coasts by the European powers in December 1902 offered the USA the opportunity to establish its hegemony on the continent. Through its mediation in the conflict, the USA managed to curb European intentions to influence the region and place the Latin American and Caribbean countries under its tutelage. The battle ends with the intervention of the American ambassador, Herbert Bowen, as an arbitrator in the conflict. With this, the USA promoted international arbitration to end the naval blockade. The aggressor powers accepted this measure. In 1903, the so-called Washington Protocols were signed⁴.

Venezuela's total debt to the blocking powers ended in 1913, but the background to this event involved deeper motivations, all this responded to strategic interests.

The Republic, led by Theodore Roosevelt at the time, makes a reinterpretation of the Monroe Doctrine of 'America for the Americans': with the Roosevelt Corollary [26] to become the United States the natural protector of Latin America. Thus, the escalation of USA interventions in the subcontinent began.

Almost a century after, in 1989, Carlos Andres Perez was the President of Venezuela for the second time and applied a set of unpopular measures recommended by the International Monetary Fund (IMF). These policies provoked a series of protests that were brutally suppressed by the police and military forces, and several hundreds of civilians were killed. On February 4, 1992, Lieutenant-Colonel Hugo Chavez led a military coup against President Perez. The military coup failed. Chavez was sentenced to some years in prison, but after spending two years, he was pardoned by President Rafael Caldera in March 1994. On December 6, 1998, Hugo Chavez won the presidential elections by 56.2 percent, the most significant percentage of voters in four decades.

Chavez took office on February 2, 1999, and the same day he signed a decree that called for a referendum where the people would decide if they support Chavez's idea of the creation of a new constitution. In the referendum, Chavez got more than 71% of the votes. So, the plan of a new constitution was fully approved by the Venezuelan people. Ten days after the law was signed, the Venezuelan opposition launched a general strike.

⁴ Preferential Treatment of Claims of Blockading Powers against Venezuela. *Permanent court of arbitration*. URL: <https://pca-cpa.org/cn/cases/76/> (accessed: 01.03.2021).

In the new constitution, there is a mechanism that any elected official can be recalled. By 2004 the opposition launched a campaign against Chavez, with this on August 15, 2004, the revocatory election was performed, Chavez won the recall by 59.25 percent of the votes.

Chavez was one of the most visible and vocal Latin American leaders spreading anti-American sentiments around the world. The USA recognizes Chavez as a threat to USA interests in different parts of the world. In 2007 the Secretary of State Condoleezza Rice called Chavez a “Negative force in the region” [27].

For December 2008, the USA Department of the Treasury’s Office of Foreign Assets Control (OFAC) designated two senior Venezuelan government officials for ‘materially assisting the narcotics trafficking activities of the Revolutionary Armed Forces of Colombia (FARC), a narco-terrorist organization’.

After a decade in power, Hugo Chávez was diagnosed with cancer in 2011, but he won the presidential election of 2012 with 55.07% of the votes, that mandate would end in 2019. However, he passes away on March 5, 2013, and new elections were held on April 14, 2013. The main competitors were Nicolás Maduro, in charge of directing Venezuelan foreign policy since 2006, and by the opposition, the so-called ‘Table of Democratic Unity’ (MUD), represented by Henrique Capriles Radonski.

Nicolás Maduro won these elections with 50.61% of the votes. But Capriles ignored the official bulletin issued by the National Electoral Council (CNE) and called for a total count of the votes. On April 19, 2013, Maduro began his formal mandate to complete the 2013–2019 constitutional period.

In addition to political tensions, in 2013 inflation shot up to levels not seen in twelve years, weighed down by the drop in oil prices, and in large part given the strict controls on foreign exchange access and the establishment of a rigid law of price control which produces a food shortage. The situation that takes advantage of the opposition to call protests that began on February 12, 2014, and lasted several months until mid-June of that year.

The USA government also sees its opportunity to establish ‘order’ in the Caribbean country, and applying the Roosevelt corollary, establishes the ‘Venezuela Defense of Human Rights and Civil Society Act’ as a law to impose specific sanctions on certain individuals in Venezuela who were responsible for human rights violations during these 2014 anti-government protests.

In October 2014, oil prices fell to the cost of four years earlier. In early 2015 the USA government establishes its executive order No. 12747 and formally declares that the situation in Venezuela ‘constitutes an unusual and extraordinary threat to the national security and foreign policy of the USA’, thereby giving the green light to the beginning of the international strangulation of the already delicate Venezuelan economy, given the outlook for the price of black gold, on which more than 95% of the country’s export earnings depended.

At the end of 2015, another package of economic measures was approved in the Council of Ministers of Venezuela, Venezuela reached the highest inflation rate in the last 35 years, it could be considered that year it entered a process of hyperinflation.

On December 6, 2015, the parliamentary elections were held, where the MUD was victorious, with 112 of the 167 deputies of the National Assembly (56.2% of the votes), which constituted the first electoral victory of weight for the opposition in 17 years. It should be taken into account that, out of 167 elected deputies, there are four whose election was contested by magistrates of the Supreme Court of Justice (TSJ), who declared the suspension of acts of vote totalization and proclamation of the results of the parliamentary election in all the circuits of the Amazonas state, affecting three deputies elected by the MUD and one deputy from the PSUV government party.

For January 25, 2016, a National Economic Emergency Decree is released. At the beginning of this year, there were a series of economic announcements such as the increase in gasoline and the minimum wage, currency exchange control was simplified, and the currency was devalued, and taxes were also increased to reduce the public deficit.

For April 26, 2016, the opposition to the Government presents the recall referendum project before the National Electoral Council (CNE) to decide the permanence of Nicolás Maduro in the Head of State, a project that is suspended on October 20, due to accusations by fraud by the opposition MUD. Opponents of the Maduro government viewed the annulment as a break in Venezuela's constitutional thread and called for protests.

On December 7 of that year, the Central Bank of Venezuela announced the new banknotes that began to circulate in Venezuela, with which the monetary cone was changed to 'Strong Bolívars' due to high inflation levels.

In January 2017, the Supreme Court of Justice ratified the contempt that the National Assembly maintains since December 2015 against the Judiciary and the constitutional order, due to the swearing-in of three opposition deputies that had been prohibited by the TSJ on 2015, the TSJ ratified the invalidity of the actions of the National Assembly since December 30, 2015. This measure was extended on March 29, with sentence 156, where it was established that the TSJ would guarantee compliance with the powers parliamentary and extend these powers to the President of the Republic, Nicolás Maduro, according to the Constitutional Chamber, until the situation of contempt of parliament persists.

For May 1, 2017, through presidential decree No. 2830, the Maduro president calls the electoral bases to carry out a National Constituent Assembly, in charge of drafting a new constitution for Venezuela. This assembly was indicated as fraudulent by the opposition, despite the explicit authority of convocation by the President, granted in article 348 of the 1999 constitution. On July 30, 2017, elections were held to choose the 545 constituents that would make it up.

During 2017, numerous protests called by the opposition continued, for August of that year, the USA published the Executive Order No. 41155, for 'Imposing Additional Sanctions to the Situation in Venezuela', alleging that the Government had incurred in "abuses of human rights". This order further affects the country's already hanged oil industry.

For October 15, 2017, the regional elections are held, where the governors of each federal entity were elected, where the MUD obtained 44.3% of the

total votes, but five governments against 18 of the government party. The USA Department of State ruled on the elections and noted that:

As long as the Maduro regime conducts itself as an authoritarian dictatorship, we will work with members of the international community and bring the full weight of American economic and diplomatic power to bear in support of the Venezuelan people as they seek to restore their democracy⁵.

Already for March 2018, a new monetary reconversion was announced in the country, the new currency will be called Bolívar Soberano, and its conversion rate would be 1000 Bolívares Fuertes in 2017 equal to 1 Bolívar Soberano, it would be the second change of monetary cone in less than three years.

For its part, in early 2018, the National Constituent Assembly requests before the National Electoral Council (CNE) the presidential elections are advanced from December to April 2018. Nothing in the Venezuelan constitution prevents votes from being called early, so the CNE accepts the request and set them for May 2018. However, although it was that same CNE that led the elections where they became winners of the national assembly in 2015, and that since March 2017, parties of the MUD, began a discussion on who would be their candidate for the 2018 presidential elections, the opposition branded the body as biased and said there was not enough time for the call, so would boycott the polls. Another of the arguments put forward is the disqualification from running candidates. However, several of them already had said disqualification long before the announcement of the elections, either due to acts of violence in the protests in previous years, corruption, or being outside the country.

With these arguments, an international campaign begins to ignore the results before it is carried out, elections that, in any case, would be held six months later. Finally, on February 21, the opposition coalition parties reached an agreement not to participate in the elections⁶. According to these announcements, the USA government says it did not recognize the results of the elections before it was held, and part of the countries of the American and European continents joined it, also announcing that they would be unaware of the results of said elections for being 'illegal'.

The contest was held on May 20, 2018, and ranked with the highest abstention in the history of the presidential elections since the arrival of democracy in 1958. The results gave Maduro the winner, with 67% of the votes. The results were not recognized by the USA, the OAS, and the European Council of the European Union.

In November President Maduro proposed a national savings plan based on the purchase of gold to avoid the use of the dollar as a savings mechanism, but in the same month, the USA government issues Executive Order No. 55243 given the 'actions by the Maduro regime and associated persons to plunder Venezuela's wealth for their fraudulent purposes, degrade Venezuela's infrastructure and natural environment through economic mismanagement and confiscatory mining and industrial practices'.

⁶ La MUD anuncia que no participará en las presidenciales de Venezuela. *BBC News Mundo*. <http://www.bbc.com/mundo/noticias-america-latina-43148830> (accessed: 01.03.2021).

In December 2018 Guaidó was chosen as President of the National Assembly of Venezuela (In contempt according to the TSJ since 2015) and was sworn in on January 5, 2019. For its part, Maduro's inauguration took place on January 10, 2019, in the Supreme Court building in Caracas. The National Assembly declared Guaidó was willing to assume the responsibilities of the presidency.

On January 23, Guaidó declared he was acting President and took the presidential oath at a rally in Caracas. Within minutes of Guaidó's swearing-in, the USA recognized him as President, followed shortly thereafter by Canada and other Latin American and European countries. Two days later, on January 25, 2019, the USA issues Executive Order No. 509 where the Government of Maduro is no longer called an 'authoritarian dictatorship' and now becomes 'illegitimate Maduro regime', with that order they apply the sanctions imposed since 2015 on any government representation other than the national assembly. In the same way, control of Venezuelan assets on the USA lands is transferred to Guaido.

From that moment Guaidó calls for a continuous protest, also encouraging the people to keep up the fight if he gets arrested, nationwide recurring electrical blackouts began in March and for May the Central Bank of Venezuela published the inflation for April 2019 of 33,78% and the accumulated of a year between April 2018 and April 2019 of 283,972.81%. Venezuela's economic situation is deteriorating more and more. By August of that year, the USA issues Executive Order No. 38843 where blocked all the properties from the Venezuelan Government in the USA.

Given the lack of success in overthrowing Maduro through economic sanctions or with the collaboration of local opposition allies, by 2020, the USA strategy for Maduro's departure becomes more radical. In March the Justice Department announced that 'Nicolás Maduro Moros and 14 Current and Former Venezuelan Officials Charged with Narco-Terrorism, Corruption, Drug Trafficking and Other Criminal Charges' and the USA Department of State, through its Narcotics Rewards Program offers a reward of 15 million dollars 'for information leading to the arrest and/or conviction of Maduro Moros'⁷, with this formally seeks to start a stage of violence in the country and exit Maduro by any means. For May 2020 occurs the unsuccessful attempt by the opposition and an American private military company, Silvercorp USA, to infiltrate Venezuela by sea and remove Nicolás Maduro from office, this attempt was called Operation Gideon [28].

After this more violent change in strategy, support in opposition to Guaido was decreasing, especially internally, according to anti-government pollsters, for January 2019 63% of Venezuelans believed that a change of Government was possible; in May 2020 that figure is 20%.

⁷Nicolás Maduro Moros and 14 current and former Venezuelan officials charged with narco-terrorism, corruption, drug trafficking and other criminal charges. *U.S. Drug Enforcement Administration*. <https://www.dea.gov/press-releases/2020/03/26/nicolas-maduro-moros-and-14-current-and-former-venezuelan-officials> (accessed: 01.03.2021).

Use of cryptocurrencies in Iran and Venezuela

Before pointing out the regulations and realities of the use of cryptocurrencies in each country, it is necessary to briefly explain the concepts that surround cryptocurrencies.

Conceptualization of cryptocurrencies

The basis of these currencies is blockchain technology, which can provide a single source of truth that's verifiable, secure, and immutable. Blockchain is a ledger or collection of records of the coins that have been 'mined'.

Bitcoin and similar digital currencies are called cryptocurrencies because the underlying algorithms and security are intimately related to digital cryptographic algorithms. A publicly available database records every trade of currency. Every coin is associated with an address and a transaction is a trade of coins from one address to another. This database is called the 'blockchain'. This is a chain of records of transactions and coins produced. Miners add to the blockchain by 'mining' or solving a computational problem and adding new transactions. The evidence of ownership of some coin is entirely in the blockchain. Holders of coins use 'wallets' to keep track of their balances as well as to send and receive coins.

Copies of the database are maintained because miners maintain copies as part of mining. Miners must have a copy and be linked to other sites to post their solution to the computational problem in the database. Besides, if someone else solves the cryptographic problem first and this information is likely to be reasonably widely known, miners' optimal strategy is to move onto the next block. Hence, miners have an incentive to update frequently and stay informed about the state of the blockchain.

Cryptocurrencies in Iran

In April 2014, the Islamic Parliament Research Center (IPRC) published a report reviewing the legal and regulatory status of Bitcoin, where it concludes that the Government should more clearly define and regulate Bitcoin's position in the Iranian economy. In the same year, Naser Hakimi, IT Director of Iran's Central Bank, stated that the use of Bitcoin in Iran is illegal under Article 2 of Iran's 'Money and Banking Act'. So regardless of this legislation, Iranian users accessing Bitcoin sites freely via VPNs and other circumvention tools. In general, in the beginning, the Government takes a hard stance against the currency. By 2015 BTXCaptial and Draglet are one of the firsts bitcoin firms to make their way into Iran, together with LocalBitcoins⁸.

Although the official news agency of the Islamic Republic of Iran for 2017 announced that 'Iran can become the next major Bitcoin market by stopping

⁸Iran's first bitcoin exchange opens in effort to exploit 'huge untapped market'. *International Business Times UK*. URL: <https://www.ibtimes.co.uk/irans-first-bitcoin-exchange-opens-effort-exploit-huge-untapped-market-1517300> (accessed: 01.03.2021).

to use USD⁹, in December of that year, it also published statements by Iranian lawmakers clarifying that it did not yet have no concrete position or regulation regarding the use of Bitcoins¹⁰. For February 2018, Nasser Hakimi, Head of Central Bank of Iran, declared that ‘bitcoin has not yet come into extensive use and it would be risky to invest in them’, which began to show signs of fear that the Government had about the use of bitcoins. Finally, in April 2018 the Central Bank of Iran (CBI) banned the use of Bitcoin and other virtual currencies (Forex) on the cyber net.

No official figures exist that measure how widespread cryptocurrencies are in Iran. Only the LocalBitcoins exchange shows some statistics. However, by October of 2018, the USA Financial Crimes Enforcement Network defines the use of virtual currency in Iran as ‘comparatively small’, estimating transactions to be about \$3.8 million worth per year¹¹.

For 2019 the official policy on cryptocurrency changes, in January the CBI ‘invites views on cryptocurrency draft policy’ and in July the Iranian government-endorsed crypto mining as an industrial activity and noted that those involved should take required licenses from the Ministry of Industry, Mine and Trade¹². Likewise, ‘Special electricity tariff for cryptocurrency miners’ is established, which encourages mining. At the end of 2019, Iran’s President Hassan Rouhani declares that ‘with the emergence of the new technology of blockchain, we can find our cryptocurrency’.

In January 2020 the Ministry of Industries, Mining, and Trade has issued 1,000 plus licenses for cryptocurrency mining units. In May 2020, the use of digital currencies will be proposed to increase the power of exchange in the currency return cycle and facilitate currency exchanges. The same month iMiner, a Turkey-based company, has the green light from the nation’s Ministry of Industry, Mine and Trade to operate up to 6,000 mining rigs in the city of Semnan. iMiner is the ‘first and largest bitcoin mining and extraction system in Iran’ with 2,000 mining machines by May of 2020¹³.

However, in Iran is not explicit rules regarding the governing of the trade-in cryptocurrencies, the banking sector cannot use cryptocurrencies yet, by June

⁹ Iran can become next major Bitcoin market by stopping to use USD. *Islamic Republic News Agency*. URL: <https://en.irna.ir/news/82427652/Iran-can-become-next-major-Bitcoin-market-by-stopping-to-use> (accessed: 01.03.2021).

¹⁰ MPs express hope, worry about bitcoin entering Iran market. *Islamic Republic News Agency*. URL: <https://en.irna.ir/news/82767231/MPs-express-hope-worry-about-bitcoin-entering-Iran-market> (accessed: 01.03.2021).

¹¹ Advisory on the Iranian Regime’s Illicit and Malign Activities and Attempts to Exploit the Financial System. *Financial Crimes Enforcement Network (FinCEN)*. URL: <https://www.fincen.gov/sites/default/files/advisory/2018-10-12/Iran%20Advisory%20FINAL%20508.pdf> (accessed: 01.03.2021).

¹² Iranian govt. authorizes crypto mining. *Mehr News Agency*. URL: <https://en.mehrnews.com/news/148195/Iranian-govt-authorizes-crypto-mining> (accessed: 01.03.2021).

¹³ Iran Issues License for Nation's Biggest Bitcoin Mining Operation. *Coindesk*. URL: <https://www.coindesk.com/business/2020/05/05/iran-issues-license-for-nations-biggest-bitcoin-mining-operation> (accessed: 01.03.2021).

2020, representative Mohammad Hossein Farhangi (Tabriz), spoke before the nation's parliament, called on the Governor of the Central Bank of Iran, Abdolnaser Hemmati, to handle oversight of bitcoin.

Cryptocurrencies in Venezuela

In Venezuela, in the middle of 2013 and 2014, the first exchange business began to operate, among them are LocalBitcoins and SurBitcoin¹⁴, which is the first Latin American exchange house for bitcoins with Venezuelan participation.

Bolivarcoin is the first cryptocurrency created in Venezuela. It was announced by 'Satoshisimon Bolivarmoto' on August 29, 2015, where its genesis block was mined. However, by June 2020, its total capitalization was just \$ 169,715¹⁵.

In December 2017, the 'Petro' was announced, as an award-winning Venezuelan token, according to its initial announcement based on blockchain technology and, according to approved laws backed by the reserves of various natural resources of Venezuela such as oil, gold, diamonds, and gas. Likewise, the creation of the Superintendence of Cryptocurrency and Related Activities is established, which will control and monitor the behavior and evolution of the Petro. On January 30, 2018, in Council of Ministers No. 311, the national executive announced the publication of the white paper containing the conditions and functions of the cryptocurrency¹⁶. Unlike Bitcoin, the Petro is centralized by an intermediary, in this case, the Government of Venezuela. The value of the Petro is established according to the price of a barrel of oil. It can be used to pay taxes and public services, and the Government has also used it to grant direct subsidies to the population. In April 2018, the National Gazette No. 6,371 was published, where the Treasury of Crypto-assets of Venezuela and the Superintendency of Crypto-assets of Venezuela and Venezuelan Related Activities (Supcacven) are established.

However, as of March 2018, the USA issues Executive Order No. 12469, given that the Government of Maduro 'attempts to circumvent USA sanctions by issuing a digital currency in a process that Venezuela's democratically elected National Assembly has denounced as unlawful', with which the barely born currency is seriously limited in its use by the international community.

After the launch of the Petro, from a private point of view, some initiatives continue to take place, in December 2017 the National Association of Cryptocurrencies 'Asonacrip' is created. Then in 2018 other currencies such as the 'Arepacoin' or the 'Onixcoin' are born, with capitalizations according CoinMarketCap for June 2020 are \$ 28,714.13 and \$ 10,143.42 respectively.

¹⁴ Qué ha sucedido con SurBitcoin? Sigue funcionando? Es confiable? *Cointelegraph*. URL: <https://es.cointelegraph.com/news/what-happened-to-surbitcoin> (accessed: 01.03.2021).

¹⁵ Bolivarcoin Markets. *CoinMarketCap*. URL: <https://coinmarketcap.com/currencies/bolivarcoin/> (accessed: 01.03.2021).

¹⁶ Venezuela Petro Cryptocurrency (PTR) English Whitepaper. *The Whitepaper Database*. URL: <https://www.allcryptowhitepapers.com/venezuela-petro-cryptocurrency-ptr-english-whitepaper/> (accessed: 01.03.2021).

For January 2019, the ‘Comprehensive Cryptoactive System Law’ is published, which creates the National Superintendence of Cryptoactive Assets and Related Activities (Sunacrip) that replaces the previous ‘Supcacven’ of 2018 and expands its powers. In February of the same year, the Comprehensive Registry of Cryptoactive Services (RISEC) was established, and the requirements and procedures for sending and receiving Remittances in cryptoactive assets were published. For December, the body establishes the regulations for the accounting record of operations and economic events expressed in crypto assets. In December it was found that the ‘Homeland System’ was authorized to transact operations in cryptocurrencies as a financial service, this system is associated with the ‘Homeland Card’ is an identification document of Venezuela, with a QR code that allows knowing the partner status economic of the Venezuelans. This system makes it possible to streamline the delivery of the Socialist Missions established by the Government of Hugo Chávez and continued under the command of Maduro.

Variables Analysis

Already carried out in the previous sections the review of the definition of the indicators, the economic and political events in Iran and Venezuela, their relationship with the USA along with the internal regulations on cryptocurrencies, there is an overview of the context under which the indicators and proposed variables unfold, with this you can now understand the change in the trends of the variables and understand how the reported events and specifically the different sanctions by the USA have affected the economy of both countries. But to confirm this statistically, Table shows the years in which there is a change in the trend in the variables seen through the Mann — Whitney test [29].

Years of change on the trend in each series according to the Mann — Whitney test

Variable	Iran, Islamic Rep.	Venezuela, RB
Google Trends Index for ‘Bitcoin’ (BtcGoo)	2013–2014	2014–2015: Beginning of sanctions
Net migration rate (MigRat)	2014–2015	
Migrant remittance inflows (RemFlo)		
Total Exports — Total Exports (TraBal)		
Crude oil production (OilPro)	2018–2019: Reimposition of sanctions	
Real GDP growth (GDP)		
Inflation rate (Infla)		

Source: developed by A. Colmenares in base of information from fig. 1 to 10.

These changes are highlight on the next figures, in the case of Venezuela since 2015 it occurs in all variables, in the case of Iran, the indicators in the economic order occur from the year 2018. In both cases is precisely the year in which sanctions are imposed or re-imposed by the USA that changes in trends occur.

Variable's evolution

Now in the next figures, we have a visual evolution of the variables proposed. The proposed period given the historical challenge of events shown was from 2010 to the most recent data found, in some cases only until 2019, in another with data from the beginning of 2020.

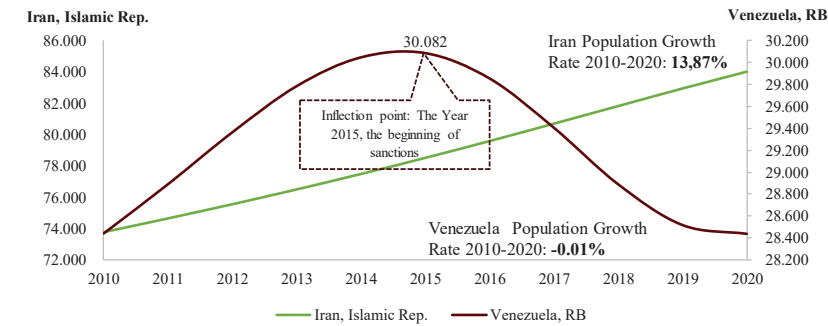


Fig. 1. Evolution of population of Iran and Venezuela in the period 2010–2020
Source: made by A. Colmenares according to the data¹⁷ with the use of MS Excel.

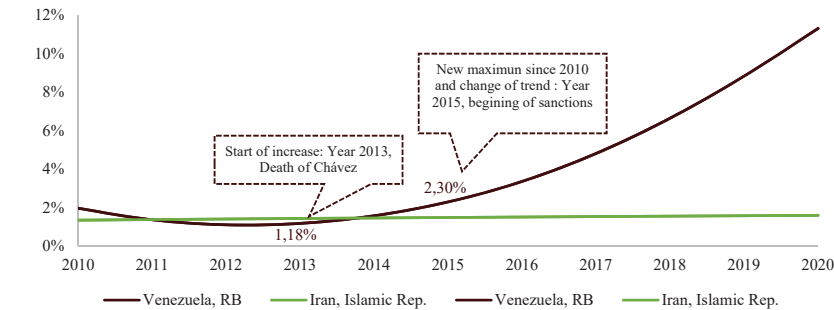


Fig. 2. Net migration rate (Migrant Stock by Origin / Population) in the period 2010–2020
Source: made by A. Colmenares according to the data¹⁸ with the use of MS Excel.

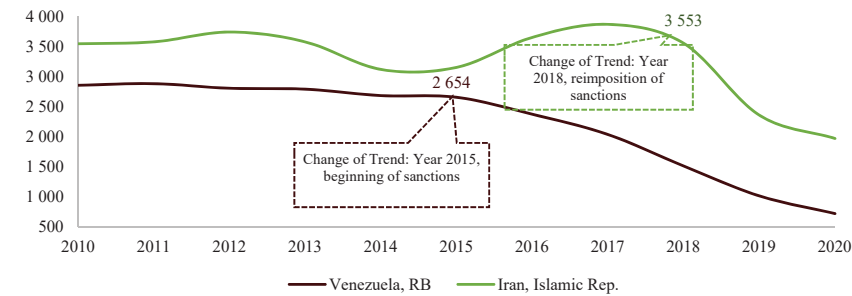


Fig. 3. Crude oil production (1,000 b/d, until April 2020) in the period 2010–2020
Source: made by A. Colmenares according to the data¹⁹ with the use of MS Excel.

¹⁷ World Population Prospects 2019. *Population Division of United Nations*. URL: <https://www.un.org/development/desa/pd/news/world-population-prospects-2019-0> (accessed: 01.03.2021).

¹⁸ Ibid.

¹⁹ OPEC Monthly Oil Market Report. *Organization of the Petroleum Exporting Countries (OPEC)*. URL: <https://www.opec.org/monthly-oil-market-report.html> (accessed: 01.03.2021).

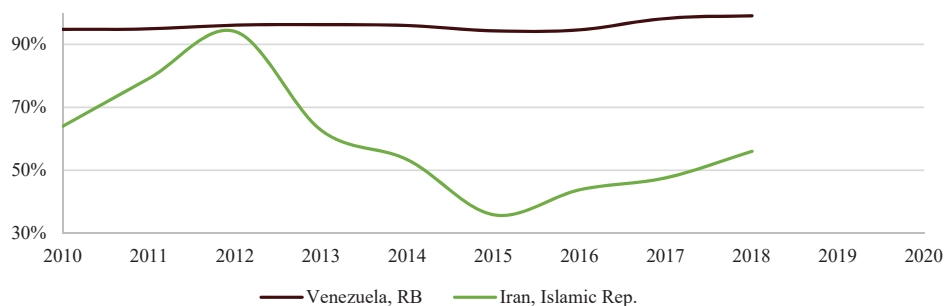


Fig. 4. Values of petroleum exports / Values of total exports in the period 2010–2018

Source: made by A. Colmenares according to the data²⁰ with the use of MS Excel.

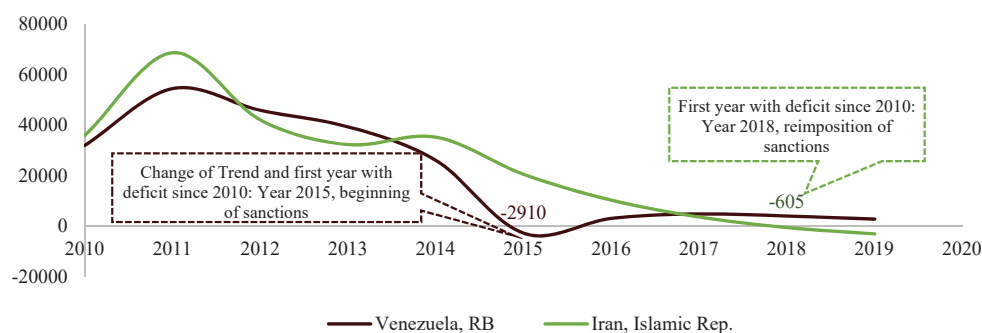


Fig. 5. Total Exports — Total Imports, million of USA dollars, in the period 2010–2019

Source: made by A. Colmenares according to the data²¹ with the use of MS Excel.

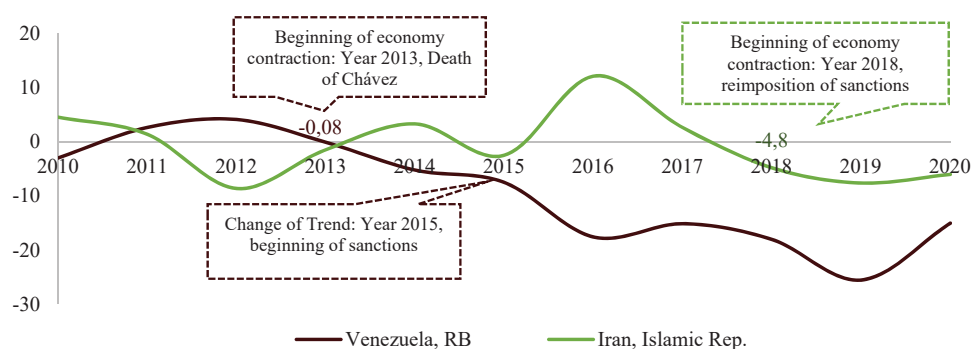


Fig. 6. Real GDP growth (Annual percent change) in the period 2010–2020

Source: made by A. Colmenares according to the data²² with the use of MS Excel.

²⁰ OPEC Annual Statistical Bulletin. *Organization of the Petroleum Exporting Countries (OPEC)*. URL: <https://www.opec.org/monthly-oil-market-report.html> (accessed: 01.03.2021).

²¹ Data Hub. *United Nations Conference on Trade and Development (UNCTAD)*. URL: <https://unctadstat.unctad.org/datacentre/> (accessed: 01.03.2021).

²² IMF DataMapper. *International Monetary Fund (IMF)*. URL: <https://www.imf.org/external/datamapper/datasets> (accessed: 01.03.2021).

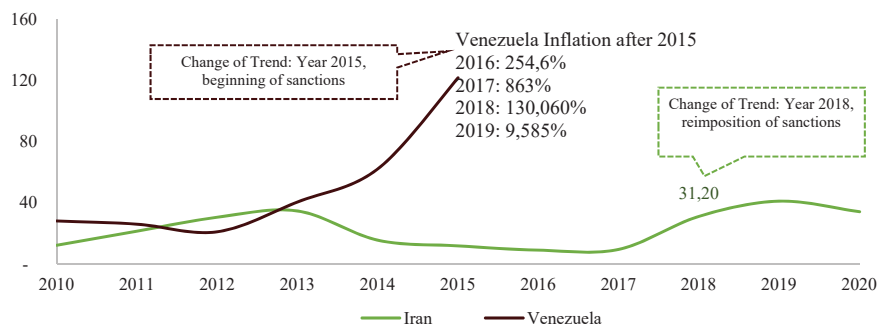


Fig. 7. The inflation rate, average consumer prices (Annual percent change) 2010–2020
Source: made by A. Colmenares according to data^{22, 23} with the use of MS Excel.

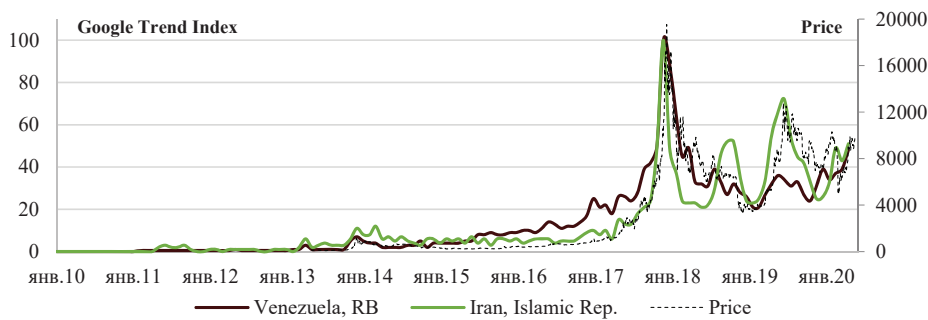


Fig. 8. Monthly average of Google Trends Index for “Bitcoin” keyword search 2010–2020
Source: made by A. Colmenares according to the data²⁴ with the use of MS Excel.

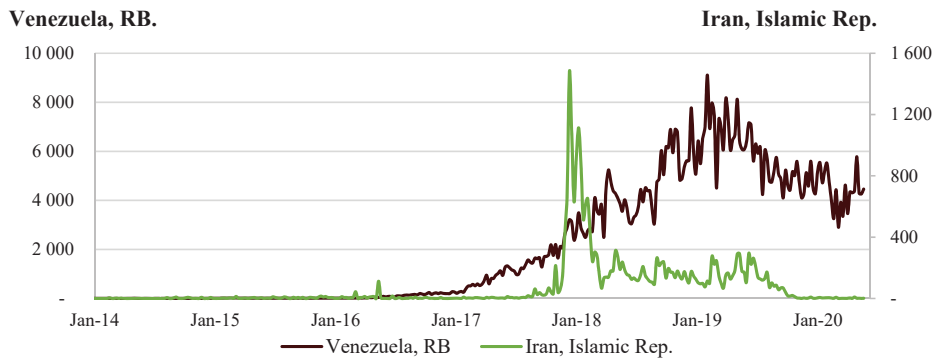


Fig. 9. Weekly LocalBitcoins Volume, thousands of USA dollars
Source: made by A. Colmenares according to the data²⁵ with the use of MS Excel.

²³ Statistics of consumption. *Banco Central de Venezuela (BCV)*. URL: <https://www.bcv.org.ve/estadisticas/consumidor> (accessed: 01.03.2021).

²⁴ Google Trends. *Trends*. URL: <https://trends.google.com/trends/> (accessed: 01.03.2021).

²⁵ Community-driven Bitcoin statistics and Services. *Coin Dance*. URL: <https://coin.dance/volume/localbitcoins> (accessed: 01.03.2021).

Discussion

The pronounced change in the population of Venezuela (see fig. 1) is in part due to its high migration rate (see fig. 2), which leaves it with an estimated growth rate between the years 2010–2020 of -0.01% . In the case of Iran, it experiences constant growth and achieves a growth of 13.87% .

The Oil production (see fig. 3) has gone from close to 3 million barrels per day to around 500 thousand, and from 3.5 to just under 2 million in the same period for Venezuela and Iran respectively, it is important to note that despite the cuts in early 2020 due to the Covid-19 pandemic, both countries already had a marked decrease in their production. The strong dependence on oil exports in the case of Venezuela (see fig. 4), which together with the decrease in its oil production explains the behavior of the Trade Balance, GDP and inflation (see fig. 5 to 7) respectively. Venezuela from 2015 begins a period of hyperinflation. In the case of Iran, dependence on oil has varied over the years, remaining around 50% , but all his economic indicators in (see fig. 5 to 7) show a pronounced deterioration as of the year 2018, time of the reimposition of sanctions from the USA.

As for the interest in the bitcoin term (see fig. 8), for both countries the behavior is very similar, both following the conduct of the price of the cryptocurrency, however, the difference in the volume of transactions in the Exchange LocalBitcoin (see fig. 9) are quite different, as we have previously commented, the regulations in both countries have had a direct impact on these transactions. Internal regulations in the case of Venezuela have encouraged the use of cryptocurrencies, even allowing the creation of non-governmental cryptocurrencies since 2015.

About remittances for both countries, the world bank shows constant figures from 2016 in the case of Venezuela and 2011 for Iran, which represents a substantial limitation in the study. Therefore, we are going to estimate this amount based on the number of migrants in each country. We will assume that the amount remitted by each migrant will be the annual average of that observed up to that year, in the case of Venezuela, it would be \$ 299 for each migrant, in the case of Iran \$ 1,243. Taking into account this 'average remittance' per country, it will be multiplied by the amount of Migrant Stock by Origin provided by the United Nations. Actual values and estimates are found next (fig. 10).

On the other hand, to discover if the use of cryptocurrencies, in this case, Bitcoin, has had a boom or increase in its use given the changes in trends previously seen in the variables, we are going to calculate the correlations between all the variables, taking as base indicator Google searches for the word 'Bitcoin'. The results of these correlations next (see fig. 11).

The indicator that has the most significant correlation with Google searches for the word 'bitcoin' in both countries is the proposed remittance flow proposal 'RemFlo', in Iran it presents a correlation of 0.85 while in the case of Venezuela it is 0.88 , so it could be assumed that part of them are sent by said mechanism, this

also considering that the World Bank maintains constant the figures for traditional channels, the differential between the estimated and indicated by the world bank could be largely through cryptocurrencies.

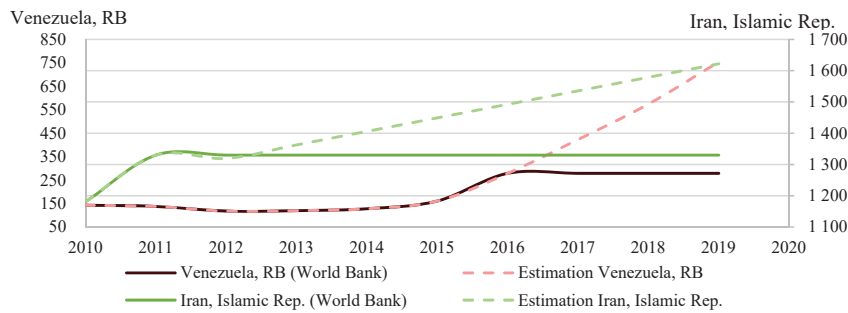


Fig. 10. Migrant remittance inflows, US\$ million, from 2010 to 2019
Source: made by A. Colmenares according to the data²⁶ with the use of MS Excel.

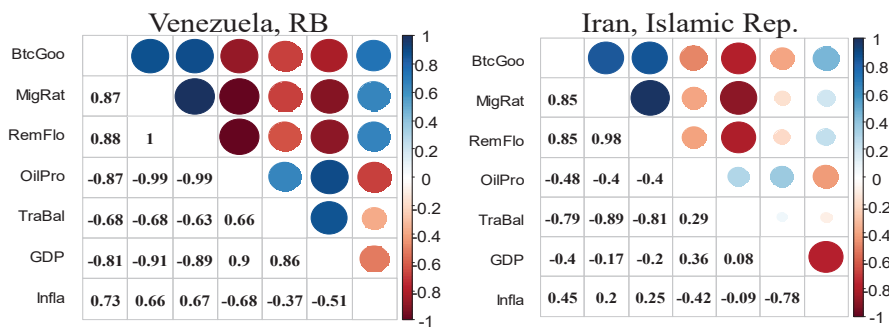


Fig. 11. Cross-correlation by country, years 2010–2019
Source: made by A. Colmenares according to the data from Fig. 1 to 10 with the use of R language.

Conclusion

In this investigation a detailed reconstruction of the events in the framework of the relations of Iran and Venezuela with the USA was carried out, highlighting the executive orders issued, the most relevant internal events and a review of the regulations on cryptocurrencies for each country, which could give a better understanding to the evolution of the indicators shown at the beginning. Without a doubt, both countries are in a precarious situation, at least from the economic point of view. Although the status of these indicators is not directly attributable to sanctions by the United States, they cannot be separated entirely either, the evidence of the change in trend in both countries shows that precisely the year in which the economic restrictions were implemented by the USA, all economic indicators worsened, with a severe consequence in the case of Venezuela: its population has decreased.

²⁶ International Migrant Stock. *United Nations Population Division*. URL: <https://www.un.org/development/desa/pd/content/international-migrant-stock> (accessed: 01.03.2021).

In the same way, a proposal to estimate the calculation of the amount of remittances for Iran and Venezuela was made. Among other five variables including inflation, GDP or oil production, this estimation is the one that has the highest correlation with the search for the term bitcoin in Google, given the high migration rate, at least in the case of Venezuela, this may indicate that remittances are being sent through this cryptocurrency. For its part, Iran, with its government policy of promoting the mining of bitcoin, and although it does not show the large volumes of transactions in the Exchange of LocalBitcoins such as Venezuela, this could be because, being a country with more experience in issues of economic sanctions, do not use direct or visible mechanisms to trade your bitcoins, even more given the great limitations that the state cryptocurrency in Venezuela Petro had, which was destined to fail almost since its issue when sanctioned by the USA.

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