**Immigration and Emigration in Italy 1995-2013, a Quantitative Research**

**Introduction**

Quantitative research is ‘Explaining phenomena by collecting numerical data that are analyzed using mathematically based methods (in particular statistics).’ (Aliaga and Gunderson, 2002)

The aim of the project is to analyze, performing a quantitative comparative research, the dataset of Italian Immigration and Emigration of Foreign Citizens in the time period from 1995 to 2013.

In this way, it’s possible to verify if the Italian peninsula is only an arrival land, or if there are foreign citizens that, after staying in Italy, go back to their original country.

I analyze the Dataset using Python in the Jupiter Notebook of VS-Code, and built a Streamlit presentation with the main plots.

In the analysis, I also try to predict the future immigration and emigration of foreign citizens in Italy, using two different methodologies: regression and ARIMA algorithm.

In this report, I analyze the different element of my project, and show the conclusion.

**Dataset and Variables**

The Dataset contains information about Immigration and Emigration of Foreign Citizens in and from Italy in the time period that goes from 1995 to 2013.

The source of the dataset is the UN website,

The Immigrants and Emigrants are analyzed by the Country of origin, so in the project it is possible to establish what are the main Country of people that arrives and goes out of the Italian national borders.

There is no information regarding the way in which Immigrants came, or why Emigrants go out of Italy, but, analysing the growth in different time periods, we can understand some interesting things.

The Dataset has a length of 389 rows, and it has 27 columns.

The columns are divided into years (from 1995 to 2013, excluding the 2001), and in:

* Type: describes whether the People are Immigrants or Emigrants
* Coverage: describes the fact that the Immigrants or Emigrants are Foreigners
* Country: the Birth-Country of the Immigrants or Emigrants
* AREA: code of the Area-name
* AreaName: Continent of Provenience
* REG: code of Region-name
* RegName: Region of provenience
* DEV: code of DevName
* DevName: gives information about the developing condition of the Country

For every year present in the columns, it’s possible to analyze the number of Immigrants and Emigrants of a particular Country, data stored at the end of the year.

**Immigration and Emigration, the main Causal-Events**

Talking about Immigration and Emigration, it’s better to provide some causal-effects that are related to these phenomena.

**Immigration Causal Events**

1. **Economic Opportunities**: Italy's economy has attracted foreign workers seeking employment opportunities. Immigrants, particularly from countries with lower wages and limited job prospects, have migrated to Italy in search of better economic conditions. Sectors such as agriculture, construction, hospitality, and caregiving have often relied on foreign labor to meet workforce demands.
2. **Asylum and Refugee Crisis**: Italy has been a common destination for individuals seeking asylum or refuge from war-torn countries, political persecution, or humanitarian crises. Conflicts in countries such as Syria, Libya, and various African nations have displaced many people, leading them to seek safety and protection in Italy. The Mediterranean Sea has been a primary route for migrants and refugees crossing into Europe, with Italy being one of the first points of arrival.
3. **Family Reunification**: Similar to Italian citizens, foreign residents in Italy often seek to bring their family members to join them. Family reunification policies allow foreign citizens residing in Italy to sponsor their family members, contributing to immigration flows. The desire to live together as a family and provide better opportunities for children is a significant motivation for immigration to Italy.

We can better analyze the first 2 Causal-events to understand what happened in the period 1995-2013.

1. **Economic Opportunities**

Between 1995 and 2013, Italy experienced several economic events that contributed to its economic growth.

1. Integration into the European Union: Italy's membership in the European Union (EU) played a significant role in its economic growth. Access to the EU's single market provided Italian businesses with opportunities for trade and investment. It facilitated the export of Italian goods and services to other EU member states, contributing to economic expansion.
2. Export-Oriented Manufacturing Sector: Italy has a strong manufacturing base, known for its quality craftsmanship and design. The country's manufacturing sector, particularly in industries such as automotive, machinery, fashion, and luxury goods, experienced growth during this period. Italian exports, fueled by demand for "Made in Italy" products, played a vital role in driving economic growth.
3. Technological Innovation: Italy witnessed advancements in technology and innovation, which stimulated economic growth. The country's investments in research and development, particularly in sectors such as pharmaceuticals, biotechnology, and renewable energy, contributed to innovation-driven growth. The adoption and integration of new technologies improved productivity and competitiveness in various industries.
4. **Asylum and Refugee Crisis**

During the period from 1995 to 2013, several significant social and political crises occurred worldwide.

1. Yugoslav Wars and Balkan Conflicts (1991-2001): The breakup of Yugoslavia led to a series of ethnic conflicts and wars, including the Bosnian War (1992-1995) and the Kosovo War (1998-1999). These conflicts resulted in significant loss of life, displacement of populations, and widespread human rights abuses, causing a major humanitarian crisis in the region.
2. September 11 Attacks and the Global War on Terror (2001-present): The terrorist attacks on September 11, 2001, in the United States had far-reaching consequences worldwide. The subsequent Global War on Terror led to military interventions in Afghanistan and Iraq, as well as increased security measures and surveillance globally. The conflicts and counterterrorism efforts sparked debates on civil liberties, human rights, and geopolitical stability.
3. Arab Spring (2010-2013): The Arab Spring refers to a wave of popular protests and uprisings that swept across several countries in the Middle East and North Africa region. These movements aimed to challenge authoritarian regimes, demand political reforms, and address socio-economic grievances. The protests led to the overthrow of governments in countries such as Tunisia, Egypt, Libya, and Yemen, but also resulted in ongoing conflicts and political instability in the region.
4. Syrian Crisis : The Syrian crisis refers to the ongoing conflict and humanitarian emergency that has been taking place in Syria since early 2011. It began as a series of peaceful protests against the government but quickly escalated into a full-scale civil war. The crisis has had severe humanitarian, social, and political consequences both within Syria and internationally

For the analysis, it’s also important to understand what are the Countries that became part of **European Union** in these arc of time.

1. Austria (Joined in 1995): Austria became a member of the EU on January 1, 1995, expanding the EU’s membership to 15 countries at that time.
2. Finland (Joined in 1995): Finland joined the EU on January 1, 1995, along with Austria, increasing the EU’s membership to 15 countries.
3. Sweden (Joined in 1995): Sweden also became a member of the EU on January 1, 1995, together with Austria and Finland, bringing the EU’s membership to 15 countries.
4. Cyprus (Joined in 2004): Cyprus joined the EU on May 1, 2004, along with several other countries from Central and Eastern Europe. This expansion increased the EU’s membership to 25 countries.
5. Czech Republic (Joined in 2004): The Czech Republic joined the EU on May 1, 2004, as part of the EU’s largest enlargement to date, which included several other countries from Central and Eastern Europe.
6. Estonia (Joined in 2004): Estonia became an EU member on May 1, 2004, as part of the same enlargement that included the Czech Republic and other Central and Eastern European countries.
7. Hungary (Joined in 2004): Hungary also joined the EU on May 1, 2004, as part of the enlargement that took place in 2004.
8. Latvia (Joined in 2004): Latvia became an EU member on May 1, 2004, alongside other countries from Central and Eastern Europe.
9. Lithuania (Joined in 2004): Lithuania joined the EU on May 1, 2004, as part of the same enlargement that included Latvia and other countries from Central and Eastern Europe.
10. Malta (Joined in 2004): Malta became an EU member on May 1, 2004, along with several other countries from Central and Eastern Europe.
11. Poland (Joined in 2004): Poland joined the EU on May 1, 2004, as part of the largest enlargement in the EU’s history.
12. Slovakia (Joined in 2004): Slovakia also became an EU member on May 1, 2004, alongside other Central and Eastern European countries.
13. Slovenia (Joined in 2004): Slovenia joined the EU on May 1, 2004, as part of the same enlargement that included other Central and Eastern European countries.
14. Bulgaria (Joined in 2007): Bulgaria joined the EU on January 1, 2007, along with Romania, expanding the EU’s membership to 27 countries.
15. Romania (Joined in 2007): Romania became an EU member on January 1, 2007, together with Bulgaria, bringing the EU’s membership to 27 countries.

**Emigration Causal Events**

Foreign citizens in Italy may choose to **emigrate** for various reasons, including:

1. **Better Economic Opportunities**: Some foreign citizens who have resided in Italy may choose to emigrate to other countries in search of improved economic prospects. They may seek countries with stronger economies or job markets that offer higher wages, better career prospects, or specific opportunities in their fields of expertise.
2. **Changing Immigration Policies**: Shifting immigration policies and regulations in Italy may prompt foreign citizens to consider emigration. If the country tightens immigration requirements or limits job opportunities for foreign nationals, some individuals may decide to leave in search of more welcoming immigration policies elsewhere.
3. **Return emigration**: Act of individuals or families leaving a country or region where they have previously immigrated or resided and returning to their country of origin. It involves a reversal of the migration process, with individuals or families choosing to go back to their home country permanently or for an extended period.

As made for the Immigration, let’s analyze the main component of the causal-effects.

1. **Better Economic Opportunities**

The 2008 financial crisis had a significant impact on Italy’s economy. The country experienced an economic downturn, with a decline in GDP growth and rising unemployment rates.

It exposed vulnerabilities in the banking sector, leading to concerns about solvency and liquidity. Italy’s public debt increased, prompting the government to implement austerity measures to address the growing debt burden.

The crisis resulted in political instability, frequent changes in government, and challenges in achieving sustained economic growth.

The 2008 crisis had a profound impact on Italy’s economy, leading to an economic downturn, banking sector troubles, a sovereign debt crisis, austerity measures, political instability, and long-lasting consequences for businesses, individuals, and the country as a whole.

1. **Changing Immigration Policies**

During the period from 1995 to 2013, Italy implemented various immigration policies and measures that shaped its approach to immigration.

1. Immigration Act of 1998: On April 30, 1998, Italy enacted the Immigration Act, which established the legal framework for immigration and residence permits, defining the categories and requirements for foreigners entering and residing in the country.
2. Regularization Program in 1998: In June 1998, Italy implemented a regularization program known as the “Brasseries Law,” which allowed undocumented migrants who met certain criteria to regularize their status and obtain legal residence permits.
3. Immigration Quota System in 2002: In 2002, Italy introduced a quota system for immigration, setting limits on the number of work permits issued to non-EU citizens. The quotas aimed to manage the entry of foreign workers into specific sectors of the Italian labor market.
4. Security Measures in 2008: In July 2008, Italy introduced a security package called the “Security Decree,” which included measures to strengthen border controls, combat illegal immigration, and address public security concerns. These measures included increased patrols, surveillance, and cooperation with neighboring countries.
5. Lampedusa Migrant Crisis in 2011: In 2011, Italy faced a significant influx of migrants, particularly from North Africa, due to political unrest and conflicts in the region. The island of Lampedusa became a focal point as thousands of migrants arrived by boat, leading to a humanitarian crisis and prompting Italy to request assistance from the European Union.
6. Schengen Agreement Suspension in 2011: In April 2011, Italy temporarily suspended the Schengen Agreement, which allows for passport-free travel among member states, to reimpose border controls. The move was intended to manage the influx of migrants and prevent their further movement within the Schengen area.
7. Dublin Regulation Amendments in 2013: In 2013, Italy advocated for amendments to the EU’s Dublin Regulation, which determines the responsibility for examining asylum applications. Italy sought to address the disproportionate burden it faced as a frontline country receiving a large number of asylum seekers and called for a fairer distribution of responsibilities among EU member states.

These are the main acts and events that characterized the Immigration Policies of Italy during the period 1995-2013.

1. **Return emigration**

Can occur for various reasons. Some individuals or families may decide to return to their home country due to personal or familial factors, such as a desire to reunite with family members, attend to cultural or traditional obligations, or reconnect with their roots. Others may have initially migrated for temporary economic opportunities or education and choose to return after achieving their goals or obtaining the desired experience or qualifications.

Return emigration can also be influenced by socio-political factors. Changes in the economic or political situation in the host country or the home country can impact the decision to return. Economic factors, such as improved opportunities or stability in the home country, may attract individuals to go back. Similarly, political developments, policy changes, or shifts in societal attitudes can influence the decision to return.

**Analysis: Some Interesting Numbers**

Linked to the previous citated events, it’s possible to analyze some important data.

According to the join in the EU in 2007, Romania and Bulgaria had an enormous increase in the Emigrants to Italy.

The Immigrants changed from the 39.715 from Romania of 2006 to the 271.443 of 2007 (+583,48%), and from the 2.145 from Bulgaria of 2006, to the 13.362 of 2007 (+522,94%).

These data can be analyzed from a Political point of view. The new countries are now members of the EU, and the citizens have more freedom to go from a country to another.

It’s is also interesting to say that Romania is the first country according to both the total number of Immigrants and the total number of Emigrants from Italy.

We can see a huge amount of Emigrants coming from Romania that went out from Italy in 2008 (+122%).

This is with related, high probability, to the fact that Italy faced the global crisis in 2008, having a worst economic condition, that provide a cause for try to find new economic opportunities in other countries.

The same can be seen in other Country of origins, like Poland (+74%) and Hungary (+147%).

Another important growth is related to the Immigrants coming from Albania in 1996.

In 1996, Albania experienced a series of socio-political and economic crises, often referred to as the "Albanian civil unrest" or the "1997 Albanian crisis." The events of that year had a profound impact on the country.

1. Ponzi Scheme Collapse: In early 1996, a widespread pyramid investment scheme collapsed in Albania, causing financial devastation for thousands of Albanians who had invested their savings. The collapse of these fraudulent investment schemes led to significant social and economic unrest, as many people lost their life savings.
2. Popular Protests: The collapse of the pyramid schemes triggered widespread protests and demonstrations across Albania. People took to the streets to express their anger and frustration over the loss of their investments and the perceived corruption within the government and financial institutions.
3. Social Unrest and Violence: The protests escalated into a period of social unrest, characterized by violent clashes between protesters and law enforcement. The situation deteriorated, leading to a breakdown of law and order in some areas. Rioting, looting, and armed confrontations became widespread.
4. Government Collapse: The government of President Sali Berisha faced intense pressure due to the civil unrest and the perception of corruption and mismanagement. In March 1997, Berisha's government collapsed, and he stepped down as president. This political vacuum further exacerbated the crisis.
5. Mass Migration: As a result of the political and economic turmoil, a significant number of Albanians sought to leave the country in search of better opportunities and stability. This led to a wave of mass migration, with thousands of Albanians crossing borders illegally or seeking asylum in neighboring countries.

Albanian Immigrants in Italy changed from 3.411 of 1995 to 20.508 in 1996, which a growth of 501.22%.

**Predictions**

For what concern the predictions, it can be seen that while regression (linear and polynomial) works well analyzing the Emigrants in the period 1995-2013, on the other hand the Immigration seems to be really hard to predict.

This is due to the high impedivity of events that cause immigrations, such as wars and social revolutions in different countries.

It can be seen that, while the Emigrations from Italy of Foreign citizens has a more linear growth during the period, the Immigrations is characterized by some waves and quick growth, that are not easy to interpret and predict.

That’s because the regression seems not to be the best way for a prediction.

ARIMA (Autoregressive Integrated Moving Average) is a popular time series forecasting algorithm used to model and predict data points based on their historical values. It is a versatile algorithm that captures both the autocorrelation (dependence on past values) and the moving average (dependence on past errors) components of a time series.

The characteristics of the ARIMA algorithm can be summarized as follows:

1. Autoregressive (AR) Component: The autoregressive component in ARIMA refers to the dependency of a data point on its previous values. It assumes that the current value of the time series can be expressed as a linear combination of its past values. The order of the autoregressive component (represented as "p") indicates the number of lagged terms considered.
2. Integrated (I) Component: The integrated component in ARIMA represents the differencing operation applied to the time series data to make it stationary. Stationarity refers to a constant mean, constant variance, and the absence of trends or patterns over time. By differencing the series, we can remove the underlying trend and seasonality, making the data suitable for modeling using AR and MA components.
3. Moving Average (MA) Component: The moving average component in ARIMA considers the error terms or residuals from the past predictions. It assumes that the current value of the time series is a linear combination of the past forecast errors. The order of the moving average component (represented as "q") indicates the number of lagged forecast errors considered.

Using ARIMA, we can predict better the number of future Immigrants and Emigrants in Italy (Foreign Citizens).

From an Emigration point of view, this is the output of ARIMA:

Year: 2014, Predicted Emigration: 45768.18684169498

Year: 2015, Predicted Emigration: 48447.409650601025

Year: 2016, Predicted Emigration: 51097.97819677627

From ISTAT, the data of Foreign Citizens Emigration from Italy are the following:

Year: 2014, Emigration: 44000

Year: 2015, Emigration: 47000

Year: 2016, Emigration: 50000

Actually, these values are very accurate.

It seems that, using the ARIMA, it is possible to predict with a certain accuracy the future Emigrations of foreign citizens from Italy.

Looking at the Immigration of Foreign Citizens, the ARIMA output is the following:

Year: 2014, Predicted Immigration: 292727.5958980237

Year: 2015, Predicted Immigration: 297494.8026309632

Year: 2016, Predicted Immigration: 298917.89812941576

From ISTAT, the data of Foreign Citizens Immigration from Italy are the following:

Year: 2014, Immigration: 248000

Year: 2015, Immigration: 280000

Year: 2016, Immigration: 301000

Also in this case, the accuracy of the prediction it’s high in 2016, while there is some errors in the years 2014 and 2015.

**Conclusions**

In conclusion we can say that, even if the Italian peninsula had an important number of people that came during the period 1995-2013 (4.966.100), it had also an important number of Foreign Emigrants (331.200).

According to the analysis, it’s possible to say that Italy is a land of arrival, for the high number of opportunities that offers and the high quality of life, but it is also a step-land, where people that arrived go away, in search for better conditions or to go back to their original countries.

From a predictive point of view, both regression and ARIMA work well in predicting emigrations from Italy of Foreign Citizens, while, on the other hand, the Immigrations are more accurately predicted by the ARIMA algorithm, regression is not a proper method for the analysis on immigration.

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