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The Impact of Motu Proprio on Interest in Marriage Annulments in Spain: A Fractional Integration Approach

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Abstract

Objective: Marriage annulments play an important role in dignifying people. The main aim of this research paper is to analyze the impact of Motu Proprio (2015) on the interest in marriage annulments (IMA) in Spain, considering the business cycle. *Hypotheses:* (1) Motu Proprio reform might have a positive impact on interest in marriage annulments and (2) Business cycle could influence on people decisions regarding marriage nullities. *Method:* We apply methods of fractional integration to assess whether the reform has had a permanent or transitory effect, and if there is causality between GDP and interest in marriage annulments by means of the Breitung and Candelon frequency domain causality test. *Results:* The results show that business cycle does not impact interest in marriage annulments. Additionally, Motu Proprio had a strong impact on IMA in the short term but was not long lasting. *Conclusion:* People do not seem to request nullities for a decrease in bureaucratic processes or for the economic performance, but rather for the imperative need to regain their dignity and spirituality.

Keywords: Annulment, Motu Proprio, Business Cycle, Fractional Integration and Cointegration.

JEL Classification: K33, C32.

Introduction

Marriage annulments play an important role in ensuring that marriages are performed in accordance with proper legal and religious criteria. They provide a mechanism to correct marriages that, from their beginning, did not fulfill the fundamental criteria for validity. Furthermore, marital annulment can have significant emotional and societal consequences for the individuals involved. It can provide as a remedy for those who are in marriages that were initiated based on deceitful representations or excessive coercion. Because of the importance of annulments for dignity of people, Pope Francis boosted a reform of the canonical process for causes for declaration of marriage nullity in 2015 (Francisco, 2015). This reform aimed at favoring not the annulment of marriages, but the speed of the processes. According to Pope Francesco, the Motu Proprio looks for an adequate simplification, so that, “due to a delay in the definition of the judgment, the hearts of the faithful who await the clarification of their own state will not be long oppressed by the darkness of doubt.”

The main objective of this research paper is to analyze the impact of Motu Proprio (applied in 2015), that reforms the canonical process of marriage annulments in Spain.

To do this, we implement fractional integration and cointegration techniques. These methods

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allow researchers to assess whether a shock or policy (a reform in this case) has a temporary or permanent effect on the time series analyzed. We use data from January 2004 to July 2024.

The structure of the paper is as follows: Part 2 defines the Motu Proprio and describes the literature review; Part 3 outlines the research data and presents the methodology; Part 4 explains the principal results; and conclusions and discussions are provided in Part 5.

Literature Review

Nullity proceedings are notorious for being slow and economically burdensome. Moreover, there is an inevitable emotional cost in this process, as the couple seeking annulment of their marriage must relive the reasons for their failure and the potential grounds for nullity.

Furthermore, until 2015, once the process had begun it was necessary for a higher Tribunal to ratify the first-instance sentence after the phase of instruction and the final decision of the judges, even if the Tribunal issued an affirmative nullity sentence. This added an additional wait, making the process even longer (Moreno García, 2012).

Canon 1682 stated: “§ 1. *The sentence declaring the nullity of a marriage for the first time (...) must be transmitted ex officio to the appellate court within twenty days from the publication of the sentence.* § 2. *If the sentence in favor of nullity has been issued in the first instance, the appellate court, after reviewing the observations of the defender of the bond and, if any, those of the parties, must, by decree, either confirm the decision without delay or admit the case for examination through ordinary proceedings in the new instance.*”

This norm originated with Benedict XVI (1741), who, concerned about the excessive ease with which some Tribunals granted nullity, decided in 1741 to establish the figure of the Defender of the Bond with the mandate to ensure the validity of the marriage and its indissolubility and to appeal ex officio against the first declarative sentence of marriage nullity. Thus, it was mandatory that at least two instances always had to intervene in the same process.

Over time, this role of the Defender of the Bond seemed excessive, and it was decided that, although their role in the process continued to be to ensure the validity of the marriage and the search for truth in the process, they would cease to appeal sentences (Pius XII, 1944).

Nevertheless, even though the Defender of the Bond ceased this role, Canon 1682 of the Code maintained the requirement for the confirmation of the first affirmative sentence, obligating the Tribunal that issued it to raise the records and the sentence ex officio to a higher tribunal for it to declare its conformity or reform (De Diego Lora, 1996).

The defenselessness of many faithful individuals in the face of possible economic costs, the slowness of the Tribunals in resolving cases, and the enormous workload that studying first-instance sentences in the second instance gave the Tribunal of the Rota sufficient reason for Pope Francis to propose a renewal of the process and consequently the deadlines, with the intention of solving the existing problem.

Thus, Pope Francis, in his Motu Proprio *Mitis Iudex Dominus Iesus* of August 15, 2015, asserted that the deadlines in the process were excessive and could be a reason for the faithful not wanting to go to the Tribunals for a response to their failure.

This reform by Pope Francis involves a new drafting of Canon 1679, which replaces the content of Canon 1682: “*The sentence that declares the nullity of a marriage for the first time, after the deadlines established in Canons 1630-1633 have elapsed, becomes executive.*”

This reform (Roca Fernández, 2017) ensures that processes are shorter and therefore more agile: if the first-instance Tribunal declares the nullity of a marriage and no appeal is filed, that sentence will be executive (Daneels, F, 2016) and the process could last between four months and a year. However, it is important to note that the duration always depends on the chapter alleged and the

Tribunal. It is interesting to mention that this process renewal had been suggested for many years (Calvo Tojo, 1994; Wilde, 2002; López Zubillaga, 2004).

Pope Francis also reflected on the fact that if a faithful did not request nullity, it should not be for economic reasons. Therefore, in point VI of his Motu Proprio, he indicated that “*together with the proximity of the judge, the Episcopal Conferences should ensure, as far as possible, and safeguarding the just and dignified remuneration of the tribunal operators, the gratuity of the processes.*”

However, perhaps the most significant novelty introduced by Mitis Iudex is the Brief Process before the Bishop. To access this type of process, the request must be presented by both spouses or by one of them with the consent of the other, and there must be facts that, supported by witnesses or documents, do not require a more detailed investigation or instruction, given that the nullity is clear and evident (Canon, 1683).

The reform does not present a closed list of circumstances under which the Brief Process can be requested but does indicate some examples: “*(...) the brevity of conjugal cohabitation, procuring an abortion to prevent procreation, obstinate persistence in an extramarital relationship at the time of the marriage or immediately thereafter, willful concealment of sterility or a serious contagious disease or children born from a previous relationship or imprisonment, a reason for marrying completely unrelated to conjugal life or consisting of the woman’s unexpected pregnancy, physical violence to extract consent, the lack of use of reason verified by medical documents, etc.*” (Art. 14 § 1, Mitis Iudex Dominus Iesus).

The press has reported on this reform indicating two clear consequences: the speed of the process given that now only one Tribunal intervenes, and in case the sentence is affirmative, it would be executive. Additionally, the press also indicated that reducing the process would make it more economical or even free.

Finally, and somewhat confusingly, the press referred to a “quick annulment” in relation to the aforementioned Brief Process, which is which is far from the case: it is not always easy to access due to the importance of the moral certainty that judges need to declare nullity.

This last point, among others, has been thoroughly studied by the Dean of the Spanish Rota, as it is a complex process that must examine as many proofs as necessary to reach the truth (Morán Bustos, 2016).

Data and Methodolgy

Data Sources

The data sources utilized in this paper are Google Trends and Thomson Reuters Eikon-Datastream, allowing us to track the variables monthly. As far as Google Trends is concerned, we carry out a text mining based on keywords search related to marriage annulments (used before in Choi and Varian, 2012; Li et al., 2017; and Poza and Monge, 2020). Concerning Thomson Reuters, we exploit data from the Spanish National Accounts (Real GDP).

The time series starts in January 2004 and ends in July 2024, so the number of observations amounts to 247.

Variables

We use two kinds of variables: 1) indicator of interest in marriage annulments (IMA) and 2) real Gross Domestic Product (GDP). The first one could be considered as the treatment variable and the second one as the control variable.

Regarding IMA, it is constructed as a composed indicator (adding the values) by means of a pool

of keywords that people search for collecting information through Google. The keywords have been selected following the criteria of use frequency in Francisco (2015) and news in press. They are annulment, marriage annulment, annulment process, annulment reform, and annulment price. Note that for Google Trends, the numbers reflect the search interest in relation to the maximum value in a given region and period (index). A value of 100 indicates the maximum popularity of a term, while 50 and 0 indicate that a term is half popular in relation to the maximum value or that there was not enough term data, respectively.

GDP is measured at constant prices and has been interpolated monthly. We have transformed in annual rates. The more the percentage, the more the economic activity in Spain; therefore, more personal income one will have.

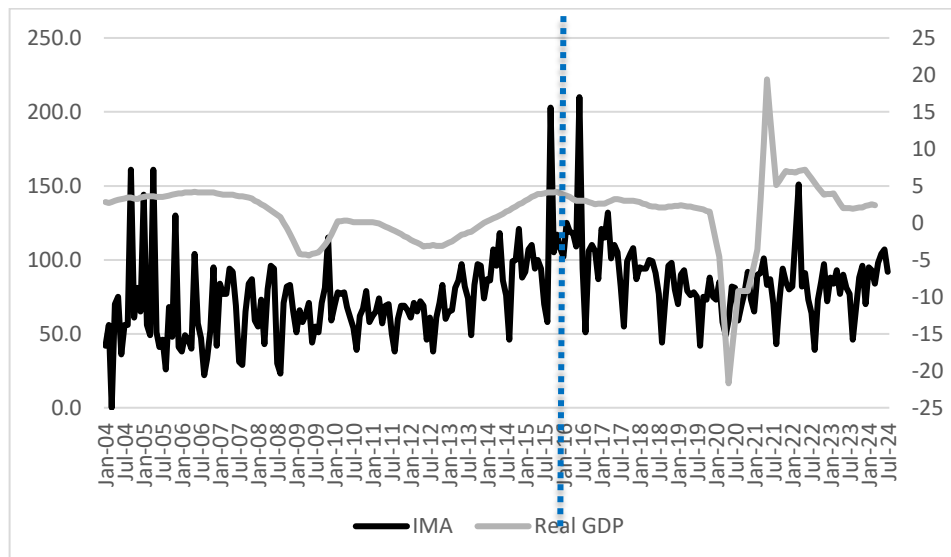
Table 1 shows some descriptive statistics to observe the data behavior. In addition, the correlation between IMA and GDP is low but significant (0,2 at 95% of confidence).

Table 1. Descriptive analysis

	N	Min	Max	Mean	S.D.
IMA	247	0	210	78,0	27,2
GDP	243	-22	19	1,3	4,2
N valid	243				

Furthermore, Chart 1 displays the evolution of IMA and GDP at constant prices in the context of Motu Proprio discussion and implementation. We observe a short and intense increase after the reform.

Chart 1. IMA and Real GDP evolution



Source: IMA (Google Trends) and GDP (Thomson Reuters Eikon-Datastream).

Note: Left axis is measured as an index number; right axis in annual growth rates. The blue line represents the Motu Proprio application.

Methodology

ARFIMA (p, d, q) Model

Authors such as Diebold and Rudebusch (1991), Hassler and Wolters (1994), Lee and Schmidt (1996) and others stated that all unit root methods have very low power if the true data generating process displays long memory or if it is fractionally integrated. For this reason, we use the ARFIMA (p, d, q) model where the mathematical notation is:

$$(1 - L)^d x_t = u_t, \quad t = 1, 2, \quad (1)$$

In equation (1), x_t refers to the time series that has an integrated process of order d ($x_t \approx I(d)$), d refers to any real value, L is the lag-operator ($Lx_t = x_{t-1}$) and u_t refers to $I(0)$. The Akaike information criterion (Akaike 1973) and Bayesian information criterion (Akaike 1979) were used to select the appropriate AR and MA orders in the models.

The d parameter has been estimated considering all combinations of AR and MA terms ($p; q \leq 2$) for the time-series and for the subsamples taking into account their confidence bands at 95%.

Breitung and Candelon Test

The causality test proposed by Breitung and Candelon (2006) contributes to providing an idea about whether the relationship between both time series is temporary or permanent (see Tastan, 2015; Ciner, 2011; Kirca et al., 2020). Because it interprets Granger causality across several frequency domains, this test has an advantage over other frequently used causality tests. To this end, two-time series—one based on coherence and the other on the bivariate spectral-density matrix—are categorized according to their spectral associations. An overall count of immediate forward and backward causality mechanisms is then obtained from the categorization.

According to Breitung and Candelon (2006), the VAR(p) model below can be used to specify the interdependence between two variables, x and y :

$$x_t = \alpha_1 x_{(t-1)} + \alpha_p x_{(t-p)} + \beta_1 y_{(t-1)} + \dots + \beta_p y_{(t-p)} + \beta_{1t} \quad (2)$$

The null hypothesis, $H_0: M_{(y \rightarrow x)}(w) = 0$, as tested by Geweke (1982), matches the null hypothesis of linear restriction given as:

$$R(w)\beta = 0 \quad (3)$$

Where β denotes the coefficient vector of y . $R(w)$ is defined as:

$$R(w) = \begin{pmatrix} \cos(w) & \cos(2w) & \dots & \cos(pw) \\ \sin w & \sin(2w) & \dots & \sin(pw) \end{pmatrix} \quad (4)$$

The F-statistics for the null hypothesis in Eq. (5) has an approximated distribution of $F(2, T - 2P)$, for $Fw \in (0, \pi)$. Furthermore, co-integration is frequently used as a framework for examining the frequency-based Granger causality test. Therefore, Breitung and Candelon (2006) substitute x_t in Eq. 4 for Δx_t . As a result, the existence of cointegration between the series suggests that the primary long-term causation and zero-frequency causality share conceptual similarities. However, if there is no long-term link in the stationary case, the evidence of a causal association at a low frequency implies that the variable under consideration's frequency element can be predicted by a different variable.

Results

We employ fractionally integrated methods, and use ARFIMA (p,d,q) models to study the persistence of the IMA index and real GDP time series.

The Akaike information criterion (AIC; Akaike, 1973) and the Bayesian information criterion (BIC; Akaike, 1979) are used to select the appropriate AR and MA orders in the models.

The advantages of using the ARFIMA (p, d, q) model over any Unit Root tests are several: 1) They allow fractional values for greater flexibility in how the series is modeled; 2) They capture long-term dependence; 3) They offer a complete framework for modeling and predicting time series.

Table 2 displays the estimates of the fractional differencing parameter d and the AR and MA terms, using Sowell's (1992) maximum likelihood estimator of various ARFIMA (p, d, q) specifications with all combinations of $p, q \leq 2$, for each time series.

Table 2. Results of long memory tests

Data analyzed	Sample size (days)	Model Selected	d	Std. Error	Interval	I(d)
IMA Index	Original Time Series					
	247	ARFIMA (2, d, 2)	0.41	0.134	[0.19, 0.63]	I(d)
	Before Nov. 2015					
	143	ARFIMA (2, d, 2)	0.49	0.000	[0.21, 0.59]	I(d)
	After Nov. 2015					
	104	ARFIMA (1, d, 2)	0.36	0.168	[0.08, 0.63]	I(d)
Real GDP	Original Time Series					
	243	ARFIMA (0, d, 0)	0.50	0.000	[0.50, 0.50]	I(d)
	Before Nov. 2015					
	143	ARFIMA (1, d, 0)	0.92	0.101	[0.76, 1.09]	I(1)
	After Nov. 2015					
100	ARFIMA (0, d, 0)	1.42	0.080	[1.29, 1.56]	I(1)	

We observe from Table 1 that the estimates of d for the IMA index are lower than 1 ($d < 1$) for all cases (original time series, before and after Motu Proprio legal reform). When d is lower than

0.5, stationary behavior is implied. Also, these results suggest that the shocks have or will have temporary effects and will disappear by themselves in the long run. From a legal perspective, that means the Motu Proprio applied in 2015 had a strong impact on interest in marriage annulments in the short-term, as observed in news and Google searches, but not in the long run because the real reason to request nullities does not depend on bureaucracy (although people thanks agility), but the necessity to recover civil status and, more importantly, spirituality and dignity. Thus, the trend presents mean reversion for that reason.

Furthermore, the Real GDP series shows a significant change in its memory properties over time. Initially, it appears nearly stationary, but after November 2015, it becomes more non-stationary. This indicates a structural change in the underlying economic process, leading to increased persistence in the series. Obviously, this alteration is not related to Motu Proprio (spurious correlation), but to business cycle, when we observed a deceleration in economic activity in Spain.

Once we have studied the statistical properties of each time series, we use the Breitung and Candelon frequency domain causality test to examine the interactions between both time series (Table 3). Performing a bivariate causality analysis allows us to identify the influences that one variable or time series exerts on the other. Also, past values of the causal variable provide useful information that can be exploited to predict future values of the dependent variable.

Table 3. Breitung and Candelon Frequency Domain Causality Test Results

Hypothesis	Lag	Long Term	Medium Term	Short Term
Original Time Series				
IMA \square GDP	4	0.82 (0.66)	0.54 (0.76)	0.85 (0.65)
GDP \square IMA		1.17 (0.56)	2.96 (0.23)	3.22 (0.20)

Focusing on the results that we get using the causality test in the frequency domain, we can determine that the relationship in both directions is spurious. It means that not only does the variable “IMA” not help to predict the variable “GDP”, but the variable “GDP” also does not help predict the variable “IMA”. In other words, each of the two variables do not provide useful information to predict the other.

That means an increase or decrease in GDP figures does not affect interest in marriage annulments, because the real reason behind requesting nullities is not the state of the economy, but the necessity of restoring dignity and spirituality (Conway and Spruyt, 2018).

These results indicate that the business cycle does not impact on interest in marriage annulments. Additionally, Motu Proprio had a strong impact on IMA in the short term, but this is not long lasting.

According to the Breitung and Candelon frequency domain causality test results, it does not make sense apply a cointegration analysis between GDP and IMA, such as a Wavelets Analysis. If there is no causality, the cointegration could be spurious.

Conclusions and Discussion

The main aim of this research article was to assess whether Motu Proprio (applied in 2015) had impact on the interest in marriage annulments in Spain. To do so, we have implemented fractional integration techniques and the Breitung and Candelon frequency domain causality test. The main results are as follows:

- The analysis provided uses ARFIMA (p,d,q) models and long memory tests to study the persistence in the IMA index and real GDP time series.
- From a legal point of view, the results for the IMA index show that while the Motu Proprio legal reform had a short-term impact on marriage annulments, this effect did not persist in the long term. The stationary nature of the IMA index suggests that the reasons for requesting annulments are more deeply rooted in personal and spiritual needs rather than procedural bureaucracy. Therefore, the interest in annulments shows mean reversion, returning to a long-term average.
- From an economic perspective, the Real GDP series exhibits increased persistence and non-stationarity after November 2015. This shift indicates a structural change in the economy, likely due to broader economic factors such as the business cycle. The observed deceleration in economic activity in Spain during this period is reflected in the more persistent shocks in the GDP data.
- According to the Breitung and Candelon frequency domain causality test, IMA versus GDP presents no causality at any term.

In conclusion, Motu Proprio reform has been successful to the extent that after its application there was an increase in the interest in marriage annulments; however, this was short lasting. People do not seem to request nullities for a reduction in bureaucracy neither for the economic situation, but simply and deeply for the necessity of restoring their dignity and spirituality (Frijters et al., 2023).

Conflict of Interest Statement

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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