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Research Paper

Gender Succession and Market Efficiency: a Case Study of Inditex Generational Shift

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ABSTRACT

Purpose: This paper investigates the impact of Marta Ortega's succession on the closing prices of Inditex. The paper highlights the meticulous succession planning orchestrated by Amancio Ortega, Marta Ortega's extensive involvement in the business, and the supportive family dynamics that facilitated a smooth transition. This study challenges conventional notions about women in family successions and underscores the importance of effective planning and successor preparation in family businesses.

Methodology: In this article we use daily data of closing prices of INDITEX from January 3, 2011, until November 29, 2023. The methodology used is based on the concept of fractional integration.

Results: Contrary to market expectations, the results reveal a positive trend in closing prices following Marta Ortega's assumption of the non-executive chairman position. The prices showed some evidence of mean reversion and thus inefficiency, though, at the same time, a positive significant trend was observed in the price of the company since then.

Research limitations: This research is not without limitations, which open the way for future research. This research is a case study. The results may be limited by our sample. Other female successions and their impact on closing prices should be investigated. This would help to increase research on the effects on the company following female succession. Another limitation of the study concerns the period investigated. It will be interesting to review the results obtained when the period elapsed since the succession is longer.

Practical implications: This research helps to avoid the negative stereotypes associated with female succession in companies.

Originality: This research will help to understand how generational handover occurs in family businesses when the heir is also a woman.

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1. Introduction

Inditex, the largest textile company in the world, closed 2023 with a net profit of 5,395 million euros, 30.3% more than the previous year. Gross operating profit (ebitda) stood at 9,850 million, 13.9% higher than in 2022, while revenues rebounded 10.4% to 35,947 million euros. (Inditex Annual Report 2023, n. d.). The figures confirm the continued business growth and consolidation in the international market since the arrival of Marta Ortega as Chairman of Inditex. The CEO, Óscar García Maceiras, attributes this upward trend at Inditex to the talent of the workforce and "improvements in the performance of the business model". A business model that has made Amancio Ortega, its founder, one of the richest men in the world. Inditex's success is based on the analysis of information to know the demand, the productive flexibility to manufacture what the customer needs. As they say in their financial report "our success is to be close to the customer". Schumpeter already said it in the 19th century when he warned that the economic development of companies is centered on two factors: the entrepreneur and innovation, it is not about doing similar things but about being able to undertake innovative disruptions in the company that change the market.

Amancio Ortega had left the presidency of Inditex in July 2011, giving way to Pablo Isla who had been the CEO since August 2005. Just a few months later, José María Castellano, Ortega's right-hand man since 1984, left the company. After the eightieth birthday of the founder and first shareholder of Inditex, in 2016, the rumors of the changeover in the company were triggered. Inditex, as a family business, had to give way to the second generation at some point.

The chosen and prepared successor to continue its legacy has been Marta Ortega Pérez, the youngest daughter of Amancio Ortega. Marta Ortega officially began working at Inditex in 2006, although it could be said that she was already involved in the business from birth. Born in 1984, she is the only child of Flora Pérez, the second wife of Amancio, who at that time was still married to Rosalía Mera, his co-founder of Zara. Today, Flora Pérez represents 60 percent of the family on the board of directors. Marta Ortega finished her first school years in Galicia (Spain), and then continued her studies at a boarding school in Switzerland. From this point on, Marta was clear about her direction towards

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the business world. She returned to Galicia and enrolled in Business Studies at the University of a Coruña (Spain). She completed her training at the European Business School in London, one of the most prestigious centers in the world. She graduated there in 2007, specializing in International Business. Amancio Ortega's daughter has built her career in the family company from the ground up, working in various departments of the company and passing through different locations before assuming her new position.

On 30 November 2021, the company announced to the *Comisión Nacional del Mercado de Valores* (CNMV) the departure of Pablo Isla, the arrival of Marta Ortega as non-executive chairman of the company and the promotion of Óscar García Maceiras to CEO. In a meeting with the media, Isla said: "It is an optimal moment to tackle it, we understand that the company is very solid, has a well-defined strategy, has fantastic teams in all areas with a combination of youth and experience. We have been preparing this transition discreetly for some time" (Europa Press, 30 November 2021).

Described as the "optimal moment" for change by the incumbent president, he concluded his 17-year tenure, comprising six years as vice president and CEO, followed by eleven years as president. Commencing from said date, the transitional phase commenced, culminating in April 2022 when Marta Ortega assumed office, thereby ensuring the continuity of the family business.

The share fell by 6.1% on 30 November, which meant that the company lost just over 5,600 million euros of its market capitalization in one day. However, two years later, Isla’s departure did not cause any damage to Inditex's machinery. Despite the war in Ukraine, the exit from the booming Russian market and the inflationary crisis, Inditex has once again posted record results. Now the share is at record highs. Figure I below shows the current board of directors.

Figure 1: Inditex Composition of the Board

Name or company name of director	**Representative**	**Directorship type**	**Position on the board**	**Date first appointed to the board**	**Date of last appoinment**	**Election procedure**
Ms Marta Ortega Pérez		Proprietary	Non-Executive Chair	01/04/2022	12/07/2022	AGM
Mr Oscar García Maceiras González		Executive	CEO	29/11/2021	12/07/2022	AGM
Mr Amancio Ortega Gaona		Proprietary	Ordinary member	12/06/1985	11/07/2023	AGM
Mr José Arnau Sierra		Proprietary	Deputy chair	12/06/2012	13/07/2021	AGM
PONTEGADEA INVERSIONES S.L.	Ms Flora Pérez Marcote	Proprietary	Ordinary member	09/12/2015	14/07/2020	AGM
Bns Denise Patricia Kingsmill		Independent	Ordinary member	10/07/2016	14/07/2020	AGM
Ms Anne Lange		Independent	Ordinary member	10/12/2019	14/07/2020	AGM
Ms Pilar López Álvarez		Independent	Ordinary member	17/07/2018	12/07/2022	AGM
Mr José Luis Durán Schulz		Independent	Ordinary member	14/07/2015	11/07/2023	AGM
Mr Rodrigo Echenique Gordillo		Independent	Lead Independent Director	15/07/2014	12/07/2022	AGM
Total number of directors						**10**

Source: Inditex 2023 Financial Report

According to the data from the *Instituto de la Empresa Familiar* in Spain (2023), women account for 32% of board members in family businesses and 24% of executive positions. Generally, and according to the CNMV 2022 report, in publicly traded companies, female participation on boards stands at 29.2% (up from 26% in 2021), and in IBEX companies, it is at 32.6%. However, the number of chairwomen has decreased by three points, from 8.8% to 5.9%. The presence of women as CEOs of the company significantly increases in those companies in the first or second generation, while it decreases significantly in the older ones. In the first generation, there is a result of 35.6%, and in the third, 20.0%.

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Among the most perilous moments in family- and owner-controlled firms are successions (Ahrens et al., 2015) and has been the subject of research for many years (Brockhaus, 2004; De Massis et al., 2008). The greatest challenge identified by family businesses for their survival, and one that should occupy a fundamental part of the family protocol, is succession. Balancing the business and family aspects is crucial for managing continuity. Planning succession, defining criteria, is an effort that will facilitate intergenerational transmission.

Dominating the economic landscape (Chrisman et al., 2005), family firms are the most ubiquitous business entity worldwide (La Porta et al., 1999; Rovelli et al., 2021). Although succession literature has witnessed a momentous evolution in the last few decades, research on female succession remains fragmented and limited. Previous studies have predominantly examined women in family businesses overall, with only minimal attention given to female succession specifically (Boukhabza and Ouhadi, 2023).

The factors involved in the succession of women in family businesses are related to individual, relational and organizational factors (Kubíček and Machek, 2019; Boukhabza and Ouhadi, 2023). At the individual level, motivation of women to join the company is considered a facilitator, for example, in relation to flexible working hours and the balance between family and work life (Salganicoff, 1990; Karataş-Özkan et al., 2011), expectations regarding personal fulfillment (Ho, 2021), the desire to help the family, improve the company, or make social contributions (Vera and Dean, 2005; Akhmedova et al., 2020). The research indicates motivational synergies between intrinsic and ethical motivation that are important in the family business context (Akhmedova et al., 2021).

The structure of the paper is as follows: Section 2 presents the literature review along with a historical contextual of the evolution of Inditex. Section 3 presents the data and describes the methodology. The empirical application is carried out in Section 4, while Sections 5 and 6 contain respectively the discussion and the concluding comments.

2. Literature Review

Father-daughter relationships are widely studied, confirming that this relationship is a good line in the incorporation of women into the family business (Humphreys, 2013). A good relationship from an early age between father-daughter facilitates women's path to business leadership (e.g., Vera & Dean, 2005; Martinez Jimenez, 2009); on the contrary,

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a bad father-daughter relationship may even impede succession (Deng, 2015). Daughters tend to have a closer, professional, and high-quality relationship with their parents, which is crucial to the success of the succession (Urban and NonKwelo, 2020). Smythe and Sardeshmukh (2013) found that good communication, early socialization within the company and a deeper understanding help in the father-daughter succession process. Parental support and leadership mentoring seem to facilitate daughters' succession (Overbeke et al., 2013). Even with these facilitators, predecessors often still prefer male successors, even though female successors possess a high level of human capital (Ahrens et al., 2015); this is because in the case of women, there is a higher demand for preparation, educational level, and work experience compared to men (Howorth and Machek, 2019). Another factor is the role played by other women in the family, such as the wife or mother of the successor (Martinez Jimenez, 2009; Pham et al., 2021; Cesaroni et al., 2021). The quality of family relationships is deeply related to the well-being of the family business (Smythe and Sardeshmukh, 2013).

From the point of view of organizational factors, the question is whether a male-led sector necessarily represents a difficulty for female succession, as well as the influence of size and type of corporate governance. The few studies available indicate that a sector with male gender dynamics is often a common obstacle (Galiano and Vinturella, 1995), that larger company size favors male succession over female succession (Halkias et al., 2010) and that the lack of a protocol for company governance hinders female succession (Joshi et al., 2018). Added to all this is the influence of a culture's values and gender stereotypes associated with decision-making. In this sense, a collaborative, responsive and relationship-oriented leadership style, for example, is perceived as a threat (Kubíček and Machek, 2019).

Studies focus more on the invisibility of women and other negative aspects of female succession (e.g., challenges, unrecognized contributions, informal roles...) than on the contributions of women (Campopiano, 2017; Boukhabza and Ouhadi, 2023). Cruz, Rachida and De Castro (2012) stated that employing family members improved the performance of the firm in women-led businesses, probably because women are better able to handle the conflict between simultaneously pursuing socio-emotional and financial goals (Aldamiz-Echevarría et al., 2017). Amore et al. (2014) studied the change in profitability after CEO succession by comparing male-male and male-female transitions in Italian family firms. Their results confirmed that the profitability effect of

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female CEO transitions is increasing in the proportion of female directors on the board. However, the positive effect of female interactions on profitability is reduced when the family firm is in geographic areas characterized by gender prejudices and when the firm is large (Amore et al., 2014). Soost and Moog (2019) analyze how male and female family business successors perform in terms of the objective and subjective performance indicators of sales, employees, sales per employee, growth prospects regarding sales growth, market share growth, overall return growth, equity ratio growth, innovation, and satisfaction scale. Their results show that female successors challenge the business transfer with more employees than male successors. They have lower productivity (sales per employee) than their male counterparts. In contrast, there are no gender differences related to satisfaction and growth prospects (subjective performance).

The literature to date on women in family businesses tends to document barriers rather than illuminate elements that contribute to their success, which also exist (Humphreys, 2013). In accordance with the gaps in research to date, this research addresses a gap in knowledge by exploring Inditex's closing prices in the process and subsequent succession of Marta Ortega at Inditex.

2.1. Historical context

Inditex is a global fashion retailer based in Arteixo, Spain, founded by Amancio Ortega Gaona in 1985. The company is renowned for its fast-fashion approach, owning several brands including Zara, Pull&Bear, Massimo Dutti, Bershka, Stradivarius, Oysho or Zara Home. Inditex has revolutionized the fashion industry with its agile supply chain management, enabling it to swiftly respond to changing fashion trends and customer demands.

Key Historical Dates:

1985: Amancio Ortega founded Inditex in Arteixo, Spain.

1988: The first Zara store outside Spain opens in Portugal.

1991: Inditex expands internationally by opening stores in the United States.

1997: Inditex launches its online presence with Zara.com.

2000: Inditex goes public, listing on the Madrid stock exchange.

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2001: The company enters the Asian market by opening a Zara store in Tokyo, Japan. It has been listed on the stock exchange since 23 May 2001. With a starting price of 14.70 euros, the shares rose 22.45 percent on their debut. It closed the day with a valuation of 18 euros.

2005: Pablo Isla is appointed Vice Chairman and CEO.

2010: The company achieves significant growth, reaching 5,000 stores globally. Zara starts selling its products online.

2011: Pablo Isla takes over the chairmanship of Inditex. Inditex surpasses the 5,500-shop mark, with shops in 82 markets. The company launches online shops for all its brands.

2016: Inditex introduces its sustainability strategy focusing on eco-efficiency and ethical sourcing.

2021: On November 30, Marta Ortega, daughter of Amancio Ortega, assumes the presidency non-executive of Inditex. Her appointment marks a significant moment in the company's history as she becomes the first member of the Ortega family to lead the company. His appointment marks the culmination of the generational handover process that began in 2011 with the replacement of Amancio Ortega as Chairman of Inditex.

The succession of Marta Ortega has been designed by Amancio Ortega with premeditation and calculation. According to Salgado (2023), the succession has been a long, gradual process, in which a smooth family handover has been sought. The plan was based on the company's IPO and the reinvestment of dividends to ensure a family heritage that would avoid future tensions among the heirs. The IPO has acted as a thermometer of the company's performance, enabling growth, the entry of investors and the attraction of new talent that has professionalized it to the point of making it one of the most successful companies in the sector worldwide.

Marta Ortega is the only descendant of Amancio Ortega (85 years old) who is part of the family business. Amancio Ortega has two children by his first wife: Sandra and Marcos Ortega Mera. Sandra only has a shareholding relationship with Inditex, controlling 5.05 shares, and Marcos has suffered from severe cerebral palsy since birth. For Amancio Ortega, the succession should have been in the hands of someone who was as involved as

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he was in the business of selling clothes. In his understanding of the matter, a succession in which there was no clear involvement with the company did not make sense. Marta began her career at Inditex as a sales assistant in one of the Inditex shops. After her time in that shop in the British capital, she would rotate through other stores -such as another shop in Paris- and the company's headquarters in different countries around the world. In 2008, she moved to Shanghai to act as a liaison between the headquarters in La Coruña and the market in the Asian giant. Marta returned to Galicia, where she has worked in Zara's product development and design department at the headquarters in Arteixo.

Speaking to *The man from ZARA. The story of the genius behind the INDITEX Group*, published for the first time in 2008, Amancio Ortega said of his daughter: “What gives me great peace of mind is that we have already moved on to the second generation almost without even realizing it. (…) The succession has been cleared because everything has been delegated” (O’Shea, 2012).

Plans for the exact timing of the announcement were not finalized, but it was expected to coincide with the 31 January 2022 financial year end. The announcement of the succession was precipitated by the leak in a newspaper that a CEO was to be replaced. The importance of the content of the leak forced Inditex to consider the need to announce the succession, so as not to generate uncertainty. Inditex did not want to expose itself to rumors, nor give the impression that the management might be going through a time of crisis.

In a statement following her appointment Marta Ortega said: "I have lived this company since my childhood and have learned from all the great professionals I have worked with over the last 15 years. I have always said that I would dedicate my life to building on my parents' legacy, looking to the future, but learning from the past and serving the company, our shareholders, and our customers, wherever I am most needed. I feel deeply honored and committed by the trust that has been placed in me and enormously excited about the future that we are all going to undertake together" (Vázquez, 2021).

Marta Ortega is not directly involved in the operational management of Inditex, her position as non-executive chairman of the board of directors and proprietary director gives her relative power in the company. Her influence extends through participation in strategic decision-making and representation of the interests of the founding family as shareholders. Marta Ortega's appointment as president of Inditex signifies a generational shift in leadership within the company. As the daughter of the founder, she brings a deep

understanding of the company's values and culture, combined with a fresh vision for its future. Under her leadership, Inditex is expected to continue its commitment to sustainability, further embrace digitalization, and maintain its position as a global leader in the fashion industry. Marta Ortega's presidency represents a continuation of the company's legacy while also ushering in a new era of innovation and growth (Ellison, 2023).

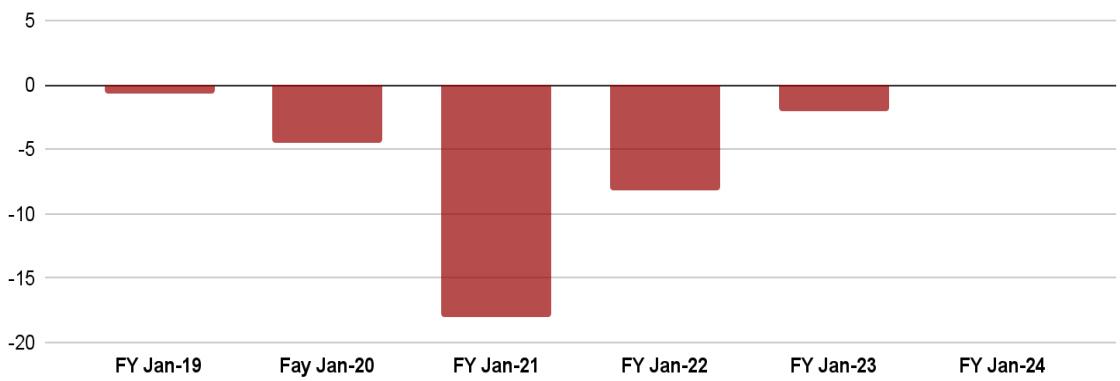
3. Data and Methodology

In this article we use daily data of closing prices of INDITEX from January 3, 2011, until November 29, 2023. The data was sourced from the Refinitiv database, a global provider of financial market data, as they provide information with measurable data from more than forty thousand companies in nearly two hundred countries, providing reliable data that drives technology in global models that establishes confidence in decision-making.

Below are some illustrative graphs about the Inditex share price. These graphs have been taken from the Refinitive database in the period studied in this research.

The earnings per share (EPS) development chart of Inditex illustrates the evolution of the company's earnings per share over a specific period. It depicts how Inditex's earnings per share have fluctuated over time, reflecting the company's financial performance, including factors such as sales, costs, and operational efficiency. An increase in EPS indicates profitable growth, while a decrease may signal financial or strategic challenges. This chart is essential for investors to understand Inditex's profitability and financial strength in the market.

Figure 2: Earnings per share development



	Historical					Estimated
Surprise	FY Jan-19	Fay Jan-20	FY Jan-21	FY Jan-22	FY Jan-23	FY Jan-24
Surprise %	-0.69	-4.45	-18	-8.24	-2.04	0.01
Actual	1.11	1.17	0.36	1.04	1.33	-
Mean	1.12	1.22	0.44	1.14	1.35	1.69
Smart Estimate	1.11	1.22	0.4	1.16	1.36	1.69
Predicted Surprise	-0.01	0	-0.04	0.02	0.01	0
Predicted Surprise %	-0.53%	0.02%	-8.07%	1.82%	0.55%	0.01%
Median	1.12	1.23	0.43	1.18	1.35	1.69
High	1.15	1.36	0.52	1.25	1.49	1.75
Low	1.05	1.15	0.35	0.4	1.26	1.61
Standard Deviation	0.02	0.03	0.04	0.15	0.04	0.03
SUE	0	-2	-2	-1	-1	-
Number of Estimates	29	25	27	29	26	24
YoY Growth %	2.78%	5.41%	-69.23%	189.44%	27.35%	27.41%
YoY Growth	0.03	0.06	-0.81	0.68	0.28	0.36
Guidance/Revisions	FY Jan-20	FY Jan-21	FY Jan-22	FY Jan-23	FY Jan-24	FY Jan-25
Mean % Chg (7d Post Rpt)	-0.34%	-8.59%	-1.39%	-3.03%	1.70%	-
Price Response	13 Mar 19	18 Mar 20	10 Mar 21	16 Mar 22	15 Mar 23	
7d Price Reaction	0.08%	13.96%	-1.41%	-5.75%	1.68%	-

Source: Own Elaboration. Refinitiv database (November 2023)

The Share Price Performance chart in the study of Inditex serves as a crucial tool for evaluating the trajectory and trend of the company's stock prices in the market. It allows investors and analysts to visualize how Inditex's stock price has evolved over a specific period, providing insights into market perception of the company and potential behavioral patterns. This chart is essential for conducting technical and fundamental analyses, as well as for making informed investment decisions regarding Inditex stock.

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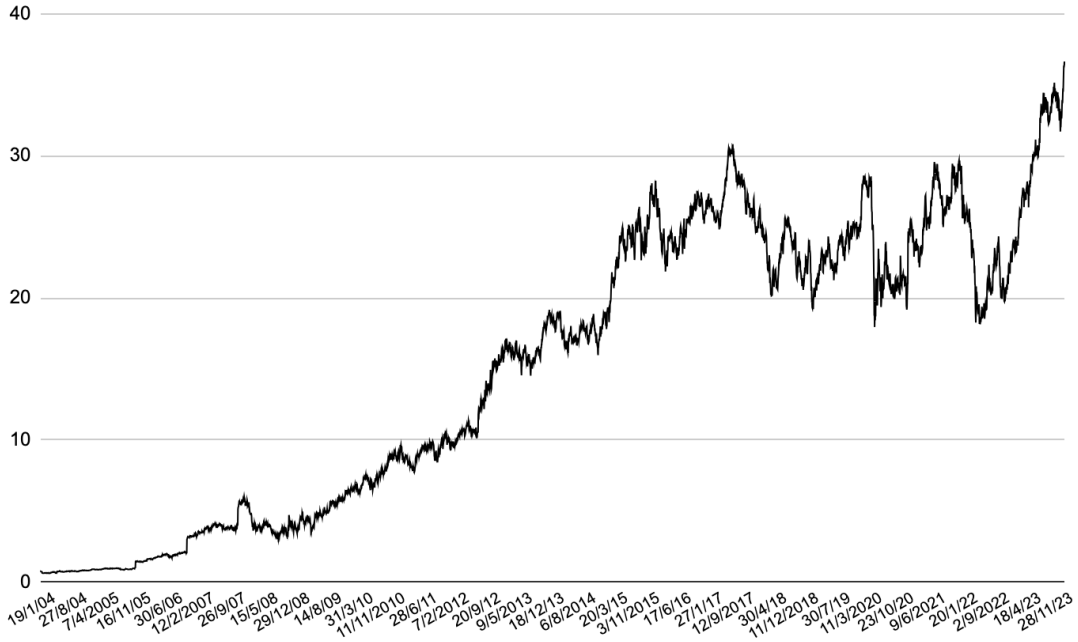
Figure 3: Share price performance



Source: Own Elaboration. Refinitiv database (November 2023)

As earlier mentioned, the methodology is based on the concept of fractional integration. This is a time series technique that is characterized because the series needs to be d-times different to render it stationary I (0). Stationarity is a property of a stochastic process that implies that the mean and variance and covariances do not depend on time. In general, it is a minimal requirement to make statistical inference. Nevertheless, in practice, many series are nonstationary and require some transformations to make them stationary. Until the 80s, the standard approach was to run regressions on time to remove that nonstationary component, for example, conducting regressions with a constant and a linear time trend of the form,

$$y(t) = \alpha + \beta t + x(t), \quad t = 1, 2, \ldots, \qquad (1)$$

where the regression errors, $x(t)$ were supposed to be stationary. This approach is deterministic in the sense that regressors in (1) are deterministic.

It was after a seminal paper by Nelson and Plosser (1982) that a stochastic approach based on first differences becomes popular. Thus, if a time series $y(t)$ is nonstationary, its first differences, i.e, $y(t) - y(t-1)$ or $(1 - L)\, y(t)$ (where L is the lag operator, $Ly(t) = y(t-1)$) may be stationary. In this context, $y(t)$ is said to be integrated of order 1, or $I(1)$ since one

number of differences is required in the series. Since then, many statistical methods were proposed to determine if a series is integrated of order *1* or, on the contrary, stationary, and integrated of order *0*. Within these methods the most widely used is the ADF tests proposed by Fuller (1976) and Dickey and Fuller (1979), though many others have appeared in the subsequent twenty years (Phillips and Perron, 1988; Kwiatkowski et al., 1992; Elliot et al., 1996; Ng and Perron, 2001).

However, a time series might be integrated of order d where d may be a fractional value. Thus, *x(t)* is *I(d)* if it can be expressed as:

$$(1 - L)^d x(t) = u(t), \quad t = 1, 2, \ldots, \qquad (2)$$

and $x(t) = u(t) = 0$ for $t \leq 0$, where *u(t)* is short memory or integrated of order *0*. In this context, it should be noted that the polynomial in *L* in Equation (2) can be written for all real d as:

$$(1 - L)^d = \sum_{j=0}^{\infty} \binom{d}{j} (-1)^j L^j = 1 - dL + \frac{d(d-1)}{2} L^2 - \cdots \qquad (3)$$

and thus, that equality can be expressed as

$$x(t) = dx(t-1) - \frac{d(d-1)}{2} x(t-2) + \ldots + u(t)\,. \qquad (4)$$

In this context, if *d* is a non-integer value, *x(t)* is a function of all its past history, which is expressed in terms of an infinite *AR* process. Similarly, *x(t)* may also adopt an infinite *MA* representation and if *d* is smaller than *1*, the series displays the property of reversion to the mean reversion, implying shocks that will be transitory, disappearing in the long run. On the contrary, if *d* is equal to or higher than *1*, shocks will have a permanent nature and therefore there is no reversion to the mean.

The estimation of *d* is conducted throughout the Whittle function, which is an approximation to the likelihood function, and we work with a frequency domain version of this function (Dahlhaus, 1989). For this purpose, we use a testing design developed in Robinson (1994) and widely used in empirical applications of fractional integration. It basically consists of testing the null hypothesis H_o: $d = d_o$, where d_o is a given real value. Among the many advantages of this approach, we can mention the following: it has a standard normal null and local limit distributions. These regular distributions hold independently of the inclusion or not of deterministic terms like those presented in the first equality in (1). Moreover, it is a valid method even in nonstationary contexts ($d_o \geq$

0.5) with no need of first differentiation in case of nonstationary series; finally, it is the most efficient method in the Pitman sense against local departures from the null. The functional form of the version of the tests used in this work can be found for example in Gil-Alana and Robinson (1997).

4. Empirical results

Across Tables I-VI we reproduce the estimates of *d* in a model given by Equations (1) and (2), i.e.,

$$y(t) = \alpha + \beta t + x(t), \quad (1-L)^d x(t) = u(t), \qquad t = 1, 2, 3, \ldots, \qquad (3)$$

where *y(t)* refers to the time series under observation, α and β are unknown coefficients determined within the model, and $(1-L)^d$ being the fractional integration polynomial in *L* with fractional degree *d*, which makes the model integrated of order *I (0)*.

Using a version of the Lagrange Multiplier (*LM*) tests proposed by Robinson (1994), we estimated the value of *d* in three scenarios: with no deterministic terms (i.e., $\alpha = \beta = 0$), including the intercept (i.e., $\alpha \neq 0,\ \beta = 0$), and with a linear trend (i.e., $\alpha \neq \beta \neq 0$). We have marked in bold in the tables the selected specification in relation with these deterministic terms, for each series, this selection being made based on the significance of these components.

Tables I and II display the estimates of *d* for the whole sample period, i.e., from January 31, 2011, until November 29, 2023. The upper panel refers to the results based on white noise errors, that is, we do not allow any time dependence in the error term, while the lower one displays the results imposing autocorrelation throughout the model of Bloomfield. In the two cases we consider both original and logged transformed data.

Table I: Estimates of the differencing parameter

Sample: 31/01/2011 - 29/11/2023

i) White noise errors			
Series	No det. Terms	Witn an intercept	With a time trend

Data (original)	0.983 (0.963, 1.008)	**0.972 (0.947, 0.994)**	0.971 (0.946, 0.994)
Data (logged)	1.002 (0.984, 1.023)	**0.972 (0.953, 0.996)**	0.972 (0.954, 0.996)
i) Autocorrelated errors			
Series	No det. Terms	Witn an intercept	With a time trend
Data (original)	1.013 (0.977, 1.032)	**0.984 (0.955, 1.034)**	0.984 (0.954, 1.034)
Data (logged)	1.004 (0.978, 1.032)	**0.978 (0.937, 1.011)**	0.977 (0.942, 1.013)

Source: Own Elaboration

Table II: Selected coefficients on the estimated models.

Sample: 31/01/2011 - 29/11/2023

i) White noise errors			
Series	*d* (95% band)	Intercept (tv)	Time trend (tv)
Data (original)	0.972 (0.947, 0.994)	10.4923 (16.55)	-----
Data (logged)	0.972 (0.953, 0.996)	2.4114 (148.58)	------
i) Autocorrelated errors			
Series	d (95% band)	Intercept (tv)	Time trend (tv)
Data (original)	0.984 (0.955, 1.034)	11.4893 (27.57)	-----
Data (logged)	0.978 (0.937, 1.011)	2.4114 (148.59)	------

Source: Own Elaboration

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Starting with the results displayed in Table I, the first thing we observe is that the time trend is not required in any single case; however, the intercept is significant in all cases. More importantly, the estimated value of *d* is equal to 0.972 with both original and logged data, the unit root null hypothesis (*d = 1*) being rejected in favor of values slightly below 1. On the other hand, if autocorrelated is permitted, the values of d are slightly higher, 0.984 with the original data, and 0.978 with the logged transformed data, and now, the null hypothesis of a unit root cannot be rejected in any of the two series. The estimated coefficients are displayed in Table I. According to these results, the market might display some inefficiencies if the errors are uncorrelated, with shocks having temporary though with long lasting effects. On the contrary, this hypothesis of mean reversion is rejected with the model of Bloomfield (1973) for the error term.

Next, we focus on the subsample ending on November 30, 2021, that is, when the company announced to the *Comisión Nacional del Mercado de Valores* (CNMV) the departure of Pablo Isla, the arrival of Marta Ortega as non-executive chairman of the company and the promotion of Óscar García Maceiras to CEO. The results are reported across Tables III and IV. The first noticeable feature observed now is that the *I(1)* hypothesis could not be rejected even with uncorrelated errors, supporting the random walk model and the Efficiency Market Hypothesis (*EMH*) in its weakly form. Thus, we observe that the estimates of dare 0.974 and 0.973 with original and logged data under white noise errors, and 0.982 and 0.976 with autocorrelated errors, but the confidence intervals include the value *1* in all cases reported.

Table III: Estimates of the differencing parameter

Sample: 31/01/2011 - 30/11/2021

i) White noise errors			
Series	No det. Terms	Witn an intercept	With a time trend
Data (original)	0.953 (0.931, 0.974)	**0.974** **(0.946, 1.001)**	0.974 (0.944, 1.001)
Data (logged)	0.982 (0.953, 1.005)	**0.973** **(0.941, 1.001)**	0.973 (0.942, 1.001)

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i) Autocorrelated errors			
Series	No det. Terms	Witn an intercept	With a time trend
Data (original)	0.976 (0.936, 1.010)	**0.982 (0.935, 1.036)**	0.981 (0.933, 1.031)
Data (logged)	0.983 (0.944, 1.023)	**0.976 (0.932, 1.013)**	0.976 (0.934, 1.017)

Source: Own Elaboration

Table IV: Selected coefficients on the estimated models.

Sample: 31/01/2011 - 30/11/2023

i) White noise errors			
Series	*d* (95% band)	Intercept (tv)	Time trend (tv)
Data (original)	0.974 (0.946, 1.001)	11.1497 (27.96)	-----
Data (logged)	0.973 (0.941, 1.001)	3.3783 (112.25)	------
i) Autocorrelated errors			
Series	d (95% band)	Intercept (tv)	Time trend (tv)
Data (original)	0.982 (0.935, 1.036)	11.1472 (27.94)	-----
Data (logged)	0.976 (0.932, 1.013)	2.4114 (149.35)	------

Source: Own Elaboration

Finally, we look at the subsample that goes from November 30, 2021, until November 29, 2023, and the results displayed in Tables V and VI indicate first that the unit root null cannot be rejected under uncorrelated errors (upper part of Tables V and VI). However, and more interestingly, if the error term is autocorrelated, which is a plausible assumption to be made, the estimates of *d* are in the two series strictly below 1, and the time trend

coefficient is now significantly positive. Thus, the estimates of *d* are now 0.841 for the original data, and 0.843 for the logged values, and the confidence intervals support the hypothesis of mean reversion and thus transitory shocks.

Table V: Estimates of the differencing parameter.

Sample: 01/12/2011 - 29/11/2023

i) White noise errors			
Series	No det. terms	Witn an intercept	With a time trend
Data (original)	0.983 (0.930, 1.046)	**0.963** **(0.920, 1.017)**	0.962 (0.918, 1.017)
Data (logged)	0.988 (0.953, 1.053)	**0.971** **(0.926, 1.027)**	0.971 (0.925, 1.027)
i) Autocorrelated errors			
Series	No det. Terms	Witn an intercept	With a time trend
Data (original)	0.922 (0.847, 1.012)	0.862 (0.808, 0.947)	**0.841** **(0.787, 0.943)**
Data (logged)	0.956 (0.888, 1.073)	0.861 (0.807, 0.965)	**0.843** **(0.779, 0.966)**

Source: Own Elaboration

Table VI: Selected coefficients on the estimated models.

Sample: 01/12/2021 - 29/11/2023

i) White noise errors			
Series	*d* (95% band)	Intercept (tv)	Time trend (tv)
Data (original)	0.963 (0.920, 1.017)	29.0755 (67.74)	-----
Data (logged)	0.971	3.3701 (203.45)	-----

	(0.926, 1.027)		
i) Autocorrelated errors			
Series	d (95% band)	Intercept (tv)	Time trend (tv)
Data (original)	0.841 (0.787, 0.943)	28.8500 (60.02)	0.0166 (2.19)
Data (logged)	0.843 (0.779, 0.966)	3.3619 (205.66)	0.00052 (1.79)

Source: Own Elaboration

5. Discussion

Summarizing the results, we observe that using the whole sample, evidence of mean reversion takes place if the errors are uncorrelated; however, if autocorrelation is permitted, the unit root null hypothesis cannot be rejected. In the two cases the time trend coefficient is found to be statistically insignificantly different from zero. Separating the data in two subsamples on November 30, 2021, the time when Marta Ortega took the presidency, we observe first that the unit root cannot be rejected before that time in any of the two cases, while mean reversion is now found with autocorrelated errors. This may indicate a loss of efficiency in the new period, though at the same time, we observe a significantly positive time trend in this period, indicating a success in the performance of the company. While it was expected that the incorporation of Amancio Ortega's daughter to the presidency of Inditex could cause a downward variation in the price of its shares, the data indicate that the Stock Market remained expectant for a few days, as it would have done in the event of any change in regime. the person who will make the commercial decisions in the company and, not because she is a woman and even less because she is the daughter of the founder of the company.

6. Conclusions

The markets tend to punish family succession. After seeing the results of this study in which it was expected that the entry into the presidency of Marta Ortega Pérez would

punish the Inditex share in the stock market, a change in the behavior of prices is noted, what were efficient in the sense of fame, finally are not and become positive in the following period, observing a trend of positive linear growth. That is to say, what was expected as a drop in the share price turns in a few days into a growth that lasts to this day; it is true that the market was expectant and the shareholders observed the movements but in no case can it be demonstrated that the succession of Marta Ortega Pérez, daughter of the founder, has negatively affected the business results of the company.

Marta Ortega's succession was prepared, the protocol was internal and thought through to the millimeter by Amancio Ortega, a fact that is reflected in the good relationship between father and daughter (Vera & Dean, 2005; Martinez Jimenez, 2009; Humphreys, 2013; Urban and Nonkwelo, 2020). Moreover, there was no obvious competition, and we must also highlight the help of Marta's mother in this matter, guiding and preparing her daughter in the shadows. This case underscores the significance of other women in the family in the succession process (Martinez Jimenez, 2009; Pham et al., 2021; Cesaroni et al., 2021).

As well as being prepared and having worked in the company before the succession, Marta Ortega wanted to do it; in fact she comments “all my life I thought I would be in this company as if it was something I was meant to do”. This supports the thesis that individual motivations such as expectations regarding personal fulfillment (Ho, 2021), the desire to help the family, improve the company, or make social contributions (Vera and Dean, 2005; Akhmedova et al., 2020) are succession facilitators. This supports the notion that individual motivations such as personal fulfillment expectations (Ho, 2021), family assistance, company improvement, or societal contributions (Vera and Dean, 2005; Akhmedova et al., 2020) facilitate succession. From an organizational perspective, there is no indication that Marta Ortega's governance style has harmed the company. This case challenges the conclusions drawn by Galiano and Vinturella (1995), Halkias et al. (2010), and Kubíček and Machek (2019), regarding stereotypes associated with certain sectors, company size, or governance styles.

Testing the statistical properties of the closing prices of the company before and after the arrival of Marta Ortega, we observe that efficiency in the market is not satisfied in the recent period, but, on the other hand, we observe a positive trend in the closing prices of the company. What is interesting about this research is that before the change of president, the market acted quite efficiently, but after the change, stock prices showed some

predictable power with a mean reverting tendency to its original trend. This suggests that the market reacted differently than expected, defying conventional expectations.

In accordance with Humphreys (2013), the literature on women in family businesses tends to focus on barriers rather than illuminate factors that contribute to their success. This research addresses a gap in knowledge by examining Inditex's closing prices during and after Marta Ortega's succession at Inditex, serving as an example of positive outcomes following succession by a woman.

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