

**IBN HALDUN UNIVERSITY  
SCHOOL OF GRADUATE STUDIES  
DEPARTMENT OF ECONOMICS**

**MASTER THESIS**



**EXAMINING THE DETERMINANTS OF CONSUMER  
PERCEPTION OF INFLATION**

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**THESIS SUPERVISOR:  
PROF. MUHITTIN KAPLAN**

**ISTANBUL, 2024**

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**MASTER THESIS**

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PERCEPTION OF INFLATIO**

**by**

**GHITA REGASSE**

**A thesis submitted to the School of Graduate Studies in partial  
fulfillment of the requirements for the degree of Master of Arts in  
Economics**

**THESIS SUPERVISOR  
PROF. MUHITTIN KAPLAN**

**ISTANBUL, 2024**

APPROVAL PAGE

This is to certify that we have read this thesis and that, in our opinion, it is fully adequate, in scope and quality, as a thesis for the degree of Master of Arts in Economics.

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This is to confirm that this thesis complies with all the standards set by the School of Graduate Studies of Ibn Haldun University.

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## ACADEMIC HONESTY ATTESTATION

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ÖZ

TÜKETİCİ ENFLASYON ALGISI İLE RESMİ ÖLÇÜMLER ARASINDAKİ  
FARKIN BELİRLEYİCİLERİNİ İNCELEMEK

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Bu çalışma, 2023 yılında Fas, Türkiye ve İtalya'daki hanelerden toplanan anket verilerini kullanarak tüketici enflasyon algısının belirleyicilerini incelemektedir. Algılanan enflasyonun belirleyicilerini ortaya çıkarmak, etkili iletişim stratejileri ve para politikaları oluşturmak için önemlidir. Önceki çalışmalar, yaşam standartları, bölge, mesleki durum, yaş, medeni durum ve psikolojik faktörler gibi açıklayıcı faktörleri araştırırken, bu araştırma medya etkisi, akran etkisi, tüketici güven endeksi, hafıza ve geçmiş enflasyon algıları ile yaş, cinsiyet, medeni durum, eğitim, mesleki durum, yaşam standardı, tasarruflar ve enflasyon bilgisi gibi faktörlerin etkisine odaklanmaktadır. Çalışma, anket verilerini çevrimiçi yollarla toplamıştır. Algılanan enflasyonun çoklu regresyon modeli tahmini ve sonuçların çoklu regresyon ile tutarlılığını değerlendirmek için bir sıralı probit modeli olmak üzere iki regresyon modeli kullanmıştır. Ampirik sonuçlar, Türkiye, Fas ve İtalya genelinde algılanan enflasyonun eğitim seviyesi, yaşam standardı, medya etkisi, enflasyon bilgisi ve geçmiş enflasyon algıları gibi çeşitli faktörlerden etkilendiğini göstermektedir. Bu faktörler üç ülke genelinde ortaktır. Ancak, ülkelere özgü farklılıklar incelendiğinde bazı değişiklikler gözlenmektedir. Örneğin, Türkiye'de akran etkisi, medya ve geçmiş enflasyon algıları gibi faktörler algılanan enflasyonu şekillendirmede önemli roller oynarken, Fas'ta tüketici güven endeksi, hafıza, akran etkisi ve geçmiş enflasyon algıları daha etkili olmaktadır. İtalya'da ise medya, hafıza ve geçmiş enflasyon algıları algılanan enflasyon üzerinde belirgin bir etkiye sahiptir. Ülkeler arasındaki bu

farklılıklar, her ÷lkeye özgü sosyo-ekonomik ve k÷ltürel faktörlerin dikkate alınmasının önemini göstermektedir. Politika yapıcılar, enflasyon eğitim kampanyalarının, medya ve akran etkisinin enflasyon algılarını şekillendirmedeki rolünü dikkate almalı ve bu kanalları doğru bilgiyi yaymak için kullanarak, kamuoyunun daha iyi anlaması ve para politikası kararlarına daha fazla güven duymasını sağlamalıdır.

**Anahtar Kelimeler:** Algılanan Enflasyon, Gerçek Enflasyon.



## ABSTRACT

### EXAMINING THE DETERMINANTS OF THE DISCREPANCY BETWEEN CONSUMER PERCEPTION OF INFLATION AND OFFICIAL MEASURES

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This study examines the determinants of consumer perception of inflation in 2023 using the survey data collected from Moroccan, Turkish, and Italian households. Uncovering the determinants of perceived inflation is important to make effective communication strategies and monetary policies. While previous studies explored explanatory factors such as living standards, region, professional status, age, marital status, and psychological factors, this research focuses on the effect of media influence, peers' influence, consumer sentiment index, memory, and past perceptions of inflation, alongside age, gender, marital status, education, professional status, living standard, savings, and inflation knowledge. The study collected survey data online. It utilized two regression models—a multiple regression model estimation of perceived inflation and an ordered probit model to evaluate the consistency of results with the multiple regression. The empirical results indicate that perceived inflation across Turkey, Morocco, and Italy is impacted by various factors, including education level, living standard, media influence, inflation knowledge, and past perceptions of inflation. These factors are common across the three countries. However, when examining country-specific differences, there are some variations. For instance, while factors such as peers' influence, media, and past inflation perceptions play significant roles in shaping perceived inflation in Turkey, various factors such as consumer sentiment index, memory, peers' influence, and past inflation perceptions are more influential in Morocco. In Italy, factors such as media, memory, and past inflation perceptions have

a notable impact on perceived inflation. The distinctions through countries indicate the importance of considering socio-economic and cultural factors unique to each country. Policymakers should consider the role of inflation education campaigns, media and peer influence in shaping inflation perceptions and leverage these channels to spread accurate information, thereby, greater public understanding and more confidence in monetary policy decisions.

**Keywords:** Actual Inflation, Perceived Inflation



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## LIST OF SYMBOLS AND ABBREVIATIONS

CIP	Consumer Inflation Perception
CPF	Country Partnership Framework
CPI	Consumer Price Index
GDP	Gross Domestic Product
HCP	Haut Commissariat au Plan (High Commission for Planning)
IBRD	International Bank for Reconstruction and Development
LR	Likelihood Ratio
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
TCMB	Türkiye Cumhuriyet Merkez Bankası (Central Bank of the Republic of Turkey)
VIF	Variance Inflation Factor

# CHAPTER I

## INTRODUCTION

Inflation is one of the important economic performance metrics that have a profound effect on various aspects of an economy, from economic growth, consumption, and saving to the decision-making process of consumers, economic policymakers, and investors. Although moderate rates of inflation are usually good for an economy, their high and rapidly increasing rates may have a detrimental effect on the economy and society.

Nevertheless, inflation rates announced by official authorities and the percentage changes in price levels perceived by consumers might be dramatically different from each other. It seems that actual inflation is disconnected from the population's Perception of price increases. This difference between the perceived and measured rates of inflation can lead to serious consequences that can affect the social, political, and economic stability of countries. In fact, this study aims to investigate the possible links between individual socioeconomic and psychological characteristics and how people perceive inflation.

In practice, perceived inflation refers to the inflation rate felt by consumers and households. It is measured based on household opinions on price change and is generally called Consumer Inflation Perceptions (CIP). These opinions are obtained by implementing consumer surveys to report that, generally, households tend to feel that inflation is higher compared to the actual price indices. The measurement of inflation is based on the assessment of the change in price indices. The Consumer Price Index (CPI) is the most frequently used index to calculate inflation because it indicates the percentage change in prices in private consumption expenditures that directly affects consumers. Other price indices can also be used, namely the change in aggregate price of government final consumption and investment or the gross domestic product.

At present, a large amount of literature has been accumulated on the determinants of the gap between actual and perceived inflation. A significant portion of the existing research has explored the impact of explanatory factors such as living standards, residential location, professional status, age, marital status, psychological factors, and savings on perceived inflation. Nevertheless, there are some important factors to be addressed, such as media influence, peers' Influence, consumer sentiment index (how the household feels about the overall economy), memory, and past perceptions of inflation (lagged perceived inflation). Therefore, this study contributes to the current empirical literature on the subject by analyzing how these five variables, media influence, peers' Influence, consumer sentiment index, memory, and past perceptions of inflation, in addition to age, gender, marital Status, education, professional standing, income, savings, inflation knowledge, collectively influence one's Perception of inflation.

Although these variables are very important for understanding the underlying reasons behind perceived inflation, the data related to these variables are not readily available. Therefore, it is difficult to conceptualize and measure these variables. Thus, this task will be achieved by conducting a survey method. The data collected through surveys carried out remotely (via the Internet) using the ease and speed of contact offered by the Web, specifically in Turkey, Morocco, and Italy, will be employed in the empirical part of this study. The data will be analyzed using two different models: a multiple regression model in order to estimate the OLS on perceived inflation and an ordered probit model in order to see the coherence between the results with multiple regression, respectively.

According to the literature review, various hypotheses can be formulated regarding the determinants of perceived inflation based on the household's socioeconomic and psychological. The first hypothesis is that media positively influences consumer perception of inflation. The second hypothesis is that peer and social circles are positively correlated with perceived inflation. The third hypothesis is that the consumer sentiment index is negatively correlated with perceived inflation. The last hypothesis is that memory and past perceptions of inflation (lagged perceived inflation) are negatively correlated with perceived inflation.

The rest of the study is as follows. Section 2 provides a literature review on the determinants of perceived inflation. Section 3 presents an overview of the economy of each country. Section 4 draws the methodology that will be used, including data collection and analysis techniques. Section 5 outlines the results and discussions based on the research analysis. Finally, Section 6 presents conclusions and discusses policy recommendations.



## **CHAPTER II**

# **A BRIEF REVIEW OF THE THEORETICAL AND EMPIRICAL LITERATURE ON DETERMINANTS OF PERCEIVED INFLATION**

The determinants of the gap between perceived inflation and measured inflation have been a subject of longstanding interest among economists, policymakers, and researchers. This review sets the stage for our investigation into the microeconomic determinants of perceived inflation in both theoretical and empirical literature. In fact, various studies revealed many factors, such as psychological and socioeconomic factors, that can be drawn from theoretical and empirical reviews.

### **2.1. Review of the Theoretical Literature on the Determinants of Perceived Inflation**

This section examines the theoretical literature on the factors underlying individual Perception of inflation and their impact on economic decision-making processes. A thorough understanding of perceived inflation is important since the divergence of perceived inflation from actual inflation has profound implications for individuals', investors', and policymakers' behaviors. More importantly, explaining the determinants of difference between perceived and actual inflation is the cornerstone of this study. The distinction is also important because individuals are compelled to rely on their subjective assessments of inflation rather than direct observations of actual inflation when forming their expectations. In this regard, Perception stands for a process of gathering and interpreting sensory information by economic agents to form cognitive constructions of the economic real situation. Individuals then use their perceptions to form their expectations about inflation rates, consequently influencing their economic decisions, such as spending, saving, and investment choices.

To understand the determinants of differences between perceived inflation and actual inflation, we have to define what we mean by perceived inflation and actual inflation. The actual inflation rate is an observed economic measure determined by the decision-making process of individual economic agents related to inflation. Perceived inflation, on the other hand, encompasses subjective dimensions as it is determined by individuals' interpretations of real-world economic conditions. Particularly, individuals can form their perceptions and, hence, expectations through rational economic reasoning based on available information and prediction of future trends. Nevertheless, some irrational factors can also affect these perceptions and expectations, such as cognitive biases and heuristics, external influences like peer influence and media, and many other factors. For this reason, first, we have to explain how economic agents make their decisions under uncertainty. Then, we have to explain the role of expectations in the decision-making process and the relationship between expectations and perceptions, especially in the context of inflation.

The following section first provides information on the decision-making process and then introduces the theoretical mechanisms through which decisions are made. In this regard, two theoretical frameworks will be introduced, namely, the Perception Theories and The Prospect Theory. Then, two main dimensions of the Prospect theory, cognitive biases and heuristics, will be explained to uncover the mechanisms of decision-making under uncertainty and its implications for inflation perceptions.

- **Understanding Decision-Making Process**

Economic variables, represented by the inflation rate and others, emerge as the aggregated outcome of individual and collective decisions made by economic agents. For this reason, it can be argued that understanding the decision-making process is the main building block of economic analysis. The decision-making process is complex and is shaped by the dynamics between Perception and cognition at two distinct stages. Perception can be defined as gathering sensory inputs from the external world and interpreting these data using cognitive faculties like memory and other reasoning abilities. However, this two-stage process leads to suboptimal decisions (Sydhagen, 2017). The initial stage starts with the Perception of the world, where information is gathered and interpreted, and then this information is processed by cognitive systems

and reasoning abilities. Then, in the second stage, we use this processed, reasoned information in evaluating options and making decisions. Unfortunately, the decision-making process is not straightforward, as explained.

The critical question at this point is: What is the exact mechanism that relates sensory data around us to economic decisions? There are two main theoretical frameworks that attempt to explain the mechanism through which individuals make decisions and form their perceptions, namely, the Prospect theory and Perception theories. The Prospect Theory explains the decision-making under uncertainty.

### **2.1.1. The Prospect Theory**

Prospect Theory, as developed by Kahneman and Tversky in 1979, is known as an alternative to the Expected Utility Theory that explains decision-making under risk. The Prospect Theory is based on the observation of several empirical findings from laboratory experiments that contradict the expected utility theory, such as the certainty effect, the possibility effect, and the reflection effect (Kahneman & Tversky, 1979), and it has been applied to various domains, such as international relations and political psychology (Levy, 1992). The certainty effect and the isolation effect show that individuals often underweight probable outcomes and tend to discard shared components when evaluating options, which leads to inconsistent preferences (Kahneman & Tversky, 1979).

Prospect Theory comes as an alternative to the Expected Utility Theory because the latter suggests that individuals make choices based on their potential gains and losses relative to a reference point and not to the absolute value of the options or the net worth. This approach takes into account observed patterns of risk aversion for gains and risk acceptance for losses, which the Expected Utility did not adequately explain (Levy, 1992).

The Prospect Theory identifies two phases in the decision-making process: editing and evaluation. The editing phase refers to the simplification of the prospects by organizing and reformulating them in order to make the evaluation easier. Then, the evaluation phase refers to the assessment of edited prospects by assigning value to gains and losses,

and the final decision is made on the basis of a value function of the individual's sensitivity to gains and losses as well as the probability weighting function of the individual's attitude related to risk (Kahneman & Tversky in 1979).

The important key characteristics of the Prospect Theory are loss aversion, status quo, and framing. Loss aversion refers to the situation where losses are strongly felt compared to equivalent gains. Status quo bias refers to situations where individuals prefer to maintain the actual situation rather than take a gamble with the same potential profit or loss. The framing refers to how the issue presented can highly affect the individual's preferences, even when the underlying results remain the same (Levy, 1992).

In prospect theory, the value function is convex for losses, which means there is an increasing sensitivity to decreases in wealth, and it is concave for gains, which means there is a decreasing sensitivity to increases in wealth. Therefore, this asymmetry shows the risk aversion behavior towards gains, which means small gains are less attractive compared to sure gains, and risk accepting behavior towards losses, which means small losses are more acceptable compared to sure losses (Kahneman & Tversky, 1979).

#### **2.1.1.1. Biases**

According to Tversky and Kahneman, biases refer to the systematic errors that might be made by an individual when they deviate from basic principles of rationality while making a decision or judgment. The basic principles of rationality require that the choice between two suggestions shouldn't reverse because of the changes in the frame. It means that the individual must be consistent and coherent in their choice between two suggestions without being affected by how the information is framed. In addition, individuals often make systematic errors while making judgments or decisions due to several factors, such as emotional influences, imperfect Perception, or cognitive limitations. For instance, changes in perspective can affect the individual's choice between two suggestions that are equivalent (Tversky & Kahneman, 1981).

These biases challenge the assumption of perfect rationality in decision-making. In fact, biases occur when an individual makes a judgment on the basis of incomplete or irrelevant information, partial information selectivity, or prioritization of certain information over other cues. Therefore, the individual might not be consistent and coherent in their choices. That's why biases are one of the key concerns for the theory of rational choices. Moreover, biases are important for Prospect Theory because they challenge the assumption of perfect rationality in decision-making. In fact, Prospect Theory assumes that an individual might not be consistent with the axioms of expected utility theory when they make decisions or make judgments under risk. For this reason, biases were discussed in the Prospect Theory.

Loss aversion and framing effects are two psychological biases discussed under the umbrella of the Prospect Theory by Tversky and Kahneman. Loss aversion refers to the situation where the individual highly prefers avoiding losses over acquiring gains in net worth. This bias is related to the asymmetrical psychological effect of losses and gains, where individuals feel losses more than gains with the same magnitude. Therefore, individuals are risk-averse towards losses. For example, individuals with loss aversion would often choose the options that minimize losses instead of the options that maximize gains, and the framing effects will amplify this bias more (Tversky & Kahneman, 1981). Moving the framing effects refers to how the information is presented and can affect decision-making. In fact, presenting the same information in different ways can lead to different preferences and choices. For example, the framing of a situation as a potential gain or loss can highly influence how the individual would edit and evaluate the choices (Tversky & Kahneman, 1981).

Kahneman (1992) discussed the bias resulting from reference dependency and anchoring. Reference dependence explains that decisions are affected by a reference point. This reference point can affect the valuation of gains and losses, as well as acceptable or reprehensible behavior. For example, when an individual negotiates, the process of valuation of the outcome can differ according to the chosen reference point. While negotiating, two individuals can affect each other's reference points by communicating their reference levels (Kahneman, 1992). Moving to anchoring bias refers to the first information that heavily influences decision-making. For example, if individuals are asked to estimate the value of an object without having prior knowledge

about how much it is worth, these individuals are shown some random and unrelated values. This anchor sets a subsequent judgment that leads to a value estimation affected by the initial information given. Therefore, individuals do not make decisions in isolation; they can refer to a reference point, which can be called the anchor (Kahneman, 1992).

#### **2.1.1.2. Heuristics**

According to Tversky and Kahneman, biases refer to the systematic errors that might be made by an individual when they deviate from basic principles of rationality while making a decision or judgment. The basic principles of rationality require that the choice between two suggestions shouldn't reverse because of the changes in the frame. It means that the individual must be consistent and coherent in their choice between two suggestions without being affected by how the information is framed. In addition, individuals often make systematic errors while making judgments or decisions due to several factors, such as emotional influences, imperfect Perception, or cognitive limitations. For instance, changes in perspective can affect the individual's choice between two suggestions that are equivalent (Tversky & Kahneman, 1981).

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### **2.1.2. Perceptions Theories**

Unlike Prospect Theory, which focuses on decision-making, Perception Theories are based on psychological frameworks such as Gestalt psychology, constructivism, and ecological psychology. They focus on exploring how individuals gather information from their environment and emphasize how they perceive and interpret this information through sensory experiences.

### **2.1.2.1. Gestalt Psychology**

Gestalt psychology is a school of thought that analyses the way that an individual's mind perceives objects. It assumes that individuals perceive objects as unified wholes and not a collection of individual and isolated parts. It means that the individual's mind naturally visualizes the world into organized information and meaningful structures (Wagemans et al., 2012). In fact, Gestalt psychologists assume that structure emerges from the meaningful stimuli that individuals perceive, and the perceptual experience is a holistic process where the mind automatically eliminates incomplete structures. Another key principle of Gestalt psychology is the law of Pragnanz or the law of simplicity, which means that individuals tend to perceive things in the simplest interpretation possible. Another important key principle is emergent features, which emphasize that the whole is greater than the sum of its parts. In fact, while perceiving an object, some properties emerge when components are combined together. Thus, emergent qualities lead to the Perception of the unified whole. Furthermore, Gestalt psychologists believe in configuration superiority, which refers to the fact that individuals are better at recognizing objects or events when they are presented in their natural configuration and not in a randomized way. Moreover, Gestalt psychology emphasizes the global precedence principle that assumes that while processing an object, it is from global to local, which means that first, the global properties are processed, then the analysis of local properties (Wagemans et al., 2013).

### **2.1.2.2. Constructivism**

Constructivist theories emphasize Perception as a process of active construction instead of a passive recording of sensory information. In fact, perceptions are not a passive process relying on absorbing information from the environment, but it is an active participation of the individual on the basis of their mental frameworks. Besides, Constructivists view sensory Perception as a small part of the process since sensory information is not sufficient for understanding the environment in a complete way. Therefore, it assumes that Perception happens thanks to how the individual's brain processes, interprets and organizes sensory information (Démuth, 2013). Furthermore, constructivists believe that perceptions are iterative and form a continuously changing process that is composed of top-down processing, learning, and mental representation.

The top-down processing includes the Influence of hypotheses, prior knowledge, and expectations. For instance, the individual's expectations can affect what he experiences because he can perceive what aligns with his beliefs. Similarly, an individual's prior knowledge can alter what an individual perceives. For example, students who study art are more able to perceive details in art compared to students with a different background (Démuth, 2013). In addition, in the context of constructivist theories, there are two views: externalists and internalists. Externalists assume that all the individual's knowledge comes from his interaction with the external world. However, internalists think that innate cognitive structures are the basis of an individual's Perception of the world (Démuth, 2013).

Finally, constructivist theories take into consideration the conscious and unconscious factors of experience. These effects are Perception and illusion (Ponzo illusion, well-known Muller-Lyer illusion). Illusions show how individuals might not always perceive the world in an accurate way. Even with these constraints, individuals can still reach a convincing perception using their previous experiences and prior knowledge (Démuth, 2013).

### **2.1.2.3. Ecological Psychology**

Ecological psychology, founded by J.J. Gibson, is one of the important theories since it assumes that Perception is not reconstructed through sensory information in an individual's brain, but it is the fruit of the interaction between the organism and its environment. Consequently, the environment is an important factor in shaping Perception. Moreover, this theory emphasizes the possibilities for action that the environment offers to an organism. In fact, it assumes that individuals have a continuous interaction with the environment through affordances. This later means that the environment provides opportunities for action to the individuals. The Perception of affordance is related to the individual's abilities and the environment's characteristics, which shape how they both interact and adapt to their surroundings. Besides, ecological psychology assumes that there is a direct perception between individuals and the environment, which means that individuals can perceive meaningful information in the environment without returning to complex internal processing. Moreover, individuals are able to adapt their actions in order to meet the

opportunities given by various situations. This adaptability is one of the effective means of interaction with the world. Finally, this theory underscores that individuals and their environment are in one integrated system. This means that the Perception is inseparable from the context in which it happens (Démuth, 2013).

### **2.1.3. Comparing the Prospect Theory with Perceptions Theories**

Prospect Theory and Perception Theories help in understanding how individuals make decisions and understand the external world. Prospect Theory comes from behavioral economics, which focuses on how individuals make decisions under uncertainty and risks (Kahneman & Tversky, 1979). On the other hand, perception theory comes from various psychological ideas that focus on how individuals perceive, make sense of, and interpret the external world (Démuth, 2013).

While Prospect Theory explores the complexities of decision-making under uncertainty and Perception Theories explore the external world, there is an interconnectedness between them. One of the key aspects where the two theories intertwine is the realm of framing effects. In fact, Tversky and Kahneman (1981) suggested that framing affects how information is exposed in decision-making. In other words, it refers to the fact that individuals can make different choices on the basis of how information is presented and framed. This means that the same information can lead to different decisions. This concept aligns with perception theories, which state that the interpretation of the world is related to the framing of information (Démuth, 2013). Overall, while Prospect Theory takes into consideration how the frame or reference point affects judgments of gains and losses, Perception Theories focus on how the framing of information affects how individuals perceive the world around them.

At its core, Prospect Theory explores the cognitive processes underlying decision-making. Tversky and Kahneman (1974) explored the main heuristics that individuals use while making judgments and decisions under conditions of uncertainty. The representativeness heuristic means that individuals tend to evaluate the probability of a situation based on its resemblance to a particular event or stereotype. Therefore, errors might occur due to the neglect of different factors such as base rates and

socioeconomic and demographic factors. Availability heuristic, which means that individuals tend to assess the frequency of situations based on their ease of recall. Therefore, the situations that can be remembered easily are perceived as more likely to happen. Anchoring means that individuals tend to anchor their numerical predictions to a reference point and adjust from there. Therefore, the starting anchor might bias the predictions. Similarly, Perception Theories explore the synergy between cognitive processes and how individuals perceive external words (Andrej D., 2013). Therefore, these two concepts recognize that how the world is perceived and how the choices are made are interconnected.

#### **2.1.4. Understanding Cognitive Biases: Case of Perceived Inflation**

Prospect theory and perception theories play a crucial role in shaping individuals' perceptions of inflation. According to the prospect theory, individuals can be more sensitive to perceive losses in purchasing power instead of the actual numerical increase in prices. In addition, according to perception theories, individuals may selectively focus on certain aspects of inflation, shaping their overall Perception. For instance, if individuals expect inflation to rise, they may be more likely to notice instances of price increases, which reinforces their Perception of higher inflation. Consequently, these theories explain how individuals subjectively experience inflation and shape their economic decision-making.

While analyzing the systematic cognitive biases, one of the notable biases is peer influence, 'Influence. The Psychology of Persuasion by Cialdini (1984) discussed influence techniques used by individuals to shape their decisions. The first technique is reciprocity, which means individuals tend to return favors, which is a tool of persuasion. The second technique is commitment and consistency, which means individuals' commitment toward something pushes them to maintain consistency. The third technique is social proof, which means individuals tend to guide their decisions by referring themselves to others under uncertain events. The fourth technique is authority, which means individuals tend to follow authority's ideas without thinking of their decisions. The fifth technique is liking, which means individuals are affected by the ones they like. The last technique is scarcity, which means individuals tend to perceive the high value of products that are limited.

Linking it to inflation perceptions, when peers express concerns about inflation, individuals would feel compelled to share similar perceptions to maintain reciprocity and consistency. Besides, if these peers are authoritative figures and express how they feel about inflation, individuals would be more likely to adjust their inflation perceptions to align with these influences.

Another tool to influence individuals is the Media. Agenda-Setting Theory, as proposed by Cohen in 1963 and developed by McCombs and Shaw in 1972, emphasizes that media topics may shape public perceptions and choices. In fact, the media, as a soft power in political discourse, has been investigated in several research studies. Exposure to politically biased media can shape an individual's political beliefs (Ansolabehere & Iyengar, 1995). While not directly focused on inflation, these authors provide insights into how media can shape individuals' perceptions, which can be utilized to shape their perceptions of inflation.

## **2.2. Review of the Empirical Literature on the Determinants of Perceived Inflation**

This section presents a review of empirical studies on the determinants of the discrepancy between actual inflation and perceived inflation. The review sheds light on disadvantaged socioeconomic and demographic backgrounds, cognitive and behavioral aspects, consumption patterns and financial circumstances, information search behavior, and individual uncertainty.

### **2.2.1. Socioeconomic and Demographic Background**

This section presents a review of empirical studies on the determinants of the discrepancy between actual inflation and perceived inflation. The review sheds light on disadvantaged socioeconomic and demographic backgrounds, cognitive and behavioral aspects, consumption patterns and financial circumstances, information search behavior, and individual uncertainty.

### 2.2.2. Cognitive and Behavioral Aspects

The cognitive and behavioral dimensions of inflation perception are uniquely explored in the studies of Ashton (2012), Sorić & Čižmešija (2013), and Gündüz et al. (2020). Ashton's (2012) approach, focusing on adjustments to the Consumer Price Index (CPI), brings to the forefront cognitive biases such as attribution bias, selective memory, and loss aversion. These biases skew how households perceive inflation, with a tendency to overemphasize price increases. In fact, he used adjusting for quality and correction for asymmetric perceptions. The adjusting for quality explored the effect of quality and substitution adjustments on households' perceptions. The household might not understand the quality adjustment, which leads to a higher price. Besides, the correction for asymmetric perceptions discussed the cognitive biases such as attribution bias, selective memory, and loss aversion that affect how households perceive inflation. For instance, Ashton's (2012) work found that households tend to pay high attention to price increases while neglecting price decreases. He called it an attribution bias since households see price increases as high inflation and price decreases as 'good shopping.'

Shifting focus on Sorić & Čižmešija's (2013) research in Croatia, using dummy regression models, finds that income and socioeconomic status are instrumental in shaping inflation sentiment. Their study particularly highlights the role of behavioral heuristics like the availability heuristic, where past experiences, such as hyperinflation episodes, significantly influence current inflation perceptions. More detailed, Sorić, P. & Čižmešija, M. (2013) obtained the data from the Consumer Surveys conducted by the Croatian National Bank and analyzed the differences in inflation perceptions and expectations in different socio-demographic categories, with the key factors of age, gender, income, and education. The dependent variable, inflation perception, was collected via the survey by asking the respondents how the consumer prices have developed over the last 12 months (risen a lot, risen moderately, risen slightly, stayed about the same, fallen, don't know). The research findings show that income is statistically significant and socioeconomic Status plays a crucial role in the inflation sentiment. Additionally, the research suggested that Croatian households associated how they feel price changes today with the hyperinflation experienced in the early 1990s. The most notable finding of this study was the Influence of behavioral

heuristics on inflation sentiment. The authors measured it via a dummy regression model where the inflation sentiment is the dependent variable, and a set of socio-demographic characteristics is the independent variable. The availability heuristic, for instance, played a significant role, with older individuals who had experienced hyperinflation episodes in the past exhibiting significantly higher inflation sentiment. Additionally, the associativeness heuristic came into play, as the study suggested that Croatians associated current economic uncertainty with hyperinflation experiences from the early 1990s, even in contrast to real economic trends and economic theory.

Of particular relevance, Gündüz et al. (2020) focused on the trust in official measures and economic literacy, highlighting how skepticism and educational background in economics affect students' Perceptions of inflation. In fact, Gündüz et al. (2020) investigated the factors that affect household perceptions of price changes via a survey of undergraduate students of business and economics. Their study used ordered probit, probit, and ordinary least squares (OLS) regression models to analyze the data, using the key determinants Finance, Gender, Distrust, Knowledge, Food, Market, Butcher, Green, Shop, Durable, Awareness, Rent, Dwelling, Search, Internet, Card, and Eco. They found that the factor 'level of trust in official measures' has an important effect on driving inflation perceptions. In fact, there is a strong positive relationship between skepticism of official measures and higher perceived inflation. In addition, the findings show that the financial situation of the students is statistically significant, stating that students who live in financial distress feel higher price changes. Additionally, the study mentioned a cognitive phenomenon that refers to students who buy more durable goods; they feel higher the price changes. Finally, the research stated that knowledge was a significant factor as well, revealing that students of economics were more likely to estimate perceived inflation closer to measured inflation compared to other department students.

### **2.2.3. Consumption Patterns and Financial Circumstances**

In investigating the impact of personal spending habits and financial conditions, studies by Döhring & Mordonu (2007) and Hałka & Łyziak (2013) provide insightful findings.

Döhring & Mordonu's (2007) dynamic panel data model applied to the Euro area indicates that the "out-of-the-pocket expenditure" index better predicts inflation perceptions compared to the all-items Harmonized Index of Consumer Prices (HICP) index. This suggests that personal spending patterns are a more accurate gauge of inflation perception. To reach this result, the authors employed a dynamic panel data model, utilizing data from January 1997 to February 2007, sourced from the Joint Harmonised EU Programme of Business and Consumer Surveys. Inflation perceptions were considered as the dependent variable, and the independent variables were measured Harmonized Index of Consumer Prices (HICP) inflation, specific Harmonized Index of Consumer Prices (HICP) items, and inflation expectations. Meanwhile, Hałka & Łyziak's (2013) study in Poland introduces the Consumer Perception Price Index, which quantifies how frequently purchased items impact consumers' Perception of inflation, aligning with the Prospect Theory's emphasis on the asymmetric response to price changes. In fact, Hałka & Łyziak (2013) conducted a study to examine the products in the households' consumption baskets and their price aversion. They created a Consumer Perception Price Index as a scaling factor to derive a probability-based measure considering the frequency of purchase and the perceived impact of price changes on different items. This index is designed to quantify how consumers perceive changes in the prices of goods and services in their consumption baskets. Additionally, the probability quantification method was developed by Carlson and Parkin (1975) and later by Batchelor and Orr (1988). The data used represents households' perceptions in Poland between 2004 and 2011. The findings show that households' perceptions are impacted by the prices of the goods and services purchased frequently, which implies that items purchased more often have a greater impact on how consumers perceive overall inflation. Besides, the findings explored that consumers tend to feel price increases more strongly than price decreases. This asymmetric response aligns with the Prospect Theory, where individuals are more averse to losses compared to gains.

#### **2.2.4. Information Search Behavior and Individual Uncertainty**

The role of information search behavior and individual uncertainty in shaping inflation perception is examined in the works of Ranyard et al. (2008), Hayo & Neumeier (2018), and Huber et al. (2023).

Ranyard et al.'s conceptual analysis in Germany highlights how direct experiences and indirect influences like media and word-of-mouth communication affect inflation perception. Besides, Ranyard et al. (2008) also underscore the impact of income levels, lay understanding, cognitive mechanisms, and social amplification on inflation perceptions. While analyzing direct influences, households perceived inflation from their experience. On the other hand, indirect influences of media and word-of-mouth communication can also affect how households feel about inflation. For income level, households' financial circumstances can affect the affordability of goods and services, therefore affecting how households feel about inflation. In addition, they assumed that not all households might have an accurate understanding of the economic concept of inflation. Thus, there is a difference between an expert and a non-expert view. Consequently, a lack of knowledge about the concept can play a role in shaping inflation perceptions. Besides, Ranyard et al. (2008) explored cognitive mechanisms, such as availability heuristics, which refers to the situation where households recall recent price increases easily. Nonetheless, they underscored the pivotal role of media as a social amplifier of economic news that creates a feedback loop on the general economy and participates in shaping households' inflation perceptions.

Shifting focus on Hayo & Neumeier's research in New Zealand, employing descriptive statistics and multivariate regressions, using as variables economic situation, information search behavior, economic knowledge, and attitude point out that economic knowledge and attitude play a significant role in how inflation is perceived, with a tendency for overestimation even among those with different economic conditions. In fact, the finding showed that households believe that they understand inflation, but when they were asked about the current inflation, only 45% of them could give an accurate answer, which shows that their knowledge of inflation is intuitive and not precise. The results show that households tend to overestimate price changes even when they have different economic conditions. This overestimation can be noticed in married households and in towns. However, households with high levels of economic knowledge tend to have inflation perceptions close to the accurate inflation rate. Meanwhile, Huber et al.'s recent study with German households utilizes regression models to delve into the dynamics of inflation perceptions in changing economic environments, emphasizing the Influence of socioeconomic factors, information sources, and individual uncertainties. The findings revealed a robust positive

correlation between households' perceptions of past inflation and their expectations for both the short and long term. Huber et al. (2023) shed light on the socio-political aspect, information sources, and individual uncertainties. They found heterogeneity in the strength of the pass-through from perceptions to expectations while analyzing different socioeconomic groups alongside gender, regional residence, employment status, and age. Additionally, Huber et al. emphasized the role of information sources and found that households highly take into consideration their shopping experiences while focusing on the goods they purchase frequently. Nonetheless, they identified the moderating factor of individual uncertainty in the pass-through from perceptions to expectations.

As a robust finding, the literature from diverse countries with various methodologies contributes to a growing body of evidence that consistently reveals that individuals with an inaccurate memory of prices, low knowledge of inflation, and uncertainty disadvantaged socioeconomic and demographic background, characterized by factors such as low income and lower educational attainment, tend to feel biased inflation perceptions. In other words, inflation perception is affected by different socio-demographic factors, cognitive and behavioral aspects, personal consumption patterns, and the external environment of information and individual uncertainties.

## **CHAPTER III**

### **AN OVERVIEW OF THE ECONOMY: CASE OF TURKEY, MOROCCO, AND ITALY**

Each country has a distinct economic landscape with its unique challenges and opportunities. Examining the economic context of Turkey, Morocco, and Italy and analyzing the dynamics of macroeconomic indicators will help to understand the groundwork for the analysis of the determinants of perceived inflation and their implications for economic decision-making.

#### **3.1. Turkey: Overview**

According to the World Bank (2021), the Turkish economy is characterized by various industries, such as manufacturing, agriculture, and services. Turkey experienced robust economic growth thanks to its export-oriented industrialization and strategic geographic location. Additionally, Turkey has strong economic ties with various countries in the Middle East, Asia, and Africa, which drive its trade growth and reduce its dependency on a single market. Besides, Turkey has started initiatives to attract foreign direct investment (FDI) as well as the promotion of technology-driven industries. However, Turkish economic growth faces some external shocks due to geopolitical tensions and global economic downturns, as well as high inflation and levels of public debt. In recent years, inflation has been about the central bank's target, which influences the purchasing power and overall economic stability. Besides, Turkey has been facing a currency depreciation, a rise in energy prices, and supply chain disruptions due to fluctuations in the exchange rate, external shocks, and structural issues. All these factors contribute to the Turkish inflationary pressures. Therefore, the Central Bank of the Republic of Turkey implemented some monetary policies like interest rate adjustments and reserve requirement changes in order to stabilize the currency and control inflation. However, these policies have been the subject of many debates to see their effectiveness in reaching the target.

### 3.1.1. Turkey's Context

Turkey is known for its 19th position globally in terms of its economy. It has a GDP of approximately \$906 billion. The country is a member of the OECD and G20, and it significantly contributes to the official development assistance (ODA).

**Table 3.1. Economic Indicators (Turkey, 2023)**

<b>Turkey 2023</b>	
<b>Population in millions</b>	85
<b>GDP in current US\$ billion</b>	906
<b>GDP per capita in current US\$</b>	10,661.2
<b>Life Expectancy at Birth in Years</b>	75.8

Source: The World Bank, 2023

Turkey implemented reforms between 2006 and 2017 and achieved economic growth that gave the country the Status of upper-middle-income and lower poverty. In fact, the poverty line of the percentage of Turkish individuals living below \$6.85 per day has declined between 2006 and 2020, almost 9.8%. However, because of the decrease in reform efforts, the pace of productivity growth has become slow in the last decade. Therefore, the country used credit booms and demand stimulus, which led to high internal and external vulnerabilities. Besides, the country has faced macro-financial instability due to persistent current account deficits, unemployment, and inflation since the end of 2018 (The World Bank, 2023).

Even if Turkey recovered with a 5.6% growth rate in 2022 after the COVID-19 pandemic, the country faced challenges in terms of a slowdown amid unorthodox monetary policies and a deteriorating external environment. In addition, two huge earthquakes on February 6, 2023, caused a human tragedy and physical damage in 11 provinces, which affected 9.4% of the Turkish economy and 16.4% of its population. Furthermore, an estimation of %34.2 billion is predicted as a direct loss that could be doubled due to the actual reconstruction. These earthquakes strengthen an existing

fragile macro-financial situation. The predicted economic growth rate is 3.2% in 2023 and 4.3% in 2024 (The World Bank, 2023).

### 3.1.2. Turkey’s Strategy

Turkey has a partnership with the World Bank Group, as detailed in the Country Partnership Framework (CPF), that covers the period between 2018 and 2021, but it has extended to the period between 2022 and 2023. The CPF aligns with the strategies implemented by the Turkish government, such as the 11th Development Plan, the New Economic Program, and the transition to a high-income status (The World Bank, 2023).

Moving to the IBRD projects, the country has 28 active IBRD projects, costing in total \$10.9 billion, besides some funds from the Global Environment Facility and trust funds, and \$600 million from the European Union.

**Table 3.2. Active Projects and Lending (Turkey, 2023)**

<b>Number of active projects</b>	22
<b>Lending</b>	\$2 billion/year
<b>Total</b>	\$10.9 billion

Source: The World Bank, 2023

The country is supported by the World Bank’s FY23 program in order to achieve its climate goals, boosting projects in relation to climate change adaptation and mitigation, enhancing human capital, and providing opportunities for vulnerable groups (especially youth and women) by creating job opportunities, good online education, and an improved health system. In addition, since the European Union responded to help the Syrian refugee crisis, the World Bank has borrowed \$600 million from the Facility for Refugees in Turkey in order to support refugees and boost socioeconomic projects (The World Bank, 2023).

### **3.1.3. Economic Outlook and Development I**

Inflation has sharply increased from 12.28% in 2020 to 72.31% in 2022. This surge might raise concerns about the purchasing power of the customers and may have implications for the overall economic stability. Adding to this, the unemployment rate suggests a positive trend since the percentage decreased from 13.11% in 2020 to 10.03% in 2022. This reflects a positive overall economic well-being in terms of the labor market.

The debt-to-GDP ratio declined from 39.65% in 2020 to 31.7% in 2022, which shows a decrease in the Turkish debt burden. Moving to the exchange rate witnessed a significant fluctuation each year, and this volatility can affect international trade and foreign exchange reserves. For the trade balance, it indicates a substantial deficit, which can affect the country's external balance and sustainability. The Gross Fixed Capital Formation shows a continuous focus on investment as well as capital formation since it rose over the years.

The Turkish economy grew by almost 5.6% in 2022, but it slowed down compared to the previous year. In fact, even if individuals were spending money, investment, export, and manufacturing activity weren't as strong as expected. The growth achieved was mainly because of the services and industry sectors. In addition, even if the labor market recovered after the COVID-19 pandemic, the Turkish currency lost 30% of its value in 2022, although the central bank has tried to stabilize it (The World Bank, 2023).

Turkish citizens face challenges in terms of the cost of living, which has reached the highest level in 24 years. Besides, the government implemented new rules that made the process of taking out loans hard for Turkish citizens. However, there is a concern that the banking sector can handle this financial stress since banks invest a lot of money in government bonds. Furthermore, the government tries to help by increasing wages and pensions, supporting businesses, and providing subsidies for energy. Moreover, the Turkish debt improved compared to the country's income. However, the government needs to pay a lot of interest rates on its loans (The World Bank, 2023).

The economic outlook of Turkey shows that the country might face new challenges because of the last earthquake. In fact, the government plans to increase the minimum wage and invest in rebuilding the areas affected by the earthquake. In this case, this spending can affect the government by having less money, and there is a risk that this situation might get worse (The World Bank, 2023).

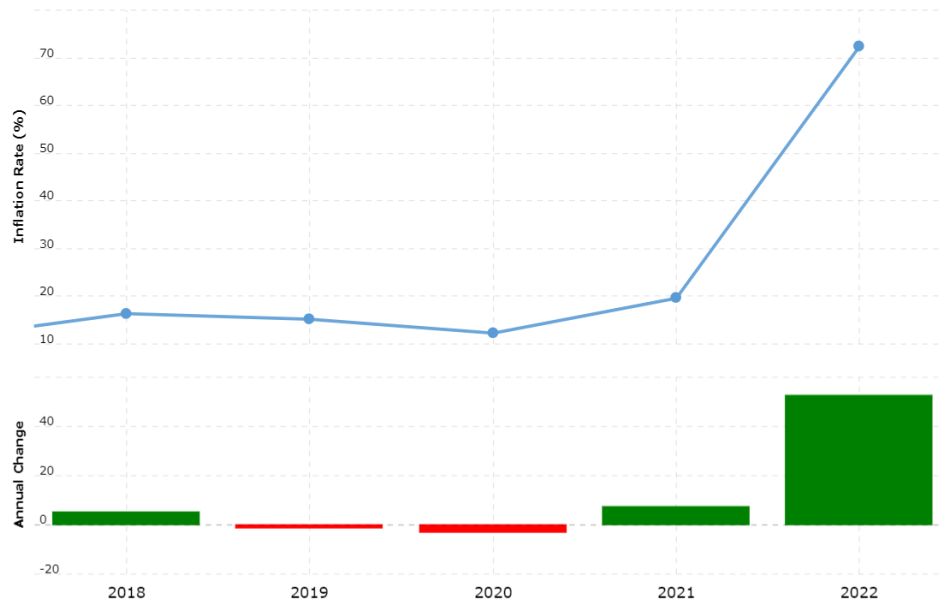
The inflation rate is measured by the consumer price index, and it shows the annual percentage change in expenses. The Laspeyres formula was used to get these values.

**Table 3.3. Key Macroeconomic Indicators (Turkey, 2020-2022)**

<b>Indicator</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>Inflation</b>	12.28%	19.60%	72.31%
<b>Economic Growth</b>	1.94%	11.35%	5.57%
<b>Unemployment</b>	13.11%	11.98%	10.03%
<b>Debt to GDP Ratio</b>	39.65%	41.76%	31.7%
<b>Exchange rate (TRY/USD)</b>	7.43	13.28	18.72
<b>Trade Balance (USD)</b>	-25.14B	-1.87B	-42.67B
<b>Gross Fixed Capital Formation (% of GDP)</b>	28%	28%	29%

Source: The World Bank & Macrotrend, 2020-2022

In terms of inflation, Turkey's inflation rate was 15.18% in 2019, reflecting a decrease of 1.16% compared to 2018. For 2020, Turkey's inflation rate is 12.28%, indicating a decrease of 2.9% compared to the previous year, 2019. In 2021, Turkey's inflation rate is 19.60%, showing a rise of 7.32% from 2020. Turkey's inflation rate for 2022 stood at 72.31%, demonstrating a substantial increase of 52.71% compared to the previous year, 2021.

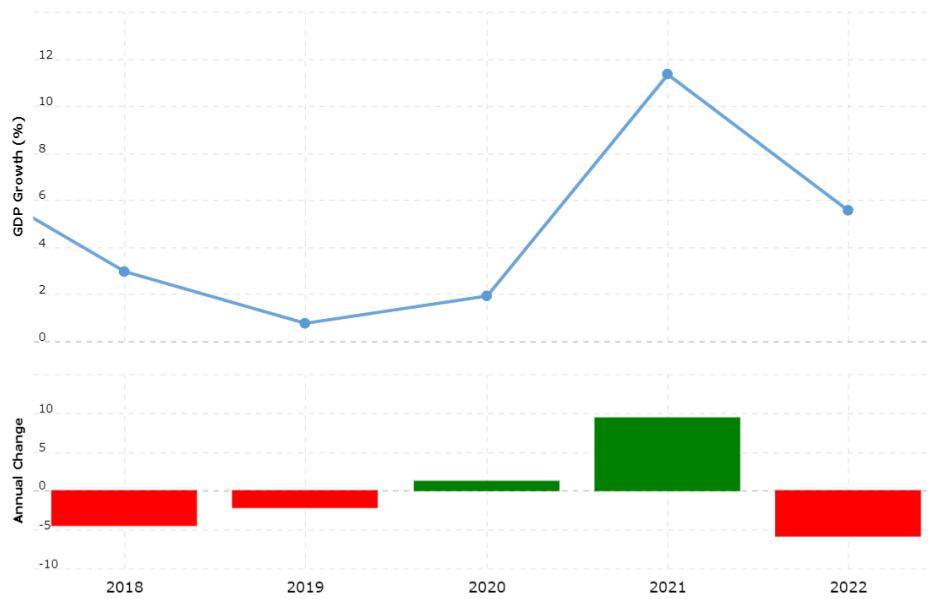


**Figure 3.1. Inflation Rate (Turkey, 2018-2022)**

Source: Macrotrend, 2018-2022

Gross Domestic Product or GDP is the sum of gross value added by all residents. Gross Domestic Product or GDP is the sum of gross value added by all resident producers in the economy, plus any product taxes and minus any subsidies not included in product values. This calculation is made without the deductions for the depreciation of fabricated assets and the depletion and degradation of natural resources.

According to Figure 3, Turkey's GDP growth rate was 0.78% in 2019, reflecting a decrease of 2.2% compared to 2018. For 2020, Turkey's GDP growth rate is 1.94%, indicating an increase of 1.16% compared to the previous year, 2019. In 2021, Turkey's GDP growth rate was 11.35%, showing a rise of 9.41% from 2020. Turkey's GDP growth rate for 2022 stood at 5.57%, demonstrating a decline of 5.59% compared to the previous year, 2021.



**Figure 3.2. Economic Growth (Turkey, 2018-2022)**

Source: Macrotrend, 2018-2022

### 3.2. Morocco: Overview

Shifting the focus, according to the World Bank (2022), the Moroccan economy is characterized by its diverse sectors. It is known mainly for its performance in the agriculture sector and its growing focus on industry and services. Particularly crops, manufacturing, and mining, which contribute to its GDP. Additionally, Morocco has established several trade agreements, besides its position as a gateway to Africa, which attract foreign direct investment. However, even with this progress, Morocco faces high unemployment rates and income inequality. In addition, Morocco is vulnerable to fluctuations in commodity prices, particularly food and energy, as well as global economic downturns. These factors affect inflation in Morocco, but the country has experienced relatively moderate inflation due to the monetary policies implemented by the Central Bank of Morocco, Bank Al-Maghrib.

#### 3.2.1. Morocco's Context

Morocco faced several challenges in 2022, such as a strong drought, a global economic slowdown, and high international commodity prices because of the conflict in Ukraine. Consequently, the Moroccan economic growth declined from 8% in 2021 to 1.3% in

2022. Nevertheless, Morocco experienced a recovery in 2023 thanks to its developed agricultural production, an increased number of tourists, and a rebound in exports, which led to a 3% growth in the first half of 2023 (The World Bank, 2023).

Similar to Turkey, Morocco experienced an earthquake on September 8 in the region of Al Haouz, which affected the economic acceleration since this region modestly contributes to the national economy. Besides, there is a potential risk of a negative influence on the sector of tourism. Nonetheless, the country plans to rebuild the earthquake-affected region, which could boost growth in the medium term (The World Bank, 2023).

Moving to inflation, it declined from 10.3% in February 2023 to 5% in August 2023 because of a decrease in global commodity prices. Bank Al-Maghreb kept its interest rates at 3% and stopped its monetary tightening measures. Besides, the government kept investing in state-owned enterprises, addressing water-related challenges, and implementing new reforms. For instance, Morocco has an important reform program and initiatives (like the Mohamed VI investment fund) that focus on private sector-led growth, human capital development, job opportunities, enhancement of education, social protection, and available healthcare (The World Bank, 2023).

Even in the context of global challenges, the country demonstrated resilience by ensuring currency stability, boosting external liquidity, having access to international financial markets, and being able to attract foreign direct investment. Adding to this, Morocco demonstrated success stories in the automotive industry, the phosphate sector that makes the country the major provider for Africa, and the Tangier port that has become a leading logistical hub (The World Bank, 2023).

### **3.2.2. Morocco's Strategy**

There is a comprehensive plan, "the Country Partnership Framework (CPF)" between the World Bank and Morocco for the period from 2019 to 2024, that aligns with the Moroccan government's goals, including initiatives like the National Initiative for Human Development. It focuses on the New Development Model (NDM), climate transition, water supply and irrigation, financial inclusion, improving healthcare

system and education reforms, promoting job creation, strengthening human capital, and enabling a strong territorial development. It also promotes the principles of good governance, citizen engagement, and a strong focus on cross-cutting themes like gender and the digital economy. All these efforts aim to enhance sustainable development and economic growth in Morocco.

### 3.2.3. Economic Outlook and Development II

Morocco has experienced a notable increase in inflation, upswinging from 1.40% in 2021 to 6.66% in 2022. In addition, after a significant contraction of -7.19% during the pandemic, Morocco's economy recovered with a growth rate of 7.93% in 2021. Then, the economic growth was moderated to 1.08% in 2022, which indicates a stabilization phase after the initial recovery.

Morocco has experienced a decrease in the unemployment rate from 11.11% in 2020 to 10.49% in 2022, which reflects an improved labor market. Morocco's debt-to-GDP ratio has remained almost stable, at 70% in 2022, which appears to be manageable for the country. For the exchange rate, it shows fluctuations, rising from 8.99 MAD/USD in 2021 to 10.16 MAD/USD in 2022. The country faced a deficit of \$15.56 billion in 2022 in the trade balance compared to \$12.98 billion in 2021, which indicates challenges related to increased imports or export competitiveness. Finally, Morocco's Gross Fixed Capital Formation as % a of GDP remained relatively steady, which means that it has a consistent level of investment, known as a crucial factor for sustained economic growth.

**Table 3.4. Key Macroeconomic Indicators (Morocco, 2020-2022)**

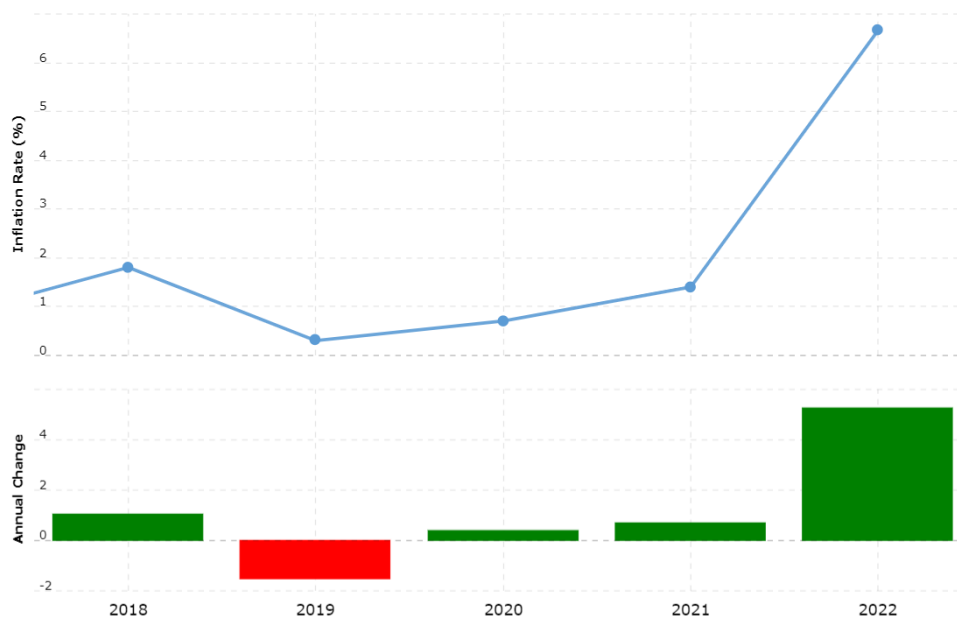
<b>Indicator</b>	2020	2021	2022
<b>Inflation</b>	0.71%	1.40%	6.66%
<b>Economic Growth</b>	-7.19%	7.93%	1.08%
<b>Unemployment</b>	11.11%	10.54%	10.49%
<b>Debt to GDP Ratio</b>	72.25%	68.94%	70.3%
<b>Exchange rate (MAD/USD)</b>	9.5	8.99	10.16

**Table 3.4. (cont.)**

<b>Trade Balance (USD)</b>	-8.80B	-12.98B	-15.56B
<b>Gross Fixed Capital Formation (% of GDP)</b>	29%	31%	30%

Source: The World Bank & Macrotrend, 2020-2022

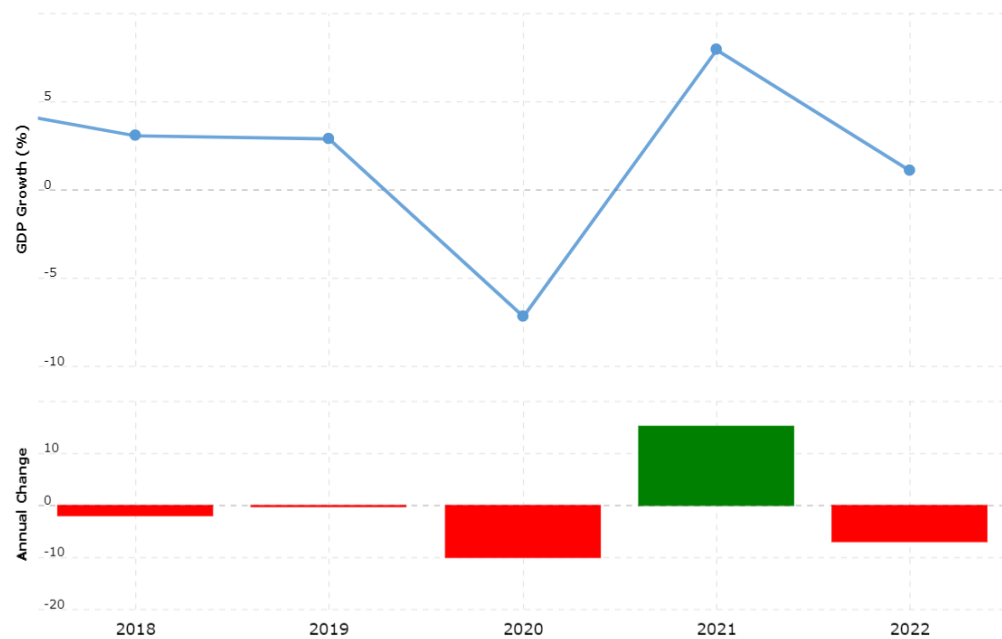
In 2019, the inflation rate was 0.30%, reflecting a 1.5% decline from 2018. For 2020, Morocco experienced an inflation rate of 0.71%, which indicates a 0.4% increase from 2019. In 2021, the inflation rate stood at 1.40%, which reflects a 0.7% increase from 2020. For 2022, the inflation rate is 6.66%, signifying a 5.26% upswing from the previous year.



**Figure 3.3. Inflation Rate (Morocco, 2018-2022)**

Source: Macrotrend, 2018-2022

Morocco's GDP growth rate is 2.89% for 2019, reflecting a 0.17% decrease from 2018. For 2020, the GDP growth rate is 7.19%, signifying a 10.08% decrease from 2019. In 2021, the GDP growth rate was 7.93, indicating a 15.12% increase from 2020. In 2022, the GDP growth rate was 10.8%, reflecting a 6.85% decline from 2021.



**Figure 3.4. Economic Growth (Morocco, 2018-2022)**

Source: Macrotrend, 2018-2022

### 3.3. Italy: Overview

Moving on to Italy, according to the Organisation for Economic Co-operation and Development (OECD, 2021), the Italian economy, known as one of the world's largest economies, is characterized by its diversity, including fashion, design, manufacturing, and tourism. However, Italy has been criticized for rigidity towards global changes, dominance of SMEs, labor market rigidity, high taxes, and bureaucracy. Besides, the country has faced several challenges, such as slow economic growth and high public debt, limiting its fiscal maneuverability. Moving to inflation, Italy has experienced relatively low inflation rates recently. This is due to a single monetary policy implemented by the European Central Bank that aims to maintain price stability within a target of 2%.

Despite the challenges that the Italian economy faces, the country has implemented several reforms to improve the business environment and sustain a flexible labor market, as well as new tax policies that stimulate economic growth and address economic issues.

### **3.3.1. Italy's Context**

Italy has successfully faced many challenges with a robust fiscal policy, a healthier banking sector, and increased competitiveness, which has positively contributed to the country's economic growth. Nevertheless, Italy faces high public debt and growing spending demands because of its aging population, high interest rates, and its plan to change to green and digital initiatives. The country plans to implement a consistent fiscal consolidation during the next few years in order to control the debt levels and safeguard public investment outlined in the National Recovery and Resilience Plan (OECD, 2023).

### **3.3.2. Italy's Strategy**

The Ministry of Enterprises and Made in Italy has worked to cultivate a stronger culture of assessment and monitoring. It established a new Analytical Unit (Centro Studi) to conduct evaluations of policies before, during, and after the implementation. This reflects how the ministry is committed to enhancing its ability to generate and use impact evaluations while offering guidance, practices, and methodologies to fortify the governance, data, and evaluation capabilities, with a focus on industrial policies, innovation, entrepreneurship, and productivity. This project received funding from the European Union and was implemented by the OECD Economics Department, the Public Governance Directorate, and the Directorate for Science, Technology, and Innovation, with the Directorate General for Structural Reform Support of the European Commission and the Ministry of Enterprises and Made in Italy. The collaborative effort involves contributions from the OECD Economics Department, the Public Governance Directorate, and the Directorate for Science, Technology, and Innovation (OECD, 2023).

### **3.3.3. Economic Outlook and Development III**

Italy experienced a significant shift from deflation in 2020 to a notable inflation rate of 8.20% in 2022, which shows that Italy's economy recovered and possibly had increased consumer spending.

For economic growth, Italy experienced a sharp contraction of -8.98% in 2020 because of the COVID-19 pandemic. Nevertheless, the economy recovered with 6.99% growth in 2021 and a moderate growth rate in 2022 of 3.67%. Moving to the unemployment rate declined gradually from 9.16% to 8.09%, reflecting the improvement of the labor market conditions. The national debt-to-GDP ratio decreased from 154.93% in 2020 to 144.41% in 2022. For the exchange rate, there was a depreciation of the Euro against the USD, falling from 1.14 in 2020 to 1.0538 in 2022.

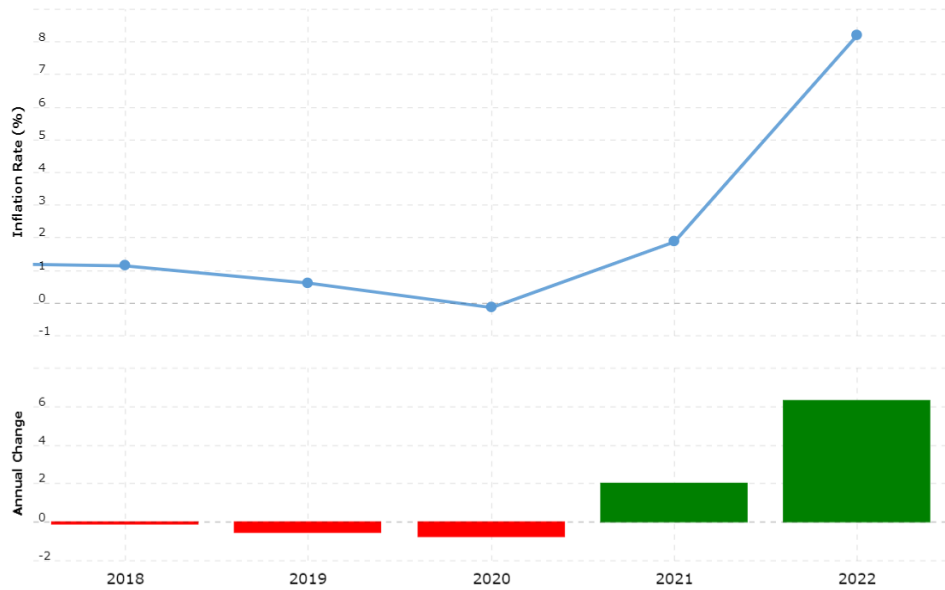
For the trade balance, Italy's economy moved from a surplus of \$68.29 billion in 2020 to a deficit of \$30.98 billion in 2022. This deficit can reflect an increase in imports compared to exports. The Gross Fixed Capital Formation shows a growing investment in fixed assets since it increased consistently from \$240.95 billion in 2020 to \$449.76 billion in 2022.

**Table 3.5. Key Macroeconomic Indicators (Italy, 2020-2022)**

<b>Indicator</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>Inflation</b>	-0.14%	-0.14%	8.20%
<b>Economic Growth</b>	-8.98%	6.99%	3.67%
<b>Unemployment</b>	9.16%	9.50%	8.09%
<b>National Debt to GDP Ratio</b>	154.93%	149.89%	144.41%
<b>Exchange rate (EUR/USD)</b>	1.14	1.183	1.0538
<b>Trade Balance (USD)</b>	68.29B	48.17B	-30.98B
<b>Gross Fixed Capital Formation (USD)</b>	340.95B	441.66B	449.76B

Source: The World Bank & Macrotrend, 2020-2022

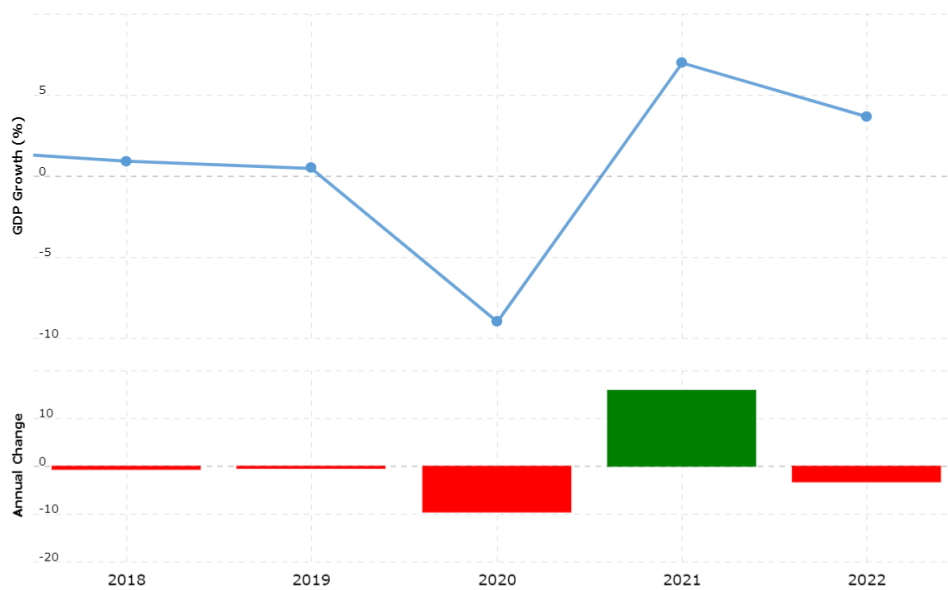
In 2019, the inflation rate was 0.61%, reflecting a 0.53% decrease from 2018. For 2020, Italy experienced an inflation rate of -0.14%, which indicates a 0.75% upswing from 2019. In 2021, the inflation rate stood at 1.87%, which reflects a 2.01% increase from 2020. For 2022, the inflation rate is 8.20%, signifying a 6.33% upswing from the previous year.



**Figure 3.5. Inflation Rate (Italy, 2018-2022)**

Source: Macrotrend, 2018-2022

Italy's GDP growth rate is 0.48% for 2019, reflecting a 0.44% decrease from 2018. For 2020, the GDP growth rate is -8.98%, signifying a 9.46% decrease from 2019. In 2021, the GDP growth rate was 6.99, indicating a 15.97% upswing from 2020. In 2022, the GDP growth rate was 3.67%, reflecting a 3.31% decline from 2021.



**Figure 3.6. Economic Growth (Italy, 2018-2022)**

Source: Macrotrend, 2018-2022

## CHAPTER IV

# MODEL SPECIFICATION, DATA COLLECTION, AND METHODOLOGY

Shifting focus on methodological rigor, the steps involved in model specification will be explored, while establishing best practices for data collection and econometric techniques as a powerful tool for understanding perceived inflation.

### 4.1. Modelling Perceived Inflation

In light of the literature review presented above, inflation perception is modeled as a function of age, professional status, living standard, education, marital status, savings, media influence, consumer sentiment index, and lagged perceived inflation. In the empirical model, the characteristics of individuals determined as explanatory variables to explain the individual Perceptions of inflation are as follows:

**Age:** since the behavior of young households differs from adults' behavior (Accardo et al., 2011). It can be assumed that people who experienced higher inflation rates before can estimate the current inflation based on their life experience better than younger age cohorts.

**Marital Status:** It might create a difference in households' inflation perceptions. There are five categories: single, married, separated, divorced, and widowed (OECD, 2006). A married household that takes care of a family can feel price changes more than a single household that takes care of only itself. Therefore, it will be beneficial to understand how much marital Status drives inflation perceptions (Hayo et al.; F., 2018).

**Gender:** Women might feel price changes differently than men due to the differences in consumer behavior (Fritzer & Rumler, 2015).

**Level of Education:** A household with a significant level of education can understand the process of inflation and avoid high perceived inflation bias. The opposite is true for a low level of education. Therefore, it will be interesting to know how much financial education should be provided in order to increase the awareness of households towards inflation perceptions as well as the monetary policy efficiency (Arioli R. et al.,2017)).

**Professional Status:** The latest affects the behavior of people, especially how they feel about inflation. There are four categories to take into consideration: employed, unemployed, discouraged workers, and retirees. Employed is considered as an individual who works at least one hour during the reference period. This later means the week before the survey is conducted. An unemployed person is an individual who is not employed but has looked for a job in the last four weeks and is ready to start work in two weeks. Discouraged workers are people who gave up on searching for a job and did not search for it in the last four weeks (George et al.). Retirees are people who have finished their professional careers. A person who is not employed without an income will feel inflation in a different way than an employee with an income. The same is true for discouraged workers and retirees (Arion et al., 2018).

**Living Standard:** The interaction between living standards and perceived inflation has been analyzed in many literatures. Fischer proved that households feel price changes according to income changes. In fact, households perceive high inflation when the prices increase sharply compared to their real income. Adding to this, households with high incomes will perceive inflation less than households with low incomes. However, other literature assumes that high inflation perceptions vary with inflation and not income (Gärling et al., 2013). Therefore, it will be important to take living standards or income into account in order to check the contribution of income to inflation perceptions.

**Savings:** Rather than using house possession (Döhring et al., A., 2007), saving rates will reflect not only the house possession effect but also the household's consumption and purchase ability (Hayo et al.; F., 2018).

**Media Influence:** Media influence can shape public Perception of economic conditions and price changes. Media often highlight news related to price changes, which can either overestimate or underestimate households' inflation perceptions (Ansolabehere and Iyengar, 1995).

**Peers' Influence:** When peers express concerns about price changes, it can affect their friends and shape the perceptions of other people around them to maintain reciprocity and consistency (Cialdini, 1984).

**Consumer Sentiment Index:** A measure of households' confidence and sentiment about the overall economy, which can also affect perceived inflation (Gündüz et al., 2020).

**Memory:** When the household lived an increase in prices, it stays in his memory for longer. Therefore, the household might tend to feel the decrease or the stability of prices less, which might affect his inflation perception (Del Giovane et al., 2008).

**Inflation Knowledge:** A low knowledge of inflation concepts might lead to an overestimation of inflation perception (Del Giovane et al., 2008).

**Lagged Perceived Inflation:** It reflects households' past experiences. Households tend to base their actual perceptions of inflation on what they have observed in the recent past. For instance, if they previously perceived high price changes, they are more likely to continue perceiving high inflation, even if actual inflation has changed (Sorić, P. & Čižmešija, M., 2013).

**Table 4.1. Key Determinants Representation**

<i>Variables</i>	<i>Description</i>
<i>The dependent variable</i>	
<i>Perceived Inflation (pinfla)</i>	Quantitative values according to households' answers.

**Table 4.1. (cont.)**

<i>Price changes of the current year</i>	Three dummy variables: <ul style="list-style-type: none"><li>▪ 1: prices are stable.</li><li>▪ 2: prices are moderately increasing.</li><li>▪ 3: prices are sharply increasing.</li></ul>
<i>The explanatory variables</i>	
<i>Age (age)</i>	Categorical variable describing three age cohorts: <ul style="list-style-type: none"><li>▪ 1: less than 24 years old.</li><li>▪ 2: between 24-64 years old.</li><li>▪ 3: above 65 years old.</li></ul>
<i>Marital Status (maritalsta)</i>	Four dummy variables: <ul style="list-style-type: none"><li>▪ 1: single.</li><li>▪ 2: married.</li><li>▪ 3: divorced.</li></ul>
<i>Gender (gender)</i>	A dummy variable: <ul style="list-style-type: none"><li>▪ 1: woman.</li><li>▪ 0: otherwise.</li></ul>
<i>Level of Education (educ)</i>	Three dummy variables: <ul style="list-style-type: none"><li>▪ 1: primary education.</li><li>▪ 2: high education.</li><li>▪ 3: university or more.</li></ul>
<i>Professional Status (prost)</i>	Four dummy variables: <ul style="list-style-type: none"><li>▪ 1: employed.</li><li>▪ 2: unemployed.</li><li>▪ 3: discouraged people.</li><li>▪ 4: retirees.</li></ul>
<i>Living Standard or Income (livst)</i>	Four dummy variables: <ul style="list-style-type: none"><li>▪ 1: Minimum wage or less</li><li>▪ 2: Between the minimum wage and twice the minimum wage</li><li>▪ 3: Between twice and three times the minimum wage</li><li>▪ 4: More than three times the minimum wage</li></ul>

**Table 4.1. (cont.)**

<p><i>Saving</i> (sav)</p>	<p>Five dummy variables:</p> <ul style="list-style-type: none"> <li>▪ 1: Saving 10%</li> <li>▪ 2: Saving between 10% and 20%</li> <li>▪ 3: Saving between 20% and 30%</li> <li>▪ 4: Saving between 30% and 40%</li> <li>▪ 5: More than 40%</li> </ul>
<p><i>Media Influence</i> (media)</p>	<p>Three dummy variables:</p> <ul style="list-style-type: none"> <li>▪ 1: Frequently come across news or media coverage related to inflation in daily life.</li> <li>▪ 2: Occasionally come across news or media coverage related to inflation in daily life.</li> <li>▪ 3: Never come across news or media coverage related to inflation in daily life.</li> </ul>
<p><i>Peers' Influence</i> (peers)</p>	<p>Three dummy variables:</p> <ul style="list-style-type: none"> <li>▪ 1: Social circle does not affect the price changes perception.</li> <li>▪ 2: Social circle moderately affects the price changes perception.</li> <li>▪ 3: Social circle significantly affects the price changes perception.</li> </ul>
<p><i>Consumer Sentiment Index</i> (csindex)</p>	<p>A dummy variable:</p> <ul style="list-style-type: none"> <li>▪ 1: Trust the overall economy.</li> <li>▪ 0: otherwise.</li> </ul>
<p><i>Memory</i> (memory)</p>	<p>Three dummy variables:</p> <ul style="list-style-type: none"> <li>▪ 1: Remembering past prices very accurately.</li> <li>▪ 2: Remembering past prices moderately accurately.</li> <li>▪ 3: Remembering past prices not at all accurately.</li> </ul>

**Table 4.1. (cont.)**

<i>Inflation Knowledge</i> ( <i>know</i> )	Three dummy variables: <ul style="list-style-type: none"><li>▪ 1: Poor knowledge of inflation concept.</li><li>▪ 2: Fair knowledge of the inflation concept.</li><li>▪ 3: Good knowledge of the inflation concept.</li></ul>
<i>Lagged Perceived Inflation</i> ( <i>lpinfla</i> )	Quantitative values according to households' answers.
<i>Price changes of the previous year (lagged perceived inflation)</i>	Three dummy variables: <ul style="list-style-type: none"><li>▪ 1: prices are stable.</li><li>▪ 2: prices are moderately increasing.</li><li>▪ 3: prices are sharply increasing.</li></ul>

## 4.2. Regression Models

The key determinants will be represented in a multiple regression model in order to estimate the OLS on perceived inflation (quantitative values generated from the survey).

$$\begin{aligned} pinfla = & \beta_0 + \beta_1 age + \beta_2 maritalsta + \beta_3 gender + \beta_4 educ + \beta_5 prost \\ & + \beta_6 livst + \beta_7 sav + \beta_8 media + \beta_9 peers + \beta_{10} csindex \\ & + \beta_{11} memory + \beta_{12} know + \beta_{13} lpinfla \end{aligned}$$

Another ordered probit model will be estimated in order to see the coherence between the results with multiple regression results.

$$\begin{aligned} P(Y_i = x) = & \Phi(\beta_0 + \beta_1 age + \beta_2 maritalsta + \beta_3 gender + \beta_4 educ + \beta_5 prost \\ & + \beta_6 livst + \beta_7 sav + \beta_8 media + \beta_9 peers + \beta_{10} csindex \\ & + \beta_{11} memory + \beta_{12} know + \beta_{13} lpinfla) \end{aligned}$$

Where  $x$  is equal to 1 when prices are stable, equal to 2 when the prices are moderately increasing, and equal to 3 when prices are sharply increasing.  $j$  represents the

respondents.  $P$  is the probability that the respondent will feel that prices are stable, moderately, or sharply risen.  $\Phi$  is the distribution function of the reduced centered normal distribution.

### 4.3. Data

The sample size of the research is for a 95% confidence level and a 5% margin of error. Therefore, the data will be collected from 400 households.

$$n = \frac{Z^2 \times p \times (1 - p)}{E^2}$$

Where:

$Z$  is the Z-score for a 95% confidence level, which is approximately 1.96.

$p$  is the estimated proportion of the population.

$E$  is the desired margin of error, which is 5%.

$$n = \frac{1.96^2 \times 0.5 \times (1 - 0.5)}{0.05^2} = 384.16$$

The sample size for each country should be at least 385 or more.

The data used for this study was collected from 404 participants in Turkey, 458 participants in Morocco, and 468 participants in Italy. The sampling method used is random sampling, allowing each participant to have an equal chance of selection. It is random because the more data is received, the larger the sample size gets, with more answers to analyze and understand the sample's behavior, thereby obtaining a representative sample in order to minimize biases.

The data was generated via an online survey distributed through online platforms and social media in order to reach more participants. Besides, participants were encouraged to spread the survey with their friends and families to expand the sample size and its representativeness.

While filling in the online survey, efforts were made to receive accurate and complete answers. In fact, mandatory response fields were used to minimize missing observations, and duplicate responses were removed to guarantee the quality of the data.



## **CHAPTER V**

### **EMPIRICAL ANALYSIS OF THE DETERMINANTS OF PERCEIVED INFLATION**

The focus is shifted to empirical analysis, where the determinants of perceived Inflation will be analyzed following a methodological approach that combines descriptive statistics and regression analysis. The objective is to provide robust empirical evidence on the drivers of perceived Inflation.

#### **5.1. Descriptive Analysis**

Using Stata software, the following results show descriptive statistics of the data collected from 404 Turkish households, 458 Moroccan households, and 468 Italian households. The descriptive analysis gives an overview of key determinants through measures such as means and percentages that provide insights into tendencies and distributions of the data within each sample.

##### **5.1.1. Case of Turkey I**

Table 5.1 describes the frequency, percentage, and cumulative of each variable in Turkey: price changes of the current year, age categories, marital status, gender, level of education, professional status, living standard, saving, consumer sentiment index, media influence, peers' influence, inflation knowledge, and lagged Inflation.

The survey shows possible distinctions between the three main groups. The respondents feel that prices are the same or rise by a small percentage. The mean of their perceived Inflation is 40.77%, and most of their answers are around 40%. Other respondents feel that prices increase moderately. The mean of their perceived Inflation is 59.52%, and most of their answers are around 60%. The last category is sharp, where

respondents feel that prices increase sharply. The mean of perceived Inflation is 84.34%, and most of their answers are 100%.

The mean of perceived Inflation, 76.86%, is higher than the actual Inflation given by the CPI, 61.98%, computed by TCMB. Since the median is 80, it means that many respondents feel high in perceived Inflation, not only a few respondents. The variance is 929.93. It means that many responses are far from the mean and from one response to another. The interval of 60% and 95% is between the 25 percentile and 75 percentiles.

There are three age categories for the age variable: the first category refers to respondents less than 24 years old. It represents 30.69% of the sample. The second category is the age of respondents between 25 years old and 64 years old. It represents 67.08% of the data. The third category represents respondents of an age higher than 65. It constitutes 2.23% of the population studied.

For the marital status variable, the sample is divided into three categories. The first category contains 193 single respondents, which represents 47.77% of the data. The second category contains 256 married respondents, which represents 38.61%. The third category contains 55 divorced respondents, which represents 13.61% of the sample.

For the variable gender, the sample is divided into two categories. The first category has 230 male respondents, which represents 56.93% of the data. The second category has 174 female respondents, which represents 43.07% of the data.

There are three categories of education. Seventy-six respondents who completed primary school or less constitute 18.81% of the sample. Seventy-seven respondents studied from primary school until high school, representing 19.06%. Two hundred fifty-one respondents completed university and more, representing 62.13% of the data.

Moving to professional status categories, 282 employed respondents represent 69.80%, 66 unemployed respondents represent 16.34%, 47 discouraged workers represent 11.63%, and nine retired respondents represent 2.23% of the data.

For the living standard variable, the sample is divided into four categories. The first category contains 197 respondents who earn the minimum wage (17000TL) or less, which represents 48.76% of the data. The second category contains 138 respondents who earn between 17000TL and 34000TL, which represents 34.16%. The third category contains 64 respondents who earn between 34000TL and 51000TL, which represents 15.84% of the sample. The last category contains five respondents who earn more than three times the minimum wage (51000TL), which represents 1.24% of the data.

For the variable saving, the sample is divided into five categories. The first category has 227 respondents who save 10% or less of their income, which represents 56.19% of the data. The second category has 75 respondents who save between 10% and 20% of their income, which represents 18.56% of the data. The third category has 66 respondents who save between 20% and 30% of their income, which represents 16.34% of the data. The fourth category has 21 respondents who save between 30% and 40% of their income, which represents 5.20% of the data. The fifth category has 15 respondents who save more than 40% of their income, which represents 3.71% of the data.

There are three categories of media influence. 257 respondents who frequently check media and constitute 63.61% of the sample. 132 respondents who occasionally check media and represent 32.67%. 15 respondents who never check media and represent 3.71% of the data.

Moving to peers' influence, 129 respondents who are not affected by their social circle represent 31.93% of the sample, 220 respondents who are moderately affected by their social circle represent 54.46%, and 55 respondents who are significantly affected by their social circle, represent 13.61%.

For the consumer sentiment index, the sample is divided into two categories. The first category contains 161 respondents who trust the overall economy of the country, which represents 39.85% of the data. The second category contains 243 respondents who do not trust the overall economy of the country, which represents 60.15%.

For the variable memory, the sample is divided into three categories. The first category has 126 respondents whose memory is very accurate, which represents 31.19% of the data. The second category has 228 respondents whose memory is moderately accurate, which represents 56.44% of the data. The third category has 50 respondents whose memory is not accurate, which represents 12.38% of the sample.

There are three categories of inflation knowledge. Two hundred nineteen respondents have a poor knowledge of inflation concepts and constitute 54.21% of the sample. Eighty-three respondents have a fair knowledge of inflation concepts and represent 20.54%. One hundred two respondents have a good knowledge of inflation concepts and represent 25.25% of the data.

Moving to the lagged perceived Inflation, 34 respondents tend to feel that prices are stable and represent 8.42%, 179 respondents tend to feel that prices are moderately increasing and represent 44.31%, 191 respondents tend to feel that prices are sharply increasing and represent 47.28% of the data.

**Table 5.1. Description of Dependent and Explanatory Variables (Turkey)**

<i>Variables</i>	<i>Frequency</i>	<i>Percentage (%)</i>	<i>Cumulative (%)</i>
<b><i>Price changes (current year)</i></b>			
<i>Prices are stable</i>	13	3.22	3.22
<i>Moderately increasing</i>	99	24.50	27.72
<i>Sharply increasing</i>	292	72.28	100
<b><i>Age categories</i></b>			
<i>≤24-year-old</i>	124	30.69	30.69
<i>[25,64]</i>	271	67.08	97.77
<i>≥65-year-old</i>	9	2.23	100
<b><i>Marital status</i></b>			
<i>Single</i>	193	47.77	47.77
<i>Married</i>	156	38.61	86.39
<i>Divorced</i>	55	13.61	100

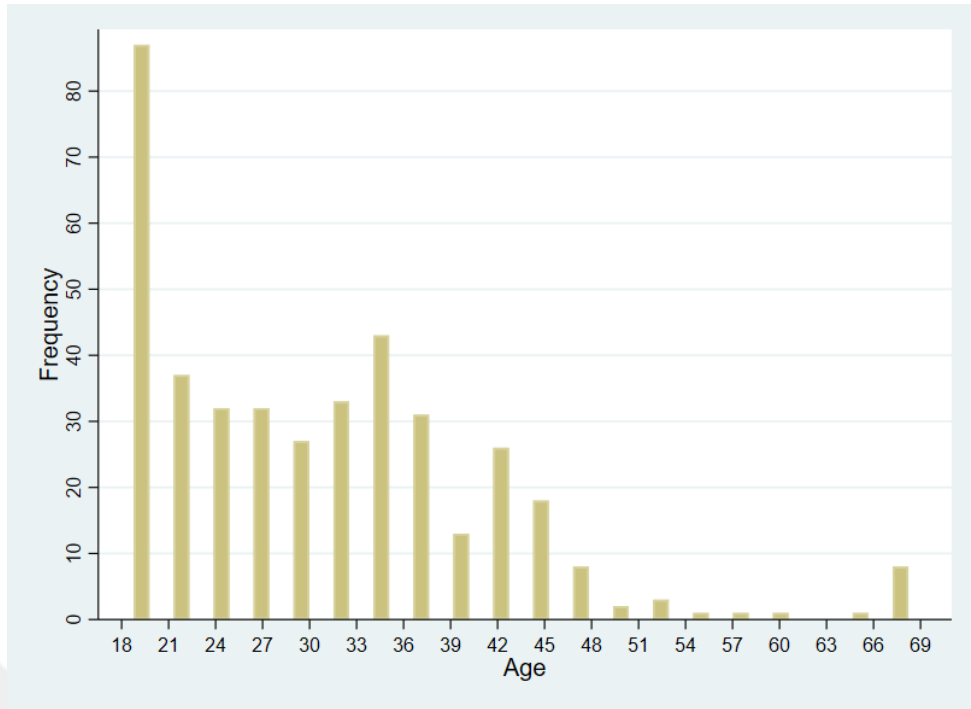
**Table 5.1. (cont.)**

<b>Gender</b>			
<i>Male</i>	230	56.93	56.93
<i>Female</i>	174	43.07	100
<b>Education</b>			
<i>Primary school</i>	76	18.81	18.81
<i>High school</i>	77	19.06	37.87
<i>University or above</i>	251	62.13	100
<b>Professional status</b>			
<i>Employed</i>	282	69.80	69.80
<i>Unemployed</i>	66	16.34	86.14
<i>Discouraged worker</i>	47	11.63	97.77
<i>Retired</i>	9	2.23	100
<b>Living standard</b>			
<i>17000TL or less</i>	197	48.76	48.76
<i>]17000, 34000]</i>	138	34.16	82.92
<i>]34000, 51000]</i>	64	15.84	98.76
<i>More than 51000TL</i>	5	1.24	100
<b>Saving</b>			
<i>10% or less of income</i>	227	56.19	56.19
<i>10%-20% of income</i>	75	18.56	74.75
<i>20%-30% of income</i>	66	16.34	91.09
<i>30%-40% of income</i>	21	5.20	96.29
<i>40% or more of income</i>	15	3.71	100
<b>Media influence</b>			
<i>Frequently</i>	257	63.61	63.61
<i>Occasionally</i>	132	32.67	96.29
<i>Never</i>	15	3.71	100
<b>Peers' influence</b>			
<i>No effect</i>	129	31.93	31.93
<i>Moderate effect</i>	220	54.46	86.39
<i>Significant effect</i>	55	13.61	100

**Table 5.1. (cont.)**

<b><i>Consumer Sentiment Index</i></b>			
<i>Trust</i>	161	39.85	39.85
<i>Distrust</i>	243	60.15	100
<b><i>Memory</i></b>			
<i>Very accurate</i>	126	31.19	31.19
<i>Moderately accurate</i>	228	56.44	87.82
<i>Not accurate</i>	50	12.38	100
<b><i>Inflation knowledge</i></b>			
<i>Poor</i>	219	54.21	54.21
<i>Fair</i>	83	20.54	74.75
<i>Good</i>	102	25.25	100
<b><i>Lagged perceived inflation</i></b>			
<i>Prices are stable</i>	34	8.42	8.42
<i>Moderately increasing</i>	179	44.31	52.72
<i>Sharply increasing</i>	191	47.28	100

The age distribution of 404 Turkish households provides descriptive insights into the demographics of the sample. The youngest participant is 18 years old, representing the 1st and 5th percentiles, which indicates a narrow age range among the sample. The median age is 30 years, which indicates that the majority of participants fall within the second age category. The mean age is 30.73 years, with a standard deviation of 10.59. This shows the variability in the age of participants. Moreover, the age distribution has a positive skewness of 1.088 and a kurtosis of 4.61, which suggests that the age distribution is slightly skewed to the right and has heavier tails compared to a normal distribution.



**Figure 5.1. Age Distribution (Turkey)**

Table 5.2. summarizes the survey by representing perceived Inflation by other characteristics such as age categories, marital status, education, professional status, income, and savings.

For respondents less than 24 years old, 1.61% feel that prices are stable, 14.52% feel that they are moderately increasing, and 83.87% feel that they are sharply increasing. For respondents between 25 years old and 64 years old, 4.06% assume that prices are stable, 28.41% assume that they are moderately increasing, and 67.53% assume that they are sharply increasing. For respondents older than 65 years old, 0.00% think that prices are stable, 44.44% assume that they are moderately increasing, and 55.56% assume that they are sharply increasing. Therefore, the majority of respondents assume that prices are sharply increasing. Additionally, the percentage of respondents who feel that prices are sharply rising decreases when the age category increases.

Moving to marital status, 3.63% of single respondents feel that prices are stable, 15.54% feel that prices are moderately rising, and 80.83% feel that prices are sharply increasing. For married respondents, 2.56% feel that prices are stable, 33.33% feel that prices are moderately increasing, and 64.10% feel that prices are sharply increasing.

For divorced respondents, 3.64% feel that prices are stable, 30.91% feel that prices are moderately rising, and 65.45% feel that prices are sharply rising. In conclusion, the majority of respondents assume that prices are sharply increasing, with a higher percentage given by single respondents.

For the gender variable, 2.61% of male respondents feel that prices are stable, 20.43% of male respondents tend to feel that prices are moderately increasing, and 76.96% of male respondents tend to feel that prices are sharply increasing. Besides, 4.02% of female respondents assume that prices are stable, 29.89% of female respondents assume that prices are moderately increasing, and 66.09% of female respondents assume that prices are sharply increasing. As a consequence, the majority of male and female respondents feel that prices are sharply increasing, and the percentage of males who feel that prices are sharply rising is higher than the percentage of females who feel the same.

Going forward of education levels, 1.32% of respondents with a primary school level (or less) feel that prices are stable, 5.26% feel that prices are moderately increasing, and 93.42% feel that prices are sharply increasing. For respondents with high school levels (or less), 3.90% assume that prices are stable, 31.17% assume that prices are moderately rising, and 64.94% assume that prices are sharply rising. For respondents with a university level (or above), 3.59% assume that prices are stable, 28.29% assume that prices are moderately increasing, and 68.1% assume that prices are sharply increasing. Therefore, the majority of respondents in all categories feel that prices are sharply increasing; the highest percentage of respondents who feel that prices are sharply rising among the three categories is the respondents with primary education or less.

Regarding professional status, 2.84% of employed respondents assume that prices are stable, 19.86% assume that prices are moderately increasing, and 77.30% assume that prices are sharply increasing. For unemployed respondents, 3.03% assume that prices are stable, 33.33% assume that prices are moderately increasing, and 63.64% assume that prices are sharply increasing. For discouraged workers, 6.38% assume that prices are stable, 36.17% assume that prices are moderately increasing, and 57.45% assume that prices are sharply increasing. For retired, 0.00% assume that prices are stable,

44.44% assume that prices are moderately increasing, and 55.56% assume that prices are sharply increasing. Thus, most of the respondents, according to professional status, feel that prices are sharply increasing.

Moving forward to living standard categories, 2.03% of respondents with less than the minimum wage of 17000TL or less feel that prices are stable, 14.21% feel that prices are moderately rising, and 83.76% feel that prices are sharply rising. For respondents with an income higher than the minimum wage and less than 34000TL, 3.62% feel that prices are stable, 35.51% feel that prices are moderately increasing, and 60.87% feel that prices are sharply increasing. For respondents between 34000TL and 51000TL, 4.69% feel that prices are stable, 31.25% feel that prices are moderately increasing, and 64.06% feel that prices are sharply increasing. For respondents with higher income than 51000TL, 20.00% feel that prices are stable, 40.00% feel that prices are moderately rising, and 40.00% feel that prices are sharply rising. In conclusion, when income increases, the percentage of respondents who feel that prices are stable increases.

For saving, 1.76% of respondents who save less than 10% of their income feel that prices are stable, 18.94% feel that prices are moderately increasing, and 79.30% feel that prices are sharply increasing. For respondents who save between 10% and 20% of their income, 9.33% feel that prices are stable, 21.33% feel that prices are moderately increasing, and 69.34% feel that prices are sharply increasing. For respondents who save between 20% and 30% of their income, 3.03% feel that prices are stable, 33.33% feel that prices are moderately increasing, and 63.64% feel that prices are sharply increasing. For respondents who save between 30% and 40% of their income, 0.00% feel that prices are stable, 61.90% feel that prices are moderately increasing, and 38.10% feel that prices are sharply increasing. For respondents who save more than 40% of their income, 0.00% feel that prices are stable, 33.33% feel that prices are moderately increasing, and 66.67% feel that prices are sharply increasing.

For the Media variable, 1.95% of respondents who frequently check media feel that prices are stable, 19.07% feel that they are moderately increasing, and 78.99% feel that they are sharply increasing. For respondents who occasionally check media, 6.06% assume that prices are stable, 35.61% assume that they are moderately increasing, and

58.33% assume that they are sharply increasing. For respondents who never check media, 0.00% think that prices are stable, 20.00% assume that they are moderately increasing, and 80.00% assume that they are sharply increasing.

Moving to peers' influence, 2.33% of respondents who are not affected by their social circle feel that prices are stable, 5.43% feel that prices are moderately rising, and 92.25% feel that prices are sharply increasing. For respondents who are moderately affected by their social circle, 4.09% feel that prices are stable, 37.27% feel that prices are moderately increasing, and 58.64% feel that prices are sharply increasing. For respondents who are significantly affected by their social circle, 1.82% feel that prices are stable, 18.18% feel that prices are moderately rising, and 80.00% feel that prices are sharply rising. In conclusion, the percentage of respondents who feel that prices are stable decreases when the effect of the social circle increases.

For the consumer sentiment index, 1.86% of respondents who trust the overall economy feel that prices are stable, 32.30% feel that prices are moderately increasing, and 65.84% feel that prices are sharply increasing. Besides, 4.12% of respondents who distrust the overall economy assume that prices are stable, 19.34% assume that prices are moderately increasing, and 76.54% of female respondents assume that prices are sharply increasing. Therefore, the majority of respondents feel that prices are sharply increasing, even if they trust or distrust the overall economy. However, the percentage of respondents who trust the overall economy and feel that prices are sharply rising is less than those who distrust the overall economy.

Going forward to the memory variable, 3.97% of respondents whose memory is very accurate feel that prices are stable, 3.97% feel that prices are moderately increasing, and 92.06% feel that prices are sharply increasing. For respondents whose memory is moderately accurate, 2.63% assume that prices are stable, 38.16% assume that prices are moderately rising, and 59.21% assume that prices are sharply rising. For respondents whose memory is not accurate, 4.00% assume that prices are stable, 14.00% assume that prices are moderately increasing, and 82.00% assume that prices are sharply increasing. Therefore, the majority of respondents in all categories feel that prices are sharply increasing. Adding to this, the percentage of respondents who feel that prices are stable decreases when the memory is very accurate.

Regarding inflation knowledge, for respondents who have poor knowledge of inflation concepts, 3.65% feel that prices are stable, 16.89% feel that prices are moderately increasing, and 70.45% feel that prices are sharply increasing. For respondents who have a fair knowledge of inflation concepts, 3.61% assume that prices are stable, 40.96% assume that prices are moderately rising, and 55.42% assume that prices are sharply rising. For respondents who have good knowledge of inflation concepts, 1.96% assume that prices are stable, 27.45% assume that prices are moderately increasing, and 70.59% assume that prices are sharply increasing. Therefore, the percentage of respondents who feel that prices are stable decreases when they have a better knowledge of inflation concepts.

Moving to lagged perceived Inflation, for respondents who felt that prices were stable the previous year, 17.65% feel that prices are stable, 64.71% feel that prices are moderately increasing, and 17.65% feel that prices are sharply increasing. For respondents who felt that prices were moderately increasing the previous year, 2.23% assume that prices are stable, 26.82% assume that prices are moderately rising, and 70.95% assume that prices are sharply rising. For respondents who felt that prices were sharply increasing the previous year, 1.57% assume that prices are stable, 15.18% assume that prices are moderately increasing, and 83.25% assume that prices are sharply increasing. Therefore, the percentage of respondents who feel prices are sharply increasing is high when the respondents feel that prices are sharply increasing in the previous year, and it is low when the respondents feel that prices are stable in the previous year.

**Table 5.2. Perceived Inflation in terms of Explanatory Variables (Turkey)**

<i>Variables</i>	<i>Perceived Inflation</i>			<i>Total</i>	<i>Type</i>
	<i>Stable</i>	<i>Moderately</i>	<i>Sharply</i>		
<i>Age categories</i>					
$\leq 24$	2	18	104	124	<i>Frequency</i>
	1.61	14.52	83.87	100	<i>In %</i>
$[25,64]$	11	77	183	271	<i>Frequency</i>
	4.06	28.41	67.53	100	<i>In %</i>

**Table 5.2. (cont.)**

$\geq 65$	0	4	5	9	<i>Frequency</i>
	0.00	44.44	55.56	100	<i>In %</i>
<b><i>Living standard</i></b>					
<i>17000TL or less</i>	4	28	165	197	<i>Frequency</i>
	2.03	14.21	83.76	100	<i>In %</i>
<i>]17000, 34000]</i>	5	49	84	138	<i>Frequency</i>
	3.62	35.51	60.87	100	<i>In %</i>
<i>]34000, 51000]</i>	3	20	41	64	<i>Frequency</i>
	4.69	31.25	64.06	100	<i>In %</i>
<i>Higher than 51000</i>	1	2	2	5	<i>Frequency</i>
	20.00	40.00	40.00	100	<i>In %</i>
<b><i>Saving</i></b>					
<i>10% or less</i>	4	43	180	227	<i>Frequency</i>
	1.76	18.94	79.30	100	<i>In %</i>
<i>10%-20% of income</i>	7	16	52	75	<i>Frequency</i>
	9.33	21.33	69.34	100	<i>In %</i>
<i>20%-30% of income</i>	2	22	42	66	<i>Frequency</i>
	3.03	33.33	63.64	100	<i>In %</i>
<i>30%-40% of income</i>	0	13	8	21	<i>Frequency</i>
	0.00	61.90	38.10	100	<i>In %</i>
<i>Higher than 40%</i>	0.00	5	10	15	<i>Frequency</i>
	0.00	33.33	66.67	100	<i>In %</i>
<b><i>Media influence</i></b>					
<i>Frequently</i>	5	49	203	257	<i>Frequency</i>
	1.95	19.07	78.99	100	<i>In %</i>
<i>Occasionally</i>	8	47	77	132	<i>Frequency</i>
	6.06	35.61	58.33	100	<i>In %</i>
<i>Never</i>	0	3	12	15	<i>Frequency</i>
	0.00	20.00	80.00	100	<i>In %</i>

**Table 5.2. (cont.)**

<b><i>Peers' influence</i></b>					
<i>No effect</i>	3	7	119	129	<i>Frequency</i>
	2.33	5.43	92.25	100	<i>In %</i>
<i>Moderate effect</i>	9	82	129	220	<i>Frequency</i>
	4.09	37.27	58.64	100	<i>In %</i>
<i>Significant effect</i>	1	10	44	55	<i>Frequency</i>
	1.82	18.18	80.00	100	<i>In %</i>
<b><i>Consumer Sentiment Index</i></b>					
<i>Trust</i>	3	52	106	161	<i>Frequency</i>
	1.86	32.30	65.84	100	<i>In %</i>
<i>Distrust</i>	10	47	186	243	<i>Frequency</i>
	4.12	19.34	76.54	100	<i>In %</i>
<b><i>Memory</i></b>					
<i>Very accurate</i>	5	5	116	126	<i>Frequency</i>
	3.97	3.97	92.06	100	<i>In %</i>
<i>Moderately accurate</i>	6	87	135	228	<i>Frequency</i>
	2.63	38.16	59.21	100	<i>In %</i>
<i>Not accurate</i>	2	7	41	50	<i>Frequency</i>
	4.00	14.00	82.00	100	<i>In %</i>
<b><i>Inflation knowledge</i></b>					
<i>Poor</i>	8	37	174	219	<i>Frequency</i>
	3.65	16.89	70.45	100	<i>In %</i>
<i>Fair</i>	3	34	46	83	<i>Frequency</i>
	3.61	40.96	55.42	100	<i>In %</i>
<i>Good</i>	2	28	72	102	<i>Frequency</i>
	1.96	27.45	70.59	100	<i>In %</i>
<b><i>Lagged perceived inflation</i></b>					
<i>Prices are stable</i>	6	22	6	34	<i>Frequency</i>
	17.65	64.71	17.65	100	<i>In %</i>

**Table 5.2. (cont.)**

<i>Moderately increasing</i>	4	48	127	179	<i>Frequency</i>
	2.23	26.82	70.95	100	<i>In %</i>
<i>Sharply increasing</i>	3	28	159	102	<i>Frequency</i>
	1.57	15.18	83.25	100	<i>In %</i>
<b><i>Total responses</i></b>	13	99	292	404	<i>Frequency</i>
	3.22	24.50	72.28	100	<i>In %</i>

### 5.1.2. Case of Morocco I

Table 5.3. describes the frequency, percentage, and cumulative of each variable in Morocco: price changes of the current year, age categories, marital status, gender, level of education, professional status, living standard, saving, consumer sentiment index, media influence, peers' influence, inflation knowledge, and lagged Inflation.

The survey shows possible distinctions between the three main groups. The respondents feel that prices are the same or rise by a small percentage. The mean of their perceived Inflation is 32.89%, and most of their answers are around 6%. Other respondents feel that prices increase moderately. The mean of their perceived Inflation is 34.26%, and most of their answers are around 30%. The last category is sharp, where respondents feel that prices increase sharply. The mean of perceived Inflation is 42.31%, and most of their answers are 90%.

The mean of perceived Inflation, 36.17%, is higher than the actual Inflation given by the CPI 6.1%, computed by HCP. Since the median is 30, it means that many respondents feel high in perceived Inflation, not only a few respondents. The variance is 850.62. It means that many responses are far from the mean and from one response to another. The interval of 10% and 50% is between the 25 percentile and 75 percentiles.

For the age variable, there are three age categories: the first category refers to the age of respondents less than 24 years old. It represents 9.61% of the sample. The second category is the age of respondents between 25 years old and 64 years old. It represents

87.12% of the data. The third category represents respondents of an age higher than 65. It constitutes 3.28% of the population studied.

For the marital status variable, the sample is divided into three categories. The first category contains 108 single respondents, which represents 23.58% of the data. The second category contains 250 married respondents, which represents 54.59%. The third category contains 100 divorced respondents, which represents 21.83% of the sample.

For the variable gender, the sample is divided into two categories. The first category has 214 male respondents, which represents 46.72% of the data. The second category has 244 female respondents, which represents 53.28% of the data.

There are three categories of education. 43 respondents who completed primary school or less and constitute 9.39% of the sample. 149 respondents who studied from the primary school until the high school and represent 32.53%. 266 respondents completed university and more, represent 58.98% of the data.

Moving to professional status categories, 227 employed respondents represent 49.56%, 116 unemployed respondents represent 25.33%, 84 discouraged workers represent 18.34%, and 31 retired respondents represent 6.77% of the data.

For the living standard variable, the sample is divided into four categories. The first category contains 102 respondents who earn the minimum wage (3300MAD) or less, which represents 22.27% of the data. The second category contains 191 respondents who earn between 3300MAD and 6600MAD, which represents 41.70%. The third category contains 133 respondents who earn between 6600MAD and 9900MAD, which represents 29.04% of the sample. The last category contains 32 respondents who earn more than three times the minimum wage (9900MAD).

For the variable saving, the sample is divided into five categories. The first category has 223 respondents who save 10% or less of their income, which represents 48.69% of the data. The second category has 114 respondents who save between 10% and 20% of their income, which represents 24.89% of the data. The third category has 74

respondents who save between 20% and 30% of their income, which represents 16.16% of the data. The fourth category has 23 respondents who save between 30% and 40% of their income, which represents 5.02% of the data. The fifth category has 24 respondents who save more than 40% of their income, which represents 5.24% of the data.

There are three categories of media influence. One hundred seventy respondents frequently check media and constitute 37.12% of the sample. Two hundred nineteen respondents who occasionally check media represent 47.82%. Sixty-nine respondents who never check media and represent 15.07% of the data.

Moving to peers' influence, 78 respondents who are not affected by their social circle represent 17.03% of the sample, 294 respondents who are moderately affected by their social circle represent 64.19%, and 86 respondents who are significantly affected by their social circle, represent 18.78%.

For the consumer sentiment index, the sample is divided into two categories. The first category contains 172 respondents who trust the overall economy of the country, which represents 37.55% of the data. The second category contains 286 respondents who do not trust the overall economy of the country, which represents 62.45%.

For the variable memory, the sample is divided into three categories. The first category has 56 respondents whose memory is very accurate, which represents 12.23% of the data. The second category has 181 respondents whose memory is moderately accurate, which represents 39.52% of the data. The third category has 221 respondents whose memory is not accurate, which represents 48.25% of the sample.

Proceeding to inflation knowledge, there are three categories. 186 respondents have a poor knowledge of inflation concepts and constitute 40.61% of the sample. 119 respondents have a fair knowledge of inflation concepts and represent 25.98%. 153 respondents have a good knowledge of inflation concepts and represent 33.41% of the data.

Moving to the lagged perceived Inflation, 95 respondents tend to feel that prices are stable and represent 20.74%, 238 respondents tend to feel that prices are moderately increasing and represent 51.97%, 125 respondents tend to feel that prices are sharply increasing and represent 27.29% of the data.

**Table 5.3. Description of Dependent and Explanatory Variables (Morocco)**

<i>Variables</i>	<i>Frequency</i>	<i>Percentage (%)</i>	<i>Cumulative (%)</i>
<b><i>Price changes (current year)</i></b>			
<i>Prices are stable</i>	97	21.18	21.18
<i>Moderately increasing</i>	255	55.68	76.86
<i>Sharply increasing</i>	106	23.14	100
<b><i>Age categories</i></b>			
<i>≤24-year-old</i>	44	9.61	9.61
<i>[25,64]</i>	399	87.12	96.72
<i>≥65-year-old</i>	15	3.28	100
<b><i>Marital status</i></b>			
<i>Single</i>	108	23.58	23.58
<i>Married</i>	250	54.59	78.17
<i>Divorced</i>	100	21.83	100
<b><i>Gender</i></b>			
<i>Male</i>	214	46.72	46.72
<i>Female</i>	244	53.28	100
<b><i>Education</i></b>			
<i>Primary school</i>	43	9.39	9.39
<i>High school</i>	149	32.53	41.92
<i>University or above</i>	266	58.08	100
<b><i>Professional status</i></b>			
<i>Employed</i>	227	49.56	49.56
<i>Unemployed</i>	116	25.33	74.89
<i>Discouraged worker</i>	84	18.34	93.23
<i>Retired</i>	31	6.77	100

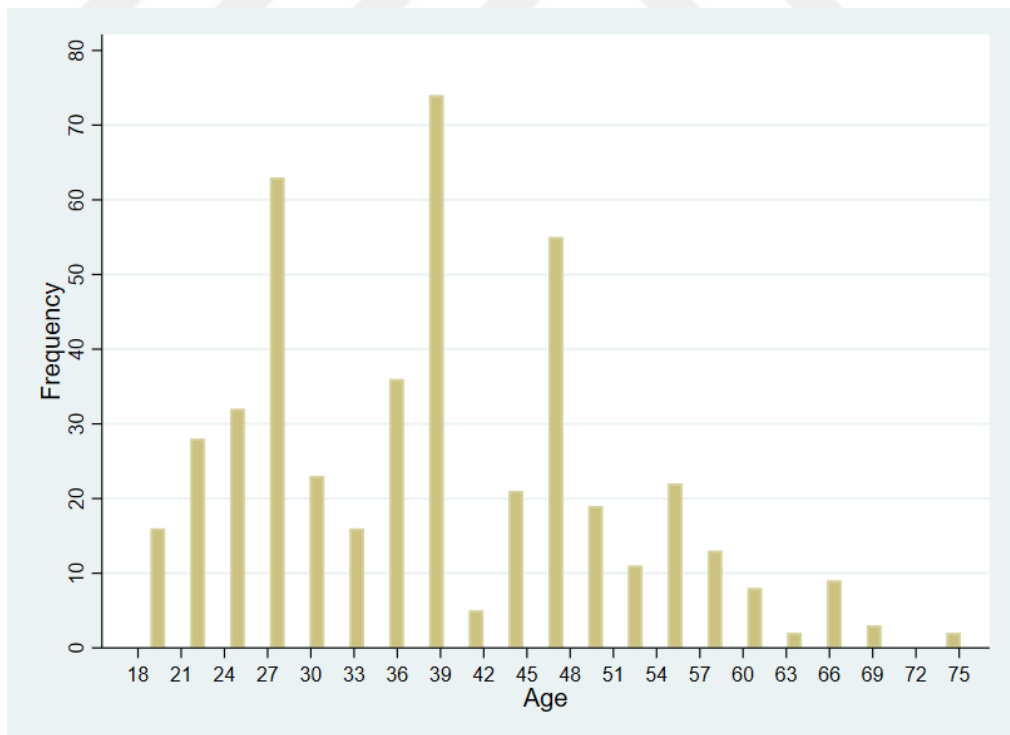
**Table 5.3. (cont.)**

<b><i>Living standard</i></b>			
<i>3300 MAD or less</i>	102	22.27	22.27
<i>]3300, 6600]</i>	191	41.70	63.97
<i>]6600, 9900]</i>	133	29.04	93.01
<i>More than 9900 MAD</i>	32	6.99	100
<b><i>Saving</i></b>			
<i>10% or less of income</i>	223	48.69	48.69
<i>10%-20% of income</i>	114	24.89	73.58
<i>20%-30% of income</i>	74	16.16	89.74
<i>30%-40% of income</i>	23	5.02	94.76
<i>40% or more of income</i>	24	5.24	100
<b><i>Media influence</i></b>			
<i>Frequently</i>	170	37.12	37.12
<i>Occasionally</i>	219	47.82	84.93
<i>Never</i>	69	15.07	100
<b><i>Peers' influence</i></b>			
<i>No effect</i>	78	17.03	17.03
<i>Moderate effect</i>	294	64.19	81.22
<i>Significant effect</i>	86	18.78	100
<b><i>Consumer Sentiment Index</i></b>			
<i>Trust</i>	172	37.55	37.55
<i>Distrust</i>	286	62.45	100
<b><i>Memory</i></b>			
<i>Very accurate</i>	56	12.23	12.23
<i>Moderately accurate</i>	181	39.52	51.75
<i>Not accurate</i>	221	48.25	100
<b><i>Inflation knowledge</i></b>			
<i>Poor</i>	186	40.61	40.61
<i>Fair</i>	119	25.98	66.69
<i>Good</i>	153	33.41	100

**Table 5.3. (cont.)**

<i>Lagged perceived inflation</i>			
<i>Prices are stable</i>	95	20.74	20.74
<i>Moderately increasing</i>	238	51.97	72.71
<i>Sharply increasing</i>	125	27.29	100

The age distribution of 458 Moroccan households is characterized by a median age of 38 years, with 25% of households falling below the age of 29 and 75% below the age of 48. The youngest respondent in the sample is 18 years old, while the oldest is 70 years old. The average age of the participants is 38.7 years, with a standard deviation of 11.99. This shows that there is dispersion around the mean. The age distribution has a positive skewness of 0.49, which indicates that the tail of the distribution is slightly to the right. It has a moderate value of 2.62 kurtosis, which suggests that the distribution has relatively heavier tails and a more peaked central tendency compared to a normal distribution.



**Figure 5.2. Age Distribution (Morocco)**

The table 5.4. summarizes the survey by representing perceived Inflation by other characteristics such as age categories, marital status, education, professional status, income, and saving.

For respondents less than 24 years old, 11.36% feel that prices are stable, 54.55% feel that they are moderately increasing, and 34.09% feel that they are sharply increasing. For respondents between 25 years old and 64 years old, 22.56% assume that prices are stable, 56.14% assume that they are moderately increasing, and 21.30% assume that they are sharply increasing. For respondents older than 65 years old, 13.33% think that prices are stable, 46.67% assume that they are moderately increasing, and 40.00% assume that they are sharply increasing. Therefore, the majority of respondents who are less than 24 years old and between 25 years old and 64 years old assume that prices are moderately increasing. However, most of the respondents who are older than 65 years feel that prices are sharply increasing.

Moving to marital status, 21.30% of single respondents feel that prices are stable, 54.63% feel that prices are moderately rising, and 24.07% feel that prices are sharply increasing. For married respondents, 20.00% feel that prices are stable, 58.40% feel that prices are moderately increasing, and 21.60% feel that prices are sharply increasing. For divorced respondents, 24.00% feel that prices are stable, 50.00% feel that prices are moderately rising, and 26.00% feel that prices are sharply rising. In conclusion, the majority of respondents assume that prices are moderately increasing.

For the gender variable, 21.03% of male respondents feel that prices are stable, 54.21% of male respondents tend to feel that prices are moderately increasing, and 24.77% of male respondents tend to feel that prices are sharply increasing. Besides, 21.31% of female respondents assume that prices are stable, 56.97% of female respondents assume that prices are moderately increasing, and 21.72% of female respondents assume that prices are sharply increasing. As a consequence, the majority of male respondents feel that prices are moderately increasing, but the majority of female respondents assume that prices are moderately and sharply increasing.

Going forward of education levels, 25.58% of respondents with a primary school level (or less) feel that prices are stable, 51.16% feel that prices are moderately increasing,

and 23.26% feel that prices are sharply increasing. For respondents with high school levels (or less), 20.81% assume that prices are stable, 57.05% assume that prices are moderately rising, and 18.10% assume that prices are sharply rising. For respondents with a university level (or above), 20.68% assume that prices are stable, 55.64% assume that prices are moderately increasing, and 23.68% assume that prices are sharply increasing. Therefore, the majority of respondents in all categories feel that prices are moderately increasing.

Regarding professional status, 22.47% of employed respondents assume that prices are stable, 54.19% assume that prices are moderately increasing, and 23.35% assume that prices are sharply increasing. For unemployed respondents, 24.14% assume that prices are stable, 57.76% assume that prices are moderately increasing, and 18.10% assume that prices are sharply increasing. For discouraged workers, 11.90% assume that prices are stable, 58.33% assume that prices are moderately increasing, and 29.79% assume that prices are sharply increasing. For retired, 25.81% assume that prices are stable, 51.61% assume that prices are moderately increasing, and 22.58% assume that prices are sharply increasing. Thus, most of the respondents, according to professional status, feel that prices are increasing moderately.

Moving forward to living standard categories, 22.55% of respondents with less than the minimum wage of 3300MAD or less feel that prices are stable, 52.94% feel that prices are moderately rising, and 24.51% feel that prices are sharply rising. For respondents with an income higher than the minimum wage and less than 6600MAD, 20.94% feel that prices are stable, 57.07% feel that prices are moderately increasing, and 21.99% feel that prices are sharply increasing. For respondents between 6600MAD and 9900MAD, 21.80% feel that prices are stable, 56.39% feel that prices are moderately increasing, and 21.80% feel that prices are sharply increasing. For respondents with higher income than 9900MAD, 31.25% feel that prices are stable, 51.61% feel that prices are moderately rising, and 15.63% feel that prices are sharply rising. In conclusion, when income increases, the percentage of respondents who feel that prices are sharply rising decreases.

For saving, 18.83% of respondents who save less than 10% of their income feel that prices are stable, 55.61% feel that prices are moderately increasing, and 25.56% feel

that prices are sharply increasing. For respondents who save between 10% and 20% of their income, 26.32% feel that prices are stable, 53.51% feel that prices are moderately increasing, and 25.56% feel that prices are sharply increasing. For respondents who save between 20% and 30% of their income, 22.97% feel that prices are stable, 59.46% feel that prices are moderately increasing, and 17.57% feel that prices are sharply increasing. For respondents who save between 30% and 40% of their income, 8.70% feel that prices are stable, 60.87% feel that prices are moderately increasing, and 30.43% feel that prices are sharply increasing. For respondents who save more than 40% of their income, 25% feel that prices are stable, 50.00% feel that prices are moderately increasing, and 25.00% feel that prices are sharply increasing.

For the Media variable, 22.35% of respondents who frequently check media feel that prices are stable, 58.82% feel that they are moderately increasing, and 18.82% feel that they are sharply increasing. For respondents who occasionally check media, 20.55% assume that prices are stable, 52.97% assume that they are moderately increasing, and 26.48% assume that they are sharply increasing. For respondents who never check media, 20.29% think that prices are stable, 56.52% assume that they are moderately increasing, and 23.19% assume that they are sharply increasing. Therefore, checking media decreases the percentage of respondents who tend to feel prices are sharply rising and increases the percentage of respondents who tend to feel that prices are stable.

Moving to peers' influence, 26.92% of respondents who are not affected by their social circle feel that prices are stable, 53.85% feel that prices are moderately rising, and 14.15% feel that prices are sharply increasing. For respondents who are moderately affected by their social circle, 22.45% feel that prices are stable, 55.78% feel that prices are moderately increasing, and 60.38% feel that prices are sharply increasing. For respondents who are significantly affected by their social circle, 11.63% feel that prices are stable, 56.98% feel that prices are moderately rising, and 31.40% feel that prices are sharply rising. In conclusion, the percentage of respondents who feel that prices are stable decreases when the effect of the social circle increases.

For the consumer sentiment index, 16.28% of respondents who trust the overall economy feel that prices are stable, 54.07% feel that prices are moderately increasing,

and 29.65% feel that prices are sharply increasing. Besides, 24.13% of respondents who distrust the overall economy assume that prices are stable, 56.64% assume that prices are moderately increasing, and 19.23% of female respondents assume that prices are sharply increasing. As a consequence, the majority of respondents feel that prices are moderately increasing, even if they trust or distrust the overall economy.

Going forward to the memory variable, 17.86% of respondents whose memory is very accurate feel that prices are stable, 57.14% feel that prices are moderately increasing, and 25.00% feel that prices are sharply increasing. For respondents whose memory is moderately accurate, 17.13% assume that prices are stable, 53.04% assume that prices are moderately rising, and 29.83% assume that prices are sharply rising. For respondents whose memory is not accurate, 25.34% assume that prices are stable, 57.47% assume that prices are moderately increasing, and 17.19% assume that prices are sharply increasing. Therefore, the majority of respondents in all categories feel that prices are moderately increasing. Adding to this, the percentage of respondents who feel that prices are stable decreases when the memory is very accurate.

For the inflation knowledge, for respondents who have poor knowledge of inflation concepts, 24.75% feel that prices are stable, 58.60% feel that prices are moderately increasing, and 16.67% feel that prices are sharply increasing. For respondents who have a fair knowledge of inflation concepts, 21.85% assume that prices are stable, 52.10% assume that prices are moderately rising, and 26.05% assume that prices are sharply rising. For respondents who have good knowledge of inflation concepts, 16.34% assume that prices are stable, 54.90% assume that prices are moderately increasing, and 28.76% assume that prices are sharply increasing. Therefore, the percentage of respondents who feel that prices are sharply rising increases when they have a better knowledge of inflation concepts.

Moving to lagged perceived Inflation, for respondents who felt that prices were stable the previous year, 24.73% feel that prices are stable, 58.95% feel that prices are moderately increasing, and 16.84% feel that prices are sharply increasing. For respondents who felt that prices were moderately increasing the previous year, 21.43% assume that prices are stable, 58.40% assume that prices are moderately rising, and 20.17% assume that prices are sharply rising. For respondents who felt that prices were

sharply increasing the previous year, 18.40% assume that prices are stable, 48.00% assume that prices are moderately increasing, and 33.60% assume that prices are sharply increasing. Therefore, the percentage of respondents who feel prices are sharply increasing is high when the respondents feel that prices are sharply increasing in the previous year, and it is low when the respondents feel that prices are stable in the previous year.

**Table 5.4. Perceived Inflation in terms of Explanatory Variables (Morocco)**

<i>Variables</i>	<i>Perceived Inflation</i>			<i>Total</i>	<i>Type</i>
	<i>Stable</i>	<i>Moderately</i>	<i>Sharply</i>		
<i>Age categories</i>					
$\leq 24$	5	24	15	44	<i>Frequency</i>
	11.36	54.55	34.09	100	<i>In %</i>
[25,64]	90	224	85	399	<i>Frequency</i>
	22.56	56.14	21.30	100	<i>In %</i>
$\geq 65$	2	7	6	15	<i>Frequency</i>
	13.33	46.67	40.00	100	<i>In %</i>
<i>Marital status</i>					
<i>Single</i>	23	59	26	108	<i>Frequency</i>
	21.30	54.63	24.07	100	<i>In %</i>
<i>Married</i>	50	146	54	250	<i>Frequency</i>
	20.00	58.40	21.60	100	<i>In %</i>
<i>Divorced</i>	24	50	26	100	<i>Frequency</i>
	24.00	50.00	26.00	100	<i>In %</i>
<i>Gender</i>					
<i>Male</i>	45	116	53	214	<i>Frequency</i>
	21.03	54.21	24.77	100	<i>In %</i>
<i>Female</i>	52	139	53	244	<i>Frequency</i>
	21.31	56.97	21.72	100	<i>In %</i>
<i>Education</i>					
<i>Primary school or less</i>	11	12	10	43	<i>Frequency</i>

**Table 5.4. (cont.)**

	25.58	51.16	23.26	100	<i>In %</i>
	51.16				
<i>High school</i>	31	85	33	149	<i>Frequency</i>
	20.81	57.05	22.15	100	<i>In %</i>
<i>University or above</i>	55	148	63	266	<i>Frequency</i>
	20.68	55.64	23.68	100	<i>In %</i>
<b><i>Professional status</i></b>					
<i>Employed</i>	51	123	53	227	<i>Frequency</i>
	22.47	54.19	23.35	100	<i>In %</i>
<i>Unemployed</i>	28	67	21	116	<i>Frequency</i>
	24.14	57.76	18.10	100	<i>In %</i>
<i>Discouraged worker</i>	10	49	25	84	<i>Frequency</i>
	11.90	58.33	29.76	100	<i>In %</i>
<i>Retired</i>	8	16	7	31	<i>Frequency</i>
	25.81	51.61	22.58	100	<i>In %</i>
<b><i>Living standard</i></b>					
<i>3300 MAD or less</i>	23	54	25	102	<i>Frequency</i>
	22.55	52.94	24.51	100	<i>In %</i>
<i>]3300, 6600]</i>	40	109	42	191	<i>Frequency</i>
	20.94	57.07	21.99	100	<i>In %</i>
<i>]6600, 9900]</i>	29	75	29	133	<i>Frequency</i>
	21.80	56.39	21.80	100	<i>In %</i>
<i>Higher than 9900</i>	10	17	5	32	<i>Frequency</i>
	31.25	53.13	15.63	100	<i>In %</i>
<b><i>Saving</i></b>					
<i>10% or less</i>	42	124	57	223	<i>Frequency</i>
	18.83	55.61	25.56	100	<i>In %</i>
<i>10%-20% of income</i>	30	61	23	114	<i>Frequency</i>
	26.32	53.51	20.18	100	<i>In %</i>
<i>20%-30% of income</i>	17	44	13	74	<i>Frequency</i>
	22.97	59.46	17.57	100	<i>In %</i>

**Table 5.4. (cont.)**

<i>30%-40% of income</i>	2	14	7	23	<i>Frequency</i>
	8.70	60.87	30.43	100	<i>In %</i>
<i>Higher than 40%</i>	6	12	6	24	<i>Frequency</i>
	25.00	50.00	25.00	100	<i>In %</i>
<b><i>Media influence</i></b>					
<i>Frequently</i>	38	100	32	170	<i>Frequency</i>
	22.35	58.82	18.82	100	<i>In %</i>
<i>Occasionally</i>	45	116	58	219	<i>Frequency</i>
	20.55	52.97	26.48	100	<i>In %</i>
<i>Never</i>	14	39	16	69	<i>Frequency</i>
	20.29	56.52	23.19	100	<i>In %</i>
<b><i>Peers' influence</i></b>					
<i>No effect</i>	21	42	15	78	<i>Frequency</i>
	26.92	53.85	14.15	100	<i>In %</i>
<i>Moderate effect</i>	66	164	64	294	<i>Frequency</i>
	22.45	55.78	60.38	100	<i>In %</i>
<i>Significant effect</i>	10	49	27	86	<i>Frequency</i>
	11.63	56.98	31.40	100	<i>In %</i>
<b><i>Consumer Sentiment Index</i></b>					
<i>Trust</i>	28	93	51	172	<i>Frequency</i>
	16.28	54.07	29.65	100	<i>In %</i>
<i>Distrust</i>	69	162	55	286	<i>Frequency</i>
	24.13	56.64	19.23	100	<i>In %</i>
<b><i>Memory</i></b>					
<i>Very accurate</i>	10	32	14	56	<i>Frequency</i>
	17.86	57.14	25.00	100	<i>In %</i>
<i>Moderately accurate</i>	31	96	54	181	<i>Frequency</i>
	17.13	53.04	29.83	100	<i>In %</i>
<i>Not accurate</i>	56	127	38	221	<i>Frequency</i>
	25.34	57.47	17.19	100	<i>In %</i>

**Table 5.4. (cont.)**

<b><i>Inflation knowledge</i></b>					
<i>Poor</i>	46	109	31	186	<i>Frequency</i>
	24.73	58.60	16.67	100	<i>In %</i>
<i>Fair</i>	26	62	31	119	<i>Frequency</i>
	21.85	52.10	26.05	100	<i>In %</i>
<i>Good</i>	25	84	44	153	<i>Frequency</i>
	16.34	54.90	28.76	100	<i>In %</i>
<b><i>Lagged perceived inflation</i></b>					
<i>Prices are stable</i>	23	56	16	95	<i>Frequency</i>
	24.21	58.95	16.84	100	<i>In %</i>
<i>Moderately increasing</i>	51	139	48	238	<i>Frequency</i>
	21.43	58.40	20.17	100	<i>In %</i>
<i>Sharply increasing</i>	23	60	42	125	<i>Frequency</i>
	18.40	48.00	33.60	100	<i>In %</i>
<b><i>Total responses</i></b>	97	255	106	458	<i>Frequency</i>
	21.18	55.68	23.14	100	<i>In %</i>

**5.1.3. Case of Italy I**

Table 5.5 describes the frequency, percentage, and cumulative of each variable in Italy: price changes of the current year, age categories, marital status, gender, level of education, professional status, living standard, saving, consumer sentiment index, media influence, peers' influence, inflation knowledge, and lagged Inflation.

The survey shows possible distinctions between the three main groups. The respondents feel that prices are the same or rise by a small percentage. The mean of their perceived Inflation is 9.25%, and most of their answers are around 5%. Other respondents feel that prices increase moderately. The mean of their perceived Inflation is 39.82%, and most of their answers are around 30%. The last category is sharp, where

respondents feel that prices increase sharply. The mean of perceived Inflation is 68.16%, and more of their answers are around 90%.

The mean of perceived Inflation, 36%, is higher than the actual Inflation given by the economic forecast, 5.9%, computed by the European Union. Since the median is 30, it means that many respondents feel high in perceived Inflation, not only a few respondents. The variance is 970.36. It means that many responses are far from the mean and from one response to another. The interval of 6% and 90% is between the 25 percentile and 75 percentiles.

For age variable, there are three age categories: the first category refers to the age of respondents less than 24 years old. It represents 12.61% of the sample. The second category is the age of respondents between 25 years old and 64 years old. It represents 86.11% of the data. The third category represents respondents of age higher than 65. It constitutes 1.28% of the population studied.

For the marital status variable, the sample is divided into three categories. The first category contains 121 single respondents, which represents 25.85% of the data. The second category contains 237 married respondents, which represents 50.64%. The third category contains 110 divorced respondents, which represents 23.50% of the sample.

For the variable gender, the sample is divided into two categories. The first category has 226 male respondents, which represents 48.29% of the data. The second category has 242 female respondents, which represents 51.71% of the data.

Proceeding to education, there are three categories of level of education. 65 respondents who completed primary school or less and constitute 13.89% of the sample. 130 respondents who studied from the primary school until the high school and represent 27.78%. 273 respondents completed university and more, represent 58.33% of the data.

Moving to professional status categories, 227 employed respondents represent 49.56%, 116 unemployed respondents represent 25.33%, 84 discouraged workers represent 18.34%, and 31 retired respondents represent 6.77% of the data.

For the living standard variable, the sample is divided into four categories. The first category contains 209 respondents who earn the minimum wage (1150EUR) or less, which represents 44.66% of the data. The second category contains 147 respondents who earn between 1150EUR and 2300EUR, which represents 31.41%. The third category contains 167 respondents who earn between 2300EUR and 3450EUR, which represents 35.68% of the sample. The last category contains 75 respondents who earn more than three times the minimum wage (3450EUR), which represents 16.03% of the data.

For the variable saving, the sample is divided into five categories. The first category has 127 respondents who save 10% or less of their income, which represents 27.14% of the data. The second category has 127 respondents who save between 10% and 20% of their income, which represents 27.14% of the data. The third category has 95 respondents who save between 20% and 30% of their income, which represents 20.30% of the data. The fourth category has 70 respondents who save between 30% and 40% of their income, which represents 14.96% of the data. The fifth category has 49 respondents who save more than 40% of their income, which represents 10.47% of the data.

Proceeding to media influence, there are three categories. 175 respondents who frequently check media and constitute 37.39% of the sample. 183 respondents who occasionally check media and represent 39.10%. 110 respondents who never check media and represent 23.50% of the data.

Moving to peers' influence, 88 respondents who does not get affected by their social circle, represent 18.80% of the sample, 283 respondents who moderately get affected by their social circle, represent 60.47%, and 97 respondents who significantly get affected by their social circle, represent 20.73%.

For the consumer sentiment index, the sample is divided into two categories. The first category contains 238 respondents who trust the overall economy of the country, which represents 50.85% of the data. The second category contains 230 respondents who do not trust the overall economy of the country, which represents 49.15%.

For the variable memory, the sample is divided into three categories. The first category has 70 respondents whose memory is very accurate, which represents 14.96% of the data. The second category has 158 respondents whose memory is moderately accurate, which represents 33.76% of the data. The third category has 240 respondents whose memory is not accurate, which represents 51.28% of the sample.

There are three categories of inflation knowledge. One hundred eighty respondents have a poor knowledge of inflation concepts and constitute 38.46% of the sample. One hundred eleven respondents have a fair knowledge of inflation concepts and represent 23.72%. One hundred seventy-seven respondents have a good knowledge of inflation concepts and represent 37.82% of the data.

Moving to the lagged perceived Inflation, 131 respondents tend to feel that prices are stable and represent 27.99%, 147 respondents tend to feel that prices are moderately increasing and represent 31.41%, 190 respondents tend to feel that prices are sharply increasing and represent 40.60% of the data.

**Table 5.5. Description of Dependent and Explanatory Variables (Italy)**

<i>Variables</i>	<i>Frequency</i>	<i>Percentage (%)</i>	<i>Cumulative (%)</i>
<i>Price changes (current year)</i>			
<i>Prices are stable</i>	189	40.38	40.38
<i>Moderately increasing</i>	138	29.49	69.87
<i>Sharply increasing</i>	141	30.13	100
<i>Age categories</i>			
<i>≤24-year-old</i>	59	12.61	12.61
<i>[25,64]</i>	403	86.11	98.72

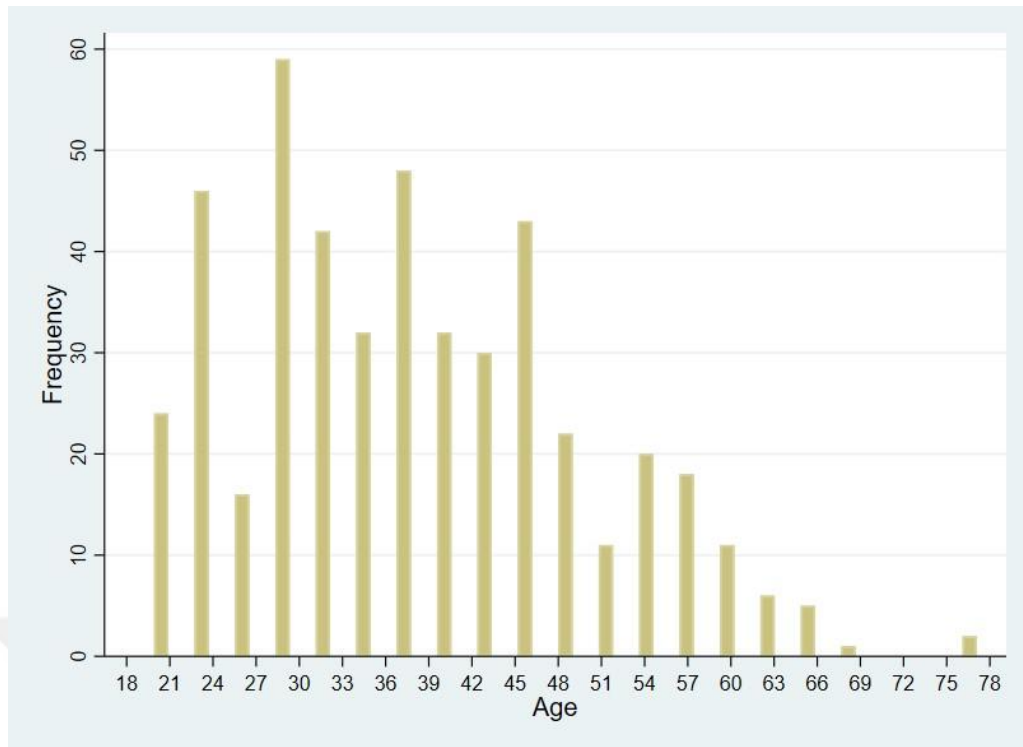
**Table 5.5. (cont.)**

<i>≥65-year-old</i>	6	1.28	100
<b><i>Marital status</i></b>			
<i>Single</i>	121	25.85	25.85
<i>Married</i>	237	50.64	76.50
<i>Divorced</i>	110	23.50	100
<b><i>Gender</i></b>			
<i>Male</i>	226	48.29	48.29
<i>Female</i>	242	51.71	100
<b><i>Education</i></b>			
<i>Primary school</i>	65	13.89	13.89
<i>High school</i>	130	27.78	41.67
<i>University or above</i>	273	58.33	100
<b><i>Professional status</i></b>			
<i>Employed</i>	209	44.66	44.66
<i>Unemployed</i>	124	26.50	71.15
<i>Discouraged worker</i>	101	21.58	92.74
<i>Retired</i>	34	7.26	100
<b><i>Living standard</i></b>			
<i>1150 EUR or less</i>	79	16.88	16.88
<i>]1150, 2300]</i>	147	31.41	48.29
<i>]2300, 3450]</i>	167	35.68	83.97
<i>More than 3450 MAD</i>	75	16.03	100
<b><i>Saving</i></b>			
<i>10% or less of income</i>	127	27.14	27.14
<i>10%-20% of income</i>	127	27.14	54.27
<i>20%-30% of income</i>	95	20.30	74.57
<i>30%-40% of income</i>	70	14.96	89.53
<i>40% or more of income</i>	49	10.47	100
<b><i>Media influence</i></b>			
<i>Frequently</i>	175	37.39	37.39
<i>Occasionally</i>	183	29.10	76.50

**Table 5.5. (cont.)**

<i>Never</i>	110	23.50	100
<b><i>Peers' influence</i></b>			
<i>No effect</i>	88	18.80	18.80
<i>Moderate effect</i>	283	60.47	79.27
<i>Significant effect</i>	97	20.73	100
<b><i>Consumer Sentiment Index</i></b>			
<i>Trust</i>	238	49.15	49.15
<i>Distrust</i>	230	50.85	100
<b><i>Memory</i></b>			
<i>Very accurate</i>	70	14.96	14.96
<i>Moderately accurate</i>	158	33.76	48.72
<i>Not accurate</i>	240	51.28	100
<b><i>Inflation knowledge</i></b>			
<i>Poor</i>	180	38.46	38.46
<i>Fair</i>	111	23.72	62.18
<i>Good</i>	177	37.82	100
<b><i>Lagged perceived inflation</i></b>			
<i>Prices are stable</i>	131	27.99	27.99
<i>Moderately increasing</i>	147	31.41	59.40
<i>Sharply increasing</i>	190	40.60	100

The age distribution of 468 Italian households starts from a minimum age of 20 to a maximum age of 65, with a median age of 37 years, a standard deviation of approximately 11.56 years, and a variance of 133.54. The majority of participants fall within the interquartile range. In fact, 25% of participants are below 29 years, and 75% of participants are below 45 years. In addition, the age distribution demonstrates a positive skewness of 0.51, which means a higher concentration of participants towards a younger age. The kurtosis value is 2.77, indicating that the age distribution has relatively heavier tails than a normal distribution.



**Figure 5.3. Age Distribution (Italy)**

The table 5.6. summarizes the survey by representing perceived Inflation by other characteristics such as age categories, marital status, education, professional status, income, and saving.

For respondents less than 24 years old, 42.37% feel that prices are stable, 28.81% feel that they are moderately increasing, and 28.81% feel that they are sharply increasing. For respondents between 25 years old and 64 years old, 39.21% assume that prices are stable, 30.02% assume that they are moderately increasing, and 30.77% assume that they are sharply increasing. For respondents older than 65 years old, 100% think that prices are stable. Therefore, the majority of respondents, according to the age groups, feel that prices are stable.

Moving to marital status, 38.84% of single respondents feel that prices are stable, 36.36% feel that prices are moderately rising, and 24.79% feel that prices are sharply increasing. For married respondents, 39.24% feel that prices are stable, 27.85% feel that prices are moderately increasing, and 32.91% feel that prices are sharply increasing. For divorced respondents, 44.55% feel that prices are stable, 25.45% feel

that prices are moderately rising, and 30.00% feel that prices are sharply rising. In conclusion, the majority of respondents, according to marital status, assume that prices are stable.

For the gender variable, 44.25% of male respondents feel that prices are stable, 27.43% of male respondents tend to feel that prices are moderately increasing, and 28.32% of male respondents tend to feel that prices are sharply increasing. Besides, 36.78% of female respondents assume that prices are stable, 31.40% of female respondents assume that prices are moderately increasing, and 31.82% of female respondents assume that prices are sharply increasing. As a consequence, the majority of respondents, according to the gender groups, feel that prices are stable.

Going forward of education levels, 29.23% of respondents with a primary school level (or less) feel that prices are stable, 24.62% feel that prices are moderately increasing, and 46.15% feel that prices are sharply increasing. For respondents with high school levels (or less), 45.38% assume that prices are stable, 24.62% assume that prices are moderately rising, and 30.00% assume that prices are sharply rising. For respondents with a university level (or above), 40.66% assume that prices are stable, 32.97% assume that prices are moderately increasing, and 26.37% assume that prices are sharply increasing. Therefore, the majority of respondents who have a primary education or less tend to feel that prices are sharply increasing. However, the majority of respondents who have higher education or university tend to feel that prices are stable. Besides, whenever education is higher, the percentage of the respondents who feel that prices are sharply rising decreases.

Regarding professional status, 41.15% of employed respondents assume that prices are stable, 29.19% assume that prices are moderately increasing, and 29.67% assume that prices are sharply increasing. For unemployed respondents, 36.29% assume that prices are stable, 30.65% assume that prices are moderately increasing, and 33.06% assume that prices are sharply increasing. For discouraged workers, 40.59% assume that prices are stable, 30.69% assume that prices are moderately increasing, and 28.71% assume that prices are sharply increasing. For retired, 50.00% assume that prices are stable, 23.53% assume that prices are moderately increasing, and 26.47% assume that prices

are sharply increasing. Thus, most of the respondents, according to professional status groups, feel that prices are stable.

Moving forward to living standard categories, 44.30% of respondents with less than the minimum wage of 1150EUR or less feel that prices are stable, 27.85% feel that prices are moderately rising, and 27.85% feel that prices are sharply rising. For respondents with an income higher than the minimum wage and less than 2300EUR, 41.50% feel that prices are stable, 28.57% feel that prices are moderately increasing, and 29.93% feel that prices are sharply increasing. For respondents between 2300EUR and 3450EUR, 34.13% feel that prices are stable, 32.93% feel that prices are moderately increasing, and 32.93% feel that prices are sharply increasing. For respondents with higher income than 3450EUR, 48.00% feel that prices are stable, 26.33% feel that prices are moderately rising, and 26.67% feel that prices are sharply rising. In conclusion, the majority of respondents, according to the income categories, feel that prices are stable.

For saving, 40.94% of respondents who save less than 10% of their income feel that prices are stable, 26.77% feel that prices are moderately increasing, and 32.28% feel that prices are sharply increasing. For respondents who save between 10% and 20% of their income, 43.31% feel that prices are stable, 28.35% feel that prices are moderately increasing, and 28.35% feel that prices are sharply increasing. For respondents who save between 20% and 30% of their income, 44.21% feel that prices are stable, 31.58% feel that prices are moderately increasing, and 24.21% feel that prices are sharply increasing. For respondents who save between 30% and 40% of their income, 34.29% feel that prices are stable, 28.57% feel that prices are moderately increasing, and 37.14% feel that prices are sharply increasing. For respondents who save more than 40% of their income, 32.65% feel that prices are stable, 36.73% feel that prices are moderately increasing, and 30.61% feel that prices are sharply increasing.

For the variable media, 37.71% of respondents who frequently check media feel that prices are stable, 31.3% feel that they are moderately increasing, and 30.86% feel that they are sharply increasing. For respondents who occasionally check media, 42.08% assume that prices are stable, 32.24% assume that they are moderately increasing, and 25.68% assume that they are sharply increasing. For respondents who never check

media, 41.82% think that prices are stable, 21.82% assume that they are moderately increasing, and 36.36% assume that they are sharply increasing. Therefore, checking media decreases the percentage of respondents who tend to feel prices are stable.

Moving to peers' influence, 50.00% of respondents who are not affected by their social circle feel that prices are stable, 19.32% feel that prices are moderately rising, and 30.68% feel that prices are sharply increasing. For respondents who are moderately affected by their social circle, 36.75% feel that prices are stable, 34.98% feel that prices are moderately increasing, and 28.27% feel that prices are sharply increasing. For respondents who are significantly affected by their social circle, 42.27% feel that prices are stable, 22.68% feel that prices are moderately rising, and 35.05% feel that prices are sharply rising. In conclusion, the percentage of respondents who feel that prices are stable decreases when the effect of the social circle increases.

For the consumer sentiment index, 41.18% of respondents who trust the overall economy feel that prices are stable, 25.63% feel that prices are moderately increasing, and 33.19% feel that prices are sharply increasing. Besides, 39.47% of respondents who distrust the overall economy assume that prices are stable, 33.48% assume that prices are moderately increasing, and 26.96% of female respondents assume that prices are sharply increasing. As a consequence, the majority of male respondents feel that prices are moderately increasing, even if they trust or distrust the overall economy.

Going forward to the memory variable, 38.57% of respondents whose memory is very accurate feel that prices are stable, 25.71% feel that prices are moderately increasing, and 35.71% feel that prices are sharply increasing. For respondents whose memory is moderately accurate, 38.61% assume that prices are stable, 33.54% assume that prices are moderately rising, and 27.85% assume that prices are sharply rising. For respondents whose memory is not accurate, 42.08% assume that prices are stable, 27.92% assume that prices are moderately increasing, and 30.00% assume that prices are sharply increasing. Therefore, the majority of respondents in all categories feel that prices are moderately increasing. Adding to this, the percentage of respondents who feel that prices are stable decreases when the memory is very accurate.

For the inflation knowledge, for respondents who have poor knowledge of inflation concepts, 55.00% feel that prices are stable, 18.89% feel that prices are moderately increasing, and 26.11% feel that prices are sharply increasing. For respondents who have a fair knowledge of inflation concepts, 31.53% assume that prices are stable, 43.24% assume that prices are moderately rising, and 25.23% assume that prices are sharply rising. For respondents who have good knowledge of inflation concepts, 31.07% assume that prices are stable, 31.64% assume that prices are moderately increasing, and 37.29% assume that prices are sharply increasing. Therefore, the percentage of respondents who feel that prices are sharply rising increases when they have a better knowledge of inflation concepts.

Moving to lagged perceived Inflation, for respondents who felt that prices were stable the previous year, 26.72% feel that prices are stable, 29.01% feel that prices are moderately increasing, and 44.27% feel that prices are sharply increasing. For respondents who felt that prices were moderately increasing the previous year, 38.78% assume that prices are stable, 33.45% assume that prices are moderately rising, and 38.78% assume that prices are sharply rising. For respondents who felt that prices were sharply increasing the previous year, 51.05% assume that prices are stable, 35.26% assume that prices are moderately increasing, and 13.68% assume that prices are sharply increasing. Therefore, the percentage of respondents who feel prices are sharply increasing is high when the respondents feel that prices are stable in the previous year, and it is low when the respondents feel that prices are sharply increasing.

**Table 5.6. Perceived Inflation in terms of Explanatory Variables (Italy)**

<i>Variables</i>	<i>Perceived Inflation</i>			<i>Total</i>	<i>Type</i>
	<i>Stable</i>	<i>Moderately</i>	<i>Sharply</i>		
<i>Age categories</i>					
$\leq 24$	25	17	17	59	<i>Frequency</i>
	42.37	28.81	28.81	100	<i>In %</i>
$[25,64]$	158	121	124	403	<i>Frequency</i>
	39.21	30.02	30.77	100	<i>In %</i>

**Table 5.6. (cont.)**

≥65	6	0	0	6	<i>Frequency</i>
	100.00	0.00	0.00	100	<i>In %</i>
<b><i>Marital status</i></b>					
<i>Single</i>	47	44	30	121	<i>Frequency</i>
	38.84	36.36	24.79	100	<i>In %</i>
<i>Married</i>	93	66	78	237	<i>Frequency</i>
	39.24	27.85	32.91	100	<i>In %</i>
<i>Divorced</i>	24	50	26	110	<i>Frequency</i>
	44.55	25.45	30.00	100	<i>In %</i>
<b><i>Gender</i></b>					
<i>Male</i>	100	62	64	226	<i>Frequency</i>
	44.25	27.43	28.32	100	<i>In %</i>
<i>Female</i>	89	76	77	242	<i>Frequency</i>
	36.78	31.40	31.82	100	<i>In %</i>
<b><i>Education</i></b>					
<i>Primary school or less</i>	19	16	30	65	<i>Frequency</i>
	29.23	24.62	46.15	100	<i>In %</i>
<i>High school</i>	59	32	39	130	<i>Frequency</i>
	45.38	24.62	30.00	100	<i>In %</i>
<i>University or above</i>	111	90	72	273	<i>Frequency</i>
	40.66	32.97	26.37	100	<i>In %</i>
<b><i>Professional status</i></b>					
<i>Employed</i>	86	61	62	209	<i>Frequency</i>
	41.15	29.19	29.67	100	<i>In %</i>
<i>Unemployed</i>	45	38	41	209	<i>Frequency</i>
	36.29	30.65	33.06	100	<i>In %</i>
<i>Discouraged worker</i>	41	31	29	101	<i>Frequency</i>
	40.59	30.69	28.71	100	<i>In %</i>
<i>Retired</i>	17	8	9	34	<i>Frequency</i>
	50.00	23.53	26.47	100	<i>In %</i>

**Table 5.6. (cont.)**

<b><i>Living standard</i></b>					
<i>1150EUR or less</i>	35	22	22	79	<i>Frequency</i>
	44.30	27.85	27.85	100	<i>In %</i>
<i>]1150, 2300]</i>	61	42	44	147	<i>Frequency</i>
	41.50	28.57	29.93	100	<i>In %</i>
<i>]2300, 3450]</i>	57	55	55	74	<i>Frequency</i>
	34.13	32.93	32.93	100	<i>In %</i>
<i>Higher than 3450</i>	36	19	20	75	<i>Frequency</i>
	48.00	26.33	26.67	100	<i>In %</i>
<b><i>Saving</i></b>					
<i>10% or less</i>	52	34	41	127	<i>Frequency</i>
	40.94	26.77	32.28	100	<i>In %</i>
<i>10%-20% of income</i>	55	36	36	127	<i>Frequency</i>
	43.31	28.35	28.35	100	<i>In %</i>
<i>20%-30% of income</i>	42	30	23	95	<i>Frequency</i>
	44.21	31.58	24.21	100	<i>In %</i>
<i>30%-40% of income</i>	24	20	26	70	<i>Frequency</i>
	34.29	28.57	37.14	100	<i>In %</i>
<i>Higher than 40%</i>	16	18	15	49	<i>Frequency</i>
	32.65	36.73	30.61	100	<i>In %</i>
<b><i>Media influence</i></b>					
<i>Frequently</i>	66	55	54	175	<i>Frequency</i>
	37.71	31.43	30.86	100	<i>In %</i>
<i>Occasionally</i>	77	59	47	183	<i>Frequency</i>
	42.08	32.24	25.68	100	<i>In %</i>
<i>Never</i>	46	24	40	110	<i>Frequency</i>
	41.82	21.82	36.36	100	<i>In %</i>
<b><i>Peers' influence</i></b>					
<i>No effect</i>	44	17	27	88	<i>Frequency</i>
	50.00	19.32	30.68	100	<i>In %</i>
<i>Moderate effect</i>	104	99	80	283	<i>Frequency</i>

**Table 5.6. (cont.)**

	36.75	34.98	28.27	100	<i>In %</i>
<i>Significant effect</i>	41	22	34	97	<i>Frequency</i>
	42.27	22.68	35.05	100	<i>In %</i>
<b><i>Consumer Sentiment Index</i></b>					
<i>Trust</i>	98	61	79	141	<i>Frequency</i>
	41.18	25.63	33.19	100	<i>In %</i>
<i>Distrust</i>	91	77	62	230	<i>Frequency</i>
	39.57	33.48	26.96	100	<i>In %</i>
<b><i>Memory</i></b>					
<i>Very accurate</i>	27	18	25	70	<i>Frequency</i>
	38.57	25.71	35.71	100	<i>In %</i>
<i>Moderately accurate</i>	61	53	44	158	<i>Frequency</i>
	38.61	33.54	27.85	100	<i>In %</i>
<i>Not accurate</i>	101	67	72	240	<i>Frequency</i>
	42.08	27.92	30.00	100	<i>In %</i>
<b><i>Inflation knowledge</i></b>					
<i>Poor</i>	99	34	47	180	<i>Frequency</i>
	55.00	18.89	26.11	100	<i>In %</i>
<i>Fair</i>	35	48	28	111	<i>Frequency</i>
	31.53	43.24	25.23	100	<i>In %</i>
<i>Good</i>	55	56	66	177	<i>Frequency</i>
	31.07	31.64	37.29	100	<i>In %</i>
<b><i>Lagged perceived inflation</i></b>					
<i>Prices are stable</i>	35	38	58	131	<i>Frequency</i>
	26.72	29.01	44.27	100	<i>In %</i>
<i>Moderately increasing</i>	57	33	57	147	<i>Frequency</i>
	38.78	33.45	38.78	100	<i>In %</i>
<i>Sharply increasing</i>	97	67	26	190	<i>Frequency</i>
	51.05	35.26	13.68	100	<i>In %</i>
<b><i>Total responses</i></b>	189	138	141	468	<i>Frequency</i>
	40.38	29.49	30.13	100	<i>In %</i>

## 5.2. Regression Analysis

Using Stata software, the following results show the regression analysis to explore the determinants of perceived inflation among households in Turkey, Morocco, and Italy. Utilizing OLS regression and ordered probit, the influence of the explanatory variables of perceived inflation is quantified.

### 5.2.1. Case of Turkey II

Table 5.7 below represents the OLS regression estimated with Stata software. It indicates the coefficients, the standard errors, the number of observations, F-statistic, R-squared, Adjusted R-squared, Durbin Watson, Mean-Variance Inflation Factor (VIF), p-value (chi-square), and the levels of significance.

The quantitative regression, starting with the age variable, shows that the coefficient for households between 25 and 64 is 1.03 with a standard error of 3.80, which means that this category of households perceives inflation as 1.03 units higher than households aged 24 or younger. However, this coefficient is not statistically significant since the p-value is greater than 0.10. For households aged 65 or older, the coefficient is -3.09 with a standard error of 11.16, which indicates that households aged 65 or older perceive inflation as 3.09 units lower than households aged 24 or younger. However, this result is also not statistically significant since the p-value is greater than 0.10.

Moving to gender variable, the coefficient for female households is 0.30 with a standard error of 2.65. It indicates that female households perceive inflation 0.30 units higher than male households, but the result is not statistically significant since the p-value is higher than 0.10.

For the marital status variable, married households perceive inflation as 1.02 units lower, and divorced households perceive inflation as 0.60 units lower compared to single households. Both results are not statistically significant since their p-values are higher than 0.10.

While analyzing the education variable, households with primary school education or less perceive inflation as 4.34 units higher, and households with high school education perceive inflation level as 2.48 units lower compared to households with a university education or above. However, neither result is statistically significant since their p-values are higher than 0.10.

Moving to the professional status variable, compared to unemployed households, discouraged workers perceive inflation as 2.92 units higher, and retired households perceive inflation as 5.72 units higher. These results are not statistically significant since their p-values are higher than 0.10. However, employed households perceive inflation 9.19 units higher than unemployed households, and this result is statistically significant since its p-value is less than 0.05.

For the living standards variable, households with an income between 17000TL and 34000TL perceive inflation 4.01 units lower than households with an income of 17000TL or less. This result is not statistically significant since its p-value is higher than 0.10. Nonetheless, households with an income between 34000TL and 51000TL perceive inflation as 11.60 units lower than households with an income of 17000TL or less, and it is statistically significant since its p-value is less than 0.01. Additionally, households with an income higher than 51000TL perceive inflation at 23.08 units compared to households with an income of 17000TL or less, and it is statistically significant since its p-value is less than 0.05.

Moving to Saving variable, households who save between 10% and 20% of their income perceive inflation higher than households who save 10% or less of their income, but this result is not statistically significant since its p-value is higher than 0.10. The remaining saving categories are not statistically significant effecting perceived inflation.

While analyzing media influence, households who occasionally check media perceive inflation 2.41 units higher, and households who do not check media perceive inflation 0.79 units lower, compared to households who frequently check media. However, these results are not statistically significant since their p-values are higher than 0.10.

For peers' influence, households who are not affected by their social cycle perceive inflation as 8.97 units lower than households who are significantly affected by their social cycle. This result is statistically significant since its p-value is less than 0.05. Furthermore, households who are moderately affected by their social cycle perceive inflation as 14.65 units lower compared to households who are significantly affected by their social cycle. This result is statistically significant since its p-value is less than 0.01.

For the consumer sentiment index, households who trust the overall economy perceive inflation as 3.44 units lower than households who distrust the overall economy. However, this result is not statistically significant since its p-value is higher than 0.10.

Moving to the memory variable, compared to households who have very accurate memory, households who have moderately accurate memory perceive inflation as 4.60 units lower, and households who do not have accurate memory perceive inflation as 3.29 units lower. However, these results are not statistically significant since their p-values are higher than 0.10.

Focusing on the inflation knowledge variable, compared to households with poor knowledge, households with fair inflation knowledge perceive inflation as 3.80 units higher, and households with good inflation knowledge perceive inflation as 3.09 units higher. Nevertheless, these results are not statistically significant since their p-values are higher than 0.10.

For lagged inflation, for each unit increase in the past perceptions of inflation, there is a 0.68 unit increase in perceived inflation. This result is statistically significant since its p-value is less than 0.01.

The intercept term indicates the average perceived inflation value in case all the explanatory variables are zero. Its value is 54.06 units and is statistically significant since its p-value is less than 0.01.

While analyzing the model fit, the F-statistic with a value of 7.75 and a p-value equal to zero shows that the regression model is statistically significant.

The R-squared suggests that the explanatory variables explain 36% of the variance in perceived inflation. The adjusted R-squared of 31% is a more conservative estimate of the regression model's explanatory power. In fact, this adjustment shows that the additional number of predictors does not have a significant contribution to the explanatory power of the model, assuming that the regression model significantly performs well in explaining the variation in perceived inflation.

Moving to the Durbin-Watson statistic, it is 1.85, which shows that there might not be an autocorrelation in the residuals of the regression analysis since the value is around 2.

The Mean VIF is 1.83, it measures the average multicollinearity in the regression model. Since the value is closer to 1 and far from 5. It assumes a low multicollinearity between the explanatory variables.

While checking for homoscedasticity, the probability associated with the chi-squared test is less than 0.05, which shows the presence of heteroscedasticity in the regression model. Consequently, a correction of heteroskedasticity was required. The White corrected robust variance estimates were employed in order to mitigate the effects of heteroskedasticity on the regression results and improve the reliability of the regression analysis.

**Table 5.7. OLS Regression (Turkey)**

<i>Variables</i>	<i>Perceived inflation (OLS)</i>
<b><i>Age categories</i></b>	
$\leq 24$	ref
$[25,64]$	1.03 (3.80)
$\geq 65$	-3.09 (11.16)
<b><i>Gender</i></b>	
<i>Male</i>	ref

**Table 5.7. (cont.)**

<i>Female</i>	0.30 (2.65)
<b><i>Marital status</i></b>	
<i>Single</i>	ref
<i>Married</i>	-1.02 (3.51)
<i>Divorced</i>	-0.60 (4.67)
<b><i>Education level</i></b>	
<i>Primary school or less</i>	4.34 (4.94)
<i>High school</i>	-2.48 (3.47)
<i>University or above</i>	ref
<b><i>Professional status</i></b>	
<i>Employed</i>	9.19** (3.78)
<i>Unemployed</i>	ref
<i>Discouraged worker</i>	2.94 (5.34)
<i>Retired</i>	5.72 (6.09)
<b><i>Living standard</i></b>	
<i>17000TL or less</i>	ref
<i>]17000, 34000]</i>	-4.01 (3.60)
<i>]34000, 51000]</i>	-11.60** (4.54)
<i>Higher than 51000</i>	-23.08* (12.50)

**Table 5.7. (cont.)**

<b><i>Saving</i></b>	
<i>10% or less</i>	ref
<i>10%-20% of income</i>	-6.04
	(3.77)
<i>20%-30% of income</i>	-3.47
	(3.98)
<i>30%-40% of income</i>	-4.02
	(6.37)
<i>Higher than 40%</i>	3.04
	(7.82)
<b><i>Media influence</i></b>	
<i>Frequently</i>	ref
<i>Occasionally</i>	2.41
	(2.96)
<i>Never</i>	-0.79
	(6.92)
<b><i>Peers' influence</i></b>	
<i>No effect</i>	-8.97*
	(5.10)
<i>Moderate effect</i>	-14.65***
	(3.77)
<i>Significant effect</i>	ref
<b><i>Consumer Sentiment Index</i></b>	
<i>Trust</i>	-3.44
	(2.90)
<i>Distrust</i>	
	ref
<b><i>Memory</i></b>	
<i>Very accurate</i>	ref

**Table 5.7. (cont.)**

<i>Moderately accurate</i>	-4.70
	(4.59)
<i>Not accurate</i>	-3.29
	(5.41)
<b><i>Inflation knowledge</i></b>	
<i>Poor</i>	ref
<i>Fair</i>	3.80
	(3.64)
<i>Good</i>	3.09
	(3.44)
<b><i>Lagged inflation</i></b>	0.68***
	(0.06)
<b><i>Constant</i></b>	54.06***
	(8.48)
<b><i>Number of observations</i></b>	404
<b><i>F (27, 376)</i></b>	7.75
<b><i>Prob (F-statistic)</i></b>	0.00
<b><i>R-squared</i></b>	0.36
<b><i>Adjusted R-squared</i></b>	0.31
<b><i>Durbin-Watson</i></b>	1.85
<b><i>Mean VIF</i></b>	1.83
<b><i>Chi-squared</i></b>	145.79
<b><i>Prob (Chi-squared)</i></b>	0.00

The level of significance: \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%

Table 5.8. below represents the ordered probit estimated with Stata software for Turkish households. It shows the coefficients (probabilities), the standard error, the Wald Chi-square, and the Pseudo R-squared. The ordered probit model is a good choice for the nature of the dependent variable since perceived inflation is split into three categories: households who perceive price changes as stable, moderate, or sharp. Besides, the ordered probit model is robust to the assumption of normally distributed

errors, assuming that it handles any shape of the data utilized. Additionally, this regression model will enable the comparison of the consistency of results with the multiple regression and will enhance the robustness of the findings.

For the variable age, households aged between 25 and 64 are less likely to perceive prices as moderately or sharply increasing compared to households aged 24 or below, with a probability of -0.04 and a standard error of 0.22. Additionally, households aged 65 and above are also less likely to perceive prices as moderately or sharply increasing compared to households aged 24 or below, with a probability of -0.26 and a standard error of 0.27. However, these results are not statistically significant since their p-values are higher than 0.10.

For the gender variable, female households are less likely to perceive prices as moderately or sharply increasing compared to male households, with a probability of -0.12 and a standard error of 0.15, but the result is not statistically significant.

For the variable marital status, married households are more likely to perceive prices as moderately or sharply increasing compared to single households, with a probability of 0.23 and a standard error of 0.21. Besides, divorced households are more likely to perceive prices as moderately or sharply increasing compared to single households, with a probability of 0.15 and a standard error of 0.25. These results are not statistically significant since their p-values are more than 0.10.

For the variable education, households with a primary school education or less are more likely to perceive prices as moderately or sharply increasing compared to households with a university education or above, with a probability of 0.52 and a standard error of 0.31. This result is statistically significant since its p-value is less than 0.10.

For the profession status variable, employed households and retired households are more likely to perceive prices as moderately or sharply increasing compared to unemployed households. However, discouraged workers are less likely to perceive prices as moderately or sharply increasing compared to unemployed households. These results are not statistically significant.

For living standard variable, households with higher income than 51000TL are more likely to perceive prices as moderately or sharply increasing compared to households with an income less than the minimum wage, with a probability of 1.47 and a standard error of 0.87. This result is statistically significant since at 10% level.

Analyzing saving, households who save between 30% and 40% of their income are more likely to perceive prices as moderately or sharply increasing compared to households who save less than 10% of their income, with a probability of -0.50 and a standard error of 0.28. Additionally, households who save higher than 40% of their income are less likely to perceive prices as moderately or sharply increasing compared to households who save less than 10% of their income, with a probability of 0.66 and a standard error of 0.41. these results are statistically significant since they are at the 10% level.

Moving to media influence, households who occasionally check media are less likely to perceive prices as moderately or sharply increasing compared to households who frequently check media, with a probability of -0.39 and a standard error of 0.16. This result is statistically significant since its p-value is less than 0.01.

Focusing on peers' influence, households who are moderately affected by their social circle are less likely to perceive prices as moderately or sharply increasing compared to households who are not affected by their social circle, with a probability of -0.73 and a standard error of 0.21. This result is statistically significant since its p-value is less than 0.01.

For the consumer sentiment index, households who trust the overall economy are less likely to perceive prices as moderately or sharply increasing compared to households who distrust the overall economy. However, this result is not statistically significant.

For variable memory, households with moderately accurate memory are less likely to perceive prices as moderately or sharply increasing compared to households with very accurate memory. However, households who do not have accurate memory are more likely to perceive prices as moderately or sharply increasing compared to households who have very accurate memory. These results are not statistically significant.

For the variable inflation knowledge, households with fair inflation knowledge are less likely to perceive prices as moderately or sharply increasing compared to households with poor inflation knowledge, with a probability of -0.50 and a standard error of 0.18. This result is statistically significant at 1% level.

For lagged perceived inflation, households who perceive prices of the previous year as stable are less likely to perceive prices as moderately or sharply increasing compared to households who perceive prices of the previous year as sharp, with a probability of -0.56 and a standard error of 0.25. The result is statistically significant since its p-value is less than 0.01.

The cut points are the thresholds between different levels of perceived inflation. For instance, households are more likely to perceive prices as moderately increasing instead of stable if their perception score falls below -3.28 and are more likely to perceive prices as sharply increasing rather than moderately increasing if their score falls between -1.56 and -3.28.

While analyzing the model fit, the Wald Chi-square is 153.88, suggesting that the model is statistically significant overall and that at least one of the explanatory variables has a significant effect on perceived inflation. Moreover, Pseudo R-squared is 0.26, which means that the independent variables explain 26% of the variance in perceived inflation based on the independent variables included in the model.

Heteroskedasticity was addressed in the ordered probit model using robust standard errors in order to ensure the reliability of parameter estimates.

The marginal effect values predict the probability of perceiving prices as stable, moderately increasing, or sharply increasing, according to the effect of the explanatory variable. While analyzing the statistically significant variables, having a primary education or less decreases the probability of feeling that prices are stable with 0.02 (level of significance 5%) compared to having a university education or more. Having an income higher than 51000TL increases the probability of feeling that prices are moderately increasing with 0.26 (level of significance 5%) and decreases the probability of feeling that prices are sharply increasing with 0.41 compared to having

income less than the minimum wage (level of significance 10%). Saving between 30% and 40% of income decreases the probability of feeling that the prices are sharply increasing with 0.13 (level of significance 10%) compared to saving 10% of income. Adding to this, saving more than 40% of income decreases the probability of feeling that prices are stable with 0.02 (level of significance 10%) compared to saving 10% or less of income. Moreover, checking media occasionally increases the probability of feeling that prices are stable by 0.02 (level of significance 5%) compared to frequently checking media, and it decreases the probability of feeling that prices are sharply increasing with 0.10 (level of significance 1%) compared to frequently checking media. Also, moderately being affected by the social circle increases the probability of feeling that prices are stable by 0.16 (level of significance 1%) and decreases the probability of feeling that prices are sharply increasing by 0.01 (level of significance 1%). Additionally, having fair knowledge of inflation concepts increases the probability of feeling that prices are increasing sharply with 0.13 (level of significance 1%) and decreases the probability of feeling that prices are stable with 0.13 (level of significance 1%) compared to having poor knowledge of inflation concepts. Besides, feeling that prices of the previous year are stable increases the probability of feeling that prices are stable with 0.19 (level of significance 1%), increases the probability of feeling that prices are moderately increasing with 0.25 (level of significance 1%), and decreases the probability of feeling that prices are sharply rising by 0.45 (level of significance 1%) compared to feeling that prices of the previous year are sharply rising.

**Table 5.8. Ordered Probit (Turkey)**

<i>Variables</i>	<i>Perceived inflation</i>	<i>Stable</i>	<i>Moderately increasing</i>	<i>Sharply increasing</i>
	<i>Ordered probit</i>	<i>Marginal effect</i>		
<i>Age categories</i>				
$\leq 24$	ref	ref	ref	ref
$[25,64]$	-0.04 (0.22)	0.002 (0.01)	0.008 (0.04)	-0.01 (0.05)
$\geq 65$	-0.26 (0.57)	0.02 (0.04)	0.05 (0.11)	-0.07 (0.15)

**Table 5.8. (cont.)**

<b><i>Gender</i></b>				
Male	ref	ref	ref	ref
Female	-0.12 (0.15)	0.006 (0.008)	0.02 (0.03)	-0.03 (0.04)
<b><i>Marital status</i></b>				
Single	ref	ref	ref	ref
Married	0.23 (0.21)	-0.01 (0.01)	-0.04 (0.04)	0.05 (0.05)
Divorced	0.15 (0.25)	-0.008 (0.01)	-0.03 (0.07)	0.04 (0.06)
<b><i>Education level</i></b>				
Primary school or less	0.52* (0.31)	-0.02** (0.009)	-0.09* (0.05)	0.11* (0.06)
High school	-0.11 (0.18)	0.006 (0.01)	0.02 (0.04)	-0.03 (0.05)
University or above	ref	ref	ref	ref
<b><i>Professional status</i></b>				
Employed	0.19 (0.20)	-0.009 (0.01)	-0.04 (0.04)	0.05 (0.05)
Unemployed	ref	ref	ref	ref
Discouraged worker	-0.27 (0.29)	0.02 (0.02)	0.06 (0.06)	-0.07 (0.08)
Retired	0.14 (0.29)	-0.007 (0.02)	-0.03 (0.06)	0.03 (0.07)
<b><i>Living standard</i></b>				
17000TL or less	ref	ref	ref	ref
]17000, 34000]	-0.32 (0.20)	0.02 (0.009)	0.06 (0.04)	-0.08 (0.05)
]34000, 51000]	-0.18 (0.29)	0.008 (0.01)	0.04 (0.06)	-0.04 (0.07)

**Table 5.8. (cont.)**

<i>Higher than 51000</i>	-1.47* (0.87)	0.15 (0.16)	0.26** (0.09)	-0.41* (0.25)
<b><i>Saving</i></b>				
<i>10% or less</i>	ref	ref	ref	ref
<i>10%-20% of income</i>	-0.25 (0.22)	0.01 (0.01)	0.05 (0.04)	-0.06 (0.06)
<i>20%-30% of income</i>	-0.08 (0.20)	0.004 (0.01)	0.01 (0.04)	-0.02 (0.08)
<i>30%-40% of income</i>	-0.50* (0.28)	0.03 (0.02)	0.01* (0.06)	-0.13* (0.08)
<i>Higher than 40%</i>	0.66* (0.41)	-0.02* (0.01)	-0.11* (0.06)	0.13* (0.06)
<b><i>Media influence</i></b>				
<i>Frequently</i>	ref	ref	ref	ref
<i>Occasionally</i>	-0.39*** (0.16)	0.02** (0.01)	0.08** (0.03)	-0.10*** (0.04)
<i>Never</i>	0.22 (0.41)	-0.008 (0.01)	-0.04 (0.07)	0.05 (0.08)
<b><i>Peers' influence</i></b>				
<i>No effect</i>	-0.02 (0.35)	0.0006 (0.01)	0.004 (0.06)	-0.005 (0.07)
<i>Moderate effect</i>	-0.73*** (0.21)	0.03*** (0.01)	0.01*** (0.03)	-0.01*** (0.04)
<i>Significant effect</i>	ref	ref	ref	ref
<b><i>Consumer Sentiment Index</i></b>				
<i>Trust</i>	-0.05 (0.15)	0.002 (0.008)	0.01 (0.03)	-0.01 (0.04)
<i>Distrust</i>	ref	ref	ref	ref

**Table 5.8. (cont.)**

<b>Memory</b>				
<i>Very accurate</i>	ref	ref	ref	ref
<i>Moderately accurate</i>	-0.08	0.004	0.02	-0.02
	(0.32)	(0.02)	(0.06)	(0.08)
<i>Not accurate</i>	0.30	-0.01	-0.05	0.07
	(0.39)	(0.02)	(0.07)	(0.09)
<b>Inflation knowledge</b>				
<i>Poor</i>	ref	ref	ref	ref
<i>Fair</i>	-0.50***	0.03**	0.01***	-0.13***
	(0.18)	(0.01)	(0.04)	(0.05)
<i>Good</i>	0.02	-0.0007	-0.003	0.004
	(0.19)	(0.008)	(0.04)	(0.04)
<b>Lagged perceived inflation</b>				
<i>Stable</i>	-0.56***	0.19***	0.25***	-0.45***
	(0.25)	(0.05)	(0.05)	(0.07)
<i>Moderate</i>	0.14	-0.005	-0.03	0.03
	(0.17)	(0.006)	(0.04)	(0.04)
<i>Sharpe</i>	ref	ref	ref	ref
<b>Cut point 1</b>	-3.28			
	(0.48)			
<b>Cut point 2</b>	-1.56			
	(0.46)			
<b>Probability</b>		0.03	0.24	0.73
<b>Wald Chi-square</b>	153.88			
<b>Pseudo R-squared</b>	0.26			

The level of significance: \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%

While comparing the significant variables resulting from the multiple regression and the ordered probit model, the multiple regression analysis indicates profession status, living standard, peers' influence, and lagged perceived inflation as statistically significant variables, while the ordered probit analysis suggests education level, living standard, saving, media influence, peers' influence, inflation knowledge, and lagged perceived inflation as significant variables. This difference is due to different assumptions for each model. In fact, the multiple regression model assumes a linear relationship between the dependent and the explanatory variables. However, the ordered probit model assumes an ordinal relationship and models the probabilities of the observation within the categories of the dependent variable. Therefore, explanatory variables that have a linear relationship with the dependent variable are significant in the multiple regression results, and the explanatory variables that have a monotonic relationship with the dependent variable are significant in the ordered probit results.

### **5.2.2. Case of Morocco II**

Table 5.9 below represents the OLS regression estimated with Stata software. It indicates the coefficients, the standard errors, the number of observations, F-statistic, R-squared, Adjusted R-squared, Durbin Watson, Mean-Variance Inflation Factor (VIF), p-value (chi-square), and the levels of significance.

From the quantitative regression, starting with the age variable, households aged between 25 and 64 perceive inflation 2.58 units lower compared to households aged 24 or below with a standard error of 5.47. In contrast, this result is not statistically significant since its p-value is less than 0.10. Besides, households aged 65 and above perceive inflation 2.07 units higher than households aged 24 or below with a standard error of 10.40, but this result is not statistically significant.

For the variable gender, female households perceive inflation as 2.73 units lower than male households, with a standard error of 2.62. Conversely, this result is not statistically significant.

For the variable marital status, married households perceive inflation 5.02 units higher than single households, with a standard error of 3.61. This result is statistically significant since its p-value is less than 0.10.

Regarding education level, households who have a high school education perceive inflation as 0.49 units lower than households who have a university education or above, with a standard error of 3.00. This result is statistically significant since its p-value is less than 0.05.

For professional status, employed households perceive inflation as 0.27 units lower compared to unemployed individuals, with a standard error of 3.40. Besides, retired households perceive inflation as 2.33 units lower than unemployed households, with a standard error of 6.13. However, these results are not statistically significant. Conversely, discouraged workers perceive inflation as 7.25 units higher than unemployed households, with a standard error of 4.02. This result is statistically significant since its p-value is less than 0.10.

Regarding living standards, households who earn an income between 3300 MAD and 6600 MAD perceive inflation as 3.87 units higher compared to households who earn an income of 3300 MAD or less with a standard error of 3.69. This result is statistically significant since its p-value is less than 0.10. Additionally, households who earn an income between 6600 MAD and 9900 MAD perceive inflation 7.83 units higher compared to households who earn an income of 3300 MAD or less with a standard error of 4.17. This result is statistically significant since its p-value is less than 0.05.

For the variable saving, households who save between 20% and 30% of their income perceive inflation 8.53 units lower compared to households saving 10% or less of their income, with a standard error of 3.76. This result is statistically significant since its p-value is less than 0.05. Moreover, households who save more than 40% of their income perceive inflation 6.91 units lower compared to households saving 10% or less of their income, with a standard error of 5.43. However, this result is not statistically significant since its p-value is greater than 0.10.

For media influence, households occasionally checking media perceive inflation as 1.03 units higher compared to households who frequently check media, with a standard error of 2.87. However, this result is not statistically significant since its p-value is greater than 0.10. On the other hand, households who never check media perceive inflation as 9.44 units higher than households frequently checking media, with a standard error of 3.70. This result is statistically significant at a level of 5%.

Focusing on peers' influence, households who are not affected by their social circle perceive inflation as 6.35 lower than households who are significantly affected by their social circle, with a standard error of 4.10. Besides, households who are moderately affected by their social circle perceive inflation as 3.48 units lower than households who are significantly affected by their social science, with a standard error of 3.58. However, these results are not statistically significant.

Regarding the consumer sentiment index, households who trust the overall economy perceive inflation 4.57 units lower than households who distrust the overall economy, with a standard error of 2.54. This result is significant at the 10% level.

For the memory variable, households who have moderately accurate memory perceive inflation 5.65 units higher than households who have very accurate memory, with a standard error of 3.65. Additionally, households who do not have accurate memory perceive inflation 0.26 units higher than households who have very accurate memory, with a standard error of 3.46. Conversely, these results are not statistically significant.

Regarding inflation knowledge, households with good inflation knowledge perceive inflation as 9.16 units higher than households with poor inflation knowledge, with a standard error of 3.05. This result is statistically significant since its p-value is less than 0.01.

For lagged inflation, past perception of prices increases perceived inflation by 0.35, with a standard error of 0.05. This result is statistically significant at a level of 1%.

While analyzing the model fit, the F-statistic with a value of 5.11 and a p-value equal to zero shows that the regression model is statistically significant.

The R-squared suggests that the explanatory variables explain 22% of the variance in perceived inflation. The adjusted R-squared of 17% is a more conservative estimate of the regression model's explanatory power. In fact, this adjustment shows that the additional number of predictors does not have a significant contribution to the explanatory power of the model, assuming that the regression model significantly performs well in explaining the variation in perceived inflation.

Moving to the Durbin-Watson statistic, it is 1.69, which shows that there might not be an autocorrelation in the residuals of the regression analysis since the value is around 2.

The Mean VIF is 1.66, it measures the average multicollinearity in the regression model. Since the value is closer to 1 and far from 5. It assumes a low multicollinearity between the explanatory variables.

While checking for homoscedasticity, the probability associated with the chi-squared test is 0.01, which is less than 0.05, which shows the presence of heteroscedasticity in the regression model. Consequently, a correction of heteroskedasticity was required. The White corrected robust variance estimates were employed in order to mitigate the effects of heteroskedasticity on the regression results and improve the reliability of the regression analysis.

**Table 5.9. OLS Regression (Morocco)**

<i>Variables</i>	<i>Perceived inflation (OLS)</i>
<b><i>Age categories</i></b>	
<i>≤24</i>	ref
<i>[25,64]</i>	-2.58 (5.47)
<i>≥65</i>	2.07 (10.40)
<b><i>Gender</i></b>	
<i>Male</i>	ref

**Table 5.9. (cont.)**

<i>Female</i>	-2.73 (2.62)
<b><i>Marital status</i></b>	
<i>Single</i>	ref
<i>Married</i>	5.02 (3.61)
<i>Divorced</i>	10.15** (4.41)
<b><i>Education level</i></b>	
<i>Primary school or less</i>	-0.95 (4.72)
<i>High school</i>	-0.49* (3.00)
<i>University or above</i>	ref
<b><i>Professional status</i></b>	
<i>Employed</i>	-0.27 (3.40)
<i>Unemployed</i>	ref
<i>Discouraged worker</i>	7.25* (4.02)
<i>Retired</i>	-2.33 (6.13)
<b><i>Living standard</i></b>	
<i>3300 MAD or less</i>	ref
<i>]3300, 6600]</i>	3.87 (3.69)
<i>]6600, 9900]</i>	7.83* (4.17)
<i>Higher than 9900</i>	3.57 (6.19)
<b><i>Saving</i></b>	

**Table 5.9. (cont.)**

<i>10% or less</i>	ref
<i>10%-20% of income</i>	-3.31
	(3.42)
<i>20%-30% of income</i>	-8.53*
	(3.76)
<i>30%-40% of income</i>	1.62
	(5.05)
<i>Higher than 40%</i>	-6.91
	(5.43)
<b><i>Media influence</i></b>	
<i>Frequently</i>	ref
<i>Occasionally</i>	1.03
	(2.87)
<i>Never</i>	9.44**
	(3.70)
<b><i>Peers' influence</i></b>	
<i>No effect</i>	-6.35
	(4.10)
<i>Moderate effect</i>	-3.48
	(3.58)
<i>Significant effect</i>	ref
<b><i>Consumer Sentiment Index</i></b>	
<i>Trust</i>	-4.57*
	(2.54)
<i>Distrust</i>	
	ref
<b><i>Memory</i></b>	
<i>Very accurate</i>	ref
<i>Moderately accurate</i>	5.65

**Table 5.9. (cont.)**

	(3.65)
<i>Not accurate</i>	0.26
	(3.46)
<b><i>Inflation knowledge</i></b>	
<i>Poor</i>	ref
<i>Fair</i>	2.96
	(3.13)
<i>Good</i>	9.16***
	(3.05)
<b><i>Lagged inflation</i></b>	0.35***
	(0.05)
<b><i>Constant</i></b>	17.42***
	(6.31)
<b><i>Number of observations</i></b>	458
<b><i>F (27, 430)</i></b>	5.11
<b><i>Prob (F-statistic)</i></b>	0.00
<b><i>R-squared</i></b>	0.22
<b><i>Adjusted R-squared</i></b>	0.17
<b><i>Durbin-Watson</i></b>	1.69
<b><i>Mean VIF</i></b>	1.66
<b><i>Chi-squared</i></b>	7.72
<b><i>Prob (Chi-squared)</i></b>	0.01

The level of significance: \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%

Table 5.10 below represents the ordered probit estimated with Stata software for Moroccan households. It shows the coefficients (probabilities), the standard error, the Wald Chi-square, and the Pseudo R-squared.

For the variable age, households aged between 25 and 64 are less likely to perceive inflation as increasing compared to individuals aged 24 or below, with a probability of -0.43 and a standard error of 0.21. This result is statistically significant since its p-

value is less than 0.05. Besides, households aged 65 and above perceive inflation as less likely to increase, but the result is not statistically significant since its p-value is less than 0.10.

For the gender variable, female households are less likely to perceive inflation as increasing compared to male households, with a probability of -0.11 and a standard error of 0.11. However, the result is not statistically significant.

For the variable marital status, married households are more likely to perceive inflation as increasing compared to single households, with a probability of 0.25 and a standard error of 0.16. Additionally, divorced households have a similar trend, with a probability of 0.23. However, neither result is statistically significant since their p-values are greater than 0.10.

Education level has a minimal effect since the values of the coefficients are almost zero for both categories, and both are not statistically significant since their p-values are greater than 0.10.

Regarding employment status, employed households are more likely to perceive inflation as increasing compared to unemployed households, with a probability of 0.15 and a standard error of 0.15.

Moving to living standards, households who earn higher incomes tend to perceive inflation as more likely to increase, with the probability slightly rising as income increases. However, the results are not statistically significant since their p-values are greater than 0.10.

For the variable saving, households who save between 20% and 30% of their income are less likely to perceive inflation as increasing, with a probability of -0.28 and a standard error of 0.16. This result is statistically significant since its p-value is less than 0.05.

For media influence and memory, the variable indicates mixed effects, with probabilities close to zero for many categories. The results are not statistically significant.

Moving to peers' influence, households who are not affected by their social circle are less likely to perceive inflation as increasing compared to households who are significantly affected by their social circle, with a probability of -0.50 and a standard error of 0.18. Additionally, households who are moderately affected by their social cycle are less likely to perceive inflation as increasing compared to households who are significantly affected by their social circle, with a probability of -0.37 and a standard error of 0.14. These results are statistically significant since their p-values are less than 0.01.

Regarding the consumer sentiment index, households who trust the overall economy are less likely to perceive inflation as increasing compared to households who distrust the overall economy, with a probability of -0.29 and a standard error of 0.11. This result is statistically significant since its p-value is less than 0.01.

Concerning inflation knowledge, households who have good inflation knowledge are more likely to perceive inflation as increasing compared to households who have poor inflation knowledge, with a probability of 0.29 and a standard error of 0.13. This result is statistically significant since its p-value is less than 0.05.

Moving to lagged perceived inflation, households who perceive past prices as stable are less likely to perceive inflation as increasing compared to households who perceive inflation as sharply increasing, with a probability of -0.43 and a standard error of 0.16. This result is statistically significant since its p-value is less than 0.01. Meanwhile, households who perceive past prices as moderately increasing are less likely to perceive inflation as increasing compared to households who perceive inflation as sharply increasing, with a probability of -0.26 and a standard error of 0.14. This result is statistically significant since its p-value is less than 0.10.

The cut points are the thresholds between different levels of perceived inflation. For instance, households are more likely to perceive prices as moderately increasing rather

than stable if their perception score exceeds -1.61 and are more likely to perceive prices as sharply increasing rather than moderately increasing if their score exceeds 0.06.

While analyzing the model fit, the Wald Chi-square is 62.37, suggesting that the model is statistically significant overall and that at least one of the explanatory variables has a significant effect on perceived inflation. Moreover, Pseudo R-squared is 0.07, which means that the independent variables explain 7% of the variance in perceived inflation based on the independent variables included in the model.

Heteroskedasticity was addressed in the ordered probit model using robust standard errors in order to ensure the reliability of parameter estimates.

The marginal effect values predict the probability of perceiving prices as stable, moderately increasing, or sharply increasing, according to the effect of the explanatory variable. While analyzing the statistically significant variables, being between 25 and 64 years old increases the probability of feeling that prices are stable with 0.10 (level of significance 5%) compared to being younger than 25, and it decreases the probability of feeling that prices are sharply increasing with 0.32 (level of significance 5%) compared to being younger than 25. Being married increases the probability of feeling that the prices are sharply increasing with 0.07 (level of significance 10%) and decreases the probability of feeling that the prices are stable with 0.08 (level of significance 10%) compared to being single. Being a discouraged worker increases the probability of feeling that the prices are sharply increasing by 0.13 (level of significance 1%), and it decreases the probability of feeling that the prices are stable by 0.12 (level of significance 1%) compared to being unemployed. Adding to this, making a saving between 20% and 30% increases the probability of feeling that prices are stable by 0.08 (level of significance 10%) and decreases the probability of feeling that prices are sharply increasing by 0.07 (level of significance 10%). Furthermore, not being affected by the social circle increases the probability of feeling that prices are stable by 0.13 (level of significance 1%), and it decreases the probability of feeling that prices are sharply rising by 0.15 (level of significance 1%) compared to significantly being affected by the social circle. Also, moderately being affected by the social circle increases the probability of feeling that prices are stable by 0.09 (level of significance 1%) and decreases the probability of feeling that prices are sharply

increasing by 0.15 (level of significance 1%). Moreover, trusting the overall economy increases the probability of feeling that prices are stable with 0.07 (level of significance 1%) and decreases the probability of feeling that prices are sharply rising with 0.08 (level of significance 5%) compared to distrusting the overall economy. Not having an accurate memory increases the probability of feeling that prices are stable with 0.08 (level of significance 10%) compared to having an accurate memory. Additionally, having good knowledge of inflation concepts increases the probability of feeling that prices are increasing sharply with 0.08 (level of significance 5%) and decreases the probability of feeling that prices are stable with 0.08 (level of significance 5%) compared to having poor knowledge of inflation concepts. Finally, feeling that prices of the previous year are stable increases the probability of feeling that prices are stable with 0.11 (level of significance 1%) and decreases the probability of feeling that prices are sharply rising by 0.12 (level of significance 1%) compared to feeling that prices of the previous year are sharply rising. Besides, feeling that prices of the previous year are moderately increasing increases the probability of feeling that prices are stable with 0.06 (level of significance 10%) and decrease the probability of feeling that prices are sharply rising by 0.08 (level of significance 10%) compared to feeling that prices of the previous year are sharply rising.

**Table 5.10. Ordered Probit (Morocco)**

<i>Variables</i>	<i>Perceived inflation</i>	<i>Stable</i>	<i>Moderately increasing</i>	<i>Sharply increasing</i>
	<i>Ordered probit</i>	<i>Marginal effect</i>		
<i>Age categories</i>				
$\leq 24$	ref	ref	ref	ref
$[25,64]$	-0.43** (0.21)	0.10** (0.04)	0.03 (0.03)	-0.32** (0.07)
$\geq 65$	-0.18 (0.43)	0.04 (0.09)	0.02 (0.05)	-0.06 (0.14)
<i>Gender</i>				
Male	ref	ref	ref	ref

**Table 5.10. (cont.)**

Female	-0.11 (0.11)	0.03 (0.03)	0.001 (0.01)	-0.03 (0.03)
<b>Marital status</b>				
<i>Single</i>	ref	ref	ref	ref
<i>Married</i>	0.25* (0.16)	-0.07 (0.05)	0.003 (0.008)	0.07* (0.04)
<i>Divorced</i>	0.23 (0.19)	-0.06 (0.05)	0.003 (0.008)	0.06 (0.05)
<b>Education level</b>				
<i>Primary school or less</i>	-0.05 (0.20)	0.01 (0.06)	0.0003 (0.001)	-0.01 (0.06)
<i>High school</i>	-0.03 (0.12)	0.007 (0.03)	0.0002 (0.001)	-0.007 (0.03)
<i>University or above</i>	ref	ref	ref	ref
<b>Professional status</b>				
<i>Employed</i>	0.15 (0.15)	-0.04 (0.04)	0.003 (0.006)	0.04 (0.04)
<i>Unemployed</i>	ref	ref	ref	ref
<i>Discouraged worker</i>	0.45*** (0.17)	-0.12*** (0.04)	-0.02 (0.02)	0.13*** (0.05)
<i>Retired</i>	-0.10 (0.28)	0.03 (0.09)	-0.007 (0.02)	-0.02 (0.05)
<b>Living standard</b>				
<i>Less than 3300</i>	ref	ref	ref	ref
<i>[3300,6600[</i>	0.10 (0.16)	-0.03 (0.05)	0.0004 (0.003)	0.02 (0.05)
<i>[6600,9900]</i>	0.09 (0.19)	-0.02 (0.05)	0.0003 (0.003)	0.02 (0.05)
<i>Higher than 9900</i>	0.23 (0.28)	-0.06 (0.07)	-0.005 (0.01)	0.06 (0.08)

**Table 5.10. (cont.)**

<b><i>Saving</i></b>				
<i>10% or less</i>	ref	ref	ref	ref
<i>10%-20% of income</i>	-0.16 (0.15)	0.04 (0.04)	0.002 (0.004)	-0.04 (0.04)
<i>20%-30% of income</i>	-0.28* (0.16)	0.08* (0.04)	-0.002 (0.01)	-0.07* (0.04)
<i>30%-40% of income</i>	0.23 (0.25)	-0.05 (0.05)	-0.02 (0.03)	0.07 (0.08)
<i>Higher than 40%</i>	-0.24 (0.26)	0.07 (0.08)	-0.0001 (0.01)	-0.07 (0.07)
<b><i>Media influence</i></b>				
<i>Frequently</i>	ref	ref	ref	ref
<i>Occasionally</i>	0.11 (0.12)	-0.03 (0.03)	0.00003 (0.003)	0.03 (0.03)
<i>Never</i>	0.22 (0.16)	-0.06 (0.04)	-0.005 (0.009)	0.06 (0.05)
<b><i>Peers' influence</i></b>				
<i>No effect</i>	-0.50*** (0.18)	0.13*** (0.05)	0.02 (0.02)	-0.15*** (0.02)
<i>Moderate effect</i>	-0.37*** (0.14)	0.09*** (0.03)	0.02 (0.02)	-0.15** (0.05)
<i>Significant effect</i>	ref	ref	ref	ref
<b><i>Consumer Sentiment Index</i></b>				
<i>Trust</i>	-0.29*** (0.11)	0.07*** (0.03)	0.008 (0.007)	-0.08** (0.03)
<i>Distrust</i>	ref	ref	ref	ref
<b><i>Memory</i></b>				
<i>Very accurate</i>	ref	ref	ref	ref

**Table 5.10. (cont.)**

<i>Moderately accurate</i>	0.02	-0.005	-0.001	0.007
	(0.17)	(0.04)	(0.01)	(0.05)
<i>Not accurate</i>	-0.28*	0.08*	0.002	-0.08
	(0.17)	(0.04)	(0.01)	(0.05)
<b><i>Inflation knowledge</i></b>				
<i>Poor</i>	ref	ref	ref	ref
<i>Fair</i>	0.18	-0.05	0.002	0.05
	(0.14)	(0.04)	(0.005)	(0.04)
<i>Good</i>	0.29**	-0.08**	-0.003	0.08**
	(0.13)	(0.03)	(0.007)	(0.04)
<b><i>Lagged perceived inflation</i></b>				
<i>Stable</i>	-0.43***	0.11***	0.007	-0.12***
	(0.16)	(0.04)	(0.013)	(0.05)
<i>Moderate</i>	-0.26*	0.06*	0.013	-0.08*
	(0.14)	(0.03)	(0.01)	(0.04)
<i>Sharpe</i>	ref			
<b><i>Cut point 1</i></b>	-1.61			
	(0.31)			
<b><i>Cut point 2</i></b>	0.06			
	(0.30)			
<b><i>Probability</i></b>		0.21	0.56	0.23
<b><i>Wald Chi-square</i></b>	62.37			
<b><i>Pseudo R-squared</i></b>	0.07			

The level of significance: \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%

While comparing the significant variables resulting from the multiple regression and the ordered probit model, the multiple regression analysis indicates marital status, education level, professional status, living standard, saving, media influence, consumer sentiment index, inflation knowledge, and lagged perceived inflation as

statistically significant variables, while the ordered probit analysis suggests age, marital status, profession status, saving, peers' influence, consumer sentiment index, memory, inflation knowledge, and lagged perceived inflation as significant variables. This difference is due to different assumptions for each model, linearity for the regression model, and monotony for ordered probit.

### **5.2.3. Case of Italy II**

Table 5.11. below represents the OLS regression estimated with Stata software. It indicates the coefficients, the standard errors, the number of observations, F-statistic, R-squared, Adjusted R-squared, Durbin Watson, Mean-Variance Inflation Factor (VIF), p-value (chi-square), and the levels of significance.

From the quantitative regression, starting with the age variable, households aged between 25 and 64 perceive inflation 6.53 units higher than households aged 24 or below, with a standard error of 4.47. Meanwhile, households aged 65 and above perceive inflation as 4.5 units lower than households aged 24 or below, with a standard error of 13.52. However, these results are statistically significant, which indicate that inflation perceptions of both age categories do not significantly differ from households aged 24 or below.

For the variable gender, female households tend to perceive inflation 4.63 units higher than male households, with a standard error of 2.85. However, this result is not statistically significant.

Regarding marital status, married households tend to perceive inflation 10.36 units higher than single households, with a standard error of 3.58. This result is statistically significant at 1% level. Additionally, divorced households tend to perceive inflation 10.06 units higher than single households, with a standard error of 4.21. This result is statistically significant at a 5% level.

Moving to education level, households with primary school education or less perceive inflation as 9.73 units compared to households with university or above, with a

standard error of 4.36. This result is statistically significant since its p-value is less than 0.05.

Focusing on professional status, being employed, discouraged workers, or retired have a negative coefficient, which suggests that these categories have lower inflation perceptions compared to being unemployed, although these results are not statistically significant.

For living standards, households who earn an income between 2300EUR and 3450EUR tend to perceive inflation as 8.14 units higher than households who earn an income less than the minimum wage, with a standard error of 4.31. This result is statistically significant at a 10% level.

Regarding saving, households who save between 10% and 20%, or 20% and 30%, or more than 40% of their income have a negative coefficient, which suggests that these categories have lower inflation perceptions compared to households who save 10% or less of their income, although these results are not statistically significant.

Moving to media influence, households who occasionally check media tend to perceive inflation 2.10 units lower than households who frequently check media, with a standard error of 3.32. Besides, households who never check media perceive inflation as 3.17 units lower than households who frequently check media, with a standard error of 3.86. However, these results are not statistically significant.

Regarding peers' influence, households who are not affected by their social circle tend to perceive inflation 2.95 units lower than households who are significantly affected by their social circle, with a standard error of 4.60. Additionally, households who are moderately affected by their social circle tend to perceive inflation as 0.21 compared to households who are significantly affected by their social circle, although these results are not statistically significant.

For consumer sentiment index, households who trust the overall economy tend to perceive inflation 3.06 units lower compared to households who distrust the overall

economy, with a standard error of 2.93, although this result is not statistically significant.

For the memory variable, households who do not have accurate memory perceive inflation as 8.95 lower than households who have very accurate memory, with a standard error of 4.41. This result is statistically significant at 5% level.

Regarding inflation knowledge, households with fair inflation knowledge tend to perceive inflation 7.93 units higher than households with poor inflation knowledge, with a standard error of 3.72. This result is statistically significant since its p-value is less than 5%. Additionally, households with good inflation knowledge tend to perceive inflation as 8.00 units higher compared to households with poor inflation knowledge, with a standard error of 3.34. This result is statistically significant at 1% level.

Moving to lagged inflation, past perceptions of prices decrease perceived inflation by 0.11, with a standard error of 0.05. this result is statistically significant since its p-value is less than 1%.

While analyzing the model fit, the F-statistic with a value of 2.13 and a p-value equal to 0.001 shows that the regression model is statistically significant.

The R-squared suggests that the explanatory variables explain 12% of the variance in perceived inflation. The adjusted R-squared of 7% is a more conservative estimate of the regression model's explanatory power. In fact, this adjustment shows that the additional number of predictors does not have a significant contribution to the explanatory power of the model, assuming that the regression model significantly performs well in explaining the variation in perceived inflation.

Moving to the Durbin-Watson statistic, it is 1.97, which shows that there might not be an autocorrelation in the residuals of the regression analysis since the value is around 2.

The Mean VIF is 1.44, which measures the average multicollinearity in the regression model. Since the value is closer to 1 and far from 5, it assumes a low multicollinearity between the explanatory variables.

While checking for homoscedasticity, the probability associated with the chi-squared test is 0.35, which is greater than 0.05, which means there is no heteroscedasticity in the regression model.

**Table 5.11. OLS Regression (Italy)**

<i>Variables</i>	<i>Perceived inflation (OLS)</i>
<b><i>Age categories</i></b>	
<i>≤24</i>	ref
<i>[25,64]</i>	6.52 (4.47)
<i>≥65</i>	-4.5 (13.52)
<b><i>Gender</i></b>	
<i>Male</i>	ref
<i>Female</i>	4.63 (2.85)
<b><i>Marital status</i></b>	
<i>Single</i>	ref
<i>Married</i>	10.36*** (3.58)
<i>Divorced</i>	10.06** (4.21)
<b><i>Education level</i></b>	
<i>Primary school or less</i>	9.73** (4.36)
<i>High school</i>	1.94 (3.30)
<i>University or above</i>	ref

**Table 5.11. (cont.)**

<b><i>Professional status</i></b>	
<i>Employed</i>	-1.13 (3.63)
<i>Unemployed</i>	ref
<i>Discouraged worker</i>	-4.53 (4.25)
<i>Retired</i>	-8.37 (6.27)
<b><i>Living standard</i></b>	
<i>1150 or less</i>	ref
<i>]1150, 2300]</i>	3.06 (4.43)
<i>]2300, 3450]</i>	8.14* (4.31)
<i>Higher than 3450</i>	2.51 (5.10)
<b><i>Saving</i></b>	
<i>10% or less</i>	ref
<i>10%-20% of income</i>	-2.40 (4.05)
<i>20%-30% of income</i>	-4.84 (4.25)
<i>30%-40% of income</i>	4.31 (4.63)
<i>Higher than 40%</i>	-0.32 (5.33)
<b><i>Media influence</i></b>	
<i>Frequently</i>	ref
<i>Occasionally</i>	-2.10 (3.32)

**Table 5.11. (cont.)**

<i>Never</i>	3.17
	(3.86)
<b><i>Peers' influence</i></b>	
<i>No effect</i>	-2.95
	(4.60)
<i>Moderate effect</i>	0.21
	(3.70)
<i>Significant effect</i>	ref
<b><i>Consumer Sentiment Index</i></b>	
<i>Trust</i>	-3.06
	(2.93)
<i>Distrust</i>	
	ref
<b><i>Memory</i></b>	
<i>Very accurate</i>	ref
<i>Moderately accurate</i>	-4.59
	(4.17)
<i>Not accurate</i>	-8.95**
	(4.41)
<b><i>Inflation knowledge</i></b>	
<i>Poor</i>	ref
<i>Fair</i>	7.93**
	(3.72)
<i>Good</i>	8.00**
	(3.34)
<b><i>Lagged inflation</i></b>	-0.11**
	(0.05)

**Table 5.11. (cont.)**

<i>Constant</i>	24.63*** (8.16)
<i>Number of observations</i>	468
<i>F (27, 430)</i>	2.13
<i>Prob (F-statistic)</i>	0.001
<i>R-squared</i>	0.12
<i>Adjusted R-squared</i>	0.07
<i>Durbin-Watson</i>	1.97
<i>Mean VIF</i>	1.44
<i>Chi-squared</i>	1.32
<i>Prob (Chi-squared)</i>	0.25

The level of significance: \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%

Table 5.12 below represents the ordered probit estimated with Stata software for Moroccan households. It shows the coefficients (probabilities), the standard error, the Wald Chi-square, and the Pseudo R-squared.

From the quantitative analysis, households aged 65 or above are less likely to perceive prices as increasing compared to households aged 24 or below, with a probability of -5.99 and a standard error of 0.12. This result is statistically significant at a level of 1%.

For the variable gender, female households are less likely to perceive prices as increasing compared to male households, with a probability of -5.99 and a standard error of 0.12. However, this result is not statistically significant.

Regarding marital status, married households show a higher probability of perceiving prices as increasing compared to single households, with a probability of 0.14 and a standard error of 0.14. However, this result is not statistically significant since its p-value is greater than 10%. A similar assumption for divorced households.

For education level, households who have a primary school education or less are more likely to perceive prices as increasing compared to households who have a university education or above, with a probability of 0.37 and a standard error of 0.17. This result is statistically significant since its p-value is less than 5%.

Regarding professional status, neither employed households nor discouraged workers significantly affect inflation perceptions compared to unemployed households since the p-values associated with their coefficients are greater than 10%. Likewise, living standard categories do not show a significant effect on inflation perceptions since their probabilities are not statistically significant. Similar assumptions for the saving variable.

Moving to media influence, households who occasionally check media are less likely to perceive prices as increasing compared to households who frequently check media, with a probability of -0.22 and a standard error of 0.13. This result is statistically significant since its p-value is less than 5%.

Regarding peers' influence, neither households who are not affected by their social circle nor households who are moderately affected by their social circle significantly affect inflation perceptions compared to households who are significantly affected by their social circle since the p-values associated with their coefficients are greater than 10%. Similar assumptions for memory variables.

For the consumer sentiment index, households who trust the overall economy are less likely to perceive prices higher compared to households who distrust the overall economy, with a probability of -0.03 and a standard error of 0.11. This result is not statistically significant since its p-value is higher than 10%.

Regarding inflation knowledge, households with fair inflation knowledge are more likely to perceive prices higher compared to households with poor inflation knowledge, with a probability of 0.41 and a standard error of 0.14. Similarly, households with good inflation knowledge are more likely to perceive prices as increasing compared to households with poor inflation knowledge, with a probability

of 0.48 and a standard error of 0.13. These results are statistically significant since their p-values are less than 1%.

For lagged perceived inflation, households who perceive the price of the previous year as stable are more likely to perceive prices as increasing currently, with a probability of 0.79 and a standard error of 0.14. Similarly, households who perceive the previous year as moderately increasing are more likely to perceive prices as increasing currently, with a probability of 0.48 and a standard error of 0.13. These results are statistically significant since their p-values are less than 1%.

The marginal effect values predict the probability of perceiving prices as stable, moderately increasing, or sharply increasing, according to the effect of the explanatory variable. While analyzing the statistically significant variables, being more than 65 years old increases the probability of feeling that prices are stable with 0.12 (level of significance 1%), decreases the probability of feeling that prices are moderately increasing with 0.30 (level of significance 1%), and decreases the probability of feeling that prices are sharply rising with 0.45 (level of significance 1%) compared to being younger than 25. For having a primary school education or less, it increases the probability of feeling that the prices are sharply increasing by 0.14 (level of significance 5%), it decreases the probability of feeling that the prices are stable by 0.10 (level of significance 5%), and it decreases the probability of feeling that prices are moderately increasing by 0.04 (level of significance 5%) compared to having university education or more. Adding to this, checking media occasionally reduces the feeling that prices are sharply increasing by 0.08 (level of significance 10%) and increases the feeling that prices are stable by 0.07 (level of significance 10%). Additionally, having good knowledge of inflation concepts increases the probability of feeling that prices are increasing sharply with 0.18 (level of significance 1%), increases the feeling that prices are moderately increasing with 0.03 (level of significance 5%), and decreases the probability of feeling that prices are stable with 0.15 (level of significance 1%) compared to having poor knowledge of inflation concepts. Besides, having fair knowledge of inflation concepts increases the probability of feeling that prices are increasing sharply with 0.15 (level of significance 1%) and decreases the probability of feeling that prices are stable with 0.15 (level of significance 1%) compared to having poor knowledge of inflation concepts. Finally,

feeling that prices of the previous year are stable decreases the probability of feeling that prices are stable with 0.27 (level of significance 1%), increases the probability of feeling that prices are moderately increasing with 0.02 (level of significance 10%), and increases the probability of feeling that prices are sharply rising by 0.25 (level of significance 1%) compared to feeling that prices of the previous year are sharply rising. Besides, feeling that prices of the previous year are moderately increasing decreases the probability of feeling that prices are stable with 0.18 (level of significance 1%), increases the probability of feeling that prices are moderately increasing with 0.03 (level of significance 5%), and increases the probability of feeling that prices are sharply rising by 0.14 (level of significance 1%) compared to feeling that prices of the previous year are sharply rising.

The likelihood ratio chi-square (LR Chi2) is 88.24 with a p-value equal to 0, showing that the whole model is statistically significant.

Pseudo R-squared is 0.07, which means that the independent variables explain 7% of the variance in perceived inflation based on the independent variables included in the model.

The two cut points are the intercepts, which indicates that the dependent variable has three categories. For instance, households are more likely to perceive prices as stable if their perceived inflation scores are below 0.20. However, they are more likely to perceive prices as moderately increasing if their perceived inflation scores are between 0.20 and 1.06, while households with perceived inflation scores above 1.06 are more likely to perceive prices as sharply increasing.

**Table 5.12. Ordered Probit (Italy)**

<i>Variables</i>	<i>Perceived inflation</i>	<i>Stable</i>	<i>Moderately increasing</i>	<i>Sharply increasing</i>
	<i>Ordered probit</i>	<i>Marginal effect</i>		
<i>Age categories</i>				

**Table 5.12. (cont.)**

$\leq 24$	ref	ref	ref	ref
$[25,64]$	-0.21 (0.17)	0.01 (0.05)	0.001 (0.01)	-0.01 (0.06)
$\geq 65$	-5.99*** (0.12)	0.75*** (0.06)	-0.30*** (0.02)	-0.45*** (0.07)
<b>Gender</b>				
Male	ref	ref	ref	ref
Female	-0.18 (0.11)	-0.05 (0.03)	-0.01 (0.01)	0.06 (0.04)
<b>Marital status</b>				
Single	ref	ref	ref	ref
Married	0.14 (0.14)	-0.04 (0.04)	-0.01 (0.01)	0.05 (0.05)
Divorced	0.003 (0.16)	-0.001 (0.05)	-0.0001 (0.01)	0.001 (0.06)
<b>Education</b>				
Primary school or less	0.37** (0.17)	-0.10** (0.04)	-0.04 (0.02)	0.14** (0.06)
High school	0.04 (0.13)	-0.01 (0.04)	-0.002 (0.01)	0.02 (0.05)
University or above	ref	ref	ref	ref
<b>Professional status</b>				
Employed	-0.06 (0.14)	0.02 (0.04)	0.005 (0.01)	-0.02 (0.05)
Unemployed	ref	ref	ref	ref
Discouraged worker	-0.03 (0.16)	0.01 (0.05)	0.002 (0.01)	-0.01 (0.06)
Retired	-0.21 (0.25)	0.06 (0.08)	0.01 (0.01)	-0.01 (0.06)
<b>Income</b>				
1150EUR or less	ref	ref	ref	ref

**Table 5.12. (cont.)**

<i>[3300,6600[</i>	0.11 (0.17)	-0.03 (0.05)	-0.01 (0.01)	0.04 (0.06)
<i>]1150, 2300]</i>	0.21 (0.17)	-0.06 (0.05)	-0.01 (0.01)	0.04 (0.06)
<i>Higher than 9900</i>	-0.09 (0.20)	0.03 (0.06)	0.003 (0.01)	-0.03 (0.07)
<b><i>Saving</i></b>				
<i>10% or less</i>	ref	ref	ref	ref
<i>10%-20% of income</i>	-0.05 (0.16)	0.01 (0.05)	0.001 (0.01)	-0.01 (0.06)
<i>20%-30% of income</i>	0.17 (0.18)	0.02 (0.05)	0.003 (0.01)	-0.02 (0.06)
<i>30%-40% of income</i>	0.06 (0.20)	-0.05 (0.05)	-0.01 (0.02)	0.06 (0.07)
<i>Higher than 40%</i>	0.07 (0.20)	-0.02 (0.06)	-0.005 (0.02)	0.02 (0.07)
<b><i>Media influence</i></b>				
<i>Frequently</i>	ref	ref	ref	ref
<i>Occasionally</i>	-0.22* (0.13)	0.07* (0.04)	0.01 (0.01)	-0.08* (0.05)
<i>Never</i>	0.03 (0.15)	-0.01 (0.04)	0.01 (0.01)	-0.01 (0.06)
<b><i>Peers' influence</i></b>				
<i>No effect</i>	-0.16 (0.18)	0.05 (0.05)	0.01 (0.01)	-0.06 (0.07)
<i>Moderate effect</i>	0.03 (0.15)	0.01 (0.04)	0.004 (0.01)	-0.02 (0.05)
<i>Significant effect</i>	ref	ref	ref	ref
<b><i>Consumer Sentiment Index</i></b>				
<i>Trust</i>	-0.03	-0.01	-0.002	0.01

**Table 5.12. (cont.)**

	(0.11)	(0.03)	(0.01)	(0.04)
<i>Distrust</i>	ref	ref	ref	ref
<b>Memory</b>				
<i>Very accurate</i>	ref	ref	ref	ref
<i>Moderately accurate</i>	-0.12	0.03	0.01	-0.04
	(0.17)	(0.05)	(0.01)	(0.06)
<i>Not accurate</i>	-0.10	0.03	0.01	-0.04
	(0.16)	(0.05)	(0.01)	(0.06)
<b>Inflation knowledge</b>				
<i>Poor</i>	ref	ref	ref	ref
<i>Fair</i>	0.41***	-0.13***	-0.02**	0.15***
	(0.14)	(0.04)	(0.02)	(0.05)
<i>Good</i>	0.48***	-0.15***	0.03**	0.18***
	(0.13)	(0.04)	(0.01)	(0.05)
<b>Lagged perceived inflation</b>				
<i>Stable</i>	0.79***	-0.27***	0.02*	0.25***
	(0.14)	(0.05)	(0.01)	(0.04)
<i>Moderate</i>	0.48***	-0.18***	0.03**	0.14***
	(0.13)	(0.05)	(0.01)	(0.04)
<i>Sharpe</i>	ref			
<b>Cut point 1</b>	0.20			
	(0.31)			
<b>Cut point 2</b>	1.06			
	(0.31)			
<b>Probability</b>		0.40	0.30	0.30
<b>Wald Chi-squared</b>	88.24			
<b>Pseudo R-squared</b>	0.09			

The level of significance: \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%

While comparing the significant variables resulting from the multiple regression and the ordered probit model, the multiple regression analysis indicated marital status, education level, living standard, saving, memory, inflation knowledge, and lagged perceived inflation as statistically significant variables, while the ordered probit analysis suggests age, education level, media, inflation knowledge, and lagged perceived inflation as significant variables. This difference is due to different assumptions for each model, linearity for the regression model, and monotony for ordered probit.



## CHAPTER VI

### CONCLUSIONS

The aim of this study is to provide information about the determinants of perceived inflation. The empirical results and analysis are estimated from two regression models. The survey is generated from Turkish, Moroccan, and Italian households. As mentioned, there is a high perceived inflation that deviated from actual inflation on average.

According to the regression models, these are the significant characteristics that drive perceived inflation in the three countries: age, marital status, education level, profession status, living standard, saving, media influence, peers' influence, consumer sentiment index, memory, inflation knowledge, and lagged perceived inflation. However, these variables do not significantly affect inflation perceptions in all the countries, and their behaviors are not the same in each country, as discussed in the key determinants part.

In Turkey, education level, professional status, living standard, media influence, peers' influence, inflation knowledge, and lagged perceived inflation affect the Turkish households' perceived inflation.

In Morocco, age, marital status, education level, professional status, living standard, savings, media influence, peers' influence, consumer sentiment index, memory, inflation knowledge, and lagged perceived inflation affect Moroccan households' perceived inflation.

In Italy, age, marital status, education level, living standard, media influence, memory, inflation knowledge, and lagged perceived inflation affect the Italian households' perceived inflation.

Starting with the age variable, households aged between 25 and 64 in Morocco might perceive prices as less stable because this age group typically faces higher financial responsibilities such as housing, education, and family expenses. Therefore, any minor price fluctuation can affect their budgeting plan. However, households whose age category is higher than 65 in Italy might perceive prices as stable because retirees in this age group often rely on the fixed incomes that they get from pensions or retirement savings, which makes stability in prices important in order to maintain their purchasing power. Besides, old households prefer stability, and they have conservative spending habits that reduce their financial obligations and make them trust their country's institutions more. Therefore, their perception of price stability is strengthened.

Moving to marital status, being married or divorced can raise inflation perceptions in Morocco and Italy. In fact, it decreases the probability of feeling that prices are stable compared to single households due to several reasons. The households' financial responsibilities increase because of children and partners. Their consumption increases as well. They will notice the price changes, especially from the perspective of personal inflation. In fact, if households buy goods or services for their families frequently, they might feel that prices are increasing.

This analysis opens the door to another character that can be estimated to predict perceived inflation as an independent variable: **utility consumption**.

While analyzing the education level variable, households with primary school education or less in Turkey and Italy tend to feel prices are less stable compared to households with a university education or more because of their limited understanding of basic concepts such as inflation that can be taught in higher grades. Not only this, but households with a primary school education or less tend to have lower financial security, which makes them sensitive to minor price fluctuations. Additionally, households with high school education tend to feel prices are less increasing for Moroccan households. In Morocco specifically, having a high school education may decrease inflation perception and increase the probability of feeling that prices are stable thanks to their moderate understanding of economic concepts that they get during their high school programs, combined with a slightly higher income level compared to households with primary education or less.

Education is important for households in order to behave right towards inflation perceptions. Therefore, it is suggested that the government makes some programs to inform households about monetary variables such as inflation rates and price fluctuations.

Moving to professional status, employed households in Turkey tend to perceive inflation higher than unemployed households because their stability of income allows for greater sensitivity to changes in the cost of living. Additionally, a household who is discouraged worker in Morocco, not actively seeking employment, tends to feel that prices are less stable compared to being unemployed and actively seeking work since they are disengaged in the labor market and disconnected from the economic trends, which results in a higher inflation perception.

Proceeding to living standards, the analysis shows that high income reduces high inflation perceptions in Turkey. This statement can get its strength from Fischer, who assumes that households judge price changes according to their incomes. High income might lead households to feel insulation from economic fluctuations and make them perceive that they can afford any price changes. Therefore, having a high income will decrease the probability of experiencing high price changes.

However, in Morocco and Italy, households with high incomes still perceive high inflation. This shows that households with higher incomes might have increased their consumption and exposure to a wider range of goods and services. Since households with higher incomes tend to consume more, they might be more sensitive to price changes. In this case, the cultural, economic behavior, and psychological factors can be taken into account to explain the different behavior of each country's households.

In this context, there is a possibility that households might increase their income by taking loans from commercial banks. When the interest rate of loans is small, households will increase their incomes easily with loans. Therefore, they will not feel high price changes. However, if the interest rate is high, households will not be able to increase their incomes. Therefore, they might feel high price changes (Lau, 2016). Therefore, another independent variable that can address perceived inflation is **interest rate x income**.

Moving to the saving variable, saving between 20% to 30% of income in Morocco decreases the probability of perceiving prices as stable compared to saving 10% or less because of the high financial awareness. Households who save a larger portion of their income are more likely to closely feel price changes, which leads to a higher sensitivity towards fluctuations and, thus, perceiving a higher inflation.

Proceeding to media influence, occasionally checking media in Turkey and Italy increases the probability of feeling that prices are stable, while never checking media in Morocco may decrease this probability compared to checking media frequently. This difference could be attributed to the varying levels of exposure to economic information and news about price changes. Households who occasionally check the media are more likely to stay informed about economic developments, which can provide them with a sense of stability and confidence in the economy. Conversely, those who never check the media, like the case in Morocco, can have a lack of access to timely information about price changes, which leads to uncertainty and increases their inflation perception.

Having no effect or experiencing a moderate effect from peers in Turkey and Morocco can decrease inflation perception because households often rely on social comparisons to judge their own economic situation. Without peer reinforcement of inflation concerns, households can perceive it as less.

Moving to the Consumer Sentiment Index, which reflects trust in the overall economy, it can decrease inflation perception in Morocco. In fact, if the households have a positive sentiment towards the economy, it shows their confidence in its stability and growth prospects. Therefore, they believe that inflation will remain under control, which results in lower perceived inflation and mitigates concerns about rising prices. Moreover, positive sentiment might lead households to feel price increases as temporary or isolated incidents rather than systemic inflationary trends. Therefore, their inflation perception decreases.

In this context, the Central Bank can share information with the public as much as possible so it can reach all the categories of households with different levels of education. It is important for households to know details related to inflation (Marco

Malgarini, 2009). It will increase the credibility of the Central Bank and its monetary policy as well. Hence, the households' trust will be strengthened (Gündüz et al. al., 2020).

If the households do not have an inaccurate memory, their inflation perception can decrease, as in the case of Moroccan and Italian households. In fact, memory plays an important role in how households tend to feel changes in prices over time. If households have an inaccurate memory of past prices, they might not be able to assess if the current prices represent an increase or decrease. Therefore, this inaccuracy while remembering past prices can result in a feeling of stability even when prices have actually risen.

Moving to inflation knowledge, if the Moroccan and Italian households have good knowledge of inflation, the probability of feeling that prices are stable decreases because of the different perceptions and expectations shaped by economic understanding. Moroccan and Italian households with a good understanding of inflation could be more aware of the factors driving price changes, which let them perceive even minor fluctuations as an indicator of potential instability. Their awareness of inflation principles leads them to focus on the complexities of inflation dynamics and price stability. However, Turkish households with fair knowledge of inflation might assume that inflation is more volatile and can tend to perceive stable prices as a welcome departure from the norm, which raises the households' feeling of price stability.

Moving to lagged perceived inflation, the perceived inflation of the previous year can affect the current year's perceived inflation differently from one country to another according to psychological and cultural factors. In Turkey and Morocco, where inflation was more volatile in recent years, perceiving higher inflation in the previous year can lead households to perceive higher levels of inflation in the current year due to recency bias. Conversely, Italy is relatively more stable, and inflation is a bit lower compared to Morocco and Turkey. Italian households might perceive higher inflation in the previous year, and it can lead to a lower perception of the current year's inflation because they view the previous year's perceived inflation as an anomaly or temporary deviation from the norm. Moreover, Italian households trust the overall economy of

their country, which leads them to believe that any inflationary pressures observed in the previous year will indeed be adequately addressed. Therefore, their perceived inflation for the current year decreases.

In this context, another variable that could be taken into account for further analysis is the **happiness index**. In fact, the happiness index can also affect how households perceive inflation. Higher levels of happiness within a country can lead households to perceive the overall economy of their country more positively, which may decrease their perceived inflation. When households are satisfied with their lives, they are more likely to interpret price changes in a favorable light, potentially being more optimistic about the stability of prices. On the contrary, lower levels of happiness within a country can lead households to perceive the overall economy of their country more negatively, which may increase their perceived inflation. Households that are less satisfied with their lives are more likely to perceive price changes as burdensome. Thus, the happiness index can play a crucial role in shaping how households feel about price changes.

Age is an important factor in the regression representing Turkish households since the R-squared decreased when age was excluded. Therefore, there is the possibility that age categories must be defined in another way with specific percentages to be respected. A similar assumption for the gender variable.

Moving to saving plays a role in explaining inflation perception in Italy because R-squared decreases without saving. Therefore, it must proceed in a different way, such as through house possession.

To conclude, there are other new factors that can be estimated as well after conducting a new survey, which are **utility consumption, interest rate x income, and happiness index**. Adding to this, there were some characteristics that were insignificant in explaining high inflation perceptions in Italy, such as saving. Therefore, the question can be redressed in a more detailed way. These details could be rent or debt instead of saving; these variables may give more detailed results that might be as significant as the first hypothesis.

Besides, many daily behaviors that are not expected to be related to inflation perceptions could affect it. For instance, one can think of **credit card payments** as well. Paying with cash might have a psychological effect on how the price changes compared to paying with a credit card.

The last assumption is the interaction between expected inflation and perceived inflation. Having a high inflation expectation can bias the way households perceive inflation. In fact, if the households are always waiting and expecting a high inflation in the future. They will assume that prices are increasing. Therefore, their perceived inflation will be higher. This can be considered as an open question for further research.



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