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Overcoming Innovation Resistance

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Strategic Lessons from the 2002 Euro Introduction for the Digital Euro Implementation

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Abbreviations

AML: Anti-Money Laundering (laws & regulations preventing financial crimes)

CBDC: Central Bank Digital Currency

DM: Deutsche Mark

ECB: European Central Bank

EMU: European Monetary Union

IRT: Innovation Resistance Theory

KYC: Know your customer (identity verification of clients)

SOEP: Sozio-ökonomisches Panel

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1. Introduction

In recent years, the use of cash has steadily declined across Europe, and digital payment systems have gained increasing prominence.[1] Many people are gradually adapting to new forms of transactions, such as contactless payments, mobile wallets, and online platforms. However, the rapid digitalization of the financial sector has not been driven primarily by European actors. Most of the widely used digital payment solutions - PayPal, Apple Pay, and others - are operated by non-European companies. This dominance of foreign providers raises important strategic concerns for the European Union, as it threatens the EU's sovereignty and power position (e.g. circulating capital, interoperability, etc.) in the global financial market.

Therefore, "we need to prepare our currency for the future" said Christine Lagarde, president of the ECB.[2] In line with similar developments by other central banks around the world, the ECB has announced plans to introduce a central bank digital currency, referred to as the digital euro. This new form of currency is envisioned as a complement to physical cash, not a replacement. It will be distributed by the ECB, accessible to every citizen, and mostly operated through a digital wallet or offline cards. The digital euro aims to offer a secure, reliable, and sovereign alternative to existing digital payment systems, while preserving core values such as privacy and financial inclusion.

Despite its technological promise and policy rationale, public reception of the digital euro remains cautious. Surveys conducted across Europe have shown that a substantial share of citizens are reluctant to embrace the idea of a central bank digital currency. Only in June 2024 did a Bundesbank survey show that 49% of German citizens would definitely or probably not use the digital euro.[3] Similarly, half of the respondents interviewed in Austria oppose the digital euro, and of those who are interested, half still emphasise the importance of traditional cash.[4] Across various, international studies on aversion toward this type of currency, four recurring aversion factors have been identified: concerns about financial implications, a lack of understanding, perceived uselessness and ease of use, and issues of trust and data security.

[1] Cf. Auer, R. / Böhme, R. (2020), p. 96
[2] Cf. European Central Bank (2023)
[3] Cf. Bundesbank (2024)
[4] Cf. Abramova, S., et al. (2022), p. 31

Looking back in history, this is not the first time the ECB has faced resistance in the context of currency innovation. In 2001, just months before the euro was physically introduced, the public debate on the new currency in many European countries was dominated by fear, and skepticism. In Germany, support for the new currency hardly exceeded 50% of the population (62% for western, 50% for eastern Germany).[5] Nevertheless, the ECB proceeded with its plan, and over time, public opinion shifted. In 2023, the euro is the second most widely used currency in the world, and a clear majority of Germans, 76%, support its continued use.[6]

This historical trajectory raises an important question: Can the public resistance toward the digital euro be better understood - and potentially overcome - by looking at the lessons from the original euro introduction? While these two currency innovations differ in some aspects, they share a fundamental similarity: both represent a major institutional and cultural shift in how Europeans perceive and use money. Given this parallel, it seems logical to re-examine the 2002 euro introduction in order to better understand the current challenges and derive practical insights for policymakers. Surprisingly, this connection has not been explored in academic literature yet. This thesis aims to fill that research gap by analyzing for the German country *how to overcome innovation resistance by identifying strategic lessons from the euro's introduction 2002 for the digital euro implementation*.

In order to answer that question, the thesis is backed by innovation resistance theory, a part of innovation research which examines why individuals and groups oppose new technologies or systems, even when these innovations offer potential benefits. Applying this framework to the case of the digital euro allows for a deeper understanding of the four identified barriers that shape public attitudes toward financial innovation.

The thesis is structured into three main sections. First, the analytical background is presented, focusing on innovation resistance theory and the distinction between active and passive resistance. This is followed by an overview of the two currency innovations under analysis: the euro introduction and the digital euro. For each case, the development of public attitudes toward the respective currency is also examined.

The second part outlines the methodological approach. A qualitative analysis of recent case studies on the digital euro identifies the four mentioned key aversion factors.

[5] Cf. Isengard, B. / Schneider, T. (2002), p. 498
[6] Cf. European Commission (2025)

These are then compared with public attitude to the euro introduction through a quantitative analysis of panel data from 2001. As existing literature suggests a strong influence of demographic characteristics, e.g. gender or age, on attitudes toward innovation, these variables are also included in the analysis.

Third, the data is examined through descriptive statistics, correlation analysis, and logistic regression, followed by an interpretation of the results and a direct comparison with the aversion landscape surrounding the digital euro. The thesis concludes by discussing practical implications for policymakers and stakeholders involved in the digital euro project. By drawing connections between past and present, the study aims to contribute to a more informed and strategically grounded implementation of future monetary innovations in Europe and fill the present research gap.

2. Analytical Background

2.1 Innovation resistance

Studies show extremely high innovation failure rates of 50% to 90%, often due to resistance from future end users.[7] To address these challenges, particularly in adopting new monetary systems like the digital euro, it is essential to understand the concept of innovation resistance and its impact on public acceptance. Thus, the following chapter will focus on innovation resistance theory (IRT) and discuss the model of active vs. passive resistance.

2.1.1 Concept of innovation and currency implementations

Innovation plays a crucial role in shaping industries, businesses, and societies. Its significance has grown at both corporate[8] and governmental levels[9], as it addresses social and economic challenges while providing long-term competitive advantages.[10] However, despite its importance, there is no unified definition of innovation in the literature, as the term encompasses various interpretations. Generally, innovation refers to the process of introducing new products, services, or technologies.[11] Schumpeter, a key figure in innovation theory, emphasized that innovations are not only novel but also disrupt existing systems, leading to creative destruction.[12] This process is fraught with uncertainty, risk, and complexity, as it often challenges the status quo and creates significant changes.[13]

Especially at governmental level, implementing such innovations presents several economic and political challenges, influenced by regulatory frameworks, public trust, and communication strategies.[14] Moreover, governments are often risk-averse, with a tendency to prioritize stability and gradual change over disruptive innovations leading to displeasure in the society. This makes the introduction of new monetary systems like the euro or the digital euro particularly challenging, as the policymakers must navigate

[7] Cf. Heidenreich, S. / Spieth, P. (2013), p. 878
[8] Cf. Zeb, A., et al. (2021), p. 661
[9] Cf. Hauschildt, J., et al. (2016), p. 24
[10] Cf. Distanont, A. / Khongmalai, O. (2020), p. 20
[11] Cf. Sammerl, N. / Wirtz, B. / Schilke, O. (2008), p. 133
[12] Cf. Barros, R. S. / Da Ferreira, A. M. D. S. C. (2019), p. 6
[13] Cf. Franken, R. / Franken, S. (2023), p. 321
[14] Cf. Koch, P. / Hauknes, J. (2005), p. 19

both societal expectations, which will be the focus of this study, and regulatory complexities.[15]

This is where aversion comes into play. According to S. Talwar, "consumer resistance to innovation is one of the main causes behind the market failure of innovations".[16] That phenomenon, called innovation resistance, refers to the reluctance of individuals or groups to adopt new ideas or technologies, often preferring to maintain the status quo due to a reluctance to embrace changes that conflict with their established beliefs or practices.[17] Kaur et al. concluded that there are two contributing to innovation resistance: functional barriers (e.g., usage, value and risk barriers) and psychological barriers (e.g., image and tradition barriers). [18] Each of these factors plays a significant role in shaping public aversion to the introduction of the euro and the digital euro.

In this research project, both the euro and the digital euro can be seen as innovations. The euro, introduced as a transnational currency, disrupted existing national currencies, while the digital euro, a planned central bank digital currency (CBDC), aims to further modernize payment systems. While the euro was ultimately successful[19], it was met with significant resistance. Today, demonstrations in Poland[20] and controversial theories spread via social media[21] reflect similar resistance to the digital euro. These concerns highlight the challenges of government-led innovation in monetary systems and seem to be a perfect example for the analysis of innovation resistance factors.

2.1.2 Active vs. passive innovation resistance

IRT offers a comprehensive framework for understanding the barriers individuals face when confronted with new innovations. One key concept developed by S. Heidenreich differentiates between active and passive innovation resistance.[22] Both forms of aversion result in reluctance to adopt innovations, but they are driven by distinct psychological and situational factors.

Active innovation resistance occurs when consumers consciously reject an innovation after actively engaging with it.[23] This rejection is typically based on functional,

[15] Cf. Koch, P. / Hauknes, J. (2005), p. 19
[16] Cf. Talwar, S., et al. (2020), p. 286
[17] Cf. Kaur, P., et al. (2021), p. 1747
[18] Cf. ibidem, p. 1747
[19] Cf. Fluch, M. / Schlögl, S. (2012), p. 56
[20] Cf. Tassev, L. (2025)
[21] Cf. Reveland, C. / Siggelkow, P. (2025), p. 1
[22] Cf. Heidenreich, S. / Handrich, M. (2015), p. 880
[23] Cf. ibidem, p. 881

product-specific barriers, such as the innovation's perceived complexity or lack of advantage over existing alternatives. When an innovation fails to meet the consumers' needs, preferences, or values, they reject it after evaluating its potential drawbacks. In the context of CBDCs, active resistance might emerge from concerns over data privacy or the complexity of adapting to digital payment systems.

Passive innovation resistance, on the other hand, is an unconscious reluctance to adopt an innovation, not arising from a deliberate evaluation. Instead, it stems from habit or satisfaction with the status quo, thus psychological barriers.[24] Individuals exhibiting passive resistance do not actively oppose the innovation; rather, they remain indifferent or hesitant due to their attachment to existing systems. This resistance typically occurs early in the adoption process. For instance, many may resist the digital euro simply because they are content with traditional cash payments or familiar digital systems like PayPal or Apple Pay.[25]

The distinction between active and passive resistance is particularly relevant when considering the euro introduction and the digital euro. A study on 3D printing adoption illustrates how passive resistance, linked to an individual's predisposition to avoid change and satisfaction with the status quo, can initially affect the evaluation of the innovation.[26] According to Villanueva, passive resistance precedes active resistance, and its intensity directly influences later evaluations and acceptance. This aligns with the case of the euro and digital euro, where initial satisfaction with existing monetary systems could hinder the public's openness to these financial innovations. As the 3D printing study demonstrates, passive resistance can evolve into active resistance when consumers actively evaluate the innovation, leading to rejection based on perceived risks and benefits.[27] The theory is therefore crucial for understanding how different types of resistance manifest and affect public acceptance of innovations like the euro and digital euro. This also establishes a foundation for effective resistance mitigation measures.

[24] Cf. Heidenreich, S. / Spieth, P. (2013), p. 4
[25] Cf. Faunce, L. / Arnold, M. / Fleming, S. (2023), p. 5
[26] Cf. Villanueva Orbaiz, M. L. / Arce-Urriza, M. (2024), p. 1
[27] Cf. ibidem, p. 13

2.2 The digital euro

Today, digital innovations have the potential to revolutionize large parts of our daily lives, but at the same time, they face the greatest resistance from end users.[28] Such an innovation, the planned digital euro, a form of CBDC, should complement existing cash and respond to the increasing demand for digital payment solutions. Nevertheless, initial studies show low acceptance rates among future end-users, which explains its relevance for the analysis of innovation resistance.

2.2.1 Digital euro implementation as alternative to cash

The development of payment services is moving towards a future in which digital transaction solutions are a fundamental part of our everyday lives. The use of mobile wallets and online accounts for payments is becoming increasingly prevalent, while the use of cash is declining rapidly, not only in Germany but across the globe. Statistics show a significant decline in the percentage of cash transactions in the eurozone, from 79% in 2016 to 59% in 2022.[29] Money serves two primary functions: as a medium of exchange and as a store of value.[30] Cash, particularly, has long been the standard for fulfilling these roles in traditional monetary systems. However, as the financial landscape evolves, new digital solutions have been proposed to fulfil the same functions as physical cash.[31] Now, a new digital solution for money has been proposed which has the same characteristics as cash but is intended to function as an alternative currency rather than as a replacement for cash. Central banks have begun issuing their own digital currency – known as central bank digital currency which describes "a currency in a digital form that is issued by a central bank and is a liability of the issuing bank"[32]. It operates within a centralized infrastructure, unlike cryptocurrencies, which are decentralized and not controlled by a central authority.

As many people still confuse CBDCs with cryptocurrencies, it is essential to distinguish between these two technologies.[33] While cryptocurrencies like Bitcoin operate on decentralized, blockchain-based platforms without the oversight of central banks, CBDCs are government-backed and issued within a centralized, proprietary

[28] Cf. Talwar, S., et al. (2020), p. 287
[29] Cf. Faunce, L. / Arnold, M. / Fleming, S. (2023), p. 4
[30] Cf. Lee, D. K. C. / Yan, L. / Wang, Y. (2021), p. 61
[31] Cf. Popovic / Dragana (2018), p. 2
[32] Cf. Ozili, P. K. (2023), p. 3
[33] Cf. European Central Bank (2021), p. 16

infrastructure.[34] This difference highlights the control and regulatory mechanisms central banks maintain over their digital currencies. Besides that, there are two main types of CBDC: wholesale CBDCs and retail CBDCs.[35] Wholesale CBDCs are primarily used by financial institutions for large-scale interbank transactions. In contrast, retail CBDCs are designed for public use, enabling private citizens to engage in everyday transactions.[36] Given the focus of this thesis on public resistance from a private end-users point of view, the analysis will focus exclusively on retail CBDCs.

The general functionality of the new currency is consistent across all countries that are working it. CBDCs are issued by the according central bank as digital tokens equivalent to traditional money, distributed through commercial banks to end-users.[37] Citizens store these tokens in digital wallets on their phone and use them for payments, transferring money, or purchasing goods. This system ensures easy access to digital currency while maintaining regulatory oversight through intermediaries like commercial banks.[38]

Examining the current global landscape reveals the significant impact of CBDC on financial markets worldwide. As of February 2025, 134 countries, representing 98% of global GDP, are exploring CBDCs and three Countries, the Bahamas, Jamaica, and Nigeria have already fully launched their digital currencies.[39] Moreover, 44 countries are running pilots, including for example China's e-CNY, India's digital rupee, and Sweden's e-krona. Central banks are motivated to issue CBDCs for several reasons: to enhance payment efficiency, counter the decline of cash usage, and respond to the rise of digital currencies.[40] Also, CBDCs enable better control over the money supply and interest rates, improve financial inclusion, and provide an alternative to private digital currencies like stablecoins.[41]

In reaction to this rise of digital currencies, the ECB has also revealed its plan to introduce a so-called digital euro, aiming to strengthen the euro’s global position. Announced in 2019 by ECB President Christine Lagarde[42], the digital euro is of great

[34] Cf. European Central Bank (2021), p. 4
[35] Cf. Horváth, D. (2023), p. 2
[36] Cf. Roelofs, B. (2023), p. 3
[37] Cf. Faunce, L. / Arnold, M. / Fleming, S. (2023), p. 7
[38] Cf. Abass, D. (2022), p. 8
[39] Cf. Atlantic Council (2024)
[40] Cf. Auer, R. / Böhme, R. (2020), p. 85
[41] Cf. Gupta, S., et al. (2023), p. 2
[42] Cf. Faunce, L. / Arnold, M. / Fleming, S. (2023), p. 2

importance as it responds to the digitalisation of the payments industry, which would be beneficial for consumers, as well as weakening non-European private payment solutions such as PayPal or Alipay. Additionally, a digital euro enhances the ECB's ability to remain a global player on the financial landscape. Since November 2023, a two-year preparation phase has been underway, involving experimentation, consultations with other central banks, and a pilot launch planned for October 2025. The final public release is expected no earlier than 2027 or 2028.[43]

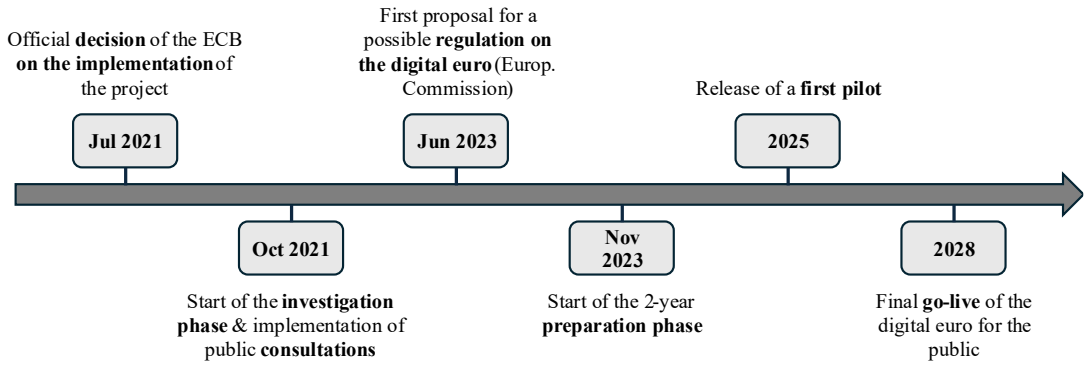


Figure 1: Timeline of the digital euro (own illustration, based on ECB data)

Despite the digital euro still being under discussion, the key functionalities and design features have already been outlined. First, the ECB aims for it to be a complementary currency to traditional banknotes, not a replacement.[44] Second, a €3,000 holding limit should be imposed to prevent bank runs, and its offline functionality will promote financial inclusion.[45] Lasty, transactions are planned to maintain anonymity, ensuring that, like cash, they are not traceable by the central bank, protecting users' privacy.[46]

Central banks and policy makers are actively promoting the digital euro as revolutionary payment method for all citizens. Nevertheless, a survey of the Deutsche Bundesbank revealed that in 2024 half of the population (49%) is not willing to adopt the new technology.[47] A recent article even called the digital euro a "digital diktat"[48]. This outlook is problematic for central banks, as the implementation of CBDC is an essential undertaking to keep pace with technological advancements while maintaining a power position in the banking and financial market.

[43] Cf. Reveland, C. / Siggelkow, P. (2025), p. 1
[44] Cf. Faunce, L. / Arnold, M. / Fleming, S. (2023), p. 7
[45] Cf. Angeloni, I. (2023), p. 4
[46] Cf. European Central Bank (2024a)
[47] Cf. Bundesbank (2024)
[48] Cf. Reveland, C. / Siggelkow, P. (2025), p. 1

2.2.2 Aversion factors towards the digital euro

An extensive literature search resulted in 12 papers examining opinions on the introduction of the digital euro and CBDCs in a period between 2020 and 2024. The homogeneous methodology used, with all studies collecting data through online questionnaires and interviews, enhances the comparability and reliability of the studies. An overview of these papers is provided in annex 1.

The examined studies reveal the key drivers contributing to citizens' aversion towards the introduction and usage of a digital currency. A geographical comparison of the findings demonstrates that the diverse opinions expressed by respondents are not significantly correlated with geographical factors or particularities. With the exception of China, for which the criticism of the security and privacy aspects of digital payments is less pronounced than in other nations[49], the driving forces behind resistance are similar throughout the countries. It can therefore be assumed that the following analysis of international studies can be applied to the implementation of the digital euro in the eurozone, at least to a certain extent. The analysis identifies four primary factors that contribute to the observed resistance and are further elaborated in the following paragraphs.

2.2.2.1 Financial implications

Firstly, the less pronounced concern when it comes to CBDC relates to the financial implications for the monetary system or one's own financial situation. In theory, during a crisis, CBDC could potentially contribute to a bank run, leading to monetary instability.[50] However, this risk is mitigated to a minimum by central banks through the implementation of a holding limit.[51] This commitment of central banks likely contributes to the moderate aversion driven by financial concerns. Nevertheless, the cost of usage remains a factor in the intention of private citizens. A 2021 ECB study found that 34% of respondents identified the absence of additional costs as the primary or secondary most important criterion for using the digital euro.[52] In addition, one in five respondents said that the digital euro should have instant payment functionality. Another

[49] Cf. Sun, M. / Li, Z. (2024), p. 457
[50] Cf. Esposito, L. (2022), p. 376
[51] Cf. Angeloni, I. (2023), p. 4
[52] Cf. European Central Bank (2021)

study highlights the importance of interest rates on positive account balances. 26% of respondents consider this as a key area for improvement in CBDC.[53]

2.2.2.2 Lack of understanding

A more frequently cited issue, among those who could potentially utilise a CBDC is their lack of comprehension meaning that the majority of citizens possess limited understanding of the technological concept and utilisation of a CBDC. M. Bijlsma conducted a survey of 2,522 Dutch panel members, which revealed that public awareness of CBDC has a significant impact on individuals' intention to use digital currency.[54] He concluded that "people who know more about CBDC have more intention of opening a CBDC account"[55]. Additionally, the survey realized by the Deutsche Bundesbank with more than 2,000 participants shows that 59% of the respondents were previously unaware of the digital euro. This is one main reason for the 49% of interviewees indicating that they would probably or definitely not adopt the digital euro.[56] However, even the 51% of respondents with a basic knowledge about the digital euro showed misunderstandings about the digital euro replacing cash. These findings are consistent with those of D. Abass' study in Ireland, which demonstrated that educational attainment and employment status are positively correlated with the probability of citizens adopting CBDC. It appears that this number increases with higher education and broader knowledge about the new currency.[57] Another paper raises the question of communication, stating that responsible financial institutions did not manage it yet to clearly share knowledge and ideas on the digital euro which results in an uninformed society.[58] To conclude, it can be said that a majority of the public lacks understanding about CBDC functions and benefits, and hindered by insufficient communication from institutions responsible for the digital euro.

2.2.2.3 Uselessness & ease of use

Subsequent to the lack of understanding, a considerable proportion of respondents exhibit a perception of irrelevance with regard to the introduction of the digital euro. The analysis of a survey commissioned by the Austrian Central Bank with 2,006 participants shows that most consumers (96% are "fully content" or "somewhat content") are

[53] Cf. Bijlsma, M., et al. (2021), p. 9
[54] Cf. ibidem, p. 17
[55] Cf. ibidem, p. 21
[56] Cf. Bundesbank (2024)
[57] Cf. Abass, D. (2022), p. 19
[58] Cf. Esposito, L. (2022), p. 372

already satisfied with existing payment methods.[59] As a result, only a minority anticipate personal advantages from a CBDC in Europe. A. Faunce further emphasises this point by referencing competition with private sector offerings. Similarly to I. Angeloni[60] he points out that existing private solutions (e.g. Alipay or Paypal) are already popular and provide similar benefits to the public.[61] This is complemented by a German study which has identified the "perceived benefits" as the most significant determinant of the adoption of the digital euro.[62] Thus, a CBDC will only be attractive if it offers users clear advantages, such as convenience, returns, costs, transaction speed, compared to other payment systems.[63] It should be noted that the reluctance to use CBDC is further increased if the perceived benefits are also hampered by operational challenges or a perceived lack of ease of use.[64] M. Sun highlights that social presence positively impacts both usefulness and ease of use, suggesting that CBDC adoption reluctance decreases and perceived usefulness rises when the social network already uses it.[65] Since the perception of a CBDC's uselessness and operational challenges are a topic addressed in many surveys, it is among the top drivers contributing to public resistance.

2.2.2.4 Trust & security

The last, but most significant, factor driving public aversion towards a CBDC is the concern about its impact on safety, privacy, data protection and trust. All these variables demonstrate the crucial role that a high level of trust plays, even acting as a precondition for its adoption.[66] A variety of studies have reached the same conclusion: people fear the abuse of data and place safety and security as number one priority when developing the digital currency.[67] This determining force is present regardless the country and type of CBDC being introduced as evidenced by international studies from India, Austria, South Korea, which all stress the importance of security and privacy.[68] As Ballasck & Paulick observe, 94% of their survey respondents ranked privacy as a very

[59] Cf. Abramova, S., et al. (2022), p. 15
[60] Cf. Angeloni, I. (2023), p. 5
[61] Cf. Faunce, L. / Arnold, M. / Fleming, S. (2023), p. 5
[62] Cf. Tronnier, F. / Harborth, D. / Hamm, P. (2022), p. 14
[63] Cf. Frenkel, M. (2023), p. 33
[64] Cf. Auer, R. / Böhme, R. (2020), p. 87
[65] Cf. Sun, M. / Li, Z. (2024), p. 478
[66] Cf. Abass, D. (2022), p. 19
[67] Cf. European Central Bank (2021), p. 22; Official Money and FInancial Institutions Forum (2020), p. 4; Solberg Söilen, K. / Benhayoun, L. (2022), p. 172
[68] Cf. Sandhu, K. / Dayanandan, A. / Kuntluru, S. (2023); Choi, S., et al. (2023); Abramova, S., et al. (2022), p. 31

important feature of payment instruments[69] which aligns with findings of the ECB indicating that privacy protection is the most important characteristic for 41% of European respondents[70]. It is evident that societal privacy concerns are primarily due to the traceable nature of CBDCs and potential misuse of personal data[71] which therefore reduces anonymity and transaction privacy[72] expected by users. In addition to that, it is argued that security concerns heavily influence the adoption of CBDC as many users prioritize safety from fraud and theft.[73] Those concerns have an even greater impact on the probability of adoption when they appear together with the other aversion factors explained before. A lack of technological and regulatory understanding coupled with a mistrust in central banks operating without political and financial motivation reinforce feelings of insecurity. Given that this point is addressed in a considerable number of studies on resistance drivers and that entire studies are dedicated to this topic[74] it can be deduced that privacy concerns constitute the most significant factor contributing to public aversion towards the digital euro and other CBDCs.

In order to draw strategic lessons for the digital euro, it appears logic to revisit the historical case of the euro's introduction and examine the public resistance encountered at that time.

2.3 Introduction of the euro currency in 1999

25 years ago, the public debate on the introduction of the euro was even more pronounced than it is now for the digital euro. Today, the euro is the second most widely used currency globally, after the US Dollar.[75] Its introduction in 1999 as part of the European Monetary Union (EMU) replaced several national currencies like the Deutsche Mark (DM), Spanish Peseta or the Franc. Although initial resistance was high, the change represented both an economic shift and a political step towards greater EU integration.[76]

[69] Cf. Ballasck, D. / Paulick, J. (2021), p. 8
[70] Cf. European Central Bank (2021), p. 11
[71] Cf. Roelofs, B. (2023), p. 10
[72] Cf. Abass, D. (2022), p. 9
[73] Cf. Official Money and FInancial Institutions Forum (2020), p. 4
[74] Cf. Tronnier, F. / Harborth, D. / Hamm, P. (2022), p. 1
[75] Cf. Breuss, F. (2019), p. 2
[76] Cf. Risse, T. (2002), p. 1

2.3.1 Motivation and historical background

The concept of a unified European currency emerged after World War II, as European nations sought economic integration to prevent future conflicts. Early steps towards this integration included the establishment of the European Coal and Steel Community and the Treaty of Rome. These early efforts laid an important groundwork for further economic integration, eventually leading to the creation of a unified currency.

In 1979, the European Monetary System and the Exchange Rate Mechanism were established to stabilize exchange rates between European currencies, enhance economic coordination, and support long-term growth across the continent. These initiatives served as stepping stones toward the visionary goal of a single European currency.[77] However, it was the Maastricht Treaty of 1991 that provided the final push toward the adoption of the euro. This treaty committed 12 EU states to the creation of the EMU, aiming for the elimination of exchange rate fluctuations within Europe and the alignment of currency policies.[78] Moreover, the Maastricht Treaty defined strict economic divergence criteria for countries seeking to adopt the euro, including requirements for low inflation, controlled budget deficits, and sustainable national debt levels. This set the stage for the euro's formal introduction, with significant political and economic implications not only for individual countries but for the EU as a whole.

Emission of the new currency had to be controlled and executed. Therefore, in 1998, the ECB was established to oversee the issuance and governance of the new currency, replacing the role of national central banks.[79] The ECB's primary responsibility was to ensure a uniform monetary policy across the Eurozone, further cementing the euro as a symbol of Europe's political and economic unity. Besides that, the creation of the ECB also represented a milestone in Europe's journey toward a more cohesive political identity, enhancing the EU's position as a global economic player.[80]

Finally, the euro was introduced as a digital currency for banking and financial transactions in January 1999, already serving as the official reserve currency for EU member states and trading on the foreign exchange market. However, it was not until January 1, 2002, that the first euro banknotes and coins, were issued in 12 EU countries, officially replacing national currencies. This phase was marked by a parallel currency

[77] Cf. van Dijk, D. / Munandar, H. / Hafner, C. M. (2005), p. 3
[78] Cf. Baun, M. J. (1995), p. 605
[79] Cf. Müller, K. (1999), p. 7
[80] Cf. Hetzel, R. L. (2002), p. 29

period until July 2002, when national currencies were gradually phased out, formally ending the use of old national money across the EU.[81]

2.3.2 Public acceptance

One can say that "it is only under a regime of monetary stability that free citizens can successfully shape their own lives and that markets can function in an optimal way".[82] But while the introduction of the euro represented a cornerstone in the European project, its acceptance among the public was far from satisfying. The economic rationale for a unified currency - increased efficiency, reduced transaction costs, and monetary integration - met with deep emotional and symbolic resistance in various member states.[83] This gap between macroeconomic logic and popular sentiment reveals how monetary instruments are embedded in national identity and collective memory.

Max Weber already observed the symbolic and emotional as it pertains to the key role of money.[84] In the first years before the final rollout, there was significant scepticism surrounding its implementation, particularly in countries with strong national currencies and deep emotional attachments to them. Germany serves as the clearest case of symbolic resistance. The Deutsche Mark was not just a currency - it was a symbol of post-war recovery and national pride.[85] According to a 2001 study, 40% of Germans identify solely with their own nationality, rather than with the European identity.[86] Many Germans feared that adopting the euro would undermine national identity. In contrast, countries like France and Spain demonstrated more moderate resistance.[87] Spain's weaker emotional connection to the peseta and a broader enthusiasm for European integration reduced opposition[88], while France's political class positioned the euro as a logical step in the country's long-standing support for a federal Europe.[89]

The emotional weight of this resistance is backed by existential psychology. Jonas, Fritsche, and Greenberg explain that currency acts as a cultural symbol, and changes to it can be experienced as existential threats, leading to defensive psychological

[81] Cf. Müller-Peters, A., et al. (1998), p. 665
[82] Cf. Issing / Otmar (2008), p. 16
[83] Cf. Risse, T., et al. (1999), p. 151
[84] Cf. Weber, M. (1980)
[85] Cf. Greitemeyer, T. / Traut-Mattausch, E. / Frey, D. (2008), p. 3
[86] Cf. Directorate-General for Press and Communication (2002), p. 14
[87] Cf. Greitemeyer, T. / Traut-Mattausch, E. / Frey, D. (2008), p. 3
[88] Cf. Müller-Peters, A. (1998), p. 714
[89] Cf. Gordon, P. H. / Meunier-Aitsahalia, S. (2004), p. 33

reactions. [90] In Germany, this often manifested in overestimating price increases - the so-called "Teuro" effect. While actual inflation was modest, there was a large difference in perception, fuelled by emotional ties to the DM.[91]

This is consistent with a study conducted in December 2000 that surveyed 1,300 eligible voters regarding their views on the euro. The findings revealed that only 27% supported the euro as the sole currency, while 46% preferred to retain the DM on a long-term run.[92] The remaining respondents expressed a desire for a transitional period in which both the euro and the national currencies would coexist. Additional reasons for this resistance, as well as the demographic patterns influencing it, are diverse and will be explored in the following chapters.

Consequently, a number of measures were implemented with the aim of reducing scepticism in Germany and preparing the public for the impending changes to their everyday life.[93] Over time, government and private campaigns helped alleviate doubts about the euro and promoted understanding of its advantages. These efforts, fostering acceptance, particularly through media campaigns addressed the practical aspects of the euro and its advantages for cross-border trade and economic stability.[94] For instance, in Germany, approximately one fifth (18%) of political and economic news coverage on television focused on the introduction of the euro.[95]

Those actions proved effective, as the anticipated “Europhobie” turned into a “Europhorie”.[96] By the time the euro was fully introduced in 2002, the public had become more accustomed to the new currency, with satisfaction rates steadily increasing, particularly in the years before the financial crisis of 2008. In the eurozone, only 54% of citizens regarded the euro as a “good thing”. This number increased to 71% in 2008.[97] It was not only in Germany, however, that the euro gained ground following its introduction. A study of B. Isengard data has revealed that across all EU countries, the average acceptance rate increased in Spring 2002 compared to Autumn 2001.[98] Greitemeyer explains this shift with the cognitive dissonance theory. According to him,

[90] Cf. Jonas, E. / Fritsche, I. / Greenberg, J. (2005), p. 143
[91] Cf. Hinter, M. (2002), p. 1
[92] Cf. Witte, E. H. / Raphael, C. (2001), p. 7
[93] Cf. Hofmann, E. / Kirchler, E. / Kamleitner, B. (2007), p. 377
[94] Cf. H. De Vreese, C. / Peter, J. / Semetko, H. A. (2001), p. 114
[95] Cf. ibidem, p. 116
[96] Cf. Isengard, B. / Schneider, T. (2002), p. 2
[97] Cf. Fluch, M. / Schlögl, S. (2012), p. 59
[98] Cf. Isengard, B. / Schneider, T. (2002), p. 4

the Germans' attachment to the DM resulted in cognitive dissonance, which was then reduced by the positive revaluation of the euro.[99] Citizens who emotionally favoured their national currency experienced psychological discomfort when faced with the euro's inevitability. To resolve this tension, they gradually reassessed and embraced the euro more positively. This case of the euro's public acceptance reveals how economic transformations are always also cultural and psychological in nature. Resistance is not merely a function of cost-benefit analysis, but also of symbolic disruption and identity politics.

Both the replacement of the DM with the euro and the digital euro have met a high level of resistance from the public. However, as this topic has not yet been explored in the existing scientific literature, it will be valuable to compare the factors of innovation resistance towards the digital euro with those encountered during the euro introduction. This comparative approach can help determine whether public resistance follows recurrent psychological and cultural patterns or whether digitalization introduces new challenges entirely.

[99] Cf. Greitemeyer, T. / Traut-Mattausch, E. / Frey, D. (2008), p. 4

3. Materials and Methodology

To address the research question and compare the aversion factors toward the digital euro with those observed during the euro's introduction, a mixed-methods approach is employed. The previous chapter highlighted case studies from recent CBDC surveys that identify key aversion factors toward the new currency. This qualitative approach is particularly suitable for exploring new technologies[100], as it provides a comprehensive view by considering both emotional and rational explanations for resistance.[101] By understanding these factors, there is a solid foundation for a more detailed quantitative analysis that tests the relevance of these factors in the context of the euro's introduction.

Building on the qualitative groundwork, a quantitative analysis is conducted to gain a deeper understanding of public reluctance prior to the introduction of the euro. Since it is no longer possible to directly measure public attitudes from that period, historical secondary data from 2001 will be used.[102] As M. Saunders already stated that "secondary data includes […] data from government departments that undertake surveys and publish official statistics covering social, demographic and economic topics"[103], which fits the objective of this thesis. The historical data is analysed to test for the aversion factors identified in section 2.2, together with demographic variables.

Quantitative research offers several advantages. Statistical measurements allow for objective and reliable comparisons, which enhance the robustness of the results. Furthermore, the use of secondary data ensures that the study adheres to key quality criteria such as validity, reliability, and objectivity. [104] Through this approach, the research aims to provide empirical evidence on how public attitudes toward the digital euro can be shaped by factors observed during the euro's introduction, thereby offering insights into strategies for overcoming resistance in the digital euro's rollout.

3.1 Panel data

3.1.1 Data source

The present thesis employs quantitative analysis with secondary data from the Eurobarometer. Since 1972, the European Commission conducts this survey to measure public

[100] Cf. Basias, N. / Pollalis, Y. (2018), p. 98
[101] Cf. Brown, P. A. (2008), p. 9
[102] Cf. Saunders, M. / Lewis, P. / Thornhill, A. (2009), p. 256
[103] Cf. ibidem, p. 256
[104] Cf. Olabode, S. O. / Bakare, A. A. / Olateju, O. I. (2018)

attitudes towards various political and societal issues and provide valuable insights for politicians, economists and other stakeholders.[105] In 1994, the Flash Eurobarometer was introduced as a complement to the regular Euro-barometer surveys.[106] Those studies are a monthly monitoring tool that are used for conducting "smaller", more targeted surveys. These focus on specific topics or particular demographic groups and require rapid results. The surveys are typically conducted via telephone interviews and participation countries for each Flash Eurobarometer survey are selected based on the relevance of the topic under study.

As part of this research, the Flash Eurobarometer 82/E (Euro Introduction Attitudes, Step 6 - Euro Members) dataset, provided by GESIS - Leibniz Institute for the Social Sciences, has been selected.[107] The chosen dataset examines the public's attitudes towards the introduction of the euro and their understanding of the changes it would bring, making it particularly relevant to this study.

Conducted in January 2001, the survey was carried out exactly one year before the euro coins and banknotes were introduced for public use. This period is of crucial significance, as it captures public attitudes and concerns during the final stages of preparation for the euro's launch. Moreover, surveys on the digital euro also refer to aversion factors preceding the introduction of the new currency, which explains selection of a dataset from this moment in time. The employed cross-sectional research design is well-suited for capturing public attitudes at a specific moment in time characterised by a changing monetary environment.[108] Concerning participants, a total of 8,035 European citizens were interviewed. The sampling methodology followed by the survey adhered to the standard procedures of the European Commission for all Eurobarometer surveys. Specifically, a multi-stage, probability sampling method was employed to ensure that the sample accurately represented the population across various demographics and regions, which enhances the robustness and generalizability of the data.[109]

Data collection was carried out via telephone interviews using a standardized questionnaire in the national language of each participating country, which ensured broad geographic reach and consistency across different nations. The survey was managed by the

[105] Cf. Nissen, S. (2014), p. 713
[106] Cf. ibidem, p. 715
[107] Cf. Europäische Kommission (2001)
[108] Cf. Wang, X. / Cheng, Z. (2020), p. 65
[109] Cf. GESIS (2025)

DG Education and Culture Unit and interviews were executed by 15 EOS GALLUP EUROPE Institutes, that worked together to collect and compile the data.

Finally, the primary objective of the Flash Eurobarometer was to assess public attitudes toward the euro, focusing on the public's knowledge of its introduction, perceptions of its economic impact, concerns regarding potential misuse, and personal experiences with the new currency.[110] These objectives are closely aligned with the prevailing research question, which aims to analyse the aversion factors toward the digital euro by comparing them to attitudes observed during the euro introduction.

3.1.2 Data sample

The Flash Eurobarometer dataset includes responses from 8,035 participants across 15 European countries, providing a representative overview of public perceptions across both Eurozone and non-Eurozone countries at the time of the euro's introduction.

From a geographic point of view, the sample includes 11 Eurozone countries - countries that were adopting the euro - representing a total of 6,021 participants, and 4 Non-Eurozone countries, with 2,014 participants, which were not adopting the euro at that time. However, this thesis aims to analyse the factors that affect citizens' attitudes towards the euro that were used to the same currency within the same environment. Science shows that each country has unique cultural connections to its currency.[111] Additionally, nations had different levels of pride in their currency and varying degrees of monetary power, which is why aversion factors may be less pronounced or influenced by different concerns. Moreover, as Greitemeyer and others have noted, emotional attachment and social identity are strongly linked to a nation's currency, and this attachment is less likely to be impacted in countries that did not adopt the euro or had another national currency before.[112] Therefore, all countries but Germany are excluded from further analysis, leaving a sample size of 1,000 participants.

After excluding all non-German respondents, the data was cleaned. Thus, all "no answer" responses to the relevant survey questions and demographic variables were deleted from the dataset. Ultimately, this left a final sample size of 820 analysed participants, which remains a reliable representation of the targeted geographical region. The

[110] Cf. Europäische Kommission (2001)
[111] Cf. Müller-Peters, A., et al. (1998), p. 678
[112] Cf. Greitemeyer, T. / Traut-Mattausch, E. / Frey, D. (2008), p. 3; Przybyszewski, K. / Tyszka, T. (2007), p. 357

sample size for Germany consists of 820 participants divided equally between the East (N=391) and West (N=429) regions.

In the following section only the main demographic factors will be presented. For instance, the variable "vote" is excluded from the analysis, as the political landscape has significantly changed since 2001, making any comparison with the current context of the digital euro introduction methodologically problematic. Furthermore, approximately 30% of respondents indicated either no political preference or that they would abstain from voting, thereby limiting the interpretive value of this variable. An overview of the dispersion per analysed demographic variable is displayed in table 1.

Table 1: Demographic overview

Gender	**N**	**Percent**
	N	%
Men	421	50%
Women	423	50%
Age		
15-29	157	19%
30-44	283	34%
45-59	206	25%
60+	191	23%
Education (age when finishing school)		
5-13	7	1%
14	76	9%
15	64	8%
16	171	21%
17	106	13%
18	87	10%
19-20	103	12%
21-23	76	9%
24-26	81	10%
27+	61	7%

Activity	**N**	**Percent**
farmer, fisherman	17	2%
professional	14	2%
shopkeeper, craftsman, owner	26	3%
general management	78	9%
employee, middle management	213	25%
manual worker	138	16%
retired	181	21%
housewife	40	5%
student, military service	60	7%
temporarily unemployed	42	5%
other	32	4%
Size of locality (no. of inhabitants)		
< 2.000	76	9%
2.000 - 5.000	62	8%
5.000 - 20.000	108	13%
20.000 - 50.000	91	11%
50.000 - 100.000	59	7%
100.000 - 500.000	153	19%
> 500.000	271	33%

Regarding gender distribution, the dataset shows a fairly equal share, with 50.2% of respondents identifying as female and 49.8% as male, which aligns with the EU average. The dataset does not take into account diverse gender identities, as these were not included in the original survey.

The age distribution spans from 15 to 99 years. However, in order to facilitate a clearer analysis and enhance comparability, the participants were divided into different age groups. While there is no strict guideline for age classification in the extant scientific literature, the determination of groups depends on the specific research objective and the level of granularity required.[113] Previous studies on CBDC or the euro introduction

[113] Cf. Franssen, T., et al. (2020); Miles, G., et al. (2024), p. 2

have employed various age classification methods. For the purposes of this study, participants were divided into groups in accordance with the four-quarter approach, thus ensuring a balanced distribution across the age ranges. The following four age groups were identified: 15-29 years, 30-44 years, 45-59 years, and 60+ years.

Next, participants indicated their age at which they completed their full-time education. As studies on the digital euro revealed insights on the correlation between innovation acceptance and income, the education data can serve as a proxy for socioeconomic status or income, as this information is not included in the dataset. Existing research shows a positive correlation between educational attainment and income, making this variable an important consideration for analysing financial concerns and their impact on aversion factors.[114] The chart in appendix 2.3 indicates that 43.4% of the sample, nearly half, completed their education between the ages of 16 and 18. However, data on the type of diploma attained is unavailable. According to the Statistisches Bundesamt, the average age at which individuals complete their education has risen in recent years due to the increasing trend of attending university.[115] This information needs to be taken into account as it may influence the analysis of educational attainment and its potential correlation with aversion factors towards the euro and digital euro.

The participants are also categorised according to their professional occupation, which has an important impact on life satisfaction, status and therefore potentially attitudes towards innovation.[116] 63% of the sample falls into the middle management, manual and retired occupations categories.

Finally, respondents reported the size of their home locality, with over half (52%) living in larger cities of at least 100,000 inhabitants, while 30% reside in very rural areas[117] with populations not exceeding 20,000.

3.2 Empirical analysis

3.2.1 Instruments and variables

The survey used only closed-ended questions and was divided into two sections: the section on personal information served as the basis for collecting demographic data, while the questions on the euro introduction aimed to capture a detailed attitude towards

[114] Cf. Montgomery, M. R., et al. (2000), p. 159
[115] Cf. Statistisches Bundesamt (2020)
[116] Cf. Inglehart, R. (2020), p. 87
[117] Cf. BMWS (2024)

the euro introduction. An overview of the entire questionnaire is provided in appendix 7.

First of all, the identification of the type of variables and scales is necessary, in order to ascertain the correct statistical approach.[118] Within the demographic segment, variables such as gender and standard activity were treated as categorical nominal variables, as respondents were required to choose from a predefined set of occupation options. In contrast, age and the age at completion of full-time education were collected as continuous interval variables, allowing for exact numerical input. For analysis purposes, age was further grouped into four distinct categories, thus rendering it an ordinal categorical variable. Similarly, the size of the respondent's home locality was treated as an ordinal variable, structured into population-based categories that reflect the degree of urbanization.

Secondly, the actual survey on the euro introduction consisted of a mix of yes/no questions and questions utilizing Likert-type scales.[119] Yes/no questions, e.g. question q16j – *"[The euro] will mean more advantages than disadvantages for you personally"*, were coded as categorical dichotomous variables, featuring only two non-numerical response options. For those questions, variables were coded manually into a binary dataset following the 0 (no) – 1 (yes) logic. In turn, Likert-scale items were interpreted as categorical ordinal variables, as the response options do not possess interval properties but imply an inherent order. For instance, this is illustrated by q8: *"How well informed do you feel about the single European currency, the euro?"*. Each scale point in the Likert items was verbally labelled - for example, ranging from "1 = strongly agree" to "4 = strongly disagree," or from "1 = very well informed" to "4 = not at all informed." Table 2, at the end of this chapter, presents a comprehensive overview of the analysed variables and their respective types and scales.

To enable quantitative processing of the categorical and non-numeric responses, all survey items were systematically numerically coded. This transformation allowed for the application of non-parametric statistical methods appropriate for ordinal data, while also enabling correlation and regression analysis to identify associations between demographic characteristics and respondents' attitudes toward the euro introduction.[120]

[118] Cf. Saunders, M. / Lewis, P. / Thornhill, A. (2009), p. 422
[119] Cf. Porst, R. (2015), p. 247
[120] Cf. Saunders, M. / Lewis, P. / Thornhill, A. (2009), p. 422

However, not all survey questions were analysed to answer the research question. In order to conduct an analysis of resistance to the introduction of the euro, comparable to the aversion to the digital euro, it was necessary to identify and extract only the most relevant variables from the dataset. This selection process was backed by the conceptual framework outlined in Chapter 2.2.2, which synthesised findings from previous studies on CBDCs and defined four distinct aversion factors: financial implications, perceived uselessness & ease of use, lack of understanding, and concerns about trust and privacy. These resistance drivers served as a consistent and theory-driven foundation for the selection of variables and the design of the subsequent statistical analysis.

3.2.1.1 Overall attitude

The objective of the analysis is to examine how each of these four aversion factors influenced respondents' overall attitude towards the introduction of the euro. To this end, a question reflecting the general disposition of a participant towards the euro is first determined. Consequently, the *q16j – [The euro] will mean more advantages than disadvantages for you personally* – is employed as an indicator of overall attitude. This question was selected as it integrates multiple underlying influences into a single, outcome-oriented judgment, aligning with existing literature that highlights multiple factors contributing to final innovation resistance.[121]

3.2.1.2 Financial implications

Afterwards, each of the four aversion factors was matched with one fitting question from the survey. First, for resistance due to financial implications, *q16i - [The euro] will contribute to price stability* - was used. This item directly addresses concerns about inflation and macroeconomic volatility - key drivers of public resistance to monetary reforms - reinforced by findings that perceived financial instability reduces support for central bank-led innovations.[122]

3.2.1.3 Lack of understanding

Second, the lack of understanding for the new currency was captured through *q8 - How well informed do you feel about the single European currency, the euro?*. As highlighted in the theoretical framework, a lack of knowledge due to low education level or missing communication can foster confusion and ultimately rejection.[123] This is

[121] Cf. Kaur, P., et al. (2021), p. 1748
[122] Cf. Chadi, A. (2015) p. 1
[123] Cf. Abass, D. (2022), p. 3

particularly evident in the context of complex innovations such as currency transitions, reflecting how limited knowledge and communication failures reduce willingness to adopt innovations.[124]

3.2.1.4 Uselessness and ease of use

Third, perceived uselessness and ease of use were measured via *q14a - Replacement of the Dmark by the euro will cause you personally a lot of inconvenience?* This questions reflects eventual perceptions of low personal benefit, a known barrier to acceptance when individuals fail to see added value in an innovation.[125]

3.2.1.5 Trust and security

Lastly, the factor of trust and security was assessed using *q14e - You think that the necessary regulations and measures will be taken in time to protect the consumers from abuses?*. Since trust in institutions and effective regulation are key concerns in the debate on the digital euro, q14e in the context of the euro introduction reflects public confidence in these safeguards, which is crucial for the acceptance of this new currency.[126]

3.2.2 Statistical approach

The data analysis follows a structured three-step approach: (1) Descriptive Analysis to summarize data distributions and central tendencies, (2) Correlation Analysis to explore relationships between key variables, and (3) Regression Analysis to quantify the impact of significant predictors on attitudes toward the euro introduction.

Statistical analysis started with a descriptive analysis of demographic and resistance-related variables to provide an overview of data distribution and central tendencies.[127] This step includes calculating and comparing the mean, median, standard deviation, minimum and maximum values for each variable.

Subsequently, relationships between variables, are examined via correlation analysis. To select the appropriate correlation analysis method, the variables are tested for normal distribution using the Shapiro–Wilk test (swilk > or < 0.05). Pearson's correlation is mostly used for normally distributed metric data, whereas Spearman's correlation is

[124] Cf. Bijlsma, M., et al. (2021), p. 21
[125] Cf. Faunce, L. / Arnold, M. / Fleming, S. (2023), p. 2
[126] Cf. Ballasck, D. / Paulick, J. (2021), p. 9
[127] Cf. Lippe, P. von der (2018), p. 23

more suitable for categorical and ordinal data.[128] The results of the normality test, coupled with the ordinal nature of most variables related to the euro questions, support the use of a Spearman correlation. Since most variables are rankable rather than nominal, the Chi-Square Test is not applied. Two sets of correlation analyses are performed, each applying two significance levels ($p < 0.05$ and $p < 0.01$) to ensure robustness. The first analysis tests the relationship between respondents' overall attitude toward the euro (q16j) and the four identifies aversion factors (q8, q14a, q14e, q16i). The second assesses correlations between q16j and key demographic variables (gender, age, education, employment status and locality size).

Lastly, a multivariate logistic regression was applied to all variables that previously demonstrated a statistically significant correlation with q16j, in order to quantify the individual contribution of each aversion driver and demographic characteristic. In this model, q16j, representing the overall attitude toward the euro introduction, is defined as the dependent variable. The demographic variables are included as control variables, helping account for potential confounding influences and thus improve the precision and interpretability of the estimated relationships between public resistance factors and attitudes toward the euro. The four aversion factors serve as the main independent variables. Given the dichotomous nature of dependent variable - answered with either *yes* or *no* - a binary logistic regression is used.[129] Each aversion factor is initially analysed individually to assess its isolated effect, before measuring the combined impact of all factors within a multivariate model. Accordingly, the following regression formulars are applied:

Regression formula testing one aversion factor (AF):

$$logit(q16j) = \beta_0 + \beta_1 \times sex + \beta_2 \times age_{group} + \beta_3 \times educ + \beta_4 \times prof + \beta_5 \times size + \gamma_x \times AF$$

Regression formula testing all aversion factors:

$$logit(q16j) = \beta_0 + \beta_1 \times sex + \beta_2 \times age_{group} + \beta_3 \times educ + \beta_4 \times prof + \beta_5 \times size + \gamma_1 \times q8 + \gamma_2 \times q14a + \gamma_3 \times q14e + \gamma_4 \times q16i$$

Afterwards, odds ratios are calculated. The logistic regression estimates how each demographic or aversion factor influences the likelihood that a respondent supports the

[128] Cf. Schober, P. / Boer, C. / Schwarte, L. A. (2018), p. 1764
[129] Cf. Sperandei, S. (2014), p. 13

euro introduction - that is, perceives more advantages than disadvantages (q16j_bin = 1). This is done by calculating odds, which compare the probability of support to the probability of rejection. The regression coefficients show how these odds change with each unit increase in a variable. To simplify detailed interpretation, they are converted into odds ratios and percent changes in odds, using the following formula:

Odds ratio:

$$\% \text{ change in odds} = (e^{\beta} - 1) \times 100$$

Finally, based on the logitstic regression results, predicitve margins are derived and evaluated. By holding all other independent variables constant, these margins estimate the probability that specific demographic groups (e.g. only men, 15-29 years old,…) or respondents selecting particular answer options (e.g., feeling very well informed) would respond affirmatively to q16j, the dependent variable.

Table 2: Overview of variables and scales

Section	*Abbr.*	Question	Answer options	Variable/scale type
Demographic information	*sex*	Gender	1: Man 2: Woman	Categorical (nominal)
	age	Age	[xx] years old	Continuous (interval)
	age_group	Age group	1: 15-29 years 2: 30-44 years 3: 45-59 years 4: ≥60 years	Categorical (ordinal)
	educ	Age when finished full time education	5-13 14 15 16 17 18 19-20 21-23 24-26 ≥27	Continuous (interval)
	prof	EOS Standard Activity	1: farmer, fisherman 2: professional 3: shopkeeper, craftsman, owner 4: general management 5: employee, middle management 6: manual worker 7: retired 8: housewife 9: student, military service 10: temporarily unemployed 11: other	Categorical (nominal)
	size	Size of Locality	≤2.000 2.000-5.000 5.000-20.000 20.000-50.000 50.000-100.000 100.000-500.000 ≥500.000 habitants	Categorical (ordinal)
Euro introduction	*q16j*	Overall attitude: Will mean more advantages than disadvantages for you personally	no - 0 yes - 1	Categorical (dichotomous)
	q8	Lack of understanding: How well informed do you feel about the single European currency, the Euro?	1 - very well informed 2 - well informed 3 - not very well informed 4 - not at all informed	Categorical (ordinal) Likert-scale
	q14a	Uselessness & ease of use: Replacement of the Dmark by the Euro will cause you personally a lot of inconvenience?	1 - strongly agree 2 - quite agree 3 - quite disagree 4 - strongly disagree	Categorical (ordinal) Likert-scale
	q14e	Trust & security You think that the necessary regulations and measures will be taken in time to protect the consumers from abuses?	1 - strongly agree 2 - quite agree 3 - quite disagree 4 - strongly disagree	Categorical (ordinal) Likert-scale
	q16i	Financial Implications: Will contribute to price stability	no - 0 yes - 1	Categorical (dichotomous)

4. Empirical findings

4.1 Descriptive statistics

To provide a comprehensive overview of the variables under investigation - both demographic factors and resistance toward the euro introduction - descriptive statistical analyses were conducted. The corresponding results, excluding nominal demographic variables already discussed in the preceding chapter, are presented in Table 3.

Table 3: Descriptive statistics

Variable	Obs	Mean	Median	Std. dev.	Min	Max
Age	820	44,90	43	16,24	15	93
Education	820	19,02	17	4,45	13	30
Size	820	304,88*	306**	2,07	301	307
Lack of understanding (q8)	820	2,42	2	0,67	1	4
Uselessness & ease of use (q14a)	820	2,67	3	0,94	1	4
Trust & security (q14e)	820	2,06	2	0,85	1	4
Financial implications (q16i)	820	0,41	0	0,49	0	1
Overall attitude (q16j)	820	0,33	0	0,47	0	1

*reflecting an average size of ~50.000 inhabitants
**reflecting an average size of ~100.000-500.000 inhabitants

The mean age of respondents was 44.9 years, with a median of 43 years. These values are consistent with demographic statistics from 2001, which report an average age of 41.3 years for the German population,[130] thereby supporting the representativeness of the sample. Regarding the age at which respondents finished their formal education, the mean was 19 years and median 17 years. However, the relatively high standard deviation of 4.45 years indicates considerable variability within the sample, suggesting a diverse range of educational trajectories among participants. For the variable size of locality, the calculated mean of 304.88 and median of 306 likely correspond to a mid-range urban category, suggesting that many respondents live in towns with populations between 20,000 and 100,000 inhabitants. The standard deviation of 2.07 units further implies a reasonably broad distribution across rural and urban settings.

Next, the anwsers for the four aversion factors and the overall attitude toward the euro are analysed and visualized in the annex. For q8, referring to the lack of understanding, the mean value of 2.42 suggests that participants see themselves roughly in the middle between being “very well informed” and “not at all informed.” The relatively low standard deviation indicates that perceptions of understanding are fairly homogeneous, which is somewhat surprising given the educational diversity within the sample.

[130] Cf. Bundesinstitut für Bevölkerungsforschung (2025)

Variable q14a assesses expected ease of use and uselessness from replacing the DM with the euro. The mean of 2.67 shows that most respondents do not anticipate significant disruption. However, with a standard deviation of 0.94 - the highest among all aversion factors - opinions vary considerably. This dispersion also becomes clear when looking at the percentual dispersion illustrated in annex 3.2, potentially reflecting different levels of personal exposure to transactional complexity. When examining the level of regulatory trust (q14e) that German citizens place in the new currency, the results suggest a generally optimistic attitude. The mean value of 2.06 corresponds to the answer option “quite agree” on the variable measuring trust in the regulatory measures accompanying the euro's introduction. Still, the standard deviation of 0.85 shows that not all respondents share this confidence, pointing to differentiated levels of trust - a critical factor in innovation resistance. The last aversion factor, q16i, addresses concerns about financial implications due to the monetary change, operationalized through the question “Will [the euro] contribute to price stability?”, to which respondents answered with either "yes" (1) or "no" (0). Given this binary coding, the mean value cannot exceed 1.0. The average of 0.41 suggests that a minority of respondents expressed confidence in the euro's ability to ensure price stability. Specifically, 58% answered "no", reflecting widespread scepticisms about macroeconomic impacts. This finding is particularly noteworthy, given that price stability was a central rationale for the euro's introduction, and suggests a substantial trust gap in perceived economic benefits.

Finally, we examine q16j, which captures respondents’ general attitude toward the introduction of the euro. The results show that two-thirds (67%) of participants perceive more personal disadvantages than advantages associated with the currency change. Moreover, the finding is reflected in the average value of 0.33, which indicates a clear tendency toward the negative answer option ("no"). This predominantly negative attitude is consistent with findings from the literature reviewed in earlier chapters, which highlight the high levels of aversion toward the euro among the German population prior to its introduction.

4.2 Correlation analysis

Before analysing the correlations between the variables, the appropriate correlation method was determined based on the results of the Shapiro-Wilk test for normality. The table provided in appendix 4, summarizes these results. Although around half of the variables show a normal distribution, the Spearman correlation coefficient is applied throughout. This method is appropriate for variables that are either not normally distributed (e.g., educ, size) or are ordinal in nature.

The results of the correlation between q16j and aversion factors (Table 4), as well as q16j and demographic factors (Table 5), are illustrated below. Significance value per correlation is set at $p \leq 0.05$ and $p \leq 0.01$.

Table 4: Correlation analysis - aversion factors

	q16j	q8	q14a	q14e	q16i
q16j	1,0000 -				
q8	-0,2763** (0,0000)	1,0000 -			
q14a	0,2210** (0,0000)	-0,1990** (0,0000)	1,0000 -		
q14e	-0,0737* (0,0348)	0,1108** (0,0015)	0,0094 (0,7884)	1,0000 -	
q16i	-0,3575** (0,0000)	0,1763** (0,0000)	-0,0684 (0,0501)	0,1703** (0,0000)	1,0000 -

*significance level: p≤0,05
**significance level: p≤0,01

First part of the correlation analysis reveals that all four aversion factors are significantly correlated with the overall attitude toward the euro (q16j). The strongest correlation is observed with financial implications (q16i), where a correlation coefficient of $\rho = -0.36$ ($p < 0.001$) indicates that respondents who believe the euro will contribute to price stability are considerably more likely to view the currency change positively. A further significant negative relationship is found between perceived understanding (q8) and overall attitude ($\rho = -0.28$, $p < 0.001$), suggesting that individuals who feel better informed about the euro tend to express a more favourable opinion of its introduction. Conversely, there is a positive correlation with the factor perceived uselessness or inconvenience (q14a): with $\rho = 0.22$ ($p < 0.001$), those who anticipate personal

difficulties due to the currency change are more likely to hold a negative view. Lastly, trust in regulatory measures (q14e) shows a weak but still statistically significant correlation with the overall attitude ($\rho = -0.07$, $p = 0.035$). This low correlation shows that regulatory trust plays a minor role compared to cognitive and economic factors when it comes to shaping public acceptance of the euro.

Table 5: Correlation analysis - demographic factors

	q16j	sex	age_group	educ	prof	size
q16j	1,0000					
	-					
sex	-0,2103**	1,0000				
	(0,0000)	-				
age_group	0,0119	0,0056	1,0000			
	(0,7341)	(0,8731)	-			
educ	0,1831**	-0,1468**	-0,1016**	1,0000		
	(0,0000)	(0,0000)	(0,0036)	-		
prof	-0,0983**	0,1575**	0,0939**	-0,2772**	1,0000	
	(0,0049)	(0,0000)	(0,0071)	(0,0000)	-	
size	0,0670*	0,0250*	0,0909**	0,1116**	0,0353	1,0000
	(0,0295)	(0,4742)	(0,0092)	(0,0014)	(0,3124)	-

*significance level: p≤0,05
**significance level: p≤0,01

The second correlation analysis examines key demographic variables that also show statistically significant relationships with respondents' overall attitude toward the euro introduction. Most notably, a strong correlation with gender ($\rho = -0.2$; $p < 0.001$) implies that male respondents tended to view the euro more favourably than female interviewees. A weaker yet still significant correlation is found for occupational status (prof) ($\rho = -0.10$). However, given that the variable is not rankable, it is not possible to make any assumptions about the relationship between income and overall attitude. Next, the correlation with age at finishing education (educ) is positive and statistically significant ($\rho = 0.18$), implying that individuals with higher levels of education were less critical of the euro. This could point to greater awareness of potential economic benefits or a more positive outlook shaped by policy knowledge. There is also a small positive correlation between locality size (size) and euro attitude ($\rho = 0.08$; $p = 0.005$), suggesting that people living in smaller rural areas were slightly more likely to reject the euro - possibly due to economic concerns or a lack of political discourse. Finally, there is no significant relationship with age group ($\rho = 0.01$; $p = 0.73$), indicating that, in

opposition to the prevailing literature, attitudes toward the euro were relatively consistent across age cohorts in this sample.

Overall, the correlation analysis shows that perceptions of economic benefit - particularly confidence in price stability - alongside informational clarity (lack of understanding) and gender, were the most influential factors determining public attitudes toward the euro prior to its introduction.

4.3 Multivariate regression

Finally, to evaluate the impact of attitudinal resistance on public support for the introduction of the euro in 2002, a series of logistic regression models were applied, with the binary variable q16j serving as the dependent variable. The multivariate regression analysis aimed to quantify how strongly the four aversion factors - lack of understanding, perceived uselessness and ease of use, trust and privacy, and concerns about financial implications - shaped the overall attitude towards the euro introduction, while controlling for demographic background. The stepwise regression included six models. Model 1 tested only demographic controls; Models 2 to 5 added each aversion factor separately; and Model 6 combined all resistance and demographic variables. The full set of coefficients, significance levels and percent changes in odds is presented in Table 6. An overview of predictive margins is provided in annex 5.

In Model 1, two demographic variables - gender and age when finishing education - showed statistically significant effects. The coefficient for gender was -0.8297 ($p<0.001$). This coefficient indicates that women were significantly less likely than men to support the euro. The odds ratio of 0.436 corresponds to a 56.4% decrease in odds for female respondents. Education showed a modest positive association (0.0607, $p<0.001$), indicating that the older respondents were when they completed their full-time education, the more likely they were to support the euro - with each additional year increasing the odds of support by approximately 6.3%. Other demographic factors - including individuals age, occupation, and locality size - were not significant in this model. Finally, the R^2 of 0.0533 indicates that only 5.3% of the variation in euro support was explained by demographic characteristics alone.

Regression models 2 to 6 serve to examine the main objective of this analysis: identifying the effects of the four resistance factors on support for the euro.

Firstly, model 2 tested for the impact of q8 (lack of understanding). The coefficient of -0.7501 ($p < 0.001$) shows a strong negative effect: each one-point increase in lack of understanding led to a 52.8% decrease in the odds of euro support, underlining the relevance of common knowledge on the euro introduction and educational measures. This model's explanatory power increased to $R^2 = 0.0872$.

Secondly, model 3 included q14a (perceived uselessness and ease of use), which assessed agreement with the statement that the euro would cause personal inconvenience. Higher values reflect disagreement and thus greater ease of use. The positive coefficient of 0.4472 ($p < 0.001$) shows that respondents who felt less inconvenienced by the euro introduction were 56.4% more likely to support it (per one-point increase). While the effect was slightly weaker than that of q8, the factor uselessness still played an important role in explaining attitudes, raising the R^2 to 0.0791.

Thirdly, q14e (trust and security) was added. The coefficient of -0.2900 ($p = 0.002$) suggests a weaker but still significant effect, with each one-point decrease in trust reducing the odds of support by 25.2%. Among the four aversion factors, this variable had the least impact on attitudes toward the euro ($R^2 = 0.0628$). This finding is particularly noteworthy as in contrast, resistance to CBDCs today is mainly driven by strong concerns about privacy and security.

In the final model (M5) testing the isolated influence of individual aversion factors, q16i (financial implications) was included. While recent surveys show that financial concerns are less central in discussions around the digital euro, this dimension had by far the strongest effect in the context of the 2002 introduction. Only 41% believed the euro would help ensure price stability - making financial skepticism the most statistically powerful resistance factor. Specifically, the coefficient of -1.6035 ($p < 0.001$) corresponds to a 79.9% decrease in the odds of support among those who did not believe in the euro's stabilizing impact. This model explained 14.8% of the variance ($R^2 = 0.1483$), which is higher than in any other model with a single aversion factor.

In M6, measuring the relative and independent impact of each aversion factor on euro support, all four aversion factors were entered simultaneously, along with the demographic control variables. The structural model in figure 2 illustrates the influence of each resistance variable. In this specification, three of the four resistance factors remained statistically significant: q8 (-0.5688, $p < 0.001$), q14a (0.4110, $p < 0.001$), and q16i (-1.5195, $p < 0.001$), thus confirming that each of these factors independently

contributed to explaining resistance to the euro. More specifically, respondents who felt less informed about the euro were significantly less likely to support it – meaning that their chances were about 43% lower compared to those who felt more informed. Indeed, predictive measures indicate that only 23% of respondents who feel not informed at all would support the euro, whereas 39% of those who feel very well informed would respond positively. Those who did not anticipate inconvenience were 50.8% more likely to support it, and those who doubted the euro would ensure price stability were 78% less likely to support its introduction. It is predicted that only 22% of respondents who doubt the euro's contribution to financial stability perceive any personal advantage in the new currency. In contrast, the fourth aversion factor, q14e (trust and security), was no longer statistically significant (-0.1156, p = 0.267) when included alongside the others. This suggests that its impact may be influenced by stronger concerns, particularly those related to financial implications and overall understanding.

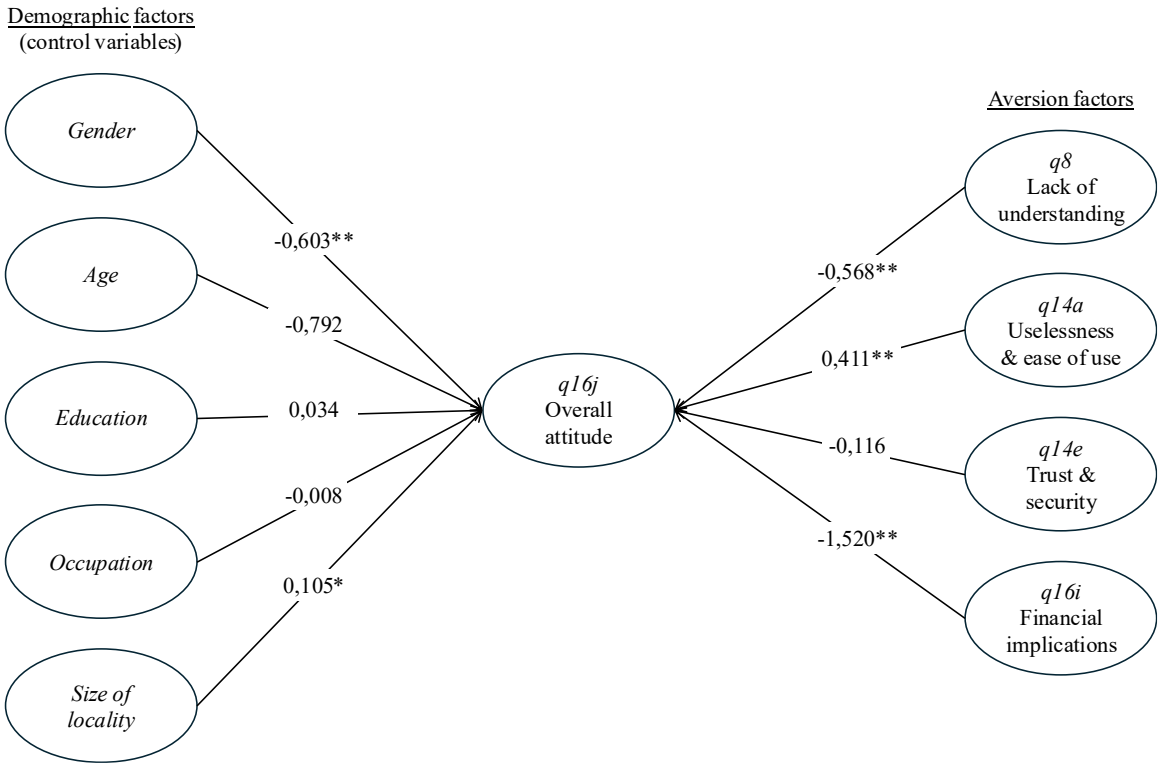


Figure 2: Structural model based on regression

Among the demographic controls, gender remained significant (-0.6029, p = 0.001), with women having 45.1% lower chance of supporting the euro than men. Predictive analytics confirm this tendency, estimating that 39% of men and only 27% of women would respond positively to q16j. Locality size also proved to be statistically significant

(0.1052, p = 0.013), indicating that living in a larger locality was associated with an 11.1% increase (per population size group) in the odds of support. In contrast, age when finishing education - which had shown a significant effect in earlier models - lost its significance in this analysis, suggesting that its indirect influence may be explained by the included resistance factors. Nevertheless, predictive measurments suggest that citizens who completed their education between the ages of 21 and 26 are the most likely to support the euro introduction (40% for those aged 21–23; 45% for those aged 24-26). Overall, M6 best explains the aversion toward euro introduction, in comparison to the previous models. This is shown by its higher R^2 value of 0.1894 and improved statistical reliability (log likelihood = -423.453).

To summarize, the analysis demonstrates that the four identified aversion factors had a substantially greater impact on public support for the euro than demographic variables. Among these, concerns about financial implications – represented through belief in price stability - were the most influential, followed by perceived lack of understanding and uselessness. Together, these three resistance factors explained the biggest part of why people had different opinions about the euro's introduction.

4.4 Robustness check

To enhance the robustness and reliability of the presented findings, a secondary data verification was conducted. For this purpose, panel data from the German Socio-Economic Panel (SOEP) for the year 2001 were analyzed. This dataset includes information on over 20,000 German citizens, capturing a wide range of life characteristics nad including an answer on the statement "concerns about the euro introduction". In addition to the review conducted by B. Isengard[131], who previously analyzed the panel data in the context of the euro introduction, we applied the same demographic and aversion factors used in the main study to the dataset. However, as not all factors could be directly translated into available variables, only a reduced set of variables was included in the correlation and regression analyses. Aversion factors were measured using proxy variables. For example, the financial implications (q16i) were captured through the variable "concerns about general economic developments". Firstly, a spearman correlation was applied, and secondly, a linear regression was used.

[131] Isengard, B. / Schneider, T. (2002)

The corresponding correlation and regression results are presented in appendix 6. Both analyses support the findings derived from the Eurobarometer sample. In the correlation analysis, all tested demographic and aversion factors exhibit a statistically significant relationship with overall attitudes toward the euro. The regression analysis yields an R^2 of 15.3%, indicating a slightly lower explanatory power compared to the Eurobarometer-based model, but the results remain statistically significant.

The findings reaffirm that gender plays a substantial role in shaping attitudes toward the euro, with men demonstrating a more positive perspective than women. Higher levels of education are also associated with increased support for the new currency, while age shows only a lower influence. According to B. Isengard this low impact of the variable age might be due to its strong correlation with other factors, e.g. future expactions.[132] Among the aversion factors and with a correlation factor of 0.348, perceived financial implications emerge as the strongest limitation to euro support. A lack of understanding and concerns related to trust and security also contribute to an increase in concerns, though with weaker statistical significance. The factor uselessness and ease of use could not be tested using the present variables.

In sum, the SOEP data confirm that demographic and aversion factors influenced public attitudes toward the euro just before its introduction in a way coherent with the Eurobarometer results. This consistency underscores the statistical robustness of the findings and enables a more detailed interpretation of the observed patterns.

[132] Isengard, B. / Schneider, T. (2002), p. 23

Table 6: Logistic regression analysis

	M1 Only control variables	M2 q8 - Lack of understanding	M3 q14a - Uselessness & ease of use	M4 q14e - Trust & Security	M5 q16i - Financial implications	M6 Overall aversion
sex	-0,8297**	-0,6807**	-0,7657**	-0,8647**	-0,7567**	-0,6029**
	(0,000)	(0,000)	(0,000)	(0,000)	(0,000)	(0,001)
%Δ odds	*-56,4%*	*-49,4%*	*-53,5%*	*-57,9%*	*-53,1%*	*-45,3%*
age_group	0,0148	-0,0162	0,0261	-0,0041	-0,0680	-0,7917
	(0,843)	(0,832)	(0,731)	(0,956)	(0,391)	(0,333)
%Δ odds	*1,5%*	*-1,6%*	*2,6%*	*-0,4%*	*-6,6%*	*-54,7%*
educ	0,0607**	0,0427*	0,0479**	0,0608**	0,0595**	0,0341
	(0,000)	(0,017)	(0,007)	(0,000)	(0,001)	(0,080)
%Δ odds	*6,3%*	*4,4%*	*4,9%*	*6,3%*	*6,1%*	*3,5%*
prof	-0,0209	0,0021	-0,0164	-0,0306	-0,0317	-0,0082
	(0,578)	(0,956)	(0,671)	(0,421)	(0,431)	(0,845)
%Δ odds	*-2,1%*	*0,2%*	*-1,6%*	*-3,0%*	*-3,1%*	*-0,8%*
size	0,0684	0,0659	0,0602	0,0728	0,1125**	0,1052*
	(0,072)	(0,091)	(0,120)	(0,058)	(0,006)	(0,013)
%Δ odds	*7,1%*	*6,8%*	*6,2%*	*7,6%*	*11,9%*	*11,1%*
q8		-0,7501**				-0,5688**
		(0,000)				(0,000)
%Δ odds		*-52,8%*				*-43,4%*
q14a			0,4472**			0,4110**
			(0,000)			(0,000)
%Δ odds			*56,4%*			*50,8%*
q14e				-0,2900**		-0,1156
				(0,002)		(0,267)
%Δ odds				*-25,2%*		*-10,9%*
q16i					-1,6035**	-1,5195**
					(0,000)	(0,000)
%Δ odds					*-79,9%*	*-78,1%*
Constant	-21,418	-18,817	-20,057	-22,005	-32,217**	-29,527*
	(0,064)	(0,112)	(0,088)	(0,059)	(0,009)	(0,021)
Log likehood	-494,535	-476,853	-481,081	-489,618	-444,944	-423,453
R^2	0,0533	0,0872	0,0791	0,0628	0,1483	0,1894

*significance level: p≤0,05
**significance level: p≤0,01

5. Interpretation

5.1 Interpretation of results & innovation resistance model

The data analysis has demonstrated that the four aversion factors and demographic characteristics have very different impacts on the overall attitude towards the euro introduction in 2002. In this chapter, a comparison will be made between the results and the current critical debate on the digital euro, and possible reasons will be explored. The interpretation of the aversion factors follows in order of increasing impact for the euro introduction.

The first resistance factor with the least statistical impact on support for the euro introduction is q14e, which captures perceptions of trust and security. Descriptive analysis revealed that 72% of respondents - nearly three-quarters - expressed confidence that appropriate consumer protection regulations would be implemented, indicating a relatively high level of institutional trust. However, regression analysis demonstrated that this factor had no statistically significant effect on overall attitudes toward the euro, suggesting that legal and regulatory concerns did not play a central role in shaping public opinion at the time. In strong contrast, recent studies on the digital euro and other CBDCs identify trust, security, and privacy as the most decisive factors influencing acceptance. For instance, a large-scale consultation by the ECB, which surveyed over 8,000 participants, found that Germany ranked first, with 55% of respondents identifying privacy as the most important feature of a digital euro.[133] Similarly, another international study on digital currencies reported that the criterion of "safety from fraud or theft" was ranked as the most important by respondents across all observed countries, with 58% of German participants selecting this concern as their top priority.[134] This pronounced discrepancy between the two monetary innovations - despite both being government-backed and therefore institutionally legitimate - raises important questions. It points to a shift in public concerns, from assuming trust in regulation in 2002 to actively questioning data protection and technological security in today's digital context, and therefore requires further investigation.

One potential explanation for the differing impact of trust on resistance to the euro versus the digital euro lies in the declining trust in governmental institutions and

[133] Cf. European Central Bank (2021), p. 2
[134] Cf. Official Money and FInancial Institutions Forum (2020), p. 13

initiatives over time. The European Social Survey, which publishes representative data biennially, documents a clear decline in public trust in the European Parliament. Whereas in 2002 only approximately 18.6% of German citizens reported low trust in the European Parliament, this figure had increased to 25.8% by 2023.[135] This trend is consistent with broader studies indicating a widespread loss of political trust, driven by a series of political and macroeconomic crises in recent years.[136] Another contributing factor may be the differences in the type of innovation. Compared to the introduction of the physical euro, the digital euro represents a more disruptive and less tangible innovation, which can heighten the perceived risk barriers associated with its adoption. People often feel less secure when they are confronted with complex digital systems or data, which can lead to doubts about privacy and safety. According to IRT, such perceptions of risk are known to amplify functional resistance.[137] For the case of the digital euro, this active resistance driver needs to be managed in combination with reduction of passive drivers, such as lack of understanding or perceived uselessness. Third potential divergence reason is that public media also focused on different aspects of the two currencies' introduction. In the years 2000 – 2002 topics such as inflation, conversion rates and daily usability were focus of the euro debate.[138] The regulatory framework was generally accepted at that time and not widely questioned. Today, news about CBDCs much more frequently raise the question of technological uncertainty and data use, presenting regulatory design as a key focus of the digital euro debate. As S. Prodan's sentiment analysis of tweets related to CBDCs shows, a significant number of users express concerns regarding privacy and security issues online and thus spread the negativity.[139] Regarding demographic factors, existing literature indicates that they may exert a stronger influence on trust- and security-related concerns. For instance, studies have shown that women tend to express greater concern about security issues, and that older individuals often demonstrate increased risk perception.[140] However, these effects were not reflected in the current data analysis, suggesting that the relationship between demographic characteristics and trust-related resistance may be more nuanced or mediated by other variables.

[135] Cf. European Social Survey European Research Infrastructure (2023)
[136] Cf. Fluch, M. / Schlögl, S. (2012), p. 56
[137] Cf. Kaur, P., et al. (2020), p. 6
[138] Cf. Brettschneider, F. / Maier, M. / Maier, J. (2003), p. 56
[139] Cf. Prodan, S. / Dabija, D.-C. / Marincean, L. (2023), p. 1097
[140] Cf. Laukkanen, T., et al. (2007), p. 424

Next factor contributing to currency innovation resistance is represented by q14a, a clear type of passive resistance capturing perceptions of uselessness and ease of use. Already in 1989 usage barriers were identified by Ram and Sheth as one of the primary functional resistance factors in IRT. These barriers arise when an innovation is perceived as incompatible with existing routines, workflows, or habits.[141] In this context, S. Ram emphasizes that "innovations that require changes in customers' routine require a relatively long development process before gaining customer acceptance"[142]. In the case of the euro, ease-of-use concerns were largely tied to practical issues such as recalculating prices and handling unfamiliar banknotes. By contrast, the usage barrier in the digital euro context is primarily associated with technological aspects, such as operating a digital wallet and understanding how the system functions. Findings from both the euro introduction data and the ongoing digital euro debate point to a similar pattern: although not the most decisive factor in determining opposition, the usage barrier clearly contributes to resistance. Across both innovations, it becomes evident that individuals who struggle to understand the practical purpose or application of the new currency are less inclined to support its adoption. This uncertainty triggers the usage barrier and consequently strengthens innovation resistance. Likewise, recent surveys on the digital euro design consistently rank "ease of use" as a mid-level priority among the most important features, reinforcing its moderate impact.[143] This aligns with the findings from the pre-euro data analysis, confirming that although ease of use is relevant, it plays a secondary role in shaping public acceptance compared to other aversion factors. However, this passive factor appears especially prone to gaps between perception and reality. A study from Austria reveals that although many citizens initially faced difficulties with the euro - 46% reported problems in 2002 - usage barriers quickly diminished as people became more familiar with the new currency; by 2006, this share had dropped to just over 25%.[144] Although the digital euro has not yet been launched, similar patterns may emerge. While current perceptions of difficulty persist, it is reasonable to expect that ease of use will improve once the currency is integrated into daily life, suggesting that broader acceptance could follow as familiarity increases.

Also a lack of understanding (q8) is a key contributor to innovation resistance in both the euro introduction and the digital euro. In both cases, greater awareness, clearer

[141] Cf. Chen, C.-C. / Chang, C.-H. / Hsiao, K.-L. (2022), p. 2
[142] Cf. Ram, S. / Sheth, J. N. (1989), p. 7
[143] Cf. Abramova, S., et al. (2022), p. 23
[144] Cf. Fluch, M. / Schlögl, S. (2012), p. 60

communication, and higher levels of understanding are associated with increased public support. For the euro introduction, a study from 2000 on internal corporate communication confirmed the regression findings, showing a strong positive link between information sharing and readiness to adopt the new currency.[145] These findings also align with M. Bijlsma's research on CBDCs, which demonstrates that individuals with more knowledge about CBDC are more likely to express interest in opening an account.[146] Backed by the IRT-framework, it is observed that limited information or low awareness often leads to resistance or delays in adoption until perceived benefits become clearer.[147] Also, when the cognitive effort required to understand an innovation is too high - as is the case with both monetary changes due to their complexity - this can intensify perceived barriers and ultimately reinforce passive aversion.[148]

For this variable, a notable effect of two demographic factors - education and gender - can be observed in relation to the perceived lack of understanding. Regarding education, it is unsurprising that respondents with higher educational attainment felt better informed and, as a result, were more likely to support the euro. In her analysis, B. Isengard shows that, in 2001, citizens with a high school diploma were 18% less concerned than respondents with lower levels of education, probably because access to information varies considerably.[149] This observation is consistent with existing literature, which shows that higher education levels are positively associated with openness to innovation.[150] As with the other variables, gender also played a significant role: women reported feeling less informed about the euro and were more likely to oppose its adoption. This finding is probably also linked to differences in education levels at that time. Studies show that in 2001, women in Germany had, on average, lower levels of formal education and were more likely to stay at home. Supporting this, a dispersion analysis of the education variable reveals that approximately 10% more women completed their education before the age of 18 compared to men. While no current studies specifically link perceived knowledge and gender to digital euro acceptance, it is reasonable to assume that this factor could continue to influence attitudes toward digital financial innovations. However, given the progress in gender equality in education[151],

[145] Cf. van Everdingen, Y. M. / Bamossy, G. J. (2000), p. 129
[146] Cf. Bijlsma, M., et al. (2021), p. 21
[147] Cf. Claudy, M. C. / Garcia, R. / O'Driscoll, A. (2015), p. 531
[148] Cf. Kleijnen, M. / Lee, N. / Wetzels, M. (2009), p. 347
[149] Cf. Isengard, B. / Schneider, T. (2002), p. 500
[150] Cf. Stryja, C. / Satzger, G. (2019), p. 1135
[151] Cf. Statistisches Bundesamt (2025)

the impact of education-related information gaps on digital euro resistance may be less pronounced today.

The final aversion factor influencing support for the currency change is q16i, which captures concerns about financial implications. As with trust and security, this factor reveals significant differences between the euro introduction and the digital euro. In the regression analysis, q16i emerged as the most influential resistance factor, with respondents who did not believe the euro would ensure price stability showing 78% lower odds of supporting its introduction. This highlights the central role that macroeconomic stability and inflation concerns played in shaping public opinion at the time. In contrast, concerns about financial stability appear to play a minor role in resistance to the digital euro. If citizens had any concerns about the digital euro, they were mostly about the cost of the new currency. This discrepancy becomes clearer when considering the differing motivations behind the two innovations and the broader historical context.

While the euro was introduced to unify and stabilize the European economy in a post-reunification and post-crisis environment, the digital euro is primarily driven by technological innovation and modernization, rather than monetary transformation - making financial stability less of a focal concern in today's debate. The ECB has explicitly stated that the digital euro will not affect financial stability, noting that "our financial system – with the banking system at its centre – functions well, and the Eurosystem wants to preserve the key role banks play in ensuring the efficient provision of credit to the real economy"[152]. In contrast, and as previously discussed, German citizens exhibited strong emotional attachment to the DM, which was regarded as a symbol of economic identity and post-war recovery.[153] Consequently, the transition to the euro provoked fears of inflation - framed as the Teuro-effect - and a perceived loss of monetary sovereignty. Within the framework of IRT, such concerns activate both the risk barrier, a functional resistance, and the tradition barrier, a psychological resistance rooted in identity disruption.[154] This results in a particularly strong reluctance, as concerns stem from both active and passive resistance. Notably, these barriers appear largely absent in the discussion about the digital euro.

Looking at demographic characteristics, gender is once again a factor in this aversion, while other factors appear less relevant when it comes to financial concerns. Three

[152] Cf. European Central Bank (2024a)
[153] Cf. Przybyszewski, K. / Tyszka, T. (2007), p. 357
[154] Cf. Laukkanen, T., et al. (2007), p. 424

main explanations - one structural and two psychological - may account for this disparity. First, the data reveal a strong association between q16i and educational attainment, whereby lower levels of financial literacy correlate with heightened innovation resistance. Second, a study on demographic influences on price sensitivity suggests that women, who more frequently manage everyday household expenditures, demonstrate greater sensitivity to price changes.[155] This trait probably intensified concerns over inflation, thereby reducing support for the euro. Third, research in behavioural finance consistently show higher levels of financial risk aversion among women.[156] Given that a currency reform constitutes a significant systemic shift, often perceived as uncertain or unpredictable, this psychological tendency likely contributes to the observed gender gap in support.

An examination of the demographic impact on the general support for monetary innovation reveals slight discrepancies in the analysis. First, the observed data did not indicate a statistically significant effect of age on pre-euro resistance, which stands in contrast to existing literature. Studies on digital or payment-related innovations frequently suggest that younger individuals are less resistant to innovation than older age groups.[157] Even preliminary research on the digital euro considers age segmentation; however, findings do not consistently support the assumption that younger people show lower resistance, indicating that the role of age requires further investigation.

In contrast, gender demonstrated a pronounced effect in the context of the euro introduction. Although specific studies on gender differences regarding the digital euro are currently missing, related research on digital innovations - such as mobile banking[158] and internet usage[159] - supports the observed pattern: women tend to show lower levels of support for currency transitions compared to men. The reasons are multiple and should be studied in an in-depth analysis.

Lastly, logistic regression results revealed a positive and significant association between locality size and euro support. This effect is probably related to the "urban-rural education gap"[160], which shows that average education levels are higher in cities than

[155] Cf. Vanlalhruaii Leivang (2023), p. 724
[156] Cf. Pacheco, L. / Lobão, J. / Coelho, S. (2023), p. 356
[157] Cf. Laukkanen, T., et al. (2007), p. 420; Koziuk, V. (2021), p. 20
[158] Cf. Elbadrawy, R. / Abdel Aziz, R. (2011), p. 15
[159] Cf. Kantar TNS (2019), p. 14
[160] Cf. van Maarseveen, R. (2021), p. 683

in rural areas. Nonetheless, this variable cannot be analysed in greater depth due to the absence of comparable data in studies concerning digital euro resistance.

To summarize, this analysis demonstrates that resistance to the euro introduction was primarily driven by concerns over financial implications, while trust and security had the least influence - yet these two factors show the exact opposite pattern in the current digital euro debate, where trust and privacy dominate and financial concerns are marginal. Demographic variables such as gender and education had notable effects, particularly on financial and lack of understanding, whereas age showed limited or inconsistent impact. These findings align with IRT, showing that both passive barriers - such as usage and knowledge gaps - and active resistance—driven by economic fears and identity loss - shaped public attitudes. While active resistance dominated during the euro introduction, the digital euro debate is more influenced by passive concerns like complexity and limited understanding.

5.2 Implications for managers & stakeholders

Drawing on the challenges observed prior to the euro introduction - and the major differences identified between the two currency innovations - this chapter outlines key conclusions for addressing current resistance to the digital euro. By applying the framework of IRT, the analysis has demonstrated active and passive innovation barriers shaping public attitudes. As the digital euro remains under development and is expected to be launched in the coming years, we determine the three most relevant factors that can help reduce public reluctance and foster broader acceptance of this new form of currency.

First and arguably most important is the need for policymakers to leverage effective communication strategies and media campaigns to reduce resistance driven by passive resistance - particularly the lack of understanding and perceived uselessness of the digital euro. The research findings indicated a strong correlation between personal benefits or understanding of the technology and the likelihood of CBDCs adoption which highlights the need for financial institutions or other intermediaries to effectively disseminate knowledge and make the digital euro more tangible.[161] While it is important that banks consider diverse public needs when designing the digital euro or currencies in general, this alone is insufficient. Our previous analysis of the euro introduction, along

[161] Cf. Faunce, L. / Arnold, M. / Fleming, S. (2023), p. 8

with an ECB study indicating increased willingness to accept the digital euro after viewing an explanatory video[162], showed the importance of communication networks and the decisive role media plays in such a debate. Thus, central banks are also encouraged to communicate effectively about the currencies purpose and usage, as this is likely to increase their adoption.[163] Furthermore, studies have revealed that CBDC projects progress faster in emerging economies due to increased innovation, openness and informal economy.[164] This also aligns with the requirement of "creating a positive social environment that encourages its use"[165] in order to make the digital euro a successful and competitive alternative to cash. As has been demonstrated by the analysis, demographic characteristics are of significance and it is therefore essential that the campaigns reach a majority of citizens, irrespective of their educational level, gender or other demographic factors.[166]

Secondly, managers and other policymakers need to build trust through a regulatory framework and its transparency. Ultimately, as this thesis confirms through the example of the euro introduction, trust is a precondition, not a by-product, of successful currency innovation. The digital euro will not gain public acceptance unless the institutional framework convincingly mitigates active resistance barriers - concerns about surveillance, misuse of data, and market dominance. It is evident that the ECB must establish a robust regulatory framework that encompasses all compliance requirements (e.g., AML or KYC) while maintaining valuable benefits for users.[167] Nevertheless, this presents a challenge for decision-makers, who must balance the competing demands of users for secure infrastructure and safety on the one hand, and anonymity and data protection on the other.[168] The focus on privacy regulations is imperative as a survey revealed that the willingness to use CBDC is significantly higher when users are assured that their identity and transaction data are stored separately and when they are informed about the privacy benefits.[169] Also, the ECB public consultation shows that citizens "want their payments to remain a private matter"[170] and view this as a priority. Following on from this, the ECB has suggested the introduction of so-called

[162] Cf. Georgarakos, D., et al. (2025), p. 17
[163] Cf. Abramova, S., et al. (2022), p. 1
[164] Cf. Maryaningsih, N., et al. (2022), p. 16
[165] Cf. Sun, M. / Li, Z. (2024), p. 23
[166] Cf. Horváth, D. (2023), p. 12
[167] Cf. Choi, S., et al. (2023), p. 30
[168] Cf. Tinn, K. / Dubach, C. (2021), p. 2
[169] Cf. Choi, S., et al. (2023), p. 29
[170] Cf. European Central Bank (2021), p. 11

"anonymity vouchers". These would limit the amount of CBDC that can be transferred without storing personal data, thereby providing users with as much individual control as possible while maintaining high safety standards. Since active innovation resistance - in this case stemming from security concerns - can intensify the spread of negative word-of-mouth and misinformation, the regulatory framework must be closely tied to communication efforts.

Finally, passive innovation resistance is closely linked to the extent of change expected from future users.[171] The introduction of the euro serves as a clear illustration of this dynamic, as the radical shift in the monetary system triggered significant public fear - partly due to emotional and tradition-based barriers. To mitigate similar concerns, policymakers should emphasize that the digital euro is intended as a complement to existing cash rather than a complete replacement.[172] This positioning can reduce aversion by addressing tradition-related resistance rooted in attachment to physical currency. In parallel, managers and stakeholders should underline the digital euro's compatibility with the current payment infrastructure, thereby simultaneously lowering resistance driven by perceived uselessness and reinforcing perceptions of ease of use. As S. Heidenreich already demonstrated, this form of self-visualisation in marketing can contribute to the overcoming of passive innovation resistance.[173]

In conclusion, overcoming resistance to the digital euro requires a comprehensive strategy that addresses both passive and active barriers. By focusing on tailored communication, transparent regulations, and continuity with existing payment structures, stakeholders can foster greater public acceptance and facilitate a smoother transition toward this evolving monetary innovation.

5.3 Limitations

Given the mixed-method approach and innovative and evolving nature of CBDC technology, it is important to consider the research gaps that exist within our current field of study when interpreting the findings. At the same time, those gaps offer potential for further studies on the topic of public resistance towards the digital euro.

[171] Cf. Heidenreich, S. / Spieth, P. (2013), p. 4
[172] Cf. Faunce, L. / Arnold, M. / Fleming, S. (2023), p. 7
[173] Cf. Heidenreich, S. / Spieth, P. (2013), p. 25

Firstly, we must take into account the geographical scope of this analysis. The study of public resistance to the euro introduction is limited to respondents from Germany. In contrast, the literature reviewed on the digital euro often includes studies conducted across several European countries or even examines other CBDCs such as the e-CNY or the digital rupee. This methodological divergence reflects a deliberate research decision, public opinion and resistance levels varied significantly across the Eurozone in the early 2000s, making a focused country-level analysis for the euro introduction more coherent.[174] However, due to a lack of granular and nationally representative datasets, a similarly Germany-specific analysis for the digital euro was not possible. Prior studies have shown that patterns of resistance toward monetary innovations are influenced by a multitude of factors - beyond emotional attachment to former currencies. These include the population's experience with previous monetary transitions, trust in financial institutions, and everyday cash usage habits.[175] For example, a study on the share of cash usage reveals a significant discrepancy in cash utilisation between different countries.[176] Thus, it is likely that individuals who are already comfortable with digital payments are more likely to accept CBDC than those who are reluctant to give up coins. Consequently, it would be valuable to collect nationally representative survey data from German citizens regarding the digital euro. Such data could enhance the comparability between the historical and current case and allow for a more nuanced understanding of country-specific resistance dynamics.

Secondly, it is important to consider the disruptive and dynamic nature of the digital euro. In 2001, although some citizens lacked a full understanding of the euro introduction, essential aspects such as the design of banknotes, exchange rates, and conversion rules were already finalized. In contrast, the digital euro remains a work in progress. As of today, many core elements - including technical design, privacy guarantees, and regulatory frameworks - are still under discussion.[177] This aspect affects the analysis in two important ways. First, resistance toward the digital euro may be shaped not only by the innovation itself but also by the lack of clarity surrounding its implementation. Second, the literature review covering public perceptions of the digital euro is based on studies published between 2020 and 2024. Some of these studies may already be partially outdated, as the digital euro's specifications have evolved during that time.

[174] Cf. Müller-Peters, A., et al. (1998), p. 678
[175] Cf. Przybyszewski, K. / Tyszka, T. (2007), p. 356
[176] Cf. Statista (2024)
[177] Cf. European Central Bank (2024b)

This creates limitations when drawing firm conclusions from the existing survey responses.

Finally, the mixed-methods approach might have an impact on the generalizabilty of the results. Public attitudes toward the euro, examined using structured panel data, allowed for robust statistical analysis of key demographic factors such as education, age or locality size. In contrast, insights on the digital euro are drawn from a range of qualitative case studies and survey-based literature. While this provides a broad and timely overview of public attitude, it restricts the analytical depth and hinders direct variable-level comparisons. For example, no harmonized data on variables such as locality size or detailed age cohorts are available for the digital euro studies, making it difficult to assess demographic patterns with the same precision. Furthermore, even if such data were available, one must acknowledge that the societal situation has changed substantially since 2001. The average level of education has increased[178], and demographic shifts - such as urbanization and changes in regional population structures[179] - would need to be accounted for in any comparative analysis. These factors limit the extent to which resistance patterns toward the euro and the digital euro can be evaluated on fully equal methodological terms.

[178] Cf. Statistisches Bundesamt (2025)
[179] Cf. Statista (2025)

6. Conclusion

The digital euro, currently being developed by the European Central Bank and the European Commission, is scheduled to launch by 2028 at the latest. Its introduction aims to offer a European alternative to the increasing dominance of non-European digital payment providers and to address the decline in the use of physical cash. Although this project is designed to bring various benefits to citizens and the financial ecosystem, early surveys reveal public skepticism and a concerningly low level of acceptance. This aversion is similar to the sentiment observed prior to the euro's physical introduction in 2002 – a transition that initially faced strong public opposition but has since become a cornerstone of European economic identity.

The core objective of this thesis was to explore how resistance to innovation can be overcome and to derive strategic lessons from the 2002 euro introduction for the implementation of the digital euro. To do so, an in-depth literature review on CBDC studies was conducted, identifying four recurring aversion factors: financial implications, lack of understanding, uselessness and ease of use, and trust and security concerns. These factors - along with five demographic variables - were then tested against 2001 panel data from the Flash Eurobarometer on the euro introduction using descriptive statistics, correlation, and logisitic regression analysis.

The analysis of both currency innovations yielded several important insights. First, financial concerns, which dominated public resistance prior to the euro launch, now play a relatively minor role in the digital euro debate. This is likely due to the nature of monetary innovation, with the digital euro being only a complement to cash. In contrast, trust and security issues - practically absent from the debate in 2001 - have emerged as the most critical barriers to public acceptance of the digital euro today. Decreasing trust levels in policymakers, as well as the disruptive nature of CBDC, are possible causes. The other two aversion factors, lack of understanding and perceived uselessness, continue to be relevant in both innovation contexts, though they are not the most decisive. Demographic analysis further revealed interesting parallels and deviations. While existing literature frequently emphasizes age as a key variable, the 2001 data showed no significant impact of age on euro support. However, both gender and education level proved influential: women as well as citizens with lower levels of education were significantly less likely to support the new currency, a pattern consistent with current findings on the digital euro. In the context of innovation resistance theory,

we observe a combination of active and passive resistance to the introduction of the digital euro. In the current debate active opposition is mainly driven by privacy concerns, while passive resistance is rooted in a lack of understanding and perceived uselessness. In context of the euro introduction, financial implications led to active resistance, whereas the other factors were of a passive nature. Addressing both types of resistance will require tailored strategies that go beyond simple communication.

Building on these findings, the thesis proposes three strategic recommendations for digital euro managers and policymakers. First, broad and inclusive communication campaigns should be launched to explain the technology, address misconceptions, and reduce perceived complexity. These campaigns must be accessible to all demographic groups, addressing different gender groups and educational levels. Second, a transparent and enforceable regulatory framework is necessary to alleviate public concerns about privacy and security - currently the most influential barrier. Third, it must be clearly emphasized that the digital euro will complement, not replace, physical cash. In context of IRT this is an issue that increases unconscious fears and doubts because the change stemming from the digital euro is overestimated.

However, some limitations must be acknowledged. The quantitative analysis is based on German data from 2001, whereas the digital euro studies draw from a broader international base. This difference in geographic scope should be taken into account when interpreting results. But most importantly, since the digital euro is still under development, future changes in its design and public perception may influence or invalidate current findings. Continued research and updated data will therefore be essential in the years ahead.

Ultimately, this thesis shows that public resistance is not just an obstacle but a key factor in the success of monetary innovations. The euro’s introduction in 2002 offers valuable lessons for today: trust, clear communication, and citizen-focused policy are essential. As the digital euro moves forward, learning from the past will be crucial to shaping a widely accepted currency for the future.

Sources

Abass, D. (2022): A Study on Public Perception on the Adoption of Central Bank Digital Currency (CBDC) in Ireland. Master thesis, Ireland, 2022.

Abramova, S. / Böhme, R. / Elsinger, H. / Stix, H. / Summer, M. (2022): What can CBDC designers learn from asking potential users? Results from a survey of Austrian residents, S. 1–45, https://www.econstor.eu/handle/10419/264833.

Angeloni, I. (2023): The digital euro: A precautionary device, not a deus ex machina, Frankfurt a. M.: Leibniz Institute for Financial Research SAFE, https://www.econstor.eu/handle/10419/271117.

Atlantic Council (2024): Central Bank Digital Currency Tracker, accessed on 02.05.2025, https://www.atlanticcouncil.org/cbdctracker/.

Auer, R. / Böhme, R. (2020): The Technology of Retail Central Bank Digital Currency, BIS Quarterly review, 2020.

Ballasck, D; Paulick, Jan (2021): The public, the private and the secret: Thoughts on privacy in central bank digital currencies, in: Journal of Payments Strategy & Systems Nr. 3/2021, 2021, S. 277–286.

Barros, R. S; Da Ferreira, Ana Maria Dias Simões Costa (2019): Bridging management control systems and innovation, in: QRAM, Vol. 16, No. 3, 2019, S. 342–372.

Basias, N; Pollalis, Y. (2018): Quantitative and qualitative research in business & technology: Justifying a suitable research methodology, in: Review of Integrative Business and Economics Research Nr. 7/2018, 2018, S. 91–105.

Baun, M. J. (1995): The Maastricht Treaty as High Politics: Germany, France, and European Integration, in: Political Science Quarterly, Vol. 110, No. 4, 1995, S. 605–624.

Bijlsma, M. / Ivan der Cruijsen, C. / Jonker, N. / Reijerink, J. (2021): What triggers consumer adoption of CBDC?, 2021.

BMWS (2024): Gleichwertige Lebensverhältnisse und ländliche Räume, accessed on 02.05.2025, https://www.bmwsb.bund.de/Webs/BMWSB/DE/themen/raumentwicklung/gleichwertige-lebensverhaeltnisse/gleichwertige-lebensverhaeltnisse-node.html.

Brettschneider, F; Maier, Michaela; **Maier, Jürgen** (2003): From D-Mark to Euro: the impact of mass media on public opinion in Germany, in: German Politics, Vol. 12, No. 2, 2003, S. 45–64.

Breuss, F. (2019): „20 Jahre Euro: eine Währung für alle?“, in: ÖGfE Policy Brief Nr. 6/2019, 2019, S. 27.

Brown, P. A. (2008): A Review of the Literature on Case Study Research, in: Canadian Journal for New Scholars in Education/ Revue canadienne des jeunes chercheures et chercheurs en éducation, Vol. 1, No. 1, 2008.

Bundesbank (2024): Bundesbank-Umfrage: Digitaler Euro findet als Bezahl-Option breite Akzeptanz in der Bevölkerung, accessed on 10.05.2025, https://www.bundesbank.de/de/presse/pressenotizen/bundesbank-umfrage-digitaler-euro-findet-als-bezahl-option-breite-akzeptanz-in-der-bevoelkerung-933320.

Bundesinstitut für Bevölkerungsforschung (2025): Fakten – Durchschnittsalter der Bevölkerung in Deutschland (1871-2022), accessed on 10.05.2025,

https://www.bib.bund.de/DE/Fakten/Fakt/B19-Durchschnittsalter-Bevoelkerung-ab-1871.html.

Chadi, A. (2015): Concerns about the Euro and happiness in Germany during times of crisis, in: European Journal of Political Economy, Vol. 40, 2015, S. 126–146.

Chen, C.-C; Chang, Chin-Hsuan; **Hsiao, Kuo-Lun** (2022): Exploring the factors of using mobile ticketing applications: Perspectives from innovation resistance theory, in: Journal of Retailing and Consumer Services, Vol. 67, 2022, S. 102974.

Choi, S; Kim, Bongseob; **Kim, Young-Sik**; **Kwon, Ohik** (2023): Central Bank Digital Currency and Privacy: A Randomized Survey Experiment, in: International Economic Review, Vol. 66, No. 2, 2023, S. 823–847.

Claudy, M. C; Garcia, Rosanna; **O'Driscoll, Aidan** (2015): Consumer resistance to innovation—a behavioral reasoning perspective, in: J. of the Acad. Mark. Sci., Vol. 43, No. 4, 2015, S. 528–544.

Directorate-General for Press and Communication (2002): EUROBAROMETER PUBLIC OPINION IN THE EUROPEAN UNION Report Number 56 2002, 2002.

Distanont, A; Khongmalai, Orapan (2020): The role of innovation in creating a competitive advantage, in: kasetsart J. Soc. Sci., Vol. 41, No. 1, 2020, 15–21.

Elbadrawy, R; Abdel Aziz, Rasha (2011): Resistance to Mobile Banking Adoption in Egypt: A Cultural Perspective, in: IJMIT, Vol. 3, No. 4, 2011, S. 9–21.

Esposito, L. (2022): Digital euro issuance: A great opportunity with some risks., in: Journal of Payments Strategy & Systems, Vol. 16, No. 4, 2022, S. 369–380.

Europäische Kommission (2001): Flash Eurobarometer 82/E (Euro Introduction Attitudes, Step 6 - Euro Members): GESIS Data Archive.

European Central Bank (2021): Eurosystem report on the public consultation on a digital euro, accessed on 15.06.2024, https://www.ecb.europa.eu/pub/pdf/other/Eurosystem_report_on_the_public_consultation_on_a_digital_euro~539fa8cd8d.en.pdf.

European Central Bank (2023): Eurosystem proceeds to next phase of digital euro project, https://www.ecb.europa.eu/press/pr/date/2023/html/ecb.pr231018~111a014ae7.en.html.

European Central Bank (2024a): FAQs on a digital euro, https://www.ecb.europa.eu/euro/digital_euro/faqs/html/ecb.faq_digital_euro.en.html.

European Central Bank (2024b): Progress on the preparation phase of a digital euro - Second progress report, https://www.ecb.europa.eu/euro/digital_euro/progress/html/ecb.deprp202412.en.html.

European Commission (2025): The euro area - November 2023 - Eurobarometer survey, accessed on 04.06.2025, https://europa.eu/eurobarometer/surveys/detail/2981.

European Social Survey European Research Infrastructure (2023): ESS | Sikt, accessed on 17.05.2025, https://ess.sikt.no/en/datafile/bcc624a3-edbb-4df3-ab18-9a96702c92ae/67?tab=1&elems=22872af3-0655-46ec-ae70-729d8afbe562_2.

Faunce, L. / Arnold, M. / Fleming, S. (2023): The digital euro: a solution seeking a problem?, in: Financial Times, 16.05.2023, https://www.ft.com/content/7c892d3b-c646-4247-9504-5f755e486101, accessed on 12.05.2025.

Fluch, M; Schlögl, S. (2012): The Euro – Public Opinion in the Ten Years after the Euro Changeover, in: Monetary Policy & the Economy, Vol. 1, 2012, S. 56–69.

Franken, R; Franken, Swetlana (2023): Steigerung der Innovationsfähigkeit von Unternehmen, in: Wissen, Lernen und Innovation im digitalen Unternehmen: Mit Fallstudien und Praxisbeispielen 2023, 2023, S. 413–446.

Franssen, T; Stijnen, Mandy; **Hamers, Femke**; **Schneider, Francine** (2020): Age differences in demographic, social and health-related factors associated with loneliness across the adult life span (19-65 years): a cross-sectional study in the Netherlands, in: BMC public health, Vol. 20, No. 1, 2020, S. 1118.

Frenkel, M. (2023): Will the Digital Euro Be Attractive Enough to Generate Significant Demand?, in: VJH, Vol. 92, No. 3, 2023, S. 23–36.

Georgarakos, D. / Kenny, G. / Laeven, L. A. / Meyer, J. (2025): Consumer Attitudes Towards a Central Bank Digital Currency, 2025.

GESIS (2025): GESIS - Leibniz Institute for the Social Sciences, accessed on 26.04.2025, https://www.gesis.org/en/eurobarometer-data-service/data-and-documentation/flash-eb/sampling-fieldwork.

Gordon, P. H. / Meunier-Aitsahalia, S. (2004): The French Challenge. Adapting to Globalization: Rowman & Littlefield, 2004.

Greitemeyer, T. / Traut-Mattausch, E. / Frey, D. (2008): Psychologische Konsequenzen der Euro-Einführung: Roman Herzog Institut, München, 2008.

Gupta, S; Pandey, Dharen Kumar; **El Ammari, Anis**; **Sahu, Ganesh P.** (2023): Do perceived risks and benefits impact trust and willingness to adopt CBDCs?, in: Research in International Business and Finance, Vol. 66, 2023.

H. De Vreese, C; Peter, Jochen; **Semetko, Holli A.** (2001): Framing Politics at the Launch of the Euro: A Cross-National Comparative Study of Frames in the News, in: Political Communication, Vol. 18, No. 2, 2001, S. 107–122.

Hauschildt, J. / Salomo, S. / Schultz, C. / Kock, A. (2016): Innovationsmanagement: Vahlen, München, 2016, 6. Aufl.

Heidenreich, S; Handrich, Matthias (2015): What about Passive Innovation Resistance? Investigating Adoption-Related Behavior from a Resistance Perspective, in: J of Product Innov Manag, Vol. 32, No. 6, 2015, S. 878–903.

Heidenreich, S; Spieth, P. (2013): WHY INNOVATIONS FAIL — THE CASE OF PASSIVE AND ACTIVE INNOVATION RESISTANCE, in: Int. J. Innov. Mgt., Vol. 17, No. 05, 2013.

Hetzel, R. L. (2002): German Monetary History in the Second Half of the Twentieth Century: From the Deutsche Mark to the Euro, in: FRB Richmond Economic Quarterly, Vol. 88, No. 2, 2002, S. 29–64.

Hinter, M. (2002): Wirtschaft: Der Warenkorb steht unter Generalverdacht, in: Der Tagesspiegel, 25.05.2002, https://www.tagesspiegel.de/wirtschaft/der-warenkorb-steht-unter-generalverdacht-895777.html, accessed on 21.04.2025.

Hofmann, E; Kirchler, Erich; **Kamleitner, Bernadette** (2007): Consumer Adaptation Strategies: From Austrian Shilling to the Euro, in: J Consum Policy, Vol. 30, No. 4, 2007, S. 367–381.

Horváth, D. (2023): Money in the digital age: Exploring the potential of central bank digital currency with a focus on social adaptation and education, in: Sustainable Futures, Vol. 6, 2023, S. 1–13.

Inglehart, R. (2020): Modernization and Postmodernization. Cultural, Economic, and Political Change in 43 Societies: Princeton University Press, 2020.

Isengard, B; Schneider, Thorsten (2002): Die Einstellung zum Euro eine empirische Analyse mit Daten des Soziooekonomischen Panels (SOEP), in: DIW Discussion Papers Nr. 316/2002, 2002.

Issing; **Otmar** (2008): The Euro: A currency without a state, in: CFS Working Paper Nr. 51/2008, 2008.

Jonas, E; Fritsche, Immo; **Greenberg, Jeff** (2005): Currencies as cultural symbols – an existential psychological perspective on reactions of Germans toward the Euro, in: Journal of Economic Psychology, Vol. 26, No. 1, 2005, S. 129–146.

Kantar TNS (2019): D21-Digital-Index. Jährliches Lagebild zur Digitalen Gesellschaft, in: Initiative D21 2019, 2019.

Kaur, P; Dhir, Amandeep; **Ray, Arghya**; **Bala, Pradip Kumar**; **Khalil, Ashraf** (2021): Innovation resistance theory perspective on the use of food delivery applications, in: JEIM, Vol. 34, No. 6, 2021, S. 1746–1768.

Kaur, P; Dhir, Amandeep; **Singh, Naveen**; **Sahu, Ganesh**; **Almotairi, Mohammad** (2020): An innovation resistance theory perspective on mobile payment solutions, in: Journal of Retailing and Consumer Services, Vol. 55, 2020.

Kleijnen, M; Lee, Nick; **Wetzels, Martin** (2009): An exploration of consumer resistance to innovation and its antecedents, in: Journal of Economic Psychology, Vol. 30, No. 3, 2009, S. 344–357.

Koch, P. / Hauknes, J. (2005): On innovation in the public sector–today and beyond, Publin Report, 2005, D20.

Koziuk, V. (2021): Confidence in digital money: Are central banks more trusted than age is matter?, in: Investment Management and Financial Innovations, Vol. 18, No. 1, 2021, S. 12–32.

Laukkanen, T; Sinkkonen, Suvi; **Kivijärvi, Marke**; **Laukkanen, Pekka** (2007): Innovation resistance among mature consumers, in: Journal of Consumer Marketing, Vol. 24, No. 7, 2007, S. 419–427.

Lee, D. K. C; Yan, Li; **Wang, Yu** (2021): A global perspective on central bank digital currency, in: China Economic Journal, Vol. 14, No. 1, 2021, S. 52–66.

Lippe, P. von der (2018): Deskriptive Statistik: Walter de Gruyter GmbH & Co KG, 2018.

Maryaningsih, N; Nazara, Suahasil; **Kacaribu, Febrio Nathan**; **Juhro, Solikin M.** (2022): Central Bank Digital Currency: What factors determine its adoption?, in: Buletin Ekonomi Moneter dan Perbankan, Vol. 25, No. 1, 2022, S. 1–24.

Miles, G; Smith, Melvyn; **Zook, Nancy**; **Zhang, Wenhao** (2024): EM-COGLOAD: An investigation into age and cognitive load detection using eye tracking and deep learning, in: Computational and Structural Biotechnology Journal, Vol. 24, 2024, S. 264–280.

Montgomery, M. R; Gragnolati, Michele; **Burke, Kathleen A; Paredes, Edmundo** (2000): Measuring living standards with proxy variables, in: Demography, Vol. 37, No. 2, 2000, S. 155–174.

Müller, K. (1999): Die Einführung des Euro, in: PROKLA, Vol. 29, No. 114, 1999, S. 7–28.

Müller-Peters, A. (1998): The significance of national pride and national identity to the attitude toward the single European currency: A Europe-wide comparison, in: Journal of Economic Psychology, Vol. 19, No. 6, 1998, S. 701–719.

Müller-Peters, A; Pepermans, Roland; **Kiell, Guido**; **Battaglia, Nicole**; **Beckmann, Suzanne**; **Burgoyne, Carole**; **Farhangmehr, Minoo**; **Guzman, Gustavo**; **Kirchler, Erich**; **Koenen, Cordula**; **Kokkinaki, Flora**; **Lambkin, Mary**; **Lassarre, Dominique**; **Lenoir, Francois-Regis**; **Luna-Arocas, Roberto**; **Marell, Agneta**; **Meier, Katja**; **Moisander, Johanna**; **Ortona, Guido**; **Quintanilla, Ismael**; **Routh, David**; **Scacciati, Francesco**; **Uusitalo, Liisa**; **van Everdingen, Yvonne M; van Fred Raaij, W; Wahlund, Richard** (1998): Explaining attitudes towards the euro: Design of a cross-national study, in: Journal of Economic Psychology, Vol. 19, No. 6, 1998, S. 663–680.

Nissen, S. (2014): The Eurobarometer and the process of European integration, in: Qual Quant, Vol. 48, No. 2, 2014, S. 713–727.

Official Money and FInancial Institutions Forum (2020): Digital Currencies: A question of trust. An OMFIF report on global public confidence in monetary, financial and payment institutions, in: OMFIF 2020, 2020.

Olabode, S. O; Bakare, Akeem Abayomi; **Olateju, Olawale Ibrahim** (2018): An assessment of the reliability of secondary data in management science research, in: LASU Journal of Employment Relations & Human Resource Management, Vol. 1, No. 1, 2018, S. 182–194.

Ozili, P. K. (2023): Central bank digital currency research around the world: a review of literature, in: JMLC, Vol. 26, No. 2, 2023, S. 215–226.

Pacheco, L; Lobão, Júlio; **Coelho, Sílvia** (2023): Gender and Risk Aversion: Evidence from a Natural Experiment, in: Games, Vol. 14, No. 3, 2023, S. 49.

Popovic; **Dragana** (2018): 21st century cash: Central banking, technological innovation and digital currencies, in: SUERF The European Money and Finance Forum Nr. 40/2018, 2018.

Porst, R. (2015): Fragebogenkonstruktion (I) - Grundlagen, Arten von Fragen, Arten von Skalen, in: GWP–Gesellschaft. Wirtschaft. Politik, Vol. 64, No. 2, 2015, S. 239–250.

Prodan, S; Dabija, Dan-Cristian; **Marincean, Leonardo** (2023): Exploring Consumer Sentiment on Central Bank Digital Currencies: A Twitter Analysis from 2021 to 2023, in: Proceedings of the International Conference on Business Excellence, Vol. 17, No. 1, 2023, S. 1085–1102.

Przybyszewski, K; Tyszka, Tadeusz (2007): Emotional Factors in Currency Perception, in: Journal of Consumer Policy, Vol. 30, No. 4, 2007, S. 355–365.

Ram, S; Sheth, Jagdish N. (1989): Consumer Resistance to Innovations: The Marketing Problem and its solutions, in: Journal of Consumer Marketing, Vol. 6, No. 2, 1989, S. 5–14.

Reveland, C. / Siggelkow, P. (2025): Wie mit dem digitalen Euro Ängste geschürt werden, accessed on 22.03.2025, https://www.tagesschau.de/faktenfinder/kontext/ezb-digitaler-euro-104.html.

Risse, T. (2002): The euro and identity politics in Europe, Nanovic Institute for European Studies, 2002.

Risse, T; Engelmann-Martin, Daniela; **Knope, Hans-Joachim**; **Roscher, Klaus** (1999): To Euro or Not to Euro?, in: European Journal of International Relations, Vol. 5, No. 2, 1999, S. 147–187.

Roelofs, B. (2023): A qualitative study of Central Bank Digital Currencies and their impacts on European consumers, 2023.

Sammerl, N; Wirtz, Bernd; **Schilke, Oliver** (2008): Innovationsfähigkeit von Unternehmen. Dynamic Capabilities View; dynamische Fähigkeiten; Innovationen; PLS; Unternehmenserfolg 2008, 2008.

Sandhu, K; Dayanandan, Ajit; **Kuntluru, Sudershan** (2023): India's CBDC for digital public infrastructure, in: Economics Letters, Vol. 231, 2023.

Saunders, M. / Lewis, P. / Thornhill, A. (2009): Research Methods for Business Students: Pearson Education, 2009.

Schober, P; Boer, Christa; **Schwarte, Lothar A.** (2018): Correlation Coefficients: Appropriate Use and Interpretation, in: Anesthesia and analgesia, Vol. 126, No. 5, 2018, S. 1763–1768.

Solberg Söilen, K; Benhayoun, Lamiae (2022): Household acceptance of central bank digital currency: the role of institutional trust, in: International Journal of Bank Marketing, Vol. 40, No. 1, 2022, S. 172–196.

Sperandei, S. (2014): Understanding logistic regression analysis, in: Biochemia Medica, Vol. 24, No. 1, 2014, S. 12–18.

Statista (2024): Share of cash payments by country 2023 | Statista, accessed on 23.05.2025, https://www.statista.com/statistics/1055618/cash-payment-transactions-by-country/.

Statista (2025): Urbanisierung in Deutschland bis 2023| Statista, accessed on 27.05.2025, https://de.statista.com/statistik/daten/studie/662560/umfrage/urbanisierung-in-deutschland/.

Statistisches Bundesamt (2020): Bevölkerung im Alter von 15 Jahren und mehr nach allgemeinen und beruflichen Bildungsabschlüssen nach Jahren, accessed on 20.04.2025.

Statistisches Bundesamt (2025): Bevölkerung (ab 15 Jahren): Deutschland, Jahre (bis 2019), Geschlecht, Altersgruppen, Allgemeine Schulausbildung, accessed on 23.05.2025, https://www-genesis.destatis.de/datenbank/online/table/12211-9012.

Stryja, C; Satzger, Gerhard (2019): Digital nudging to overcome cognitive resistance in innovation adoption decisions, in: The Service Industries Journal, Vol. 39, 15-16, 2019, S. 1123–1139.

Sun, M; Li, Zhongwu (2024): User Perception and Acceptance of Central Bank Digital Currency in Developed and Developing Countries: An Empirical Study using Technology Acceptance Model, in: 1, Vol. 21, No. 80, 2024.

Talwar, S; Talwar, Manish; **Kaur, Puneet**; **Dhir, Amandeep** (2020): Consumers' Resistance to Digital Innovations: A Systematic Review and Framework Development, in: Australasian Marketing Journal, Vol. 28, No. 4, 2020, S. 286–299.

Tassev, L. (2025): Poles oppose EU crypto rules and digital euro, Poland may pass milder MiCA law, 07.04.2025, https://www.cryptopolitan.com/poles-oppose-eu-crypto-rules-and-digital-euro-poland-may-pass-milder-mica-law/, accessed on 15.04.2025.

Tinn, K. / Dubach, C. (2021): Central Bank Digital Currency with Asymmetric Privacy, 2021.

Tronnier, F; Harborth, David; **Hamm, Peter** (2022): Investigating privacy concerns and trust in the digital Euro in Germany, in: Electronic Commerce Research and Applications, Vol. 53, 2022.

van Dijk, D; Munandar, Haris; **Hafner, Christian M.** (2005): The Euro Introduction and Non-Euro Currencies, in: Tinbergen Institute Discussion Paper Nr. 05-044/4/2005, 2005.

van Everdingen, Y. M; Bamossy, Gary J. (2000): Marketing of a Financial Innovation Commercial Use of the Euro by European Companies Prior to Mandatory Adoption, in: Journal of Business Research, Vol. 48, No. 2, 2000, S. 123–133.

van Maarseveen, R. (2021): The urban–rural education gap: do cities indeed make us smarter?, in: Journal of Economic Geography, Vol. 21, No. 5, 2021, S. 683–714.

Vanlalhruaii Leivang (2023): The Influence of Demographic Characteristics on Price Sensitivity: A Study, in: International Journal of Science and Research Development, Vol. 6, 2023, S. 723–727.

Villanueva Orbaiz, M. L; Arce-Urriza, Marta (2024): The role of active and passive resistance in new technology adoption by final consumers: The case of 3D printing, in: Technology in Society, Vol. 77, 2024, S. 102500.

Wang, X; Cheng, Zhenshun (2020): Cross-Sectional Studies: Strengths, Weaknesses, and Recommendations, in: Chest, Vol. 158, 1S, 2020, 65-71.

Weber, M. (1980): Wirtschaft und Gesellschaft (1922), 1980.

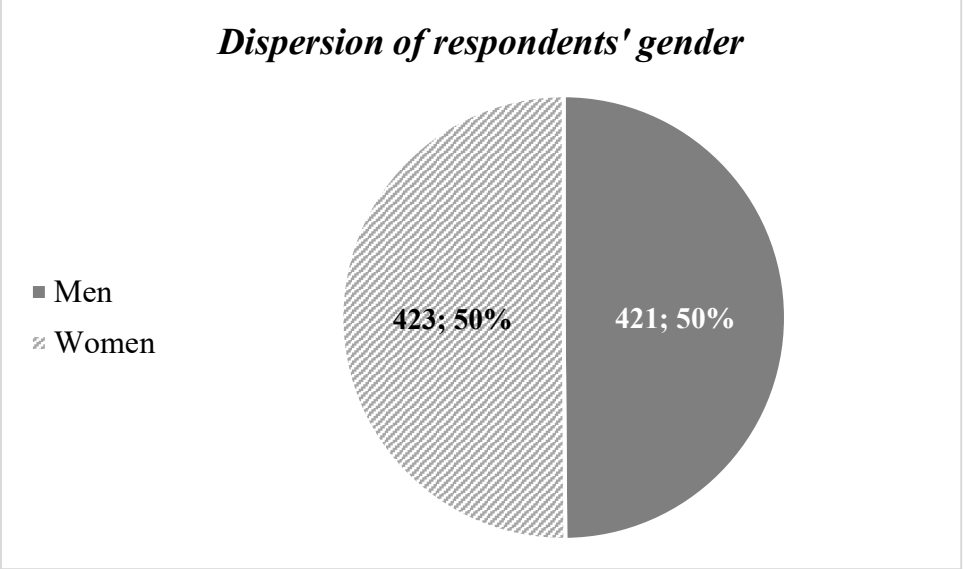
Witte, E. H; Raphael, Christiane (2001): Alter, Geschlecht und Informationsstand als Determinanten der Einstellung zum Euro, in: Hamburger Forschungsberichte zur Sozialpsychologie, Vol. 28, 2001.

Zeb, A; Akbar, Fazal; **Hussain, Khawar**; **Safi, Adnan**; **Rabnawaz, Muhammad**; **Zeb, Faheem** (2021): The competing value framework model of organizational culture, innovation and performance, in: Business Process Management Journal, Vol. 27, No. 2, 2021, S. 658–683.

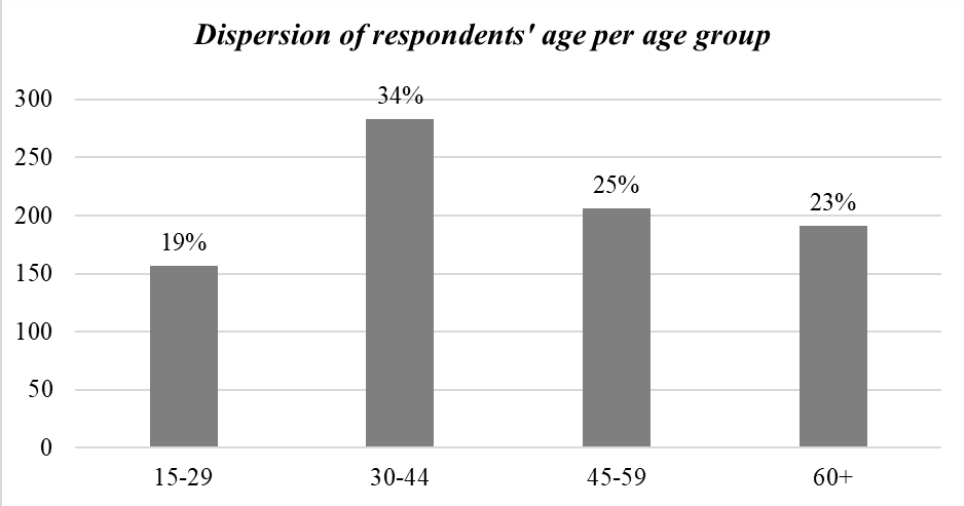
Appendix

Author/publisher	Title	Year	Country focus	Which CBDC	Study	Nb. of participants	Methodology
Abass, Damilola	A Study on Public Perception on the Adoption of Central Bank Digital Currency (CBDC) in Ireland	2022	Ireland	CBDC general	yes	144	online questionnaires
Abramova, Svetlana; Böhme, Rainer; Elsinger, Helmut; Stix, Helmut; Summer, Martin	What can CBDC designers learn from asking potential users? Results from a survey of Austrian residents	2022	Austria	CBDC general	yes	2.006	Survey commissioned by the Austrian Central Bank (telephone interview)
Bijlsma, Michiel; Ivan der Cruijsen, Carin; Jonker, Nicole; Reijerink, Jelmer	What triggers consumer adoption of CBDC?	2021	Netherlands	CBDC general	yes	2.683	Questionnaire
ECB	Eurosystem report on the public consultation on a digital euro	2021	Europe	Digital Euro	yes	8.221	Public consultation two multiple-choice and 16 open questions, divided into two parts depending on the main target audience of respondents: (i) the general public, in their role as users (referred to as "citizens" below), and (ii) experts from the financial industry, technology companies and academia
Erin Gjefle, Zach Herring, Cris Kubli, Brennan O'Rear, Georgia Rakusen	The Future of Our Money: Centering Users in the Design of Digital Currency	2022	US	CBDC general	yes, qualitative	91 interview partners 1319 participants question	interviews with industry experts + same question as ECB study for US citizens
Ming Shan Sun; Zhongwu Li	User Perception and Acceptance of Central Bank Digital Currency in Developed and Developing Countries: An Empirical Study using Technology Acceptance Model	2024	China	CBDC general	yes	500+	Questionnaire
Official Money and FInancial Institutions Forum	DIGITAL CURRENCIES: A question of trust	2020	Worldwide	CBDC general	yes	13.000+	online questionnaires
Roelofs, Bor	A qualitative study of Central Bank Digital Currencies and their impacts on European consumers	2023	Europe	CBDC general	yes, qualitative		2 Models: The Technology Acceptance Model to analyse consumer's intentions towards using CBDCs, and Privacy Calculus Theory to analyse consumer's thought process towards disclosing personal information.
Sandhu, Kamaljeet; Dayanandan, Ajit; Kuntluru, Sudershan	India's CBDC for digital public infrastructure	2023	India	CBDC general	yes	267	Questionnaire
Solberg Söilen, Klaus; Benhayoun, Lamiae	Household acceptance of central bank digital currency: the role of institutional trust	2022	Worldwide, but focus on Europe	CBDC general	yes	282	Questionnaire
Syngjoo Choi, Bongseob Kim, Young-Sik Kim and Ohik Kwon	Central Bank Digital Currency and Privacy: A Randomized Survey Experiment	2023	South Korea	CBDC general	yes	3.500+	Randomized online survey experiment
Tronnier, Frédéric; Harborth, David; Hamm, Peter	Investigating privacy concerns and trust in the digital Euro in Germany	2022	Germany	Digital Euro	yes	1.034	Survey

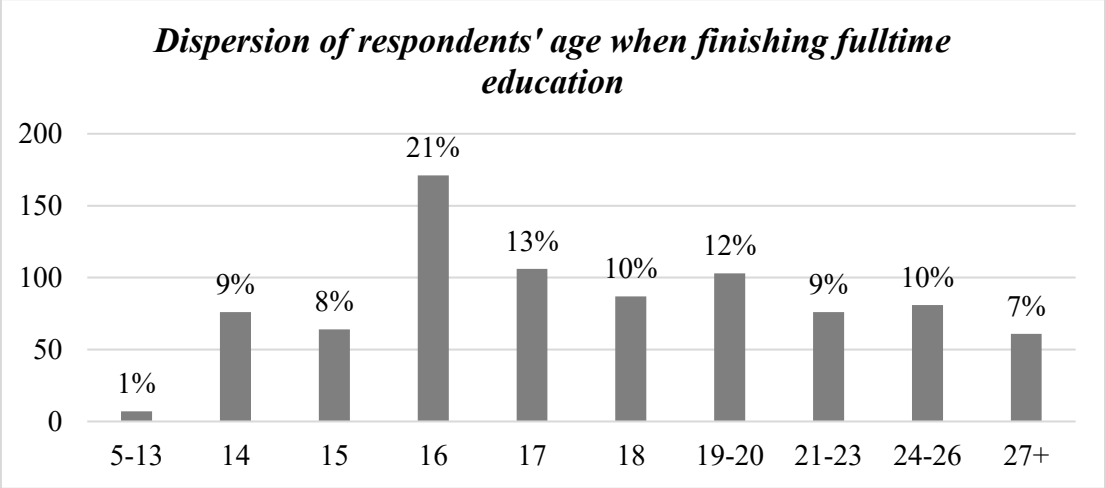
2.1 Demographic factor – gender



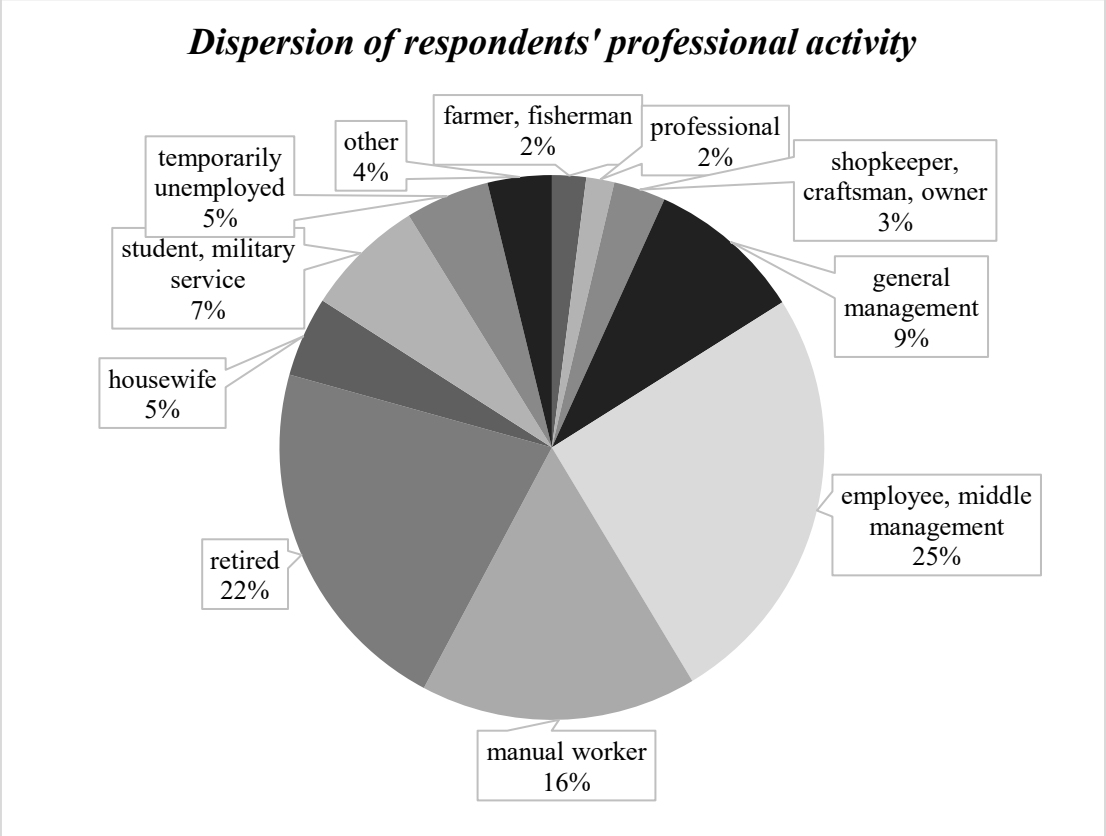
2.2 Demographic factor – age



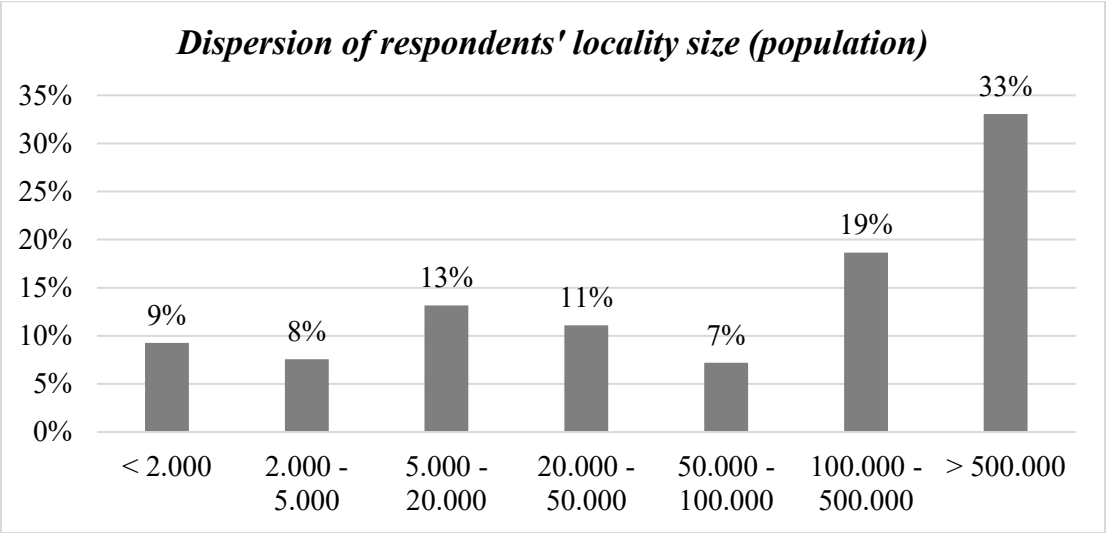
2.3 Demographic factor – age when finishing fulltime education



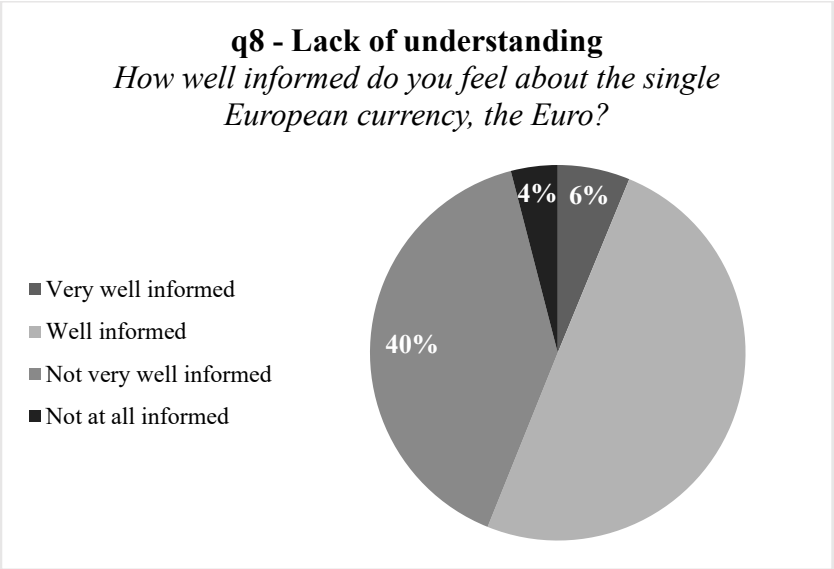
2.4 Demographic factor – professional activity



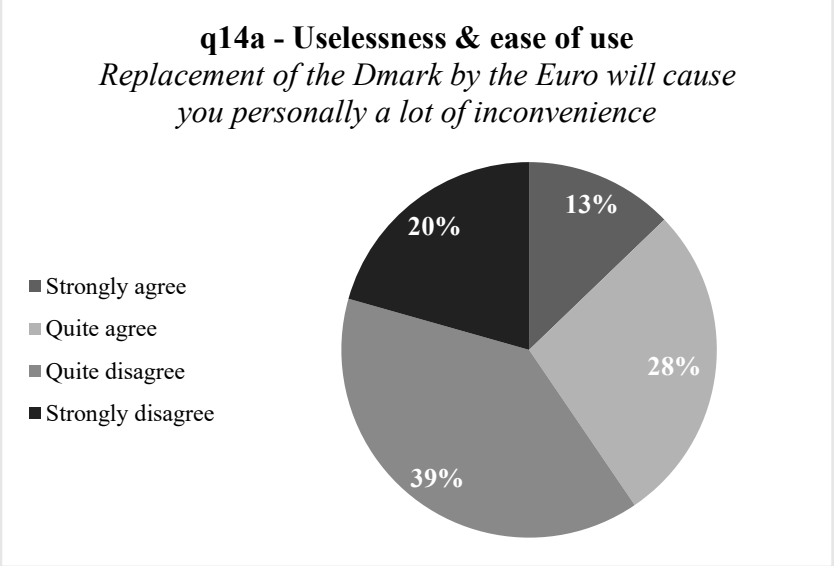
2.5 Demographic factor – locality size



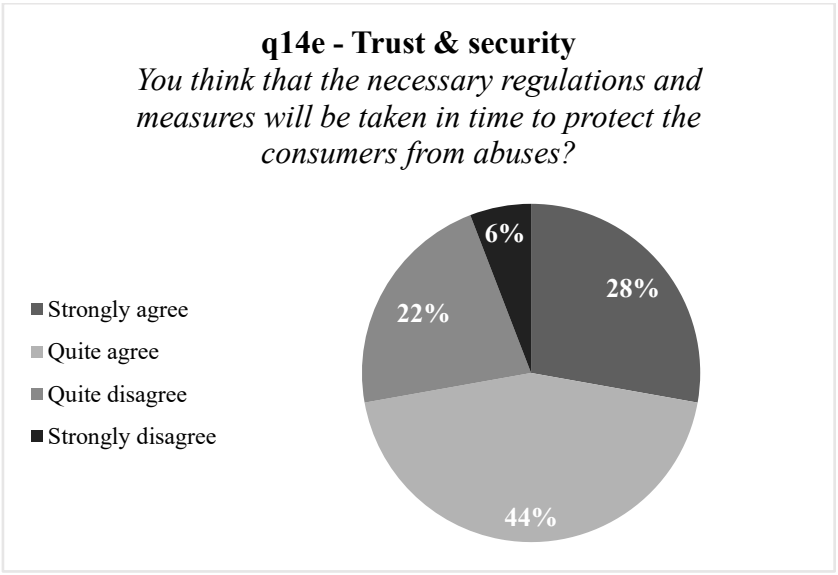
3.1 Aversion factors – lack of understanding (q8)



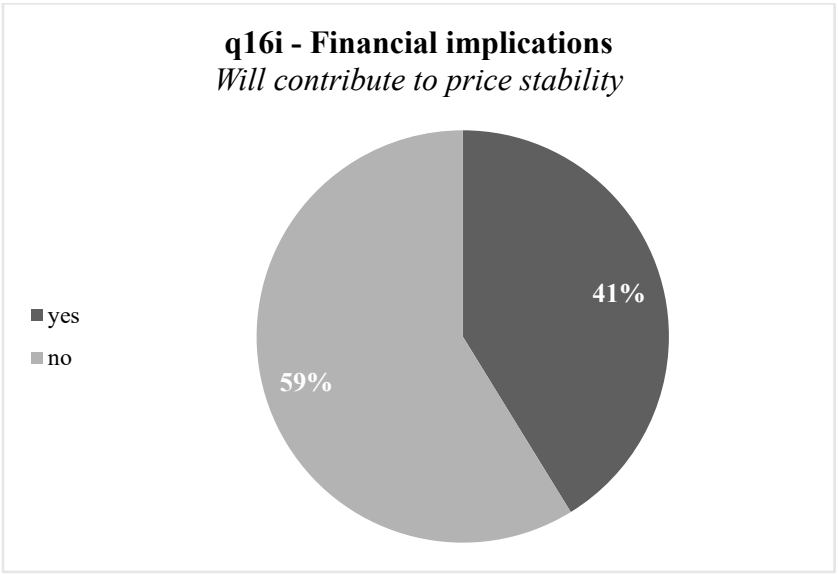
3.2 Aversion factors – uselessness & ease of use (q14a)



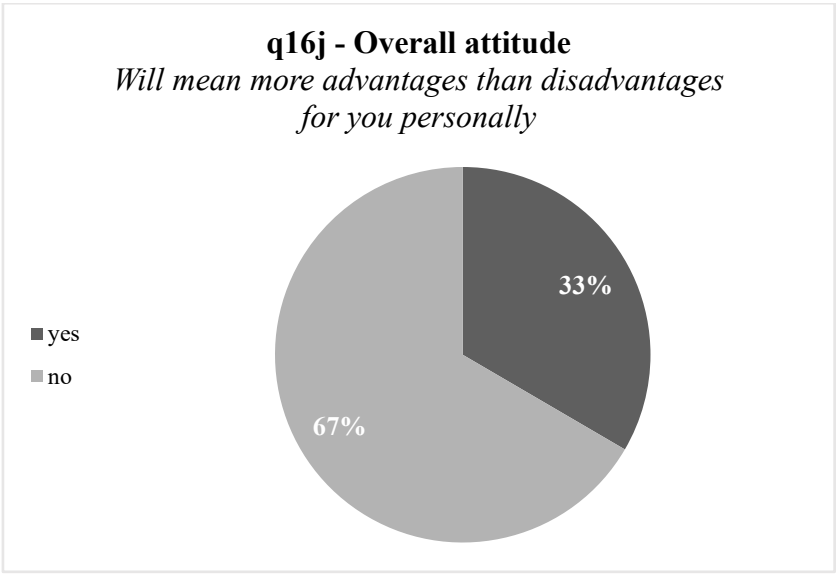
3.3 Aversion factors – trust & security (q14e)



3.4 Aversion factors – financial implications (q16i)



3.5 Aversion factors – overall attitude (q16j)



4. Shapiro–Wilk W - test for normal data distribution

Variable	Obs	Prob>z	Normal distribution
q16j	820	0,85945	yes
q8	820	0,25672	yes
q14a	820	0,49893	yes
q14e	820	0,00871	no
q16i	820	1,00000	yes
age_group	820	0,19473	yes
sex	820	1,00000	yes
prof	820	0,00000	no
educ	820	0,00000	no
size	820	0,00000	no

5. Predictive Margins

demographic factors	**margin** (q16j = 1; yes)
Gender	
Men	0,3901
Women	0,2727
Age	
15-29	0,3131
30-44	0,2986
45-59	0,3019
60+	0,4529
Education	
5-13	0,3156
14	0,3181
15	0,3901
16	0,2748
17	0,3089
18	0,3192
19-20	0,3122
21-23	0,3991
24-26	0,4547
27+	0,3028
Occupation (prof)	
farmer, fisherman	0,2096
professional	0,22
shopkeeper, craftsman, owner	0,4421
general management	0,4077
employee, middle management	0,4075
manual worker	0,3407
retired	0,2086
housewife	0,3
student, military service	0,5039
temporarily unemployed	0,2709
other	0,3179
Size of locality	
< 2.000	0,3033
2.000 - 5.000	0,2987
5.000 - 20.000	0,3115
20.000 - 50.000	0,3091
50.000 - 100.000	0,2936
100.000 - 500.000	0,3186
> 500.000	0,3855

aversion factors	**margin** (q16j = 1; yes)
q8 (lack of understanding)	
Very well informed	0,3864
Well informed	0,3846
Not very well informed	0,2591
Not at all informed	0,2272
q14a (uselessness & ease of use)	
Strongly agree	0,2499
Quite agree	0,2736
Quite disagree	0,347
Strongly disagree	0,4295
q14e (trust & security)	
Strongly agree	0,3202
Quite agree	0,3748
Quite disagree	0,3058
Strongly disagree	0,1762
q16i (financial implications)	
yes	0,2168
no	0,4851

6. SOEP – Data analysis

Overview of variables

Variable	Explanation	Eurobarometer equivalent
rp11407	Concerns about the introduction of the euro	Overall attitude (q16j)
rp13001	Gender	Sex
d1110101	Age of Individual	Age
d1110901	Number of Years of Education	Educ
rp11401	Concerns about general economic developments	Financial Implications (q16i)
rp110	Interest in politics	Lack of understanding (q8)
rp0503	Private internet use	Trust & Security (q14e)

Correlation analysis

	overall attitude	gender	age	education	financial implications	understanding	trust & security
overall attitude	1,0000						
	-						
sex	-0,056**	1,0000					
	(0,0000)	-					
age	-0,0526**	0,0211**	1,0000				
	(0,0000)	(0,0016)	-				
education	0,0917**	-0,0718**	-0,0668**	1,0000			
	(0,0000)	(0,0000)	(0,0000)	-			
financial implications	0,3479**	-0,0093	-0,0520**	-0,0098	1,0000		
	(0,0000)	(0,1653)	(0,0000)	(0,1441)	-		
understanding	-0,0611**	0,2186**	0,1633**	-0,3079**	0,0645**	1,0000	
	(0,0000)	(0,0000)	(0,0000)	(0,0000)	(0,0000)	-	
trust & security	-0,1204**	0,1110**	0,3010**	-0,2954**	-0,462**	0,1523**	1,0000
	(0,0000)	(0,0000)	(0,0000)	(0,0000)	(0,0000)	(0,0000)	-

*significance level: p≤0,05
**significance level: p≤0,01

Regression analysis

	M1	M2	M3	M4	M5
	Only control variables	Financial implications	Understanding	Trust & Security	Overall aversion
Gender	-0,0806	-0,0739**	-0,0737*	-0,0726*	-0,0526*
	(0,111)	(0,010)	(0,011)	(0,011)	(0,011)
Age	-0,0027**	-0,002**	-0,0029**	-0,0019**	-0,0016**
	(0,000)	(0,000)	(0,000)	(0,000)	(0,000)
Education	0,0179**	0,0193**	0,0167**	0,0151**	0,0147**
	(0,002)	(0,002)	(0,002)	(0,002)	(0,002)
Financial Implications		0,4597**			0,4627**
		(0,008)			(0,008)
Understanding			-0,0204**		-0,0442**
			(0,007)		(0,007)
Trust & Security				-0,0998*	-0,0809*
				(0,011)	(0,011)
Constant	2,0562*	1,0995*	2,1208*	2,2068*	1,3548*
	(0,029)	(0,031)	(0,037)	(0,034)	(0,039)
R^2	0,0105	0,1481	0,0109	0,0139	0,1526

*significance level: p≤0,05
**significance level: p≤0,01

EOS GALLUP EUROPE

FLASH EUROBAROMETRE 82/E

EURO INTRODUCTION ATTITUDES
(Step 6)

2001, January

DESCRIPTION OF THE SURVEY

Realization of this survey.

This telephone Survey FLASH EUROBAROMETRE 82/E : EURO INTRODUCTION ATTITUDES (Step 6) has been conducted on behalf of the European Commission.

It has been managed and organised by the DG Education and Culture, « Public Opinion Analysis » Unit.

The interviews have been conducted between the 03/01/2001 and the 09/01/2001 by these fifteen EOS GALLUP EUROPE Institutes :

DIMARSO - BRUXELLES	(Interviews : 03/01/01 - 06/01/01)	Belgium
GALLUP - KOBENHAVN	(Interviews : 03/01/01 - 06/01/01)	Denmark
EMNID - BIELEFELD	(Interviews : 03/01/01 - 08/01/01)	Germany
ICAP - ATHENS	(Interviews : 03/01/01 - 05/01/01)	Greece
DEMOSCOPIA - MADRID	(Interviews : 03/01/01 - 05/01/01)	Spain
SUOMEN GALLUP - ESPOO	(Interviews : 03/01/01 - 04/01/01)	Finland
B.V.A. - VIROFLAY	(Interviews : 03/01/01 - 03/01/01)	France
IRISH MKTG SURVEYS - DUBLIN	(Interviews : 03/01/01 - 09/01/01)	Ireland
DOXA - MILANO	(Interviews : 03/01/01 - 04/01/01)	Italy
ILReS - LUXEMBOURG	(Interviews : 03/01/01 - 09/01/01)	Luxemburg
NIPO - AMSTERDAM	(Interviews : 03/01/01 - 08/01/01)	Netherlands
ÖSTERREICHISCHES GALLUP - VIENNA	(Interviews : 03/01/01 - 09/01/01)	Austria
METRIS - LISBOA	(Interviews : 03/01/01 - 04/01/01)	Portugal
SVENSKA GALLUP - STOCKHOLM	(Interviews : 03/01/01 - 09/01/01)	Sweden
NOP - LONDON	(Interviews : 03/01/01 - 08/01/01)	United Kingdom

Representativity of the results.

Each national sample is representative of the continental population aged 15 and over, interviewed by telephone, within these limits :

- United Kingdom : Nothern Ireland excluded

Sizes of the samples.

The sample sizes amount to 500 respondents in each Country, with the exception of Germany, where the sample has been set at 1000 respondents.

A weighting factor has been applied on the national results in order to compute the marginals for :

- the eleven « EURO IN » countries
- the four « EURO OUT » countries

Here are presented the number of interviews as :

(a) actually conducted in each State
(b) derived from the weighting EURO IN
(c) derived from the weighting EURO OUT

	Inter viewed (a)	EURO « IN » (b)	EURO « OUT » (c)
- Belgium :	502	211	0
- Denmark :	514	0	126
- Germany : (West)	500	1346	0
- Germany : (East)	500	354	0
- Greece :	500	0	253
- Spain :	507	821	0
- France :	505	1204	0
- Ireland :	500	75	0
- Italy :	502	1197	0
- Luxemburg :	502	9	0
- Netherlands :	503	322	0
- Austria :	500	167	0
- Portugal :	500	207	0
- Finland :	500	107	0
- Sweden :	500	0	214
- United Kingdom :	500	0	1421
- Totals :	8035	6021	2014

Questionnaire.

1. The questionnaires prepared for this survey are reproduced in French and in English.

Three versions of the same questionnaire have been used :

(1) - one version used in the 11 countries ready to introduce the euro
(2) - one version for DENMARK, SWEDEN and the UNITED-KINGDOM
(3) - one version for GREECE.

The Greek version (3) is almost identical to the (2) : only slight changes in a few items have been made.

2. The translations have been realized in each national language by the Institutes listed above.

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11 EU

EOS GALLUP EUROPE
FLASH EUROBAROMETER N° 82/5 ["EURO (6)"] - January 2001
English version 18.12.2000 page 1/9

1. Sex [1] man
[2] woman

2. Exact Age: [_][_] years old
[00] **[REFUSAL/NO ANSWER]**

3. Age when finished full time education : **[EXACT AGE IN 2 DIGITS]**
[_][_] years old
[00] **[REFUSAL/ NO ANSWER]**
[01] **[NEVER GONE TO FULL TIME SCHOOL]**
[99] **[STILL AT FULL TIME SCHOOL]**

4. EOS Standard Occupation of Respondent Question :

What is your occupation ? **(INT. : WRITE IN AND CODE)**
1. Farmer, fisherman
2. Professional (lawyer, practitioner, etc. ...)
3. Owner of shop or company, craftsman, proprietor
4. General Management
5. Employed, middle management
6. Manual worker
7. Retired
8. Housewife
9. Student, military service
10. Temporarily not working, unemployed
11. Other
12. Refusal

5. Standard General Election Question

If there were a "General Election" tomorrow **(SAY IF CONTACT UNDER 18 : and you had to vote)**, which PARTY would you support ?

- Party A 01
- Party B 02
- (C, D, E, etc.) XX
- Other Party 96
- Would vote blank 97
- Would not vote 98
- (D.K./ N.A.) 99

6. Region = "European Administrative Regional Unit" (N.U.T.S. 1) **[2 DIGITS]**

7. Size of Locality

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EOS GALLUP EUROPE
FLASH EUROBAROMETER N° 82/5 ["EURO (6)"] - January 2001
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8. How well informed do you feel about the single European currency, the Euro ? Do you feel :

[READ OUT – ONLY ONE ANSWER POSSIBLE]

- very well informed 1
- well informed 2
- not very well informed 3
- not at all informed 4
- (DK/NA) 5

9. From what date will the Euro notes and coins be available for use in **[OUR COUNTRY]** ?

[INT. : IF ANSWER VAGUE, « BETWEEN… AND… » OR « NOT BEFORE… », …: PROMPT:…]

… Could you tell me in what month of what year, even if you are not sure ?

- **[CODE MONTH AND YEAR]** : [__] [__] - 20[__][__]
- (Never 00 00)
- (Doesn't know the month: ..... code 99 +year)
- (Doesn't know the year: ..... month + code 99)
- (Doesn't know at all: ..... code 9999)

10. From the day the Euro is introduced, how long will you be able to continue paying in **[NATIONAL CURRENCY]** in all the shops ?

[READ OUT – ONLY ONE ANSWER POSSIBLE]

- no longer 1
- between 1 and 4 weeks 2
- between 1 and 2 months 3
- between 2 and 6 months 4
- between 6 months and a year 5
- longer than a year 6
- indefinitely 7
- (DK/NA) 8

11. Some producers and retailers already show their prices both in **[NATIONAL CURRENCY]** and in Euro. Do you ever look at this dual pricing ?

[READ OUT – ONLY ONE ANSWER POSSIBLE]

- always 1
- often 2
- sometimes 3
- seldom 4
- never 5
- (never seen any) **[SPONTANEOUS]** 6
- (DK/NA) 7

12. Have you already tried to memorise certain prices in Euro ?

- yes 1
- no 2
- (DK/NA) 3

13. Would it help you to memorise those prices if the prices in Euro appeared before the prices in **[NATIONAL CURRENCY]** ?

[READ OUT – ONLY ONE ANSWER POSSIBLE]

- definitely 1
- probably 2
- maybe 3
- probably not 4
- definitely not 5
- (DK/NA) 6

14. I am going to read you a list of five statements concerning the replacement of the **[NATIONAL CURRENCIES]** by the Euro in daily life.

Could you tell me for each of them if you strongly agree, quite agree, quite disagree or strongly disagree :

- strongly agree 1
- quite agree 2
- quite disagree 3
- strongly disagree 4
- (DK/NA) 5

a. Replacement of the **[NATIONAL CURRENCY]** by the Euro will cause you personally a lot of inconvenience? 1 2 3 4 5

b. You're afraid of abuses and cheating on prices ? 1 2 3 4 5

c. You would rather trust retailers who agree on respecting a code of conduct and display a logo of guarantee ? 1 2 3 4 5

d. You think the banks and financial organizations will assist their clients by giving out information leaflets or even calculators ? 1 2 3 4 5

e. You think that the necessary regulations and measures will be taken in time to protect the consumers from abuses ? 1 2 3 4 5

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EOS GALLUP EUROPE
FLASH EUROBAROMETER N° 82/5 ["EURO (6)"] - January 2001

15. In your opinion, is it true that :

- true 1
- false 2
- (DK/NA) 3

a. Euro notes issued in **[OUR COUNTRY]** will immediately be usable and accepted in all the countries that adopted the Euro ? 1 2 3

b. Euro coins issued in **[OUR COUNTRY]** will immediately be usable and accepted in all the countries that adopted the Euro ? 1 2 3

c. the value of the Euro compared to the **[NATIONAL CURRENCY]** has already been definitely set ? 1 2 3

16. Do you think that the Euro : ... ?

		yes	no	(DK)
a.	Will allow you to easily compare car prices between one country and another	1	2	3
b.	Will be an international currency as the dollar	1	2	3
c.	Will contribute to the economic growth of the countries that adopted the Euro	1	2	3
d.	Will narrow the differences between the rich and the poor	1	2	3
e.	Will contribute to the creation of jobs	1	2	3
f.	Will make purchasing in the countries participating in the Euro easier	1	2	3
g.	Will eliminate the charges for changing from one currency to another	1	2	3
h.	Will be more convenient for those who travel in others countries of the European Union	1	2	3
i.	Will contribute to price stability	1	2	3
j.	Will mean more advantages than disadvantages for you personally	1	2	3
k.	Will mean that **[OUR COUNTRY]** will lose control over its economic policy	1	2	3
l.	Will mean that **[OUR COUNTRY]** will lose a great deal of its identity	1	2	3

17. Generally speaking, does the value of the Euro compared to that of the dollar worry you…

- a lot 1
- a little 2
- or not at all 3
- (DK/NA) 4

18. Did you already have practical experience of the Euro, at work or in your private life, and if so, in what circumstances ?

[READ OUT – SEVERAL POSSIBLE ANSWERS]

a) no : no practical experience up to now 1
b) yes : in your business, at work, at the office, ... 1

c) yes : in your private life :
   1) you have personally received payments in Euro (on an account / through cheques / transfers) 1
   2) you have personally made payments in Euro (with banker's card / cheques / transfers)..... 1
   3) you have a bank account / financial account in Euro 1
   4) you have made stock exchange transactions / investments in Euro..... 1
   5) in other personal circumstances **[SPECIFY]** 1
d) (DK/NA) 1

19. Do you know how much one Euro is worth in **[NATIONAL CURRENCY]**?

[INT. CODE THE AMOUNT, POSSIBLY WITH THE DECIMALS, WHERE IT BELONGS]

- One Euro is : ..... , ... **[NATIONAL CURRENCY]**

[IF NO ANSWER, PROMPT : ...]

... and approximately ?

- One Euro is approximately : ..... , ... **[NATIONAL CURRENCY]**
[IF REALLY DON'T KNOW → CODE 0000000000]

[END OF INTERVIEW - THANK RESPONDENT]

8. Code history of data analysis

```
  ___  ____  ____  ____  ____ ®
 /__    /   ____/   /   ____/      StataNow 18.5
___/   /   /___/   /   /___/       MP—Parallel Edition

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Notes:
      1. Unicode is supported; see help unicode_advice.
      2. More than 2 billion observations are allowed; see help obs_advice.
      3. Maximum number of variables is set to 5,000 but can be increased;
          see help set_maxvar.

1 . use "C:\Users\carin\OneDrive - HWR Berlin\UNI\Unterlagen\Master\3. Semester\Masterarbeit\Datenanalyse\Gesis_
  > Daten\2001\Daten_bereinigt_logit.dta"

2 . summarize

    Variable |        Obs        Mean    Std. dev.       Min        Max
-------------+---------------------------------------------------------
     country |        820    29.95366    .9995353        29         31
       quest |        820    490.5976    288.2876         1        998
          q8 |        820    2.417073    .6697374         1          4
        q14a |        820    2.673171    .9430743         1          4
        q14e |        820    2.058537    .8539145         1          4
-------------+---------------------------------------------------------
        q16i |        820    1.587805    .4925303         1          2
        q16j |        820    1.665854    .4719791         1          2
         sex |        820    1.502439    .5002992         1          2
         age |        820    44.89756    16.23595        15         93
      school |        820    1.039024    .1937712         1          2
-------------+---------------------------------------------------------
        educ |        820    19.02195    4.445245        13         30
        prof |        820    6.221951    2.104012         1         11
        vote |        820    331.6939    44.46985       301        399
      region |        820    308.6866    4.880558       301        316
        size |        820    304.8756     2.07353       301        307
-------------+---------------------------------------------------------
    wcountry |        820    .9932857    .5739157    .087663   3.750799
      weurin |        820    1.741352    1.590201   .0943011   10.09786
   age_group |        820    2.513415    1.041772         1          4
    q16j_bin |        820    .3341463    .4719791         0          1
    q16i_bin |        820    .4121951    .4925303         0          1

3 . swilk q16j_bin q8 q14a q14e q16i_bin age_group sex prof educ size

                    Shapiro-Wilk W test for normal data

    Variable |        Obs       W           V        z       Prob>z
-------------+--------------------------------------------------------
    q16j_bin |        820    0.99782      1.149    0.341    0.36660
          q8 |        820    0.99752      1.305    0.653    0.25672
        q14a |        820    0.99810      1.001    0.003    0.49893
        q14e |        820    0.99500      2.633    2.378    0.00871
    q16i_bin |        820    0.99922      0.409   -2.193    0.98586
   age_group |        820    0.99730      1.420    0.861    0.19473
         sex |        820    0.99989      0.057   -7.051    1.00000
        prof |        820    0.98666      7.021    4.787    0.00000
        educ |        820    0.89137     57.189    9.938    0.00000
        size |        820    0.97298     14.225    6.521    0.00000
```

```
4 . spearman q16j_bin q8 q14a q14e q16i_bin, stats(rho p) star(0.05)

  Number of observations = 820
```

Key
rho *p-value*

	q16j_bin	q8	q14a	q14e	q16i_bin
q16j_bin	1.0000				
	.				
q8	-0.2763*	1.0000			
	0.0000	.			
q14a	0.2210*	-0.1990*	1.0000		
	0.0000	0.0000	.		
q14e	-0.0737*	0.1108*	0.0094	1.0000	
	0.0348	0.0015	0.7884	.	
q16i_bin	0.3575*	-0.1763*	0.0684	-0.1703*	1.0000
	0.0000	0.0000	0.0501	0.0000	.

```
5 . spearman q16j_bin age_group sex prof educ size, stats(rho p) star(0.05)

  Number of observations = 820
```

Key
rho *p-value*

	q16j_bin	age_gr~p	sex	prof	educ	size
q16j_bin	1.0000					
	.					
age_group	0.0119	1.0000				
	0.7341	.				
sex	-0.2103*	0.0056	1.0000			
	0.0000	0.8731	.			
prof	-0.0983*	0.0939*	0.1575*	1.0000		
	0.0049	0.0071	0.0000	.		
educ	0.1831*	-0.1016*	-0.1468*	-0.2772*	1.0000	
	0.0000	0.0036	0.0000	0.0000	.	
size	0.0760*	0.0909*	0.0250	0.0353	0.1116*	1.0000
	0.0295	0.0092	0.4742	0.3124	0.0014	.

```
 6 . logit q16j_bin age_group sex prof educ size

   Iteration 0:  Log likelihood =  -522.4025
   Iteration 1:  Log likelihood = -494.76111
   Iteration 2:  Log likelihood =  -494.5348
   Iteration 3:  Log likelihood = -494.53474
   Iteration 4:  Log likelihood = -494.53474

   Logistic regression                                     Number of obs =    820
                                                           LR chi2(5)    =  55.74
                                                           Prob > chi2   = 0.0000
   Log likelihood = -494.53474                             Pseudo R2     = 0.0533

   ------------------------------------------------------------------------------
       q16j_bin | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
   -------------+----------------------------------------------------------------
      age_group |   .0147836   .0745744     0.20   0.843    -.1313795    .1609467
            sex |  -.8297282   .1574124    -5.27   0.000    -1.138251   -.5212056
           prof |  -.0209373    .037631    -0.56   0.578    -.0946927    .0528181
           educ |   .0606895   .0173805     3.49   0.000     .0266244    .0947546
           size |   .0684358   .0380599     1.80   0.072    -.0061602    .1430317
          _cons |  -21.41809   11.54315    -1.86   0.064    -44.04225    1.206067
   ------------------------------------------------------------------------------

 7 .
 8 . logit q16j_bin age_group sex prof educ size q8

   Iteration 0:  Log likelihood =  -522.4025
   Iteration 1:  Log likelihood =  -477.6049
   Iteration 2:  Log likelihood = -476.85269
   Iteration 3:  Log likelihood = -476.85254
   Iteration 4:  Log likelihood = -476.85254

   Logistic regression                                     Number of obs =    820
                                                           LR chi2(6)    =  91.10
                                                           Prob > chi2   = 0.0000
   Log likelihood = -476.85254                             Pseudo R2     = 0.0872

   ------------------------------------------------------------------------------
       q16j_bin | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
   -------------+----------------------------------------------------------------
      age_group |  -.0162463     .07657    -0.21   0.832    -.1663207    .1338282
            sex |  -.6807419    .162326    -4.19   0.000    -.9988949   -.3625888
           prof |   .0021268   .0386672     0.06   0.956    -.0736595    .0779132
           educ |   .0426827   .0179501     2.38   0.017     .0075011    .0778643
           size |   .0658985   .0390461     1.69   0.091    -.0106305    .1424275
             q8 |  -.7500501   .1307205    -5.74   0.000    -1.006258   -.4938426
          _cons |  -18.81657   11.84357    -1.59   0.112    -42.02955    4.396413
   ------------------------------------------------------------------------------

 9 .
10 . logit q16j_bin age_group sex prof educ size q14a

   Iteration 0:  Log likelihood =  -522.4025
   Iteration 1:  Log likelihood = -481.72709
   Iteration 2:  Log likelihood = -481.08206
   Iteration 3:  Log likelihood = -481.08116
   Iteration 4:  Log likelihood = -481.08116

   Logistic regression                                     Number of obs =    820
                                                           LR chi2(6)    =  82.64
                                                           Prob > chi2   = 0.0000
   Log likelihood = -481.08116                             Pseudo R2     = 0.0791
```

q16j_bin	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
age_group	.0260797	.075827	0.34	0.731	-.1225385	.1746979
sex	-.7656831	.1601547	-4.78	0.000	-1.079581	-.4517857
prof	-.016366	.0384988	-0.43	0.671	-.0918222	.0590902
educ	.0478707	.0177814	2.69	0.007	.0130198	.0827215
size	.0602467	.0387478	1.55	0.120	-.0156976	.1361909
q14a	.4471784	.0882398	5.07	0.000	.2742316	.6201253
_cons	-20.05651	11.74787	-1.71	0.088	-43.08191	2.96889

```
11 .
12 . logit q16j_bin age_group sex prof educ size q14e

Iteration 0:  Log likelihood =  -522.4025
Iteration 1:  Log likelihood =   -489.977
Iteration 2:  Log likelihood =  -489.6185
Iteration 3:  Log likelihood = -489.61828
Iteration 4:  Log likelihood = -489.61828

Logistic regression                                     Number of obs =    820
                                                        LR chi2(6)    =  65.57
                                                        Prob > chi2   = 0.0000
Log likelihood = -489.61828                             Pseudo R2     = 0.0628
```

q16j_bin	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
age_group	-.004126	.0752692	-0.05	0.956	-.151651	.1433991
sex	-.8646702	.1590504	-5.44	0.000	-1.176403	-.5529372
prof	-.0306444	.0380847	-0.80	0.421	-.105289	.0440002
educ	.0608521	.0174612	3.48	0.000	.0266289	.0950754
size	.0728009	.0384014	1.90	0.058	-.0024643	.1480662
q14e	-.2900163	.0938715	-3.09	0.002	-.4740011	-.1060314
_cons	-22.00523	11.63823	-1.89	0.059	-44.81574	.805279

```
13 .
14 . logit q16j_bin age_group sex prof educ size q16i_bin

Iteration 0:  Log likelihood =  -522.4025
Iteration 1:  Log likelihood = -446.75589
Iteration 2:  Log likelihood = -444.94606
Iteration 3:  Log likelihood = -444.94434
Iteration 4:  Log likelihood = -444.94434

Logistic regression                                     Number of obs =    820
                                                        LR chi2(6)    = 154.92
                                                        Prob > chi2   = 0.0000
Log likelihood = -444.94434                             Pseudo R2     = 0.1483
```

q16j_bin	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
age_group	-.0680195	.0792505	-0.86	0.391	-.2233477	.0873087
sex	-.7567353	.1681187	-4.50	0.000	-1.086242	-.4272288
prof	-.0316729	.0402104	-0.79	0.431	-.1104838	.0471381
educ	.0594734	.0186297	3.19	0.001	.0229597	.095987
size	.1125034	.0409732	2.75	0.006	.0321973	.1928094
q16i_bin	1.603463	.1672479	9.59	0.000	1.275663	1.931263
_cons	-35.42393	12.4365	-2.85	0.004	-59.79902	-11.04884

```
15 .
16 . logit q16j_bin age_group sex prof educ size q8 q14a q14e q16i_bin

   Iteration 0:  Log likelihood =  -522.4025
   Iteration 1:  Log likelihood = -426.44214
   Iteration 2:  Log likelihood =  -423.4676
   Iteration 3:  Log likelihood = -423.45309
   Iteration 4:  Log likelihood = -423.45309

   Logistic regression                                     Number of obs =    820
                                                           LR chi2(9)    = 197.90
                                                           Prob > chi2   = 0.0000
   Log likelihood = -423.45309                             Pseudo R2     = 0.1894

------------------------------------------------------------------------------
    q16j_bin | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
   age_group |   -.079167   .0817748    -0.97   0.333    -.2394426    .0811087
         sex |  -.6029343   .1758069    -3.43   0.001    -.9475095   -.2583591
        prof |  -.0081707   .0418414    -0.20   0.845    -.0901783    .0738369
        educ |   .0340914   .0194597     1.75   0.080    -.0040489    .0722318
        size |    .105169   .0424583     2.48   0.013     .0219524    .1883857
          q8 |  -.5687519   .1417334    -4.01   0.000    -.8465444   -.2909595
        q14a |    .411018   .0980253     4.19   0.000      .218892    .6031439
        q14e |  -.1155609   .1040042    -1.11   0.267    -.3194054    .0882835
     q16i_bin |   1.519532   .1740238     8.73   0.000     1.178452    1.860613
        _cons |  -32.56076   12.88382    -2.53   0.011    -57.81258   -7.308941
------------------------------------------------------------------------------

17 . logit q16j_bin i.age_group i.sex i.prof i.educ i.size i.q8 i.q14a i.q14e i.q16i_bin

   Iteration 0:  Log likelihood =  -522.4025
   Iteration 1:  Log likelihood =  -404.8523
   Iteration 2:  Log likelihood = -399.98259
   Iteration 3:  Log likelihood = -399.96092
   Iteration 4:  Log likelihood = -399.96092

   Logistic regression                                     Number of obs =    820
                                                           LR chi2(39)   = 244.88
                                                           Prob > chi2   = 0.0000
   Log likelihood = -399.96092                             Pseudo R2     = 0.2344

------------------------------------------------------------------------------
             q16j_bin | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
----------------------+----------------------------------------------------------------
           age_group |
                   2 |  -.0952964   .3093348    -0.31   0.758    -.7015814    .5109887
                   3 |  -.0730943   .3263406    -0.22   0.823    -.7127102    .5665216
                   4 |   .8441615   .4873015     1.73   0.083    -.1109319    1.799255
                     |
                 sex |
               women |  -.7115727   .1925633    -3.70   0.000     -1.08899   -.3341555
                     |
                prof |
        professional |   .0826342   1.015469     0.08   0.935    -1.907648    2.072917
shopkeeper, craftsman, owner |   1.492527    .851145     1.75   0.080    -.1756864    3.160741
  general management |   1.295596   .7544509     1.72   0.086    -.1831002    2.774293
employee, middle management |   1.294146   .7281565     1.78   0.076    -.1330141    2.721307
       manual worker |   .8976745   .7423273     1.21   0.227    -.5572603    2.352609
             retired |  -.0058584   .7789342    -0.01   0.994    -1.532541    1.520825
           housewife |   .6414282   .8613643     0.74   0.456    -1.046815    2.329671
student, military service |   1.840257   .8126662     2.26   0.024     .2474605    3.433054
temporarily unemployed |   .4484923   .8488551     0.53   0.597    -1.215233    2.112218
               other |   .7559472   .8759561     0.86   0.388    -.9608952     2.47279
                     |
                educ |
                  14 |   .0152675   1.233708     0.01   0.990    -2.402756    2.433291
                  15 |   .4437059   1.238266     0.36   0.720     -1.98325    2.870662
                  16 |  -.2622555   1.226013    -0.21   0.831    -2.665196    2.140685
                  17 |  -.0423313   1.229961    -0.03   0.973    -2.453011    2.368349
                  18 |   .0218833   1.243994     0.02   0.986      -2.4163    2.460067
               19-20 |  -.0214842   1.233142    -0.02   0.986    -2.438399    2.395431
```

21-23	.495539	1.240472	0.40	0.690	-1.935742	2.92682
24-26	.8085256	1.239341	0.65	0.514	-1.620538	3.237589
27 y.o. & older	-.0807244	1.250033	-0.06	0.949	-2.530744	2.369295
size						
2.000 - 5.000	-.0296868	.4522055	-0.07	0.948	-.9159932	.8566196
5.000 - 20.000	.0528746	.3897727	0.14	0.892	-.7110658	.8168151
20.000 - 50.000	.0376609	.4087634	0.09	0.927	-.7635006	.8388224
50.000 - 100.000	-.0632544	.4625035	-0.14	0.891	-.9697445	.8432358
100.000 - 500.000	.0982221	.3683197	0.27	0.790	-.6236712	.8201154
500.000 hab. et plus	500,000 in..	.5057622	.3447548	1.47	0.142	-.1699449	1.181469
q8						
Assez bien inform□	Well i..)	-.010564	.3749874	-0.03	0.978	-.7455258	.7243978
Pas tr□s bien inform□	Not ve..)	-.7678252	.395121	-1.94	0.052	-1.542248	.0065978
Pas bien inform□ du tout	Not at..)	-.9891242	.7074684	-1.40	0.162	-2.375737	.3974883
q14a						
Plut□t d'accord	Quite ..)	.1600533	.3711079	0.43	0.666	-.5673048	.8874115
Plut□t pas d'accord	Quite ..)	.6149895	.3555947	1.73	0.084	-.0819633	1.311942
Pas d'accord du tout	Strong..)	1.084658	.3758412	2.89	0.004	.3480231	1.821293
q14e						
Plut□t d'accord	Quite ..)	.3296942	.2127226	1.55	0.121	-.0872345	.7466229
Plut□t pas d'accord	Quite ..)	-.0912806	.2651428	-0.34	0.731	-.6109509	.4283897
Pas d'accord du tout	Strong..)	-1.041735	.5111447	-2.04	0.042	-2.043561	-.0399101
1.q16i_bin		1.507316	.184641	8.16	0.000	1.145427	1.869206
_cons		-2.718783	1.515001	-1.79	0.073	-5.68813	.2505647

```
18 . margins sex

Predictive margins                                      Number of obs = 820
Model VCE: OIM

Expression: Pr(q16j_bin), predict()
```

	Margin	Delta-method std. err.	z	P>|z|	[95% conf.	interval]
sex						
men	.3900778	.0216828	17.99	0.000	.3475803	.4325754
women	.272742	.0210502	12.96	0.000	.2314844	.3139996

```
19 .
20 . margins age_group

Predictive margins                                      Number of obs = 820
Model VCE: OIM

Expression: Pr(q16j_bin), predict()
```

	Margin	Delta-method std. err.	z	P>|z|	[95% conf.	interval]
age_group						
1	.3131043	.0395609	7.91	0.000	.2355664	.3906421
2	.2985855	.0265572	11.24	0.000	.2465343	.3506367
3	.3019391	.0287435	10.50	0.000	.2456029	.3582753
4	.452929	.0571151	7.93	0.000	.3409855	.5648725

```
21 .
22 . margins educ

Predictive margins                                      Number of obs = 820
Model VCE: OIM

Expression: Pr(q16j_bin), predict()
```

	Margin	Delta-method std. err.	z	P>|z|	[95% conf.	interval]
educ						
5-13	.3156562	.193651	1.63	0.103	-.0638928	.6952052
14	.3181139	.0555095	5.73	0.000	.2093173	.4269104
15	.3900723	.0526559	7.41	0.000	.2868685	.4932761
16	.2748093	.0326959	8.41	0.000	.2107266	.338892
17	.3088856	.0403455	7.66	0.000	.2298099	.3879614
18	.3191814	.0455886	7.00	0.000	.2298295	.4085333
19-20	.3122119	.038943	8.02	0.000	.235885	.3885387
21-23	.3991092	.0477832	8.35	0.000	.3054558	.4927626
24-26	.4547128	.0525704	8.65	0.000	.3516766	.5577489
27 y.o. & older	.3028018	.0495912	6.11	0.000	.2056048	.3999989

```
23 .
24 . margins prof

Predictive margins                                      Number of obs = 820
Model VCE: OIM

Expression: Pr(q16j_bin), predict()
```

	Margin	Delta-method std. err.	z	P>|z|	[95% conf.	interval]
prof						
farmer, fisherman	.2093587	.0890839	2.35	0.019	.0347576	.3839599
professional	.2200261	.0981869	2.24	0.025	.0275833	.412469
shopkeeper, craftsman, owner	.442106	.0860934	5.14	0.000	.2733659	.610846
general management	.4077139	.0516104	7.90	0.000	.3065593	.5088684
employee, middle management	.4074631	.0340601	11.96	0.000	.3407065	.4742197
manual worker	.3407071	.0406212	8.39	0.000	.261091	.4203232
retired	.2086145	.0400462	5.21	0.000	.1301254	.2871036
housewife	.3000026	.07452	4.03	0.000	.1539462	.4460591
student, military service	.5038663	.0667928	7.54	0.000	.3729549	.6347777
temporarily unemployed	.270924	.0697648	3.88	0.000	.1341875	.4076605
other	.3179188	.0817822	3.89	0.000	.1576286	.4782091

```
25 .
26 . margins size

Predictive margins                                      Number of obs = 820
Model VCE: OIM

Expression: Pr(q16j_bin), predict()
```

		Margin	Delta-method std. err.	z	P>|z|	[95% conf.	interval]
	size						
moins de 2.000 hab.	less than ..	.3032741	.0470409	6.45	0.000	.2110756	.3954726
	2.000 - 5.000	.2987064	.0519648	5.75	0.000	.1968572	.4005556
	5.000 - 20.000	.3114889	.0380998	8.18	0.000	.2368146	.3861633
	20.000 - 50.000	.309115	.0421912	7.33	0.000	.2264218	.3918082
	50.000 - 100.000	.2935809	.0519075	5.66	0.000	.191844	.3953178
	100.000 - 500.000	.318613	.0327631	9.72	0.000	.2543985	.3828275
500.000 hab. et plus	500,000 in..	.3855153	.0257033	15.00	0.000	.3351377	.4358928

```
27 . margins q8

Predictive margins                                      Number of obs = 820
Model VCE: OIM

Expression: Pr(q16j_bin), predict()
```

		Margin	Delta-method std. err.	z	P>|z|	[95% conf.	interval]
q8							
Tr⍰s bien inform⍰	Very w..)	.3864473	.0639371	6.04	0.000	.2611329	.5117618
Assez bien inform⍰	Well i..)	.3845571	.0211775	18.16	0.000	.34305	.4260641
Pas tr⍰s bien inform⍰	Not ve..)	.2591304	.0241039	10.75	0.000	.2118876	.3063733
Pas bien inform⍰ du tout	Not at..)	.2271865	.0840699	2.70	0.007	.0624125	.3919605

```
28 .
29 . margins q14a

Predictive margins                                      Number of obs = 820
Model VCE: OIM

Expression: Pr(q16j_bin), predict()
```

		Margin	Delta-method std. err.	z	P>|z|	[95% conf.	interval]
q14a							
Tout-⍰-fait d'accord	Strong..)	.249856	.0474816	5.26	0.000	.1567937	.3429182
Plut⍰t d'accord	Quite ..)	.2736287	.026718	10.24	0.000	.2212623	.3259951
Plut⍰t pas d'accord	Quite ..)	.3469838	.0232553	14.92	0.000	.3014043	.3925632
Pas d'accord du tout	Strong..)	.4295396	.034357	12.50	0.000	.362201	.4968781

```
30 .
31 . margins q14e

Predictive margins                                      Number of obs = 820
Model VCE: OIM

Expression: Pr(q16j_bin), predict()
```

		Margin	Delta-method std. err.	z	P>|z|	[95% conf.	interval]
q14e							
Tout-⍰-fait d'accord	Strong..)	.3202167	.0265101	12.08	0.000	.2682579	.3721756
Plut⍰t d'accord	Quite ..)	.3747739	.0221118	16.95	0.000	.3314356	.4181123
Plut⍰t pas d'accord	Quite ..)	.3057503	.0317176	9.64	0.000	.2435849	.3679157
Pas d'accord du tout	Strong..)	.1761505	.0554092	3.18	0.001	.0675505	.2847505

```
32 .
33 . margins q16i_bin

Predictive margins                                      Number of obs = 820
Model VCE: OIM

Expression: Pr(q16j_bin), predict()
```

	Margin	Delta-method std. err.	z	P>|z|	[95% conf.	interval]
q16i_bin						
0	.2168329	.018267	11.87	0.000	.1810303	.2526355
1	.4851036	.0253417	19.14	0.000	.4354347	.5347724

9. AI Directory

No.	AI tool	Purpose of use	Affected Sections	Remarks, Procedure, Prompts
1	DeepL Write DeepL Write: Ihr KI-Schreibassistent	Proofreading: Correcting grammar & spelling mistakes Improving text formulation Translation: English - German	All chapters	Writing style: business, academic Grammar corrections
2	ChatGPT ChatGPT	Selection of methods & models Data analysis: support in STATA coding Interpretation: Understanding complex data & paper Writing: Proofreading & formulation optimization	All chapters	See prompt log "Generic Prompts" including *[my text]* used several times for different parts in the text Examples of prompts are illustrated in the prompt log
3	ScholarGPT ChatGPT - Scholar GPT	Literature research & management Free access literature	Chapter 2 & 5	See prompt log "literature research"
4	StataGPT ChatGPT - Stata	Data analysis guidance Explanation and correction of codes	Chapter 3 & 4	See prompt log "Data analysis"

Declaration of Authorship

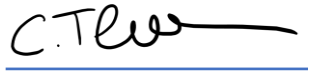
I hereby declare that I have written the submitted academic work entirely by myself without anyone else's assistance, and that I have not used any sources or aids other than those stated. Wherever I have drawn on literature or other sources, either in direct quotes, or in paraphrasing such material, I have given, in accordance with academic standards, the reference to the original author or authors and to the source where it appeared. If I have used AI-based tools that were classified as reportable at the time of submission of my paper, I have fully listed them in the AI directory section with the product name, the source, the purpose of use, details of the parts of the academic work affected, as well as the inputs.

I am aware that the use of quotations, or of close paraphrasing, from books, magazines, newspapers, the internet or other sources, which are not marked as such, or the use of AI tools without detailed documentation, will be considered as an attempt at misconduct, and that the academic work will be graded with a fail.

I hereby declare that I have used AI-based tools in my submitted academic work and documented their use in accordance with the above requirements.

Paris, 14th July 2025

Place, Date



Signature