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## **Master Thesis**

Choosing economics as elective subject –  
How do students with the subject economics  
differ from others?

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Summer Term 2022

Tübingen, September 26<sup>th</sup>, 2022

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Master of Education Economics

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# 1 Introduction

Rapid economic development in the last decades has increased requirements for citizens to participate in a complex economic environment. Due to globalized markets, structural transformation and not least crises like the financial crisis in 2008 or the global energy crisis in 2022, economic education becomes more and more relevant to make decisions in everyday life.

In the last decades, economic education in the German high-tier school track “Gymnasium” has been limited to an integrated concept, with economic contents being implemented in curricula of adjacent subjects like social sciences (Brückner et al., 2015; Kaiser et al., 2020; Oberrauch & Kaiser, 2020). Recently, the German federal state Baden-Württemberg passed a curriculum reform introducing economics as a standalone subject in all general education schools. This development makes the investigation of economic education and economics students in secondary education increasingly relevant.

There have been fears and objections that an autonomous subject would influence students towards the neo-classical paradigm. One reason for this are different attitudes and values of economics students, as previous research seems to be in agreement that economists and economics students behave differently than other individuals (e.g., Bauman & Rose, 2011; Carter & Irons, 1991; R. H. Frank et al., 1993, 1996; Haucap & Müller, 2014; Ifcher & Zarghamee, 2018; Marwell & Ames, 1981; Rubinstein, 2006).

However, to date, sources for these differences are poorly understood. There are mainly two possible explanations discussed in literature. The first one is *self-selection*. According to this theory, economists possess different traits before receiving economic education (e.g., Carter & Irons, 1991; Cipriani et al., 2009; B. S. Frey et al., 1993). The second possibility, frequently referred to as *indoctrination*, states that training in economics affects students’ attitudes and values towards a more rational, calculating behavior (Bauman & Rose, 2011; Cipriani et al., 2009; B. S. Frey et al., 1993; Haucap & Just, 2010). The two theories are mainly investigated for economics students in higher education (e.g., Cipriani et al., 2009; B. S. Frey et al., 1993; Haucap & Just, 2010).

Many economists, educators and parents demand more economic education in high schools in order for students to be well prepared for the challenges of a complex

globalized world (Kaminski, 2017; Loerwald, 2008). At the same time, others fear indoctrination by neo-liberal thoughts and one-sided microeconomic contents (e.g., Hedtke, 2012). This ongoing conflict makes it particularly relevant to further investigate characteristics and attitudes of economics students already at the high school level.

Because of the limited extent of economic education in German secondary schools, evidence on potential indoctrination effects in high school remains particularly scarce (Kaiser et al., 2020).

This thesis investigates whether students voluntarily enrolled in economics differ from untrained students in various non-cognitive outcomes. The participants' elective subject economics starts in grade eleven. Data are collected from students in grade eleven and twelve with the vast majority being enrolled in grade twelve. Thus, graduation and important economic decisions are imminent for participating students. Prior to grade eleven, students did not get any compulsory economic education in school except for some integrated contents. To examine students' differences, four main categories are investigated aside from demographic characteristics. First, data on personality traits based on the Big Five personality model are collected. Second, students' preferences towards risk, time, trust and altruism are measured. Third, potential differences in normative attitudes towards economics, e.g., the price mechanism, profit maximation and fairness are considered. And fourth, interest in economic matters and economic competence are measured by applying a shorter version of the "Test of Economic Competence" (TEC) by Kaiser et al. (2020).

In order to investigate which variables may explain the decision to elect economics a regression has been conducted. In particular, this thesis examines to what extent demographic characteristics, personality traits, economic preferences, attitudes towards normative economic decisions and economic interest may serve as predictor for electing economics as school subject.

Results show that some of the conducted traits and attitudes can indeed serve as predictor for being enrolled in the subject economics. Consistent with previous findings, there is a significant gender gap with being male positively influencing the election of economics. Students with a lower score on neuroticism are significantly more likely to be in the economics course. In addition to that, two items show that economics students are more likely to rate a price increase as fair and choose profit maximation more frequently.

At the same time, other attitudes towards economics, also examining the price mechanism, do not seem to differ for economists and other students. Furthermore, personality traits except for neuroticism and economic preferences do not provide significant regression results. Thus, no differences between economists and other individuals is evident regarding preferences and four out of five personality traits. The results are partly surprising in showing that economics students' social preferences do not differ from others as based on previous findings, a less social behavior could be expected.

This thesis is structured as follows: First, a theoretical framework is given, providing background information about economic education in Germany and relevant literature. After that, framework conditions of German secondary education and concrete curricular settings are explained. It follows information on the sample and research design. Afterwards, the regression results are presented, followed by a discussion of the findings. In the end, I will draw a final conclusion.

## **2 Theoretical framework**

### **2.1 Economic education in Germany**

Economic education in Germany cannot easily be summarized. One reason for that is German federalism, which makes the sixteen federal states partly sovereign. Education is one important section which is independently regulated by the federal states. Thus, educational systems differ from state to state (Weber, 2002). This could further be differentiated for the four existing types of secondary schools. There is the highest level, called "Gymnasium", an intermediate and base level ("Realschule" and "Werkrealschule"), and an integrated comprehensive school type. Usually, those have different educational plans in each federal state.

Especially regarding economic education, there are great disparities between the different states. This results from the fact that in contrast to subjects like math, biology etc., there is no standard compulsory subject of economics established in all federal states (Loerwald et al., 2021). While in some states economics is taught as an integrative subject in combination with politics, social sciences and geography, in others it is implemented as autonomous compulsory subject. However, this is only the case for the federal state of Baden-Württemberg (Loerwald et al., 2021). Whether

economics should be a subject on its own in the German educational system is still controversially discussed. While many argue that an independent subject economics is necessary in order to provide for an adequate economic education (Kaminski, 2017; Loerwald, 2008), others fear that students might be indoctrinated by neo-liberal thoughts and one-sided contents influenced by large enterprises and organizations (e.g., Hedtke, 2012).

What most academics and educators agree on is that either as integrated or stand-alone subject, economic education is essential to prepare learners for finding their way in society and being able to act autonomously and responsibly in economically-shaped life situations (e.g., Hübner, 2008; Kaminski, 2017; Liening, 2015; Retzmann & Seeber, 2016). Being an existentially important part of society, economics is also part of every-day life of children and needs to be integrated in general education (Hübner, 2008). Students should learn to manage economic situations, compare costs and benefits and make rational decisions (Retzmann, 2008). In addition to that, economic education should enable learners to evaluate conflicts of interests from various perspectives, considering the point of view of different agents as well as economic, social, ecological and ethical perspectives (Loerwald, 2008).

All this is also constituted in the education plan for the subject economics of the federal state Baden-Württemberg, in which this study takes place (Ministerium für Kultus, Jugend und Sport Baden-Württemberg, 2004, 2016b, 2016a).

The present sample of 426 students was taken in Baden-Württemberg in 2021 and 2022. Thus, the surveyed cohorts were not yet affected by the curriculum reform in 2016 and therefore students did not receive an economic education through an autonomous subject economics. However, in grade eleven, students have the choice to elect economics as elective subject. Approximately half of the respondents did so.

In the following, it will be examined whether students who chose economics have different preferences and attitudes towards economics.

## **2.2 Literature review**

The question of whether economists exhibit different behaviors and attitudes than non-economists is not a new one. A large body of evidence shows that economists behave differently in experimental settings such as cooperative or non-cooperative games. In 1981, Marwell and Ames showed that the amount of free riding is significantly higher

among economics students. Furthermore, economics students accepted less in the ultimatum game and tend to prioritize their own benefit over others in dictator games more often than other students (Carter & Irons, 1991; Ifcher & Zarghamee, 2018).

In the prisoner's dilemma games conducted by Frank et al. (1993, 1996) economists show higher overall non-cooperative behavior; however, their cooperativeness increases with increasing time of interaction with the other subject.

Through trust games, Haucap and Müller (2014) find out that economists are both less trusting and less trustworthy than law students. They also find a significant gender gap with females being less trusting and trustworthy than males.

Moreover, economists being less trustworthy and more selfish is consistent with findings of Carter and Irons (1991), Frank et al. (1993, 1996) and Lundquist et al. (2009). Economics students are less generous and donate significantly less than others (Bauman & Rose, 2011; B. S. Frey & Meier, 2005). For instance, they are significantly more corrupt than others, showing a gender effect of male economists being the most corrupt compared to other groups (B. Frank & Schulze, 2000).

Next, this literature also provides evidence that economists show different normative attitudes and policy preferences. For instance, Gorman and Kehr (1993) find that business executives have significantly different attitudes towards fairness, judging profit maximization as unfair less often than others.

Besides these reportedly different behaviors and preferences in economic games and situations, economists inherit different views of the world than non-economists. According to Gandal et al. (2005), economists put more weight on values of self-enhancement like power and achievement than on values of universalism. Furthermore, when it comes to governmental market interventions, they are more likely to place efficiency over fairness (Haferkamp et al., 2009) and are self-reportedly less concerned with fairness (Ifcher & Zarghamee, 2018). Rubinstein (2016) showed that economists tend to prefer profit maximization strategies, given a dilemma between profit and the welfare of workers.

In general, evidence suggests a consensus that economists behave more accordingly to the "homo economicus" and neoclassical paradigm of thinking than others. The opposite conclusion is drawn from the results of Yezer et al. (1996), who find that students trained in economics behave in a more cooperative way than others, returning significantly more lost letters to the owner than other students. Furthermore, economists are not found to be less cooperative than others by Laband and Beil (1999).



However, evidence on superior cooperative behaviors among economists remains scarce. Thus, researchers are mostly on the same page about economists having different preferences and behaving differently in certain situations. What is still intensely discussed, however, are the sources for these differences. There are two main theories which might explain this phenomenon: self-selection and indoctrination.

The theory of self-selection states that people who choose to become economists possess ex-ante different traits and preferences and thus self-select themselves into studying economics or pursuing an economic career path (e.g., Carter & Irons, 1991; Cipriani et al., 2009).

According to the indoctrination or learning hypothesis, students “adapt their behavior over time to the basic axioms of the theories they study” (Carter & Irons, 1991, p. 171). Thus, the exposure to economic theories and especially to principles of the neoclassical theory encourages students to adapt their preferences according to the neoclassical way of thinking (e.g., Carter & Irons, 1991; Frey et al., 1993).

In previous literature, the terms ‘learning’ and ‘indoctrination’ have been used both interchangeably and differently. From a general perspective, the word indoctrination has a negative connotation, implying the adoption of thoughts or theories without criticism (Cambridge Dictionary, n.d.). This negative connotation becomes apparent for example in Frey and Meier (2005) who define indoctrination as “negative effect on students’ cooperative behavior” (p. 454). Still, it is often used interchangeably with the word learning. For instance, according to Frey et al. (1993) indoctrination is the situation in which “students ... learn how to apply economics in daily-life situations in order to perform better than people without economics training, who possibly behave in a more altruistic way” (p. 272). Haucap and Müller (2014) use the word learning instead of indoctrination throughout the entire article. In this thesis, word choice is adapted to the source of literature that is referred to.

A large body of literature tries to disentangle selection from indoctrination effects. However, results are equivocal and the question of causality is not convincingly addressed. Bauman and Rose (2011), Carter and Irons (1991), B. Frank and Schulze (2000), Frey and Meier (2005) and Frey et al. (1993) among others find evidence that is consistent with the self-selection theory but not the indoctrination theory. According to them, economists are different already before being taught in economics and this

difference does not significantly expand during the course of study. On the other hand, Ifcher and Zarghamee (2018) and Rubinstein (2006) report opposing results which are in favor of an indoctrination effect. Other researchers find both a self-selection and indoctrination effect or at least parts of both effects at the same time. According to these studies economics students possess different traits or attitudes before taking courses in economics and this difference expands due to economic education (Cipriani et al., 2009; R. H. Frank et al., 1993; Haucap & Just, 2010; Haucap & Müller, 2014). Results are also heterogenous with regard to socio-demographic characteristics. Haucap and Müller (2014) find a significant gender gap influencing both the self-selection and learning effect. Their findings suggest that self-selection is mostly due to female participants and the learning effect is also stronger for women.

The present thesis aims at contributing to the existing literature by analyzing differences of students who choose economics as elective subject in grade eleven with students who do not choose economics.

### **3 Context of the study**

#### **3.1 Curricular settings**

The study has been conducted via questionnaire in thirteen schools of the high-tier school track in South-West Germany. This is also a main difference to the existing literature, which mostly deals with students of higher education economics.

Background of the study is a curriculum reform in the federal state of Baden-Württemberg in 2016 and the ongoing debate about compulsory economic education in high schools. The present data have been collected in 2021 and 2022, so that respondents in grades eleven and twelve were not yet affected by the reform.

The questionnaire was sent to 200 secondary schools of the high-tier school track “Gymnasium” in Baden-Württemberg. During the valid curriculum between school years 2001/02 and 2019/20, in grade eleven students choose elective subjects (“Neigungsfach”), which they will be taught in four lessons per week for two years until graduation (“Abitur”) (Neumann, 2010). Besides German, math and a foreign language, students can choose two elective subjects, inter alia economics. In grade five to ten in the general secondary High School (“Allgemeinbildendes Gymnasium”), students did not receive any explicit economic education, except for occasional

economic content in an interdisciplinary learning context, like geography or social studies. This changes however with the curriculum reform in 2016, when economic education is included as mandatory subject “Economics and Vocational/ Academic Orientation” (“Wirtschaft/ Berufs- und Studienorientierung”) from grade eight to ten (Ministerium für Kultus, Jugend und Sport Baden-Württemberg, 2016b). Preceding this reform were heavy discussions about economics as compulsory subject, especially debating possible indoctrination effects. As this debate is still not over yet and relevant also for other federal states, this thesis examines voluntary economic education and whether students who are taught in economics show any significant differences. Of the present data set, approximately half of the students (200 out of 414 who responded to that question) chose economics as elective subject. Although this is not representative for the general student body as economics is only one out of several possible elective subjects, the sample is chosen that way in order to draw a comparison between students who chose economics and those who did not.

The curricular settings of the subject economics which are relevant for the surveyed cohort are defined in the education plan of Baden-Württemberg valid from 2004 to 2016 (Ministerium für Kultus, Jugend und Sport Baden-Württemberg, 2004).

These education plans are usually broadly formulated and give overall topics which schools and teachers can implement at their own discretion. Explicitly mentioned is not only the knowledge of theoretical principles and models of economics. Besides that, the application of knowledge and competencies to make decisions and act accordingly in real economic life situations is part of the subject economics (ibid.). To complement that, students should be able to apply their skills not only in an economic context but consider ecological, social and ethical dimensions. Thus, according to the curriculum, economic education should enable students to act responsibly in an interdisciplinary context (ibid).

It becomes clear that the curriculum does not only take into account a microeconomic perspective according to the neoclassical theory but explicitly addresses social and systemic perspectives.

### **3.2 Implementation and sample**

The survey takes place in the German high-tier school track “Gymnasium”. 200 schools in the federal state Baden-Württemberg were randomly selected and contacted. Of those, 13 schools participated in the final study. One reason for the relatively low

confirmation rate might be the absence of incentives and the Covid pandemic which facilitates the response burden for schools and teachers during the relevant time period. Nevertheless, the final number of respondents (426) comes relatively close to the initial goal of reaching about 500 students. For each participating school one or more course of grade eleven or twelve completed the questionnaire.

The sampling procedure consisted of two stages. First, schools were selected randomly and contacted. Second, one or more courses of the senior classes eleven and twelve were selected. After accepting participation, teachers of the selected courses implemented and supervised the questionnaire during a regular school lesson. The tests were conducted digitally using computers. The time span in which respondents filled out the questionnaires lies between October 21<sup>st</sup>, 2021 and January 25<sup>th</sup>, 2022. The test design offered no incentives for test participation or a high score on items measuring economic competence. Respondents completed the questionnaire completely anonymously. Furthermore, they were informed that except for the twelve items about economic competence, there are no right or wrong answers.

Sample characteristics are shown in table 1. In total, 13 schools with a total of 426 students participated in the survey. Most of the students, that is 89 % are in grade twelve, 6 % are in grade eleven and 4.8 % are in other grades. As the compulsory subject economics starts in grade eleven, most students have had approximately one year of economic education when completing the survey.

They have a mean age of 17.21 years, and the proportion of females is 44.39 %. The educational level of the parents is measured by asking for their highest school-leaving qualification. Students can indicate their parents' education on a scale from 1 (no educational qualification) to 9 (doctorate degree). Note that the respective figures might be slightly distorted as 25 of 414 (22 of 415) respondents indicate that they do not know their mothers' (fathers') level of education and those are not taken into account.

This goes along with the number of books at home, an indicator for socioeconomic status (Heppt et al., 2022). Most students report that German is the first language spoken at their homes. Approximately half of the students questioned chose economics as elective subject in grade eleven. Their math grade shows an average of 2.4. Grades in German high school are measured withing the range from 1.0 to 6.0, with 1.0 being the best grade and 5.0 to 6.0 connoting failure.

In total, 407 out of 426 students finished the questionnaire until page 25 (see Appendix B for the questionnaire). 13 students completed less than half of the questionnaire. Due to this, the number of observations (N) varies with different questions.

For simplicity reasons, in the following, the students who chose economics as elective subject are frequently referred to as “economics students” or “economists”.

*Table 1: Sample characteristics*

Variables	N	Mean	SD	Min	Max
Sex	410	0.444	0.497	0	1
Age	409	17.211	0.780	14	20
Education mother	389	6.177	2.034	1	9
Education father	393	6.402	2.295	1	9
Books at home	415	4.275	1.463	1	6
Native language	415	0.872	0.334	0	1
Subject economics	414	0.483	0.500	0	1
Math Grade	411	2.397	1.100	1	6

## 4 Research design and empirical method

As mentioned in section two, there is already a substantial body of literature about if and how economists are different, dating back to the early 80s. To further contribute to this literature, this thesis examines differences between students who chose economics and those who did not.

In contrast to previous literature examining the effects of the newly introduced mandatory economic education (Kaiser & Oberrauch, 2021; Oberrauch & Seeber, 2022), this study shows differences in preferences and attitudes of students who voluntarily decided to receive an economic education at the secondary school level. One of the main differences to other studies is the focus on students enrolled in an upper stage secondary educational level, while most previous studies focus on students at the university level.

In the following sections it will be further explained how data on the students’ personality traits, economic preferences, attitudes towards economic decisions and their economic competence are collected.

## 4.1 Measuring personality traits

To examine whether respondents who chose economics as elective subject possess different personal characteristics, the questionnaire contains 25 questions about their personality traits. Those are based on the Five Factor Model (FFM), also known as taxonomy of the Big Five personality traits (e.g., Goldberg, 1992; John & Srivastava, 1999; McCrae & John, 1992; Roccas et al., 2002). This name indicates the broadness of the five terms with each factor including many more specific personality traits (John & Srivastava, 1999).

In the last decades, the FFM has been the dominant model when it comes to examining personality traits (Roccas et al., 2002). The origin of the model goes back to Tupes and Christal (1961), who found “five relatively strong and recurrent factors” (p. 14) when it comes to analyzing human personal characteristics (McCrae & John, 1992). Since then, several studies demonstrate the validity of those factors, enduring across instruments and decades (e.g., McCrae & Costa, 1990; McCrae & John, 1992).

According to the FFM, individual characteristics can be summarized by the five factors openness, agreeableness, extraversion, conscientiousness and neuroticism. Accordingly, an individual who exhibits a high score of openness is considered to be intellectual, imaginative and open-minded. A high score of agreeableness entails modest, gentle and cooperative personality features. Similarly, a pronounced personality trait of extraversion implies sociable, assertive and active character traits and a high score of conscientiousness is associated with careful, responsible and organized features. Finally, a person who scores high on neuroticism tends to be more anxious, depressed and insecure (Roccas et al., 2002).

Versatile application has proven the validity of the model (c.f. Gerlitz & Schupp, 2005). Research has shown that the Big Five can predict significant life outcomes in many areas (e.g., Barlett & Anderson, 2012; McCrae & John, 1992; Ziegler et al., 2010).

The model is mostly validated for adults (John & Srivastava, 1999). Previous studies suggests that the Big Five personality traits of adults are relatively stable throughout life (e.g., Cobb-Clark & Schurer, 2012; Soldz & Vaillant, 1999). With a range from 14 to 20 years and mean age of 17, the majority of this sample can be categorized in middle and/or late adolescence (Sawyer et al., 2018). Therefore, personality traits of

this cohort are considered as relatively stable already (Borghuis et al., 2017; Roberts et al., 2001)

In the questionnaire that is used here, students respond to 25 statements about personal characteristics (see F19 in Appendix B). These are based on the selection of John et al. (1991) and validated for example by Gerlitz and Schupp (2005). The items are developed with the goal to create a “relatively small set of variables that will uniformly produce the Big Five factor structure” (Goldberg, 1992, p. 27).

For every statement respondents can specify on a scale from 1 (“does not apply at all”) to 5 (“fully applies”) to what extent it is applicable for them individually. Each of the five overall personality trait categories is measured by five statements, randomly ordered and formulated either in positive or negative terms. The Big Five personality trait items that are used here have been validated in Gerlitz and Schupp (2005). For the evaluation, I summarized the five statements which belong to one overall personality trait to a single factor, respectively. The principal component score of the personality traits represents the underlying personality dimensions and is illustrated in figure 1 in the appendix (c.f. Pedhazur & Schmelkin, 2013). A linear probability model is carried out.

In the following, I *inter alia* examined if and to what extent personality traits correlate with the decision to choose economics as elective subject. Furthermore, I carried out a regression analysis which is intended to show whether personality traits can serve as a predictor for electing economics.

## **4.2 Measuring economic preferences**

In general, preferences denote an agent’s favored choice when he or she has at least two options (Broome, 1993). Economic preferences are considered to be important predictors for economic transactions and are included as parameters into many economic models (e.g., Albanese et al., 2017; Chuang & Schechter, 2015; Falk et al., 2018).

As already discussed in section two, economists are found to be different regarding several aspects. Thus, this study inquires preferences in order to examine whether they differ for students who chose economics as elective subject and those who did not.

In the neo-classical sense, people are expected to act rationally and choose the option which maximizes their profit (Broome, 1993). If economists behave according to the

“homo economicus”, they are expected to be less altruistic than other individuals (Haucap & Müller, 2014). Furthermore, based on evidence by Frank et al. (1993, 1996) they are expected to trust less than other individuals. Regarding risk preferences there is only few literature showing significant differences between economists and other people. One recent finding by Kaiser and Oberrauch (2021) suggests that students who received mandatory economic education in secondary school have a lower level of risk seeking and are more patient.

The following sections examine whether this is true for students who chose economics as elective subject. If so, this would add to the literature stating that economists are different. Provided that preferences are considered stable, such a result would be consistent with the self-selection hypothesis, showing that economists have ex-ante different preferences which remain constant over time and during treatment. However, while neo-classicists traditionally take the view that preferences are stable (Becker, 1976; Carlsson et al., 2014), this question is still controversially discussed (Anderson & Mellor, 2009; Chuang & Schechter, 2015).

This study inquires the economic preferences risk, trust, altruism and time through self-report. To measure risk preferences students are asked one question to self-assess their general willingness to take risks (“In general, how willing to take risks are you?”) using a ten-point scale from 1 (risk averse) to 10 (risk-taking). This simple question has been shown to be a valid predictor of risk and has been verified in the field by Dohmen et al. (2011).

Preferences regarding trust are studied through the simple binary question “Generally speaking, would you say that most people can be trusted, or that you cannot be too careful?”. This question has been used for example in the General Social Survey (GSS) and validated in Falk et al. (2016) (Bohnet, 2008). Students then decide between the two answers “You cannot be too careful” and “Most people can be trusted”.

Four questions in the survey aim to measure altruism. The first one is a qualitative question related to sharing prize money. It asks respondents whether they would share a large amount of the prize money if they won 1000 Euros. This question has been used in the German Socio-Economic Panel (SOEP) and in other previous research (Falk et al., 2016; Kaiser & Oberrauch, 2021). The second question deals with students’ thoughts about redistribution of income. Respondents are asked to indicate



their preference for redistribution on a scale from 1 (no redistribution) to 10 (total redistribution).

In addition to that, students' field behavior with regard to social preferences is surveyed. As part of social preferences, they are asked whether they have ever donated money for a charitable cause (and if so, how much) and whether they have ever done voluntary work (and if so, for how many hours).

To measure students' time preferences, students self-assess two statements about their patience and impatience. The first statement is "I can forego something today so that I can afford more tomorrow" and the second statement is "I want to have fun today and do not think about tomorrow", measuring attitudes towards discounting. Both statements include a five-point Likert scale on which students indicate their level of agreement from 1 ("do not agree at all") to 5 ("totally agree"), respectively. All items can be found in Appendix B.

### **4.3 Measuring attitudes towards economics**

To examine respondents' normative attitudes towards economic decisions, the questionnaire inquires data concerning market mechanism and profit maximization. In order to do so, the questionnaire contains five items which have been established and investigated in previous studies (Cipriani et al., 2009; B. S. Frey et al., 1993; Haucap & Just, 2010; Kaiser & Oberrauch, 2021; Rubinstein, 2006).

The first question was established by Kahneman et al. (1986). It is here called *Auction*, following Cipriani et al. (2009) and is worded as follows:

*"A football team normally sells some tickets on the day of their games. Recently, interest in the next game has increased greatly, and tickets are in great demand. The team owners can distribute the tickets in one of three ways. (1) By auction: the tickets are sold to the highest bidders. (2) By lottery: the tickets are sold to the people whose name are drawn. (3) By queue: the tickets are sold on a first-come first-served basis. Rank these three in terms of which you feel is the most fair and which is the least fair – the auction, the lottery, and the queue." (cf. Cipriani et al., 2009; Kaiser & Oberrauch, 2021)*

Through this question, students judge the fairness of the three allocation mechanisms and rank the alternatives according to their individual sense of fairness. To analyze whether economists prefer the price mechanism (auction) more often than other students, responses are coded as 1 if auction was chosen as first preference and 0 otherwise.

The second question is coded as *Hiking*. It has been established by Frey et al. (1993) and further conducted for example by Haucap and Just (2010) and Kaiser and Oberrauch (2021). This item tests how students assess the fairness of different allocation mechanisms of a scarce resource. The situation is as follows:

*At a sight-seeing point, reachable only by foot, a well has been tapped. The bottled water is sold to thirsty hikers for two Euro per bottle. The maximum daily production are 100 bottles. On a particularly hot day, 200 thirsty hikers are expected. Please judge the following measures for allocating the water among the thirsty hikers:*

- (1) The price is increased to four Euro per bottle.*
- (2) Selling the water for two Euro per bottle to the first 100 hikers according to “first come, first served”.*
- (3) Selling the water for two Euro per bottle to the 100 hikers whose last name by chance happens to start with the letters A to K.*
- (4) The local community buys all bottles for two Euro per bottle and distributes them as it sees fit.*
- (5) Selling half-sized bottles for one Euro per bottle to all hikers (one bottle per hiker only). (cf. Kaiser & Oberrauch, 2021)*

Students then rate on a scale from 1 (“totally unfair”) to 4 (“totally fair”) the fairness of each of the five alternative allocation mechanisms. In this study, the price mechanism (alternative (1)) lies in the focus of attention. Following the neo-classical model, economists are expected to rate the price mechanism as fair more often than other students do. If students rate this option as “fair” or “totally fair” it is coded as 1, 0 otherwise.

The third question about students’ normative attitudes is called *Profmax*, following (Rubinstein, 2006) and others (e.g., Cipriani et al., 2009; Kaiser & Oberrauch, 2021). The question is formulated as dilemma between profit maximation and the layoff of employees (Rubinstein, 2006). Thus, due to the social dilemma, this item examines to which extent students take negative social consequences for the workers into account. The question is designed as follows:

*Assume that you are a vice president of a company. The company provides extermination services and employs 196 nonpermanent workers who are sent out on extermination jobs. All the company’s employees have been with the company for three to five years. Until recently, the company was making large profits. As a result of the continuing recession, there has been a significant drop in profits, although the company is still in the black. You will be attending a meeting of the management in which a decision will be made regarding the layoff of some of the workers. The following table shows different scenarios of annual profits. (cf. Cipriani et al., 2009; Kaiser & Oberrauch, 2021)*

<i>Number of workers who will continue to be employed</i>	<i>Number of workers who will be laid off</i>	<i>Expected annual profit</i>
0	196	Loss of 8 million €
50	146	Profit of 1 million €
65	131	Profit of 1,5 million €
100	96	Profit of 2 million €
144	52	Profit of 1,6 million €
170	26	Profit of 1 million €
196	0	Profit of 0,4 million €

Students are asked how many employees they would dismiss. Responses are coded as 1 if the respondents chose the profit maximizing option (that is dismissing 96 employees) and 0 otherwise.

The fourth item is called *Profmax-VP* and builds on the previous one (Cipriani et al., 2009; Rubinstein, 2006). Students are given a similar question, with the modification that they should now indicate what they think a real vice president would do in the same situation. The answer options are the same as in *Profmax*. This item shows how students think about a manager's decision regarding economic and social aspects. Again, responses are coded as 1 if students chose the profit maximizing option and 0 otherwise.

The fifth item was originally used by Kahneman et al. (1986a) and is coded as *Shovel* (Cipriani et al., 2009; Kaiser & Oberrauch, 2021). Students are supposed to judge the fairness of a price raise after demand increases due to an exogenous shock (Kaiser & Oberrauch, 2021). The company's cost does not increase and people are in need of the good after the shock. Thus, with the shop taking advantage of vulnerable consumers and exploiting the situation to maximize profit, the question also raises fairness aspects (Cipriani et al., 2009). This dilemma between the efficient price mechanism and fairness is presented as follows:

*„A hardware store has been selling snow shovels for 15 Euro. The morning after a large snowstorm, the store raises the price to 20 Euro. Please rate this action“* (cf. Cipriani et al., 2009; Kahneman et al., 1986a; Kaiser & Oberrauch, 2021).

Students can rate whether they find the price raise “totally unfair”, “unfair”, “fair” or “totally fair”. Responses are coded as 1 if students chose “fair” or “totally fair”, 0 otherwise. In this way I examine which students prioritize the efficiency of the price mechanism over fairness concerns.

#### **4.4 Measuring economic competence, interest and attitudes towards competition**

Economic competence is another construct which this survey measures. For this, the “Test of Economic Competence” (TEC) constructed by Kaiser et al. (2020) has been used. The TEC contains 31 items and is designed to measure economic competence in German secondary education schools. It is especially adapted to the competence model underlying the curriculum in the federal state Baden-Württemberg (Kaiser & Oberrauch, 2021). Test items show valid psychometric properties (Kaiser et al., 2020). In this survey, twelve multiple choice items of distinct levels of difficulty have been selected out of the 31 questions in total. They cover three content-related areas which are formalized in the curriculum.

Out of the twelve items used here the total sum of correct answers has been calculated for each individual, with a maximum of twelve and minimum of zero correct answers. In addition to that, economic interest is measured. The item simply asks respondents how much they are interested in economics and includes a five-point Likert scale from 1 (“not at all”) to 5 (“very much”).

Finally, the questionnaire measures respondents’ attitude towards competition. It contains five items about students’ attitudes towards competition which have been applied and validated in former research (Oberrauch & Seeber, 2022). The items are phrased as follows:

*“Life would be very boring without competition.”*

*“Competition gives people a goal, something to strive for.”*

*“Competition is a fundamental aspect of human nature.”*

*“Competition motivates people to achieve goals.”*

*“Competition could bring each individual to improve.”* (cf. Oberrauch & Seeber (2022), following Fülöp et al. (2008))

For each item, students can position themselves among a five-point Likert scale from 1 (“do not agree at all”) to 5 (“totally agree”). Like for the personality items, I used the principal component score for the subsequent regression analysis (see figure 2 in Appendix A).

According to the model of the “homo economicus” one could assume that economists generally show higher approval of competition as in economic theory, competition is a fundamental aspect of functioning markets (Oberrauch & Seeber, 2022). Evidence for economists being more competitive has been found for example in Haucap and Just (2010). However, Oberrauch and Seeber (2022) find no significant differences in

attitudes towards competition for high school students with the compulsory subject economics.

## **5 Results**

In this section I will present the detected differences of students who chose economics as elective subject and those who did not. A linear probability model (LPM) has been performed using a dummy for whether economics is selected as dependent variable. In particular, this section examines to what extent demographic observables, personality traits, economic preferences, attitudes towards normative economic decisions and economic interest may serve as predictor for electing economics as school subject.

### **5.1 Demographic variables**

First, I carried out a linear regression with the election of economics as a function of the demographic variables sex, age, math grade and socio-economic background, i.e., number of books at home, parents' education and native language. Regression estimates are reported in table 2.

For the regression, "female" has been coded as 1, "male" as 0. The coefficient for gender is negative and significant at a 1 % level. In other words, male students are significantly more likely to be enrolled in the elective subject economics.

The language spoken at the students' home, the number of books at home as well as the parents' education are used to examine migration and socio-economic background. In this respect, an interesting effect can be seen regarding the participants' mothers' education. The effect is positive and highly significant. This shows that in this sample, students whose mother reached a higher level of education are significantly more likely to be registered in economics. From the other demographic variables, no conclusion can be drawn regarding the elective subject economics as none of the coefficients are statistically significant.

*Table 2: Linear probability model with demographic variables as explanatory variables*

	(1)
Sex	-0.174*** [0.056]
Age	0.034 [0.072]
Native language	-0.147 [0.095]
Books at home	-0.038 [0.022]
Education mother	0.06*** [0.019]
Education father	-0.005 [0.012]
Math grade	-0.024 [0.026]
(Intercept)	-0.027 [1.194]
N	367
N (cluster)	13
Adj. R-squ.	0.078
F-stat.	10.569

This table shows regression estimates on the election of economics as dependent variable. Standard errors are in parenthesis and clustered at school level. "Sex" is coded as 1 for female. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

## 5.2 Personality traits

A linear probability model shows the relation between variables. Electing the subject economics is the binary dependent variable, coded as 1 if students chose economics as elective subject and 0 otherwise. The election of economics is examined as a function of sex, age, math grade, family background and the five personality items. Regression results are shown in table 2.

Derived from previous literature one might expect that motivated through neoclassical theory, economists' score on agreeableness is lower than for others. This would be consistent with findings that economists are less cooperative and less pro-social (e.g., R. H. Frank et al., 1993, 1996). In general, to my best knowledge, personality traits of economists have not been examined specifically, which makes predictions towards the other traits difficult.

As illustrated in table 3 the only significant coefficient stems from the variable neuroticism. The effect is negative and significant at a 5 % level. Thus, students with

a lower score on neuroticism items are significantly more likely to be enrolled in economics. This result is rather surprising; there is no plausible theoretical explanation which would have predicted this result.

Regarding the other personality traits, no significant correlation with the election of economics is found (for bivariate correlations see table A2). This shows that the expectation of a lower score on agreeableness is not met. One possible explanation for this is that economics students in this sample are not less cooperative than other students, differently than in many previous studies. This will be further addressed when it comes to social preferences in the discussion. Another explanation could be that the study design distorts results as students’ self-assessments might be biased. Further research on economists’ personality traits is needed to confirm and explain the lower score on neuroticism and to examine the other traits in more detail.

*Table 3: Linear probability model with Big Five personality traits as explanatory variables*

	(2)
Extraversion	-0.014 [0.021]
Conscientiousness	0.005 [0.035]
Neuroticism	-0.073*** [0.022]
Openness	-0.01 [0.024]
Agreeableness	-0.011 [0.027]
(Intercept)	-0.45 [1.047]
N	340
N (cluster)	13
Adj. R-squ.	0.101
F-stat.	92.563

This table shows regression estimates on the election of economics as dependent variable. Standard errors are in parenthesis and clustered at school level. Model 2 controls for demographic variables. A full regression with all control variables can be found in Table A1 in the appendix. Personality traits are captured through 5 items, respectively. For more detailed information see section 4.1.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

### 5.3 Economic preferences

Items about economic preferences focus on risk, trust, time and altruistic preferences. A regression has been run using the demographic and personality items as control variables in order to examine a possible influence of preferences on the elective subject economics (a regression with a full set of control variables is shown in table A1 in the appendix). As reported in table 4, none of the examined preference variables, neither self-assessed nor reported field behavior, show any significant regression coefficients (for bivariate correlations see table A2).

Thus, economics students in this sample do not inherit any different economic preferences than other students. This result is interesting especially regarding items measuring altruism and will be further discussed in section 6.

*Table 4: Linear probability model with economic preferences as explanatory variables*

	(3)
Risk	-0.013 [0.013]
Trust	-0.047 [0.061]
Altruism	-0.06 [0.045]
Patience	-0.01 [0.031]
Impatience	-0.038 [0.031]
Redistribution	0.005 [0.012]
Donation	-0.027 [0.066]
Voluntary work	0.039 [0.043]
(Intercept)	-0.205 [1.041]
N	319
N (cluster)	13
Adj. R-squ.	0.081

This table shows regression estimates on the election of economics as dependent variable. Standard errors are in parenthesis and clustered at school level. Model 3 controls for demographic variables and personality traits. A full regression with all control variables can be found in Table A1 in the appendix.

For detailed information about the measurement of preferences see section 4.2.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .



#### 5.4 Attitudes towards economics

So far, economists in this sample have barely shown any significant differences to the other students, considering personality and preferences. This changes in parts when we look at attitudes towards economics. Five items have been used to investigate respondents' normative attitudes towards economic decisions, the market mechanism and profit maximation. As explained in more detail in section 4.3, the items used have been established and investigated in previous studies (Cipriani et al., 2009; B. S. Frey et al., 1993; Haucap & Just, 2010; Kaiser & Oberrauch, 2021; Rubinstein, 2006).

Regression results in table 4 provide evidence that economics students decided significantly different than others on the items *Hiking* and *Profmax*. The regression model controls for demographics, personality items and preferences (a regression with a rich set of control variables is shown in table A1 in the appendix).

The *Hiking*-item examines how students assess the fairness of different allocation mechanisms of a scarce resource. It has been coded as 1 if students rate a price increase as “fair” or “totally fair”. The regression coefficient is positive and significant at the 1 % level. This finding suggests that students who judge the price mechanism as fair are significantly more likely to be enrolled in economics. This is consistent with findings by Haucap and Just (2010) who report that economics students in their sample rate the price increase as fair significantly more often than other students.

The question *Profmax* is formulated as dilemma between profit maximation and the layoff of employees. Thus, besides the preference for profit maximation, the item examines to which extent students take negative social consequences for the workers into account (Rubinstein, 2006). Again, the coefficient shows a positive effect and is statistically significant at the 5 % level, providing evidence that students who prefer the profit maximizing option are registered in economics more often. This result suggests that consistent with Rubinstein (2006), economics students might indeed be less concerned with social consequences for other economic agents than their fellow students.

The other items measuring normative attitudes, *Auction*, *Shovel*, and *Profmax-VP* do not indicate any significant differences between the responses of economics students and others.

*Table 5: Linear probability model with attitudes towards economics as explanatory variables*

	(4)
Auction	0.086 [0.113]
Hiking	0.175** [0.06]
Shovel	0.04 [0.07]
Profmax	0.135 * [0.063]
Profmax-VP	-0.122 [0.085]
(Intercept)	-0.682 [1.061]
N	277
N (cluster)	13
Adj. R-squ.	0.116

This table shows regression estimates on the election of economics as dependent variable. Standard errors are in parenthesis and clustered at school level. Model 4 controls for demographic variables, personality traits and economic preferences. A full regression with all control variables can be found in Table A1 in the appendix.

For detailed information on normative attitude items see section 4.3.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

## 5.5 Economic competence, interest and competition

Finally, data about economic competence, interest and attitudes towards competition have been collected.

As economic competence is rather a dependent variable than an explanatory for the subject economics, no regression has been conducted here. Correlation of the two variables can be seen in table A2 in the appendix. The coefficient is slightly positive, however not statistically significant.

Regression results for the dependent variable as function of interest in economics and attitudes towards competition are reported in table 5. Demographics, personality items, preferences and attitudes towards economics are used as control variables (for full regression with all control variables shown see table A1 in the appendix).

Unsurprisingly, the coefficient for students' interest in economic matters as predictor is positive and highly significant (1 % level). This means that students who are more interested in economic topics are significantly more likely to be enrolled in the subject economics, which seems logical. The two variables might affect each other in both

directions, which would be consistent with previous literature showing that economic education increases interest in economic matters (Kaiser & Oberrauch, 2021; Oberrauch & Seeber, 2022).

At the same time, the regression analysis with the principal component score of the competition items (see figure 2 in the appendix, c.f. Pedhazur & Schmelkin, 2013) indicates that attitudes towards competition do not correlate significantly with economics as elective subject.

*Table 6: Linear probability model with interest in economics and attitude towards competition as explanatory variables*

	(5)
Interest economics	0.223*** [0.034]
Competition	0.021 [0.042]
(Intercept)	-1.539 [0.883]
N	277
N (cluster)	13
Adj. R-squ.	0.319
F-stat.	

This table shows regression estimates on the election of economics as dependent variable. Standard errors are in parenthesis and clustered at school level. Model 5 controls for demographic variables, personality traits, economic preferences and normative attitudes. A full regression with all control variables can be found in Table A1 in the appendix. For detailed information about interest and competition items see section 4.3.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

## 6 Discussion

This thesis examined correlations between personality traits, preferences and attitudes and the elective subject economics in the context of German secondary education. This section discusses results and compares them with findings of previous literature. Limitations of the study are pointed out.

Starting with **demographic variables**, the regression analysis reveals a selection effect in favor of male students, indicating that male students are significantly more

likely to choose the elective subject economics. Furthermore, male students show higher interest in economics, which is illustrated in figure 3 in the appendix, where male students (denoted as 0) indicate more often that they are very interested in economics. This matches with the decision to take economics as elective subject.

In line with this, Oberrauch and Brahm (2022) show that male students have significantly higher economic competences for which interest in economics is an important explanatory variable. Male students showing higher interest in economic matters is also consistent with findings by Kaiser and Oberrauch (2021) and Oberrauch and Seeber (2022). In addition, several researchers have found a gender gap showing lower competence scores for girls regarding economic and financial competence (e.g., Brückner et al., 2015; Driva et al., 2016; Kaiser et al., 2020; Lusardi & Mitchell, 2014). Due to the selection effect, which is evident in this study, the gender gap might even widen through the supplemental economic education of the elective subject. Thus, policy makers and educators need consider this and further research is needed to implement possible solutions. The implementation of a mandatory subject economics might limit the possibly increasing gender gap due to the elective subject.

Furthermore, a significant positive effect on the election of economics is evident regarding mothers' education for this sample. This shows that students whose mother reached a higher level of education are significantly more likely to be enrolled in economics. Due to the limited sample size and possible side effects this is not necessarily representative. Other items measuring socio-economic background (see Appendix for the entire questionnaire) do not show any significant correlation with the subject economics. As only the mothers' education shows a statistically significant regression result, one cannot find a uniform effect of socioeconomic background on the election of economics for this specific sample.

While previous studies have shown that a higher socioeconomic background can serve as predictor of students' economic abilities and competences (Grohmann et al., 2015; Organisation for Economic Co-operation and Development (OECD), 2014, 2017), it seems that it does not necessarily come along with choosing the subject more often.

Regarding the **Big Five personality items**, after controlling for demographic variables, the only significant coefficient stems from the variable neuroticism (c.f. table 2). The negative coefficient indicates that students with a lower score on neuroticism items who are emotionally more stable and calmer (c.f. Roccas et al.,

2002), are significantly more likely to be enrolled in economics. This result is surprising and cannot be explained by previous literature.

Coefficients indicating a correlation between economics and the other personality traits are not statistically significant (for bivariate correlations see table A2 in the appendix). This does not meet the initial expectation regarding agreeableness, predicting a lower score for economists who are shown to be less cooperative (e.g., R. H. Frank et al., 1993, 1996). However, considering results for social preferences, this result is not that surprising anymore. Economics students in this sample do not show any significant differences regarding social preferences, indicating that they are not less cooperative and pro-social than others. This goes along with economists in this sample showing no significant differences of agreeableness.

On the basis of previous findings, it is assumed that personality traits for this age cohort are relatively stable over life already (Borghuis et al., 2017; Cobb-Clark & Schurer, 2012; Roberts et al., 2001; Soldz & Vaillant, 1999). As a consequence, the present findings do not support a self-selection of less cooperative students.

The regression examining **economic preferences** shows no statistically significant regression coefficients (cf. table 3), indicating that economics students in this sample do not inherit any different economic preferences than other students. This result stands in contrast with numerous previous studies indicating that economists have different preferences than other individuals. Evidence is especially strong regarding altruism. It is shown that economists usually have a tendency of unsocial and less generous behavior (Bauman & Rose, 2011; Etzioni, 2015; R. H. Frank et al., 1993; Marwell & Ames, 1981).

Based on this evidence one would expect that students who are enrolled in the subject economics would be more likely to have a lower preference towards altruism, are less in favor of redistribution, donate less and do less voluntary work in comparison with other students (R. H. Frank et al., 1993, 1996; Haucap & Müller, 2014). This cannot be confirmed with the findings of this study. There are several possible reasons for this. First, it should be noted that economic preferences are usually measured using incentivized experiments while here, self-assessment is applied. For example, to elicit social preferences, researchers often apply dictator and ultimatum games (Carter & Irons, 1991; Ifcher & Zarghamee, 2018; List, 2007). This difference in elicitation

methods might be one reason why expectations regarding social preferences of economists are not met by this sample.

From another point of view, the present results do not necessarily contradict previous literature. One difference between this study and many others examining nature vs. nurture effects is that this study questions high school students, while most other studies are carried out with higher education students. This gives rise to the question whether economic preferences are stable over time. Considering the possibility that preferences might change over time, adolescence might be a period in which this could happen (Cobb, 2010). Thus, if students' preferences in secondary education are malleable, this could explain why preferences of economics students and others do not differ in this study, while they differ in other research. While neo-classicists traditionally take the view that preferences are stable over time (Becker, 1976; Carlsson et al., 2014), this question is still controversially discussed and cannot be answered unambiguously (e.g., Anderson & Mellor, 2009; Chuang & Schechter, 2015).

At the same time, Oberrauch and Seeber (2022) find that students who were taught the subject economics during secondary education put more emphasis on social responsibility of companies. They conclude that economic education might have generated a general awareness to problems. Furthermore, few other studies find that economics students show more cooperative, pro-social behavior than others (Laband & Beil, 1999; Yezer et al., 1996).

These contradictory findings show that there is no unequivocal response to the question in which way economists' social preferences differ from other individuals. The findings of this study may serve as evidence for this conclusion. In the future, researchers might have to further examine preferences of economists and take a closer look at different effects of secondary and higher education.

When it comes to the other economic preferences, differences between economists and other individuals have not been studied as much. Regarding trust, Haucap and Müller (2014) state that economics students trust less and are less trustworthy than others. Kaiser and Oberrauch (2021) find that students who received mandatory economic education in secondary school have a lower level of risk seeking and are more patient. These results cannot be found for the present sample. In addition to that, Kaiser and Oberrauch (2021) find no treatment effect of economic education on students' trust,

which is consistent with the result here, showing no significant difference between preferences of economics students and others.

Next, this study measured students' **normative attitudes towards economics** using the five items *Auction*, *Hiking*, *Shovel*, *Profmax*, and *Profmax-VP* (see section 4.3 for further explanation). Regression results are shown in table 5 and indicate statistically significant results for the items *Hiking* and *Profmax*.

*Hiking* shows students' assessment of a price increase of a scarce resource. The positive and significant coefficient suggests that students who judge the price mechanism as fair are significantly more likely to be enrolled in economics. This finding is consistent with previous literature. Results of Frey et al. (1993) show that due to a selection effect, economics students prefer the price system more often than others. Haucap and Just (2010) also report that economics students rate the price increase as fair significantly more often than other students. However, they find evidence for both a selection and learning effect. While the result that economists rate the price mechanism as fairer than other students is consistent with results of the present study, this study design does not allow to extrapolate to either a self-selection or treatment effect. It should also be noted that Kaiser and Oberrauch (2021) do not find differences between the treatment and control group regarding the *Hiking* item. Investigating students at secondary educational German schools, their sample is quite close to the one investigated here. As they do not find a treatment effect and rule out self-selection examining mandatory economic education, the effect found here might logically be traced back to self-selection. However, this is speculation and cannot be proven due to the design of this study. As the sample in Kaiser and Oberrauch (2021) includes students of secondary education at an earlier age than the sample of this study, different lesson contents might also have an effect on the results. Differences between high school economics at various levels and higher education might be an object for further investigation.

The item *Profmax* examines students' preference for profit maximization, given the scenario of dismissing employees in order to maximize profit. The regression provides evidence that students who prefer the profit maximizing option are registered in economics more often. This result is consistent with Rubinstein (2006) and Cipriani et al. (2009). Rubinstein (2006) concludes that economics students are less concerned with social consequence than others. To counteract this, he calls for less mathematical

economic teaching and more focus on real economic problems. This is partly confirmed by Cipriani et al. (2009), who find that in contrast to Business students, students of Management and Marketing show a positive treatment over time, which means they tend to less choose the maximizing option. An explanation for this might be that Management and Marketing studies are more concerned with corporate social responsibility and ethical issues, which could make those students more sensitive regarding the social dilemma of the item (Cipriani et al., 2009).

However, these studies focus on university students. While economic education in German high schools is much less mathematic and already lays emphasis on problem solving (c.f. Ministerium für Kultus, Jugend und Sport Baden-Württemberg, 2016a), results in this study still show economics students being more prone to the profit maximizing option. This indicates that the effect is either not due to a too mathematical economic education, or the focus on real life issues and problem-solving needs to be even more emphasized. Once again, in this study it cannot be concluded whether effects occur due to a self-selection, a treatment effect or both.

Regarding the other items (*Auction*, *Shovel*, *Profmax-VP*), effects are not statistically significant for this sample.

The item *Auction* asks students to rate the fairness of different allocation mechanisms. Based on previous literature one would expect economics students to rate the price mechanisms as fair more often than other students (B. S. Frey et al., 1993; Haucap & Just, 2010). According to Cipriani et al. (2009), economists indeed choose the auction as fairest mechanism more often resulting from both a selection and treatment effect.

*Shovel* asks for the fairness of a price increase after an exogenic shock. In this dilemma between fairness and efficiency, it would be expected from students being taught in basic economic theory to assess the price raise as fair more often. This is consistent with findings by Cipriani et al. (2009), but cannot be confirmed through this study.

Thus, both items *Auction* and *Shovel* deal with the fairness of the price mechanism. As economics students of this sample rate the price increase as fair more often than other students regarding the *Hiking* item, one could expect them to assess the same way for *Auction* and *Shovel*. However, this is not the case and it cannot be concluded that economics students always rate the efficient price mechanism as fairer. One conclusion could be that the price mechanism is preferred more often when in contrast with other distributional mechanisms, like rationing or government allocation. However, this needs further verification.



The item *Profmax-VP* examines students' opinion about the decision of a real vice president. Consistent with the results of this study, Rubinstein (2006) finds no significant differences between economists and other students. At the same time, economics students in the sample of Cipriani et al. (2009) are less likely than other students to believe that a real vice president would be a profit maximizer without considering social consequences.

Examining mandatory economic education in secondary schools, Kaiser and Oberrauch (2021) do not find any significant differences of students' normative attitudes after the treatment. As they can rule out a self-selection effect, one could conclude that the significant differences of economics students for *Hiking* and *Profmax* in the present study are due to a treatment effect. However, this needs further verification, as no final conclusion on causality can be drawn here and attitudes of economics students concerning the price mechanism are equivocal.

Finally, the questionnaire inquires economic competence, interest and attitudes towards competition. Correlation of **economic competence**, that is the final score of the twelve competence items, and the elective subject economics is slightly positive but not statistically significant (see table A2 in the appendix). This result is quite surprising as one would expect that students with more economic knowledge self-select more into economics and that economic competence increases with economic education. Especially the second effect can be seen in several studies which demonstrate higher economic competence of treated students (Kaiser & Menkhoff, 2020; Kaiser & Oberrauch, 2021). One limitation of this study and possible explanation might be the low stakes test setting. The study does not offer any incentives. In order to solve the competence items, intrinsic motivation might be too low for students to make a real effort.

**Interest in economic matters** correlates positively with the election of economics. This means that students who are more interested in economic topics are significantly more likely to be enrolled in the subject economics, which does not seem surprising. There might be two explanations for this. First, students who are more interested in economic matters self-select into economics. Second, students' interest increases with economic education. Also, both effects might occur jointly. Previous research finds similar results, showing that students' interest in economic matters increases with the subject economics (Kaiser & Oberrauch, 2021; Oberrauch & Seeber, 2022). Those

studies give evidence to the second theory but rule out self-selection as they examine economics as mandatory subject.

Considering students' attitudes towards **competition** the regression shows no significant effect regarding the election of economics after controlling for several variables. This is another rather surprising result. Resulting from competition being a fundamental aspect of the market mechanism one would expect that economists show higher approval of competition than other students (Gandal et al., 2005).

However, the present finding is consistent with Oberrauch and Seeber (2022) who find no significant treatment effect regarding competition for high school students. Again, a distinction between high school economics and higher education could be an explanation.

In summary, some significant differences between economics students and others are found in this sample. Neuroticism seems to be the only one of the Big Five personality traits which significantly correlates with being enrolled in economics. Preferences of economics students in this sample do not significantly differ from other students, which contradicts previous literature and the expectation that economics students are less cooperative and pro-social. Regarding attitudes towards economics, students' answers differed regarding two items: *Hiking* and *Profmax*. Resulting from those items economists seem to rate the price mechanism as fair and choose the profit maximizing option more often. However, there is no such effect for the other items which does not allow for an overall conclusion regarding attitudes. Choosing economics as elective subject seems to be influenced by gender with male students electing economics more often. Additionally, the socioeconomic background might play a role, but further research on this is needed to draw conclusions.

## **7 Conclusion**

This thesis compared German high school students who chose economics as elective subject with students who did not regarding their characteristics, preferences and attitudes. In the last years, the very limited economic education in German secondary schools has been more and more extended introducing a mandatory subject economics for intermediate classes next to the elective subject for senior classes (Brückner et al., 2015; Kaiser et al., 2020). However, due to the fragmented educational system in

Germany, the implementation of the autonomous subject has only happened in one federal state so far and is still disputed. Against this background of the rising importance of economic education and the remaining controversies it seems highly relevant to examine economics students in secondary education.

In 1981, Marwell and Ames found evidence that economists are more prone to free riding than other individuals. Since then, research on how economists differ from others grew, with the vast majority evidencing differences regarding values, attitudes and preferences (e.g., Carter & Irons, 1991; R. H. Frank et al., 1993; Haucap & Just, 2010; Haucap & Müller, 2014). Results of this study partly add to this in showing that economists' attitudes differ from others regarding the fairness of profit maximation in a social dilemma. They show a significant lower level of neuroticism and rate a price increase (*Hiking*) as fairer than others. At the same time, the analysis reveals no difference for other items regarding the price mechanism (*Shovel, Auction*). Furthermore, economic preferences and scores on conscientiousness, agreeableness, openness and extraversion do not differ significantly for economics students.

These findings contradict expectations that economists have lower social preferences. Furthermore, it might have been expected that economists' score on agreeableness would be lower, being less cooperative (R. H. Frank et al., 1993, 1996), which could also not be confirmed by this study.

These differences compared with previous literature and expectations might have various explanations. First, students in this sample are younger than in others, as secondary schools are targeted instead of higher education. Presumably, their attitudes adapt and change further during later adolescence and are thus more pronounced for university participants of previous studies. However, this explanation is only conceivable for items which are not stable over time.

Second, economic education in (German) high schools differs from higher education not only in difficulty level but in contents and didactics. The focus is more on an overall economic education including everyday life situations and problem solving than on microeconomic contents and the approach is less mathematical.

The study reveals a significant gender gap with male students being more interested in economic matters and choosing economics more often. This selection effect might even widen the gender gap found in economic competence (e.g., Brückner et al., 2015;

Driva et al., 2016; Kaiser et al., 2020; Lusardi & Mitchell, 2014). The implemented mandatory subject might be one way counteract this.

In conclusion, this thesis contributes to the existing literature on differences of economists and others. In contrast to most previous studies, this thesis takes a new perspective considering the elective subject economics for secondary education students. This is relevant in the current debate on economic education. Further research might investigate self-selection vs. indoctrination effects on a secondary education level, providing further information for educational policy makers.

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# Appendix A

Table A 1: Complete linear probability model

	(1)	(2)	(3)	(4)	(5)
Sex	-0.174*** [0.056]	-0.151** [0.057]	-0.15 * [0.083]	-0.111 [0.069]	-0.026 [0.052]
Age	0.034 [0.072]	0.057 [0.065]	0.053 [0.068]	0.072 [0.071]	0.072 [0.059]
Native language	-0.147 [0.095]	-0.169 [0.099]	-0.158 [0.1]	-0.107 [0.115]	-0.021 [0.108]
Books at home	-0.038 [0.022]	-0.039 [0.027]	-0.039 [0.027]	-0.028 [0.025]	-0.025 [0.015]
Education mother	0.06*** [0.019]	0.062*** [0.018]	0.06*** [0.016]	0.052** [0.018]	0.034** [0.015]
Education father	-0.005 [0.012]	0.001 [0.014]	0.004 [0.015]	0 [0.014]	0.002 [0.009]
Math grade	-0.024 [0.026]	-0.024 [0.026]	-0.015 [0.027]	0.001 [0.037]	-0.013 [0.032]
Extraversion		-0.014 [0.021]	-0.036 [0.026]	-0.033 [0.028]	-0.001 [0.02]
Conscientiousness		0.005 [0.035]	-0.013 [0.041]	0.003 [0.039]	-0.031 [0.031]
Neuroticism		-0.073*** [0.022]	-0.077*** [0.024]	-0.07*** [0.022]	-0.019 [0.023]
Openness		-0.01 [0.024]	-0.006 [0.023]	0.001 [0.026]	0.001 [0.024]
Agreeableness		-0.011 [0.027]	-0.012 [0.029]	0.001 [0.036]	-0.013 [0.03]
Risk			-0.013 [0.013]	-0.027 [0.017]	-0.027 [0.015]
Trust			-0.047 [0.061]	-0.057 [0.072]	-0.04 [0.08]
Altruism			-0.06 [0.045]	-0.05 [0.035]	-0.013 [0.033]
Patience			-0.01 [0.031]	-0.011 [0.042]	-0.021 [0.04]
Impatience			-0.038 [0.031]	-0.02 [0.032]	-0.012 [0.026]
Redistribution			0.005 [0.012]	0.011 [0.016]	0.033 * [0.015]
Donation			-0.027 [0.066]	-0.029 [0.067]	0.007 [0.059]
Voluntary work			0.039 [0.043]	0.044 [0.045]	0.028 [0.045]
Auction				0.086 [0.113]	0.011 [0.094]
Hiking				0.175** [0.06]	0.108 * [0.054]
Shovel				0.04 [0.07]	0.029 [0.057]
Profmax				0.135 * [0.063]	0.103** [0.047]
Profmax-VP				-0.122 [0.085]	-0.054 [0.074]
Interest economics					0.223*** [0.034]
Competition					0.021 [0.042]
(Intercept)	-0.027 [1.194]	-0.45 [1.047]	-0.205 [1.041]	-0.682 [1.061]	-1.539 [0.883]
N	367	340	319	277	277
N (cluster)	13	13	13	13	13
Adj. R-squ.	0.078	0.101	0.081	0.116	0.319
F-stat.	10.569	92.563			

Table A 2: Bivariate correlation table

	Sex	Age	Edu Mother	Edu Father	Books	Native	Subject Economics	Economics coarse	Economics fine	Maths
Sex	1.00									
Age	-0.05	1.00								
Education Mother	-0.03	-0.18***	1.00							
Education Father	-0.09	-0.27***	0.50***	1.00						
Books	0.03	-0.17***	0.34***	0.37***	1.00					
Native Language	0.01	-0.18***	0.04	0.17***	0.22***	1.00				
Subject										
Economics	-0.19***	0.05	0.17***	0.05	-0.05	-0.08	1.00			
Economics coarse	-0.12	0.08	0.09	-0.03	-0.04	0.02	0.43***	1.00		
Economics fine	-0.13*	-0.01	0.02	-0.03	0.04	0.01	0.37***	0.73***	1.00	
Math grade	-0.16**	0.10*	-0.09	-0.11*	-0.14**	-0.03	-0.01	-0.04	0.08	1.00
Sum Score	-0.13*	-0.04	0.12*	0.16**	0.15**	0.20***	0.08	0.03	-0.08	-0.19***
Interest eco	-0.27***	0.02	0.15**	0.05	-0.01	-0.03	0.53***	0.52***	0.41***	0.02
Competition	-0.31***	0.05	0.10	0.09	0.07	-0.02	0.20***	0.11	0.08	-0.01
Election	-0.01	-0.03	0.11*	0.04	0.14**	0.17***	-0.01	0.09	0.09	-0.07
Neuroticism	0.32***	0.01	-0.02	0.01	0.02	-0.09	-0.16**	-0.08	-0.10	-0.10*
Conscientiousness	0.19***	0.01	0.06	0.01	0.05	0.03	0.01	0.06	-0.04	-0.28***
Agreeableness	0.03	0.04	0.01	-0.05	0.03	0.05	-0.02	0.03	-0.01	0.08
Extraversion	0.02	-0.03	0.06	0.06	0.07	-0.02	-0.01	-0.15*	-0.12	0.03
Openness	-0.07	0.00	0.10	0.01	0.12*	-0.07	0.02	-0.08	0.01	0.06
Donation	0.16***	0.08	-0.03	-0.09	0.05	-0.09	-0.03	0.10	0.11	0.04
Voluntary Work	0.17***	0.04	-0.01	-0.07	0.19***	0.16**	-0.05	0.05	-0.01	-0.09
Selfassessment										
Eco	-0.34***	0.00	0.13**	0.06	0.03	-0.04	0.58***	0.39***	0.33***	0.01
Risk	-0.19***	0.01	-0.09	-0.00	-0.03	0.12*	0.06	0.04	0.03	0.14**
Trust	-0.01	-0.05	0.01	0.00	0.12*	0.15**	-0.07	-0.01	-0.05	-0.11*
Altruism	0.13**	0.09	0.01	-0.11*	-0.06	-0.13**	-0.07	-0.12	-0.07	0.03
Patience	0.06	0.07	0.02	0.02	0.07	-0.03	0.03	0.03	-0.05	-0.11*
Impatience	-0.04	-0.05	-0.02	0.05	-0.07	0.06	-0.07	-0.01	0.05	0.13**
Redistribution	0.21***	-0.00	-0.03	-0.06	-0.02	-0.07	-0.05	-0.16**	-0.11	-0.01
Auction	-0.15**	-0.02	0.08	0.07	-0.06	0.02	0.09	0.12	0.07	0.00
Hiking Price	-0.12*	0.02	-0.01	0.11*	0.02	-0.01	0.23***	0.11	0.11	0.01
Shovel	-0.27***	0.02	0.03	0.08	0.02	-0.02	0.10*	0.01	0.05	0.06
Profmax	-0.04	-0.07	-0.06	-0.00	-0.07	-0.07	0.15**	0.25***	0.23***	0.06
Profmax-VP	0.06	0.07	-0.07	-0.10*	0.00	0.05	-0.10	-0.12*	-0.10	0.01

	Sum Score	Interest eco	Competition	Election	Neuroticism	Conscientiousness	Agreeableness	Extraversion	Openness	Donation	Voluntary Work
Sex											
Age											
Education Mother											
Education Father											
Books											
Native Language											
Subject											
Economics											
Economics coarse											
Economics fine											
Math grade											
Sum Score	1.00										
Interest eco	0.15**	1.00									
Competition	0.14**	0.33***	1.00								
Election	0.13**	0.05	-0.07	1.00							
Neuroticism	-0.13*	-0.25***	-0.09	0.01	1.00						
Conscientiousness	0.11*	0.14**	0.08	-0.02	0.00	1.00					
Agreeableness	-0.04	0.00	-0.09	0.07	0.02	-0.01	1.00				
Extraversion	-0.02	-0.14**	-0.15**	-0.02	0.00	0.00	-0.00	1.00			
Openness	0.01	0.09	0.15**	-0.01	-0.01	-0.01	0.02	0.01	1.00		
Donation	-0.09	-0.07	-0.09	0.07	0.03	-0.03	0.06	-0.00	0.08	1.00	
Voluntary Work	0.03	-0.04	-0.09	0.16***	0.02	0.04	0.09	-0.09	0.07	0.19***	1.00
Selfassessment											
Eco	0.20***	0.68***	0.29***	0.03	-0.30***	0.14**	0.02	-0.11*	0.17**	-0.07	-0.02
Risk	0.08	0.16**	0.19***	-0.01	-0.31***	-0.06	-0.14**	-0.30***	0.17**	-0.05	0.03
Trust	0.11*	-0.05	0.05	0.04	-0.03	-0.04	0.12*	-0.04	-0.11*	-0.00	0.07
Altruism	-0.12*	-0.14**	-0.12*	0.11*	0.22***	-0.03	0.25***	-0.00	0.00	0.02	0.12*
Patience	0.13*	0.09	0.14**	-0.06	0.02	0.26***	-0.00	0.05	0.14**	-0.04	-0.02
Impatience	-0.11*	-0.10*	-0.10	0.08	-0.06	-0.29***	-0.04	-0.02	-0.02	0.06	0.03
Redistribution	-0.16**	-0.27***	-0.38***	0.01	0.12*	-0.13**	0.10*	0.17**	-0.06	0.03	0.07
Auction	0.00	0.16**	0.10	0.00	-0.09	-0.03	-0.10	-0.07	0.03	-0.01	0.00
Hiking Price	0.09	0.20***	0.25***	-0.03	-0.13*	-0.05	-0.14**	-0.03	0.04	-0.02	0.02
Shovel	0.11*	0.14**	0.24***	0.04	-0.13**	-0.10	-0.09	-0.02	0.09	-0.05	-0.02
Profmax	-0.05	0.17***	0.05	0.01	-0.04	-0.02	-0.10	-0.06	-0.01	0.01	-0.05
Profmax-VP	-0.01	-0.11*	-0.03	0.01	0.02	-0.07	0.00	-0.06	0.01	0.04	0.08

	Selfassessment economics	Risk	Trust	Altruism	Patience	Impatience	Redistribution	Auction	Hiking Price	Shovel	Profmax
Sex											
Age											
Education Mother											
Education Father											
Books											
Native Language											
Subject											
Economics											
Economics coarse											
Economics fine											
Math grade											
Sum Score											
Interest eco											
Competition											
Election											
Neuroticism											
Conscientiousness											
Agreeableness											
Extraversion											
Openness											
Donation											
Voluntary Work											
Selfassessment											
Eco	1.00										
Risk	0.18***	1.00									
Trust	-0.05	-0.10	1.00								
Altruism	-0.16**	-0.11*	0.01	1.00							
Patience	0.13**	-0.04	-0.04	-0.00	1.00						
Impatience	-0.15**	0.21***	-0.03	-0.02	-0.49***	1.00					
Redistribution	-0.20***	-0.11*	0.00	0.23***	-0.04	0.05	1.00				
Auction	0.19***	0.08	0.03	-0.10	-0.06	0.05	-0.17**	1.00			
Hiking Price	0.15**	0.15**	0.03	-0.16**	0.05	-0.05	-0.16**	0.20***	1.00		
Shovel	0.13**	0.12*	0.08	-0.11*	0.01	-0.04	-0.15**	0.17**	0.29***	1.00	
Profmax	0.14**	0.06	-0.05	-0.13*	0.00	0.02	-0.12*	0.16**	0.16**	0.06	1.00
Profmax-VP	-0.01	0.03	0.02	0.05	0.06	-0.05	0.05	0.01	-0.07	-0.08	0.00

This table shows bivariate correlations between the relevant collected variables.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Figure 1: Factor analysis: personality traits

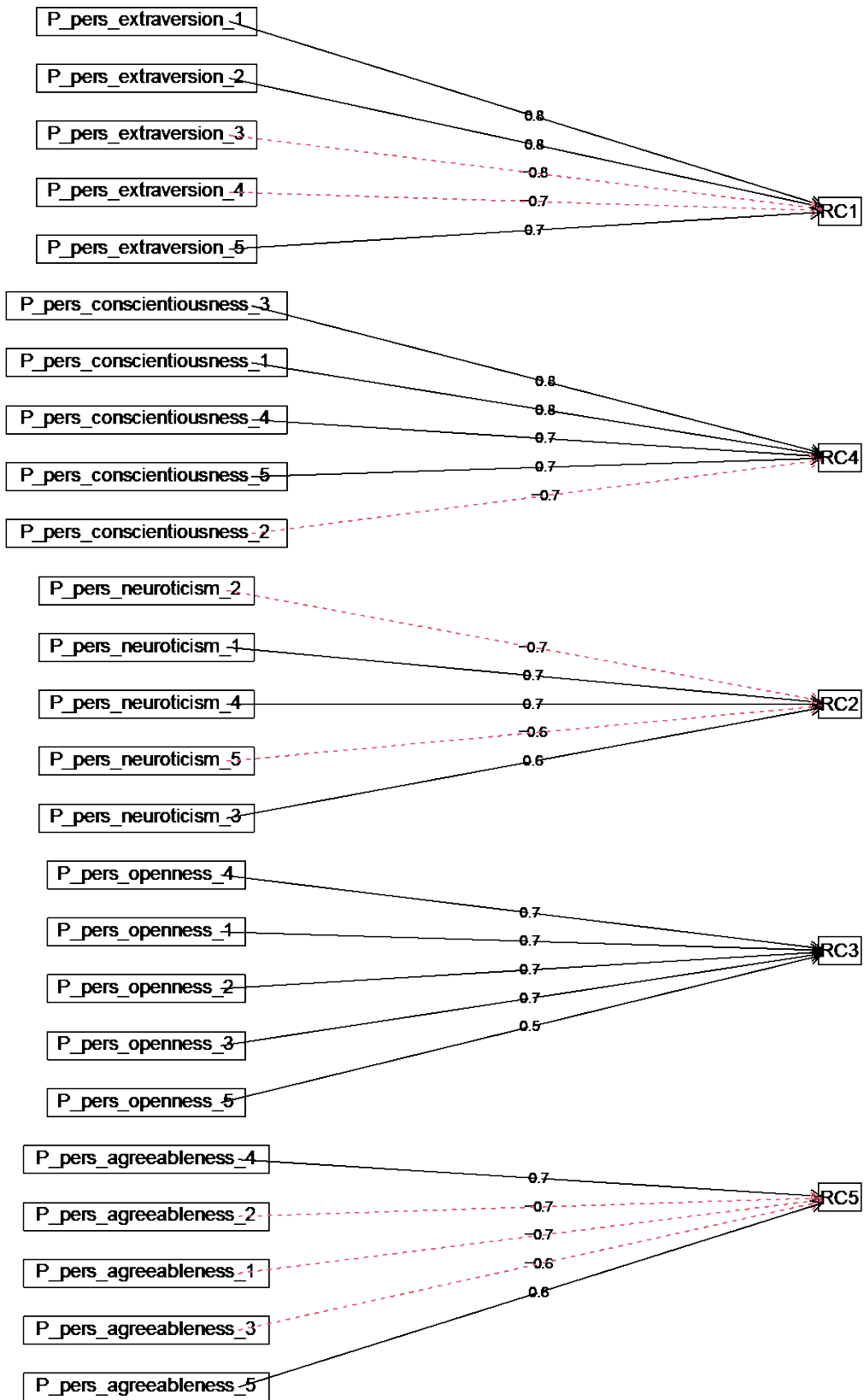


Figure 2: Factor analysis: competition

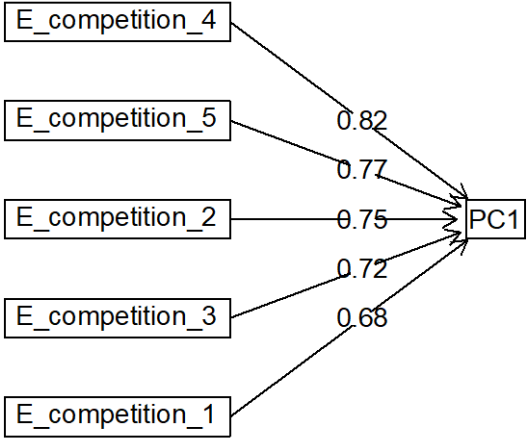
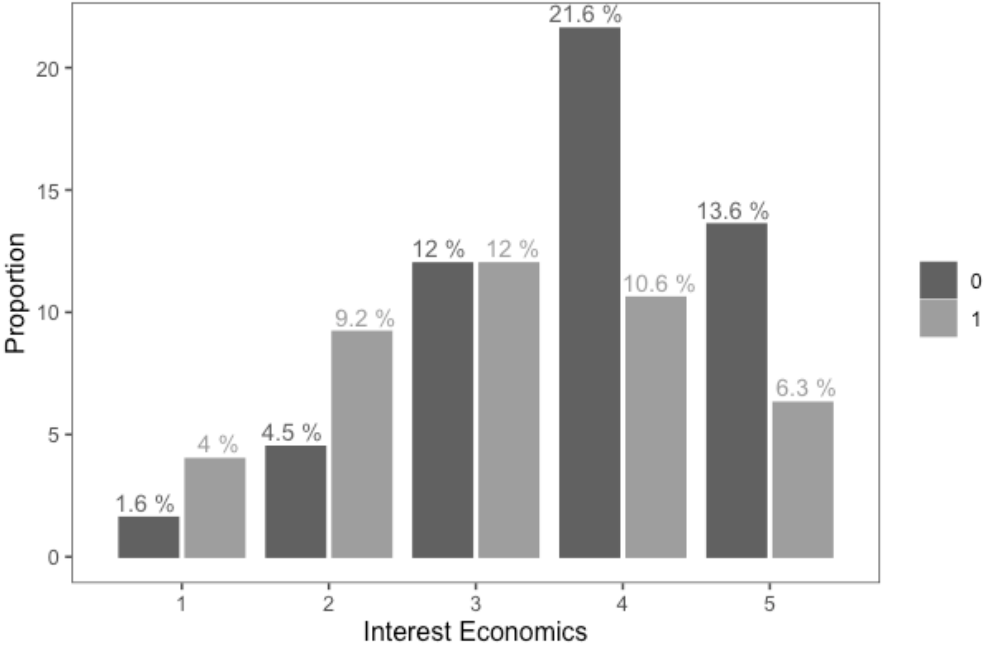




Figure 3: Interest in economics by sex



# Appendix B

## *Survey questionnaire*

**F1:** Welchen Schultyp besuchst du?

Bitte wähle nur eine der folgenden Antworten aus:

- Gemeinschaftsschule
- Werkrealschule
- Realschule
- Gymnasium

**F2:** In welcher Klassenstufe bist du?

Bitte wähle nur eine der folgenden Antworten aus:

- 11
- 12
- andere

**F3:** Belegst du das Fach „Wirtschaft“ als Basis- oder Leistungsfach?

- Basisfach
- Leistungsfach
- keines von diesen

**F4:** Beabsichtigst du, nach dem Abitur ein Studium zu beginnen?

- Ja

Wenn Ja: Welches Fach kommt am ehesten für dich infrage? \_\_\_\_\_

- Nein
- weiß nicht

**F5:** Mein Geschlecht ist...

Bitte wähle nur eine der folgenden Antworten aus:

- weiblich
- männlich
- divers

**F6:** Wie alt bist du?

Bitte Alter eingeben:

**F7:** Welche Sprache sprichst du zu Hause am häufigsten?

- deutsch
- eine andere Sprache

**F8:** Wie viele Bücher gibt es bei dir zu Hause ungefähr? Zähle nicht mit: Zeitschriften, Zeitungen und deine Schulbücher

Bitte wähle eine der folgenden Antworten aus:

- keine oder nur sehr wenige (0 bis 10 Bücher)
- genug, um ein Regalbrett zu füllen (11 bis 25 Bücher)
- genug, um mehrere Regalbretter zu füllen (26 bis 100 Bücher)
- genug, um ein kleines Regal zu füllen (101 bis 200 Bücher)
- genug, um ein großes Regal zu füllen (201 bis 500 Bücher)
- genug, um eine Regalwand zu füllen (mehr als 500 Bücher)

**F9:** Welchen höchsten allgemeinbildenden Schulabschluss hat deine Mutter?

Bitte wähle eine der folgenden Antworten aus:

- keinen Schulabschluss
- Hauptschulabschluss ohne berufliche Ausbildung
- Hauptschulabschluss mit beruflicher Ausbildung
- Mittlere Reife ohne berufliche Ausbildung
- Mittlere Reife mit beruflicher Ausbildung
- Hochschulreife/Abitur ohne berufliche Ausbildung
- Hochschulreife/Abitur mit beruflicher Ausbildung
- Fachhochschulabschluss
- Universitätsabschluss/Promotion (Dokortitel)
- weiß nicht

**F10:** Welchen höchsten allgemeinbildenden Schulabschluss hat dein Vater?

Bitte wähle eine der folgenden Antworten aus:

- keinen Schulabschluss
- Hauptschulabschluss ohne berufliche Ausbildung
- Hauptschulabschluss mit beruflicher Ausbildung
- Mittlere Reife ohne berufliche Ausbildung
- Mittlere Reife mit beruflicher Ausbildung
- Hochschulreife/Abitur ohne berufliche Ausbildung
- Hochschulreife/Abitur mit beruflicher Ausbildung
- Fachhochschulabschluss
- Universitätsabschluss/Promotion (Dokortitel)
- weiß nicht

**F11:** Wovon waren deine Eltern oder zumindest ein Elternteil während der Corona-Pandemie an ihrem Arbeitsplatz betroffen?

Mehrfachnennungen möglich:

- Kurzarbeit
- Entlassung
- geringeres Einkommen (auch bei Selbstständigen)
- keines von diesen
- weiß nicht

**F12:** Was war deine letzte Zeugnisnote in Mathematik?

- 1  2  3  4  5  6

**F13:** Was war deine letzte Zeugnisnote in Wirtschaft/Berufs- und Studienorientierung (WBS)?

- 1  2  3  4  5  6

Hinweis: Entfällt bei Erhebung im September 2021

**F14:** Wie sehr interessierst du dich für Wirtschaft?

- überhaupt nicht  1  2  3  4  5 sehr

**F15:** Wie sehr interessierst du dich für Politik?

- überhaupt nicht  1  2  3  4  5 sehr

**F16:** Würdest du an der Bundestagswahl teilnehmen, wenn du dazu berechtigt wärst?

Ja

Wenn Ja: Welche Partei würdest du wählen?

- CDU  SPD  Bündnis90/Die Grünen  AfD  FDP  Die Linke  
 eine andere  weiß nicht

Nein

**F17:** Hast du schon einmal etwas für soziale oder gemeinnützige Zwecke gespendet?

Ja

Wenn Ja: Welchen Betrag hast du insgesamt innerhalb der letzten 12 Monate gespendet?

\_\_\_\_\_ Euro

Nein

**F18:** Hast du schon einmal ehrenamtlich gearbeitet oder Freiwilligenarbeit geleistet?

Ja

Wenn Ja: Wie viele Stunden hast du dich insgesamt innerhalb der letzten 12 Monate engagiert? \_\_\_\_\_ Stunden

Nein

**F19:** Unsere alltäglichen Handlungen werden davon beeinflusst, welche Grundüberzeugungen wir haben.

Hier sind unterschiedliche Eigenschaften, die eine Person haben kann. Wahrscheinlich werden manche Eigenschaften auf dich persönlich zutreffen und andere überhaupt nicht. Bei wieder anderen bist du vielleicht unentschieden - es gibt hier also keine „richtigen“ oder „falschen“ Antworten. Bitte versuche daher, stets eine ehrliche Abschätzung abzugeben. Deine Antworten bleiben nach wie vor anonym.

Ich bin jemand, der...	trifft gar nicht zu	trifft eher nicht zu	teils- teils	trifft eher zu	trifft völlig zu
...sich oft Sorgen macht.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...entspannt ist, mit Stress gut umgehen kann.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...angespannt sein kann.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...leicht nervös wird.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...nicht leicht aus der Ruhe zu bringen ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...zurückhaltend ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...eher ruhig ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...kommunikativ, gesprächig ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...aus sich herausgehend, gesellig ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...sich manchmal gehemmt fühlt, schüchtern ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...einfallsreich ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...originell ist, neue Ideen einbringt.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...gern reflektiert, mit Ideen spielt.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...eine lebhaft Phantasie, Vorstellung hat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...künstlerische, ästhetische Erfahrung schätzt.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...manchmal etwas grob zu anderen ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...kalt und distanziert ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...Streit anfängt.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...rücksichtsvoll und freundlich mit anderen umgeht.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...verzeihen kann.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...eher organisiert ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...eher faul ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

...gründlich arbeitet.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...Aufgaben wirksam und effizient erledigt.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...bis zum Ende seine Aufgabe durchhält.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**F20:** „In Wirtschaftsthemen kenne ich mich...

überhaupt nicht aus  1  2  3  4  5 sehr gut aus.“

**F21:** „In politischen Themen kenne ich mich...

überhaupt nicht aus  1  2  3  4  5 sehr gut aus.“

**F22:** Bitte gib an, wie sehr du folgenden Aussagen zustimmst:

Bitte wähle die zutreffende Antwort aus:

	stimm e gar nicht zu	stimm e eher nicht zu	teils- teils	stimm e eher zu	stimm e völlig zu
Ohne Wettbewerb wäre das Leben ziemlich langweilig.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wettbewerb gibt den Menschen ein Ziel; etwas das sie anstreben können.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sich mit anderen im Wettbewerb messen zu wollen, ist ein grundlegender Teil der menschlichen Natur.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wettbewerb motiviert die Menschen, Ziele zu erreichen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wettbewerb könnte alle dazu motivieren, sich zu verbessern.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ich verzichte heute auf etwas, damit ich mir morgen mehr leisten kann.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ich will heute meinen Spaß haben und denke dabei nicht an morgen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**F23:** Bist du allgemein ein risikobereiter Mensch oder versuchst du, Risiken zu vermeiden?

gar nicht  
risikobereit

sehr  
risikobereit

1      2      3      4      5      6      7      8      9      10

**F24:** Würdest du ganz allgemein sagen, dass man den meisten Menschen vertrauen kann, oder dass man nicht vorsichtig genug sein kann?

Bitte wähle nur eine der folgenden Antworten aus:

Man kann nicht vorsichtig genug sein.

Man kann den meisten Menschen vertrauen.

**F25:** Wenn du 1.000 Euro gewinnen würdest, würdest du viel davon mit anderen teilen?

nein, eindeutig nicht

wahrscheinlich nicht

wahrscheinlich

ja, eindeutig

### Einkommensverteilung

Die Einkommen in Deutschland sind unterschiedlich hoch. Bei einer Umverteilung finanziert der Staat eine Angleichung der Einkommen durch Steuern und Zuschüsse. Bei einer „vollen Umverteilung“ hätten alle Bürgerinnen und Bürger das gleiche Einkommen zur Verfügung. Bei „keiner Umverteilung“ beeinflusst der Staat die Einkommensverteilung überhaupt nicht.

**F26:** Wie viel Umverteilung wünschst du dir in der Gesellschaft?

Bitte wähle die zutreffende Antwort aus:

keine  
Umverteilung

volle  
Umverteilung

1      2      3      4      5      6      7      8      9      10



**Auktion**

Ein Fußballteam verkauft einen Teil seiner Karten normalerweise am Spieltag. Für das nächste Spiel ist die Nachfrage nach Karten besonders groß. Der Verein kann die Tickets nun auf eine von drei Arten verteilen.

Auktion: Die Tickets werden an die Höchstbietenden verkauft.

Lotterie: Die Tickets werden an zufällig gezogene Personen verkauft.

Windhundverfahren: Wer zuerst kommt, bekommt ein Ticket verkauft.

Welche Verteilungsart ist am fairsten?

Ordne Auktion, Lotterie und Windhundverfahren so, dass es Deinem Gefühl für Fairness entspricht!

Hinweis: Du kannst die 3 Verteilungsarten mit dem Mauszeiger nach rechts ziehen und so in die gewünschte Reihenfolge bringen.

**F27:** Bitte nummeriere jede Box in der Reihenfolge Deiner Präferenz, beginnend von 1 bis 3.

Per Auktion

Per Lotterie

Per Windhundverfahren

**Hiking**

Auf einem nur zu Fuß erreichbaren Aussichtspunkt wurde eine Quelle erschlossen. Das dort in Flaschen abgefüllte Wasser wird an einem Stand zum Preis von 2 Euro pro Flasche an Wanderer verkauft. Die maximale Tagesproduktion besteht aus 100 Flaschen. An einem besonders heißen Tag werden 200 durstige Wanderer erwartet, die Wasser kaufen würden.

Bitte gib an, wie Du folgende Maßnahmen einschätzt, um den Wasservorrat unter den durstigen Wanderern aufzuteilen:

**F28:** Bitte wähle die zutreffende Antwort aus:

	absolut unfair	unfair	fair	völlig fair
Der Preis wird auf 4 Euro pro Flasche erhöht.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verkauf an die 100 ersten Wanderer für 2 Euro pro Flasche nach dem Prinzip „wer zuerst kommt, mahlt zuerst“ (Windhundverfahren).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verkauf für 2 Euro pro Flasche an die 100 Wanderer, deren Nachnamen zufällig mit A bis K beginnen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Die Gemeinde erwirbt alle Flaschen zum Preis von 2 Euro pro Flasche und verteilt diese nach ihrem eigenen Ermessen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verkauf von 200 kleineren halb so großen Flaschen für 1 Euro pro Flasche an alle 200 Wanderer (eine Flasche pro Wanderer).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Profmax**

Stell dir vor, du wärst Vorstandsvorsitzende/r eines Unternehmens, das sich auf Schädlingsbekämpfung spezialisiert hat. Im Unternehmen arbeiten 196 Schädlingsbekämpfer mit einer Befristung. Sie sind alle seit drei bis fünf Jahren dort beschäftigt. Durch die wirtschaftliche Lage sind die bisher hohen Gewinne stark zurückgegangen. Das Unternehmen macht jedoch noch keine Verluste.

Du sollst nun entscheiden, ob und wie viele MitarbeiterInnen entlassen werden. Die folgende Tabelle zeigt unterschiedliche Szenarien in Bezug auf den voraussichtlichen Jahresgewinn:

Anzahl von ArbeiterInnen, die weiterbeschäftigt werden	Anzahl von ArbeiterInnen, die entlassen werden	erwarteter jährlicher Gewinn
0	196	Verlust von 8 Mio. €
50	146	Gewinn von 1 Mio. €
65	131	Gewinn von 1,5 Mio. €
100	96	Gewinn von 2 Mio. €
144	52	Gewinn von 1,6 Mio. €
170	26	Gewinn von 1 Mio. €
196	0	Gewinn von 0,4 Mio. €

**F29:** Ich empfehle, von den 196 beschäftigten MitarbeiterInnen zu entlassen:

Bitte wähle nur eine der folgenden Antworten aus:

- 196
- 146
- 131
- 96
- 52
- 26
- 0

**Profmax-VP**

**F30:** Was denkst Du, wäre die Entscheidung eines/r echten Vorstandsvorsitzenden? Er/Sie würde empfehlen, von den 196 MitarbeiterInnen zu entlassen:

Bitte wähle nur eine der folgenden Antworten aus:

- 196
- 146
- 131
- 96
- 52
- 26
- 0

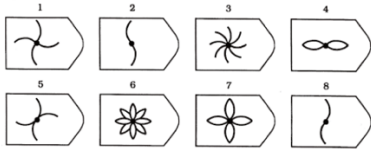
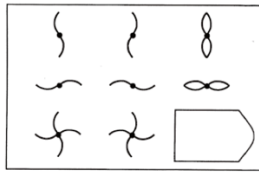
**F31:** Ein Geschäft verkauft Schneeschaufeln für 15 Euro. Am Morgen nach einem heftigen Schneesturm erhöht das Geschäft den Preis auf 20 Euro. Bitte bewerte dieses Vorgehen:

Bitte wähle nur eine der folgenden Antworten aus:

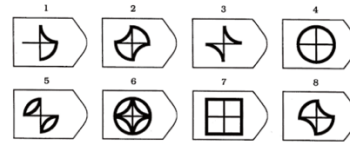
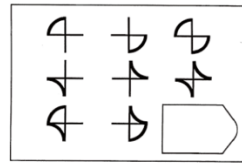
- absolut unfair
- unfair
- fair
- absolut fair

**F32:** Wirtschaftskompetenzen haben auch etwas mit Kombinationsfähigkeit zu tun. Wir möchten das in den folgenden vier kurzen Aufgaben erfragen. Sieh dir ein Bild nach dem anderen an. Welches der Teilstücke im unteren Bereich ergänzt das Muster im oberen Teil richtig?

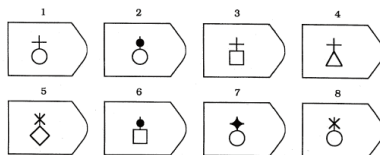
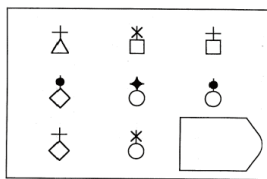
E1



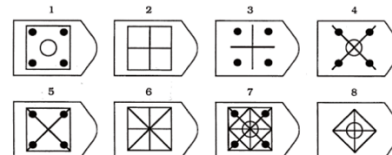
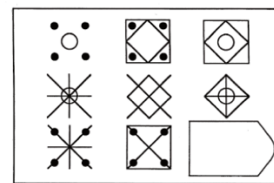
E3



E7



E10



### Aus Test of Economic Competence (TEC) – Deutsch

**F33:** Welche Aussage über eine Geldanlage in Aktien ist richtig?

Bitte wähle eine der folgenden Antworten aus:

- Die Geldanlage in Aktien ist sicherer als auf dem Sparbuch.
- Die Geldanlage in Aktien kann zu Verlusten führen.
- Die Geldanlage in Aktien führt zu gleichbleibenden Zinserträgen.
- Die Geldanlage in Aktien führt zu gleichbleibenden Dividendenerträgen.

Bäckerei Backblech backt an einem Tag aus Versehen mehr Kürbiskernbrötchen, als sie für gewöhnlich verkaufen kann.

**F34:** Welche Maßnahme würdest Du Bäckerei Backblech an diesem Tag empfehlen?

- Die übrigen Kürbiskernbrötchen verschenken.
- Den Preis für Kürbiskernbrötchen für diesen Tag erhöhen.
- Den Preis aller Produkte der Bäckerei reduzieren.
- Die Kürbiskernbrötchen günstiger anbieten

In der Schule ist vor den Sommerferien immer Schulflohmarkt.



Emma aus der 8a hat Zuhause die neuste Version eines beliebten Spieles, das sie von Ihrer Tante aus den USA bekommen hat und das in Deutschland erst im nächsten Jahr veröffentlicht wird. Sie überlegt, es auf dem Flohmarkt zu verkaufen.

**F35:** Welche Aussage ist richtig:

- Sie bekommt dieses Jahr vergleichsweise viel für das Spiel
- Sie bekommt dieses Jahr vergleichsweise wenig für das Spiel
- Sie bekommt dieses Jahr und nächstes Jahr gleich viel für das Spiel
- Sie kann das Spiel dieses Jahr nicht verkaufen
- Sie kann das Spiel nächstes Jahr nicht verkaufen

Ein Unternehmer hat eine Firma gegründet, in der technische medizinische Hilfsmittel hergestellt werden. Ab wann erwirtschaftet das Unternehmen Gewinn?

**F36:** Sobald die...

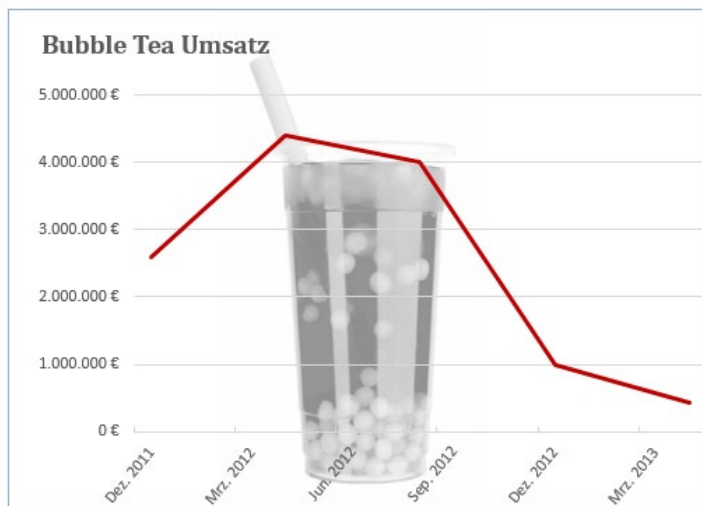
- Medizinischen Hilfsmittel in Geschäften verkauft werden.
- Einnahmen aus den Verkäufen der medizinischen Hilfsmittel die Monatslöhne der Mitarbeiterinnen und Mitarbeiter decken.
- Firma alle konkurrierenden Hersteller medizinischer Hilfsmittel vom Markt gedrängt hat.
- Einnahmen aus den Verkäufen der medizinischen Hilfsmittel die Monatslöhne und die Miete der Produktionsräume decken.
- Einnahmen aus den Verkäufen der medizinischen Hilfsmittel höher als alle entstandenen Kosten sind.

Michael hat die Schule nach der 10. Klasse verlassen und eine Ausbildungsstelle angetreten.

**F37:** Wie entwickelt sich Michaels Einkommen wahrscheinlich im Vergleich zum Einkommen seiner ehemaligen Mitschüler, die weiter die Schule besuchen und später ein Studium absolvieren?

- Michaels Einkommen wird jetzt und in Zukunft größer sein als das Einkommen seiner ehemaligen Mitschüler.
- Michaels Einkommen wird jetzt größer und in Zukunft geringer sein als das Einkommen seiner ehemaligen Mitschüler.
- Michaels Einkommen wird jetzt und in Zukunft kleiner sein als das Einkommen seiner ehemaligen Mitschüler.
- Michaels Einkommen wird jetzt kleiner und in Zukunft größer sein als das Einkommen seiner ehemaligen Mitschüler.

Auf dieser Grafik siehst Du, wie sich der Umsatz von Bubble Tea in Deutschland über 16 Monate entwickelt hat.



**F38:** Was kannst Du aus der Grafik über den Umsatz von Bubble Tea schließen.

- Bubble Tea ist seit August 2012 in Deutschland verboten.
- Bubble Tea wird in Japan weiterhin gewinnbringend verkauft.
- Bubble Tea ist gesundheitsgefährdend.
- Bubble Tea wird seit August 2012 relativ wenig verkauft.

Im Jahr 1923 gab es in Deutschland eine extrem hohe Inflation.

**F39:** Welche Aussage traf hinsichtlich der Inflation auf die Einzelhändlerinnen und Einzelhändler zu?

- Die Inflation hatte keine Auswirkung auf die Einzelhändlerinnen und Einzelhändler.
- Sie konnten Geld für schlechtere Zeiten zur Seite legen.
- Sie konnten ihre Angestellten besser bezahlen.
- Sie nahmen Geld als Zahlungsmittel nicht mehr an.

Frau Müller besitzt eine Zahnarztpraxis und nimmt pro Stunde 200 Euro ein. Heute überlegt sie, ihre Praxis eine Stunde früher zu schließen, um zuhause den Gartenschnitt zu machen. Sie könnte aber auch einen Gärtner für 50 Euro beauftragen.

**F40:** Welche Aussage trifft zu?

- Sie sollte selbst den Rasen mähen, um den Lohn des Gärtners zu sparen.
- Sie sollte selbst den Rasen mähen, weil sie es genauso schnell kann.
- Sie sollte den Gärtner beauftragen, um ihre Einkünfte nicht zu verlieren.
- Es ist egal, weil es in beiden Fällen um eine Stunde Arbeit geht.

Eine starke Erhöhung des Benzinpreises bewirkt kurzfristig nur eine geringe Verringerung der verkauften Benzinmenge.

**F41:** Warum ist das so?


- Benzin ist ein Luxusgut.
- Die Kosten für Benzin machen einen großen Teil der Ausgaben eines Haushalts aus.
- Benzin lässt sich nicht einfach durch etwas Anderes ersetzen.
- Die Steuern auf Benzin sind hoch.
- Die Fahrzeuge brauchen heutzutage wenig Benzin.

**F42:** Zwei Freunde, Emil und Kadir, gehen zur Bank.

Emil leiht sich 1.000 € von der Bank, Kadir zahlt 1.000 € auf sein Sparkonto ein. Nach einem Jahr will Emil das Geld zurückzahlen, und Kadir das Geld wiederhaben.

- Emil muss 1.000 € zurückzahlen. Kadir bekommt 1.000 €.
- Emil muss 1.000 € zurückzahlen. Kadir bekommt mehr als 1.000 €.
- Emil muss mehr als 1.000 € zurückzahlen. Kadir bekommt 1.000 €.
- Emil muss mehr als 1.000 € zurückzahlen. Kadir bekommt mehr als 1.000 €; Der Betrag ist bei beiden gleich hoch.
- Emil muss mehr als 1.000 € zurückzahlen. Kadir bekommt mehr als 1.000 €; Emils Betrag ist höher als Kadirs.

Finya hat von Ihren Großeltern zu Ihrem 16. Geburtstag 2.000 € geschenkt bekommen. Sie möchte das Geld bei der Bank anlegen. Sie findet diese Angebote im Internet:

 <p style="writing-mode: vertical-rl; transform: rotate(180deg);">BonusBank – Die grüne Bank</p>	<p><b>Ab 1.500 € Festgeldanlage: Bonus sichern!</b></p> <p>Heute abschließen und 2% Jahreszins sichern – garantiert für die von Ihnen gewählte Festsparer-Laufzeit</p> <p>Zinseszinsseffekt durch jährliche Gutschrift ihrer Zinsen zum Jahresende</p> <p>Ab 1.500 € Anlage erhalten Sie einen Festsparer-Bonus zu Laufzeitende geschenkt:          24 € bei 24 Monaten,          36 € bei 36 Monaten und          50 € bei 48 Monaten Laufzeit</p>	<p><b>T &amp; S Bank Institute</b></p> <p>Ab 2000 € Festgeldanlage bieten wir:</p> <ul style="list-style-type: none"> <li>✔ 2.1% Zinsen bei Festgeldanlage ab 12-monatiger Laufzeit – jährlich verlängerbar!</li> <li>✔ Ab 60 Monaten Laufzeit 2.2%-ige Verzinsung bei jährlicher Auszahlung</li> <li>✔ Zinseszinsseffekte ab der 1. Laufzeitverlängerung</li> </ul> <p><b>Die Online-Bank mit Schwung</b></p>
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**F43:** Das T & S Bank Institute und die BonusBank erwähnen den Zinseszinsseffekt. Was ist damit gemeint?

- Der Zinssatz ist im ersten Jahr am höchsten.
- Der Zinssatz steigt von Jahr zu Jahr.
- Die ausgezahlten Zinsen werden im folgenden Jahr wieder verzinst.
- Die Höhe des angelegten Geldes wirkt sich auf den Zinssatz aus.
- Der Zinssatz erhöht sich um die jährliche Gutschrift.
- Keine der vorhergehenden Aussagen ist richtig.

Herr Schneider bekommt eine Gehaltserhöhung.

Auf seinem Kontoauszug sieht er, dass er ab Januar ziemlich genau 1 % mehr Gehalt von seinem Arbeitgeber überwiesen bekommen hat als im Januar des vorhergehenden Jahres.

**F44:** Die Inflationsrate für das Jahr zuvor betrug 2 %. Welche Aussage ist wahrscheinlich richtig?

- Herr Schneider kann sich von seinem Januar-Gehalt mehr leisten als 12 Monate zuvor.
- Herr Schneider kann sich von seinem Januar-Gehalt genauso viel leisten wie 12 Monate zuvor.
- Herr Schneider kann sich von seinem Januar-Gehalt weniger leisten als 12 Monate zuvor.
- Es gibt keinen Zusammenhang.

Peter ist 18 Jahre alt, geht noch zur Schule und hat außer Taschengeld keine Einkünfte. Er ist auf der Suche nach einer Bank für ein Girokonto und findet im Internet die beiden folgenden Angebote:

