

The following is the research proposal we submitted for our proposed randomized survey experiment to be included in the Innovation Sample of SOEP, German Socio-Economic Panel, back in June, 2022.

This research proposal is the earliest document where we detailed the motivation for the study, raised the main research questions, relevant hypotheses & corresponding treatment designs, and drafted a simple pre-analysis plan (in terms of the main econometric analyses).

After having been selected into the SOEP Innovation Sample for the year of 2023, and obtained feedbacks from the SOEP personnel, we made a few changes to our treatment designs:

1. We dropped Treatment Group Three (T3) and Treatment Group Five (T5) in this proposal due to the smaller final sample size available for the SOEP-IS. And in order to ensure sufficient power, we kept the most important treatment arms. And the sample size per treatment arm has also been reduced from 800 observations to around 600 observations.
2. We changed a bit the contents of the *positive* and *negative* Chinese Foreign Direct Investment narratives treatment arms, to be more generic and do not pinpoint single case studies, given the sensitivity and potentially infeasibility of the narrative designs detailed in this research proposal below.

Besides these two modifications, almost everything else of the questionnaire design stays the same.

As such, compared to the final research design we pre-registered on the AEA RCT Registry, this research proposal contains a few more treatment arms. However, the main treatment arms and expected effects of these treatment arms stay the same. We are still principally interested in the effects of Chinese Foreign Direct Investment fact-checking, versus *positive* and *negative* Chinese Foreign Direct Investment narratives on the German public's preferences towards Chinese FDIs in Germany, as well as the differential effects between FDI fact-checking and FDI narratives. Furthermore, we didn't make any significant modifications with regards to the main endline outcome questions, as well as the conjoint analyses outcomes. As such, the directions of the expected treatment effects in principle also stay the same.

Ultimately, we have also added one additional coauthor over time, Katharina Kaepfel, given her expertise of the German political-economic context.

We think this document could serve as the most original document indicating our earliest pre-analysis plan in the event such need arises.

For a more recent analysis plan corresponding to our latest treatment designs, you could refer to the document titled "analysis_plan_GermanChina_FDI_2024.pdf" on the [AEA RCT Registry Webpage](#) for this project.

Perceptions and Preferences towards Chinese Investments: A Randomized Survey Experiment in Germany

Zhexun Mo^{*}

Carsten Schröder[†]

Li Yang[‡]

June 30, 2022

^{*}Principal Investigator, Paris School of Economics; **Address:** 48, Boulevard Jourdan 75014 Paris; **Email:** fredzhexun.mo@psemail.eu

[†]SOEP | DIW Berlin; **Address:** Mohrenstraße 58, 10117 Berlin; Email: cschroeder@diw.de

[‡]Corresponding Author, SOEP | DIW Berlin; **Address:** Mohrenstraße 58, 10117 Berlin; **Email:** lyang@diw.de

1 Main Aim of Study

We propose to conduct a randomized survey experiment, in which we will survey the German public's opinions towards Chinese Foreign Direct Investments (FDIs) in Germany, and analyze the contrasting causal effects of FDI narratives versus FDI facts on the formation of such attitudes towards Chinese investments.

2 Theoretical Background

China's rapid economic development and its central role as a driver of globalization have resulted in expanding economic ties with the European Union (EU) over the past few decades. In 2021 China has become the EU's biggest trading partner in the world. However, the rapid expansion of China's global economic and political influence, as well as the institutional differences between the two, has been gradually leading the two partners to a crossroad. Concerns about how to maintain economic cooperation with China are mounting inside the EU.¹ Such concerns are further triggered and aggravated by the recently evolving public debate over related topics, such as the US-China trade/technology war, human rights issues in China, as well as China's role in the Russia-Ukraine War, etc.

Given the backdrop of such potential economic and political tensions, it is of utmost importance to understand how future policies on economic collaborations with China should be guided. We believe one very important element in drafting economic policies with China (from the side of European countries) is to understand the public's opinions and potential (mis-)perceptions on economic ties with China, as well as how these attitudes evolve or change with varying kinds of information and narrative provisions.

We propose to survey the public's opinions towards Chinese Foreign Direct Investments (FDIs) in Germany to begin with, not only because FDI is one of the most important and controversial vehicles of economic cooperation, but also that Germany is the largest economy inside the EU and has close trade and investment collaborations with China. For instance, the total stock of Chinese FDIs to Germany has reached \$14.5 billion by the end of 2020, which puts Germany at the 11th place among all destination countries of Chinese overseas investments, 3rd in the European Union (after the Netherlands and Luxembourg).² However, at the same time, Chinese investment activities in Germany have often been portrayed with a lot of worries.³ There is a lot of anxiety over whether Chinese companies are snatching off core German technologies, especially in critical high-technology sectors with a few takeovers being overly publicised by the German media.⁴ Such concerns are potentially shared by the German government, as we

¹Recently the very important Comprehensive Agreement on Investment (CAI) between China and the EU has come to a standstill and shelved for future approval, due to mutual sanctions between the two parts with regards to current human rights issues in China.

²All main figures are taken from the Annual Statistical Bulletin of China's Outward Foreign Direct Investment compiled by the Chinese Ministry of Commerce.

³See reports such as: <https://www.dw.com/en/chinas-unsatisfied-hunger-for-german-companies/a-39658363>

⁴Such as the take-over of the German robotics company KUKA by Chinese electronic appliance manufacturer Midea in 2016, which created a huge stir in the German media.

have witnessed an increasing trend of tightening FDI scrutiny, with Chinese investment projects taking up the lion's share of FDI deals being reviewed by the German Ministry of Economy in the most recent years.⁵ These worries can be contrasted to objective economic indicators. According to OECD statistics on FDI's positions, the total stock of Chinese FDI's (\$14.5 billion) only accounts for around 1.3 % of the total stock of inward FDI's in Germany. More than 50% of very large-scale Chinese investment projects⁶ in Germany are concentrated in the transportation sector, much more so than the potentially more controversial sectors such as high-tech manufacturing, real-estate or finance (Xia & Liu, 2021). Such descriptive evidence above begs the question on how the German population perceives Chinese FDI's in Germany; furthermore, whether (mis-)perceptions are at the roots of the potential mistrust towards Chinese investments, or if such mistrust is more due to the narrative of Chinese foreign investments portrayed in the media.

As such, in this proposed randomized survey experiment, we intend to ask the following questions:

1. Are there major misperceptions from the German public when it comes to inward Chinese FDI's in Germany? And if so, what are they?
2. Are preferences towards Chinese investments in Germany more susceptible to misperception-correcting **facts** treatments, or provocative media **narrative** treatments?

We think our study will make several contributions to different strands of the literature. Recently there is a burgeoning literature on the public opinions towards FDI's, especially those on attitudes towards Chinese FDI's in the West (Zeng & Li, 2019; Chilton, Milner, & Tingley, 2020; Raess, 2021). However, most of the existing studies are descriptive, and focus more on reciprocity, economic nationalism as well as security threats as determinants of preferences towards Chinese FDI's. The study that comes closest to our design is Li et al. (2019), where the authors detected large misperceptions on Chinese FDI's in Canada, and correcting such misperceptions with **facts** significantly improved opinions towards Chinese FDI's. Compared to their study, our additional contributions will be that **first of all**, we will test whether public opinions towards foreign (Chinese) FDI's are more susceptible to factual information or media narratives, by providing misperception-correcting facts, positive and negative media narratives, as well as fact-checking on negative media narratives separately. **Second of all**, our study will also be the first one to measure public opinions towards Chinese FDI's in the European Union, and given the much more important as well as volatile investment relations between China and the EU in recent years, we believe it's crucial to fill in the gap on the European public's attitudes in this debate. **In addition**, there's also burgeoning research in the experimental literature on the political economy of immigration, where seminal papers providing **facts** or **narratives** information treatments have produced sizeable contrasting effects on

⁵See the recent [report](#) on Foreign Direct Investment Review in Germany 2021, where it's described that "From January 2016 to December 2018, 185 transactions have been subject to BMWi investment reviews, of which 75 acquisitions were attributed directly or indirectly to a Chinese acquirer".

⁶Investment projects that surpass \$100 million in value.

respondents' attitudes towards immigrants and refugees (Alesina et al., 2022; Barrera et al., 2020). Our paper will further expand such "facts versus narratives" comparison into the domain on public opinions towards FDIs, which has not been attempted by other researchers in the field yet. **Ultimately**, our study will also contribute to the literature on measuring the costs associated with misperceptions and biases (Hedegaard & Tyran, 2018), as we will adopt a modified version of Willingness To Pay (WTP) games, where we will elicit the German public's Willingness To Accept (WTA) with regards to choosing Chinese investment projects over investment projects from other foreign countries.

Besides the potential contributions to the academic literature, we think our study will also be suitable to be included in the Innovation Sample of the Socio-Economic Panel (SOEP) for the following reasons. First of all, the panel structure of SOEP would allow us to track the same individual's opinions towards Chinese FDIs in Germany over time. As such attitudes could be susceptible to economic or political shocks along the way, it would be important to monitor how such public opinions evolve progressively. Second of all, tracking the dynamic of the same individual's attitudes on Chinese FDIs over time could also help us understand better the fundamental determinants of such preferences. Ultimately, since how to do business with China has become an increasingly important political and economic topic in the European Union, and the Sino-EU business relationship has proven to be more unpredictable and volatile than ever, we think it is of paramount importance to regularly monitor and study European citizens' preferences towards Chinese investments at different points of time into the future, in order to provide policy support for both the German and the wider EU community's governments in a timely fashion. We think SOEP is one of the most ideal platforms to monitor the German public's attitudes towards Chinese FDIs over time.

3 Design Plan

This study will take the form of a randomized survey experiment. Specifically, we will randomly allocate our respondents into six treatment groups (the control group included). The randomization will take place at the individual level.

Before our randomized information treatment (i.e. at the baseline), we will survey our respondents on their general perceptions with regards to Sino-German investment relations by asking them their knowledge on a few factual questions (detailed in the question section).

Hypothesis 1: At baseline, the German public may hold large misperceptions with regards to Sino-German investment relations. Specifically, they may significantly over-estimate the share of Chinese FDIs out of total inward FDIs in Germany, and they may also mis-perceive the allocation of Chinese FDIs across different sectors in Germany.

Subsequently, our respondents will be randomly allocated to six groups of equal sizes. We will then provide different types of information treatments to each treatment group.

1. **Treatment Group One (T1) - Control Group** T1 will be the control group, where no additional

information will be provided.

2. Treatment Group Two (T2) - Facts: The Size of Chinese FDIs in Germany

In this group we will provide our respondents a table, which includes the actual share as well as respondents' estimates of the share of Chinese FDI stock, EU-country FDI stock as well as American FDI stock out of total inward FDI stock in Germany in 2019. We will also present a graph showing the share of FDI stock of China as well as the top 10 foreign investing countries (ranked by the FDI stock) in terms of their respective total inward FDI stocks in Germany.⁷

The purpose of this treatment group is to update the German public's mis-perceptions on the shares of Chinese (EU, US) FDI stock out of total inward FDI stock in Germany. We conjecture that the German public could be holding much larger misperceptions with regards to Chinese FDIs in Germany, than EU or US FDIs, which corresponds to our **Hypothesis 1**, where we conjecture the German public could significantly over-estimate the share of Chinese FDI stock in Germany, but not as much so for FDIs from the US and other EU countries.

Accordingly, we arrive at the following hypothesis:

Hypothesis 2: Compared to the control group, correcting downward misperceptions on the share of Chinese FDIs in Germany will increase respondents' support for Chinese-FDI-related policies in this group.

3. Treatment Group Three (T3) - Facts: The Distribution of Chinese FDIs in Germany by Sectors

In this group we will provide our respondents with a table including factual information as well as respondents' estimates on the distribution of Chinese FDIs across the two main sectors we surveyed at the baseline: manufacturing sector, which produces machinery and equipment and the manufacturing sector other than producing machinery and equipment. We will also present a table comparing the FDI distribution in these two sectors from China, the US and other EU countries.

The purpose of this treatment group is to update the German public's mis-perceptions on the allocation (across different German industry sectors) of Chinese FDIs in Germany. We conjecture that the German public could be holding large misperceptions with regard to the allocation of Chinese FDIs in the German economy (compared to the actual allocation), for instance they may over-estimate the share of Chinese FDIs in equipment and machinery manufacturing sectors, if their prior is that Chinese companies are strategically targeting this sub-sector of manufacturing for takeovers.

However, the updating process can be more nuanced, as we will also provide the distribution of American and EU-country FDIs in these two manufacturing sectors as a benchmark to anchor respondents' estimates for China at baseline. As such, there are two potential updating channels, the

⁷The information provided will be figures calculated by the authors based on authoritative official statistics on FDIs compiled by the OECD and the German Central Bank (Deutsche Bundesbank). The same applies for the figures compiled for Treatment Group Three.

first one is that the respondent will update his/her own misperceptions on Chinese FDI allocation (compared to the actual Chinese FDI allocation), the second is an updating of misperceptions in comparison to the actual allocation of American and EU-country FDIs. The direction of the ultimate treatment effect depends on the combination of the directions of these two updating channels. Our conjecture for now is that the direction of updating their own misperceptions on Chinese FDI allocation dominates the direction of updating in comparison to the US and EU-country FDI allocation. As such, our hypothesis is the following:

Hypothesis 3: Compared to the control group, correcting downward misperceptions on the share of Chinese FDIs in critical sectors in Germany will increase respondents' support for Chinese-FDI-related policies in this group.

4. Treatment Group Four (T4) - A Negative Narrative of Chinese FDIs in Germany

In this group, we intend to give our respondents a **negative narrative** of a famous case study of Chinese FDI purchase of a German company, which is meant to provoke more negative sentiments from our respondents.

The case study that has been chosen is the take-over of the German robotics technology company KUKA by the Chinese electrical appliance company Midea in 2016. At the time it created quite a stir across both the media and the German public. Our purpose of this portrayal is to highlight the fact that the company being purchased is one of those representing the core technologies of the German Industrie 4.0, and the purchase threatens both German's comparative advantage in technological innovation and job securities. Additionally, we will also invoke statements from popular politicians who claimed in public that the KUKA takeover has been a mistake and shouldn't be repeated again, etc.

Specifically, the treatment will take the form of a few narrative paragraphs (similar to those the respondents could read in the media), in the form of some news report. It will take the respondents one minute to finish reading this paragraph on average.

Hypothesis 4: Compared to the control group, increasing the salience of a negative narrative of Chinese FDI in Germany will decrease respondents' support for Chinese-FDI-related policies in this group.

5. Treatment Group Five (T5) - A Negative Narrative of Chinese FDIs in Germany with Fact-checking

In this group, after the **negative narrative** intervention, we will give our respondents some **fact-checking** intervention.

Specifically, after providing the negative narrative of KUKA purchase, we will provide our respondents with a few pieces of **facts**, such that the overall employment of KUKA in Germany, as well as its R&D expenditure kept increasing after the purchase by the Chinese company, in order to alleviate

concerns from our respondents on matters such as job securities and technology ownership, which are magnified by the negative narrative treatment.

Hypothesis 5: Compared to the "negative narrative" treatment group, providing additional fact-checking treatment might reverse the decrease in support for Chinese-FDI-related policies caused by the negative narrative intervention.

6. Treatment Group Six (T6) - A Positive Narrative of Chinese FDIs in Germany

In this group, we intend to give our respondents a **positive narrative** of Chinese FDI activities in Germany, which is meant to provoke a more positive image of Chinese foreign direct investments.

The case study that has been chosen is the take-over of the German medium-sized manufacturing firm Putzmeister, which was bought by Chinese heavy-machinery firm Sany in 2012. In this narrative, we will emphasise how the company was struggling after the global financial crisis in 2009. And after the purchase by Sany, although there's a lot of initial fears on how the Chinese company simply intended to acquire the core German technologies and not care about the well-functioning of the company, these qualms were proven to be misguided later on. As the sales of the company have steadily increased over time. Moreover, Putzmeister's initial workers' conditions in Germany are well-protected, and there is also a sufficient degree of autonomy in terms of company management.

Hypothesis 6: Compared to the control group, increasing the salience of a positive narrative of Chinese FDI in Germany will potentially increase respondents' support for Chinese-FDI-related policies in this group.

4 Sampling Plan

4.1 Sample Size and Sample Size Rationale

The total sample size of this study will be of **4,800 adult German individuals (18-65 years old)**, whom will then be equally and randomly allocated into six groups. As such, the sample size of each group will be of **800 individuals**. We'd like our overall sample to be **nationally representative**. In other words, we'd like to select an Innovation Sample which is a nationally representative sub-sample of the SOEP sample.

A simple power calculation, with power size at 0.85, and a Minimum Detectable Effect (MDE) of 0.15 standard deviations between the control group mean and the treatment (experimental) group mean (while assuming the independence between the two groups) at a significance level of 0.05 gives us a treatment (control) group sample size of 820 observations. As such, we arrive at the average group size of 800 individuals, and given that we have six groups in total, we'd like our total sample size to be at roughly 4,800 individuals.

5 Variables

5.1 Manipulated Variables

The manipulated variable in our study will be the one that indicates the random assignment of individuals into one of the six treatment arms of our survey experiment. As such, there will be six of such dummy manipulated variables. Each one of them will indicate whether a given individual is assigned to one of the treatment arms or not.

5.2 Measured Variables

The measured variables include the following:

Baseline variables

1. At baseline, the respondents' own **estimates** on the share of Chinese, American and other EU countries' FDI stocks out of total FDI stocks in Germany, which range between 0 and 1, and the sum of the three estimates should be smaller than 1 (three variables in total).
2. At baseline, the respondents' own **estimates** on the share of Chinese FDIs across the two manufacturing sectors of the German economy (detailed more below in the question section). Each estimate ranges between 0 and 1 and the sum of the two estimates should be smaller than 1 (two variables in total).
3. At baseline, the respondents' own **beliefs** on the share of concerns related to Chinese FDIs in Germany that are political versus economic (one variable).

Endline variables

1. A variable denoting support for a generic policy on improving bilateral investment relationships between China and Germany (ranging from 1 to 5).
2. Two variables denoting the level of concern with regards to employment and technological innovation in Germany, on an FDI project from China (ranging from 1 to 5).
3. Two variables denoting the level of concern with regards to employment and technological innovation in Germany, on an FDI project from the United States (ranging from 1 to 5).
4. Two variables denoting the level of concern with regards to employment and technological innovation in Germany, on an FDI project from another EU country (ranging from 1 to 5).
5. Three continuous variables serving as willingness-to-accept outcomes of the modified conjoint analyses (see the content of question section, as well as the analysis plan section).
6. One variable to denote the extent of bias of the survey (multiple choice).

6 Analysis Plan

The confirmatory statistical (& econometric) analyses we plan to use to test our hypotheses are the following:

6.1 Statistical Tools to Test Hypothesis One

In order to test hypothesis one, which is to see whether mis-perceptions with regards to the share and size of Chinese FDIs exist, we will simply descriptively plot the distributions of German people's own **estimates** of the share of Chinese FDIs, American FDIs and other EU countries' FDIs out of total inward FDIs in Germany. As such there will be three distribution plots in total, and then we will compute the distance between the mean (average share) of each distribution versus the **actual** share of each country/region's FDIs in the same distribution plot. If the misperceptions on Chinese FDIs are the largest, we expect to observe the largest distance between the actual share of Chinese FDIs and the average estimated share of Chinese FDIs, while the distance between the actual share of American (EU) FDIs and the average estimated share of American (EU) FDIs will be minimal, or the two figures may even overlap on their distribution plots. The same applies to detecting the extent of misperceptions on the allocation of Chinese FDIs across different sectors of the German economy.

6.2 Statistical Tools to Test Hypothesis Two to Hypothesis Six

In order to test hypothesis two to six, we will employ two statistical tools, the first one is the following simple Ordinary Least Square (OLS) estimation technique in Equation (1):

$$Y_i = \beta_0 + \sum_{t=2}^6 \beta_t 1_{\text{Treated}_t} + \beta_7 X_i + v_i \quad (1)$$

where the dummy variable 1_{Treated_t} will take on value one if the individual is assigned to treatment group t , and zero otherwise. Here we omit the control group ($t = 1$), and $\beta_2, \beta_3, \beta_4, \beta_5$ and β_6 will simply be identifying the mean-difference Intention-To-Treat (ITT) effects between being assigned to the one of the five main treatment groups versus being assigned to the control group. X_i are baseline demographic and socio-economic controls which will be collected with the SOEP survey, such as incomes, professional status, education levels, etc.

The Y_i variables will indicate our main outcomes of interest. It will take many forms, either it could be a general index value indicating the support for a hypothetical Chinese-investment policy in Germany (ranging from 1 to 5, with a higher value indicating more support for Chinese FDI), or general concerns (on job securities, innovation & technology in Germany, etc) associated with Chinese investments in Germany (also ranging from 1 to 5, with a higher value indicating less concern associated with Chinese FDI). Furthermore, given that both Treatment 2 and Treatment 3 are supposed to correct the German public's

mis-perceptions on Chinese FDIs downward (i.e. a reduction of the biases), we expect the effect on support for Chinese-FDIs in Germany to be **increasing**, as such theoretically the signs for β_2 and β_3 are supposed to be **positive**. In addition, Treatment 4 is supposed to be a negative narrative on Chinese FDIs, as such we expect β_4 to be **negative**. The coefficient β_5 associated with the fact-checking treatment might be either negative or null (compared to the control group), as here our main hypothesis is to see whether the fact-checking can alleviate the negative effect engendered by the negative narrative. As such, we could also compare β_4 and β_5 and check if there's a significant difference between the two. Ultimately, the sign of β_6 is conjectured to be positive, as Treatment 6 is the positive narrative treatment on Chinese FDIs.

Besides the simple mean-difference estimation, part of our end-line outcomes (support for Chinese FDIs with Willingness-To-Accept elicitation) will be elicited via a modified conjoint design. Specifically, two hypothetical foreign investment proposals will be generated with the combination of a few components **randomly** selected from a few attributes. In total we will have three attributes, namely country of investor, ownership type of the company and the sector of investment (more detailed below in the section on content of questions). Within each attribute, there will be a range of components, for instance there are in total three components in the attribute of "country of investor", such as "the United States", "other EU countries", and "China" will serve as the baseline.

For each comparison scenario (between the two proposals), we will hold the country of investor constant as China for one proposal (as the baseline), and the country of investor for the other proposal will be **randomly** varied to be either the US or other EU countries. Then, for both proposals in the same comparison scenario, one component each from the two attributes on "ownership" and "sector of investment" will be **randomly** selected at the comparison scenario level, such that they are the same for both proposals within one comparison scenario, but they still vary from one comparison scenario to another. As such, the only component that varies is the country of investor between the two proposals. Then, for the US/EU investment proposal, we will give a baseline of how many German jobs this investment plan is going to save (as the FDI proposal will be framed in a context of buying out a bankrupting German company). Afterwards, we will ask our respondents to fill in their **minimum willingness to accept**, which is the minimum number of German jobs the Chinese investment plan has to save, such that they will prefer (accept) the Chinese investment plan over the US/EU investment plan. If there are mis-perceptions associated with Chinese FDIs à priori, we should observe the number of German jobs required to be saved (such that the Chinese FDI proposal will be preferred) should be higher for the Chinese investment than for American investment (but the number may also be smaller in some other scenarios).

$$\begin{aligned}
Y_{i,p} = & \alpha_0 + \sum_{t=US,Europe}^2 \alpha_t Country_{t,p} + \alpha_{state} Ownership_{state,p} \\
& + \sum_{t=hightech,lowtech}^2 \alpha_t Sector_{t,p} + \alpha_2 X_i + \eta_i + \delta_p + v_{i,p}
\end{aligned} \tag{2}$$

Econometrically, we will be adopting a multinomial logistic regression model as specified in Equation (2), where the outcome $Y_{i,p}$ is the number of jobs (minimum willingness to accept) elicited by individual i for investment proposal p , and the variable $Country_{t,p}$ is a dummy variable that takes on value one when the country of investor is t in a given investment proposal p , and zero otherwise. The same applies to the ownership and sector dummies.

Given the random allocation of the country of investor, company ownership and sector component values, we will be able to estimate our model at the comparison-scenario level separately within each treatment group. For instance, given the omitted component for country of investor is China, coefficient α_{us} will inform us that on average, if we switch the country of investor from China to the US, what is the decrease (or increase) in the number of German jobs required to be saved such that the Chinese investment plan is preferred in one particular treatment group. This will serve as a measure of the price/cost of misperceptions with regards to Chinese FDIs (relative to American FDIs) in Germany.

Furthermore, in order to link our modified conjoint analyses' results back to our main hypotheses, given the random assignment of our respondents into different treatment groups, we will be able to test whether the price of misperceptions associated with Chinese investors (difference in the willingness to accept) in the modified conjoint analysis is smaller (or larger) in our narrative/facts treatment groups compared to the control group. For instance, we may conjecture that the positive narrative treatment could have reduced the price of misperception associated with Chinese investments, as such this price will be smaller in the positive narrative group compared to the control group. We could perform F-tests on the equality of regression coefficients on the US dummy or EU dummy across these two groups to test whether there's a significant decrease (or increase) of Chinese penalty in some of our treatment groups compared to the control group.

7 Expected Outreach

The data collected from this survey experiment will mainly be used for academic research, which will be turned into a working paper and potentially a peer-reviewed article in an economics or social science journal in the future.

Additionally, we will be very glad if the data collected could be publicly shared afterwards (under the authorization of SOEP-IS), in order to serve policy-making purposes, where it could be used by German think tanks or other government bodies to inform and assist the public debate on German or even EU economic policies with China.

8 Estimation of Total Interview Time

In total, we estimate each individual's interview time to be around 6 minutes. Below is a rough breakdown of time allotment to each part of the main question (treatment) blocks of our experiment.

1. Read introduction of FDI (30 seconds)
2. Belief elicitation at baseline (2 questions, 30 seconds each, in total 1 min)
3. Binary belief elicitation at baseline (1 question, 15 seconds)
4. Treatment intervention (Facts or Narrative Treatment) (1 min and 30 seconds)
5. One generic end-line question on support for Chinese FDI (15 seconds)
6. Elicitation of concerns of FDI from three countries/regions (each country taking 20 seconds, in total 1 minute)
7. Conjoint analysis (3 questions, 30 seconds each, in total 1 min and 30 seconds)
8. Question on survey bias (10 seconds)

The total estimated time is at around 6 minutes 10 seconds for now.

9 Content of Questions

Interviewers' Opening Remarks for the Respondents at the Beginning of the Survey:

In the following part of the survey, we are going to ask you a series of questions related to something called Foreign Direct Investment (FDI). What is FDI? FDI is short for Foreign Direct Investment, which is a long-term investment in the home country, made by another person or company from a foreign country, typically by opening a new plant or buying shares (normally at least 10%) of a home/domestic company. For instance, a foreign company builds and opens a new factory plant in Germany. Or, a foreign company invests in a German car company by buying 30% of its shares. Both are some examples of FDIs.

After the opening remarks, the main questions of the survey are listed below. First of all, **Q1**, **Q2** and **Q3** are all baseline questions, which means they will be asked before the treatment interventions. And they will all be asked on the entire sample as well.

Q1: Many foreign companies are making investments in the German economy. In your best estimate, what percentage of foreign direct investment in Germany up till the end of 2019 is owned by companies that come from each of the following countries or regions? (the sum of the percentages should be less than 100%)

The “?” blanks below have to be filled in by the respondents themselves.

Countries / Regions	FDI share out of total FDI in Germany
Mainland China (excluding Hong Kong)	? %
The United States	? %
Other European Union countries	? %

Q2: Of all the foreign direct investments in Germany that originate from China, what do you think is the distribution of Chinese FDI in the following two sectors? In other words, among all Chinese FDI in Germany, what is the share of these FDI located in the machinery manufacturing sector and what is the share such FDI located in the non-machinery sector in percentage terms? We provide you with the distribution of American and EU-country FDI in these two sectors as a benchmark. For instance, the American column indicates that out of all American FDI in Germany, 5% went to the machinery & equipment manufacturing sector, while 16% went to other manufacturing sectors.

Table 1: Distribution of FDI across Sectors of the German Economy by Country of Origin

Sectors	Percent of Chinese FDI	Percent of American FDI	Percent of EU FDI
Machinery & Equipment Manufacturing	? %	5%	1%
Other Manufacturing	? %	16%	22%

The “?” blanks above have to be filled in by the respondents themselves (the sum of the percentages for the Chinese column should be less than 100%).

Q3: In recent years, rapidly increasing Chinese FDI in Germany has sparked a lot of concerns among the German public. From your own perspective, while thinking about the worries related to Chinese FDI in Germany, what share of these concerns are political, and what share of them are economic? (The layout of this question will be designed as a semi-circle, where the default is that 50% of the concerns are political, and 50% of them are economic. Then the respondent will be asked to adjust the shares of the two according to his/her own opinions in a continuous manner. But the sum of two has to equal 100%, which is fixed.)

Between Q3 and Q4 are the treatment interventions of each group (facts or narratives), the contents of which are detailed below.

1. Control Group (Only Applies to Treatment Group 1)

Treatment Group 1 is the control group, and there won't be any treatment intervention involved.

2. Fact Treatment - FDI Size (Only Applies to Treatment Group 2)

In this group, we will show our respondents a table (as shown below), where we will list their estimates of FDI stock shares together with the actual FDI stock shares, which we computed from German Central Bank statistics.

After this, we will also provide our respondents with a graph ([Figure 1](#)) which shows the share of FDI stock from China as well as the top 10 FDI investing countries (ranked by the FDI stock)

Table 2: Share of FDI Stocks in Germany by Country of Origin

Countries / Regions	FDI share (estimates)	FDI share (real figure)
Mainland China (excluding Hong Kong)	? %	1.3%
The United States	? %	18%
Other European Union countries	? %	58.14%

in terms of their respective total inward FDI stocks in Germany, where China occupies a very small position, and is not even among the top ten investors in Germany.

Stocks of Foreign Direct Investments in Germany (2019)
(Billion €)

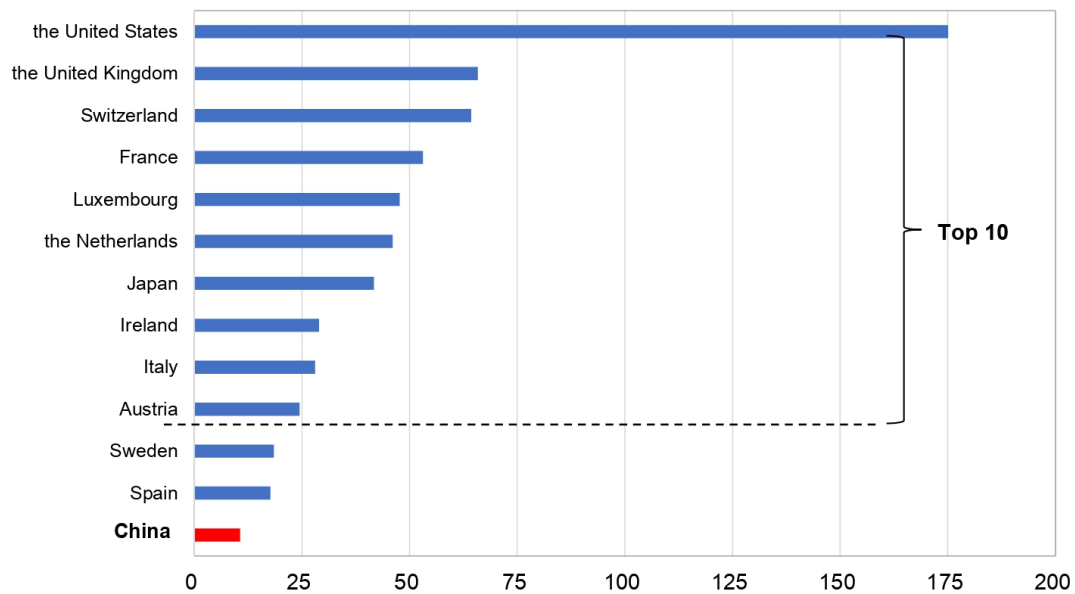


Figure 1: Stocks of FDIs in Germany by Country of Origin

3. Fact Treatment - FDI Sector Allocation (Only Applies to Treatment Group 3)

In this group, we will show our respondents a table (as shown below), where we will list their estimates of the distribution of Chinese FDIs across different sectors, together with the actual distribution figures, which we computed from German Central Bank statistics.

Table 3: Distribution of FDIs across Sectors of the German Economy by Country of Origin

Sectors	China (estimate)	China (real figure)	The US	EU
Machinery & Equipment Manufacturing	? %	15%	5%	1%
Other Manufacturing	? %	25%	16%	22%

4. Negative Narrative of Chinese FDI (Only Applies to Treatment Group 4)

In this group, the respondents will receive a negative narrative of a famous case study of Chinese FDI purchase of a German company, which is the KUKA takeover. The exact content of the narrative is as following (*in italics*) :

KUKA is a German company specializing in industrial robots and systems for factory automation. It is often touted as the epitome of the German Industrie 4.0. In 2016, to everyone's surprise, KUKA was taken over by the private Chinese electrical appliance company Midea, at an astounding price of 5 billion euros.

This acquisition has stirred an outcry of nationwide concerns, and potentially also a backlash against Chinese investors in Germany. Some German officials have described the acquisition of KUKA Robotics by Media as a wake-up call. They believe the German government should prohibit acquisitions of sensitive key-technology firms by non-EU investors in Germany, in order to secure Germany's comparative advantage in technological innovation. Others also worried that the Chinese company owner would shift the production of KUKA back to China, which could result in losing more than 4000 well-paid jobs in Germany.

Indeed, in 2018 the German government passed the Foreign Trade and Payments Act where it further strengthened the regulations against takeovers of key-industry German companies by foreign firms. In June 2022, Winfried Kretschmann, prime minister of Baden-Württemberg, while being interviewed about the future of business collaborations with Chinese investors in Germany, responded rather fiercely: "We will certainly not make a mistake similar to the one we made with the robot manufacturer KUKA." Furthermore, in a press release in May 2022, the Federal Minister for Economic Affairs and Climate Action, Dr Robert Habeck also mentioned that: "We are examining Chinese takeover bids in Germany very closely indeed, with the necessary critical eye."

5. Negative Narrative of Chinese FDI and Fact-checking (Only Applies to Treatment Group 5)

In this group, the respondents will first receive a negative narrative of a famous case study of Chinese FDI purchase of a German company, which is the KUKA takeover. The exact content of the narrative is as following (*in italics*) :

KUKA is a German company specializing in industrial robots and systems for factory automation. It is often touted as the epitome of the German Industrie 4.0. In 2016, to everyone's surprise, KUKA was taken over by the private Chinese electrical appliance company Midea, at an astounding price of 5 billion euros.

This acquisition has stirred an outcry of nationwide concerns, and potentially also a backlash against Chinese investors in Germany. Some German officials have described the acquisition of KUKA Robotics by Media as a wake-up call. They believe the German government should prohibit acquisitions of sensitive key-technology firms by non-EU investors in Germany, in order to secure Germany's comparative advantage in technological innovation. Others also worried that the Chinese company owner would shift the production of KUKA back to China, which could result in losing more than 4000 well-paid jobs in Germany.

Indeed, in 2018 the German government passed the Foreign Trade and Payments Act where it further strengthened the regulations against takeovers of key-industry German companies by foreign firms. In June 2022, Winfried Kretschmann, prime minister of Baden-Württemberg, while being interviewed about the future of business collaborations with Chinese investors in Germany, responded rather fiercely: "We will certainly not make a mistake similar to the one we made with the robot manufacturer KUKA." Furthermore, in a press release in May 2022, the Federal Minister for Economic Affairs and Climate Action, Dr Robert Habeck also mentioned that: "We are examining Chinese takeover bids in Germany very closely indeed, with the necessary critical eye."

Afterwards in the second step, we will provide the second-stage "fact-checking" treatment.

Is the KUKA purchase really a mistake? Are the concerns over job security and technological innovation on the KUKA takeover verified? Not really! As could be seen from the following [Figure 2](#), KUKA's employment in Germany kept increasing after the purchase. Furthermore, R&D employment even increased at a faster rate!

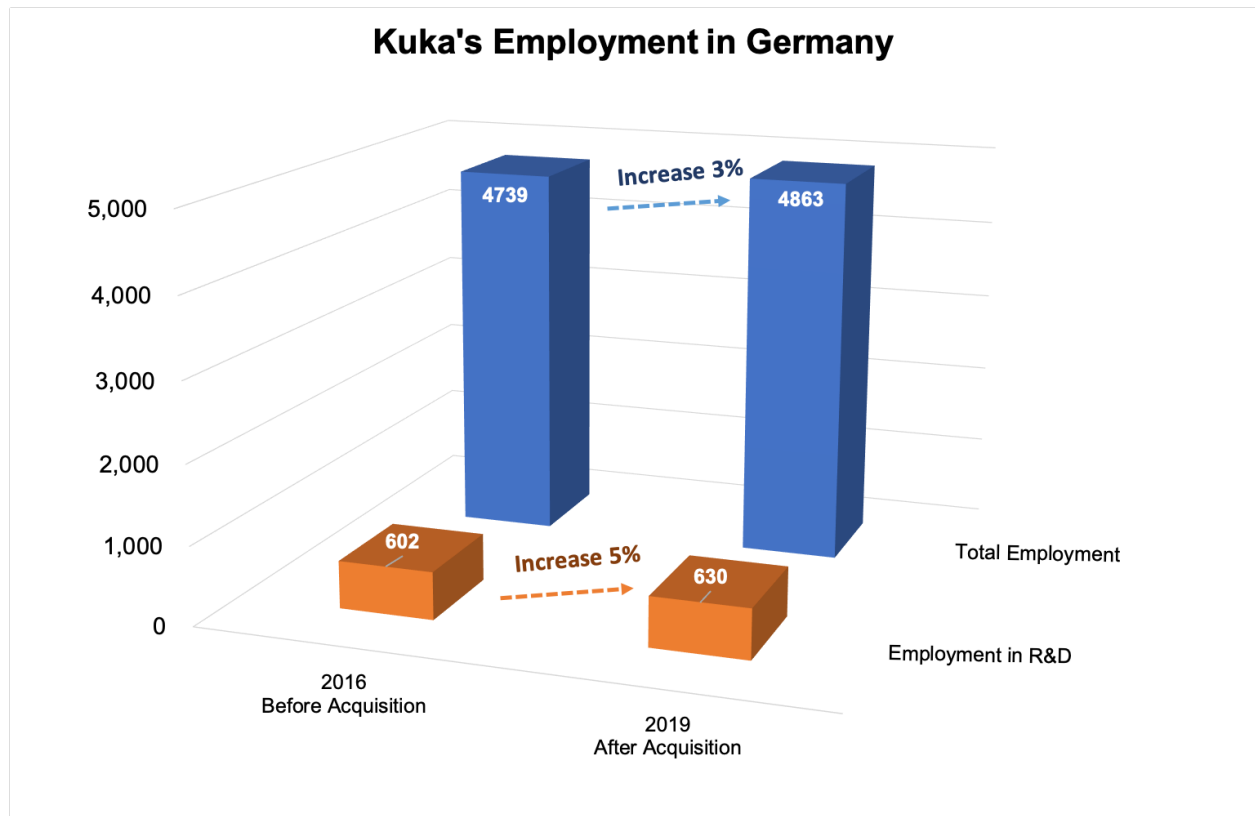


Figure 2: KUKA's Employment in Germany

This is accompanied by the more general increase in R&D expenditures (Figure 3), where the annual spending on research and development has increased from 125 million euros in 2016 to more than 160 million euros in 2019!

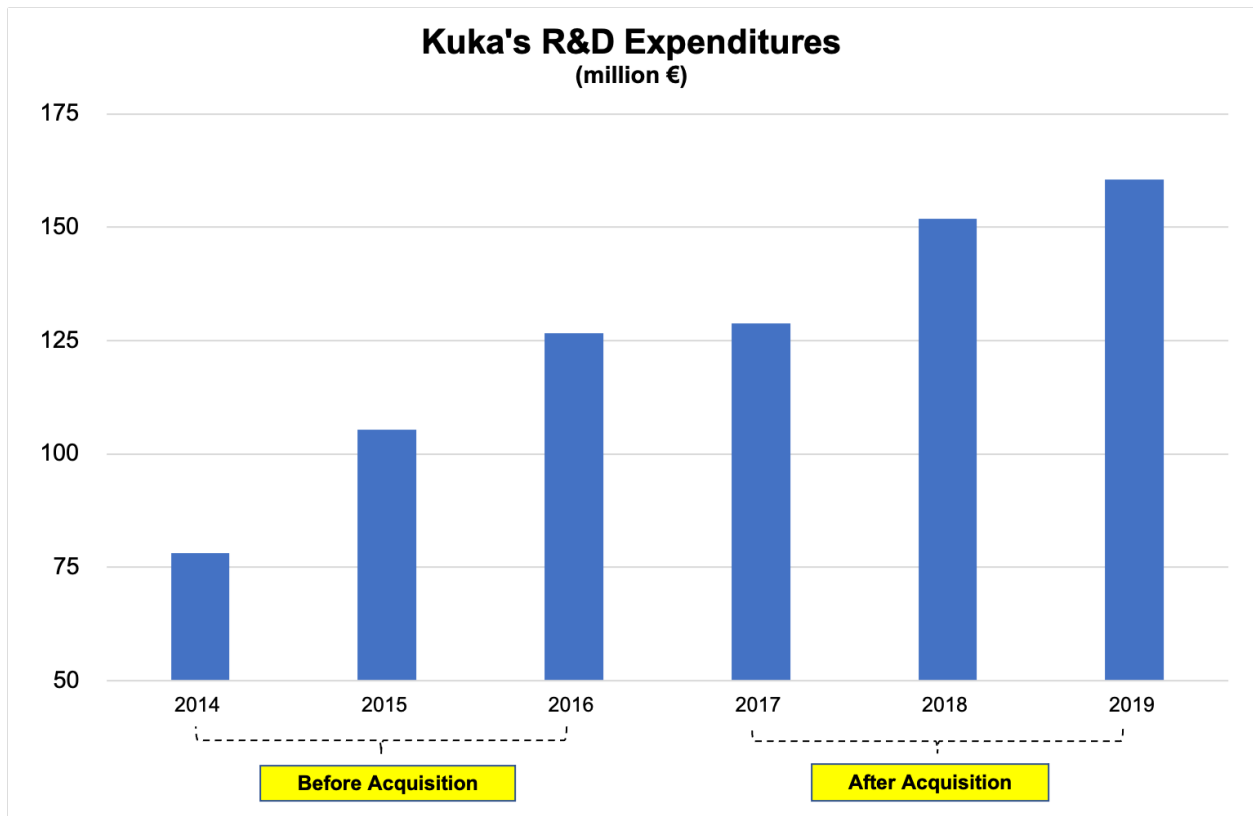


Figure 3: Evolution of KUKA's R&D Expenditures

6. Positive Narrative (Only Applies to Treatment Group 6)

In this group, we intend to give our respondents a positive narrative of Chinese FDI activities in Germany. The exact content of the narrative is as following (*in italics*):

Putzmeister, a German company producing concrete pumps, was bought by a Chinese heavy-machinery company called Sany at the price of 360 million euros in 2012. Despite some initial fears over how the Chinese company is going to manage Putzmeister after the purchase, the extraordinary performance of Putzmeister since then has pleased both former workers in Germany and buyers from China.

Ever since Sany's taking-over, Putzmeister's global workforce has remained stable at 3,300, and there have been no noticeable changes for those working in its German factories as promised. In 2019, at a time when a lot of German companies were announcing layoffs, Sany further assured the workers' union that there would be no layoffs of Putzmeister workers in Germany until the end of 2028. While being interviewed by Reuters in 2016, the head of the works council at Putzmeister, Joerg Loeffler, said the following: "I think if it were an American company, it would be a lot worse for the workforce".

In a decade after the acquisition, Putzmeister's global sales revenue also rises from 500 million in 2011 to 800 million in 2022, which is a tremendous 60% increase. Moreover, in terms of the company's technological advantage, Putzmeister pumps still come with German-engineered parts sourced from its previous suppliers. The purchasing strategy and supply chain of Putzmeister have remained unchanged to maintain its reputation as a premium brand. Former CEO of Putzmeister Gerald Karch said the following during an interview: "The take-over strategy was and has always been the strict preservation of brand and corporate identities at both firms."

The following questions are all end-line questions, which means that they will be administered after the end of the treatment interventions. All the end-line questions (Q4 to Q12) are administered to the entire sample.

- Q4:** If the federal German government is going to implement a policy to further promote bilateral investments between Germany and China, where it will mainly aim at reducing existing restrictions and lowering barriers for nationals from both sides to invest in each other's territory, to which extent will you support this policy? (choose one answer from 1 to 5 in [Table 4](#))

Table 4: Support for a hypothetical FDI policy with China

Strongly Oppose	Oppose	Neutral	Support	Strongly Support
1	2	3	4	5

- Q5:** A foreign firm from the United States is going to invest in Germany. On a scale from "worsen a lot" to "improve a lot", what do you think this investment is doing to the following domains of the German economy? (choose only one answer for each row)

Table 5: The impact of American FDIs on different domains of the German economy

Employment is going to:				
worsen a lot	worsen a bit	no change	improve a bit	improve a lot
1	2	3	4	5
Technological innovation is going to:				
worsen a lot	worsen a bit	no change	improve a bit	improve a lot
1	2	3	4	5

Q6: A foreign firm from China is going to invest in Germany. On a scale from "worsen a lot" to "improve a lot", what do you think this investment is doing to the following domains of the German economy? (choose only one answer for each row)

Table 6: The impact of Chinese FDIs on different domains of the German economy

Employment is going to:				
worsen a lot	worsen a bit	no change	improve a bit	improve a lot
1	2	3	4	5
Technological innovation is going to:				
worsen a lot	worsen a bit	no change	improve a bit	improve a lot
1	2	3	4	5

Q7: A foreign firm from another country in the European Union is going to invest in Germany. On a scale from "worsen a lot" to "improve a lot", what do you think this investment is going to affect the following domains of the German economy? (choose only one answer for each row)

Table 7: The impacts of EU-Country FDIs on different domains of the German economy

Employment is going to:				
worsen a lot	worsen a bit	no change	improve a bit	improve a lot
1	2	3	4	5
Technological innovation is going to:				
worsen a lot	worsen a bit	no change	improve a bit	improve a lot
1	2	3	4	5

Q8: Modified Conjoint Analysis Questions for Eliciting Willingness To Accept (WTA)

In this part of our experiment, we will perform a series of modified conjoint analyses to elicit the difference in willingness to accept from our respondents while comparing a hypothetical Foreign Direct Investment (FDI) profile coming from China versus another FDI profile coming from the US or other EU countries in a binary-comparison scenario.

In total we will have three main attributes, the components of which will be randomly selected to generate different FDI profiles. The composition of the attributes is the following:

(a) Attribute One: Country of Origin of the Investor (components listed below)

- (1) Other EU countries
- (2) The United States

- (3) China (baseline)
- (b) Attribute Two: Sector of the Targeted (Invested) German Company (components listed below)
 - (1) High-tech company in manufacturing sector
 - (2) Low-tech company in manufacturing sector
 - (3) Companies from a non-manufacturing sector (baseline)
- (c) Attribute Three: Ownership Type of the Investor Company (components listed below)
 - (1) State-Owned Enterprise
 - (2) Private Company (baseline)

One particular FDI profile is generated as a combination of three components, each single one of them randomly selected from each one of the main attributes.

The procedure for generating the two FDI profiles in a given binary-comparison scenario, as well as the elicitation of Willingness to Accept (WTA) is the following:

- 1 Firstly, given that we are particularly interested in comparing China with investors from other parts of the world, the country of origin for one of the FDI profiles will be fixed as China. As such, the country of origin for the other FDI profile will be randomly selected to be either the US or another EU country.
- 2 Apart from the country of origin, other attributes of the two FDI profiles in a given binary-comparison scenario will be the same, which means that **the actual randomization happens at the binary-comparison level**. For each choice comparison, one component from each one of the attributes will be randomly selected to generate a hypothetical FDI profile for that choice scenario. Afterwards, the country of origin of this FDI profile will be changed to China (the fixed component) to generate the other FDI profile in this binary-comparison scenario.
- 3 The general context of this binary-comparison scenario is framed as that a certain German medium-sized company (mittelstand) of 500 employees (fixed) is about to go bankrupt, and some particular FDI proposal (the contents of which will be randomly generated) will be proposed to buy out this company in order to save it. The US or the EU-country company can save half, i.e. 250 employees (fixed) for this German company. Then the other FDI proposal from China will be raised, and our respondent will be asked: **This Chinese investment should at least save how many jobs of the bankrupting German mittelstand, such that you will prefer (accept) the Chinese investment over the US/EU investment?**
- 4 The respondent will be told to note down his or her answer in an open-ended blank, where he/she could only key in positive integers ranging from 0 to 500 (the maximum size of the company which is fixed). This is the Willingness to Accept outcome we intend to measure. Two examples are illustrated below in [Figure 4](#) and [Figure 5](#).

Given that China will be treated as the baseline country fixed in one of the FDI profiles, in total there will be $2 \times 3 \times 2 = 12$ potential FDI profile candidates. They are listed below:

- 1) **State-Owned Enterprise** from **the United States** investing in a German company in the **low-tech manufacturing sector**
- 2) **State-Owned Enterprise** from **the United States** investing in a German company in the **high-tech manufacturing sector**
- 3) **State-Owned Enterprise** from **the United States** investing in a German company in the **non-manufacturing sector**
- 4) **Private Firm** from **the United States** investing in a German company in the **low-tech manufacturing sector**
- 5) **Private Firm** from **the United States** investing in a German company in the **high-tech manufacturing sector**
- 6) **Private Firm** from **the United States** investing in a German company in the **non-manufacturing sector**
- 7) **State-Owned Enterprise** from **another EU country** investing in a German company in the **low-tech manufacturing sector**
- 8) **State-Owned Enterprise** from **another EU country** investing in a German company in the **high-tech manufacturing sector**
- 9) **State-Owned Enterprise** from **another EU country** investing in a German company in the **non-manufacturing sector**
- 10) **Private Firm** from **another EU country** investing in a German company in the **low-tech manufacturing sector**
- 11) **Private Firm** from **another EU country** investing in a German company in the **high-tech manufacturing sector**
- 12) **Private Firm** from **another EU country** investing in a German company in the **non-manufacturing sector**

As mentioned before, the effective randomization of the FDI profile will occur at the binary-comparison scenario level, as such given that each treatment group has 800 individuals, if we let each respondent make 3 comparisons, our effective sample size for the modified conjoint analysis in each treatment group will be $800 \times 3 = 2,400$ observations.

Furthermore, in randomly selecting the FDI profile for a given comparison scenario, we will adopt a sampling method without replacement, such that each respondent won't face the same FDI profile twice in the three consecutive binary-comparison scenarios he/she has to deal with.

Q9: Second binary-comparison scenario for the respondent

Q10: Third binary-comparison scenario for the respondent

Q11: Fourth discrete-choice scenario for the respondent (the fourth choice is optional)

We will ask each respondent to make at least three comparisons (i.e. to make three choices) in the modified conjoint analysis part of the experiment. As such, there will be **THREE** questions in total, which will account for **Question 8 to Question 10** in terms of the total ranking of questions in the survey. **Question 11** is optional if three choice comparisons are judged sufficiently long.

Q12: Do you feel that this survey was biased? (single choice only)

- Yes, I felt there was a left-wing bias in the survey.
- Yes, I felt there was a right-wing bias in the survey.
- No, it did not feel biased.

A German medium-sized company (mittelstand) of **500 employees** in the **low-tech manufacturing sector** is about to go bankrupt. Two foreign companies are making investment plans to buy this company out. The profiles of these two FDI proposals are the following.

Proposal A

A **state-owned company** coming from **another EU country** plans to buy out this German company in the **low-tech manufacturing sector** on the verge of bankruptcy.

After this investment, it could save at least **250** jobs for this German company.

Proposal B

Now another **state-owned company** coming from **China** also plans to buy out this German company in the **low-tech manufacturing sector** on the verge of bankruptcy.

After this investment, how many jobs do you think the Chinese firm has to save, such that you will prefer the Chinese investment plan over the EU-country investment plan?

Jobs to be saved by the Chinese company:
_____ (0 to 500)

Figure 4: An Example of the Modified Conjoint Analysis/Comparison

A German medium-sized company (mittelstand) of **500 employees** in the ***high-tech manufacturing sector*** is about to go bankrupt. Two foreign companies are making investment plans to buy this company out. The profiles of these two FDI proposals are the following.

Proposal A

A ***private company*** coming from ***the United States*** plans to buy out this German company in the ***high-tech manufacturing sector*** on the verge of bankruptcy.

After this investment, it could save at least ***250*** jobs for this German company.

Proposal B

Now another ***private company*** coming from ***China*** also plans to buy out this German company in the ***high-tech manufacturing sector*** on the verge of bankruptcy.

After this investment, how many jobs do you think the Chinese firm has to save, such that you will prefer the Chinese investment plan over the American investment plan?

Jobs to be saved by the Chinese company:
_____ (0 to 500)

Figure 5: An Example of the Modified Conjoint Analysis/Comparison

References

- Alesina, A., Miano, A., & Stantcheva, S. (2022, 03). Immigration and Redistribution. *The Review of Economic Studies*. Retrieved from <https://doi.org/10.1093/restud/rdac011> (rdac011) doi: 10.1093/restud/rdac011
- Barrera, O., Guriev, S., Henry, E., & Zhuravskaya, E. (2020). Facts, alternative facts, and fact checking in times of post-truth politics. *Journal of Public Economics*, 182, 104123.
- Chilton, A. S., Milner, H. V., & Tingley, D. (2020). Reciprocity and public opposition to foreign direct investment. *British Journal of Political Science*, 50(1), 129–153.
- Hedegaard, M. S., & Tyran, J.-R. (2018). The price of prejudice. *American Economic Journal: Applied Economics*, 10(1), 40–63.
- Li, X., Kuang, Y., & Zhang, L. (2019). Misperceptions of chinese investments in canada and their correction: evidence from a survey experiment. *Canadian Journal of Political Science/Revue canadienne de science politique*, 52(2), 285–302.
- Raess, D. (2021). The demand-side politics of china's global buying spree: managers' attitudes toward chinese inward fdi flows in comparative perspective. *Review of international political economy*, 28(6), 1555–1581.
- Xia, X., & Liu, W.-H. (2021). China's investments in germany and the impact of the covid-19 pandemic. *Intereconomics*, 56(2), 113–119.
- Zeng, K., & Li, X. (2019). Geopolitics, nationalism, and foreign direct investment: Perceptions of the china threat and american public attitudes toward chinese fdi. *The Chinese Journal of International Politics*, 12(4), 495–518.