How does the type of crisis influence the level of solidarity? By looking at: pandemics, natural disasters, military attacks, climate change, technological backwardness, refugee inflows, high unemployment, and high debt.

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S1715283

Thesis subject: European Solidarity

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Word count: 16,600

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Abstract

This paper will evaluate the reasons behind different solidarity levels per type of crises. The crises that are examined are: epidemics, high debt, natural disasters, military attacks, climate change, technological backwardness, refugee inflows, and high unemployment. As soon as a crisis arises and solidarity manifests itself, it is important to look for the reasons behind the difference in levels of solidarity because, with such knowledge, the consequences of a regional crisis can be dealt with accordingly. The theoretical framework indicates that there are three main reasons for the diverse levels of solidarity per type of crisis: (1) need, (2) control, and (3) identity. The first variable refers to the urgency of the help necessary. For instance, in a natural disaster or a pandemic, immediate help is required, since there may be loss of lives. On the other hand, a technological backwardness crisis does not require urgent help. The second variable, control, refers to the remedy that a country or individual can provide itself in a given situation. For instance, if an exogenous crisis occurs, such as a natural disaster, the occurrence is completely out of the hands of a given country. As the country can do little about this needy situation, people are inclined to feel more solidarity towards such a country. The third variable, identity, looks at the question whether you feel close to your inner circle and how broadly you define the inner circle. With the view of the European Union, this paper analyzed which people define their fellow EU-citizens as their inner circle. When performing a regression analysis, all three variables show a statistically significant effect on the willingness to help (solidarity).

Keywords: solidarity, crisis, deservingness criteria, COVID-19, multilevel logistic regression, EU.

Introduction

Solidarity between the European Union (EU) member states is important in order to maintain a stable political and economic union and to sustain a good relationship between all the EU-countries. Therefore, solidarity is included in the Charter of Fundamental Rights of the European Union (2012). Although there may be a need for solidarity during different types of crises, the level of solidarity differs in practice. This paper will evaluate the reasons behind these differing solidarity levels. Solidarity can be defined and operationalized in multiple ways and this paper will look specifically at solidarity in the form of the willingness of individuals to help people in other countries through aid from the national government.

During different types of crises, the EU leaders and government officials have stressed the importance of solidarity. For instance, during the corona-crisis, many EU leaders have underlined the importance of solidarity in order to face the challenges that the crisis caused (Cicchi, Genschel, Hemerijck, & Nasr, 2020). Solidarity between the EU member states is essential in order to be able to tackle both the economic, as well as the health-related consequences of the corona-crisis. The overall EU-economy declined by 3.8% in the first quarter of 2020 and at the time Eurostat predicted that this decline would continue during the remainder of the year 2020 and 2021 (Eurostat, 2020). The economies of EU countries are heavily intertwined and therefore, if one member state's economy declines, others will likely follow. To prevent this downturn from happening, a solidarity approach is necessary. Moreover, there is a health aspect because there is a need for face masks, medication, and health care capacity in hospitals to prevent further spreading of this virus (European Commission, 2020).

Similarly, during the financial crisis of 2008, there was an urgent need for solidarity and specifically financial aid from the European Central Bank (ECB) and the International Monetary Fund (IMF) (Gerhards et al., 2019, p. 12). The EU has felt the economic consequences of this crisis strongly as the Gross Domestic Product (GDP) of the EU dropped by an estimated four percent in 2009, an economic decline never experienced before (European Commission, 2009). Furthermore, the ECB expected write-offs of around $649 billion on securities and loans by euro-zone banks in the period 2007-2010 alone (ECB, 2009, p. 103). Unemployment rose in the EU-27 by 5.4 million between March 2008 and May 2009 (Eurostat, 2009). Within the EU, several countries were hit particularly hard by the crisis. For example, Hungary was the first country to request external financial assistance, mainly due to high debt levels, a rapidly growing current account deficit and, importantly, domestic

borrowers of foreign loans (Hodson & Quaglia, 2009, p. 942). Additionally, several other eurozone member states such as Greece, Portugal, Ireland, Spain and Cyprus were unable to repay their public debts that were caused by saving debt-ridden banks, without the help of other euro countries, the ECB or the IMF (BBC, 2012).

Besides (1) pandemics and (2) financial crisis (high debt), there are numerous other crises that could take place in the EU, such as (3) natural disasters, (4) military attacks, (5) climate change, (6) technological backwardness, (7) refugee inflows and (8) high unemployment. These are the different crises examined in this paper. These crises are selected as they are represented in the dataset of Cicchi et al. (2020). Furthermore, these researchers operationalize solidarity by asking respondents in a survey if they think that their government should help others in times of a specific crisis. This paper uses the same operationalization of solidarity.

This paper's research question is: "*how does the type of crisis influence the level of solidarity?"* Previous research has claimed that the level of solidarity can be dependent on the type of crisis (Cicchi et al., 2020). They argued that more solidarity arises when there is a salient issue or an external shock, where the possible recipient of the solidarity benefit cannot do anything to forestall the event taking place. Consequently, one would for example expect to see more solidarity during the COVID-19 pandemic than during the 2008 financial crisis. Besides, the level of control an individual or a country has on the current situation, there are more factors that could influence the level of solidarity per crisis. For instance, if there is a greater need for support, for example for the disabled or when an epidemic occurs, then more people are inclined to show solidarity and are willing to help. Moreover, in case individuals feel more connected towards a group, they are more likely to feel solidarity. One can assume that if an individual feels more connected towards the EU as a whole, then they are more likely to feel solidarity towards their fellow EU-citizens. Hence, there are three factors that could explain the difference in solidarity per type of crisis: level of control, level of need and feeling of identity. In order to examine if the above-mentioned factors, level of control, level of need and identity influence the level of solidarity, a multilevel binary logistic regression will be performed.

Furthermore, there are a couple of aspects that make this research a contribution to science and society. As soon as a crisis arises and solidarity manifests itself, it is important to look for the reasons behind the levels of solidarity because, with such knowledge, the consequences of a regional crisis can be dealt with accordingly. If there is more knowledge on and a better

understanding of the underlying motives for solidarity during different kinds of crises, then the EU, as well as other international organizations and national governments, can work together to influence solidarity and consequently work towards an ideal level of solidarity in order to tackle the regional challenges at hand. Furthermore, if there is knowledge on what the public feels as justified on 'who should get what and why?' then it would help to legitimize the implementation of certain social policies during a specific crisis because they have the support of the public (van Oorschot, 2000, p. 34). Moreover, this research could be a contribution to the sociological perspective of the deservingness criteria by certain social groups as little research exists on different types of crises and the deservingness criteria on an international level (van Oorschot, 2000, p. 35).

This research will be an extension of the research done by Cicchi et al. (2020). Their research lacked a theoretical framework as to why there might be a difference in solidarity during different types of crises and their paper did not consider control factors such as income, gender and political preference in their relationship between the type of crisis and solidarity. Therefore, this research will be an extension of the existing literature.

Theoretical framework

This theoretical framework will firstly evaluate the literature at the individual level, assessing the characteristics through which certain individuals are deemed more deserving of solidarity than others. In general, individuals who need more help and are incapable to change their current needy situation can rely on more support for social benefits from society. Secondly, the existing theory on the relationship between deservingness characteristics and solidarity is transferred into a new theory. This new theory looks at how the difference in the type of crisis can influence the level of solidarity people feel towards the group in need of support. There are three possible reasons that the level of solidarity could differ per crisis. Firstly, individuals hit by a crisis that is created by an 'exogenous shock' may expect more solidarity from society. Secondly, the more help is required during a crisis, the more individuals should be willing to help. Thirdly, individuals are expected to feel more solidarity towards others who look similar to them.

Characteristics leading to more solidarity

The level of solidarity felt by an individual towards victims of a crisis is dependent upon the question of whether the solidarity provider sees others as deserving the solidarity benefit. Often, elderly, sick, infirm people, children and the impotent poor are seen as deserving. On the other hand, unemployed, idle paupers, those who are able to work but are not doing so, are seen as undeserving of receiving any form of solidarity. Because people view this distinction between the deserving and undeserving as justified, this distinction has even been made in legislation at the end of the Industrial period. For instance, the British Poor Law of 1934 and the Dutch 'Armenwet' of 1854 both differentiated between those deserving and those not deserving (Golding and Middleton, 1981; Katz, 1989).

Besides there being a distinction included in our legislation, research has found support for this distinction being made by society at large as well. Coughlin (1980) was one of the first who investigated the difference between the solidarity expressed towards different groups. He found that there is a similarity in the ranking in all investigated countries on which groups deserve more solidarity and therefore he spoke of "a universal dimension of support". This support was the highest towards elderly, followed by sick, disabled people and unemployed with children. Furthermore, this researcher concluded that people who were unemployed and received social assistance were viewed as the people who least deserved our solidarity (Coughlin, 1980). Other researchers, such as Petterson (1995), Oorschot and Arts (2005) and Larsen (2008) have later confirmed this ranking and elaborated more on the logic behind this

distinction between the groups. Petterson (1995) found that more people supported elderly than people receiving social benefits and Oorschot and Arts (2005) found similar results by looking at 23 European countries. Furthermore, Larsen (2008) took an Australian sample and found that people indeed viewed young unemployed as less deserving of support than older unemployed. Moreover, Cook (1979), De Swaan (1998) and Oorschot (2000) found multiple criteria where the levels of solidarity per group can be explained. Therefore, table 1 provides more clarity about the differences and similarities between various characteristics that researchers have deemed important and which characteristics can influence the level of solidarity.

Table 1

	Control	Need	Identity	Attitude	Reciprocity
Cook	Responsible	Need		Gratefulness Pleasantness	
De Swaan	Disability		Proximity	Docility	
Van Oorschot	Control	Need	Identity	Attitude	Reciprocity

The distinction between unemployed and disabled is made more concrete by the deservingness criteria of Cook (1979). She found that there were four different deservingness criteria: (1) the level of need, (2) locus of responsibility (how responsible you are for a given situation), (3) gratefulness and (4) pleasantness (Cook, 1979). The first two criteria were deemed the most important according to Cook (1979). Thus, the higher the level of need, and if a desperate situation was beyond the control of an individual, the higher the level of support. Furthermore, Will (1993) also investigated the deservingness of people. Similar to Cook's second deservingness criterion, he found that if a situation was beyond the control of an individual, people found that person to be more deserving of solidarity. Therefore, physically disabled, sick and a combination of unemployed and large family composition, were seen as more deserving, according to Will (1993). In addition, he found that people who were still trying to work despite their disabilities and hardships had characteristics that made people view them as more deserving. The findings of Cook (1979) and Will (1993) correspond with the findings of Petterson (1995) and Coughlin (1980) that people who are more in need and who are less responsible for their given situation, like elderly and sick people, are more deserving of our help.

Moreover, other researchers have also found different criteria for how deserving individuals are of society's solidarity. For example, De Swaan (1998) found three criteria to differentiate between the deserving and the undeserving: (1) disability, (2) proximity and (3) docility. The first criterion, disability, determines if people are able to make a living on their own. Those people who are not capable of providing for themselves, are the ones who are more deserving of our help. This criterion is quite similar to the second condition for solidarity of Cook, the locus of responsibility. The second criterion, proximity, refers to a kinship relationship, where people feel more closely related towards one other (De Swaan, 1988). The concept of social proximity is closely related to geographical proximity, described by Cicchi et al. (2020). In general people who live geographically closer to each other, also look more alike and feel more kinship. This social proximity is also in accordance with the in-group preference theory, where there is an 'us'-against-'them' feeling and there might consequently be less support for ethnic minorities (Messé et al., 1986). The third criterion, docility, refers to the degree in which the poor are actively trying to improve their current situation. People who are constantly asking and, at times, even demanding more financial support, are seen as more undeserving of help, while people who are actively trying to improve their current situation and hide it, are seen as more deserving (De Swaan, 1998). This is in accordance with Knegt's (1987) claims, who found that the municipality social service in the Netherlands had an informal code, where compliant individuals were treated more generously than demanding individuals. Furthermore, the docility criterion is in accordance with the third condition of Cook (1979): gratefulness. This condition explains that people who express more gratitude for the received help, are more likely to get support. Therefore, De Swaan (1998) develops Coughlin's (1980) theory further by applying measurable criteria.

Based on the three criteria of De Swaan (1998), in combination with the conditions of Cook (1979) and the works of Pettersen (1995) and Coughlin (1980), Oorschot (2000) defines five conditions to differentiate who is deserving of solidarity benefits and who is not. These five conditions are: (1) control, (2) need, (3) identity, (4) attitude and (5) reciprocity. Because these five conditions lay the foundation for Oorschot's work, the theory is also called the CARIN theory.

The first condition refers to the extent to which people have control over their current needy situation. Hence, the less control an individual has over his/her needy situation, the more solidarity can be expected of society (Oorschot, 2000). Furthermore, this criterion is similar to the deservingness condition of Cook (1979) and the disability criterion of De Swaan

(1998). Moreover, control is a factor that according to Will (1993) is correlated with feelings of deservingness. For example, disabled and sick are usually seen as having less control over their needy situation, as compared to the unemployed. This example will be more extensively discussed and explained in the next paragraph.

The second condition, the degree of need necessary, is also mentioned by previous authors, such as Cook (1979). The condition entails that the higher the level of need, the more solidarity will be evoked (Oorschot, 2000). Furthermore, this resembles a very intuitive response, because individuals are less inclined to give money to a wealthy billionaire but would rather support someone who is homeless. Therefore, the needy, such as the disabled, do receive more solidarity. However, there are more conditions that play a role.

The third condition, identity, refers to the feeling of group-identity and is in accordance with the proximity criterion found by De Swaan (1998). Hence, people feel more solidarity towards people who are part of the same group and feel less solidarity towards people with whom they do not share any kinship (Oorschot, 2000). Therefore, the level of solidarity towards immigrants may be less than the level of solidarity towards individuals from the same country.

Furthermore, the fourth condition, attitude is related to both Cook's condition of gratefulness as well as De Swaan's docility criterion. However, Oorschot (200) extended this condition slightly, arguing that the higher the gratefulness, docility and compliance an individual expresses, the more solidarity can be expected.

The fifth condition, reciprocity, entails that society gets something in return from the individual who receives a benefit. Both the gratefulness condition of Cook and the docility criterion of de Swaan (1998) can be seen as a higher form of reciprocity (van Oorschot, 2000). Although people tend to appreciate reciprocity, the reciprocity can come in different shapes and forms. For instance, a large part of society does not expect the poor to give a lot back to society because they cannot afford to do so, therefore, society often accepts the poor to give a reciprocity substitute (Komter, 1996). This form of reciprocity can be seen in terms of a smile for getting a benefit but also for instance that the elderly now receive benefits that they have paid for during their working life (van Oorschot, 2000). Therefore, a lot of people in a society think that it is logical that the unemployed need to comply with numerous behavior conditions before they receive benefits in order to reciprocate the obtained solidarity (Clasen & Clegg, 2007). Such behaviors include increasing job-search effort, performing voluntary work and enhancing employability (Gielens, Roosma, & Achterberg, 2019).

Furthermore, based on the CARIN theory, Meuleman, Roosma and Abts (2020) evaluate the reasoning behind the level of solidarity that is expressed towards different groups. They make a distinction between four different groups who need benefits: unemployed, sick, elderly, and ethnic minorities.

Similar to the findings of Pettersen (1995) and Coughlin (1980), other researchers have also found that the unemployed were viewed as less deserving of receiving benefits. There is a negative stereotype around being unemployed because people consider them as lazy and unwilling to find a job (Golding and Middleton, 1982; Van Oorschot and Meuleman, 2014). In addition, the unemployed are often seen as responsible for their own fate (Golding and Middleton, 1982) and even seen as abusing the benefits that they receive (Roosma, Van Oorschot, & Gelissen, 2016). Therefore, the unemployed are often expected to do something about their current disadvantaged situation, such as more actively trying to find a job or perform voluntary work (Gielens et al., 2019). So, how people view the unemployed is often a combination of control (how much can they do about their situation?), reciprocity (how much are they giving in return to society?) and attitude (how are they handling their situation?) (Meuleman et al., 2020). On a separate note, how much unemployed give back towards society is also dependent on the duration of their unemployment and time on social benefits.

The sick and disabled are seen as more deserving because they cannot do anything about their disadvantaged situation, according to Pettersen (1995) and Coughlin (1980). Therefore, most people support the existence of an extensive healthcare system in their countries (Missinne, Meuleman, & Bracke, 2013). In nearly all EU-countries the healthcare system has universal coverage and provides medical care to all residents. However, even though the sick and disabled are seen as more deserving of our help, there are financial strains on our healthcare system, in part due to an aging population. Furthermore, people notice that sickness is related to your lifestyle as well. For instance, smoking, an unhealthy diet, lack of exercise and performing dangerous sports can lead to more illnesses (Brown, 2013). Moreover, the rising costs of our healthcare system and the awareness that sickness is also related to lifestyle leads to more people not wanting to contribute that much to the health care benefits of the sick (Van der Aa, Hiligsmann, Paulus, & Evers, 2017). On a separate note, usually, healthcare systems do apply to everyone, but rich and affluent people are seen as less deserving of public health care (Van der Aa et al., 2017). Therefore, a health care system that is mainly focused on the poor disabled and sick, would get more support. In short, the control that people have over their situation, in combination with the need for public healthcare are important determinants for the level of solidarity.

Elderly who are retired are also seen as deserving our solidarity because they cannot generate a proper income on the labor market (Pettersen, 1995; Coughlin, 1980, Roosma et al., 2014). Therefore, in all EU-countries, there is a universal pension system. However, similar to the healthcare system, there are financial constraints to the pension system due to demographic changes as people live longer. Unlike the healthcare system, most people would prefer to pay more taxes than lower pension levels (Velladics, Henkens, & Van Dalen, 2006). Furthermore, the solidarity for elderly is specifically focused on those who are poorer and cannot take care of themselves (need-factor). Besides, the solidarity is quite high because the elderly have reciprocated the solidarity benefits as they have already provided their share to society by working and paying taxes in the past and continue to reciprocate by being grateful for their pensions (Van Oorschot, 2006).

Lastly, minority groups are at times seen as less deserving our solidarity as compared to people who are more similar to the provider. This reasoning can best be explained based on the in-group theory, describing an 'us' against 'them' feeling and identity plays a great role in who deserves what (Kootstra, 2017). Furthermore, the level of deservingness is determined by the individual position in a society because if somebody belongs to a minority or is disabled himself, he/she might feel more solidarity towards these groups (Jeene et al., 2013). Therefore, the third condition of Oorschot, identity, is an important determinant to predict the level of solidarity towards a group.

Similar to Meuleman et al. (2020), this paper will apply the CARIN method to different types of crises. However, there is still an explanation necessary as to why we prefer to apply the CARIN method to the case of the different types of crises over other methods. The criteria of De Swaan (1998) and the conditions of Cook (1979) are also adequate variables to measure the deservingness. However, the CARIN method is more comprehensive and looks at more criteria to determine the level of solidarity. Furthermore, besides the methods of De Swaan (1998) and Cook (1979), there are few deservingness methods drawn up that can truly be operationalized and measured. Therefore, the CARIN method will be applied to different types of crises.

New Theory: different types of crises and solidarity

The CARIN theory is used to determine the level of deservingness of our solidarity on the basis of groups inside a country but can also be applied towards groups/countries that are hit harder by different types of crises. Therefore, based on the CARIN theory, a predictive logic of the distinct solidarity levels per type of crisis can be explained. The different kinds of crises that this paper differentiates are: debt, unemployment, technology, refugee, climate change, pandemic, natural disaster.

The first condition to determine the deservingness of help is control. As stated above, the control variable refers to how much control a person has over his/her needy situation. A person can do little to nothing about ending up in a pandemic or natural disaster and therefore our prediction would be that there is more solidarity towards people who are hit by a pandemic and natural disaster than those facing unemployment or financial debt. Similarly, Cicchi et al. (2020) state that solidarity is higher when the crisis is caused by a salient issue or an external shock, such as a pandemic or natural disaster. Therefore, the control condition described by Oorschot (2000) and the explanation of Cicchi et al. (2020) of why there might be more solidarity in different types of crises, go hand in hand. Moreover, the control unemployed individuals have over their current situation is often viewed as higher and therefore they are perceived as less deserving, according to Meuleman et al. (2020). *Consequently, the hypothesis is that individuals or countries that are hit by a crisis beyond their control (exogenous shock), such as a pandemic, natural disaster, military attack and climate change, are seen as more deserving of our help.* Especially, in comparison to crises caused by endogenous shocks, such as technological backwardness, refugee inflows, high unemployment and high debt.

The second condition, the amount of support needed, is a determinant for the extent of solidarity people deserve. Therefore, the higher the level of need of an individual, the more he/she is viewed as deserving support. The extent of need is difficult to determine per crisis because it is dependent upon the severity of the crisis itself, rather than the type of crisis. However, in general, being hit by a natural disaster, pandemic, or military attack can be seen as a crisis where people are more in need of assistance due to a potential loss of life. Especially, in comparison with technological backwardness, high unemployment, high debt and refugee inflows, where financial assistance is needed with less urgency than during a natural disaster, as the lack of such immediate financial aid will not instantly result in the

deaths of the needy. *Consequently, the second hypothesis is that the more need is required for a country in a crisis, the more individuals view that country as deserving support.*

Furthermore, the identity condition explains that the higher the degree of group belonging, the more they are perceived as deserving help. Because of this 'insider' versus 'outsider' theory, people might feel less solidarity towards refugees and be less inclined to offer help during a refugee crisis (Meuleman et al, 2020). This is in contrast to the other crises, debt, unemployment, technology, climate change, pandemic, natural disaster, which are not identity related. Furthermore, identity/social proximity and geographical proximity are related terms, in the sense that people who live geographically closer to each other are likely to feel more social proximity. This could explain why Cicchi et al. (2020) found a geographical proximity bias. Hence, European solidarity is higher towards countries that are geographically closer to one another. For example, Sweden feels more solidarity towards Finland and less solidarity towards Spain. Interestingly, the only country where inhabitants were not viewed as more deserving of solidarity due to the geographical proximity bias is the United Kingdom (UK). Cicchi et al. (2020) explain this phenomenon as a 'Brexit-punishment' effect. Hence, the identity condition could explain why there is less solidarity towards migrants, however, the geographical proximity bias does only explain a difference in solidarity between countries and not a difference between types of crisis.

Luckily, there is an explanation related to 'identity' and 'insider-outsider theory' that could provide an insight into the difference in solidarity per type of crisis. The identity criterion explains why there is less solidarity towards migrants and less solidarity towards citizens in other EU-countries in comparison to citizens from one's home country. However, the level of solidarity differs between people who identify as Europeans and those who have a more nationalistic view. Therefore, numerous researchers, such as Lahusen and Grasso (2018) and Verhaegen (2018), found a correlation between people with a stronger EU-identity and their willingness to contribute financially to other EU-countries. Furthermore, the distinction between these two groups is often based on nationalist versus cultural-open and cosmopolitan citizens (Kleider & Stoeckel, 2019). One explanation for the significant difference in solidarity between those two groups is that nationalists define their insiders as a thinner group than cosmopolitans who might define their insiders more broadly or even extend it to the entire EU-population. Therefore, besides the level of control and need, there is a third factor that could influence the level of solidarity: their view of the EU. This variable could namely indicate how broadly they define their insider group. In short, the identity criterion refers to

the insider-outsider theory and the view of the EU could be an indication of how large the group of insiders is for individuals. The prediction is that the more you feel connected to the EU, the likelier you are to provide help and act in solidarity. *Consequently, the third hypothesis is that the more pro-EU individuals are, the more they tend to be willing to help other EU-citizens.*

Additionally, a debate exists among different researchers if, besides the relationship between cultural distinction and the level of solidarity, the left-right dimension also plays a role in the level of solidarity. For instance, Kuhn and Kamm (2019) state that the left-right dimension plays an insignificant role in the level of solidarity. On the other hand, Kleider and Stoeckel (2019) find that the left-right dimension is an important determinant that influences the level of solidarity. There is a general distinction that left-wing people are more willing-to-pay and act more in solidarity than right-wing people (Bechtel, Hainmueller, & Margalit, 2014). However, it could also be that right-wing people are more willing to pay only for specific types of crises than left-wing people. Hence, the left-right dimension influences the level of solidarity per type of crisis. Therefore, the left-right dimension is added as a control variable and the hypothesis is that left-wing people tend to be more willing to help than right-wing people.

Moreover, the attitude condition refers to the behavior of an individual towards the possible receiver of help. As stated above, the more docility, gratefulness, and compliance by an individual, the more deservingness arises. Furthermore, it is difficult to differentiate the attitude of recipient individuals during a specific type of crisis. To determine the attitude of individuals, a closer look at a specific case study is necessary. However, conclusions drawn from an individual case study are difficult to generalize towards a specific type of crisis. For instance, Greece was hostile towards the support received from other EU-countries during the financial crisis of 2008. However, it does not mean that during all other financial crises, people/countries will not behave as the donor would expect and act similar to Greece.

Lastly, the previous four conditions are discussed and therefore only an elaboration about the reciprocity condition is necessary. This condition entails that the higher the previous, current, or future payback, the higher the level of solidarity. In line with the argumentation of the attitude condition, it is difficult to generalize and determine the level of reciprocity during a specific type of crisis. Therefore, in order to determine the level of reciprocity, a closer look needs to be taken at a specific event/crisis that takes place and this cannot be generalized towards a level of reciprocity that takes place during a specific type of crisis. Consequently,

this paper cannot determine if the level of reciprocity is different during a crisis of debt, unemployment, technology, refugee, climate change, pandemic, or a natural disaster.

Hence, the CARIN theory is applied to the different types of crises, in order to determine the possible logic behind the level of solidarity received during a specific crisis. This research will focus on the level of control (exogenous vs. endogenous shocks), the level of need and the identity condition (view of the EU) because the other conditions, such as attitude and reciprocity, are harder to generalize towards a specific type of crisis. Furthermore, the hypothesis is that if a country is hit by a crisis that is beyond the control of that country (exogenous shock/no control), if that crisis also requires a lot of help and if an individual has a pro-EU view than the chances of that individual being willing to help is high.

Besides the fact that the CARIN methodology is suitable to apply to different types of crises, it is important to keep in mind that perceptions of deservingness can change over time and context. For instance, even though unemployed are generally seen as acting irresponsibly (free ridership), this perception changed during the financial crisis of 2008. During this crisis, people were more often viewed as not responsible for losing their job as they were not responsible for the crisis. In 1960-1970, the unemployed were even seen as one of the most deserving groups (Jensen, 2019). Besides the changes in attitude over time, the context and culture that an individual has grown up with can also play a role. For instance, unemployed are perceived as less deserving and more responsible for their own actions in Anglo-Saxon countries, such as the UK, as compared to continental European countries (Feather, 1974; Feagin, 1975; European Commission, 1977). Furthermore, according to Van Oorschot, other aspects could also play a role such as gender, political preferences, education, and income.

Besides need, control and identity, other variables might also influence the level of solidarity and are therefore important to mention. For instance, political preference, religion, gender, and age might all influence solidarity. Hence, an expectation is that people who vote more left-wing tend to show more solidarity in comparison with right-wing voters (Lahusen & Grasso, 2018). Moreover, women in general vote more left-wing (Giger, 2009) and therefore might also act more in solidarity. Furthermore, more religious individuals tend to favor less welfare redistribution and therefore are less in solidarity with others (Stegmueller, Scheepers, & Roßteutscher, 2012). The reason for this difference between religious and non-religious people is that the historical church-state conflict over welfare provisions still influences individuals' preferences nowadays in Western Europe. Moreover, younger people act more in solidarity in comparison to elderly.

To conclude, this theoretical framework describes that there might be a significant difference in the level of solidarity per type of crisis, partly due to the level of control, level of need and group-feelings. In our research design, all these concepts will be operationalized.

Research Design

This paper's research question is: "*how does the type of crisis influence the level of solidarity?"*. As stated in the theoretical framework, the level of control ('exogenous vs. endogenous shock'), the level of need (a lot vs. little need), and the identity condition (view of EU) may explain the difference in solidarity per type of crisis. In order to examine if there is a significant difference per type of crisis and if the above-mentioned independent variables cause this difference, a qualitative research within the EU is performed. This research design chapter consists of three parts. Firstly, solidarity and crisis are conceptualized. Secondly, the specific dataset that this paper will use, and the positive and negative aspects of that dataset are discussed. Therefore, it is good to note, that this paper will use a secondary source of the survey conducted by Cicchi et al. (2020) in order to operationalize the research question. Thirdly, the method of analyzing the research question will be elaborate upon. Specifically, a multilevel binary logistic regression is done to determine if there is a difference in the level of solidarity between different types of crises and which variables explain this difference. After these steps are explained in the research design chapter, the used dataset will be presented. Subsequently, the results of the regression analysis are provided and discussed in the results chapter.

Conceptualization

Solidarity

This paper will use the conceptualization of solidarity by Lindenberg. He defines solidarity as '*a needy situation, where the individual follows norms to take others into consideration in his or her actions, although pursuit for short-term pleasure or perhaps also personal long-term benefit would suggest to act differently in that particular situation*.' (Laitinen & Pessi, 2014). There are multiple advantages of this definition. The main advantage is that this definition is in line with the operationalization of solidarity by Cicchi et al. (2020), that look at the willingness to help individuals. Similarly, this paper will apply the operationalization of solidarity by the above-mentioned authors. Furthermore, it is important that the conceptualization is in line with how this paper operationalizes solidarity.

Another advantage is that this definition takes both the flexible choice and fixed characteristics of the benefit receiver into account. Emilie Durkheim (2010) differentiated between mechanical and organic solidarity. Mechanical solidarity refers to an emotional-

based connection in a group because of similar backgrounds. Because of these similar backgrounds, people will be more likely to feel more solidarity for one another. There is, in other words, a collective conscience. On the other hand, organic solidarity is an aspect of solidarity that develops itself because of a division of labor. Mechanical solidarity is stronger because organic solidarity is more focused on individual uniformity (Durkheim, 2010). Durkheim's definition of solidarity has received criticism, especially because he used fixed characteristics and leaves little room for choice. For instance, mechanical solidarity is mainly based on social similarities, such as gender, nationality and ethnicity. However, because two individuals look similar does not always result in more solidarity among them. This is also dependent on the circumstances and choices that somebody makes. Moreover, organic solidarity is focused on the division of labor and again leaves little room for choice (Wachinger, 2018). Because of this criticism, other authors have changed their definitions of solidarity and looked more at such choices. Ultimately, the definition of Lindenberg holds both the flexible choice into account because people can choose to pursue personal long-term benefits, as well as fixed characteristics, namely the individuals with common norms and interests.

Besides, the fact that this definition leaves room for the flexible choice of individuals, another benefit of this definition is that it describes solidarity as a micro-level phenomenon. The macro-level dimensions focus on group cohesion, while the micro-level focuses more on the emotions and attitudes of individuals explaining this group cohesion (Laitinen & Pessi, 2014). This paper does look at group cohesion at an international level (the EU) but focuses on the aspects per type of crisis in order to determine the level of solidarity. Therefore, a closer look is taken at the reasons behind the solidarity levels per type of crisis. In other words, but comparable to Lindenberg's definition, solidarity is defined as helping and cooperating during a situation of need.

Furthermore, solidarity can be applied in many contexts and the focus of this research will be on welfare and fiscal solidarity. Hence, welfare and fiscal solidarity are mainly chosen because this topic plays an important role in the EU (European Commission, 2018). For instance, territorial solidarity is not really an issue when it comes to this organization. Therefore, the willingness to help mainly refers to the willingness to financially help individuals in other countries. Hence, the views of the respondent towards redistribution policies during the selected types of crises are examined. Other studies have also focused on the views of respondents about redistribution policies, such as Lahusen and Grasso (2018).

Crisis

Similar to the solidarity definition, there are multiple definitions of a crisis that still cause debate nowadays. However, unlike the definition of solidarity, there is more agreement on the definition of a crisis. Darling (1994) defines a crisis as: '*a feeling of panic, fear, danger or shock*'. Because of this feeling of panic, important decisions need to be made. Therefore, Turner and Pedgeon (1997) say that during a crisis, important decisions have to be made in a short period of time. If a crisis is only a point in time where a crucial decision needs to be made, then a crisis does not always have to lead to a negative impact but also leads to opportunities (Stranks, 1994). Therefore, the Chinese translation of the word crisis is expressed by two characters: 'wei' (meaning danger) and 'ji' (meaning opportunity) (Turner and Pedgeon, 1997). Although it is a contested translation, it gives a good impression that different authors mention that a crisis may also lead to more opportunities. However, besides the positive aspect, if a crisis is not dealt with properly, then a disaster emerges, according to Davies and Walter (1998).

Besides the general definition, a crisis can emerge from different circumstances, such as economic, political and natural disasters (Shaluf, Said, & Ahmadun, 2003). Therefore, this paper differentiates between eight types of crisis: (1) pandemics, (2) natural disasters, (3) military attacks, (4) climate change, (5) technological backwardness, (6) refugee inflows, (7) high unemployment, and (8) high debt. Specifically, these crises are chosen because they are analyzed by Cicchi et al. (2020). Hereunder, a short explanation and examples per type of crisis are given in the EU (including the UK).

(1) Pandemics: The countries within the current EU have known multiple pandemics, such as the black plague and the Spanish flu. However, only one pandemic has occurred during the existence of the EU and this COVID-19 pandemic has had a huge impact on the day-to-day life of individuals. Hence, people needed to spend time in a lockdown and the economy declined by 3.8% in the first quarter of 2020 (Eurostat, 2020) and already in April the number of fatal casualties in Europe passed 100 000 (Rankin, Burgenin, Willsher, & Walker, 2020). Therefore, a common EU approach vis-à-vis European solidarity and support is necessary. According to the World Health Organization (WHO) (2020) a pandemic is defined as 'a worldwide spread of a new disease'. This paper will adopt this definition of the WHO, a worldwide expert in health crises.

(2) Natural disasters: There have been numerous occasions of natural disasters within the EU (and the UK) and therefore several examples can be given. For instance, a closer look at one such natural disaster, namely flood, shows at least 700 casualties, nearly half a million people losing their homes and an estimated 25 billion euros in economic losses between 2000 and 2008 (European Environment Agency, 2018). So, what would be a proper definition of natural disasters? Cicchi et al. (2020) include a major earthquake or catastrophic flooding in the definition of natural disasters. Furthermore, a natural disaster is defined as: 'a catastrophic event with geological, atmospheric, and hydrological origins that has the potential to cause damage, disruption and fatalities (such as earthquakes, hurricanes, floods, droughts)' (Xu, Wang, Shen, Ouyang, & Tu, 2016).

(3) Military attacks: The first and second world wars caused such devastation that national leaders found a common denominator in avoiding a third world war. Partly because of this reason, the EU was established. Furthermore, a common national market and economic integration had to ensure that military attacks would not take place in the future (European Union, 2020). Moreover, within the framework of NATO, countries promised to help each other if one country would be attacked (Taylor, 2019). Therefore, nearly no EU country has ever been attacked by a non-EU country (except for the UK in the case of the Falkland Islands), let alone by each other. It is important to note that Cicchi et al. (2020) specify in their survey that it only concerns a military attack from a country outside the EU. Consequently, terrorist groups, such as the IRA, are not taken into account.

(4) Climate change: climate change can have a huge impact on the world as we know it. For instance, the melting of polar ice will lead to rising sea levels. Furthermore, extreme weather, such as heatwaves, heavy rainfalls, and droughts, have more frequently taken place because of climate change. Moreover, these extreme weather conditions can cause cold-and-heat-related deaths. Besides, economically, sectors such as tourism, forestry, agriculture and energy rely heavily on a stable temperature and therefore these sectors are more often in financial trouble (European Commission, 2020).

(5) Technological backwardness: Technological developments, such as cellphones, internet, heating systems in houses, water systems and biotechnology have a huge impact on the standard of living. Unfortunately, not all countries have access to this technology, some countries are even defined as being technologically lagging behind.

In these less developed countries, there is usually not enough capital to invest in technological developments and without these developments, there is little improvement in the standard of living in that particular country (United Nations, 2020). Of course, in the EU, there are no countries that lack internet access, however, there are still differences among EU countries in technological development.

(6) Refugee inflows: When a person is persecuted in his/her own country or when a war is taking place in their home country then that person has the right to seek asylum in another country, according to the Geneva Convention (UNHCR, 2020). However, when a migrant seeks economic gains, then he/she has no such rights. In Europe, there was a refugee crisis, when ISIL terrorized parts of Syria and Iraq. Concurrently, people fled from Afghanistan and Eritrea. Moreover, in 2015 over a million people fled their home country, seeking a refugee status in Europe (UNHCR, 2020). This caused tremendous instability, especially in Greece and the areas around the Mediterranean Sea, where there was an influx of refugees. Although, although most EU countries felt the legal obligation to help the refugees in accordance with the Geneva Convention, some countries refused to receive any refugees, such as Hungary and Poland (Schmidt, 2020). Therefore, the refugee crisis has an impact on the level of solidarity among EU countries.

(7) High unemployment: According to the OECD (2020), an unemployed is a person above 15 years old, without work (both paid or self-employed), available to work and seeking work already for a specific amount of time. There are multiple problems when there is high structural unemployment in a country. Firstly, it can lead to political instability and social unrest. Secondly, it does lead to a waste of resources and a lower GDP inside a country (Pettinger, 2019). Within a country there is always a few percent of friction unemployment due to search time for jobs, however, an unemployment rate exceeding 20% is regarded as extremely high (Department of Economic and Social Affairs, 2019).

(8) High debt: when a country has a high debt for a period of time and is unable to pay back the governmental debt, then we can speak of a debt crisis (Bondarenko, n.d.). This can for instance happen when the expenditures are more than the tax revenue for a longer period of time. In Europe, a debt crisis occurred after the financial crisis of 2008 because a number of countries, such as Greece, were unable to pay back their debt (BBC, 2012).

Operationalization

Case-selection: Why examine the EU?

The EU is built on solidarity and mutual trust. If there is a lack of solidarity, such an organization might not be stable. This statement is endorsed by Professor Heringa (2020), who says: 'European solidarity forms the most important pillar of the existence of the EU'. Furthermore, it is important to identify when citizens of the EU are willing to help each other during a particular crisis, especially when a world-wide pandemic is occurring. Consequently, this research would like to investigate the difference in solidarity per type of crisis. The EU is particularly interesting to investigate because the stability of the organization has become under pressure due to Brexit.

Data collection and description of the dataset

In order to measure the level of solidarity, the dataset by Cicchi et al. (2020) is used. This dataset is applicable to our research question since solidarity is measured during different types of crises. That is exactly what this paper would like to investigate. Furthermore, to elaborate further on this dataset, the above-mentioned researchers held a survey in April 2020 interviewing 21,779 adults in 13 EU member states and the UK. They asked around 70 questions concerning numerous topics, ranging from solidarity during different types of crisis, the instrument around which solidarity is organized, the trust in governments, and national versus EU identity. Moreover, they included a number of control variables, such as gender, age, political preferences, and religion.

The most important variable in this research paper is solidarity, and this variable is operationalized by a question within the survey of Cicchi et al. (2020). The question aims to identify whether there is a significant difference in solidarity between types of crisis:
Q21. Now, imagine another country in Europe/ the European Union that is suffering a natural disaster, such as a [type of crisis]. Do you think your country should or should not provide any major help?

Hence, solidarity is defined and operationalized by looking at the willingness to help others through aid from the national government. Therefore, only the stated preferences and not the revealed preferences are included in this research. Furthermore, the other variables are easy to extract from the dataset, such as view of the EU, type of crisis, political preferences, gender, age, and religion. After this extraction of the dataset, two variables need to be included: the level of need and control. Both are defined as binary variables. Hence, when a crisis demands

urgent and high need then a 0 is given and a 1 is given in case of low need. During a pandemic, natural disaster, or military attack, there is a high potential for the loss of lives, hence, these crises are seen as requiring urgent help. Similarly, the level of control is determined in a similar way. For instance, a natural disaster scores a 0 because people can do little about such an event. However, high unemployment is indicated as a 1 because the government can influence the levels of unemployment. Therefore, a cluster is made between crises that are caused by an exogenous shock on the one hand, and by an endogenous shock (control) on the other hand. Hence, pandemics, natural disasters, military attacks, and climate change are defined as exogenous shocks because these crises are beyond the control of an individual and sometimes even of a country. Furthermore, technological backwardness, refugee inflows, high unemployment, and high debt are seen as endogenous shocks because a country and for a large part an individual is supposed to be able to influence their current situation.

Validity & reliability

The use of secondary sources has advantages and disadvantages. The advantage of using a secondary source is that the scope is already quite extensive (McCombes, 2019). For instance, Cicchi et al. (2020) have included a lot of control variables that will be used in this research. Furthermore, the above-mentioned authors have interviewed 21,779 people. As a consequence, the conclusions of this paper can be generalized to the general population of both the EU and the UK. The survey data exists of respondents from 14 countries: the UK, Denmark, Finland, France, Germany, Sweden, Greece, Hungary, Italy, Lithuania, the Netherlands, Poland, Romania, and Spain. Furthermore, in January 2019 (when the UK was still a member of the EU), the EU had around 513.5 million citizens (Eurostat, 2020). Moreover, if the actual population is 513,500,000, and the total pool of respondents is 21,779, the confidence level is set at 95%, than the margin of error is less than 1 (margin of error = 1.96 * √0.5 * (1 - 0.5) / √ (513500000 - 1) * 21779 / (513500000 - 21779) = 0.98 / 147.58 * 100 = 0.664). Therefore, a sample size of 21,779 people is large enough to generalize the conclusions of this paper to the total population of the EU. It is important to note, though, that some individuals will be listed as missing and therefore the margin of error will be slightly higher.

However, the disadvantage of the use of secondary data is that there is no control mechanism to see if the data is reliable. In addition, changing or adding content is usually not possible

(McCombes, 2019). For instance, this dataset only measures the stated preferences and not the revealed preferences. Hence, the researchers ask for the willingness-to-pay when a crisis would occur and they do not measure whether the respondents would actually contribute to the crisis at hand. Although, it is good to note that revealed preferences are quite hard to measure since only a few of these crises, such as a natural disaster, have recently occurred in the EU (and the UK). Furthermore, an individual is usually not self-contributing to the crisis at hand, as the financial aid is mainly organized by the national government. Therefore, this research only looks at the stated preferences. Nonetheless, future research can measure the revealed preferences and compare, for instance, a financial crisis with a pandemic crisis. Another aspect that cannot be changed in this dataset is the timeframe in which the respondents are examined. The survey data only look at the opinions of respondents in a given time. Therefore, this paper applies a cross-sectional research within the EU to investigate this difference at a certain point in time. In future research, it might be beneficial to evaluate if the level of solidarity differs over time and therefore perform a longitudinal research. This paper will only look at one point in time, namely 2020, because the available survey does not include an extensive timeframe.

Method of analyzing/ regression analysis

A regression analysis is used frequently to explain and investigate the relationship between independent and dependent variables. A regression is appropriate since this paper would like to investigate a relationship between solidarity and different independent variables (control, need, and identity). In the theoretical framework, these three factors emerged that could influence the levels of solidarity. Furthermore, in the regression analysis, different control variables are included, such as political preference, religion, gender, and age. The expectation is that younger people are more willing to help than elderly. Furthermore, more left-wing people will be more likely to be willing to help in comparison to right-wing people. Moreover, more religious individuals tend to favor less welfare redistribution and therefore are less in solidarity with one other (Stegmueller et al., 2012). Therefore, a cluster of all religions is made to compare with non-religious people.

Nevertheless, a choice still needs to be made in order to determine what the right type of regression analysis is, and therefore the advantages and disadvantages of different methods are discussed. There is one independent variable, the willingness to pay (operationalization of

solidarity), which can be transformed into a binary variable if the people who 'did not know' whether they are willing to help' are listed as missing. Besides, the removal of this group from the dataset is also in line with the theoretical framework, because this paper does not explain why people would not know whether they are willing to help. Therefore, removing these respondents is not only necessary to execute an appropriate regression analysis, but it also is in line with what this paper would like to determine: the difference between people who are willing to act in solidarity and those who are not.

However, the respondents are asked 8 times if they are willing to help (per type of crisis). Therefore, the observations are not independent, and the execution of a binary logistic regression is not appropriate. This paper could, of course, perform a binary logistic regression per type of crisis, where 8 separate regressions are performed. However, if 8 regressions are performed, then the independent variables need and control could not be taken into account, since they are related to the type of crisis. For instance, natural disasters, pandemics, military attacks, and climate change, were defined as crises beyond the control of a country. If a closer look was taken at only a natural disaster, then the independent variable control would be all the same during that specific crisis. Therefore, the variable control will have no effect on solidarity and there is no reason to insert this variable in the regression. To elaborate a bit more on this problem, table 2 shows us that the variable control is dependent on the type of crisis and can therefore not be included if only one type of crisis is examined. The only solution was to perform a multilevel binary logistic regression with the respondents as clusters.

Table 2

Respondents	Willingness to help	Type crisis	control
1	Yes	Natural disaster	Little
2	No	Natural Disaster	Little
3	Yes	Natural Disaster	Little
1	Yes	Debt crisis	High
2	Yes	Debt crisis	High
3	No	Debt crisis	High

Before executing a multilevel binary logistic regression, the assumptions of such a regression need to be checked. There are five assumptions: (1) independent variables need to be binary, (2) observations need to be independent, (3) absence of multicollinearity, (4) linearity in the LOG of continuous variables and (5) a large sample size (Statisticssolutions, 2020). This paper especially would like to check for multicollinearity because there is an expectation that some variables are related to one another. For instance, an expectation is that people who vote more left-wing tend to show more solidarity in comparison with right-wing people (Lahusen & Grasso, 2018). Moreover, women in general vote more left-wing (Giger, 2009) and thus, the control variable of gender can create multicollinearity with political preferences. Therefore, it is important to run a regression analysis with and without the gender variable and check if the basic assumptions of a regression analysis are met.

This is not a straightforward logistic regression and it is quite difficult to execute and interpret this regression. Therefore, this paper will elaborate during every step why those steps are taken and what the consequences might be. Furthermore, the steps that are taken are in line with the paper written by Sommet and Morselli (2017). They explain that there are three steps, plus a preliminary phase, in order to execute a multilevel binary logistic regression. During the preliminary phase, the variables are clustered. Therefore, a cluster of all the 8 answers (per type of crisis) of one respondent's willingness to help is made. Furthermore, during the first step, the intraclass correlation coefficient is calculated by running an empty model. Moreover, during the second step, the likelihood ratio test is performed to determine if the cluster-based variation improves the model's fit. Lastly, the final model is run to determine the odds ratio and confidence intervals.

Results of data analysis

Firstly, the data from a survey performed by Cicchi et al. (2020) in which 21,779 people were interviewed, is presented. The data shows whether people think that their own country should help if another EU country is hit by a crisis. This presentation of the data gives an indication of whether the set-out hypothesis could be true. Secondly, an analysis of both the independent and control variables is given in order to establish which factors need to be included in the regression analysis. Fourthly, a multilevel binary logistic regression between the level of need, the level of control, and the view of the EU on solidarity levels is performed. Furthermore, different control variables, such as gender, age, religion, and political preferences are included in the regression analysis.

Solidarity levels per crisis

The differences in solidarity between different kinds of crises are visualized in chart 1, table 3, and table 4. Hence, this chart and these tables show how much people think that their country should contribute if another country is hit by a crisis. The answers can be: yes, no, or do not know. Furthermore, this data already shows a few interesting things. Firstly, there are, on average, more people willing to help and support other EU-citizens during an attack than people who do not know or are definitely not inclined to help. Around 53% of the respondents are inclined to help, 29% are not and 18% do not know if they are inclined to help or not. Although this gives a rather positive image overall, for some crises, a majority of people do not know or are not willing to support their fellow European citizens. Secondly, people that are hit by natural disasters, pandemics, military attacks, or climate change are on average seen as more deserving of financial aid. On the other hand, people experiencing distress from refugee inflows, technological backwardness, high unemployment, and high debt are seen as deserving less help. Furthermore, one hypothesis was that people were more inclined to help when an exogenous crisis took place, in comparison to an endogenous crisis. Chart 1, table 3 and table 4 give an indication that this hypothesis could be true since the first four mentioned crises could be defined as crises a country or individual can do little about and, as such are seen as exogenous crises. Moreover, the second hypothesis was that countries hit by a crisis that requires more urgent help, such as natural disasters, pandemics and military attacks, could also count on more solidarity. The chart and tables below indeed also indicate that this is true.

Chart 1

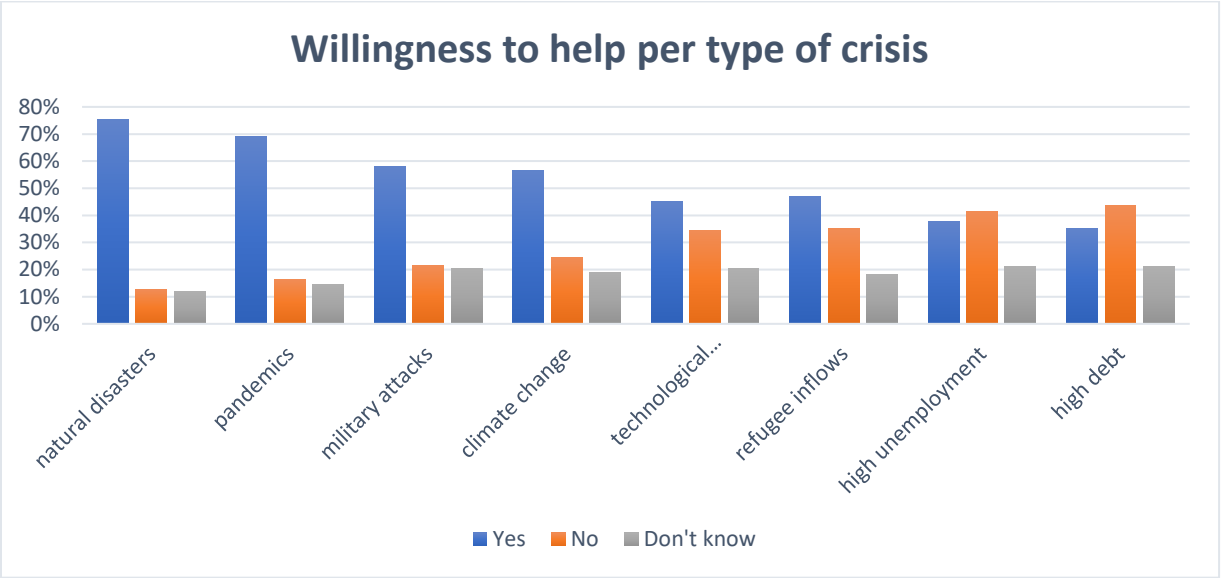


Table 3: Are you willing to help during this crisis?

	Yes	**No**	**Do not know**
Natural disasters	16579	2758	2442
Pandemics	15205	3591	2983
Military attacks	12856	4666	4257
Climate Change	12453	5417	3909
Refugee inflows	10373	7653	3753
Technological Backwardness	9915	7564	4300
High unemployment	8258	9097	4424
High debt	7735	9603	4441
Average	11671.75	6293.625	3813.625
Total	93374	50349	30509

* there are 21,779 people who state their willingness to help per crisis

* the total number of yes + no + do not know together is therefore 8 times 21779 (because every person provides their willingness to pay per type of crisis)

In table 4, one can find a presentation of the percentage difference between people that were willing to give financial aid to another country and those who did not know or were definitely not willing to contribute.

Table 4: Percentage willingness to help

	Yes	**No**	**Do not know**
Natural disasters	76.12%	12.66%	11.21%
Pandemics	69.81%	16.49%	13.70%
Military attacks	59.03%	21.42%	19.55%
Climate Change	57.18%	24.87%	17.95%
Refugee inflows	47.63%	35.14%	17.23%
Technological Backwardness	45.53%	34.73%	19.74%
High unemployment	37.92%	41.77%	20.31%
High debt	35.52%	44.09%	20.39%
Average	53.59%	28.90%	17.51%

* there are 21779 people who state their willingness to help per crisis

As stated in the research design, the respondents who stated that they ‘do not know’ if they are willing to help are removed from the dataset. This is of course unfortunate because this means that roughly 18% of the individuals are removed from the dataset. On the other hand, this procedure is important in order to execute a binary logistic regression analysis. Therefore, a presentation in table 5 is also given on the ratio between the people who are not willing to help and the people who are willing to help.

Table 5: Percentage willingness to help

	Yes	No	total
Natural disasters	85.74%	14.26%	19337
Pandemics	80.89%	19.11%	18796
Military attacks	73.37%	26.63%	17522
Climate Change	69.69%	30.31%	17870
Refugee inflows	57.54%	42.46%	18026
Technological Backwardness	56.73%	43.27%	17479
High unemployment	47.58%	52.42%	17355
High debt	44.61%	55.39%	17338
Average	65%	35%	

* 21779 people state their willingness to pay per crisis but because the individuals who voted don't know are listed as missing variables, the number of respondents included differs per crisis.

Tables 3, 4, 5 and chart 1 provide an indication that both the level of need and the level of control could be a reason for the difference in solidarity per type of crisis. Of course, this can only be proven in the regression analysis. Before the regression analysis is performed, a closer look is taken at the different independent variables (need, control, identity) and the control variables (gender, age, political preferences, and religion).

Independent variables

Before a binary logistic regression analysis is executed, a closer look is taken at the independent variables and their relationship with solidarity. The independent variables are control (exogenous vs. endogenous shock), need (little vs. urgent) and identity (view of the EU). Furthermore, the control variables are political preferences, gender, age, and religion.

Natural disasters, pandemics, military attacks, and crises caused by climate change are defined as exogenous shocks. On the other hand, refugee inflows, technological backwardness, high unemployment and high debt are seen as crises caused by endogenous

shocks. To give an overview of the difference between exogenous and endogenous shocks, an average of the percentage yes voters and no voters is presented in table 6.

Table 6: willingness to help: exogenous vs. endogenous shock

	N	Yes	No
Exogenous shock	4 crisis	77.42%	22.58%
Endogenous shock	4 crisis	51.62%	48.39%

The difference in the willingness to help between crises caused by an exogenous shock (yes: 77.42%) and crises caused by endogenous shocks (yes: 51.62%) is quite substantial. Therefore, the difference in the level of control that individuals have during a crisis could affect the solidarity levels. Consequently, this variable is included in the regression analysis. Furthermore, the expectation was that besides the level of control, also the level of need plays a role in how much people are willing to pay. Therefore, again a closer look is taken at the percentages of yes-voters in comparison with no-voters for two groups: crises where people urgently need help and crises where this is not the case. For instance, with natural disasters, pandemics, and military attacks, there is an immediate threat of loss of lives and therefore help is urgently needed.

Table 7: difference solidarity: need vs no need

	N	Yes	No
Urgent need	3 crisis	80.0%	20.0%
No urgent need	5 crisis	55.23%	44.77%

The difference between crises where there is an urgent need (yes: 80%) and crises where there is no urgent need (yes: 55.23%) is again rather substantial. This is an indication that these two factors (level of need and control) will also have a significant impact on the level of solidarity within the regression analysis.

The third independent variable is identity: which people are viewed as being insiders. Hence, the view of the EU is taken into account. In order to see if the view of the EU is a good predictor for the willingness to help (solidarity), a presentation of this variable is given. One

of our hypotheses was that individuals who like to remain in the EU are also more willing to help during a crisis. Therefore, table 8 gives a ratio of the respondents willing to help in comparison with those who are not, taking into account if people would like to remain in the EU or would like to leave. In this table, it becomes apparent that individuals preferring to remain in the EU are also more inclined to help during every crisis mentioned below. On average, the individuals willing to remain in the EU have a ratio of 1 individual not willing to help compared to 3.9 individuals that are willing to help. On the other hand, the individuals willing to leave the EU have a ratio of 1 and 1.2. Therefore, this gives an indication that this predictor is important to include in the regression analysis. Besides, table 8 also provides insight into the type of crisis during which individuals are more or less inclined to help. For instance, the highest percentage willing to help is found among those preferring to remain in the EU during a natural disaster. In this group, for roughly every 1 person that is not willing to help, 9.6 people are willing to help during that specific crisis. On the other hand, there are four types of crises during which individuals who would like to leave the EU are more inclined not to help than to help. This is the case for a refugee crisis, technological backwardness, unemployment, and debt crisis. This is interesting since all these crises are defined as endogenous. It gives an indication that there is a large difference in the willingness to help per type of crisis.

Table 8: ratio willingness to help yes vs. no: view EU

	Remain	**Leave**
Natural disasters	9.6 (9844/1022)	3.1 (3153/1028)
Pandemics	6.9 (9286/1345)	2.0 (2709/1364)
Military attacks	4.1 (8073/1948)	1.3 (2157/1674)
Climate Change	3.7 (8027/2141)	1.1 (2037/1895)
Refugee inflows	2.4 (7098/3017)	0.5 (1389/2666)
Technological Backwardness	2.0 (6583/3258)	0.7 (1562/2344)
High unemployment	1.5 (5736/3952)	0.4 (1212/2751)
High debt	1.2 (5330/4292)	0.38 (1108/2895)
Total	**3.9**	**1.2**

* 21779 people state their willingness to pay per crisis but because the individuals who voted don't know are listed as missing variables. the number of respondents included differs per crisis.

Control variables

Besides the three independent variables, there are four control variables: political preferences, age, gender, and religion. The hypothesis is that the individuals who vote for left-wing parties are more inclined to provide help to other countries compared to right-wing voters. The data includes individuals who are: (1) extremely left, (2) slightly left, (3) left from center, (4) center, (5) right from center, (6) slightly right, (7) extremely right. In order to examine the difference in willingness to help from left-wing and right-wing individuals, the first three categories are grouped into all the left-wing people and the fifth to the seventh category are all grouped as right-wing individuals. Of course, the term left-wing encompasses an entire spectrum from the extremely left-wing to left from the center, while on the opposite side there is also a wide spectrum from extremely right-wing to right from the center. Therefore, it is important to keep in mind that there might be a difference in extremely left voting individuals as compared to people who are voting slightly left from the center. Nevertheless, on average, left-wing people are more inclined to help in comparison to right-wing people. On the left, for every 1 person that is not willing to help, 3.2 are. On the right, for every 1 person that is not

willing to help, 1.3 is willing to help. Furthermore, table 9 shows that during every crisis, left-wing voters are more inclined to help than right-wing voters. Consequently, this gives an indication that the hypothesis might be true that left-wing voters are more inclined to help than right-wing individuals. Furthermore, this data also shows that political preference might be a good independent variable in order to predict the willingness to help.

Of course, there is also a difference in the willingness to help per type of crisis. For instance, table 9 shows that the highest willingness to help is found during natural disasters on the left side of the spectrum. With every 1 person that is not willing to help, 10.2 people are willing to help. A natural disaster also knows a high proportion of people willing to help on the political right, 7.5 for every 1 person. On the right side of the political spectrum, there are four types of crises where there are more individuals not willing to help in comparison to those willing to help. These crises are refugee inflows, technological backwardness, high unemployment, and high debt. This is interesting since all these crises are defined as endogenous.

Table 9: Political Preferences: yes/no ratio

	Left	**Right**
Natural disasters	10.2 (5933/582)	4.5 (4635/1020)
Pandemics	7.5 (5633/749)	3.0 (4099/1378)
Military attacks	3.7 (4645/1271)	2.5 (3794/1523)
Climate Change	4.5 (5014/1120)	1.3 (2976/2253)
Refugee inflows	3.1 (4646/1503)	0.7 (2273/3047)
Technological Backwardness	2.1 (4007/1885)	0.9 (2405/2819)
High unemployment	1.6 (3542/2224)	0.5 (1831/3368)
High debt	1.4 (3332/2395)	0.5 (1713/3532)
Total	**3.1** (36752/11729)	**1.3** (23726/18940)

* 21779 people state their willingness to pay per crisis but because the individuals who voted don’t know are listed as missing variables, the number of respondents included differs per crisis.

Furthermore, below an overview is given of the other control variables: gender, age, and religion. When looking at the control variable gender, it becomes apparent that men tend to be slightly more willing to help than women, as is visible in table 10. Men have a ratio of 1.9 willingness to help (47516) compared to not being willing to help (24956). In contrast, women have a ratio of 1.8 (45858/25393). This was not in accordance with our expectation, namely that women are more likely to be willing to help. However, the difference between a ratio of 1.8 and 1.9 is quite small and, therefore, based on this data, this paper will not draw any conclusions. In order to establish if there is no significant difference between males and females, a closer look needs to be taken at the regression analysis. Furthermore, table 10 shows us that during some crises, women are more inclined to help in comparison to men, for instance, in case of a natural disaster. This difference in ratio, however, is not very large (5.8 in comparison to 6.2). On the other hand, during a military attack, men are more inclined to help in comparison to women.

Table 10: Gender: yes/no ratio

	Male	**Female**
Natural disasters	5.8 (8099/1390)	6.2 (8480/1368)
Pandemics	4.1 (7493/1839)	4.4 (7712/1752)
Military attacks	3.0 (6764/2249)	2.5 (6092/2417)
Climate Change	2.2 (6186/2820)	2.4 (6267/2597)
Refugee inflows	1.4 (5274/3791)	1.3 (5099/3862)
Technological Backwardness	1.4 (5228/3696)	1.2 (4687/3868)
High unemployment	1.0 (4345/4467)	0.8 (3913/4630)
High debt	0.9 (4127/4704)	0.7 (3608/4899)
Total	**1.9** (47516/24956)	**1.8** (45858/25393)

Moreover, another control variable that we would like to investigate is age. Younger people are usually more likely to vote progressive and pro-EU. Therefore, this paper hypothesizes that the youngest age group (18-24) is most willing to act in solidarity. This is also what we

see when looking at the data in table 11. Within the youngest age-group, 2.5 people (9171/3632) are willing to help in comparison to every 1 person who is not willing to help. This ratio is much lower in the older age groups. For instance, the 55+ group has a ratio of 1.7, and therefore the chance that this group is willing to help is lower. Although a difference is visible between age-groups, one still cannot conclude that there is a significant difference. Therefore, a closer look needs to be taken at this variable during the regression analysis.

Besides the difference in age-groups in total, there are also some differences per type of crisis. Nearly all age groups prefer to help during a natural disaster and are less inclined to help during a debt crisis. Within the oldest age group, this difference is the largest. For example, in the 55+ group, the willingness to help is quite high during a natural disaster but is much lower during a debt crisis. Within this age group, most people are willing to help when a natural disaster occurs: 1 person is not willing to help where 7.5 people are. This in comparison to a debt crisis, where 1 person is willing to help, where 1.6 people are not (1/0.6). This indicates that besides age, the type of crisis may also play a role in determining the willingness to help.

Table 11: age: yes/no ratio

	18-24	25-34	35-44	45-54	55+
Natural disasters	5.9	5.1	4.8	5.4	7.5
Pandemics	4.5	3.9	3.8	3.9	4.7
Military attacks	3.2	2.8	2.6	2.7	2.7
Climate Change	3.9	2.8	2.4	2.1	2.0
Refugee inflows	2.3	1.7	1.4	1.2	1.2
Technological B.	1.6	1.4	1.4	1.2	1.2
Unemployment	1.5	1.3	1.0	0.8	0.7
High debt	1.3	1.1	0.9	0.8	0.6
Total	**2.5**	**2.1**	**1.9**	**1.7**	**1.7**
	(9171/3632)	(15386/7323)	(15745/8479)	(16845/9789)	(36227/21217)

The last control variable that may be added to our regression analysis is religion. One hypothesis of this paper is that religious people are less inclined to help in comparison to non-religious people. In the 14 countries that are investigated in this paper, a lot of people are Christian or not affiliated with a religion. Therefore, these two groups are the groups represented the most in our data. But there are also a few smaller religions, such as Judaism, Hinduism, Islam, Sikhism and Buddhism. Furthermore, there are of course also people who refuse to state which religion they belong to. The results of these smaller religions are briefly mentioned. For instance, there is one religion where there are even more people who are not willing to help compared to the people who are willing to help and that is Sikhism. Furthermore, also Buddhists have a high ratio of people not willing to help. On the other hand, Jews, Christians, Hindus, and atheists have a high ratio of people willing to help. Respectively: 2.5 (595/236); 2.0 (48939/24459); 1.96 (683/349); 1.77 (33.841/19091).

Table 12

Solidarity: Willing to help	Religion									
		Not part religion	Christ-ianity	Judaism	Hinduism	Islam	Sikhism	Buddhism	Others	Don't want to say
	Yes	33,841	48,939	595	683	1351	352	585	1471	5557
	No	19,091	24,459	236	349	771	353	511	1085	3494

From the smaller religions, there are fewer respondents in the dataset and therefore it is more difficult to draw conclusions. Furthermore, the above-mentioned hypothesis only looks at religious vs. non-religious people, and, therefore, all these religions are clustered and grouped into one variable. It is, however, good to keep in mind that there is a larger spectrum of religions into the group variable religions. Furthermore, table 13 shows us that the difference between religious and non-religious people in their willingness to help is quite small. Therefore, this variable might not be a good predictor for solidarity and this will be examined more extensively in the regression analysis.

Table 13: religion: yes/no ratio

	Not religious	Religious
Natural disasters	5.9 (6065/1029)	6.5 (9537/1463)
Pandemics	4.2 (5577/1338)	4.7 (8721/1947)
Military attacks	2.9 (4787/1667)	2.8 (7400/2639)
Climate Change	2.2 (4537/2075)	2.4 (7179/2982)
Refugee inflows	1.4 (3892/2760)	1.4 (5877/4349)
Technological Backwardness	1.2 (3442/2993)	1.4 (5851/4100)
High Unemployment	0.8 (2872/3511)	1.0 (4853/5011)
High debt	0.7 (2669/3718)	0.9 (4567/5273)
Total	**1.8** (33841/19091)	**1.9** (53976/27764)

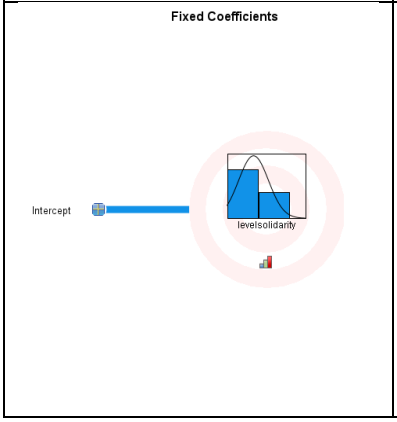
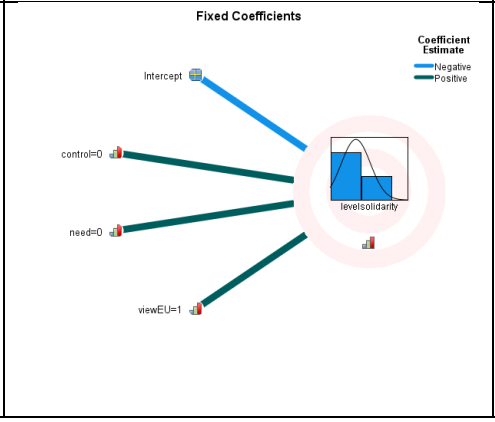
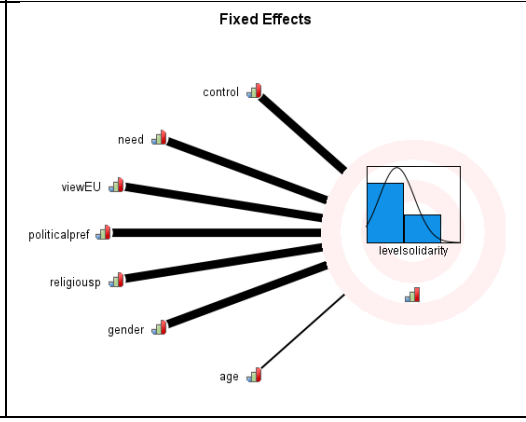
Multilevel binary logistics regression

On the basis of a multilevel binary logistic regression analysis, this paper tries to establish why there might be a significant difference in the levels of solidarity per type of crisis. In the theoretical framework, three factors emerged that could influence the levels of solidarity: level of control, level of need and identity. In this analysis, solidarity is the dependent variable, and the independent variables are need (little vs. urgent need), control (exogenous vs. endogenous shocks) and identity (view of the EU). Furthermore, in the regression analysis, different control variables are included, such as political preferences, religion, gender, and age. This paragraph firstly discusses the assumption of a binary logistic regression. Secondly, different models of a logistic regression are presented.

There are five assumptions that are applicable to a logistic regression. Firstly, the dependent variable needs to be binary. The dependent variable is solidarity, and this is measured by the willingness to help others: yes, no or don't know. All people who answered 'don't know' have been excluded from the regression analysis because there is not a clear explanation or theory for the reasons behind the response of 'don't know'. Furthermore, a binary logistic regression analysis is much clearer than a multinomial logistic regression analysis, especially when a multilevel analysis with the subjects as clusters is included. Once the respondents who said they don't know whether they were willing to help are defined as missing, the dependent variable is binary (yes vs. no). Secondly, the observations need to be independent of each other. This is not the case since the same respondents are asked 8 times what they think of a crisis. However, this invalid assumption could be overcome once the respondents are taken into account in the multilevel regression analysis. Therefore, it is important to execute a multilevel regression analysis. Moreover, this paper will look at both the fixed effects (all the independent variables) and the random effects (multiple answers for one respondent). Thirdly, there needs to be little to no multicollinearity between the independent variables and control variables: control, need, view of the EU, political preferences, gender, age and religion. There could be a correlation between the variables control and need because a lot of crises are both beyond the control of a country and require a lot of help, such as natural disasters, pandemics and military attacks. Furthermore, gender and political preferences could also be correlated with one another because women tend to vote more left-wing. However, the VIF test shows that there is very little multicollinearity as the highest measured VIF value is 2.517 (between control and need) which is relatively low. Fourthly, the independent variable should be linearly related to the LOG odds, which is the case. Fifthly, there needs to be a large sample

size, and, in this dataset, there are roughly 174,000 datapoints. However, in a multilevel analysis, the number of clusters are more important than the number of observations within the clusters (Sommet & Morselli, 2017). All the answers of one respondent (8) are clustered together so that all the respondents individually form one cluster. In this research, there are 21,779 respondents who stated their willingness to help. Although, of that 21,779 respondents, around 20% of respondents claimed that they do not know if they would like to express solidarity towards others and are therefore defined as missing data. Despite the 'missing data', there are still enough respondents in the dataset for a robust model. According to Sommet and Morselli (2017), different studies have concluded that 50 or more clusters are necessary to determine the standard error. Consequently, the number of clusters in this data-analysis is considerably large.

After it is determined that all the conditions of a binary logistic regression are met, the regression analysis can be executed. Three models will be run:

Model 1	Model 2	Model 3
		

Model 1

Firstly, a model is run with only an intercept, to see if the cluster-based variation improves the model's fit. Therefore, this model does only include respondents-specific random effects and does not consider any respondents or crisis-related characteristics. When only the intercept is included in the model, the degree to which this model predicts the willingness to help is roughly 82%. Therefore, this paper can make an assumption that including a random effect (the subjects have answered multiple questions) is very important to determine the willingness to help. Furthermore, this intercept is slightly better in predicting the individuals who were willing to help (91%) in comparison to the individuals who were not willing to help (65%). Moreover, the expectation for LOG of the averages of the answers of one individual to be

willing to help is 0.820. Furthermore, on the basis of the exp coefficient can the expected probability of an individual being willing to help be computed through the following formula: $P(owns\ album) = \frac{odds}{1+odds} = \frac{2.271}{1+2.271} = 0.69$ Therefore, 69% of all the included answers state that an individual is willing to help.

Furthermore, the level-2 variance (Est =2.522, z-score = 66.967) when only the intercept is included, is significant, which again confirms the fact that the variance between respondents is significant. Moreover, the ICC can help to identify if there is a correlation within the outcome between two randomly selected answers from the same individual. The ICC would be equal to one if all the answers of one respondent would show exactly the same response (be willing to help or not) and would be equal to zero if there was no within-cluster homogeneity. Based on the estimate of the level-2 variance the ICC value can be determined. ICC = 2.522 / (2.522 + 3.29) = 0.434. This is well above 0.05, which indicates that clustering is necessary.

Model 2

Secondly, a model is run with the intercept and all the independent variables: control, need and view of the EU. Therefore, this model includes three independent variables in addition to the respondent's specific random effects. In this model, we are predicting the probability of respondents being willing to help as a function of whether a crisis is caused by an endogenous or exogenous shock, whether the crisis requires urgent or not so urgent help and whether that respondent would like to leave the EU. On the basis of this model, the overall percentage correctly estimated if individuals are willing to help is 87.4%. This is a slightly higher percentage than when only the intercept was included (82%). Besides, this model predicts the people who are willing to help (92.7%) slightly better than the people not willing to help (76.6%). Moreover, all three variables have a statistically significant effect on the willingness to help. Therefore, the set-out hypothesis, that control, need and identity had a significant effect on solidarity, turns out to be true.

Furthermore, a closer look is taken at the interpretation of the odds ratio, depicted in table 15. When a country is hit by an exogenous shock, the odds of a respondent being willing to help is 2.957, while the odds of a respondent being willing to help during an endogenous crisis is 1. Therefore, the prediction described in the theoretical framework that if an individual or country cannot do much about the given crisis, the solidarity will be higher. Another

prediction of our theoretical framework is also concurred, namely that if a country has a high need for outside help, people are more inclined to act in solidarity, in comparison to a country that is hit by a crisis that does not require urgent help. Furthermore, a closer look is taken at the interpretation of the odds ratio, depicted in table 15. When a country is hit by a crisis that does require urgent help, the odds of a respondent being willing to help is 2.160, while the odds of a respondent being willing to help during a crisis that does not require urgent help is 1. Furthermore, the third condition, the view of the EU, is discussed based on the baseline variables. When an individual is in favor of remaining in the EU, the odds of that individual being willing to help is 5.026 in comparison to the odds being equal to 1 for an individual being willing to help if he/she would like to remain in the EU. Hence, in line with the set-out hypothesis, the individuals who would like to remain in the EU are much more likely to be willing to help during a crisis. Therefore, all three independent variables, control, need, and identity, have a significant effect on the willingness to help (solidarity) and they all perform in the direction as expected.

Besides, the ICC can also be calculated for model 2 on the basis of the level-2 variance (Est =2.938, z-score = 57.942). ICC = 2.938 / (2.938 + 3.29) = 0.472. With the addition of the independent variables, the ICC increases slightly to 0.472. This proportionate increase of the ICC from model 1 to model 2 is: (0.472-0.434/)/0.434*100% = 8,7%. The ICC would be equal to one if all the answers of one respondent would show exactly the same response (be willing to help or not) and would be equal to zero if there was no within-cluster homogeneity. Similar to model 1, the ICC is not close to zero and therefore the clusters are important to include in the model.

Model 3

Thirdly, a model is run with all the fixed predictors, including need, control, view of EU, gender, age, political preferences and religion. Therefore, this model includes 4 control variables in addition to the respondent's specific random effects and the 3 independent variables. Furthermore, the overall percentage of correctly determining if people are willing to help is exactly the same as the previous model, 87.4%. However, this model is slightly better in predicting the people who are willing to help (93.4%) and slightly worse in predicting the people who are not willing to help (74.7%). Moreover, all variables have a statistically significant effect on the willingness to help, except for the variable age.

When the control variables are added to the model (model 3), the values of the independent variables change slightly but the direction of which groups are expected to be willing to help stay the same, while the values remain significant. Furthermore, as stated above, all the control variables are significant except for age. Therefore, the odds ratios of all the control variables, presented in table 15, are discussed. For every one unit increase in the left-right scale (move to the right on a scale from 1 to 7), the odds of a respondent being willing to help decrease by a factor of 0.729 [since 1<0, the odds are decreasing]. Therefore, the more right-wing an individual classifies him/herself, the less willing he/she is to help. This is in line with the hypothesis. However, not all variables have an influence on the willingness to help as expected. For instance, men are slightly more willing to help in comparison to women, while the set-out hypothesis was that women are more likely to be willing to help. Moreover, the odds of males being willing to help during a crisis is 1.252, in comparison to women where the odds are 1. This difference is quite small. Furthermore, referring back to table 10, there is a difference in the ratio willingness to help per type of crisis and this ratio is different for men and women. For instance, women are more likely to help during natural disasters, pandemics and climate change, while men are more likely to help during military attacks, refugee inflows, technological backwardness, high unemployment and high debt crisis. This distinction indicates that women are more likely to help during a crisis where urgent aid (independent variable) is required in comparison to men. Further research into the difference in the willingness to help based on gender per type of crisis may explain this distinction better.

Moreover, another variable where the outcome is not in accordance with the set-out hypothesis is the variable religion. Atheists are less likely to help in comparison to religious people. The odds of atheists being willing to help during a crisis is 0.805, in comparison to religious people who have the odds of 1. Therefore, it can be concluded that atheists are less willing to help in comparison to religious people. However, this paper expected that more religious individuals would be less willing to help as described by Stegmueller et al. (2012). These researchers predicted that because of the historical church-state conflict over welfare provisions, individuals' preferences nowadays are still influenced in Western Europe. However, it could be that the pillarization in the Netherlands caused this church-state conflict to be reduced nowadays. Van Oorschot and Arts (2005) concluded that religion is not a good predictor of deservingness. Moreover, the spectrum of religions included in this regression

analysis is quite broad and there might be differences per religion. To conclude, there are four control variables added in this model and gender, religion and political preferences all have a significant effect on the willingness to help.

Similar to model 1 and model 2, the ICC can be computed based on the level 2 variance (Est =2.756, z-score = 51.126) to check for variation between answers from the same respondents. ICC = 2.756 / (2.756 + 3.29) = 0.456. Also, in model 3 is the value of the ICC quite high, which indicates that there is within-cluster homogeneity. This confirms that it was necessary to execute a multilevel regression analysis.

Table 14: B coefficient of multilevel logistic regression

	Model 1	**Model 2**	**Model 3**
Intercept	0.820***	-0.943***	0.357***
	(0.0132)	(0.0309)	(1.049)
Control (ref = yes)			
No		1.084***	1.049***
		(0.026)	(0.029)
Need (ref = little)			
More		0.770***	0.849***
		(0.0278)	(0.0312)
View EU (ref =Leave EU)			
Remain		1.615***	1.472***
		(0.0356)	(0.0403)
Political preferences			
			-0.0316***
			(0.0120)
Age (ref = 55+)			
18- 24			0.090
			(0.069)
25-34			0.111*
			(0.0541)
35-44			0.038
			(0.0525)
45-54			0.06
			(0.0504)
Gender (ref = Female)			
Male			0.224 ***
			(0.0362)
Religion (ref = Religious)			-0.217***
Atheist			(0.0376)
ICC	**0.434**	**0.472**	**0.456**

Note: binary logistic regression with B coefficients with standard errors in brackets.
*** p <0.001, ** p <0.01, * p <0.05
ICC: Intra Class correlation

Table 15: Estimated odds ratios

	Model 1	Model 2	Model 3
Intercept	2.271	0.390	1.429
	(2.213, 2,330)	(0.367, 0.414)	(1.244, 1.642)
Control (ref = yes)			
No		2.957	2.855
		(2.810, 3.112)	(2.697, 3.022)
Need (ref = little)			
More		2.160	2.338
		(2.046, 2.281)	(2.200, 2.485)
View EU (ref =Leave EU)			
Remain		5.026	4.302
		(4.687, 5.388)	(3.971, 4.660)
Political preferences			
			0.729
			(0.712, 0.747)
Age (ref = 55+)			
18- 24			1.084
			(0.956, 1.253)
25-34			1.118
			(1.005, 1,243)
35-44			1.039
			(0.937, 1,151)
45-54			1.062
			(0.962, 1172)
Gender (ref = Female)			
Male			1.252
			(1.166, 1344)
Religion (ref = Religious)			0.805
Atheist			(0.748, 0,867)

Note: multilevel binary logistic regression with Exp B coefficients with 95% CI in brackets.

Conclusion

This study looked for an answer to the question: "*how does the type of crisis influence the level of solidarity?"*. A quantitative study was conducted to investigate this question, specifically a regression analysis was performed.

This research forms a useful contribution to the existing literature because little to no research has been done on the difference in solidarity per type of crisis. In fact, little literature exists on the difference in solidarity per type of crisis on an international level. Therefore, this paper needs to use the existing literature on the difference in solidarity on a national level about social benefits for the sick, unemployed, disabled, and elderly and transforms it to an international level. Multiple previous authors, like Van Oorschot (2000), indicate the following aspects as having an influence on the level of solidarity: (1) control, (2) need, (3) identity, (4) attitude, and (5) reciprocity. Although these are likely predictive factors to explain the level of solidarity on a national level, not all factors can be transformed to an international level, such as attitude and reciprocity. Hence, the attitude towards help probably differs during every crisis. Therefore, it is hard to say anything about the level of solidarity per type of crisis. Similarly, the reciprocity of individuals, how much their beneficiary will compensate the community in another way, is also hard to predict for each type of crisis. There are three factors that can be applied to the deservingness criteria per type of crisis. Firstly, the level of control refers to the ability of an individual or a country to influence their needy situation. Secondly, the level of need indicates how much aid is necessary during a crisis. Thirdly, the identity refers to a group-feelings whereby the level of solidarity is greater towards people who look quite similar. Furthermore, for the identity condition, this paper not only takes a look at how the similarities and differences between groups lead to more solidarity but also if people view themselves as more part of the group, in this case, more European.

Furthermore, in order to investigate whether those factors (need, control, and identity) have a significant effect on the amount of solidarity, a multilevel binary logistic regression analysis was performed. During the execution of this regression analysis, different control variables have been added, such as gender, religion, political preferences and age. Furthermore, all variables, except for age, have a significant influence on the level of solidarity. Therefore, it can be said that need, control, and identity are factors that explain the level of solidarity. Besides, political preference, religion and gender also have a significant effect on the willingness to help. Consequently, once a crisis is hit by an exogenous shock, the crisis

requires urgent need and the person deciding on the given aid is pro-EU, the chances that this specific person is willing to help is quite high. Moreover, the regression analysis showed that the model of these seven variables and the intercept explain approximately 80% of the willingness to help others. This percentage is considerably high and indicates that the combination of variables added to the model explain for a large part if somebody is willing to help.

Discussion

The theoretical framework described three variables that could influence solidarity: control, need, and identity. Based on the regression analysis, the willingness to help (solidarity) seems to be significantly different between the categorical groups of need vs. no need, control vs. no control, and the view of the EU. Furthermore, different control variables are added to the regression, such as gender, political preferences, and religion, and also those variables have a significant effect on the willingness to help. Although there is a significant relationship of all those six variables towards the willingness to help, some control variables do not behave as this paper would expect. For instance, men are more likely to be willing to help in comparison to women and religious people are more likely to help in comparison to atheists. Additional research is necessary to explain why these outcomes are different from this paper's expectations. Moreover, the predictive model does not show a perfect fit. Therefore, it is likely that other variables explain the willingness to help besides the variables control, need, and identity. Further research is necessary to look at those other reasons that could predict the level of solidarity.

Furthermore, the advantage of the dataset used in this paper is that it is quite extensive, in terms of the number of subjects, as well as, information on the subjects. Therefore, a lot of control variables, such as gender, age, and political preferences can be added to this research. Moreover, this research is valid because of the large sample size. A sample size of 21,779 people is large enough to generalize the conclusions of this paper to the total population of the EU. Therefore, if this research is repeated, it is likely that similar results will appear with different respondents. Although it is important to note that some individuals will be listed as missing and therefore the sample size is a bit smaller than 21,779, the sample remains considerably large.

Besides the advantages, there are also disadvantages to the use of secondary data and therefore this paper offers multiple pieces of advice for future research. For instance, this research is merely a cross-sectional research and, therefore, does not investigate if the stated preferences change over time. Maybe if the time-element and context in which the willingness to help is taken into account, the predictive model would show a better fit. Therefore, it could be beneficial if further research is done on this topic and the time-element is taken into account. Of course, this could result in an expensive research project over a couple of years. Another piece of advice for future research would be to base the willingness to help per type

of crisis on percentages instead of merely offering the choice between yes, no, or don't know. As a consequence, a better understanding of the data per type of crisis is gained. Furthermore, it would be beneficial to ask an open question to the subjects on the matter of why they were willing or not willing to help during a specific crisis. Especially, it is important to ask how much more willing participants are to help during one crisis compared to another crisis because the difference can better be measured. This could result in a better understanding of which factors do influence the willingness to help. In this case, the predictive model might get even better.

Moreover, further research could also look at the actual behavior of people (revealed preferences) instead of their stated preferences. Therefore, this research cannot fully conclude if the people who stated that they would help, actually do so during a given situation. Future research could investigate these revealed preferences further. However, revealed preferences are rather difficult to measure, since only a few of these crises, such as a natural disaster, have recently taken place in the EU (and the UK).

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