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Fertility rates of first and second generation German residents with a Turkish origin

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Abstract

Since the 1960s, there has been a huge groups of Turkish immigrants in Germany, who currently form 3,6% of the total German population. This group arrived as labour migrants and has grown due to family reunification natural population growth. Historically there is a difference between Germany and Turkey. How did these immigrants adapt to the German circumstances? In this thesis, we take a look at the fertility of this immigrant group.

The main question used for this research is: *Which factors do determine the differences in fertility between Turkish inhabitants of Germany?* To answer the main question, we take a look at the first and second generation migrants. Is there a difference in the amount of children between first and second generation migrants? And is there a difference in the fertility between this migrants when they have a different education level? Research in other countries has proved that second generation migrants have a lower fertility than their parents and higher educated people have a lower fertility than lower educated people. Does this also count for Germany?

For this thesis, the Gender and Generations program (GGP) dataset is used. In this GGP dataset, there is a subcategory of German residents with a Turkish background. A Poisson regression is used to calculate the probability of having children among first and second generation migrants and four education levels.

The results of the Poisson regression are all significant. This means that second generation immigrants have a lower probability to have children and that immigrants with higher education have a lower probability of having a child than immigrants with a lower education. This is in line with the theory. Next to this, the number of children is proved to be a moderation effect between the place of birth and the amount of children. So the level of education influences the relation between the number of children of first and second generation migrants.

Table of Contents

Abstract 1
Chapter 1: Introduction
1.1: Background & Research Problem3
1.2: Structure of this thesis
Chapter 2: Theoretic Framework
2.1: Fertility of migrants
2.2: Turkish people in Germany5
2.3: Education levels & fertility5
2.4 Conceptual Model & Hypotheses
Chapter 3: Methodology
Chapter 4: Results
4.1: Sex of the respondent
4.2: Born in county of interview10
4.3: Education Level 10
4.4: Interaction variables11
Chapter 5: Conclusions
5.1: Discussion and conclusions13
5.2: Future Research
Chapter 6: Literature

Chapter 1: Introduction

1.1: Background & Research Problem

Since the 1960s, there have migration flow of labour migrants from Turkey to Germany (Krapf, 2015). After the family reunification in the 1970s, this group of immigrants became bigger. These migrants got children and now even grandchildren and at this moment 3,6% of the German population have a Turkish background (Krapf, 2015). There are huge differences between Turkey and Germany in culture, religion, and socio-economic factors. One of those differences is the fertility rate. The fertility rate for Germany was in 2020 1.59 (Statistica, 2021) and for Turkey in 2019 2.0 2.055 (World Bank, 2021). In the 1960s, when the migration flow from Turkey to Germany started, the TFR for Turkey was even much higher with 6.28 (Cesur, 2018). This difference in Fertility rate? Or will this change after time and will they adapt to the fertility rate of German. And are there differences between the first and second generation migrants? Another difference between Germany and Turkey is the average years of schooling. In Turkey, the average years of schooling after the age of 15 was in 1970 1.9 and in 2010 4.5, while in Germany it was in 1970 6.2 and in 2010 4.8 (World Bank, 2021).

Today, there is again a huge migrant flow from less developed countries to Europe again (Eurostat, 2021). A lot of these countries, for example Syria share cultural characteristics with Turkey, for example religion. As Europe has to deal with huge immigration flows today, we can learn something from the past how migrants integrated in these countries. This thesis focuses on the amount of children of first and second generation Turkish migrants in Germany. There has been already a lot of research done about the Turkish population in Germany and their fertility levels. This thesis tries to contribute to the current debate about the factors that determine the fertility. This factors could include culture, education and/or religion. In this thesis, there will be a focus on the amount of children of the Turkish population in Germany and the difference between first and second generation for this thesis.

- Which factors do determine the differences in fertility between Turkish inhabitants of Germany?

To answer this main question, the following sub questions have been formulated

- What is the difference in fertility between first generation migrants and second generation Turks in Germany?
- What is the influence of education to the fertility of German inhabitants with a Turkish background?

1.2: Structure of this thesis

The structure of this thesis is as following. First, a theoretical framework has been made where concepts and definitions used in this thesis will be examined. In the theoretical framework is also a conceptual model that links the theory and the hypothesis of this thesis. After that, the methodology of this thesis is explained. In this chapter, the choices made for the research methods are explained. In chapter 4 the results of the research are shown who are interpreted with the help of a statistical analysis. In chapter 5, the conclusion of this thesis is shown, followed by a discussion and an advice for future research. In chapter 5 is also a paragraph about the process of writing this thesis. After the conclusions in chapter 6, a literature list is shown.

Chapter 2: Theoretic Framework

There is done a lot of research about the fertility of migrants. Firstly, some elaboration is needed on the concept of fertility. To measure fertility, the Total Fertility Rate (TFR) is used. Determinants of fertility can be proportion of women married, frequency of intercourse, post-partum abstinence, lactational amenorrhoea, contraception, spontaneous intra uterine abortion, induced abortion, natural sterility and pathological sterility (Gould, 2015). These factors can be combined with socio-economic factors as income growth, urbanisation, education and the availability of health services (Gould, 2015). In this theoretic framework, first the fertility of migrants will be discussed, next to that the impact and influence of Turkish people in Germany will be discussed and the relation between education and fertility levels. At the end of this theoretical framework a conceptual model is shown and the hypotheses for this research are discussed.

2.1: Fertility of migrants

To identify possible changes in fertility of migrants, Kulu (2005) distinguishes four hypotheses. These hypotheses are used in many papers about fertility in various countries, and can apply both for internal migration and international migration. The hypotheses are:

- 1. The socialisation hypothesis: This hypothesis suggests that migrants will have the same fertility as the stayers in their home-region.
- 2. The adaptation hypothesis: This hypothesis suggests that migrants will adapt to the fertility level of the place of destination
- 3. The selection hypothesis: This hypothesis argues of migrants are a different group in the destination area and their fertility is closer to the area of origin than that of the destination area.
- 4. Disruption hypothesis: This hypothesis suggest that immediately after migration migrants are less fertile because of disruptive factors in the migration process.

The socialisation hypothesis (Kulu, 2005) suggests that migrants will have the same fertility as the stayers in their home country. About this topic, many research has been done. Guarin Rojas (2018) did a case study about this subject in Switzerland. He found out that there is no difference in probability and timing of first births between the immigrants, their children and Swiss natives. However he found out that the first generation of immigrants have a higher probability to become parents, and become parents at a younger age compared to native Swiss people and second generation migrants. Next to this, Guarin Rojas (2018) stated that for first generation migrants the second child is coming later and less often compared to Swiss nationals. Guarin Rojas (2018) also stated that the second generation of immigrants in Switzerland have a lower expectancy at giving births than Swiss natives and their parents (first generation). So for this cases, the socialisation hypothesis can be rejected and rather the adaptation hypothesis can be used.

Kulu (2017) observed different patterns in the fertility of migrants. He stated that in most countries the children of immigrants have the same fertility level as that of natives. This is in line with the adaptation hypothesis. However he noticed some exceptions: Turkish people in France and Belgium have a higher fertility than native French/Belgians. Next to that, in Germany the fertility level of second generation migrants is lower than that of natives but the probability of having a third child is higher than that of native Germans.

So in general there can be said, based on the research of Kulu (2017) and Guarin Rojas (2018) that the fertility of the first generation of migrants is higher than that of natives in the destination country. Next

to that, the fertility of the second generation of immigrants is lower than that of their parents and in general more similar to the fertility that of native inhabitants of a country.

2.2: Turkish people in Germany

The people in Germany with a Turkish background form a significant group of the German population. While 3.6 percent of the inhabitants of Germany have a Turkish background, they form the largest group of immigrants (Krapf, 2015). The majority of these people arrived in the 1960s and 1970s as a labour migrant and after these decades their families followed in the process of family reunification. There can be said that the native Germans and the inhabitants with a Turkish background have some differences. As the majority of the Germans has a Christian background, the Turkish people have a Muslim background. Next to that, Germany is a more developed country with western standards while Turkey is developing. This leads to differences in the total fertility rate and educational rates. In Turkey, the TFR was in 2019 2.055 (World Bank, 2021) while in Germany the TFR in 2020 was 1.59 (Statistica, 2021).

The development of Turkey in the 20th century goes hand in hand with the total fertility rate. While in the 1960s the TFR of Turkey was 6.28, in the late 1980s it had dropped to 2.59 (Cesur, 2018) and to 2.055 in 2019 (World Bank, 2021). Cesur (2018) stated that although Turkey is developing, the development in the country is not even: there are huge differences between regions and this is also expressed in fertility rates. The TFR of western Turkey is similar to European countries while the TFR of (south)eastern Turkey is similar to North-African or Middle Eastern countries. Cesur (2018) explained that this differences are partly because of the illiteracy rates of Kurdish women living in the southeast of Turkey. Because of this, they do not have access to resources women in western Turkey have. Cesur (2018) concluded that that illiteracy rates and 'being Kurdish' are factors that lead to high fertility in Turkey.

Stonawski (2016) stated that the fertility of Muslims who are immigrants to Europe or descend form immigrants to Europe vary from below replacement level to more then 3,5. The fertility level is higher by recent immigrants and is lower in countries with a established Muslim community such as Germany or France. The Turkish group in Germany is there for years, so this implies that the fertility level of Muslims in Germany is lower than the average. Stonawski (2016) also concluded that socio-economic status is more important for the fertility rates than culture or religion. He stated that people the migration background and next to that the lower economic status is more contributing to the fertility level than culture and religion. Robarts (2016) stated that in the UK, the fertility of people from Muslim countries such as Pakistan and Bangladesh is relatively high compared to migrants from Poland and India.

2.3: Education levels & fertility

A lot of research has been done about the effect of the educational level to the fertility of women. Kulu (2017) states that inclusion of the factor 'education' in a fertility model slightly changed the fertility levels among ethnic groups. This means that higher educated women have a lower probability of giving a birth. Götmark (2020) stated that the total fertility rate is lower in countries where women have a higher education grade, the GDP per capita is higher, the contraceptive prevalence rate is higher and if the country has a strong family planning program. He stated that this goes for most regions in the world, but not for western Europe. In western Europe, the education rate does not matter for the total fertility rate of women. In this study, Götmark (2020) placed Germany in western Europe and Turkey in Eastern Europe, so there are differences between the countries. Götmark (2020) also concluded that the total fertility rate is higher in countries and areas where the religiosity is stronger. He associated that with fewer years of education. In his study he placed Turkey as a country with a high religiosity and Germany with a lower.

In his case study about Switzerland, Guarin Rojas (2018) stated that women with a lower education level have a higher expectancy of giving a birth and that they give a birth earlier. When women have higher educational degree, the probability of giving a birth is lower and if they give birth, they do it later. Guarin Rojas (2018) also stated that women with an immigration background and a higher education level have a lower expectancy of having a child than native Swiss women with middle education. This is in line with Krapf's research about German inhabitants with a Turkish background (2015). She concludes that German inhabitants with a Turkish background with a higher education have al ower probability to give birth than first or second generation (Turkish) migrants with a lower education. She states that the effect of being a migrant vanishes when the education of the person is higher.

So in general we can conclude that in most countries people with a higher educational level have a lower fertility. This counts for both immigrants and their descendants and for native inhabitants of a country. In contrast to other research Götmark states that this do not count for Western Europe, where the fertility levels are similar between higher and lower educated people.

2.4 Conceptual Model & Hypotheses

To answer the research question, a conceptual model has been made. This model is shown in figure 1.



Figure 1: Conceptual model

In this model, the variable place of birth is whether a person is born in Turkey or born in Germany, so if the person is a first or second generation immigrant. From the theory, there can be concluded that first generation migrants have a higher probability of having a child than second generation migrants. Next to that, there can be said that the place of birth has a influence on the level of education and the level of education has again an influence on the amount of children of a person.

On basis of the conceptual model and the literature, the following three hypotheses are formulated:

- H1: The second generation Turks in Germany have a lower probability at having a child than the first generation.
- H2: The more higher educated Turkish people in Germany have a lower probability at having a child than the less educated people.
- H3: The level of education acts as a moderation effect between the place of birth and the number of children.

Chapter 3: Methodology

In this chapter, the methodology of this thesis is explained. Secondary quantitative data is used to answer the research questions.

According to Longhurst (2010), qualitative data can be used to collect subjective data. Migration numbers and fertility are both subjective numbers, as the amount of births is given and the registered inflow or outflow of people to a country is also a hard number. Because of this, I chose to use a quantitative method in this thesis. Because there is already a lot of survey data available for this subject, I chose to use a secondary dataset.

For this research, the Generations and Gender Program (GGP) survey dataset is used. This dataset contains a lot of data from various countries in Europe about the families and life-course trajectories of individuals (GGP, 2021). The purpose of the GGP data is to provide researchers and policy makers with high quality and timely data about families and life course trajectories of individuals to enable researchers to contribute insights and answer to current societal and public policy challenges (GGP, 2021). There is chosen to use this dataset because in the survey data a lot of information about fertility, education and socio-economic factors is provided. Next to that, the purposes of the dataset are in line with the purposes of this research. The GGP exists since 2000 and was monitored by the United Nations Economic Commission of Europe until 2009, after that year the program became independent. The GGP has data from two waves. Wave 1 was published in 2004 and Wave 2 in 2015. For this thesis, data from wave 2 is used. This wave already contained a dataset about the Turkish subsample in Germany, so this data is used for the data-analysis. So his thesis uses data from the GGS Wave 2 (DOs: 10.17026/dans-xm6-a262), see Gauthier, A. H. et al. (2018) or visit the GGP website (https://www.ggpi.org/) for methodological details. The data in the German-Turkish subsample is collected by the German Federal Institute of Population Research (BiB) with simple random drawn face to face interviews across the federal states (United Nations, 2005).

This dataset includes approximately 4000 residents of Germany of Turkish heritage between the age of 18 and 80. The dataset aims to collect data about fertility, fertility intentions, amount of children, work, work satisfaction, education and various other variables. In this dataset, approximately 75% of the respondents was born in Turkey and 25% was born in Germany. For this, we made the assumption that the people born in Turkey are first generation migrants and the people born in Germany are second generation migrants. The major components in the dataset that are being used for this thesis are the age, number of children, level of education and the variable if the person is born in Germany (y/n). After adjusting the dataset and deleting missing cases for variables that are used in the analysis, 3524 cases are used for the statistical analysis.

To analyse the data, a Poisson regression has been used. For this regression, the dependent variable must consist of count data (Laerd Statistics, 2021). This regression is suitable for the data because the data used for the analysis consists of count data, independent variables are used, the observations are independent (Laerd Statistics, 2021). In this regression, the dependent variable is 'number of children' and the independent predictors used in the model are, 'gender', 'born in Germany' and 'educational level'. Next to this variables, an interaction variable is created to see if there is an moderation effect of level of 'education' between the variables 'place of birth' and 'amount of children'. More explanation of this is in the next chapter.

For this research, only secondary data is used. So for designing the research question, ethics were not taken into consideration, but for the use of the database there were strict ethical procedures. To get

access to the database, an application with a pledge of confidentiality was needed. The pledge had both to be signed by the supervisor and the author. At 22-03-2021, the application was send to the GGP including the pledge. Due to administrational problems at the GGP, the request was approved at 27-04-2021 and from that date the survey data was accessible. The pledge is signed by both the supervisor as by myself and the data can only be accessed or viewed by both of us. Next to that, the data must be deleted when the final grade is received. The data in the survey database was already fully anonymous. So from the database, no personal details of the respondents can be derived an no attempt was made to seek for personal details of the respondents.

Another ethical consideration for this research is that the Turkish people in Germany form a minority group and do face some prejudices and discrimination (Thijssen, 2021). The author is neither German of from a Turkish background and is an outsider to this groups. Next to that, the data used is objective, so the positionality of the researcher is objective. Furthermore, this research is using the sex of participants as an indicator. In the original dataset, there was made a distinction between 'males', 'females' and 'others'. As no respondent answered 'other', it is left out of the analysis.

Chapter 4: Results

In this chapter, the analysis of the statistical tests is discussed. For the analysis, a Poisson regression has been done. For this regression, the dependant variable is the 'amount of children'. The predictors used in the regression are 'sex of the respondent', 'born in the county of interview', 'level of education' and the interaction variables for 'born in the county of interview' * 'level of education'. For the last four variables, dummy variables of each of the four categories were made. After that, the variables 'born in county of interview' and the four education dummy variables were standardized. To create each of the interaction variables, the product was taken between the standardized variable of 'born in county of interview' and the four standardized education dummies. In this model, the natural logarithm of age of the respondent was used as the offset variable. The offset variable is an controlling variable for the differences in the periods of time where the events of getting a child occurred.

	N1	N2	N3	N4	N5	N6	N7
Sex	0.822	0.822	0.851	0.850	0.849	0.849	0.849
Born in country		0.627	0.660	0.679	0.684	0.681	0.681
Edu1			1.326	1.378	1.378	1.393	1.393
Edu2			1.280	1.277	1.289	1.303	1.303
Edu3			1.163	1.163	1.162	1.177	1.177
Edu4 (control)			1	1	1	1	1
Bic*edu1				1.036	1.044	1.094	1.094
Bic*edu2					1.034	1.081	1.081
Bic*edu3						1.068	1.068
Bic*edu4 (control)							1

Table 1: Exp(B) values when variables are put in the model per variable

The variables were firstly put in the model one by one. The outcome of all variables was significant. In table 1 the Exp (B) values for those variables are shown. As the numbers differ slightly by some decimals, we do not use these for the further analysis, but the table is shown to give an overview. In table 2, shown below, the outcomes of the statistic tests are shown. In this table, the B value, the Standard Error, the Wald Chi-Square, the degrees of freedom, the p-value (significance) and the Exp (B) value are shown.

			Hypothesis Test			
Parameter	в	Std Error	Wald Chi-	df	Sig	Evp(B)
Falailletei		Std. Ellor	oquare	u.	oig.	Exp(b)
(Intercept)	-3,177	,0542	3438,241	1	,000	,042
Sex Respondent	-,164	,0265	38,280	1	,000	,849
Born in country of interview?	-,384	,0466	67,914	1	,000	,681
[Highest Education Level of Respondent=1]	,332	,0634	27,407	1	,000	1,393
[Highest Education Level of Respondent=2]	,265	,0556	22,667	1	,000	1,303
[Highest Education Level of Respondent=3]	,163	,0564	8,318	1	,004	1,177
[Highest Education Level of Respondent=4]	0 ^a					1
interaction_edu1	,090	,0339	7,067	1	,008	1,094
interaction_edu2	,078	,0305	6,604	1	,010	1,081
interaction_edu3	,066	,0288	5,220	1	,022	1,068
interaction_edu4	0 ^a					1
(Scale)	1 ^b					

Parameter Estimates

Dependent Variable: Total n umber of biological children

Model: (Intercept), Sex Resp ondent, Born in country of interview?, Highest Education Level of Respondent, interaction_edu1, interaction_edu2, interaction_edu3, interaction_edu4, offset = Ln_Age

a. Set to zero because this parameter is redundant.

b. Fixed at the displayed value.

Table 2: B-value, Std Error, Chi-Square, degrees of freedom, Significance and the Exp(B) of the regression

4.1: Sex of the respondent

First, we take a look at the sex of the respondent. In the table, it is shown that p-value variable is below 0.0005, so it is significant. As this variable is a dummy, men in this variable are 1 and female are 0. The Exp (B) number for this variable is 0,849. This means that in this model women are more likely to have children. There is no theory about this result, so this result cannot be explained.

4.2: Born in county of interview

For the variable 'Born in the county of interview', a dummy variable is used. In this variable, 0 stand for people born outside Germany and 1 stands for born in Germany. All people born outside of Germany are born in Turkey, as was shown in another variable in the dataset (a105). As shown in the table, the variable 'Born in county of interview', the p-value is also below 0.0005, which means that this variable is also significant. The null-hypothesis for this variable is that there is no difference in the incidence rate between people born in Turkey and people born in Germany. We can reject this hypothesis, so there is a difference between first and second generation migrants. The Exp (B) value for this variable is 0.681 which means that people born in Turkey have a higher probability at having more children than people born in Germany. This is in line with the theories of both Kulu (2017) and Guarin Rojas (2018).

4.3: Education Level

In the dataset, the variable 'Level of education' consisted of 6 categories. Because some categories were small (less than100 cases), the higher educational levels are merged. So in this model, the lowest

level of education (1) is primary education, the second level of education (2) is lower secondary education, the third level of education (3) is higher secondary education (for example the second phase of Gymnasium or Fachschule and the fourth level (4) of education is anything higher than that, including Hochschule (comparable to college or HBO) and University.

The null-hypothesis used for this variable is: There is no difference in the incidence rate for having children between the educational levels. In the test, all the educational levels are significant, which means that there is a difference in the incidence rate with the highest reference category, which is in this table the fourth level of education (4), which is higher education than the secondary level. The Exp (B) value for education (3) is 1.117 which means that people 1.117 times the amount of children than people with education (4). The Exp (B) value for education (2) have 1.303 times the amount of children than people with education (1) is 1.393 which means that people with education (1) have 1.393 times the amount of children than education (4). In the graph shown in figure 2 the 95% confidence intervals of the categories of the variable 'highest level of education' are shown. As the lines are not crossing, we can conclude that there is also a difference between the variables. As the Exp (B) rates are rising when the education level is lower, this means that people with a lower education have more children among the people in Germany with a Turkish background. This is in line with the theories of Kulu (2017) and Guarin Rojas (2018), but this model does calculate the amount of children and not the probability of giving a first or second child.



Figure 2: Confidence interval for the variable Highest Education

4.4: Interaction variables

Next to this, we take a look at the interaction variables. In the theory it was shown that second generation migrants have a higher level of education than their parents and have a lower amount of children then their parents. With this, we can suspect that there is an interaction between those variables. Based on this, interaction variables are computed. The null-hypothesis for the interaction is: There is a moderating effect of education between the place of birth and the number of children. In table 2 it is shown that for all variables the p-value is below 5% and is significant. This shows that the level of education is a moderating valuable between the place of birth and the number of

children. For this interaction, the highest education level (4) is used as the reference variable. The Exp (B) value for the third level of education is 1.068, the Exp (B) value for the second level of education (2) is 1.081 and the Exp (B) value for the first level of education is 1.094. This means that the effect is higher for people with a lower education.

Chapter 5: Conclusions

5.1: Discussion and conclusions

In this research the fertility of German inhabitants with a Turkish background is examined. The main question for this research is: 'Which factors do determine the differences in fertility between Turkish inhabitants of Germany' To answer the main question, we take first a look at the sub questions:

- What is the difference in fertility between first generation migrants and second generation Turks in Germany?
- What is the influence of education to the fertility of German inhabitants with a Turkish background?

The differences in fertility are measured in this research with a look at the amount of children of the respondent. A distinction is made between respondents born in Germany and respondents that are not born in Germany. In this case, people who are born in Germany are considered as second generation migrants and people not born in Germany as first generation migrants. In the Poisson regression, the p-value is significant, which means that there is a significant difference in the number of children between first and second generations migrants. The Exp (B) value is 0.681 which means that respondents born in Germany have a 0.681 probability to have children. Reading this, we can conclude that respondents born in Germany have less children than respondents born in Turkey and we can accept the first hypothesis: (H1: The second generation Turks in Germany have a lower probability at having a child than the first generation). This is in line with other research of the fertility of immigrants in other countries (Kulu, 2017, Guarin Rojas, 2018).

Next to this, the effect of education is measured. Both Kulu (2017) and Guarin Rojas (2018) stated that higher educated people have a lower probability of having a child. In the regression model, the p-value is significant, which means that there are differences between the levels of education. Looking at the Exp (B) values for the different levels of education, there can be concluded that people with a lower education have a higher probability of getting a child compared to the reference category which is in line with the theory. This means we can accept the second hypothesis (H2: The more higher educated Turkish people in Germany have a lower probability at having a child than the less educated people).

The third hypothesis for this research is about the moderation effect of the variable 'level of education' between the place of birth and the number of children (H3: The level of education acts as a moderation effect between the place of birth and the number of children). The p-value for the interaction variables is significant, which means that the level of education can count as a moderation effect. This means that the level of education between the place of birth and the amount of children.

So we can conclude that the fertility of Turkish immigrants in Germany and their descendants is influenced by both the place of birth and the level of education. Higher educated people have a lower probability to have children and second generation immigrants also have a lower probability to have children.

In this research, only two variables are used to explain the fertility levels of inhabitants of Germany with at Turkish background which makes the amount of conclusion we can draw limited. Next to this, only the probability of having children is measured and not the fertility rates. This makes it hard to compare to other researches, historical numbers or the native population of Germany.

5.2: Future Research

In future research, other variables, such as income, wellbeing and religiousness can be used for a broader view on this topic. Also a comparison can be made between the developments of the fertility rate of stayers in Turkey at this moment and Turkish people in Germany. Are those similar, and is this following the trend that people today are getting less children? With such a comparison, the Next to that, research can be done from which areas Turkish immigrants arrived and if this influences the fertility of the immigrants. Cekur (2018) stated that there are still huge differences in development in Turkey between regions and ethnic groups. It would also be interesting to make a comparison between the Turkish subgroup in Germany and other immigrant groups. Will there be the same results for other migrants or do they differ? And what are the factors that can lead to a difference?

Chapter 6: Literature

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