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**MEASURING POPULATION MOVEMENT AND INTEGRATION IN A GLOBALIZED  
WORLD**

**SESSION III: MIGRATION AND SOCIETY**

THE FEASIBILITY OF DETERMINING SUCCESSFUL INTEGRATION WITH  
STATISTICAL MEANS  
- USING MICROCENSUS DATA FOR ATTEMPTED INTEGRATION ANALYSIS

Note by the Federal Statistical Office of Germany and the Fachhochschule Gelsenkirchen<sup>1</sup>

**ABSTRACT**

1. With an increasing percentage share of migration population in many countries, both political actors and the general public tend to worry whether the homogeneity of the population can be maintained at a generally accepted level. Integration encompasses a variety of activities aimed at making the immigrant population familiar with the peculiarities of the host country and at doing away with upcoming cultural barriers.

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<sup>1</sup> This paper has been prepared at the invitation of the secretariat.

2. In many countries, there is an ongoing debate on whether or not sufficient efforts are undertaken with respect to integration, and if it is possible at all to determine whether integration is 'successful', i.e. whether integration efforts target the proper objectives.
3. There is a growing demand for statistical data to be used for monitoring the outcome of such integration activities, but most Statistical Offices are unable to provide the requested data. This paper suggests the use of survey data for this purpose. Such survey data exist in most countries, for EU Member States some of the data are even harmonised already.
4. The suggested concept is based on the statistical difference of well-defined population groups with respect to pre-defined indicator variables. Odds ratios, compiled by means of logistic regression, are used in combination with reclassification probabilities to determine, whether these population groups differ significantly with respect to the indicator variable used. The same compilation techniques can be used to monitor the relative distance among population groups over time via the respective odds ratios and thus creating a means for evaluating integration efforts.
5. Germany used the Microcensus as a data source, since it contains a rich variety of socio-demographic and social-economic data, among them data which can be used for determining alternative definitions of migration status such as, for example, foreigners, the foreign-born, or people with a general or a country-specific migrant background. Furthermore, it contains data which are suitable as indicator variables. In the present case, educational attainment and occupational qualifications were used as lead indicators for economic success, and unemployment, depending on family or social support as main source of living, and low income as unfavourable labour force conditions.
6. The results show a clear and statistically significant difference between the local population and the migrant population – however defined. This statistically significant difference holds true with respect to all indicator variables chosen, even if the individual results vary slightly with the estimation model or classification variable used. Furthermore, the data clearly indicate that the migrant population is heterogeneous. Actually the difference among sub-categories of the migrant population exceeds the difference between the local and migrant population. The odds ratios of ethnic Germans and naturalised foreigners for being subject to unfavourable conditions are higher than those of the local population, but those of foreigners exceed them to a significantly higher degree. Thus, it would clearly pay in Germany to address foreigners in particular, if the heterogeneity among the population groups – as measured with the odd ratios – is to be narrowed.

## **I. THE MIGRANT SITUATION IN GERMANY**

7. Germany has experienced an inflow of immigrants ever since the early '60s. When the economy picked up in the '50s, and the local labour force was less able to fill the needs, Germany started to employ immigrant workers. The first contracts with "guest workers" were signed as early as 1956, but reached a noticeable volume only from the early '60s onward. While in 1961 (West-) Germany had 690 000 registered foreigners (1.2% of the population), in 1970 the number had already increased to 2.4 million (4.3% of the population). Between 1974 and 1978 the hiring of migrant workers was stopped completely, but immigration continued – albeit

not as a continuous stream, but with ups and downs rather – as a consequence of family reunion measures and due to rising numbers of asylum seekers or civil war refugees.

8. In 1999 – at the point of Germany reunification – there were 5.0 million registered foreigners in West-Germany (8.3% of the population) and 191 000 in East-Germany (1.2% of the population); at the end of 2007, the numbers had settled at a level of 7.2 million. The peak value was reached in 1996, when there were close to 7.5 million registered foreigners in Germany. The number of foreigners is also determined by the interest – or lack thereof – of applying for German citizenship. At the end of 2005, more than 4.7 million out of 7.3 million foreigners qualified for naturalisation, but only less than 125 000 were actually naturalised in the course of 2006.

9. A second stream of immigrants contributed to the phenomenon of migration in Germany without being similarly reflected in statistical numbers. Ever since the end of the immigration wave of displaced persons in the wake of World War II in the mid '50s, there has been a continuous inflow of ethnic Germans. Ethnic Germans have either lived on German territory around the period of 1937 or are descendants of people having done so, or they belong to German minorities having maintained their cultural roots (language and customs) ever since their predecessors emigrated to Russia, Romania, Hungary as early as the 17<sup>th</sup> century. Government sources quantify the total number of ethnic Germans returned to Germany since 1950 (including spouses and children) to amount to 4.5 million, of which 2.6 million returned between 1988 and 1999 with the fall of the Iron Curtain. The exact number of ethnic Germans today is not known, however, as some of them may no longer be alive or may have moved to other countries.

10. Naturalised foreigners constitute another difficult-to-trace influence on migration in Germany. Naturalisation statistics quantify the total number of naturalisations since 1950 to amount to roughly 4.4 million, of which 3.3 million took place between 1990 and 2006. Currently the annual number of naturalisations is around 130 000. The exact number of naturalised foreigners is not known, as some of them may have died or left the country and as some of the ethnic Germans returning between 1990 and 1999 have also been naturalised, while the ones returning earlier or later have not.

11. A further difficulty in quantifying migration in Germany is associated with local-born children of migrants. Children born to ethnic Germans cannot be identified in birth records; neither can children born to naturalised foreigners. Since the Foreigner Act of 2000 there is an element of *ius soli* in German law, and children born to foreign parents are awarded double citizenship, if their parents fulfil given requirements with respect to e.g. length of residence. As a consequence of all of the above, we notice that the number of children born, admitted to kindergarten or to primary school and having a clearly foreign cultural upbringing – identified via the language spoken at home, the language of the papers read or of the TV channels watched – is continuously rising, while at the same time the number of people without German citizenship decreases simultaneously.

## II. THE EMPIRICAL STATUS QUO

12. There was a growing unease with the statistical situation on migration, as administrative records proved to remain unable to differentiate between Germans with respect to migration

status, however this status may be defined. Instead, a set of questions was added to the Microcensus – the longest-running population survey in Germany – to deal with the problem at hand. These questions relate to immigration, citizenship, and naturalisation, and respective information is provided for the interviewee him- or herself as well as for his or her parents.

13. With this set of data, foreigners – foreign- or local-born – can be distinguished from Germans – local-born, naturalised local- or foreign-born foreigners, immigrant ethnic Germans or from children with German citizenship born to any of the aforementioned groups or to foreign parents. Based on all these questions, the German Statistical Office defined the migration status of the population as a synthetic variable – yielding in a population with and without “a migrant background”. The first data became available for 2005, and – based on roughly 700 000 records of persons interviewed in the Microcensus – the number of persons with a migrant background were estimated as 15.3 million out of a total population of 82.4 million or as 18.6%. Thus, Germans with a migrant background (8.0 million) outnumber foreigners (7.3 million) by 9.7% to 8.9%, respectively.

14. The 2006 data, which have become available recently, indicate clearly that the population with a migrant background is increasing primarily due to birth cases, whereas the one without a migrant background is shrinking due to – among other things – being disproportionately affected by mortality risks observed in higher age brackets.

15. The Microcensus as a multi-purpose omnibus survey of persons and households provides a rich spectrum of socio-demographic and socio-economic information on the population in Germany, reaching from educational attainment and occupational qualifications via employment, earnings, income and poverty risks to household and family composition. It broadens the view on communalities and differences observed with respect to these topics between the population with and without migrant background, respectively. Being able to disaggregate persons with migrant background further into meaningful sub-categories, it allows a deeper insight as to how homogeneous or heterogeneous this population presents itself.

### **III. THE STUDY**

16. The publication of the first results of the economic and social role of the migrant population in Germany triggered substantial debate as to how a suitable definition of migrant population can best be reached. Most arguments presented in favour of including or excluding given person groups from the population with a migrant background were related to the known or assumed fact that these population groups varied with respect to “integration needs”.

17. As an intuitive consequence, it was discussed if and how statistical arguments could contribute to problem-solving. Alternative classifications for the migrant population could be compared among each other with respect to how well they are able to create homogeneous population groups – migrants and non-migrants. A classification scheme would be considered preferable, if it resulted in the members of the two resulting population groups being similar within the group but different from the respective other – technically, if the classification had a high ‘discriminatory power’. The homogeneity or heterogeneity would be measured with respect to an ‘indicator’ variable, which would have to be chosen thoroughly to reflect the aforementioned “integration needs”.

18. It was generally accepted that the analysis had to be performed with extreme caution. Inappropriate model specifications or a careless use of the underlying data can easily lead to biased results or to statistical artefacts, in particular to associating migration with an influence on the indicator variables that does not exist in reality. Minimizing these risks requires first of all a careful choice of the indicator variables. In addition, it requires including into the analysis all those variables, which – in addition to the migrant classification – may have an influence on the observed values of the indicator variable, among these influences of the survey sample design.

19. Based on the arguments presented above, the analysis was based the following data:

**Table 1: Classification variables used for distinguishing migrant and non-migrant population**

Variable	Description	Code	Value Labels	Sum of weights in grand total	
				in 1,000	in %
Nationality	Foreigner	0=no	German citizenship	75,145	91.1
		1=yes	non-German citizenship	7,321	8.9
Migrant	Foreign-born	0=no	born in Germany	72,066	87.4
		1=yes	born outside Germany	10,399	12.6
MigBack	Migrant background	0=no	no migrant background	67,132	81.4
		1=yes	migrant background	15,333	18.6
MigType	Migration type	0=no	Germans w/o migrant background	67,132	81.4
		1=EthGer	Ethnic Germans	4,053	4.9
		2=NatF	Naturalised foreigners	3,959	4.8
		3=For	Foreigners	7,321	8.9
Roots	<i>Cultural roots:</i> citizenship of foreigners and citizenship before naturalisation for naturalised foreigners	0=no	Germans w/o migrant background	67,132	81.4
		1=TR	Turkish cultural roots	2,814	3.4
		2=RU	Russian cultural roots	1,266	1.5
		3=PL	Polish cultural roots	1,058	1.3
		4=I	Italian cultural roots	840	1.0
		5=SR	Serbian cultural roots	445	0.5
		6=HR	Croatian cultural roots	417	0.5
		7=Ro	Romanian cultural roots	412	0.5
		8=GR	Greek cultural roots	399	0.5
		9=BiH	Bosnia-Herzegovina cultural roots	333	0.4
		10=EU25	Other EU25 cultural roots	1,771	2.1
		11=EUR	Other European cultural roots	886	1.1
		12=AF	African cultural roots	502	0.6
		13=AM	American cultural roots	783	1.0
		14=ASO	Asian/Oceanian cultural roots	1,005	1.2
15=Oth	Rest of the world; stateless	2,403	2.9		

**Table 2: Alternative indicator variables used**

Variable	Description	Code	Value Labels	Sum of weights in grand total	
				in 1,000	in %
Educational attainment	Highest school leaving certificate	0=none	no certificate	2,472	3.0
		1=low	low certificate (ISCED 0–2)	30,133	36.5
		2=middle	middle certificate (ISCED 3)	19,064	23.1
		3=high	high certificate (ISCED 4)	15,972	19.4
		.=miss	still in school	14,824	18.0
Occupational qualification	Highest occupational qualification attained	0=none	none	21,574	26.2
		1=low	low: training on the job <= 1 year	1,877	2.3
		2=middle	middle: dual education (ISCED 3A/B)	39,319	47.7
		3=high	high: university (ISCED 5–6)	8,112	9.8
		.=miss	still in professional training	11,583	14.0
Employment	Employment status	0=none	unemployed, economically inactive	45,899	55.7
		1=low	temporary employment only	3,361	4.1
		2=middle	part-time (< 35h)	6,387	7.7
		3=high	full-time (>= 35h)	26,818	32.5
Living	Main source of living	0=Fam	family support	24,097	29.2
		1=Soc	Social support	6,432	7.8
		2=Pens	income from pensions and interest	18,584	22.5
		3=Emp	employment income	33,352	40.4
Income	Net personal monthly income	0=none	none	16,906	20.5
		1=low	up to less than 1,100 €	25,041	30.4
		2=middle	1,100 to less than 3,600 €	34,264	41.5
		3=high	3,600 €and more	2,510	3.0
		.=miss	income missing or farmer	3,745	4.5

**Table 3: Additional variables included in the analysis**

Variable	Description	Code	Value Labels	Sum of weights in grand total	
				in 1,000	in %
Gender	gender	1=male	men	40,339	48.9
		2=female	women	42,127	51.1
Age	age in years	0 ... 95	age in years		
Stratum 1	region		201 regions used for stratification		
Stratum 2	building		5 building sizes used for stratification		
Cluster	sampling clusters		45,473 sampling clusters		

20. Each analysis would combine one indicator variable (Table 2) and one classification variable (Table 1), each complemented with all variables specified in Table 3. *Age* and *Gender* from Table 3 would be part of the model specification, whereas the stratum variables and the cluster variable would be used as technical variables in the procedure call. Indicator variables will have to be transformed into dichotomous variables, before the analysis is performed.

*Educational attainment* variable would have to be transformed into e.g. “low educational attainment” recoded as ‘1’ for code values ‘none’ and ‘low’ and as ‘0’ for code values ‘middle’ and ‘high’. The analysis system will automatically transform non-dichotomous explanatory variables (in this case classification variables) into a combination of dichotomous ones.

21. A typical analysis will compile the odds ratios by determining the percentage distribution of the indicator variable by the classification used as explaining variable. The relation of the percentages for ‘low’ (=TRUE) to ‘non-low’ educational attainment (=FALSE) is labelled as odds and compiled for all population groups defined through the classification. One of the resulting population groups is defined as reference group and this group’s odds are set as reference. The odds of all other groups are expressed in relation to the odds of the reference group. The resulting ‘odds ratio’ or ‘odds ratios’ are subject of all further analysis. Throughout this paper, the terms ‘risk’ and ‘odds ratios’ will be used interchangeably.

22. Indicator variables such as *Employment Status*, *Main Source of Living* or personal *Net Income* may not only react on variations of age, gender or migrant status. Therefore, these variables were additionally modelled with *Educational Attainment* and *Occupational Qualifications* as complementary explanatory variables. Thus the model will link employment, income and earnings to education in a way typically referred to as ‘human capital approach’.

23. A 50% random sample was drawn from the data set described in Tables 1 through 3 above. All estimations were based on the data of this random sample only. The authors plan to complement the results of the correlation quality indicators by applying the estimation results on the unused part of the data set and by compiling the respective indicators there as well.

24. The study uses logistic regressions for testing the hypotheses in question. The analysis was performed with the SURVEYLOGISTICS procedure from the SAS software package. SURVEYLOGISTICS was used to control for the influence of stratum and cluster variables. It had been established that, in selected cases, a LOGISTICS analysis had identified a variable as significant, whereas in SURVEYLOGISTICS the influence turned out to be non-significant.

25. The quality of the estimates is evaluated primarily based on the significance of the odds ratios. Odds ratios are considered as significant, if the confidence interval does not include the value ‘1’. The estimation quality is evaluated based on measures of association between predicted probabilities and observed responses, in particular Goodman-Kruskal’s ‘Gamma’ as rank correlation coefficient and ‘c’ as a means for testing the model’s sensitivity and specificity. Both coefficients are standardized in the range [0...1] and can be read in the same way a correlation coefficient is in a standard regression model.

#### IV. THE RESULTS

26. The results presented below will be based on *MigType* as classification variable, and they will use *Educational Attainment*, *Occupational Qualifications*, and *Main Sources of Living* as prototype indicator variables. The complete studies revealed that the principle findings do not depend on which classification variable was chosen, while the individual results do so.

27. It also became clear that the additional indicator variables *Employment Status* and *Net Income* react in a similar way to what will be shown for *Main Sources of Living*.

**A. Indicator Variable ‘Educational Attainment’**

28. The first model uses *Educational Attainment* as dependent variable with the response levels

1 = ‘no’ or ‘low’ school leaving certificates (code = ‘none’, ‘low’) and  
0 = ‘middle’ or ‘high’ school leaving certificates (code = ‘middle’, ‘high’).

29. *MigType* was used as classification variable together with *Age* and *Gender*. Two stratum variables and one cluster variable were also supplied. Tables 4 to 7 show selective parts of the output compiled.

**Table 4: Educational Attainment: The SURVEYLOGISTIC procedure**

Data Set	WORK.MIKROZENSUS
Response Variable	Educational Attainment ‘none_low’
Number of Response Levels	2
Stratum Variables	Regional stratum
Building-size stratum	
Number of Strata	969
Cluster Variable	Region
Number of Clusters	43844
Weight Variable	HRF
Model	Binary Logit
Optimization Technique	Fisher's Scoring
Variance Adjustment	Degrees of Freedom (DF)

**Table 5: Educational Attainment: Classification levels**

Class Level Information					
Class	Value	Design Variables			
MigTypus	0: no migrant background	0	0	0	0
	1: ethnic Germans	1	0	0	0
	2: naturalised foreigners	0	1	0	0
	3: foreigners	0	0	1	0
Gender	1: male	0	0	0	0
	2: female	1	0	0	0

**Table 6: Educational Attainment: Parameter estimated**

Analysis of Maximum Likelihood Estimated					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-2.9840	0.0210	20,285.2076	<.0001
Age	1	0.0551	0.000374	21,648.0567	<.0001
Gender 2	1	0.0179	0.0084	4.5064	0.0338
MigTypus 1	1	0.3849	0.0263	214.5023	<.0001
MigTypus 2	1	0.4047	0.0311	169.7236	<.0001
MigTypus 3	1	0.9779	0.0237	1,698.1892	<.0001

**Table 7: Educational Attainment: Odds ratios**

Odds Ratio Estimates				
Effect		Point Estimate	95 % Wald Confidence Limits	
Age		1.057	1.056	1.057
Gender 2 vs 1		1.018	1.001	1.035
MigTypus 1 vs 0		1.470	1.396	1.547
MigTypus 2 vs 0		1.499	1.410	1.593
MigTypus 3 vs 0		2.659	2.538	2.786
Gamma=	0.461 c      0.729			c= 0.729

30. All class levels except *Gender*=’female’ are highly significant. The odds ratios are significant as well, only for *Gender* the confidence interval approaches unity. The results can be interpreted as follows:

Women face a slightly higher risk of leaving school with a low attainment level. The influence of *Age* is also significant; the risk of low educational attainment thus increases with age.

31. All categories of migrant population face a higher risk of being awarded a low educational attainment than does the *local population*, i.e. the population without a migrant background. While for ethnic Germans and naturalised foreigners the risk of leaving school with a low attainment status is only moderately higher than that for the local population (+47% and +50%, respectively), for foreigners this risk is substantially higher (+166%). Additional analysis – not shown here – indicates that this substantially higher risk for foreigners does not change significantly if separate estimates are made for foreigners born abroad versus foreigners born locally. In the German case, these results indicate clearly that foreigners constitute a primary target group for all integration efforts aiming at improving school leaving qualification.

**B. Indicator Variable ‘Occupational Qualifications’**

32. The second model uses *Occupational Qualifications* as dependent variable with the response levels

1 = 'no' or 'low' occupational qualifications (code = 'none', 'low') and  
0 = 'middle' or 'high' occupational qualifications (code = 'middle', 'high').

33. Again, *MigType* was used as classification variable together with *Age* and *Gender*. Two stratum variables and one cluster variables were also supplied. Tables 8 and 9 show selective parts of the output compiled. In a second step *Educational Attainment* was added as a supplementary classification variable.

**Table 8: Occupational Qualifications: Parameters estimated**

Analysis of Maximum Likelihood Estimated					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-3.8442	0.0270	20,343.0914	<.0001
Age	1	0.0370	0.000396	8,737.4541	<.0001
Gender 2	1	0.8412	0.0106	6,259.3380	<.0001
MigTypus 1	1	0.7834	0.0259	916.3076	<.0001
MigTypus 2	1	1.2281	0.0313	1,544.2063	<.0001
MigTypus 3	1	1.9458	0.0235	6,835.4254	<.0001

**Table 9: Occupational Qualifications: Odds ratios**

Odds Ratio Estimates			
Effect	Point Estimate	95 % Wald Confidence Limits	
Age	1.038	1.037	1.039
Gender 2 vs 1	2.319	2.271	2.368
MigTypus 1 vs 0	2.189	2.081	2.303
MigTypus 2 vs 0	3.415	3.212	3.630
MigTypus 3 vs 0	6.999	6.684	7.330
Gamma= 0.461 c	0.729	c= 0.729	

34. Contrary to the previous situation, women face a substantially higher risk of having been awarded unfavourable occupational qualifications than do men (+132%). The influence of *Age* is again significant, i.e. the risk of low occupational qualifications increases with age.

35. All categories of migrant population face a higher risk of entering the labour market with lower occupational qualifications than the local population. All odds ratios are substantially higher than the ones observed with *Educational Attainment*; for ethnic Germans the risk is +119%, for naturalised foreigners it is +242%, But again, the situation for foreigners is by far the least favourable: their risk is not only significantly higher than that of the local population (+600%), but it is also more than twice as high as that of the 'second worst' migrant group (+600% compared to +241% for naturalised foreigners).

36. Tables 10 and 11 show how the influence of migration on the risk of low *Occupation Qualifications* changes, if *Educational Attainment* is introduced as an additional classification variable. The odds ratios for *Educational Attainment* are somewhat difficult to read, as the

category 'low' was chosen as reference group; thus the odds ratios for the categories 'middle' or 'high' are less than unity.

37. The main results are as follows: although *Educational Attainment* exerts a significant influence on *Occupation Qualifications*, the influence of migration does not disappear completely - only its dimension is reduced, albeit less than probably expected. The ranking – ethnic Germans hold the highest relative labour market qualifications, followed by naturalised foreigners and foreigners – remains unchanged. It is also noteworthy that the risk of ethnic Germans and of naturalised foreigners remains at +96% and +197%, respectively, the one for foreigners at +390%, even if the influence of *Educational Attainment* is taken into account.

**Table 10: Occupational Qualifications: Parameters estimated (Education Attainment included)**

Analysis of Maximum Likelihood Estimated					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-2.6118	0.0293	7,926.2916	<.0001
Age	1	0.0229	0.000425	2,896.9297	<.0001
Gender 2	1	0.9216	0.0115	6,472.4259	<.0001
School 0	1	2.9781	0.0518	3,309.4608	<.0001
School 2	1	-1.2955	0.0161	6,511.6600	<.0001
School 3	1	-1.6350	0.0200	6,681.8511	<.0001
MigTypus 1	1	0.6713	0.0284	560.6003	<.0001
MigTypus 2	1	1.0887	0.0341	1,020.2045	<.0001
MigTypus 3	1	1.5888	0.0253	3,933.8111	<.0001

**Table 11: Occupational Qualifications: Odds ratios (Education Attainment included)**

Odds Ratio Estimates			
Effect	Point Estimate	95 % Wald Confidence Limits	
Age	1.023	1.022	1.024
Gender 2 vs 1	2.513	2.457	2.570
School 0 vs 1	19.651	17.755	21.750
School 2 vs 1	0.274	0.265	0.283
School 3 vs 1	0.195	0.187	0.203
MigTypus 1 vs 0	1.957	1.851	2.069
MigTypus 2 vs 0	2.970	2.778	3.176
MigTypus 3 vs 0	4.898	4.661	5.147
Gamma= 0.602c      0.729		c= 0.800	

### C. Indicator Variable 'Main Sources of Living'

38. The third model uses *Main Sources of Living* as dependent variable with the risk of depending on social benefits, means-tested social income or similar forms of transfers as response levels

1 = social income as main source of living (code = 'Soc'),  
0 = other main sources of living (code = 'Fam', 'Pens', 'Emp').

Again, *MigType* was used as classification variable together with *Age* and *Gender* in the first stage. Tables 12 to 13 show selective parts of the output compiled. In a second step, *Educational Attainment* and *Occupational Qualifications* were added as supplementary variables.

**Table 12: Main Sources of Living: Parameters estimated**

Analysis of Maximum Likelihood Estimated					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-0.9473	0.0358	698.3329	<.0001
Age	1	-0.0304	0.000710	1,827.2992	<.0001
Gender 2	1	-0.2917	0.0160	331.5637	<.0001
MigTypus 1	1	0.5369	0.0370	210.4885	<.0001
MigTypus 2	1	0.4899	0.0416	138.4308	<.0001
MigTypus 3	1	0.9793	0.0295	1,098.9520	<.0001

**Table 13: Main Sources of Living: Odds ratios**

Odds Ratio Estimates			
Effect	Point Estimate	95 % Wald Confidence Limits	
Age	0.970	0.969	0.971
Gender 2 vs 1	0.747	0.724	0.771
MigTypus 1 vs 0	1.711	1.591	1.837
MigTypus 2 vs 0	1.632	1.504	1.771
MigTypus 3 vs 0	2.663	2.513	2.821
Gamma= 0.361 c      0.729		c= 0.678	

39. *Age* and *Gender* are inversely related to the risk of depending on social support as *Main Source of Living*; women are less encountered than men (-25%), and the old less than the young. The underlying reasons may be highly interesting, but they are not to be discussed here, as they refer to migrants and non-migrants in the same or in a very similar way.

40. Migrants are more likely to depend on social support than the local population. Naturalised foreigners are least likely to be encountered (+63%), followed by ethnic Germans (+71%) and by foreigners (+166%).

41. Tables 14 and 15 show how the influence of migration on the risk of depending on social support as *Main Source of Living* changes, when *Educational Attainment* and *Occupational Qualifications* are introduced as additional classification variables. Again, the results observed in the previous version do not change in principle, but detailed results differ of course. The influence of *Gender* increases compared to the previous version (-32% instead of -25%), the one of *Age* as well.

42. The influence of *Educational Attainment* and of *Occupational Qualifications* could be expected: the risk of depending on social support decreases with the levels of education or qualification reached, though with one remarkable exception: for holders of ‘middle’ school-leaving certificates, the risk is higher than for the ones with ‘low’ certificates.

43. Again, the influence of migration on the risk of depending of social support is significant, even if the influences of *Educational Attainment* and of *Occupational Qualifications* are explicitly taken into consideration. And again, the risks are highest for foreigners (+99%) and lowest for naturalised foreigners (+41%) with ethnic Germans keeping a middle position (+55%).

**Table 14: Main Sources of Living: Parameters estimated (Education Attainment and Occupational Qualification included)**

Analysis of Maximum Likelihood Estimated					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-0.3170	0.0506	39.2075	<.0001
Age	1	-0.0349	0.000772	2,042.8460	<.0001
Gender 2	1	-0.3790	0.0166	523.7473	<.0001
School 0	1	0.6784	0.0444	233.0975	<.0001
School 2	1	0.1714	0.0212	65.2595	<.0001
School 3	1	-0.4561	0.0335	185.1253	<.0001
OccQual 1	1	0.1032	0.0565	3.3337	0.0679
OccQual 2	1	-0.4323	0.0240	325.8432	<.0001
OccQual 3	1	-0.5925	0.0487	148.0911	<.0001
MigTypus 1	1	0.4349	0.0380	130.9449	<.0001
MigTypus 2	1	0.3458	0.0440	61.7141	<.0001
MigTypus 3	1	0.6884	0.0359	367.5637	<.0001

**Table 15: Main Sources of Living: Odds (Education Attainment and Occupational Qualification included)**

Odds Ratio Estimates			
Effect	Point Estimate	95 % Wald Confidence Limits	
Age	0.966	0.964	0.967
Gender 2 vs 1	0.685	0.663	0.707
School 0 vs 1	1.971	1.806	2.150
School 2 vs 1	1.187	1.139	1.237
School 3 vs 1	0.634	0.593	0.677
OccQual 1 vs 0	1.109	0.992	1.239
OccQual 2 vs 0	0.649	0.619	0.680
OccQual 3 vs 0	0.553	0.503	0.608
MigTypus 1 vs 0	1.545	1.434	1.664
MigTypus 2 vs 0	1.413	1.296	1.540
MigTypus 3 vs 0	1.991	1.855	2.136
Gamma= 0.429 c	0.729	c= 0.712	

#### **D. Summary of Results**

44. In Germany, the migrant population differs significantly from the non-migrant population and it does so irrespective of which indicator is chosen for measuring such difference. Thus, “integration” has not reached a satisfactory level in Germany yet.

45. Integration deficits differ substantially within the various subgroups of the migrant population though. In general, naturalised foreigners and ethnic Germans are closer to the population without a migrant background than foreigners are. With respect to some of the indicator variables used, the ‘distance’ between foreigners on one side and of naturalised foreigners and ethnic Germans on the other exceeds the distance between the two migrant groups and the local population.

46. If the data presented in this paper were to be used as a basis for policy advice, then two subjects would present themselves as priority areas:

(a) Foreigners are the main target group in Germany of all efforts aiming at raising the level of integration. They face a substantially higher risk of being in an ‘unfavourable situation’ compared to the local population, but also compared to the other two migrant groups analysed – however this ‘unfavourable situation’ may be defined. As being a foreigner in Germany is the consequence of personal decisions rather than of legal requirements, a foreign nationality may be seen as lead indicator for being subject of special integration needs;

(b) If integration activities need to be focused, then highest priority should be given to raising the educational attainment level and the level of occupational qualifications within the migrant population. It seems particularly cumbersome that low attainment or qualification levels are not limited to foreign-born migrants, who may in general have been brought up in less fortunate conditions in their country of birth, but that these low levels are likely to be replicated within the local-born offspring of these immigrants.

#### **V. CONCLUSIONS AND RECOMMENDATIONS**

47. The above results of the study indicate in our view that it is in general possible to use statistical means for analysing the degree of integration in a country and for monitoring the progress of this integration reached over time. Population surveys are a suitable way for collecting the necessary data, logistic regression is the suitable analysis tool.

48. All analyses described above can be performed fairly easily, as long as the following conditions are met:

(a) There is a common agreement on how to define the migrant population and on which variable to use for distinguishing between migrant and non-migrant population;

(b) There is a common agreement on how to measure or monitor “integration”. The choice of a generally accepted indicator variable may be crucial in a country, though. The indicator variables used in this paper serve as examples only. They are not to be understood as suggestions for which indicator variables to use in a given country;

(c) Some potential indicator variables may require more complex modelling than others. This paper shows likely interdependencies between indicator variables, and it also shows possible means for controlling for such interdependencies.

49. If the analysis is performed in a way similar to that shown in this paper, then ‘successful integration’ will exist, if the odds ratios of the indicator variable are not significant, while the model quality is simultaneously acceptable. Significant odds ratios, on the other hand, indicate that – with respect to the indicator variable in question – migrants and non-migrants “perform” measurably different.

50. Changes of the odds-ratios compiled at different points in time can be used to monitor integration: decreasing odds ratios indicate better integration, whereas increasing odds ratios stand for less integration.

51. Good model quality can only be obtained, if the following conditions are also met:

(a) Complementary variables such as age, gender, and survey-specific data have to be properly included;

(b) Standard quality indicators such as confidence intervals, “gamma” and “c” can be used to evaluate the significance of the compiled odds ratios and the quality of the model estimated;

(c) If the same data are collected over time, and if these data are analysed using the same model specification, the resulting data can be used for consistently monitoring “integration” over time.

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