



HAL
open science

Precautionary savings by natives and immigrants in Germany

Yu Zhu, Matloob Piracha

► **To cite this version:**

Yu Zhu, Matloob Piracha. Precautionary savings by natives and immigrants in Germany. *Applied Economics*, 2011, pp.1. <10.1080/00036846.2011.566202>. <hal-00718702>

HAL Id: hal-00718702

<https://hal.science/hal-00718702v1>

Submitted on 18 Jul 2012

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



HAL Authorization



Precautionary savings by natives and immigrants in Germany

Journal:	<i>Applied Economics</i>
Manuscript ID:	APE-2010-0128
Journal Selection:	Applied Economics
Date Submitted by the Author:	09-Mar-2010
Complete List of Authors:	Zhu, Yu; University of Kent, School of Economics Piracha, Matloob; University of Kent, School of Economics
JEL Code:	D80 - General < D8 - Information and Uncertainty < D - Microeconomics, E21 - Consumption Saving < E2 - Consumption, Saving, Production, Employment, and Investment < E - Macroeconomics and Monetary Economics, F22 - International Migration < F2 - International Factor Movements and International Business < F - International Economics
Keywords:	migrants, remittances, savings, uncertainty

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For Peer Review

Precautionary savings by natives and immigrants in Germany

M. Piracha^{ab} and Y. Zhu^{a,*}

^a School of Economics, University of Kent, Canterbury, CT2 7NP, UK

^b IZA, Schaumburg-Lippe-Straße 5-9, 53113 Bonn, Germany

This paper analyses the savings behaviour of natives and immigrants in Germany. It is argued that uncertainty about future income and legal status (in case of immigrants) is a key component in the determination of the level of precautionary savings. Using the German dataset, we exploit a natural experiment arising from a change in the nationality law in Germany to estimate the importance of precautionary savings. Using difference-in-differences approach, we find a significant reduction in savings and remittances for immigrants after the easing of citizenship requirements, compared to the pre-reform period. Our parametric specification shows that introduction of the new nationality law reduces the gap in marginal propensity to save between natives and immigrants by up to 80%. These findings suggest that much of the differences in terms of the savings behaviour between natives and immigrants are driven by the savings arising from the uncertainties about future income and legal status rather than cultural differences.

JEL Classification: D80, E21, F22

Acknowledgements: We would like to thank Jagjit Chadha, Ira Gang, Robert E. B. Lucas and participants at the XXI Annual Conference of the European Society for Population Economics, Chicago, for helpful comments. Part of this paper was written when Piracha was visiting the OECD Development Centre, whose hospitality is gratefully acknowledged. The usual disclaimer applies.

* Corresponding author. Email: Y.Zhu-5@kent.ac.uk.

I. Introduction

Most of the research on migration has focused on the labour market performance of immigrants, hence ignoring their role in the capital markets, especially their savings behaviour. Although recent literature has filled this gap somewhat, further analysis is needed to systematically analyse the differences between the level of precautionary savings of natives and immigrants, especially since savings is an important determinant of the assimilation process in the host country.

Recently several studies have contributed to the general topic of migrants' savings behaviour. Galor and Stark (1990) and Dustmann (1997) consider the link between return intentions of migration and their savings behaviour. Using an overlapping generations model, Galor and Stark show that the higher the probability of emigration from the host country the higher is the level of savings. They argue that since migrants have the high possibility of emigrating back to the source country, compared to natives, immigrants save more than the natives.¹

Dustmann (1997) endogenizes the return-intention with the savings decision. More precisely, he links the (precautionary) savings and return decisions with the level of uncertainty about the future income stream. He shows that if labour markets in the home and the host regions are positively correlated then immigrants will save more than the natives as they are subject to more income risk in the host country than are the natives. However, in the absence of positive correlation of economic

¹ Other arguments have also been explored for the difference in savings rate between natives and immigrants. There might be cultural or socioeconomic reasons which determine the level of savings, though this has been rejected by Shamsuddin and DeVortez (1998). Skill differences could also be responsible as it has an effect on the economic performance of immigrants (see Chiswick 1978 and Borjas 1987) which could affect their savings behaviour.

1
2
3 conditions between the two countries, the risk diversification favours the immigrants
4
5 as they are highly likely to emigrate back to their home country in case of worsening
6
7 labour market conditions in the host country. In such a circumstance, the immigrants
8
9 will save less compared to the natives.
10
11

12 Amuedo-Dorantes and Pozo (2002) use the 1979 Youth Cohort of the
13
14 National Longitudinal Surveys (NLSY79) to compare the precautionary savings and
15
16 wealth patterns of immigrants and natives. They find that immigrants on average
17
18 accumulate less wealth, i.e., carry out lower precautionary savings in the host
19
20 country, compared to natives. This finding is consistent with earlier results of
21
22 Carroll, Rhee and Rhee (1994) for Canada, Merkle and Zimmermann (1993) for
23
24 Germany and also partially support the theoretical results of Dustmann (1997).
25
26
27
28

29 In a related article, Amuedo-Dorantes and Pozo (2006) analyse the motives
30
31 for remittances by the migrants. They argue that remittances are transferred to the
32
33 home country for multiple reasons: to help family members (altruism), to purchase
34
35 family-provided insurance (informal agreement for reciprocal help in case of
36
37 economic hardship faced by the migrant) and self-insurance (precautionary savings).
38
39 They call the latter two the ‘insurance’ motive and test this by correlating host
40
41 variables with flows of remittances. More precisely, they determine the correlation
42
43 between risk and uncertainty level in the host country with level of remittances, i.e.,
44
45 the level of insurance they purchase.
46
47
48
49

50 Finally, a recent article by Bauer and Sinning (2006) studies the savings
51
52 behaviour of temporary and permanent migrants in Germany and compares that to
53
54 those of the natives. Although their scope is a bit wider than ours, the main concept
55
56
57
58
59
60

1
2
3 of their articles and ours is similar in nature. However, our paper differs from theirs
4
5 in two significant ways.
6
7

8 Firstly, they ex ante impose a decision rule regarding the type of migration,
9
10 temporary or permanent, whereas we think that, as pointed out by Dustmann (1997),
11
12 the decision process is endogenous in nature. A large number of individuals initially
13
14 migrate with a different motive but change their mind once they arrive, and spend
15
16 time, in the host country. Therefore making the migration decision endogenous is
17
18 crucial to this type of analysis.
19
20
21

22 Secondly, and in relation to the above point, we explicitly introduce
23
24 uncertainty to study the savings behaviour of natives and immigrants. Within this
25
26 framework then, there are two different scenarios. On the one hand it could be
27
28 argued that immigrants save more than the natives as there is a higher level of
29
30 uncertainty regarding migrant's employment status (because perhaps of their skill
31
32 level or residency status in the country) and thus there is higher risk of lower
33
34 earnings in the future. Under this condition, immigrants are likely to save more than
35
36 the natives. However, on the other hand, immigrants have the option to diversify risk
37
38 by taking employment in their home country when conditions in the host country get
39
40 worse. In this case they are likely to have lower level of savings compared to the
41
42 natives.
43
44
45
46
47

48 In terms of modelling the approach discussed above, we believe that the two
49
50 aspects of savings discussed in two separate articles by Amuedo-Dorantes and Pozo
51
52 (2002, 2006) could be analysed within the same framework to make a proper
53
54 comparison between natives and immigrants since for immigrants savings behaviour
55
56
57
58
59
60

1
2
3 is related to the remittance behaviour, as for them part of the savings takes place
4 outside the host country. More precisely we assume agents to be uncertain about
5 their future stream of income and maximize their utility over 2 periods with two
6 possible states of the world in period two: either ‘good’ (high income, which is
7 assumed in period 1) or ‘bad’ (low income).
8
9

10
11 Using the German Socio-Economic Panel (GSOEP) data we find that, once
12 remittances are taken into account, immigrants tend to save more than the natives.
13 However, in order to capture the impact of uncertainty on the savings (including
14 remittance) behaviour of immigrants, we exploit the natural experiment arising from
15 a change in nationality law in Germany in 2000. We find that the easing of the
16 requirements for naturalization has caused significant reductions of savings and
17 remittances for immigrants as a whole, which is consistent with our risk story. In
18 other words, with a fall in the uncertainty level in the host country a migrant tends to
19 behave more like a native, which shows a positive trend towards assimilation.
20
21

22
23 The rest of the paper is organized as follows. Section 2 outlines a brief
24 theoretical model to set out the foundation for the estimations of the model. Section
25 3 discusses the data while section 4 presents the empirical analysis. The last section
26 concludes the paper.
27
28

29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60

II. Theoretical Framework

We consider a two-period model in which the households know with certainty their income in the first period but there is uncertainty about the income in the second period which consists of a ‘good’ state or a ‘bad’ state. More precisely, income level in the second period, in the bad state, is Y^L (low) with probability μ and

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Y^H (high), in the good state, with probability $(1-\mu)$. In the first period the income level is assumed to be Y^H with certainty.

Households derive their utility from consumption C_1 in the first period and a discounted consumption level C_2 in the second period,

$$U = \ln C_1 + \delta \ln C_2 \quad (1)$$

where δ is the discount factor.

As in the simple two-period model, consumption in the first period is constrained by the savings made in that period for use in the second period,

$$C_1 \leq Y^H - S \quad (2)$$

In period 2, the household is faced with two possibilities. Either the good state will prevail with probability $(1-\mu)$ or the household will face the bad state with probability μ , then

$$C_2 \leq \mu [Y^L + S(1+r)] + (1-\mu) [Y^H + S(1+r)] \quad (3)$$

where r is the interest rate.

The households choose the level of savings to maximize their utility subject to the two constraints. The first order condition for this maximisation problem gives us the intertemporal consumption choices.

$$\begin{aligned} U^S &= \frac{\partial U}{\partial S} = -\delta C_1(1+r) + C_2 = 0 \\ \Rightarrow C_2 &= \delta C_1(1+r) \end{aligned} \quad (4)$$

Our objective in this paper is to analyse the role of uncertainty on the savings behaviour of households. In particular we want to determine whether non-natives save more or less as a precautionary motive compared to the natives. A priori we have two competing views on migrants' savings behaviour. One, as mentioned earlier, is that migrants are subject to more income risk in the host country than are the natives therefore will tend to save more. However, on the other hand migrants are more likely to diversify risk as they could always emigrate back to their home country if economic conditions in the host country were unfavourable. In this case migrants are likely to save less than the natives. The two conditions in our framework could be shown below.

Using the implicit function theorem we can derive the comparative results.

$$\frac{\partial S}{\partial \mu} = -\frac{\partial U^S / \partial \mu}{\partial U^S / \partial S} = -\frac{(Y^L - Y^H)}{(1 + \delta)(1 + r)} > 0 \quad (5)$$

This result suggests that an increase in the probability of the poor state in the second period increases the savings rate in the first period. This is consistent with the permanent income hypothesis as it states that an individual will decrease consumption in the good state (in the first period) and will increase saving to smooth out consumption over the lifetime,

$$\frac{\partial S}{\partial Y_H} = -\frac{\partial U^S / \partial Y_H}{\partial U^S / \partial S} = -\frac{(1 - \mu) - \delta(1 + r)}{(1 + \delta)(1 + r)} > 0 \quad (6)$$

$$\frac{\partial S}{\partial Y_L} = -\frac{\partial U^S / \partial Y_L}{\partial U^S / \partial S} = -\frac{\mu}{(1 + \delta)(1 + r)} < 0 \quad (7)$$

1
2
3 The sign for equation (6) is satisfied if the individual's discount rate of future
4
5
6 consumption $\delta > \frac{1-\mu}{1+r}$; a very small discount rate is required to trigger savings in
7
8
9
10 the presence of high uncertainty level of future income. Equations (6) and (7)
11
12 together imply that $\frac{\partial S}{\partial(Y^H - Y^L)} > 0$ which means a higher dispersion between the
13
14
15
16 good and bad states results in higher level of savings. This is then consistent with
17
18 consumption smoothing as well as with our story of saving for the future in the
19
20 presence of uncertainty about the state of the world in the second period.
21
22

23
24 The simple theoretical setup gives us some insights into the affect of
25
26 uncertainty on the savings behaviour. In the rest of the paper we conduct a more rich
27
28 empirical analysis of this setup. More precisely, we will determine the effect of
29
30 uncertainty on the savings behaviour of immigrants (and compare it to that of
31
32 natives) due to a change in their legal (residency) status in Germany.
33
34

35 36 **III. Data and Empirical Approach**

37
38
39 We use the German Socio-Economic Panel (GSOEP) data which is a
40
41 representative micro data on individuals and families in Germany collected annually
42
43 since 1984. The sample consists of households with a head aged between 16 and 65
44
45 during 1997-2006 inclusive, i.e. waves 14 through 23.² Since one of the main focus
46
47 points, as mentioned in the Introduction, is the analysis of the impact of new
48
49 nationality law (change in the legal residency status of immigrants) which came into
50
51 effect in January 2000, we exclude the 'Innovation Sample' and the 'High Income
52
53
54

55
56
57 ² 2006 is the latest year available. The year 1997 was chosen as the beginning of the sample period
58 because this is the earliest wave where savings and remittances are available.
59
60

1
2
3 Sample', both of which were added to the main sample after 2000. As only 1% of all
4
5 immigrants live in East Germany at any time, we also drop East Germany from our
6
7 sample.
8
9

10 We distinguish between natives and immigrants according to the country of
11 birth and nationality. For the purpose of our analysis, a native (German) is defined as
12 someone who was born in Germany and holds German citizenship.³ In contrast, an
13 immigrant (non-native) is someone who was not born in Germany, regardless of
14 nationality. Within the group of immigrants, we can further differentiate between
15 naturalized immigrants and foreigners according to the current nationality.⁴ Since we
16 want to focus on the impact of change in nationality law on foreigners' savings and
17 remittances behaviour, we exclude from our main analysis immigrants who had
18 already attained German citizenship before 1998, as well as foreigners from the old
19 EU15 countries or Switzerland. Hence our main sample consists of 5219 distinct
20 households, of which 566 are non-natives as of 1998. The median spells are 7 waves
21 for both natives and non-natives.
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38

39 The literature suggests that nationality and country of origin matter for
40 people's savings and remittance behaviour. In particular, these factors are expected
41 to affect people's precautionary savings. For instance, immigrants might have a
42 higher *marginal propensity to save (MPS)* compared to the natives because they face
43 higher employment/income uncertainties for various reasons, such as restrictions
44 imposed by the legal and welfare system or discrimination in the labour market. On
45
46
47
48
49
50
51
52

53
54 ³ GSOEP does not ask respondents about the country of births of their parents.

55 ⁴ There are 183 distinct individuals who were born in Germany but do not have German citizenship in
56 our sample. These are presumably second-generation immigrants who form an interesting group in its
57 own right. However, we feel that the sample size is too small to generate estimates with any precision
58 and therefore decide to leave them out for the current paper.
59
60

1
2
3 the other hand, an alternative explanation to differential in the MPS is the
4 unobserved heterogeneity (for ‘culture effects’, see e.g. Carroll, Rhee and Rhee
5 1994) across natives and immigrants. The discrimination between these two
6 competing hypotheses is not only of academic interest, it also carries important
7 policy implications: if differences in preferences or tastes (or culture in general) are
8 responsible for the variation in the marginal propensity to save across natives and
9 immigrants, then one would expect to see a convergence in the savings and
10 consumption behaviour only through the process of assimilation which is long-term
11 in nature. In contrast, if the difference in MPS across natives and immigrants is
12 largely driven by differentials in uncertainties (i.e. precautionary savings motive),
13 then legal reforms that reduce uncertainties might lead to sizeable changes in
14 behaviour over the short-term. Therefore, the real challenge from an econometric
15 point of view is to find an exogenous variation that will allow us to disentangle the
16 effect of unobservables from that of different degrees of uncertainties faced by these
17 two distinct groups.
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37

38
39 The recent reform of the nationality law in Germany offers us such a *natural*
40 *experiment*. The 2000 citizenship legislation replaced the previous one which was
41 solely based on the principle of descent (*jus sanguinis*), dating back to the imperial
42 period of 1913, with the introduction of the country of birth (*jus soli*) principle in the
43 citizenship law and the easing of the requirements for naturalization. This reform
44 was only made possible after the coalition led by Gerhard Schröder came to power
45 in 1998, and therefore was largely unanticipated at the time.⁵ The change was also
46
47
48
49
50
51
52
53
54

55
56
57 ⁵ Easing of naturalisation process was indeed one of Gerhard Schroder’s election manifestos and
58 therefore it could be argued that it was not necessarily unanticipated. However, there are two things
59
60

1
2
3 radical. For instance, the qualifying period was reduced from a minimum of 15 years
4
5 to 8 years. Fig. 1 shows that the proportion of foreigners (i.e. non-citizens at the
6
7 beginning of the sample period) acquiring German citizenship has tripled from
8
9 around 8% before 1998 to about 25% by 2004. This pattern is consistent with
10
11 aggregate statistics from official source.
12
13

14
15 The outcome variable we focus on in this paper is savings. While the
16
17 measurement of savings is fairly straight forward for natives, it is complicated by the
18
19 treatment of remittances for non-natives. In this paper, we are going to look at
20
21 savings and remittances separately, as well as the sum (implicitly treating all
22
23 remittances as savings):
24
25

- 26
27 1) **savings**: usual amount of money left over at the end of the month that the
28
29 household can save for larger purchases, emergency expenses or to
30
31 acquire wealth;
32
33 2) **remittances**: this adds further payments or support by all household
34
35 members to parents, children, (ex) spouse, and other persons related (or
36
37 not) who live abroad.;
38
39 3) **total savings** (i.e. savings and remittances combined): to the extent that
40
41 all remittances are ‘insurance’ related, this definition is fully justified.
42
43
44 However, if parts of the remittances are motivated by altruism, then this
45
46 definition might be regarded as an upper bound.
47
48
49
50
51
52
53

54 to note. One is that there was a very strong opposition to this policy, not only by the rival political
55
56 parties but some potential coalition partners as well, and in the face of this it might not have been
57
58 obvious that the change in law will be implemented. Second, if it was indeed anticipated then the
59
60 choice of 1998 as the start of our sample period should, if anything, work against us in finding a
significant impact of the law change.

1
2
3 Fig. 2 shows the mean levels of savings, loan repayments and remittances
4 over time by legal status.⁶ It is obvious that natives save more on average than
5 immigrants. This is not surprising as here we do not control for any other factors, the
6 most important of which is the household income. What is really striking is change
7 in savings behaviour among non-natives over this relatively short time period.
8 Comparing to natives who have demonstrated remarkable stability over the sample
9 period, both savings and remittances have experienced a dramatic drop post reform
10 for the subsample of immigrants.⁷
11
12
13
14
15
16
17
18
19
20
21

22 Table 1 gives the summary statistics of the key variables to be used in the
23 econometric analysis in Section 4, for natives and immigrants separately. Native
24 households report an average family net income of €2524 per month, which is 20%
25 higher than the mean of €2099 of immigrant households. Natives save €228 per
26 month on average, almost 80% more than the mean savings by immigrants.
27 However, this 'savings gap' is reduced to just over 30% if we regard remittances as
28 savings.
29
30
31
32
33
34
35
36
37
38

39 Although theoretically savings can be negative, it is often reported as a
40 variable left-censored at zero in household surveys such as the GSOEP.
41 Policymakers are often interested in finding out the number and share of savers as
42 well as the level of savings. So we also report the percentage of savers by different
43 definitions in Table 1. It turns out that natives not only save more on average, but are
44
45
46
47
48
49

50
51 ⁶ Both Fig. 2 and Table 1 show small positive remittances attributed to natives. This could be by, for
52 instance, second-generation immigrants (who were born in Germany and hold German citizenships
53 and hence classified as natives).

54 ⁷ Other than the nationality law, there weren't any changes after the elections that could specifically
55 affect immigrants' savings behaviour. However, we still empirically check this later on by comparing
56 the savings behaviour of natives and immigrants after the law change to ascertain if there were any
57 broader changes in the economic policy that might have affected the savings behaviour of individuals
58 in the country.
59
60

1
2
3 also more likely to have positive savings. 60% of natives save on a regular basis, a
4 figure which is about 50% higher than the 41% for immigrants. However, once we
5
6 take into account remittances, this gap is reduced to only 10%.
7
8
9

10 While heads of immigrant households are about two years older on average
11 (45.5 vs. 43.4 years old) compared to their native counterparts, they receive 2 years
12 less schooling. Immigrant families also tend to be larger and have more children,
13 implying an even large per capita income gap in favour of natives. Moreover, heads
14 of immigrant households are much less likely to be female (21.7% vs. 38.1%) and
15 significantly more likely to be married. They are also less likely to be in work, and at
16 least twice as likely to be unemployed (omitted category being inactivity) or to be
17 receiving social assistance. They are only one third as likely to own their houses and
18 apartments. Finally, three-fifths of immigrants are of Turkish origin while about one
19 third are from former Yugoslavia.
20
21
22
23
24
25
26
27
28
29
30
31
32
33

34 To sum up, immigrants seem to fare worse in terms of virtually all socio-
35 economic indicators compared to natives. However, this is not surprising given their
36 relatively more disadvantaged background and the constraints imposed by their legal
37 status.
38
39
40
41
42

43 In the following econometric analysis, we simply split the sample into two
44 halves, with pre-treatment years defined as 1997-1998 and post-treatment defined as
45 2004-2006 inclusive. The intervening period of 1999-2003 inclusive is left out.⁸
46
47
48
49
50
51
52

53
54 ⁸ Leaving out the transition period of 1999-2003 minimizes potential problems with anticipatory
55 effects as well as lags in the naturalization process (often taking more than one year). Table A1 in the
56 Appendix shows that the (lead) effect of changing nationality in the post-reform period has had no
57 *additional* impact on savings, remittances or household income for immigrants in the pre-reform
58 period.
59
60

IV. Empirical Results

Simple difference-in-differences estimates

Figs. 1 and 2 suggest that it is perhaps no coincidence that immigrants in Germany decrease their levels of savings and remittances as Germany is undergoing a landmark reform of its immigration law. This is consistent with our theoretical model as the precautionary savings motive arising from the uncertainties, here due to their legal status, will be much weakened for immigrants as a result of the reform.

While Table 2a presents difference-in-differences (DiD) estimates without controls for covariates, Table 2b allows for a full set of controls for age, gender, education, labour market status, benefit status, house ownership, ethnic origin, and number of people and dependent children in the household. The natives are used as the control group while immigrants form the treatment group.

We focus on the coefficient of the interaction between the immigration dummy and the post-reform dummy (i.e. the DiD term in Table 2), which measures the ‘average treatment effect’ after differencing out the effect. Comparing to natives, immigrants save less, and also tend to remit less, as a result of the reform. However, only the first effect is statistically significant at the 5% level. This suggests the introduction of the new citizenship law in 2000 caused a statistically significant decrease in savings relative to what it would have been in the absence of the reform. The decrease in savings is also economically significant, at €50 per month without remittances, and €60 per month with remittances. On the other hand, the reform itself appears to have no effect on adjusted household net income. These results are consistent with the view that the relaxation of immigration control in general and the

1
2
3 easing of the requirements for naturalization in particular have significantly
4 weakened precautionary savings for immigrants. In other words, a change in the
5 legal status in favour of the immigrants reduces the level of uncertainty which in
6 turn changes their savings behaviour.
7
8
9
10
11

12 *Random-effect Tobit Estimates*

13
14
15
16 Economists as well as policymakers are not only interested in (changes in)
17 the absolute levels of savings and remittances, but also in the (changes in) the
18 relative levels of savings, often measured as a share of net income. In particular, a
19 measure of key importance is the marginal propensity to save (MPS), which refers to
20 the increase in saving that result from a marginal increase in income.
21
22
23
24
25
26
27

28 Table 3 shows the random-effect Tobit estimates, which not only allow for
29 left censoring of savings, but also take advantage of the panel nature of our data, for
30 the 3 alternative definitions of savings. In the following we will just focus on the
31 change in the MPS differential between natives and immigrants arising from the
32 introduction of the new citizenship law, which are captured by the 3-way interaction
33 between the immigrant dummy, the post-reform dummy and the continuous measure
34 of household net income. The MPS for natives pre-reform is 17.7%. The MPS for
35 immigrants is more than 50% (around 10-11 percentage points) higher in the base
36 period, regardless of whether we take remittances into account. This pattern is
37 consistent with a much stronger motive for precautionary savings among
38 immigrants. There is a general decrease in MPS in the magnitude of 1-2 percentage
39 points across both subsamples post-reform. However, the MPS for immigrants as a
40 whole has suffered an additional large and statistically significant drop, around 7.5
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3 percentage points. Indeed, this implies that the MPS gap in favour of immigrants
4
5 pre-reform was closed by about two thirds if the narrowest definition of savings is
6
7 used. When remittances are treated as savings, the gap could be reduced by as much
8
9 as three quarters.
10
11

12 13 *Sensitivity analysis* 14 15

16 We have carried out various robustness checks (not reported to save space
17
18 but are available upon request) to make sure our findings are not sensitive with
19
20 respect to the choice of the transition years. In the following we will focus on the
21
22 validity of the natural experiment and test whether the causal effect indicated by the
23
24 difference-in-difference model might be due to some remaining heterogeneity
25
26 among immigrants. The idea was to repeat the difference-in-differences exercise by
27
28 comparing the same control group of natives to immigrants who had already
29
30 acquired German citizenship by 1998 (i.e. before introduction of the reform). If the
31
32 nationality law which was introduced in 2000 was found to affect savings and
33
34 remittances behaviour for immigrants who had already acquired German citizenship
35
36 by 1998, then the causal effects we have found in the previous sections will be
37
38 questionable.
39
40
41
42
43

44 Table 4 shows that the 2000 reform has had no effect whatsoever on
45
46 immigrants who had already been naturalized by the time of the reform. This
47
48 exercise clearly demonstrates that the causal effect we have identified is not driven
49
50 by some remaining heterogeneity between naturalized immigrants and foreigners
51
52 (over and above the difference in legal status) and hence lends strong support to the
53
54 validity of the natural experiment.
55
56
57
58
59
60

V. Conclusions

This paper analysed the savings behaviour of natives and immigrants in Germany using the German Socio-Economic Panel (GSEOP) data. We found that savings reported by natives are 80% higher than that by immigrants on average, and natives are 50% more likely to have positive savings than immigrants. However, the savings gap is substantially reduced once we take remittances into account. Moreover, controlling for a full set of individual and family characteristics, we found that the marginal propensity to save for immigrants is actually more than 50% higher than that for natives.

We then moved on to estimate the importance of precautionary savings using a natural experiment arising from a change in the nationality law in Germany in 2000. Using a difference-in-differences approach, we found that the easing of the requirements for naturalization has caused significant reductions of savings for immigrants who are directly affected by the reform, in the magnitude of €50 per month, comparing to the pre-reform period. On the other hand, the change in legislation does not affect the income differential between natives and immigrants. Our parametric specification also suggests that the introduction of the new nationality law reduces the gap between natives and immigrants in marginal propensity to save by 65% to 75%, depending on whether remittances are regarded as savings.

Our results are robust with respect to a number of sensitivity checks. In particular, we have shown that the 2000 reform has had no effect on immigrants who had already acquired German citizenship by the time the law was introduced. This

1
2
3 exercise clearly demonstrates that the causal effect we have identified is not driven
4
5 by some remaining heterogeneity between naturalized immigrants and foreigners
6
7
8 and hence lends strong support to the validity of natural experiment. Put together,
9
10 our findings suggest that much of the differences in terms of the savings behaviour
11
12 between natives and immigrants are driven by the precautionary savings arising
13
14 from the uncertainties about future income and legal status rather than cultural
15
16 differences.
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For Peer Review

References

Amuedo-Dorantes, C. and Pozo, S. (2002) Precautionary saving by young immigrants and young natives, *Southern Economic Journal*, **29**, 48-71.

Amuedo-Dorantes, C. and Pozo, S. (2006) Remittances as insurance: evidence from Mexican immigrants, *Journal of Population Economics*, **19**, 227-254.

Bauer, T.K. and Sinning, M. (2005) The savings behaviour of temporary and permanent migrants in Germany, *RWI Discussion Paper No. 29*.

Borjas, G. (1987) Self-selection and the earnings of immigrants, *American Economic Review*, **77**, 531-553.

Carroll, C.D., Rhee, C. and Rhee, B. (1994) Are there cultural effects on saving? some cross-sectional evidence, *Quarterly Journal of Economics*, **109**, 685-700.

Chiswick, B., 1978, The effect of Americanization on the earnings of foreign-born men, *Journal of Political Economy*, **86**, 897-921.

Dustmann, C. (1997) Return migration, uncertainty and precautionary savings, *Journal of Development Economics*, **52**, 295-316.

Dynan, K. E., Skinner, J. and Zeldes, S. P. (2004) Do the rich save more? *Journal of Political Economy*, **112**, 397-444.

Galor, O and Stark, O. (1990) Migrants' savings, the probability of return migration and migrants' performance, *International Economic Review*, **31**, 463-467.

Merkle, L and Zimmermann, K. (1992) Savings, remittances, and return Migration, *Economic Letters*, **38**, 77-81.

Shamsuddin, A. F. M. and DeVortez, D. J. (1998) Wealth accumulation of Canadian and foreign-born households, *Review of Income and Wealth*, **44**, 515-533.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Figures

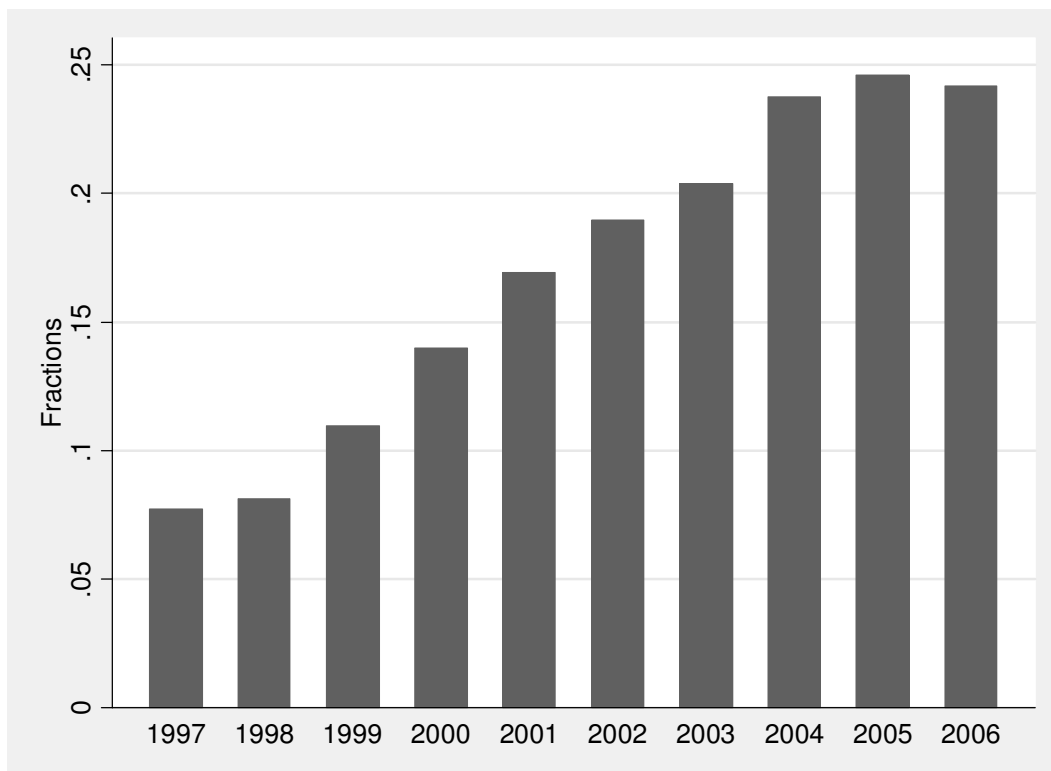


Fig. 1: Acquisition of German Citizenship by Foreigners, 1997-2006

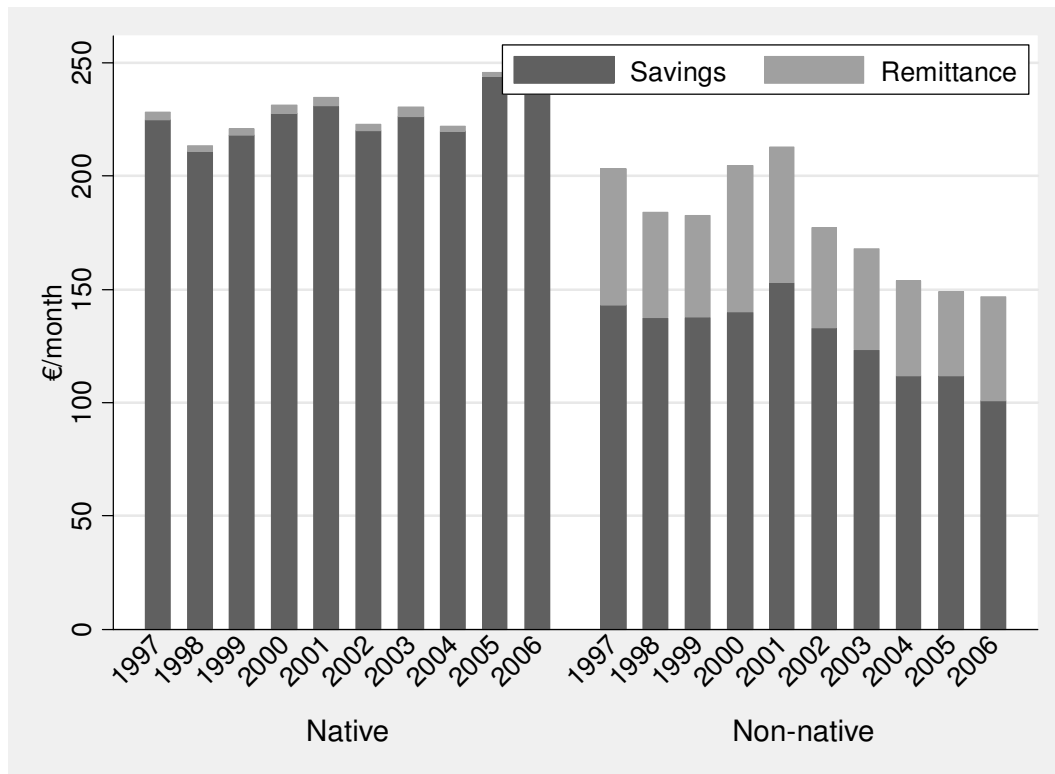


Fig. 2: Mean Savings and Remittances over Time by Legal Status

Tables

Table 1: Summary statistics

	<i>Natives</i>		<i>Immigrants</i>	
	<i>Mean</i>	<i>Standard Error of Mean</i>	<i>Mean</i>	<i>Standard Error of Mean</i>
Household Net Income (€/month)	2524.1	12.8	2098.8	24.8
Savings (€/month)	227.9	3.2	127.0	6.7
Prop. with +ve savings (%)	60.0	0.4	41.3	1.2
Remittances (€/month)	2.8	0.4	48.4	3.4
Prop. with +ve remittances (%)	1.7	0.1	24.9	1.1
Savings+Remittances (€/month)	230.7	3.3	175.4	7.9
Prop. with +ve total savings (%)	60.5	0.4	53.8	1.2
Age	43.4	0.1	45.5	0.3
Years of Education	12.2	0.0	10.1	0.1
Household size	2.57	0.01	3.34	0.04
Number of children under 16	0.76	0.01	1.14	0.03
Female (%)	38.1	0.4	21.7	1.0
Married (%)	57.9	0.4	82.1	0.9
Employed (%)	75.9	0.4	63.0	1.2
Unemployed (%)	5.2	0.2	16.1	0.9
Receiving Social Assistance (%)	2.3	0.1	5.6	0.6
Own House (%)	46.5	0.4	16.4	0.9
Foreigner (%)	-	-	85.0	0.9
Turkish (%)	-	-	59.5	1.2
Former Yugoslavia (%)	-	-	32.7	1.1
Obs (person-waves)	13 712		1672	

Notes: The definitions of savings are given in the data section on page 11.

Table 2a: Difference-in-differences estimates without controls

	<i>Savings</i>	<i>Remittances</i>	<i>Savings and Remittances</i>	<i>Household Net Income</i>
Immigrant	-77.101 (12.635)	50.357 (5.634)	-26.744 (14.747)	-358.151 (44.635)
Post reform	18.788 (6.807)	-0.589 (0.780)	18.200 (6.855)	379.287 (27.544)
<u>Immigrant*Post-reform (DiD)</u>	-50.294 (15.313)	-11.481 (7.138)	-61.774 (17.268)	-35.879 (67.297)
Constant	217.384 (5.705)	3.129 (0.625)	220.513 (5.775)	2311.908 (21.633)
Obs (person-waves)	15 384	15 384	15 384	15 384
Adj-R²	0.008	0.051	0.003	0.024

Notes: SEs in parenthesis.

Bold difference estimates indicate statistical significance at the 5% level.

Table 2b: Difference-in-differences estimates with controls

	<i>Savings</i>	<i>Remittances</i>	<i>Savings and Remittances</i>	<i>Household Net Income</i>
Immigrant	-39.516 (27.152)	34.356 (9.303)	-5.161 (28.274)	-359.307 (95.083)
Post reform	10.121 (6.497)	-1.110 (0.809)	9.011 (6.541)	345.529 (22.755)
<u>Immigrant*Post-reform (DiD)</u>	-49.061 (15.358)	-10.841 (7.128)	-59.902 (17.095)	-74.828 (54.467)
Age	-4.301 (2.677)	-0.825 (0.531)	-5.126 (2.743)	41.794 (9.459)
Age square	0.062 (0.032)	0.012 (0.007)	0.074 (0.032)	-0.329 (0.116)
Female	-20.443 (8.973)	-0.474 (1.045)	-20.917 (9.040)	-63.011 (32.523)
Married	69.803 (11.788)	6.141 (1.689)	75.944 (11.931)	219.295 (43.261)
Years of Education	30.421 (2.185)	1.257 (0.356)	31.678 (2.231)	142.728 (7.286)
Turkish	39.620 (27.924)	1.642 (10.317)	41.262 (29.613)	-138.557 (50.753)
Former Yugoslavia	49.386 (30.660)	49.255 (14.989)	98.640 (34.063)	93.881 (61.844)
Employed	68.152 (10.641)	5.086 (1.728)	73.238 (10.816)	444.891 (36.713)
Unemployed	-36.238 (10.719)	1.482 (3.537)	-34.756 (11.390)	-238.205 (40.365)
Receiving Social Assistance	-11.866 (11.299)	-7.097 (1.874)	-18.963 (11.708)	-217.399 (49.579)
Own House	78.975 (8.340)	-2.566 (1.279)	76.876 (9.263)	330.745 (33.657)
Household size	28.227 (7.567)	-1.856 (1.130)	26.371 (7.699)	559.584 (28.264)
Number of children under 16	-56.334 (8.432)	1.169 (1.036)	-55.165 (8.565)	-353.488 (31.920)
Constant	-236.123 (55.567)	-3.404 (6.892)	-239.527 (56.175)	-2309.827 (186.415)
Obs (person-waves)	15 384	15 384	15 384	15 384
Adj-R²	0.114	0.072	0.114	0.348

Notes: SEs in parenthesis.

Bold difference estimates indicate statistical significance at the 5% level.

Table 3: Random-effect Tobit estimates with alternative savings measures

	<i>Savings</i>	<i>Remittances</i>	<i>Savings and Remittances</i>
Immigrant	-283.957 (75.102)	493.962 (91.732)	-140.845 (69.097)
Post-reform	-18.006 (15.840)	-40.733 (46.364)	-20.727 (15.938)
Net Income (MPS)	0.177 (0.005)	-0.002 (0.0145)	0.175 (0.005)
Immigrant * Post-reform	88.535 (63.796)	2.152 (77.214)	75.525 (58.702)
Immigrant * Net Income	0.112 (0.019)	0.071 (0.023)	0.096 (0.018)
Post-reform * Net Income	-0.018 (0.005)	0.011 (0.014)	-0.017 (0.005)
<u>Immigrant * Post-reform* Net Income</u>	-0.075 (0.025)	-0.034 (0.029)	-0.072 (0.023)
Age	-16.473 (3.483)	2.765 (8.514)	-16.378 (3.461)
Age square	0.189 (0.039)	0.020 (0.094)	0.192 (0.039)
Female	-13.677 (12.749)	-2.187 (29.800)	-15.083 (12.719)
Married	110.986 (12.921)	134.065 (31.843)	113.126 (12.858)
Years of Education	20.400 (2.129)	29.572 (4.444)	21.747 (2.113)
Turkish	22.002 (66.766)	17.150 (76.557)	8.323 (62.053)
Former Yugoslavia	40.586 (69.445)	180.115 (79.223)	109.759 (64.144)
Employed	87.703 (12.601)	74.374 (30.027)	90.705 (12.520)
Unemployed	-105.830 (21.617)	30.926 (39.609)	-87.251 (20.913)
Receiving Social Assistance	-102.495 (32.241)	-223.769 (77.232)	-112.505 (31.345)
Own House	20.626 (10.993)	-20.031 (25.400)	18.558 (10.948)
Household size	-64.225 (7.606)	-25.965 (15.961)	-62.917 (7.527)
Number of children under 16	-16.519 (8.153)	8.128 (17.651)	-16.068 (8.056)
Constant	-213.868 (72.08)	-1563.231 (195.369)	-235.849 (71.770)
Obs (person-waves)	15 384	15 384	15 384
Rho	0.476	0.620	0.476
Log likelihood	-69687.699	-5798.981	-71670.864

Notes: SEs in parenthesis.

Bold difference estimates indicate statistical significance at the 5% level.

Table 4: Difference-in-differences estimates with controls, natives versus naturalized immigrants

	<i>Savings</i>	<i>Remittances</i>	<i>Savings and Remittances</i>	<i>Household Net Income</i>
Immigrant	-21.701 (13.225)	17.390 (3.417)	-4.312 (13.471)	-306.355 (48.098)
Post reform	9.765 (6.504)	-0.921 (0.805)	8.843 (6.548)	345.807 (22.803)
<u>Immigrant*Post-reform (DiD)</u>	-11.976 (21.881)	-7.398 (4.445)	-19.374 (22.108)	-39.991 (68.913)
Constant	-235.186 (56.118)	-2.000 (5.276)	-237.185 (56.343)	-2356.490 (190.298)
Obs (person-waves)	14 726	14 726	14 726	14 726
Adj-R²	0.115	0.018	0.117	0.347

Notes: SEs in parenthesis.

Bold difference estimates indicate statistical significance at the 5% level.

Control variables include age, age squared, gender, education, labour market status, benefit status, house ownership, ethnic origin, and number of people and dependent children in the household (see Table 2).

Appendix

Table A1: Test for anticipatory (lead) effects: difference-in-differences estimates with controls, pre-reform sample only

	<i>Savings</i>	<i>Remittances</i>	<i>Savings and Remittances</i>	<i>Household Net Income</i>
Immigrant	-25.065 (36.352)	29.277 (10.393)	4.212 (39.040)	-427.352 (108.039)
<u>Immigrant Naturalized post-reform (lead effect)</u>	3.721 (25.650)	-3.695 (16.296)	0.026 (31.415)	66.821 (70.066)
Constant	-127.832 (80.166)	-16.907 (11.245)	-144.738 (81.738)	-1756.883 (225.788)
Obs (person-waves)	7 008	7 008	7 008	7 008
Adj-R²	0.097	0.101	0.098	0.329

Notes: SEs in parenthesis.

Bold difference estimates indicate statistical significance at the 5% level.

Control variables include age, age squared, gender, education, labour market status, benefit status, house ownership, ethnic origin, and number of people and dependent children in the household (see Table 2).