Discussion Paper

The PHF: a comprehensive panel survey on household finances and wealth in Germany

Ulf von Kalckreuth
Martin Eisele
Julia Le Blanc
Tobias Schmidt
Junyi Zhu

Abstract:

The Panel on Household Finances (PHF) is a new panel survey on household finances and wealth in Germany conducted by the Deutsche Bundesbank. It covers the balance sheets, pension claims, savings, incomes and work histories of households, together with some information on consumption patterns, attitudes, expectations and standard demographic characteristics. This paper introduces the survey, highlights its main methodological features and presents initial results.

The first wave of the survey was carried out between September 2010 and July 2011. It encompasses a net sample of 3,565 randomly selected households in Germany. Wealthy households are oversampled using micro-geographic indicators. The survey is designed to be a full panel. The micro data will be made available for scientific use. The next wave is scheduled for 2014.

Aside from being a self-contained and comprehensive survey on household finances in Germany, the PHF is part of the Household Finance and Consumption Survey (HFCS). This system of surveys collects e*x ante* harmonised micro data in every country of the euro area.

Non-technical summary

The Panel on Household Finances (PHF) is a new panel survey on household finances and wealth in Germany conducted by the Deutsche Bundesbank. It covers the balance sheets, pension claims, savings, income and work histories of households, together with some information on consumption patterns, attitudes, expectations and standard demographic characteristics. This paper introduces the survey, highlights its main methodological features, and presents some initial results.

A representative sample comprising 3,565 households provided data for the first survey wave between September 2010 and July 2011. Wealthy households were oversampled on the basis of micro-geographic indicators in order to shed light on the distribution and the composition of wealth across households. The next wave is tentatively scheduled for 2014, and will involve as many households surveyed in the first wave as possible.

In this paper we do not only describe the methodology of the PHF but also illustrate the great potential of micro-data for the analysis of issues related to household finance by presenting some first results for property ownership. What the article shows, in particular, is how housing wealth is distributed in Germany and the size of the associated debt burden borne by the various household groups. Some aspects of the data processing have not yet been completed, meaning that the figures presented below are provisional.

In future, the data will provide a comprehensive view of households' assets and debts and their determinants, thus allowing a better understanding of issues such as saving and consumption behaviour, the distribution of wealth or insolvency risks. The anonymised micro data will be made available for scientific use in spring 2013, but initial results will be published earlier.

Because the PHF is part of a new, harmonised survey being carried out in all euro-area countries, it will be relatively easy to place the German results in a European context. We are confident that the high data quality will make it a fruitful resource for researchers and monetary policymakers alike.

Nichttechnische Zusammenfassung

Im Rahmen der Panelstudie „Private Haushalte und ihre Finanzen" (PHF) hat die Bundesbank erstmals stichprobenartig deutsche Haushalte über ihr Vermögen und ihre Finanzen befragt. Die erhobenen Daten umfassen vor allem die Vermögensbilanzen der Haushalte, ihre Rentenansprüche, die Spartätigkeit, das Einkommen, Daten zur Arbeitstätigkeit, zum Konsum, zu Einstellungen und Erwartungen sowie viele demographische Charakteristika. In diesem Papier werden die Studie und ihre Methodik vorgestellt, sowie erste vorläufige Ergebnisse präsentiert.

Die erste Befragungswelle fand zwischen September 2010 und Juli 2011 statt. In dieser Zeit wurden 3565 Haushalte befragt. Es handelt sich dabei um eine repräsentative Stichprobe. Um die Vermögenszusammensetzung und –verteilung besser analysieren zu können, wurden wohlhabende Haushalte überproportional erfasst. Die nächste Befragung soll 2014 erfolgen. Dabei werden möglichst viele Haushalte der ersten Welle wieder befragt.

Einerseits gibt das Papier einen Überblick über das Konzept und die statistischen Arbeiten, andererseits zeigt er das große Potential von Mikrodaten für die Analyse der Finanzen privater Haushalte auf. Letzteres geschieht am Beispiel der Immobilienvermögens. Insbesondere zeigt der Aufsatz, wie Immobilienvermögen in Deutschland verteilt ist und wie stark verschiedene Haushaltsgruppen durch die damit verbundene Verschuldung belastet sind. Die vorgelegten Zahlen sind noch vorläufig.

Die Daten liefern künftig ein umfassendes Bild der Vermögens- und Verschuldungssituation privater Haushalte und ihrer Bestimmungsgründe und ermöglichen so ein besseres Verständnis etwa des Spar- und Konsumverhaltens, der Vermögensverteilung oder der Insolvenzrisiken. Die anonymisierten Mikrodaten werden voraussichtlich Anfang 2013 vorliegen.

Das PHF ist Teil einer neuen, harmonisierten Befragung, die in allen Euroländern durchgeführt wird. Daher werden sich die deutschen Ergebnisse vergleichsweise leicht auch in einen europaweiten Kontext stellen lassen.

Contents

Lists of Tables and Figures

The PHF: a comprehensive panel survey on household finances and wealth in Germany

1. Overview

The Panel on Household Finances (PHF) is a new panel survey on household finances and wealth in Germany, covering the balance sheets, pension claims, savings, incomes and work histories of households, together with some information on consumption patterns, attitudes, expectations and standard demographic characteristics. The survey is conducted by the Deutsche Bundesbank. It is designed to be a full panel, ie all consenting household members will be re-contacted.

The first PHF wave was carried out between September 2010 and July 2011 in cooperation with infas Institut für angewandte Sozialwissenschaften, Bonn. During that time a net sample of 3,565 randomly selected households was collected. Wealthy households were oversampled on the basis of microgeographic indicators in order to shed light on the distribution and the composition of wealth across households.

The anonymised micro data will be made available for scientific use in spring of 2013, but initial results will be published earlier.

1.1 A euro-area initiative

Aside from being a comprehensive survey on household finances in Germany, the PHF is part of the Household Finance and Consumption Survey (HFCS). This system of national wealth surveys collects *ex ante* harmonised micro data in every country of the euro area.

At the initiative of the ECB, a Eurosystem task force, composed of researchers and statisticians from most euro-area central banks, started work in 2006. In 2008, the euro-area national central banks and the ECB, in collaboration with some national statistical institutes, set up the Euro Area Household Finance and Consumption Network (HFCN); see Eurosystem Household Finance and Consumption Network (2009).

In order to ensure comparability of results across countries, the network developed a common blueprint questionnaire. The blueprint serves as the basis for new surveys launched in several countries and as a benchmark for existing surveys. The national questionnaires are not input-harmonised, ie questions are not direct translations of the common blueprint. Instead, a set of harmonised output variables was agreed upon by the HFCN, in order to provide for the necessary flexibility in dealing with the diversity of financial institutions in Europe, and to accommodate pre-existing wealth surveys. Among those are the SHIW in Italy, the EFF in Spain, and the DNB household survey in the Netherlands. A number of so-called 'core' output variables are to be provided by all participating countries. In addition, a set of 'non-core' variables has been defined which are output-harmonised as well, but not obligatory. In

addition, each national question programme contains many features which are specific to the country in question.[1]

1.2 Heterogeneity matters

The HFCS in general, and the PHF in particular, are central bank endeavours to collect micro-level information on household finances. For a variety of purposes, the available aggregate data are deemed insufficient. Measuring all relevant issues simultaneously at the individual level opens up the possibility of understanding structural relationships. Instead of being limited to observing the slow and jointly endogenous changes of averages and aggregates, micro data provide the cross-sectional perspective.

There are two major reasons for central banks' efforts in collecting detailed micro-level information and making them available. First, the financial conditions and financial behaviour of households have major implications for an economy's development. Second, heterogeneity matters in household finances even more than in other areas of economic activity. The "representative household" is a fiction which is often not helpful in understanding consumption, saving and how these are affected by monetary policy or other exogenous factors, in much the same way as the concept of a "representative bank" is not helpful when dealing with financial stability issues.

The informative value of aggregated data on household debt is constrained in a number of ways. The Bundesbank's borrowers statistics show that the total debt of households (employees, sole proprietors and entrepreneurs) stood at €1,403 billion at the end of 2010. Dividing this figure by the number of households at that particular time yields an average household debt of €34,813. However, such averages mask important information which can only be obtained using microdata. Provisional PHF figures show that only 41.9% of German households are actually in debt at all. These households must consequently bear an average debt of €83,098. Yet this does not tell the whole story, either. In fact, it is not so much the averages but rather the tails of distributions which matter for financial stability. Heavily indebted households with insufficient income are likely to file for insolvency, leaving their creditors to foot the bill. Central banks therefore need to be able to assess how concentrated indebtedness is and how much debt is borne by those households for which the ratio of payment obligations to disposable income exceeds a given threshold. Information on distributions is necessary to breathe life into terms such as "loss given default" or "value at risk". The section on mortgage debt below serves to illustrate the importance of information on distribution.

To understand individual behaviour, we have to look at important state variables, such as saving or its components, as well as its possible determinants at the level of the individual. As

---

[1] More information on the Eurosystem project is provided by the HFCN website,
     http://www.ecb.int/home/html/researcher_hfcn.en.html .

a case in point, the ownership of homes and property is much less widespread in Germany than in other countries in Europe and elsewhere. This has important ramifications for the distribution of wealth and debt. In order to explain the distribution of home and property ownership, we have to observe, at the level of the individual, as many determinants for the acquisition of property as possible, and, preferably, compare them across countries. Such determinants include income, transaction costs, financing constraints, tax considerations and family structure, along with the significance of inheritance for the transfer of property ownership.

Another example is the well-known stylized fact that aggregate household shareholding is very low in the light of the risk/return structures. Individual level data are needed even for the very first step, recognising that market participation is an issue: most households do not own any stocks at all. Micro data do far more than this, however. By providing multivariate distributions, they allow researchers to see who holds shares, how the value of the wealth tied up in shares is distributed and what the associated characteristics of holders are in terms of income, wealth, age, job security and financial education.

2. Content and scientific focus of the PHF

The kernel of all HFCN surveys is a detailed breakdown of the households' balance sheet, listing both assets and liabilities. Figure 1 gives an overview.

Figure 1: The household balance sheet – a schematic overview

Assets	Liabilities
Non-financial assets – Owner-occupied housing – Other ownership of homes and property – Established businesses (net value) – Vehicles, collections, jewellery etc	*Liabilities* – Mortgages – Consumer loans (including credit card debt, current account credit, unpaid invoices, student loan debt) – Loans for business activity
Financial assets – Savings and current accounts, savings under building loan contracts – Mutual fund shares/units, debt securities, shares, derivatives and certificates – Balances from private pension and life insurance policies – Long-term equity investment – Assets under management	*Net wealth*
Total assets	Total liabilities

Like the blueprint HFCS questionnaire,[2] the PHF program consists of the following modules.

1. Household structure
2. Demographics
3. Consumption
4. Non-financial assets and their financing
5. Other liabilities and credit constraints
6. Businesses and financial assets
7. Inheritances and gifts
8. Employment
9. Old-age provision
10. Income

The PHF project website provides full documentation, including the question program, alongside with an English translation.[3]

2.1 Special features of the German PHF

The PHF has some important special features that set it apart from the prototype HFCN survey and make it a major research endeavour in its own right. First, the PHF places special emphasis on two key topics in German economic policy: savings and old age provision (see below). In this regard it follows an approach to household savings which was pioneered by SAVE,[4] a university-based study organised by MEA in Mannheim. Second, by establishing a full panel, the PHF takes a life cycle perspective. Similar to the Panel Study on Income Dynamice (PSID) on US families, and the Socio-Economic Panel (SOEP) on German households, the PHF will have a self-rejuvenating panel structure.[5] The PHF is designed to be compatible with both SAVE and SOEP, such that these three German data bases can be used in a complementary way.

2.2 Measuring saving

Measuring household saving is a challenging conceptual problem for all surveys on household finances. The PHF can start from the complete asset side of a household balance sheet, as this is part of the core survey programme.

---

2 The core questionnaire common to all HFCN surveys can be accessed at the HFCN website: http://www.ecb.int/home/pdf/research/hfcn/core_questionnaire.pdf?95a48949283c6fec13cfdb7a1db50e5f

3 See http://www.bundesbank.de/vfz/vfz_panel.en.php

4 See Börsch-Supan et al. (2009).

5 For a description of SOEP, see Wagner, Frick and Schupp (2007). The panel structure of SOEP is similar though not identical to the structure of the PSID. The details of the PHF panel structure have yet to be finalised.

This opens up the possibility of measuring savings in two ways:

1) In each wave, the question programme loops over all assets and asks for the corresponding saving contracts. We make use of the fact that most saving in Germany is based on long-term contracts, the conditions of which we ask households to specify. This yields gross flows into the most important saving vehicles in Germany: Riester pension accounts, private annuities, life insurance policies, building society contracts, savings accounts, mortgages, etc. In order to obtain net saving, the survey also asks for discontinuous saving and the dissolving of savings,an approach pioneered by SAVE.

2) Important complementary information will come from the panel dimension, comparing asset holdings over time.

Based on these two measuring methodologies, the survey is designed to provide a rather accurate picture of the saving dynamics in the medium and long run.

2.3 Old-age provision

Saving decisions are intimately linked with the old age provision system of a country. The resident population in Germany is ageing rapidly. At the same time, the country is moving from a full pay-as-you-go system to a partly funded retirement system. This puts double pressure on active labour market participants. The basic problems of ageing societies are almost universal in rich countries, but the details are very specific to each system. Thus, for meaningful analyses, country-specific data are required.

The PHF gives an account of the German pension system in the phase of transition, together with detailed information on wealth, savings, and work life. The survey waves will allow researchers to describe the dynamics of income, saving and wealth, in the cross-section as well as over the life cycle.

2.4 Wealth dynamics and family dynamics

Data on the distribution of wealth is scant in Germany and elsewhere. Beyond the statics of the wealth and income distribution, the PHF will make it possible to observe their *evolution*. Observing saving, the asset portfolio, transfers and inheritances in a self-refreshing, long-run panel can provide us with the elements of the Markov chain that governs the evolution of the distribution of income and wealth. The survey will open the way to fascinating research on the interaction of family dynamics and finances.

3. Survey mode and sampling design

3.1 Basic features

The first wave of the PHF targeted a net sample of 4,000 households, though only 3,565 households could be surveyed. Wealthy households were oversampled on the basis of income tax data at municipality level and of micro-geographical information on the level of street sections within large cities. Like the SOEP and PSID, all households will be re-contacted in later waves, and all individuals will be tracked. If households break up or individuals secede, the split-off households will be added to the panel. In order to address panel mortality and to include new important subgroups such as immigrants, there will be refreshment samples at regular or irregular intervals. The survey frequency will be two to three years.

3.2 Survey mode

Most questions refer to the household as a whole. These questions were to be answered by the member who knows best about the household's financial situation. All household level data were collected by face-to-face, computer-aided personal interviews (CAPI). In addition, the survey collects data on the income, the old age provision and the occupation of each household member older than 16. These questions were to be answered individually. A paper version and an online interface were available in the event that a personal interview was not feasible. As a last resort, proxy interviews were allowed. In order to reach Germany's growing immigrant population, the entire question programme was translated into Turkish, Russian and Polish. However, these language modules were not actually requested in the field. Although immigrant participation was not bad, the willingness to participate in this survey turned out to correlate strongly with the ability to speak German.

3.3 Sampling design

The random sampling of addresses for the PHF was conducted in three stages: 1) selection of municipalities/sample points, 2) selection of street segments in large cities, 3) selection of addresses from population registers ("Einwohnermelderegister"). The sampling design enhances the selection probability of wealthy households in order to capture an adequate number of wealthy households in the final sample. The first stage of the sampling design divides municipalities into three strata according to size and proportion of wealthy households. Income tax statistics are used to identify small municipalities (<100,000 residents) with a high share of wealthy households. These municipalities are oversampled at stage one.

The second stage is based on a stratification of streets. In big cities with a population of 100,000 and more, streets are grouped into two categories − streets in wealthy neighbourhoods and other streets. Wealthy streets are oversampled. Small and middle-sized municipalities with fewer than 100,000 residents are treated as a single unit. The streets of

those municipalities are not categorised, because small municipalities very often do not provide addresses based on a selection of streets.

In the third stage, adults (18 years and older) are drawn from a public register ("Einwohnermeldeamtsregister"). In municipalities with fewer than 100,000 residents, individuals are selected by a systematic random selection process out of a list of all registered adult residents sequenced by family name. In cities with more than 100,000 residents, addresses are sampled from the selected streets.

4. The PHF wave one field phase

The PHF field phase consisted of two major parts, an initial field phase and a "re-launch". The latter was initiated because the initial phase yielded too few interviews.

The initial phase lasted 25 weeks, the second an additional 20 weeks. The survey began on 13 September 2010 and ended on 18 July 2011. At the beginning of the initial field phase, 212 trained interviewers were deployed. Of those, 132 interviewers were retained for the relaunch phase, which started in March 2011. For the whole study the gross sample size was 20,501, split evenly between phase 1 (10,258 addresses) and phase 2 (10,243 addresses).

In the course of both phases, specially trained interviewers tried to convert soft refusals. Beginning in January 2011, a new contact procedure was established. After a certain time, households that had not been reached by the interviewers in the field were contacted centrally by the survey agency's CATI interviewers to make appointments for the face-to-face interviews. The re-launch phase introduced a number of additional changes. Financial and non-financial incentives for interviewers were modified. For instance, interviewers were allowed to choose their clusters in the second part of the field phase. They were required to contact each "undecided" household at least once every week, and there was a bonus payment for the most successful interviewers. Furthermore, households in clusters characterised by bad housing conditions were given some additional incentive payment to boost participation among this subgroup.

Despite all these efforts, the response rate of 18.6% was rather low in comparison with other studies of the same kind.[6]

Figure 2 depicts the response behaviour over the course of both parts of the field phase. The green line shows the interviews conducted as a percentage of households with a definite participation decision, positive or negative. The low values in the initial weeks are an artefact of measurement, as negative decisions take their effect immediately, whereas positive decisions only enter when the interview has actually taken place. After a few weeks, the

---

[6] This is response rate 2 according to the classification of AAPOR, see AAPOR (2008). The addresses which are not in the target group because, for instance, the households have since moved to an unknown address were removed from the numerator of the quotient. Valid household interviews were included in the denominator even if some interviews of individuals were missing.

cooperation rate had converged to a surprisingly stable plateau. The large swings in the number of interviews completed are primarily related to interviewer activity.
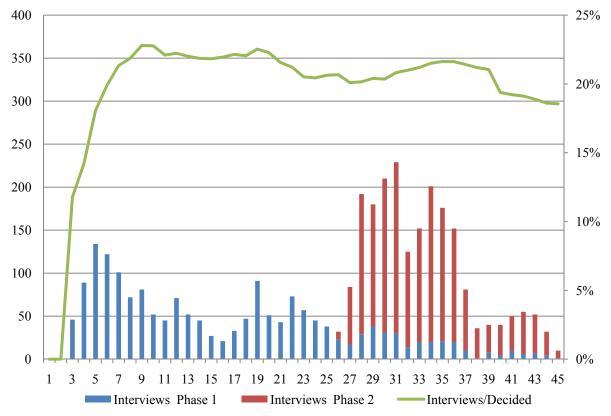
Figure 2: Fieldwork by week

Notes: Decided = Households which either refused or completed the interview. Ineligible cases are not part of the calculations.
Source: Authors' own calculations based on weekly response statistics for the PHF provided by infas.

The number of completed interviews depicted in red and blue shows two important features of the field phase. First, most interviews were completed in the early stages of fieldwork. But second, there is a bright side of having a long field phase: after more than 30 weeks of fieldwork, interviewers still conducted a non-negligible number of interviews with phase one households.

5. Non–response and selectivity

5.1 Unit non-response

The long field phase certainly also helped improve the quality of the data. Comparisons with external statistics as well as logit models explaining the participation decision of households show that the sample does not suffer from severe selectivity problems.

The non-response analysis shows that households in wealthy areas are slightly more likely to participate than other households. Similarly, households with older members are somewhat easier to convince. This section evaluates selectivity by holding the PHF sample against the German Microcensus 2010/2006. The Microcensus covers 1% of the German population and

is designed to give fundamental statistical information in the time between census years. For the sake of this comparison, PHF data are weighted with design weights that counterbalance the oversampling of the wealthy, without adjusting for participation, ie without non-response factors or calibration to population totals. Selectivity would show as a mismatch between the estimated population structures from the two surveys. The implicit assumption is – of course – that the Microcensus gives an adequate account of the population structure. When the outcomes of the 2011 general census are published, this comparison will have a still better foundation.
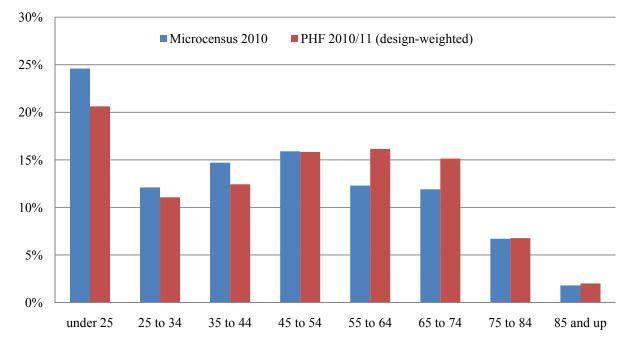
Figure 3: Persons in households, by age

Sources: Destatis (2011) Bevölkerung und Erwerbstätigkeit – Haushalte und Familien – Ergebnisse des Mikrozensus 2010 – Fachserie 1, Reihe 3; PHF sample: the Panel on Household Finances (PHF) survey conducted by the Deutsche Bundesbank. Survey period: September 2010 to July 2011

Figure 3 depicts the estimated age structure according to the Microcensus 2010 and (design-weighted) PHF data. Although the very young are somewhat underrepresented in the PHF, the rest of the age structure looks satisfactory. Similarly, although single households are overrepresented in the PHF , even very large households are represented well: see Figure 4 on the distribution of household size.
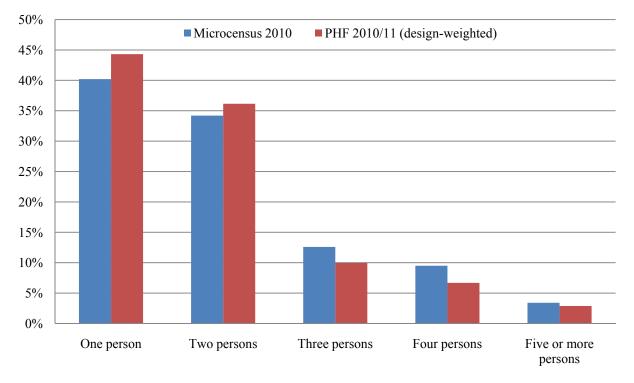
Figure 4: Households, by household size

The distribution of labour market status in Figure 5 according to the two surveys shows a close correspondence.

Table 1 depicts the income distribution, which is very important in a wealth survey. In the PHF, income can be measured as the sum of the incomes from labour, entrepreneurship and pensions of all household members, plus household-level transfer and capital income. However, for the sake of this comparison, income is measured in exactly the same way as in the Microcensus, using the answer to a question on the overall monthly net income of the household[7]. Because of the oversampling feature in the PHF survey design, the distribution based on both weighted and unweighted data is shown. The second column of Table 1, the unweighted distribution, shows that the oversampling was successful: The four highest categories are clearly overrepresented in the sample, with the top income category (4500 €and above) more than twice as numerous as in the population. This changes when oversampling is factored out by the use of design weights. The resulting distribution closely mirrors the Microcensus.

---

[7] Though measuring income this way may lead to biased results due to recollection errors in both surveys, it is the correct way to compare the income structure in the two surveys.
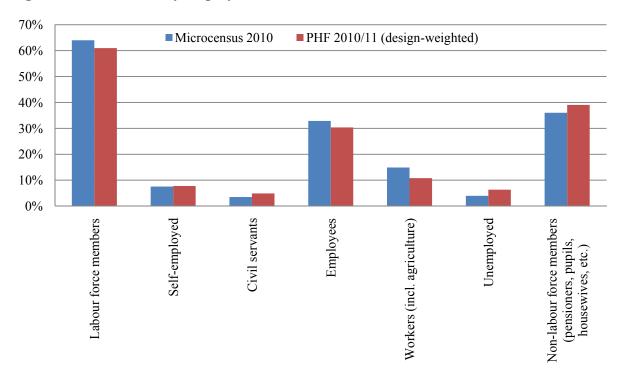
Figure 5: Households, by employment status of the main income earner

Sources: Destatis (2011) Sonderauswertung im Auftrag der Deutschen Bundesbank – Ergebnisse des Mikrozensus 2010; PHF sample: the Panel on Household Finances (PHF) survey conducted by the Deutsche Bundesbank. Survey period: September 2010 to July 2011

Ultimately, much is revealed by homeownership, as housing equity is an important component of wealth. Figure 6 compares the share of owner-occupied housing, ie whether or not a household owns the apartment or house it occupies, in the Microcensus and the PHF. The share of owner-occupied housing in Germany was 40.6% in 2006, which is very low by international standards. Using design weights, the PHF data yield an estimated overall share of 44.2%. The sample appears biased towards home-owners. The rest of the table shows that this bias is due to singles or couples without kids.

Special care was taken to reach immigrant households. However, the fact that the initial written communication was done in German and the face to face interviewers making the first contact were not especially qualified in working with foreign languages may have induced a bias against the growing immigrant population in Germany. The design-weighted share of foreigners in the survey is 6%, as opposed to around 9% in the population. A bias of this size can be corrected easily by calibrating weights. The composition in terms of countries of origin is also satisfactory. Nonetheless there is reason to suspect that the immigrant representation in the survey is biased in other, more subtle ways, by attracting predominantly those immigrants who are well integrated into German society. This problem is common to all such surveys.
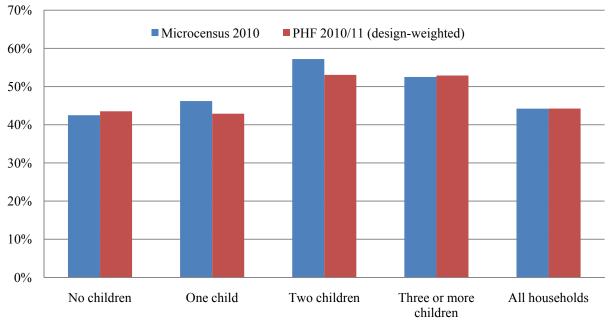
Figure 6: Households in owner-occupied housing, by number of children below the age of 18

Sources: Destatis (2012) Mikrozensus - Zusatzerhebung 2010 - Bestand und Struktur der Wohneinheiten - Wohnsituation der Haushalte - Fachserie 5 - Heft 1; PHF sample: the Panel on Household Finances (PHF) survey conducted by the Deutsche Bundesbank. Survey period: September 2010 to July 2011

5.2 Item non-response

Item non-response, ie the fact that not all questions are answered, is a special challenge to wealth surveys. The reason for a "don't know" or a "no answer" is not necessarily the unwillingness to answer. In many cases, it will be lack of knowledge or apprehension. Typically, item non-response is systematic: it will be correlated with the issue that is being asked for. If the respondent does not have a loan, it is easy to say so, and the level of indebtedness is recorded correctly as "zero". If there is a loan, however, the respondent may be ignorant of the outstanding value, or ashamed, or unwilling to speak about the amount for other reasons. This will make the probability of item-non-response vary with the existence and the size of debt. Ignoring item non-response completely – eg by setting all missing values to zero, or by taking into account only the existing answers - will result in a bias, the size of which depends on the strength of the interrelationship. Under certain conditions, a bias due to item non-response can be mitigated or even avoided by imputation, depending on how well item non-response can be explained by observed variables; see Section 6 below.

In wealth surveys, it is typically the *values* of assets and liabilities which are most difficult to capture. In the PHF, respondents can give information on values on three levels. First, the respondent is asked to give the amount (such as the outstanding value of credit card debt) as a numeric value. If a respondent reports that s/he cannot or does not want to answer, the interviewer will ask for upper and lower thresholds. If this is not feasible either, the respondent may select one bracket in a predefined set. All missing numeric data will be

13

imputed on the basis of existing information, but obviously imputation is much more exact and reliable if upper and lower thresholds are available.

Table 2 shows item non-response with respect of a variety of sensitive questions for euro amounts. The first column gives the share of responses where no exact numeric value is given, whereas the second column lists the incidence of cases where not even thresholds or brackets are available. It can be seen that allowing thresholds and brackets, dramatically decreases the number of cases requiring "unguided" imputation. As in other wealth surveys, the value of an own enterprise proves to be especially difficult to quantify, reflecting partly the daunting evaluation task involved. In 12.1% of cases there is no answer to this question. Also, some financial items are hard to capture: the value of bond holdings is completely missing in 12.4% of cases. Most other value questions are answered much better. To the surprise of the PHF survey designers, respondents spoke quite frankly about their debts. It has to be noted that questions on amounts are especially difficult. For other types of questions, item non-response is much lower. For the standard socio-demographic characteristics it is almost nil.

To some degree, the low item non-response may be seen as a counterpart to high unit non-response: The successful interviews were largely made with respondents that were co-operative and trusted the Deutsche Bundesbank.

It has been already mentioned that the household interview was conducted with the person who knows best about household finances, and shorter interviews were conducted with the other members of the household as well. These additional interviews could not always be obtained. In 310 out of 3875 sample households there were individuals missing, and 423 out of 7084 persons are concerned. In those cases, the household level questions have (mostly) been answered, but the answers to an entire cluster of questions – namely those directed at one individual – are missing. As the PHF is a household survey by nature, this can be considered a special type of item non-response. The missing information will be imputed.

6. Editing, imputation and weighting

6.1 Editing the PHF

The main goal of the German PHF is to provide household-level data that accurately reflect the balance sheets of households in Germany. Unfortunately, the information recorded during the interview may deviate from the desired information: respondents may misunderstand questions, interviewers may mistype answers, and complex questions may lead to incorrectly recorded information. Such problems are common and can be mitigated by using editing techniques.[8]

---

[8] See, for example, Bledsoe and Fries (2002), "Editing the 2001 Survey of Consumer Finances", Federal Reserve Board, Washington D.C., September.

To improve data quality, each interview was subjected to an intense review using interviewer comments on specific questions during the interview and interviewer assessment on the quality of the information provided as well as all other information recorded during the interview.

In general, the editing process of the PHF can be divided into three steps: 1) all interviews were subjected to initial filter and value checks, ie mechanical data checks of the correct filtering of the answering path and the correct values; 2) logical consistency checks, ie checks that tested the consistency of households' answers with other answers given during the interview; and 3) outlier checks that detected whether some values for a given household were clearly too high or low in comparison with the other answers given by the same household and with respect to other households in the data set. In the course of these three steps, editors of the PHF reviewed interviewer comments and a one-page overview of the key financial indicators to get a better understanding of the general economic situation of the household under revision. Some of the variables of the first wave of the PHF were collected as verbatim responses and had to be recoded into categorical answers by editors.

Editors were careful to use rules-based guidelines for editing the data and to indicate all necessary data changes by setting appropriate flags. All edits were documented to ensure consistency in future waves. Editing flags will be provided to users of the data.

6.2 Imputation of missing variables

In order to deal with item non-response, missing observations of all major PHF variables are imputed. The imputation procedure is based on the "missing at random" (MAR) assumption, which states that the probability for an observation to be missing can be fully explained using the observed values in the data set. However, it is not possible to verify whether this assumption is indeed true. The assumption becomes more plausible if the imputation model covers as many interrelationships as possible.

The PHF data are multiply imputed using the method of Rubin (1987).[9] If the MAR assumption holds approximately, and imputation models are correctly specified, the analyst can be confident that the conditional distribution of the imputed variable will be well recovered by multiple imputation. The retention of the general statistical features of the joint distribution of all variables is the main objective of the stochastic imputation and takes precedence over finding the most plausible value in each individual case.

---

[9] Multiple imputation of wealth survey data was pioneered by Arthur Kennickell at the Survey of Consumer Finance (Board of Governors of the Federal Reserve System). His method is particularly well suited for the survey with complex questionnaire design and missing pattern. He allowed the PHF team to use his routines, and Cristina Barceló (EFF, Banco de España) provided a well-documented version geared to an HFCS-style survey. The PHF team is extremely grateful to them both.

The main challenge of imputing the wealth survey is that the imputation algorithm must reflect the logical structure of the questionnaire to ensure the consistency of the data. If, for example, the question relating to the ownership of property was answered with "don't know", the entire property section of the questionnaire is left out during the interview. If the initial question is imputed as "yes", then the subsequent property-related questions also have to be imputed. Therefore, to ensure consistency, a complex logic tree is built.

Generally, for imputing continuous variables (especially euro amounts), a linear stochastic regression model is used. In most cases, missing values are substituted by their best linear predicted values, plus a normally distributed random variable. Sometimes, this first-stage prediction is replaced by the closest observed value in order to replicate the particular observed distribution such as the existence of mass point. In other instances, a sample residual is drawn instead when heteroscedasticity is present. As regressors, variables should be chosen that allow good predictions and cover the relationships analysts might want to study. If the respondent did not report the exact value, but specified an upper or a lower bound for the value, imputation is repeated until the substitute value falls into the interval.

Binary variables are often indicator variables, such as the question of whether the household owns any property. They are imputed using a linear probability model.

Hot deck imputation is used for the imputation of categorical variables. Here, a missing value is replaced by an observed value of another household, which can resemble the household to be imputed as much as possible in terms of the selected characteristics. One example is the imputation of the highest level of education completed, which enters nine different categories in the PHF.

The creation of only one single imputed data set does not take into account the uncertainty of the selected imputation model and hence underestimates variances and covariances in the imputed data set. This is why the data are "multiply imputed", by generating five different imputed data sets, or implicates. The inclusion of five data sets is a generally accepted norm, that has been adopted also by the HFCN. It is theoretically justified in cases where the rate of missing observations is low..

The imputation of the PHF data is done iteratively. In the first iteration, all imputed variables containing missing values are replaced by a value which is estimated purely on the basis of the observed data. The second and all following iterations re-impute, using the imputation outcome from the previous iteration, these values in the light of the model. The key criterion for the convergence of the procedure is that the variance between implicates is small in comparison with the variance within implicates. All imputed values are marked with a special imputation flag.

6.3 Weighting

In general, simple means from survey data will be biased for various reasons: unequal selection probabilities caused by a complex sample design, unit non-response, under-coverage or over-coverage. A comprehensive weighting mechanism is designed to compensate for these distortions and also to minimise the inefficiency induced by weighting. Weights are constructed over multiple stages.

First, design weights are assigned to correct for unequal selection probabilities due to a complex sample design. The underrepresented households are given greater weights and overrepresented households receive smaller weights. Second, non-response factors are adopted to adjust for the impact of non-responding units. The base weight of those respondents which are similar to the non-respondents is raised. In order to avoid an excessive variance of weights, these factors are trimmed. The third stage develops calibrations to ensure that weighted estimates accurately represent the population in important dimensions not captured by sample design. In order to match the overall marginal distributions, calibration relies on external information provided by the German Microcensus 2010. Some of the marginal distributions used in calibaration are, either referring to the household structure others to the status of the household's main income earner. The former group comprises household size, region ("Bundesländer"), municipality size ("politische Ortsgrößenklasse"), ownership status of main residence, and size of main residence for owners. The group of variables referring to the main income earner consists of: labor market status, nationality and combinations of age with gender and the highest schooling degree, respectively. As a service for researchers, the PHF − like all HFCN surveys − provides bootstrap replicate weights in order to enable efficient variance estimation even if for the sake of disclosure control not all important design elements can be passed on to the research community. Replicate weights also provide a simple means of pooling survey data from countries with different sample designs. The replicate weights are the result of bootstrap simulations that take all major elements of the sample design into account, including the calibration stage. In order to obtain a valid estimate for the standard deviation of any statistic, the calculation of this statistic is to be repeated for each replicate.

7. Data access and data protection

The survey results will be distributed in three ways: publications, tabulations and providing anonymised micro data to researchers. According to current plans, micro data can be made accessible in the spring of 2013. Researchers will be asked to provide personal information (name, address, CV, affiliation with research institution), a research proposal for the project for which the micro data are needed, and details on data storage. In addition, data usage terms and conditions as well as confidentiality obligations need to be signed.

Confidentiality is a priority concern. The survey team of the Deutsche Bundesbank does not have access to the names and addresses of the participants at any time. The research use file will be anonymised further with the aim of rendering re-identification of households or persons impossible. Besides deleting all personal identifiers, the process involves recoding, grouping or rounding of some variables. Regional information is coarsened in such a way that no exact mapping of the household's municipality will be possible.

Most values denominated in euro, such as variables for income, assets, liabilities, etc are random-rounded to two significant digits. Extremely large values of continuous non-euro variables (like the number of cars, the size of household main residence) may be top-coded. Age is top-coded at 90. Other variables with rare or infrequently occurring categories or rare combinations of variables will be edited in a way that makes re-identification impossible. Imputation may preserve most of the distributional information in these cases.

As there is very detailed information on German businesses, anonymisation procedures that make sure that no re-identification of businesses owned by the interviewed households is possible will be employed.

8. A first look at PHF data − homeownership in Germany

The financial components of aggregate household wealth in Germany are well accounted for by Deutsche Bundesbank's statistics, most importantly by the Financial Accounts, the Borrower Statistics, the Banks' Balance Sheets, and the Deposits Statistics, a database on security holdings of households and other entities managed by German banks.[10] Adding information on fixed assets, the Deutsche Bundesbank and the German Federal Statistical Office have jointly compiled a balance sheet for the aggregate household sector.[11] The individual level balance sheets of survey sample households can be aggregated to yield an estimate of the assets and liabilities of the entire household sector, but it will not be the main task of the PHF to provide such aggregates. Rather, the strengths of the PHF data lie in their capacity to subdivide aggregates among subpopulations, at the inclusion of size distributions, and the use of individual level covariates. Even though the data preparation work is not yet completed, this section will present some examples of what can be expected from the first wave data. Out of the many assets covered by the PHF, we pick real estate to illustrate the potential of the PHF database. Home and property ownership is an important component of household wealth, and it allows us to demonstrate important features of the survey. The data are preliminary, as of April 2012.[12]

---

[10] See, for example Deutsche Bundesbank (2011), Special Publication No 4, Financial Accounts for Germany, 2005-2010.

[11] See Federal Statistical Office and Deutsche Bundesbank (2010).

[12] The following tables have been calculated using household-level weights that correct for non-response biases on the basis of an estimated model of survey participation and are calibrated to the above mentioned marginal distributions from external statistics.

8.1 Housing equity – the asset side

While the patterns of homeownership will be exposed in more detail in forthcoming publications, it is interesting to have a first look at the data already at this stage of data processing. Table 3 provides an overview of housing equity in Germany. It presents the share of German households who own their main residence or other property, together with the type of property they own. The PHF data confirms the findings by other surveys, that homeownership[13] in Germany is generally quite low by international standards. About 49% of all households own property and 44% own their main residence. The PHF allows a disaggregated view. Table 3 show the composition of housing equity both in terms of objects being owned and of the subgroups of the population to which their owners belong. A first distinction that can be made is between owner-occupied housing (main residence) and other property. For main residences an additional breakdown according to what is owned is possible. The objects are categorised as houses, flats and multiple-use buildings (e.g. shops in the ground floor and residences in the upper floors or farms). The rows break property ownership down according to subpopulations of interest. Separate ownership shares are calculated for households classified by the age and employment status of the main income earner, by net monthly income and family size. The property values are reported in Table 4, and they are broken down in the same fashion. An additional dimension of analysis is the distribution of indicators across quartiles, deciles or percentiles (see Table 6). This dimension can in principle (i.e. sample size permitting), be combined with any of the breakdowns and indicators of the PHF.

Homeownership seems to have a sort of life cycle pattern, a feature that is impossible to discern with macro-data: the ownership rate is low for young people, and increases with age, peaking at the age of 60-64. Grouping households by the employment status of the main income earner, it is possible to look at socio-economic patterns of homeownership. At 69% and 70% respectively, ownership of property is dominant among the entrepreneurs and self-employed on the one hand and civil servants on the other. The property of entrepreneurs and self-employed has the highest mean value. Employees have a lower homeownership rate than civil servants, but the properties they own are of similar value. Only about 10% of the unemployed are property owners. It is interesting to see that the homeownership rate of households with a non-active main earner is rather high. This effect is driven by the pensioners. More than every second pensioners' household owns the home it occupies. The breakdown by household income shows a close correspondence between property ownership and income. Gross and net housing equity for homeowners underline the close relationship. Ultimately, having children also favours ownership. Ownership rates are comparatively low for households with only one child or none at all, but it is considerably higher if there are two or more children.

---

[13] We use the terms "homeownership" and "property ownership" interchangeably.

8.2 Mortgages

If the property is not inherited or received as a gift, financing property acquisitions becomes an issue. Collecting data on mortgages and other debt is therefore an important feature of the PHF. As questions on debt may be considered sensitive, the statistical analysis will start with a validation of the PHF data on housing debt. The Deutsche Bundesbank borrower statistics database reports a total of €965 billion of loans to private households related to financing housing equity. Of these, €799 billion is accounted for by collateralised mortgages with an initial time to maturity of more than 5 years, and €166 billion by either unsecured loans to finance housing equity or mortgages with an initial time to maturity of 5 years and less. This corresponds well to the PHF data. The estimate of aggregate housing debt of private households amounts to a total of € 1,021 billion, of which the longer-run mortgages account for €864 billion and the sum of unsecured lending and shorter-run mortgages accounts for another €170 billion.

Table 5 gives an overview of the financing of homeownership on the basis of PHF data, using the same population breakdowns as Table 3 and Table 4. The indicators considered are: 1) share of households with some outstanding mortgage as a percentage of households owning housing equity, 2) share of households with a mortgage that uses the main residence as collateral, as a percentage of all households owning their main residence, 3) the percentage of households owning other properties that have mortgages on these other properties, and 4) the mean outstanding value of mortgages.

One can see that 45% of property owners are paying down mortgages. Many elderly people have paid off their mortgages altogether. This is shown both by the age breakdown and by the fact that only about 18% of pensioners still have a mortgage outstanding. The mean outstanding mortgage value is approximately €117,000. Among the subgroups, conditional means vary in a predictable way. Households with lower earning potential have lower outstanding amounts of credit, reflecting the intertemporal budget constraint.

8.3 The size distribution of housing wealth and mortgages

Looking at both housing equity and mortgages has prepared the ground for considering the distribution of housing wealth. Table 6 shows the size distribution of housing equity in terms of gross values, mortgage debts and net values. It also gives the first nine deciles, the 95% percentile and the 97.5% percentile for monthly payments for mortgages. The size distribution is calculated among the owners of housing equity – if it were calculated among all households, the first five deciles would be zero, reflecting a homeownership rate of less than 50%. And among homeowners, the first five deciles of the distribution of mortgages are zero, as less than half of all housing equity owners are paying down a mortgage. Median gross housing wealth (among owners) is €180,000, and median net wealth is €150,000, showing the great significance of housing equity for household wealth. Note that the third row is not the

difference of the first and the second, as net equity is ordered separately when calculating quantiles. The housing wealth values corresponding to the 95% percentile and the 97.5% percentile shows that the PHF was successful in attracting the upper quantiles of the wealth distribution. The last three columns give an idea of the size distribution of different measures of the debt burden ratio, relating the sum of interest and amortisation to total household net income. Without going deeper into the analysis of over-indebtedness at this point, it appears that more than 90% of housing equity owners do not have any problems with their mortgages.

9. Summary

In this paper we have introduced the Panel on Household Finances (PHF) and highlighted its main methodological features. The comparisons with selected external statistics lead us to the conclusion that the PHF sample is a largely unbiased sample of the household population in Germany. By providing some preliminary results on property ownership in Germany, we have shown the great potential of micro-data for the analysis of issues related to household finance. The data's potential can be enhanced by using comparable HFCN data from other euro area countries and extending analysis into an international context.

The next steps will be to finalize the preparation of the dataset. We are confident that the high data quality will make it a fruitful resource for researchers and monetary policymakers alike.

Literature

The American Association for Public Opinion Research (2008), Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys. 5th Edition. AAPOR, Lanexa, Kansas.

Bledsoe, R.and Fries, G. (2002), Editing the 2001 Survey of Consumer Finances, Federal Reserve Board, Washington D.C., September.

Börsch-Supan, A., M. Coppola, L. Essig, A. Eymann, D. Schunk (2009), The German SAVE Study: Design and Results, Mannheim Research Institute for the Economics of Aging (MEA), Mannheim.

Eurosystem Household Finance and Consumption Network (2009), Survey Data on Household Finance and Consumption: Research summary and policy use. ECB Occasional Paper Series No 100 / January 2009.

Rubin, D. B. (1987), Multiple Imputation for Nonresponse in Surveys, John Wiley and Sons, New York.

Deutsche Bundesbank (2011), Financial Accounts for Germany 2005 to 2010. Special Statistical Publication No. 4,

Federal Statistical Office (2011), Bevölkerung und Erwerbstätigkeit – Haushalte und Familien – Ergebnisse des Mikrozensus 2010 – Fachserie 3, Reihe 1.

Federal Statistical Office (2011), Sonderauswertung – Ergebnisse des Mikrozensus 2010.

Federal Statistical Office and Deutsche Bundesbank (2010), Balance Sheets for Institutional Sectors and the Entire Economy, 1992–2010, Wiesbaden, October.

Federal Statistical Office (2012), Mikrozensus - Zusatzerhebung 2010 - Bestand und Struktur der Wohneinheiten - Wohnsituation der Haushalte - Fachserie 5 - Heft 1

Wagner, G. G., J. R. Frick and J. Schupp (2007), The German Socio-Economic Panel Study (SOEP) – Scope, Evolution and Enhancements, Schmollers Jahrbuch, Vol 127 No 1, 139-169.

Appendix

Table 1: Households, by monthly net household income (in €)

	Microcensus 2010 [1]	PHF 2010/11 (unweighted [2])	PHF 2010/11 (design-weighted [3])
less than 500	2.2%	1.7%	3.3%
500 to less than 900	10.9%	5.5%	10.0%
900 to less than 1,300	15.5%	9.1%	15.2%
1,300 to less than 1,500	8.0%	4.8%	7.1%
1,500 to less than 1,700	7.4%	6.2%	7.6%
1,700 to less than 2,000	9.5%	7.1%	8.4%
2,000 to less than 2,600	15.6%	17.3%	16.9%
2,600 to less than 3,200	10.6%	13.5%	11.1%
3,200 to less than 4,500	12.4%	17.0%	10.6%
4,500 or more	7.9%	17.9%	9.7%

Notes:
1 Percentage of all households providing an answer.
2 Unweighted sample percentages, with the effect of oversampling visible.
3 Design-weighted extrapolation, with the effects of oversampling neutralised preliminary data and design weights.
Sources: Destatis (2011) Bevölkerung und Erwerbstätigkeit – Haushalte und Familien – Ergebnisse des Mikrozensus 2010 – Fachserie 1, Reihe 3; PHF sample: Panel on Household Finances (PHF) survey conducted by the Deutsche Bundesbank. Survey period: September 2010 to July 2011, preliminary data as of April 2012.

Table 2: Item non-response for selected items

Question	no exact value given	no value given
Value of the first property purchased	7.9%	2.9%
Value of the first mortgage (HMR)	6.0%	2.3%
Value of all cars	4.9%	1.7%
Size of credit card debt	5.6%	1.4%
Value of business owned by the household	23.2%	12.1%
Value of mutual funds	12.6%	6.4%
Value of fixed-interest bonds	17.1%	12.4%
Value of shares	11.9%	7.6%
Total value of assets held in safe custody	9.5%	5.4%
Value of savings under building loan contracts	10.6%	4.9%
Employee income	5.1%	2.7%

Source: raw data from the PHF survey 2010-11.

Table 3: Share of households which own property (in %) [1]

	Share of households which own property	Share of households which own their main residence	*of which* House ownership	Flat ownership	Ownership of mixed-use buildings/farms	Share of households which own other property
Total	49.2%	44.2%	61.3%	34.4%	4.2%	17.7%
Ownership rates and average asset values by age of main income earner						
under 40	24.6%	20.4%	53.8%	46.1%	0.1%	10.1%
40 - 49	54.6%	47.3%	64.2%	30.9%	4.9%	17.5%
50 - 59	62.3%	56.6%	60.6%	31.2%	8.2%	26.4%
60 - 64	65.2%	59.6%	57.6%	38.4%	4.0%	23.5%
65 or older	56.7%	53.2%	63.7%	33.6%	2.7%	18.3%
Ownership rates and average asset values by employment status of main income earner [2]						
Labour force member	48.7%	42.8%	60.4%	34.4%	5.2%	18.8%
of which						
Self-employed	68.7%	61.0%	51.5%	29.7%	18.8%	36.3%
Civil servant	69.5%	61.5%	55.5%	43.1%	1.4%	27.2%
Employee	50.7%	43.9%	63.6%	34.3%	2.0%	20.5%
Worker	41.5%	37.5%	62.7%	33.3%	4.0%	9.9%
Unemployed	12.8%	12.3%	37.8%	62.2%	0.0%	0.7%
Non-labour force member	50.1%	46.8%	62.8%	34.5%	2.7%	15.8%
of which						
Pensioner	56.8%	53.4%	63.2%	34.1%	2.7%	17.8%

Ownership rates and average asset values by monthly net household income in €[3]

less than 900	18.3%	16.8%	43.3%	49.1%	7.7%	3.5%
900 to less than 1,300	25.1%	23.9%	50.8%	44.8%	4.4%	4.9%
1,300 to less than 2,000	42.1%	36.4%	57.7%	41.6%	0.7%	12.22%
2,000 to less than 3,200	57.4%	51.5%	61.1%	34.4%	4.5%	19.9%
3,200 to less than 4,500	78.6%	72.3%	63.9%	30.4%	5.6%	31.7%
4,500 to less than 6,000	85.2%	76.6%	78.5%	16.5%	5.0%	41.0%
6,000 to less than 7,500	90.4%	77.9%	55.0%	38.6%	6.4%	62.2%
7,500 or more	85.4%	76.0%	89.1%	3.1%	7.7%	64.5%

Ownership rates and average asset values by number of children below the age of 18

Households with no children below the age of 18	48.5%	43.8%	59.1%	36.5%	4.3%	17.7%
Households with …						
one child	50.8%	42.8%	70.9%	24.7%	4.4%	16.8%
two children	53.3%	48.5%	64.3%	32.1%	3.6%	20.3%
three or more children	52.4%	47.0%	80.3%	16.5%	3.2%	13.6%

Notes:
1 Excluding 103 households reporting implausible values for partial ownership.
2 Categorised on the basis of the most important status.
3 Derived from a self-assessment of total income.
Source: PHF 2010-11, preliminary data as of April 2012.

Table 4: Households owning property: average asset values (in 1,000s of €) [1]

	Mean net housing wealth for households which own property	Mean gross housing wealth for households which own property	Median net housing wealth for households which own property	Median gross housing wealth for households which own property	Percentage of hhds owning their main residence which obtained ownership through inheritance or as a gift (in %)
Total	227.7	278.5	150.0	180.0	24%
Ownership rates and average asset values by age of main income earner					
under 40	132.4	229.4	90.0	180.0	13%
40 - 49	187.3	258.8	122.0	200.0	25%
50 - 59	296.1	353.9	150.0	180.0	25%
60 - 64	223.1	253.5	140.0	160.0	20%
65 or older	250.5	268.3	165.0	180.0	29%
Ownership rates and average asset values by employment status of main income earner [2]					
Labour force member *of which*	226.3	296.8	131.5	190.0	22%
Self-employed	458.4	536.6	170.0	240.0	33%
Civil servant	200.4	285.5	150.0	250.0	18%
Employee	206.1	282.9	150.0	200.0	19%
Worker	118.5	166.2	80.0	130.0	22%
Unemployed	100.5	117.9	60.0	60.0	22%
Non-labour force memb. *of which*	230.0	247.3	150.0	160.0	29%
Pensioner	234.4	251.6	160.0	180.0	29%
Ownership rates and average asset values by monthly net household income in €[3]					
less than 900	116.1	135.5	70.0	90.0	49%
900 to less than 1,300	174.5	187.0	112.5	140.0	38%
1,300 to less than 2,000	140.2	159.0	118.0	125.0	35%
2,000 to less than 3,200	192.8	233.9	133.0	160.0	18%
3,200 to less than 4,500	255.3	338.6	160.0	230.0	18%
4,500 to less than 6,000	285.8	392.3	200.0	280.0	19%
6,000 to less than 7,500	723.9	821.6	333.0	450.0	15%
7,500 or more	843.5	1,004.3	400.0	660.0	8%

Ownership rates and average asset values by number of children below the age of 18

Households with no children below the age of 18	241.4	280.8	150.0	180.0	26%
Households with …					
one child	192.1	261.7	130.0	180.0	23%
two children	164.0	280.4	149.4	230.0	12%
three or more children	180.6	272.9	100.0	200.0	17%

Notes:
1 Excluding 103 households reporting implausible values for partial ownership.
2 Categorised on the basis of the most important status.
3 Derived from a self-assessment of total income.
Source: PHF 2010-11, preliminary data as of April 2012.

Table 5: Households which own property: Share of households with mortgage loans and average loan sizes

	Share of households which own property and hold at least one mortgage loan (in %)	Share of households which own their main residence and hold at least one mortgage loan secured by the main residence (in %)	Share of households which own other property and hold at least one mortgage loan secured by other properties (in %)	Average size of real estate loans of households which own property and hold mortgage loans (in € thousand)
Total	44.9%	42.1%	34.3%	116.6
Share of households and average loan size by age of main income earner				
under 40	59.5%	62.8%	35.4%	162.0
40 - 49	65.2%	65.3%	40.5%	110.5
50 - 59	57.8%	53.8%	44.7%	105.9
60 - 64	34.8%	30.5%	25.0%	99.3
65 or older	18.3%	14.6%	22.7%	103.3
Share of households and average loan size by employment status of main income earner [1]				
Labour force member	59.8%	58.3%	40.2%	121.0
of which				
Self-employed	63.1%	55.2%	46.0%	140.7
Civil servant	62.3%	56.2%	41.6%	134.7
Employee	60.4%	60.7%	38.5%	125.4
Worker	57.8%	58.4%	39.6%	87.2
Unemployed	25.9%	26.8%	1.7%	64.9
Non-labour force member	19.3%	15.8%	21.9%	93.6
of which				
Pensioner	18.4%	14.6%	22.0%	95.0
Share of households and average loan size by monthly net household income in € [2]				
less than 900	28.4%	26.3%	31.6%	63.3
900 to less than 1,300	21.2%	20.1%	36.9%	58.6
1,300 to less than 2,000	25.1%	24.4%	26.1%	79.4
2,000 to less than 3,200	46.0%	44.6%	24.1%	91.3
3,200 to less than 4,500	64.7%	61.7%	40.3%	128.4
4,500 to less than 6,000	61.7%	52.8%	53.8%	178.1
6,000 to less than 7 500	59.1%	51.6%	38.2%	168.5
7,500 or more	77.5%	54.4%	55.0%	218.6

Share of households and average loan size by number of children below the age of 18

Households with no children below the age of 18	38.0%	34.6%	32.0%	108.1
Households with …				
one child	64.8%	65.1%	42.6%	110.9
two children	73.0%	72.0%	45.0%	159.7
three or more children	74.5%	76.1%	34.2%	122.5

Notes:
1 Categorised on the basis of the most important status.
2 Derived from a self-assessment of total income.
Source: PHF 2010/11, preliminary data as of April 2012.

Table 6: Distribution of housing wealth and mortgage debt for property owners [1]

	Mean	1st decile	2nd decile	3rd decile	4th decile	5th decile	6th decile	7th decile	8th decile	9th decile	95%	97,5%
Gross housing wealth (in € thousands)	278.5	50.0	85.0	115.0	150.0	180.0	220.0	275.0	350.0	500.0	750.0	1,100
Size of mortgage loans (in € thousands)	50.7	0.0	0.0	0.0	0.0	0.0	12.0	48.0	90.0	153.0	213.4	284.0
Net housing wealth (in € thousands)	15.0	45.0	74.8	102.0	150.0	180.0	222.0	305.0	450.0	695.0	1,000.0	15.0
Monthly interest and debt service payments as a percentage of monthly net household income [2]	11.7%	0	0	0	0	0	7.0%	14.9%	21.9%	33.3%	45.3%	66.7%
Monthly interest and debt service payments as a percentage of calculated monthly net household income [3]	10.2%	0	0	0	0	0	4.1%	11.9%	17.5%	27.9%	38.6%	48.5%
Monthly interest payments as a percentage of calculated monthly net household income [3]	5.4%	0	0	0	0	0	1.3%	4.5%	8.8%	15.2%	23.0%	30.3%

Notes:
1 Excluding 103 households reporting implausible values for partial ownership
2 Calculated from the income of the household members.
3 Derived from a self-assessment of total income.
Source: PHF 2010-11, preliminary data as of April 2012.

The following Discussion Papers have been published since 2012:

01	2012	A user cost approach to capital measurement in aggregate production functions	Thomas A. Knetsch
02	2012	Assessing macro-financial linkages: a model comparison exercise	Gerke, Jonsson, Kliem Kolasa, Lafourcade, Locarno Makarski, McAdam
03	2012	Executive board composition and bank risk taking	A. N. Berger T. Kick, K. Schaeck
04	2012	Stress testing German banks against a global cost-of-capital shock	Klaus Duellmann Thomas Kick
05	2012	Regulation, credit risk transfer with CDS, and bank lending	Thilo Pausch Peter Welzel
06	2012	Maturity shortening and market failure	Felix Thierfelder
07	2012	Towards an explanation of cross-country asymmetries in monetary transmission	Georgios Georgiadis
08	2012	Does Wagner's law ruin the sustainability of German public finances?	Christoph Priesmeier Gerrit B. Koester
09	2012	Bank regulation and stability: an examination of the Basel market risk framework	Gordon J. Alexander Alexandre M. Baptista Shu Yan
10	2012	Capital regulation, liquidity requirements and taxation in a dynamic model of banking	Gianni De Nicolò Andrea Gamba Marcella Lucchetta
11	2012	Credit portfolio modelling and its effect on capital requirements	Dilek Bülbül Claudia Lambert

12	2012	Trend growth expectations and U.S. house prices before and after the crisis	Mathias Hoffmann Michael U. Krause Thomas Laubach
13	2012	The PHF: a comprehensive panel survey on household finances and wealth in Germany	Ulf von Kalckreuth Martin Eisele, Julia Le Blanc Tobias Schmidt, Junyi Zhu

The following Discussion Papers have been published since 2011:

Series 1: Economic Studies

01	2011	Long-run growth expectations and "global imbalances"	M. Hoffmann M. Krause, T. Laubach
02	2011	Robust monetary policy in a New Keynesian model with imperfect interest rate pass-through	Rafael Gerke Felix Hammermann
03	2011	The impact of fiscal policy on economic activity over the business cycle – evidence from a threshold VAR analysis	Anja Baum Gerrit B. Koester
04	2011	Classical time-varying FAVAR models – estimation, forecasting and structural analysis	S. Eickmeier W. Lemke, M. Marcellino
05	2011	The changing international transmission of financial shocks: evidence from a classical time-varying FAVAR	Sandra Eickmeier Wolfgang Lemke Massimiliano Marcellino
06	2011	FiMod – a DSGE model for fiscal policy simulations	Nikolai Stähler Carlos Thomas

07	2011	Portfolio holdings in the euro area – home bias and the role of international, domestic and sector-specific factors	Axel Jochem Ute Volz
08	2011	Seasonality in house prices	F. Kajuth, T. Schmidt
09	2011	The third pillar in Europe: institutional factors and individual decisions	Julia Le Blanc
10	2011	In search for yield? Survey-based evidence on bank risk taking	C. M. Buch S. Eickmeier, E. Prieto
11	2011	Fatigue in payment diaries – empirical evidence from Germany	Tobias Schmidt
12	2011	Currency blocs in the 21st century	Christoph Fischer
13	2011	How informative are central bank assessments of macroeconomic risks?	Malte Knüppel Guido Schultefrankenfeld
14	2011	Evaluating macroeconomic risk forecasts	Malte Knüppel Guido Schultefrankenfeld
15	2011	Crises, rescues, and policy transmission through international banks	Claudia M. Buch Cathérine Tahmee Koch Michael Koetter
16	2011	Substitution between net and gross settlement systems – A concern for financial stability?	Ben Craig Falko Fecht
17	2011	Recent developments in quantitative models of sovereign default	Nikolai Stähler
18	2011	Exchange rate dynamics, expectations, and monetary policy	Qianying Chen

19	2011	An information economics perspective on main bank relationships and firm R&D	D. Hoewer T. Schmidt, W. Sofka
20	2011	Foreign demand for euro banknotes issued in Germany: estimation using direct approaches	Nikolaus Bartzsch Gerhard Rösl Franz Seitz
21	2011	Foreign demand for euro banknotes issued in Germany: estimation using indirect approaches	Nikolaus Bartzsch Gerhard Rösl Franz Seitz
22	2011	Using cash to monitor liquidity – implications for payments, currency demand and withdrawal behavior	Ulf von Kalckreuth Tobias Schmidt Helmut Stix
23	2011	Home-field advantage or a matter of ambiguity aversion? Local bias among German individual investors	Markus Baltzer Oscar Stolper Andreas Walter
24	2011	Monetary transmission right from the start: on the information content of the eurosystem's main refinancing operations	Puriya Abbassi Dieter Nautz
25	2011	Output sensitivity of inflation in the euro area: indirect evidence from disaggregated consumer prices	Annette Fröhling Kirsten Lommatzsch
26	2011	Detecting multiple breaks in long memory: the case of U.S. inflation	Uwe Hassler Barbara Meller
27	2011	How do credit supply shocks propagate internationally? A GVAR approach	Sandra Eickmeier Tim Ng
28	2011	Reforming the labor market and improving competitiveness: an analysis for Spain using FiMod	Tim Schwarzmüller Nikolai Stähler

29	2011	Cross-border bank lending, risk aversion and the financial crisis	Cornelia Düwel, Rainer Frey Alexander Lipponer
30	2011	The use of tax havens in exemption regimes	Anna Gumpert James R. Hines, Jr. Monika Schnitzer
31	2011	Bank-related loan supply factors during the crisis: an analysis based on the German bank lending survey	Barno Blaes
32	2011	Evaluating the calibration of multi-step-ahead density forecasts using raw moments	Malte Knüppel
33	2011	Optimal savings for retirement: the role of individual accounts and disaster expectations	Julia Le Blanc Almuth Scholl
34	2011	Transitions in the German labor market: structure and crisis	Michael U. Krause Harald Uhlig
35	2011	U-MIDAS: MIDAS regressions with unrestricted lag polynomials	C. Foroni M. Marcellino, C. Schumacher

Series 2: Banking and Financial Studies

01	2011	Contingent capital to strengthen the private safety net for financial institutions: Cocos to the rescue?	George M. von Furstenberg
02	2011	Gauging the impact of a low-interest rate environment on German life insurers	Anke Kablau Michael Wedow
03	2011	Do capital buffers mitigate volatility of bank lending? A simulation study	Frank Heid Ulrich Krüger
04	2011	The price impact of lending relationships	Ingrid Stein
05	2011	Does modeling framework matter? A comparative study of structural and reduced-form models	Yalin Gündüz Marliese Uhrig-Homburg
06	2011	Contagion at the interbank market with stochastic LGD	Christoph Memmel Angelika Sachs, Ingrid Stein
07	2011	The two-sided effect of financial globalization on output volatility	Barbara Meller
08	2011	Systemic risk contributions: a credit portfolio approach	Klaus Düllmann Natalia Puzanova
09	2011	The importance of qualitative risk assessment in banking supervision before and during the crisis	Thomas Kick Andreas Pfingsten
10	2011	Bank bailouts, interventions, and moral hazard	Lammertjan Dam Michael Koetter
11	2011	Improvements in rating models for the German corporate sector	Till Förstemann

12	2011	The effect of the interbank network structure on contagion and common shocks	Co-Pierre Georg
13	2011	Banks' management of the net interest margin: evidence from Germany	Christoph Memmel Andrea Schertler
14	2011	A hierarchical Archimedean copula for portfolio credit risk modelling	Natalia Puzanova
15	2011	Credit contagion between financial systems	Natalia Podlich Michael Wedow
16	2011	A hierarchical model of tail dependent asset returns for assessing portfolio credit risk	Natalia Puzanova
17	2011	Contagion in the interbank market and its determinants	Christoph Memmel Angelika Sachs
18	2011	Does it pay to have friends? Social ties and executive appointments in banking	A. N. Berger, T. Kick M. Koetter, K. Schaeck

Visiting researcher at the Deutsche Bundesbank

The Deutsche Bundesbank in Frankfurt is looking for a visiting researcher. Among others under certain conditions visiting researchers have access to a wide range of data in the Bundesbank. They include micro data on firms and banks not available in the public. Visitors should prepare a research project during their stay at the Bundesbank. Candidates must hold a PhD and be engaged in the field of either macroeconomics and monetary economics, financial markets or international economics. Proposed research projects should be from these fields. The visiting term will be from 3 to 6 months. Salary is commensurate with experience.

Applicants are requested to send a CV, copies of recent papers, letters of reference and a proposal for a research project to:

Deutsche Bundesbank
Personalabteilung
Wilhelm-Epstein-Str. 14

60431 Frankfurt
GERMANY