THE FEASIBILITY OF ESTIMATING THE DEMAND FOR RESIDENTIAL MORTGAGE CREDIT IN POLAND

FINAL REPORT

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ABSTRACT

This paper provides a brief commentary on the demand for housing and the related demand for mortgage credit. No attempt to actually estimate the demand for credit or the demand for housing has been made (in the first instance, the requisite data are not available at present). Rather, the purpose of this paper is to provide a discussion of the types of housing models that are generally developed, the practical applications of these models, and the types of data necessary to their estimation.

The study has been prepared based on a request from a number of quarters, including the Ministry of Finance (MOF) and the Foundation for Mortgage Credit. It will, hopefully, be useful to their efforts to understand the factors underlying the demand for housing and the demand for mortgage credit, and the relationship among these and the other asset and consumer goods choices facing Polish households. Estimates of long-term demand relationships, and their variance according to household characteristics, should also be useful to the Housing and Urban Development Authority (HUDA) for developing housing subsidy policies that best achieve their desired policy ends. Finally, our comments should also be useful to the Polish Banks Association (PBA) and individual banks in order to assess what types of databases and methodologies are relevant to forecasting the potential demand for mortgage credit.

Recommendations are then made for next steps in Poland. The most important of these is to develop a long-term, ongoing survey: a "Survey for Housing and Consumer Finance." The survey would be conducted on a representative sample of households (the sample could provide not only nationwide estimates but also individual estimates for Poland's largest cities and/or other geographic areas, for example). Microeconomic data from this survey will be crucial to estimating the basic models for the demand for housing and mortgage credit (and consumer credit as well). Other recommendations include developing modifications to the traditional models of the demand for housing and mortgage credit relating to the barriers between potential and effective demand in Poland (and other transition countries); developing a database of mortgage credit information based on existing bank portfolios, linking household-level data on loan characteristics and household characteristics; and, in order to establish benchmarks for demand in Poland, comparing key housing indicators from advanced emerging nations, such as Turkey and Chile, and key housing finance statistics from Western European nations just recently experiencing a surge in the demand for mortgage finance.

The study has been developed for USAID's Poland Housing Finance Project, directed by Michael Lee.

LIST OF ACRONYMS, POLISH NAMES, AND GLOSSARY OF TERMS

AHS	American Housing Survey
CEE	Central and Eastern Europe
DIM	Dual Index Mortgage
GDP	Gross Domestic Product
GINB	Generalny Inspektorat Nadzoru Bankowego (General Inspectorate of Banking Supervision)
Gminas	Local authorities in Poland
GOP	Government of Poland
GUS	Central Office of Statistics
HRI	Housing Research Institute (Instytut Gospadarki Mieskaniowej)
HUDA	Housing and Urban Development Authority
MBS	Mortgage Backed Security
MOF	Ministry of Finance
NBP	National Bank of Poland
PBA	Polish Banks Association
PLN	New Polish Złotys
RAM	Reverse Annuity Mortgage
SCF	Survey of Consumer Finances
UIC	Urban Institute Consortium
USAID	United States Agency for International Development
VUS	Voivodship Statistical Office

Econometrics:	The methodologies by which economic data with unknown distributional properties and/or various errors of measurement are adjusted to minimize bias in estimation
Income elasticity:	The responsiveness of the demand for housing (by households) to changes in their income
Price elasticity:	The responsiveness of the demand for housing (by households) to changes in the price of housing (or in the price of mortgage credit)
Macroeconomic:	Refers to economic aggregates for Poland as a whole
Microeconomic:	Refers in this case to data describing a given household
Time series data:	The same information (either macroeconomic or microeconomic) collected over time at regular intervals
Cross section data:	The same information (for each household) collected at a single point in time

THE FEASIBILITY OF ESTIMATING THE DEMAND FOR RESIDENTIAL MORTGAGE CREDIT IN POLAND

1.0 EXECUTIVE SUMMARY: THE OBJECTIVES OF THIS STUDY AND THE KEY RECOMMENDATIONS

As Poland's economy continues its strong growth, and its housing and housing finance sectors mature and expand, questions regarding the magnitude of the current and potential demand for housing and mortgage credit are increasingly heard. Observation of construction projects alone suggests that some segments of demand are making themselves felt in the market; also, data on housing starts suggest that the sector is more robust than data on housing completions might imply. The expanding portfolio of residential mortgage loans and the increased number of lenders are also testimony to the transformation of the housing finance sector.

This paper provides a brief commentary on a very large, and generally very technical, topic: methodologies and models for estimating the demand for housing and the related demand for mortgage credit. We have made no attempt to actually estimate any model of the demand for credit or the demand for housing. In the first instance, the requisite data are not available. Rather, the purpose of this paper is to provide a discussion of the types of housing models that are generally developed, the practical applications of these models, and the types of data necessary for their estimation.

It would be useful to have two types of estimates of demand: (1) an estimate of the demand for housing; and, (2) related to this, an estimate of the demand for residential credit. In addition, for each of these estimates there is both a macroeconomic and a microeconomic construct. On the one hand, an estimate of aggregate demand nation-wide is a function, primarily, of overall macroeconomic factors. Similarly, the aggregate demand for residential credit is a related macroeconomic concept.

On the other hand, from a microeconomic perspective, household decision-making with regard to consumer goods and housing is also of interest. Topics to address include: (a) the determinants of the demand for housing (and for cars and other consumer goods) of individual households; (b) the probability that a household with given characteristics would seek to obtain mortgage credit; and (c) if the household does apply for credit, what factors determine the amount requested? Corollary functions are (d) whether the application is accepted; (e) if yes, how much credit is offered; and (f) what is the potential for credit risk: the probability of late payment and/or default.

The study has been prepared based on a request from a number of quarters, including the Ministry of Finance (MOF) and the Foundation for Mortgage Credit; hopefully, it will be useful to their efforts to understand the factors underlying the demand for housing and the demand for mortgage credit, and the relationship among these and the other asset and consumer goods choices facing Polish households. Housing is an extremely

important aspect of the macroeconomy; macroeconomic stability is crucial for the housing sector to thrive, and, in turn, a growing and responsive housing sector is important for an economy to realize its growth potential. The reverse is also true: a poorly functioning housing sector will inevitably constrain growth.[1] Thus, the Ministry of Finance and the National Bank of Poland must be able to understand and predict movements in the housing sector as well as the consequences of changes in inflation and real interest rates.

Estimates of long-term demand relationships, and their variance according to household characteristics, should also be useful to the Housing and Urban Development Authority (HUDA) for developing housing subsidy policies that best achieve its desired policy ends. The Polish Banks Association (PBA) and many individual banks have a vested interest in forecasting and/or marketing. Our comments should be useful to in order to help assess what types of databases and methodologies are relevant to forecasting the potential demand for mortgage credit. Finally, many other representatives of the private sector (the construction and building trades industries, household goods producers, real estate brokers, etc.) could benefit greatly from better forecasts of housing activity and the availability and desirability of housing finance.

In summary, the ability to estimate the demand for housing and mortgage credit is important with regard to (1) setting national economic policy; (2) predicting the growth of GDP; (3) determining which types of housing subsidies—demand or supply subsidies, assistance to rental or owner-occupied housing—best promote both Poland's social goals and economic efficiency; and (4) helping the private sector—banks, the construction industry, real estate brokers, appraisers, and so forth—plan for, and market, their services.

The main assumptions underlying the development of this study are the following:

- A better understanding of both the demand for housing and the demand for mortgage credit are important. The demand for mortgage credit obviously derives from the demand for housing; thus, our analytical framework begins there. However, the demand for mortgage credit is an important variable in its own right—that is, some of its determinants are independent of housing per se. We discuss both macroeconomic and microeconomic housing demand models: macroeconomic models are based on estimates of national aggregate data, while microeconomic models use household-level information to understand the household decisions that underlie demand.

- The demand for housing rests in a complex series of interrelated decisions taken by households in response to both economic and financial factors and

[1] See the discussion in Sally Merrill, Patric Hendershott, Stephen Mayo, and Douglas Diamond in "Housing and the Macroeconomy: Tax Reform and Alternative Subsidy Policies for Housing," April 1999.

their own preferences, as determined by a multitude of socioeconomic variables. The demand for mortgage credit is one end result of (as well as being a factor in) at least the following: (a) the decision to own or rent; (b) the decision to move; (c) the decisions regarding portfolio choice—that is, what role, if any, housing assets will play in the household's accumulation of wealth; and (d) the demand for specific features of unit and locational quality as well as an overall level of housing services. (That these various decisions are not independent is one reason why model estimation can become so complex from a statistical and econometric point of view.)

- Transition countries represent a unique economic paradigm. Housing demand relationships modeled for the United States and Western Europe are not adequately helpful; thus, while database design and the methodologies of model development can certainly be "imported" to Poland, the estimated parameters of models from these other countries cannot be. Furthermore, the gap between "potential demand" and "effective demand" is likely to be quite large in transition countries in the short term—and definitely larger than the gap in markets with well-developed institutions for financing and constructing housing and infrastructure. *For these reasons, it is difficult to tell whether, at the present time, the demand for mortgage credit—as evidenced by the outstanding mortgage portfolio of Poland's lenders—is smaller or larger than might be expected.*[2]

- Finally, we have made an attempt to discuss, in (reasonably) nontechnical terminology, complex economic models and complex econometric estimation methodologies. The databases underlying the various types of estimations also receive attention. The more highly technical material is largely contained in the report's annexes, which are directed at economists, statisticians, and data and survey experts.

As discussed in the Housing Finance Assessment Report and elsewhere, numerous barriers—based on both supply and demand factors—to land and housing development exist in transition countries that make it difficult to translate "potential demand" into "effective demand."[3] One of these barriers has been the availability of residential mortgage credit. In the past several years, however, the market for residential credit has grown and a large number of banks now offer mortgage credit. In addition, establishment of both mortgage banks and a second contract savings scheme will be expected to increase mortgage lending.

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[2] We refer only to the portfolio developed since about 1995 on market-based terms.

[3] Refer to "Building on Progress: The Future of Housing Finance in Poland."

It would be useful, therefore, for Poland to develop several types of estimates of the demand for housing and residential credit. For each of these constructs there is a macroeconomic and microeconomic approach. On one hand, aggregate demand nationwide is a function of overall macroeconomic factors. Similarly, the aggregate demand for residential credit is a related macroeconomic concept. On the other hand, from a microeconomic perspective, the more detailed factors underlying the decision making of individual households are of great interest. Thus, we would like more information on (a) the determinants of the demand for housing of individual households; (b) the probability that a household will move (in order to become a homeowner); (c) the probability that a household with given characteristics will seek to obtain mortgage credit; and (d) if the household does apply for credit, the factors that determine the amount requested. Corollary functions are (e) whether the application is accepted; (f) if yes, the amount of credit that is offered; (g) the loan-to-value ratio (LTV); and (h) the potential for credit risk to the lender: the probability of late payment and/or default.

To date, no major quantitative models of either the demand for housing or the demand for credit have been estimated on a nationwide basis in Poland. We should take a moment, however, to distinguish what we mean by studies of demand, models of demand, and estimates of the need for housing in Poland. A demand forecasting study, prepared by Jacek Łaszek, developed various estimates of the demand for residential construction between 1996 and 2010. In this study, an assumption was made regarding the income elasticity of demand for housing (at 1.4) and then various assumptions were made about the growth in gross domestic product (GDP), the growth in household income, and the use of mortgage credit to produce estimates of units demanded over a series of five-year periods.[4]

A number of descriptive studies of demand have also been undertaken. The Housing Research Institute and the Central Office of Statistics (GUS) continue to monitor and study housing issues through various surveys, and their micro data and analyses are very useful for descriptive analyses. In addition, a number of individual gminas have addressed housing demand and preference issues locally.

Finally, a number of studies of the "need" for housing have been undertaken, where need is defined by the gap between the number of households (now and in the future) and the number of housing units. This issue is discussed at some length in the UIC report "Public Sector Housing Finance Policy Strategies for Poland." However, while this definition of need is illustrative of Poland's housing problem, it does not constitute the actual demand for housing—that is, the amount of housing that households can now afford.

[4] See Jacek Łaszek, "Global Housing Demand and Variants of Housing Construction," in *Housing Problems*, November 1996, Housing Research Institute.

Quantitative models of housing demand, on the other hand, are data-based estimates of the basic parameters that drive the demand for housing in any specific country or region. It is these estimates that Poland is lacking at the moment, basically because the necessary data are not yet assembled. For example, the demand forecast study referred to above used assumptions about demand elasticity based on parameters estimated in countries other than Poland. While this is a useful first step, Poland needs to undertake its own estimates, especially since the "emergence from transition" paradigm is unique and not yet well understood.

Thus, to contribute to a better understanding of the types of demand studies that are traditionally undertaken, as well as alternative approaches that might be considered, this study will address the following topics:

- The methodologies for macroeconomic and microeconomic demand studies and how they might need to be reconsidered in transition countries because of the gap between potential and effective demand.

- An assessment of the macroeconomic and microeconomic data now available in Poland and whether these data are appropriate for model estimation at the present time.

- An assessment of approaches to modeling that might be relevant to Polish policy makers, banks, and gminas.

- Recommendations for next steps in estimating models of demand.

1.1 Summary of Major Findings

At the present time in Poland, estimation of formal econometric models of the demand for housing and the demand for mortgage credit is not feasible. The problems in estimation have mostly to do with lack of appropriate data. In addition, however, because of barriers to making the potential demand for housing and/or credit effective—a problem not unique to, but very pronounced in, transition economies—the models traditionally used for estimation may need some modification. The UIC team considers that it is important, however, for Poland to gain a more precise understanding of the role of housing in the economy—both in terms of economic aggregates and household behavior—to better assess its macroeconomic role and to design optimum housing subsidy policies.

We feel that many groups, both public and private will benefit, including the Ministry of Finance; the National Bank of Poland; the Housing and Urban Development Authority; many private institutions, including banks, developers, builders, and the real estate industry; and finally, research foundations and professional associations, such the the Polish Banks Association, the Foundation for Mortgage Credit, the Housing Research

Institute, the National Association of Home Builders, the Polish Federation of Valuers, and so forth.

In summary, the key findings include the following:

- **Macroeconomic Data.** The available macroeconomic data are seriously hampered by lack of a consistent historical time series and by limitations on accuracy and measurement of the value of the housing stock and of new production. GUS continues to adapt its national accounts to international standards, but it will take some time before a consistent time series (of quarterly data) is available.

- **Microeconomic Data.** In contrast, Poland has a good variety of microeconomic data—collected variously by GUS, the Housing Research Institute, and a number of gminas—which are very useful for descriptive analysis of the housing stock (although issues regarding valuation still apply).

  Importantly, however, because these microeconomic data are obtained from a variety of sources, and do not include key variables on household income and finances (including the use of mortgage credit), they cannot constitute the type of representative household database that is a prerequisite for estimation of formal macroeconomic models.

- **Bank Portfolio Database.** Very useful computerized databases could be developed from existing bank portfolios. These could provide correlations between household and loan characteristics, an analysis over time of loans already in the portfolio (the factors that contribute to good underwriting and repayment histories), the key characteristics of the bank's customers, and so forth. Data collected by the Mortgage Fund to supervise loan quality may also be investigated for use in database preparation.

  These internal databases, however, cannot address questions regarding the overall demand for mortgage credit: that is, the probability of applying for mortgage credit and the overall impact of demographic and economic factors on the demand for housing or the amount of credit. Again, these types of analyses require a representative sample of households, both those interested in (and able to obtain) mortgage credit and those not.

- **Quantitative Demand Studies.** A number of studies of housing demand have been undertaken in Poland. Generally, however, these have been estimates of housing "need," often defined as the difference between the number of households in Poland and the number of housing units meeting a certain standard of acceptability. While such studies may illustrate Poland's housing

problem, they do not define demand—that is, what can be afforded by households in Poland at the present time. One of the studies reviewed did, in fact, estimate what level of housing could be afforded given assumptions about growth in GDP and the use of mortgage credit; however, the income elasticity estimate was derived from studies in other countries because data do not yet exist in Poland to derive an internal estimate.

For this reason and others, we recommend below that the necessary household-level data be made available, and formal statistical models should be estimated. The models may need to be modified, however, to obtain better results for Poland and other transition countries—that is, to take better account of the barriers between potential and effective demand.

1.2 Summary of Recommendations

A number of recommendations are offered to assist Poland to quickly enhance its ability to analyze the demand for housing and the demand for mortgage credit. In the first instance, better measures of the market value of the housing stock and annual production must be developed. Second and most important, Poland should develop an ongoing household (microeconomic) survey to obtain housing and financial data. Variables representing the important factors in housing and credit decisions could then be made available, including household income and assets; other determinants of household preferences; financial and economic indicators; factors underlying mobility; the market price of housing; unit quality and locational features, and household preferences for those features; the demand for consumer durables; the demand for financial assets; and so forth. In summary, it is suggested that Poland should undertake the following:

- **HUDA Research and Policy Analysis Division**. HUDA could greatly benefit in its policy analysis efforts if its technical staff had more access to data to support their analyses. Development of the appropriate surveys, information systems, and databases is a long-term effort, but well worth it. We recommend that HUDA establish a division specifically devoted to preparing for, and undertaking research on, a variety of housing issues, including estimation of the demand for housing. The HUDA Research Division would also be responsible for design and analysis of the household survey recommended below. Implementation of the survey could be undertaken in conjunction with GUS.[5]

- **Household Survey of Housing and Consumer Finance.** It is recommended that Poland develop a long-term, ongoing survey—"Survey for Housing and Consumer Finance," for example. The survey could be conducted annually, or

[5] The UIC team has also made the same recommendation—formation of a HUDA Research Division—in our report "Public Sector Housing Finance Strategies for Poland."

every other year as is the case with the American Housing Survey in the U.S., on a representative sample of households. The sample could provide not only nationwide estimates but also individual estimates for Poland's largest cities and/or other geographic areas, for example. Microeconomic data from this survey will be crucial to estimating the basic models for the demand for housing and mortgage credit (and consumer credit as well).[6]

- **Valuation of Housing.** Develop systematic procedures for compiling data on the market value of housing and on the stock of, and annual originations of, mortgage credit. This could involve a wide range of institutions, including HUDA, the National Bank of Poland, and the realtors, appraisers, and banks.[7]

- **Demand Models.** Develop modifications to the traditional (formal) models of demand for housing and mortgage credit relating to the barriers between potential and effective demand in Poland (and other transition countries). As discussed in section 3.0, the relationship between the demand for housing and the demand for mortgage credit may be even more complex (and less closely correlated) in Poland than in the United States or many of the countries in Western Europe. This fact, in addition to the barriers to effective demand, underscores the need for Poland to develop its own databases and models.

- **Housing Indicators.** Compare housing indicators in Poland with those in the advanced emerging nations (for example, Malaysia, Chile, and Turkey). It would also be useful to analyze those nations in Western Europe where mortgage credit is just now rapidly increasing in importance (Spain, Portugal, and Ireland) to help establish benchmarks for emergence from transition.[8]

- **Macroeconomic Data.** Continue improvements now being undertaken by GUS in the methodologies underlying derivation and estimation of macroeconomic aggregates for the national accounts on housing investment, depreciation, new

[6] The data from the survey would initially be "cross-section" data (a representative sample conducted at one point in time). Over time, the information would yield a combined "cross-section and time-series" database; among the important outputs would be estimates of the income and price elasticities of demand for housing and mortgage credit.

[7] UIC is currently preparing a report on "Property Valuation and Appraisal: U.S. Information Systems and Recommendations for Poland." Systematic under reporting of value (for tax reasons) would pose a very serious problem for the interpretation of formally estimated relationships.

[8] The bibliography provides several references to the Housing Indicators Project, which collects housing data on emerging and transition nations. Annex I suggests that Poland might study the benchmark indicators in Turkey, Chile, and Malaysia, all examples of advanced emerging nations with a longer history of establishing market-based economies. For more information, the Housing Indicators Project can be reached on the Internet at http://www.unchs.unon.org/unon/unchs/indicat/indihome.htm

production, and so forth. These data, in years to come, will provide the necessary time series for estimation of macroeconomic models.

- **Computerized Database of Bank Portfolios.** Prepare a computerized database of mortgage credit information based on existing bank portfolios, linking household-level data on loan characteristics and household characteristics. The data on loan portfolios collected by the Mortgage Fund may also be utilized.

- **NBP Data of Mortgage Lending**. NBP should collect and separately report—on a regular, on-going basis—aggregate data from bank portfolios on residential and commercial real estate lending.

1.3 Overview of This Study

Section 2.0 briefly describes the role of mortgage credit in the United States, Western Europe, and Poland and the types of barriers to realization of housing and/or credit demand likely to be operative in transition countries. Section 3.0 provides an overview of the various types of models used in the demand for housing and credit; data requirements and issues in estimation are also noted. Also, a brief literature review of estimations of the demand for mortgage credit in the United States is provided. Issues regarding the estimation of these traditional models for Poland are discussed in section 4.0, including a critique of the available macroeconomic and microeconomic data. Section 5.0 provides recommendations for next steps in Poland.

The annexes play an especially important supporting role in these discussions. First, as noted, they are addressed to various technicians, including economists, econometricians, and survey experts; the main text has drawn from them but attempted to make the material more digestible for general policy makers. Annex I presents, in a formal econometric fashion, macroeconomic and microeconomic models of the demand for housing and the demand for mortgage credit; this annex suggests adaptations to these models suitable for Poland and other transition and emerging countries. Annex II provides a critique of macroeconomic and microeconomic data in Poland; the review is somewhat technical because it comments on the methodologies used in the national accounts and because it follows from the data requirements of the econometric models specified in annex I.

Annex III presents a review of the data available on mortgage lending in Polish banks and the Mortgage Fund. This background analysis was undertaken to determine what information is collected and stored by banks in the lending process and how much of it is computerized. Finally, annex IV provides a summary overview of the two major household surveys in the United States used for estimation of housing models and finance models: the American Housing Survey (AHS) and the Survey of Consumer Finance (SCF).

The AHS survey form is attached; selected portions of the SCF are also attached (the compete form is available from UIC or from the Worldwide Web, but it is quite lengthy). Since we recommend that Poland develop a household survey, however, these documents may be particularly pertinent.

2.0 THE DEMAND FOR HOUSING AND MORTGAGE CREDIT IN THE UNITED STATES AND EUROPE AND POLAND

The role of housing in the U.S. economy, and in the lives of its households, may be somewhat unique worldwide. Because of this, it should not be viewed as a benchmark for potential demand in Poland, at least not at this time. Similarly, in Western Europe, although there is huge diversity in the importance of mortgage debt in the various economies, it plays an extremely important role in most of the largest countries. Not only are there major differences in income across the Western and transition economies, but differences in many other factors—greater mobility, greater access to choice of tenure and housing type, greater efficiency in raising long-term funds for the lending and in the experience of the lending institutions, and so forth. In addition, households in Poland have not had many decades of opportunity to save and accumulate wealth that might be used as equity in a home—that is, accumulate a down payment. Rather, in order for Poland to establish benchmarks for the levels of housing demand and mortgage lending that might be expected, it may wish to look to the advanced emerging economies, which, like Poland, are in the process of instituting market-based reforms. Similarly, the housing finance sectors of certain of the Western European countries are just now maturing, which may provide other lessons learned.

2.1 The Demand for Housing and Mortgage Credit in the United States and Western Europe

The profile of mortgage credit in the United States includes the following factors:

- The rate of home-ownership is very high (over 65 percent).
- A very high proportion of home purchases are financed with mortgage loans: 40 to 60 percent of households currently hold mortgage loans (depending on their definition); at the point of purchase of a home, the vast majority secure a mortgage loan.
- As a consequence, there is a very high level of mortgage debt outstanding in the United States; at roughly 6 trillion, it, in fact, now exceeds the level of government debt outstanding.

- The demand for housing is especially pronounced because of the major U.S. housing subsidy, which makes mortgage interest payments a tax deduction. (As an aside, economists have debated this subsidy for years, and many feel it causes over- investment in housing).

- A home mortgage represents the major proportion of household indebtedness for most households. In fact, as a proportion of total debt, mortgage debt has increased and other consumer debt has decreased as households use "home equity" loans to finance a variety of goods and services.

- At the same time, the equity in their home is by far the major asset for most households.

- In fact, borrowing against the equity in the home now supports all manner of activities, from home repair to purchase of luxury items to consumption of goods and services by the elderly via reverse annuity mortgages (RAMs).[9]

■ **The Goals of Demand Estimation in the United States.** Given this profile, homeownership and the demand for mortgage credit are literally big business in the United States. Since housing investment is such an important component of GDP, macroeconomic models of housing aggregates play a very important role in models of GDP, forecasting, and analyses of economic trends. The crucial indicators of long-term demand—the income elasticity of demand for housing and the price elasticity of demand for housing—are key components of macroeconomic and forecasting models. Estimates of indicators such as housing starts are also of key importance to the business cycle, as well as to the macro economy in the long term, and thus are important to fiscal and monetary policy.

Mortgage credit is the key component of consumer credit. Concentration of mortgage lending in savings and loan associations is now a thing of the past—mortgage lending is important to the portfolios of all types of financial and nonfinancial institutions, including mortgage banks, savings banks, commercial banks, and secondary market institutions such as Fannie Mae, Freddie Mac, and Ginnie Mae. In fact, the ascendence of the secondary market, and the importance of mortgage-backed securities (MBS), has placed great emphasis on microeconomic analyses of mortgage portfolios—the probabilities of prepayment and default are instrumental in the risk analysis and pricing of MBS. Basically, the determinants of demand for housing and mortgage credit are important across the board—to government policy makers, banks, primary and academics,

[9] See Sally Merrill, "Home Equity and the Elderly" and "Potential Beneficiaries from Reverse Annuity Mortgage Products for Elderly Homeowners: An Analysis of American Housing Survey Data." See also Jozsef Hegedüs and Katalin Zsámboki, "the Transformation of the Housing Finance Sector: 1989-1009: Macroecnomic Considerations," which describes the Reverse Mortgage Program for is being operated by the Budapest City Estate Co., and which is planned to become a national program with government support.

and market research and consulting companies alike. Similarly, construction companies, builders, urban planners, realtors, and so forth are dependent not only on demand forecasts but also on mobility estimates, tenure choice decisions, and the demand for specific features of housing units and their location.

■ **The Demand for Housing and the Demand for Mortgage Credit.** It would seem obvious that the demand for mortgage credit is closely related to the demand for housing. Although this is generally the case—since most homes are financed with mortgage loans in the United States—mortgage credit is an independent variable in its own right. First, prepayment is not prohibited, and thus refinancing of existing loans becomes very important if interest rates fall (by more than the transaction costs of refinancing the loan). Secondly, as mentioned above, consumers use home equity loans for a wide variety of purposes; this is generally a cheaper form of financing than most consumer loans. Thirdly, RAM products allow elderly households to actually "consume" their home equity without selling their homes. All of these factors complicate the intensity and direction of the relationship.[10]

■ **The Demand for Housing and Mortgage Credit in Western Europe.** The majority of countries in Western Europe have a high rate of homeownership: a rough average would be about 65 percent. There is significant variance, however, from nearly 80 percent in Norway and Spain to over 65 percent in the United Kingdom to about 50 percent in Denmark and 45 percent in Germany. What is more surprising, however, is the range seen across the countries with regard to the importance of mortgage debt relative to GDP. In the United Kingdom, Denmark, the Netherlands, Sweden, and Germany, the ratio of mortgage debt to GDP exceeds 50 percent. In contrast, for countries such as Greece, Austria, and Italy, this percentage is quite low—about 10 percent or less. A middle group includes France, Spain, Portugal, Ireland, Belgium, and Luxembourg, where the ratio is about 25 to 30 percent.

The interesting result of these two trends is that the rate of homeownership and the ratio of mortgage debt to GDP are not well correlated in Western Europe. Obviously, then, in some countries much of homeownership occurs without major use—or any use—of mortgage credit. Poland might investigate those Western European countries with high or relatively high homeownership and smaller amounts of mortgage credit relative to GDP—Greece, Austria, and Italy as well as the "middle" group cited above. This is especially true in Spain, Portugal, and Ireland, where Poland might look for suggestions.

In general, the trend in Western Europe is toward a quite rapid increase in the amount of mortgage debt outstanding, both absolutely and relative to GDP. What factors are contributing to this growth? What barriers—in real interest rates, in the attitudes of

[10] Furthermore, as discussed in section 3.0, some academics feel that theoretical models of the loan-to-value ratio—that is, household leveraging—are not yet sufficiently, or at least not empirically, tests.

lenders and households, in the efficiency of the mortgage markets—were overcome? We feel that there may be more potential lessons learned here for Poland than by focusing on the various ratios and utilization figures from the United States, Germany, and the United Kingdom.

2.2 The Demand for Housing and Mortgage Credit in Poland and Other Advanced Transition Countries

As mentioned, Poland has made progress in the development of its housing finance sector. A growing number of lending institutions are competing for mortgage business, and progress continues in reducing the various legal and administrative barriers inhibiting the sector's advancement. Also, as mentioned, the demand for housing is growing in Poland, although it is difficult to measure because the level of housing completions may understate actual activity.

Table 1 compares completions with units under construction (in addition, using similar data, annex II points out that the data suggest an exceptionally long construction period, which seems rather unlikely on average).

Table 1
Housing Units Under Construction and Completed

Date	Housing Units Under Construction (000)	Housing Units Completed (000)
1993	n.a.	94.4
1994	509.8	71.6
1995	537.7	67.1
1996	576.5	62.1
1997	602.9	73.7

Whatever the actual level of housing demand, however, it does appear that the relative role of mortgage credit in the economy is extremely small. Estimates of total mortgage debt outstanding at the end of 1997 place it at about PLN 1,740 million. As compared with 1997 GDP of PLN 429,700 million, the share is less than 0.5 percent. Furthermore, analysis suggests that only one in five home purchasers utilizes a mortgage loan in Poland.[11]

[11] The estimates of total mortgage credit outstanding (and use of mortgage credit) were prepared by CREI and Jacek Łaszek; official estimates are not published by NBP. By September 1998, it is estimated that total mortgage credit had increased by another 500 million PLN.

Thus, the following questions are relevant:

- Has the demand for housing lagged behind the significant growth in GDP during the last half of this decade?
- Is this level of demand for mortgage credit what would be expected at this time?
- What determinants distinguish the demand for housing and the demand for mortgage credit?
- Are consumers' energies—and funds—being concentrated on consumer durables or on some other items?

These questions are very difficult to answer for Poland (and perhaps for other transition countries), not only because there are insufficient data for analysis but also because it is not clear what should be expected in the transition process. Is demand low as compared with which countries? At what point in time in the evolution of their mortgage finance sectors? What would be expected as the system finalizes its emergence from central controls and price distortions? At least one analyst has suggested that mortgage credit utilization is unduly low not only in Poland but also in Hungary, the Czech Republic, and Slovakia.[12] There are, in fact, a large number of plausible reasons for constraints to exist on the demand for housing and credit, and these are discussed below.

■ **Estimating Demand for Housing and Mortgage Credit in Poland: Potential Versus Effective Demand.** For many reasons, the levels of demand for housing and for mortgage credit evidenced in the United States and in Western Europe may hold little relevance for Poland and other transition countries, at least at the current time. In the first instance, of course, differences in income level, in real interest rates, in the relative price of housing and other goods, and in the ratio of the price of housing to income are all determining factors. But making a hypothetical assumption for the moment—let us say, assuming a group of households with similar incomes and preferences—are there other factors that might distinguish differences in level of demand?

We suggest that a variety of barriers produce a gap between potential demand and effective demand.[13] Furthermore, the variables that impact the demand for housing may

[12] See Doug Diamond, "The Transition in Housing Finance in Central Europe," Chapter 6: Conclusions, forthcoming, 1999.

[13] Please also refer to annex I. Formally, the issue can be expressed as the rate at which the actual housing stock moves toward the desired level of housing stock, which can be more or less rapid and a function of a variety of factors.

differ from those that impact the demand for credit, as clearly evidenced by the (apparently) low utilization rates.

In combination, the rigidities of central planning and state-owned housing production, the remuneration of households to a substantial extent via in-kind transfers, and the distortions in the pricing systems—whether of housing, interest rates, or consumer goods—have left the transition countries with very significant barriers to realization of potential demand for housing. Thus, a key problem in Poland is that of translating "potential demand" for housing and residential credit into "effective demand." This can be a critical problem not only in the transitional economies but wherever government policies and institutions have not been designed to be responsive to market signals concerning demand and supply.

Problems of inadequate "effective demand," as commonly perceived, can result from policy failures on both the demand side and the supply side of the housing market. For example, households occupying heavily subsidized housing, who would, with smaller or no subsidies, consider moving to another dwelling or even another city, may have little or no incentive to move as long as subsidies persist. Similarly, incentives to change dwellings will be minimal if available housing is priced beyond the means of most households—perhaps as a result of government-imposed restrictions on land development or house construction. With regard to mortgage credit, parallels exist concerning demand- and supply-side barriers to translating potential demand into effective demand. If the possibility of government-subsidized credit exists for a household (such as through contract savings schemes), even if it must wait for years to take advantage of it, the household may be reluctant to seek credit at market rates of interest; this is a demand-side barrier to effective demand for private mortgage credit. On the supply side, any policy that either rations credit or increases its price (such as inefficient legal and administrative practices in granting credit or failure to manage credit risk properly) will restrict the ability to translate potential demand into effective demand.

Studies of the demand for housing and mortgage credit should seek insofar as possible to identify the key barriers on both the demand and supply side of the market for housing and credit and to quantify their relative impacts. By so doing, priorities can be established for policy, administrative, and institutional reform. They should then also attempt to decompose the sources of shortfalls in effective demand for both housing and residential credit according to both demand- and supply-side policy shortcomings. Some of the constraints that have been cited as potentially damaging include the following:

- **Barriers to Effective Demand for Housing in Poland and Other Transition Countries**

  — Mobility constraints
  — Tenure choice barriers

— Other supply constraints on housing types and locations
— Rent control (artificially lowers the cost of existing housing)
— Higher relative cost of housing
— Privatization policies confer ownership at little or no cost (sometimes with low-cost credit from gminas); also, occupancy rights already confer "sense" of ownership, so owners do not privatize.

- **Barriers to Effective Demand for Mortgage Credit in Poland and Other Transition Countries**

— Liquidity constraints (inability to secure a sufficient down payment)
— LTV (loan-to-value) constraints by conservative lenders
— Relative cost of mortgage credit (high real mortgage lending rates); also, as noted above, low-cost gmina credit for privatization
— Expectations/attitudes regarding indebtedness (by households and lenders both?)
— Expectations/attitudes regarding the cost of housing relative to other goods (especially consumer durables) and to income
— Expectations regarding local and/or regional political and employment stability

Mobility rates are indeed very low in Poland, which has been a topic of concern with regard to the impact of low labor mobility on economic growth. Tenure choice and locational barriers will gradually be overcome as the construction sector expands; however, rent control will inhibit both the demand for other housing and the formation of a dynamic, privately financed rental sector. Also, to the extent that occupancy rights in various types of housing convey a sense of ownership, "formal" purchase is not made. Furthermore, to the extent that privatized units are very deeply discounted, no mortgage credit may be required (in some cities, it is also possible to pay over time at low interest or no interest).

LTVs are on average quite low. And real lending rates in mortgage finance appear quite high.[14] Table 2 presents a series of interest rates and the rate of inflation for comparison. The rate of inflation and cost of government debt are steadily falling; mortgage lending rates remain quite high.

[14] Interestingly, although real mortgage lending rates may be quite high in much of CEE, households may not be very sensitive to this fact. See Diamond, op. cit.; he estimates real mortgage lending rates to be 5 percent in Poland and Slovakia, 4 to 8 percent in Hungary, but zero (or minus 1 percent) in the Czech Republic. However, the use of mortgage credit is uniformly low in all the countries—at about 20 percent of those purchasing a house, as was cited above.

Table 2
Comparison of Interest Rates and Inflation, 1996 – 1998

Type of Rate	Date	Level (%)
Inflation	9/96	19.5
(Consumer Price Index, annual rate)	9/97	13.6
	9/98	10.6
Treasury Bill Rate (52-week)	9/30/96	19.43
	9/29/97	23.20
	9/28/98	15.81
	11/9/98	13.65
Bank 12-Month Deposit Rate (min/max)	9/96	17.2/20.5
	9/97	16.5/22.1
	7/98	13.0/21.0
Mortgage Lending Rate	1996	28 to 30
	1998	23 to 25

The impact that these types of factors might have on the use of traditional models of demand, and some suggestions for modifying the models to be more realistic for Poland, are discussed in section 4.0 and in annex I, which illustrates how such barriers might impact the design and estimation of formal models.

3.0 THE GOALS AND METHODOLOGIES OF ALTERNATIVE TYPES OF HOUSING DEMAND AND MORTGAGE CREDIT STUDIES

3.1 A Compendium of Models

The demand for mortgage credit is one part of a complex decision-making process with many interrelated aspects. In the first instance, the demand for mortgage credit is—in part—a function of the demand for housing. Underlying the demand for housing is a series of decisions with regard to the probability of moving; the choice of tenure (own or rent); the demand for other goods, particularly consumer durables; and other choices regarding financial assets in the household's portfolio. Enveloping all of this are decisions being made over time—the so-called life-cycle approach to savings and consumption—in which housing, as the main asset of most households, plays a pivotal role.[15]

The following list offers one type of simple categorization of the models:

[15] See, for example, Paul Courant, Edward Gramlich, and John Laitner, "A Dynamic Microeconomic Estimate of the Life-Cycle Model," and Sally Merrill, "Home Equity and the Elderly" (which discussed the life-cycle model specifically for housing), both in *Retirement and Economic Behavior,* Henry Aaron and Gary Burtless, eds. The Brookings Institution, 1984.

Macroeconomic Demand Models

— The demand for housing
— The demand for mortgage credit
— Housing starts and housing completions

Microeconomic Models

- **Microeconomic Demand Models**

  — The demand for housing
  — The demand for mortgage credit

- **Housing Choice (Probability) Models**

  — Tenure choice models
  — Mobility models

- **Household Portfolio Choice Models**

  — The demand for housing and other assets
  — The demand for mortgage credit in the financial portfolio

- **Life-Cycle and Savings Models**

- **Bank Portfolio Analyses**

  — Mortgage credit; LTVs, loan products, customer characteristics, etc.
  — The probability of default
  — The probability of prepayment
  — Consumer credit aggregates and cross-selling

- **Urban Planning Analyses**

  — Tenure choice
  — Mobility
  — Housing demand and housing quality and locational preferences
  — Household income and socioeconomic characteristics

- **Market Surveys**

  — The probability of applying for mortgage and/or consumer credit
  — The financial, socioeconomic, and geographic characteristics of applicants
  — The determinants of the amount of credit applied for, etc.

- **Housing Preference Models: Hedonic Models (the demand for housing, building, and locational attributes)**

Tables 3 and 4 provide a reference to the types of macroeconomic and microeconomic models and estimations, the general types of data required by each, their major uses, and brief comments with regard to their priority for Poland.

3.2 Issues in Model Structure and a Brief Review of Studies of Mortgage Credit

The Demand for Housing and the Demand for Mortgage Credit

Clearly, many of the decisions involved in becoming a homeowner—and whether or not to do so with mortgage credit—are interrelated, including the probability of moving, the amount of housing services desired, the probability of applying for and receiving a mortgage loan, and the amount of mortgage credit. As noted in section 2.0 with regard to the United States, although closely related to the demand for housing, the demand for mortgage credit is an independent variable in its own right. *We hypothesize that in transition countries, the link between the demand for housing and the demand for mortgage credit is perhaps even more complex than in the United States.* In the first instance, there may be a substantial lag between the growth in income in Poland and the demand for housing (longer, that is, than in the United States or the United Kingdom, for example). Secondly, there also appears to be a lag—as well as the numerous barriers—between the effective demand for housing and the use of mortgage credit. Clearly, many households buy homes (or privatize their current units) without recourse to mortgage credit or with low LTVs—many more than in most developed countries. Thus, the specifications and/or results of several of the quantitative models will differ between Poland and the United States—not only the demand for housing but, perhaps even more importantly, the probability of trying to obtain mortgage credit and the amount of credit desired (or offered) if the application is made.

Table 3
Macroeconomic Models

Type of Estimation	Required Data	Major Uses/Users	Comment For Poland
Macroeconomic Models of Housing Demand	Macroeconomic aggregates on housing investment, housing consumption, sales/ rental prices, relative prices of other goods, household socio-economic data, etc.	A major component of GDP; estimates of the long-term income and price elasticities of demand are vital to analysis of economic policy. Users include MOF, HUDA, NBP, PBA, banks, and research institutions.	Poland should change the construct of its macroeconomic data series, including valuation of housing; this will become a very important economic policy tool as demand expands in the future.
Macroeconomic Models of Housing Starts and Completions	Macroeconomic aggregates of housing starts, construction costs, relative housing costs, household socio-economic data, etc.	Business cycle analysis and forecasting; major economic indicators. Users include MOF, HUDA, NBP, PBA, banks, and research institutions.	Poland should easily be able to streamline data already collected on housing starts, permits, and completions and to refine estimation of completions to better reflect actual activity.
Macroeconomic Demand for Mortgage Credit	Macroeconomic aggregates of mortgage credit, housing sales prices, relative price of housing and of mortgage credit, household socio-economic data, etc.	Major component of financial sector assets and household debt. Users include PBA, banks, MOF, HUDA, NBP, and research institutions.	This will become increasingly important as the sector grows; NBP should initiate collection reporting procedures; recording of actual sales prices will become very crucial.

Second, a “reverse” relationship may also be operative—the effective demand for housing may be constrained by the limited availability of mortgage credit—the probability of receiving a mortgage loan at all and/or the amount of credit granted. This is also true in the United States; some households that wish to purchase a home with a mortgage loan are denied credit. U.S. government programs in mortgage insurance and other affordability (and credit) enhancement can assist these households, as is the case in other countries with these types of subsidies. Nevertheless, there are still households that, for whatever reasons, do not have a sufficient down payment, even though they may be able to service a loan; they are referred to as “liquidity constrained.” Nevertheless, while liquidity and other borrowing constraints (market failures, that is, not factors such as low income) may also be evident in developed markets, they are likely to be more pronounced in a transition setting.

In summary, the factors that determine the probability of seeking and/or receiving a loan are likely to be somewhat different from those that determine housing demand, and these differences are likely to be emphasized in the transition countries.

Table 4
Microeconomic Models

Type of Estimation	Required Data	Major Uses/Users	Comment For Poland
Microeconomic Housing Demand Function	Household survey data on housing investment, housing costs, household socioeconomic data, etc.	Estimation of major economic, financial, and social parameters of the household's demand for housing (including income and price elasticities); "educates" macroeconomic models and provides major inputs to forecasting. Users include MOF, HUDA, PBA, banks, builders, real estate brokers, and research institutions.	Development of the household survey and sample to support a microeconomic database is our key recommendation for Poland.
Microeconomic Demand for Mortgage Credit	Household survey data on mortgage credit, relative prices, relative returns on assets, household socio-economic data, etc.	Estimation of similar parameters as above for housing; could (or should) be estimated as part of a system along with housing demand. Users include banks, PBA, NBP, and research institutions.	The household data survey would also be designed to serve this purpose. Will gain importance as credit grows.
Models of Tenure Choice and Models of Mobility Decisions	Household survey data in a time-series sample on mobility and changes in tenure choice	Estimation of these probabilities for Poland important for understanding factors important in housing demand, including barriers to demand. Users include PBA, banks, builders, real estate brokers, and gminas.	Lack of mobility is thought to be a major barrier between potential and effective demand. Analyses of mobility and tenure choice will become increasingly important as elements of demand decisions.
Models of Portfolio Choice	Household survey data with complete data on income, assets, and wealth	Understanding the role of housing as the main (or a major) household asset. Users include PBA, NBP, banks, and research institutions.	A secondary and long-term goal for modeling more complex models of demand; also important for analysis by banks.

Table 4 (Continued)

Type of Estimation	Required Data	Major Uses/Users	Comment For Poland
Life-Cycle Models of Savings and Assets	Household survey data with complete data on income, assets, and wealth; cross-section/time-series data desirable	Understanding the long-term role of housing as the main (or a major) asset in household life-cycle decisions about assets. Users include PBA, NBP, banks, MOF and research institutions.	A secondary and long-term goal for modeling more complex models of demand.
Demand for Housing Types/Components: Hedonic Models	Household survey with detailed descriptors of housing and location characteristics; adequate valuation is crucial	Used extensively for valuations and appraisals and for understanding household preferences and marginal valuation of unit and locational characteristics. Users include valuers, builders, gminas, real estate experts, and researchers.	Will be widely useful in Poland in areas of demand estimation, real estate valuation, rent restructuring, and setting land and real estate taxes.

3.3 Literature Review: Theoretical Basis of the Demand for Mortgage Credit and Estimation in Practice

This section briefly discusses some of the types of studies of the demand for mortgage credit undertaken in the United States. Some are macroeconomic, but the majority are microeconomic (and furthermore, most of these latter are based on data from the AHS and SFC, as discussed in annex IV).

The empirical investigations into mortgage credit in the United States have tended to focus on five basic questions:

1. How much housing do different types of households want?

2. What are the factors in the "leveraging decision"—that is, the amount of credit in relation to the house price, or the LTV?

3. What is the impact of borrowing constraints on the ability to obtain credit?

4. Have alternative mortgage products (adjustable-rate mortgages in the United States) impacted the demand for credit?

5. What is the impact of the U.S. tax deduction for mortgage interest on the demand for housing and credit? (While this is a U.S. policy, similar policies elsewhere would also require evaluation.)

In the usual course of specification of various models of the demand for mortgage credit, a theoretical model is presented, which then determines, along with available data (and/or proxies for unobserved phenomena), the econometric approach to estimation. However, a rather wide variety of specifications have been made. This section comments very briefly on some of the technical approaches to credit demand models, which will give at least a flavor of the discussions carried on by the modelers.

Various experts note that a complete specification of the demand for mortgage would be an extremely challenging task. Ling and McGill state that "ideally the demand for mortgage debt would be specified as one equation in a simultaneous system that also would include a housing demand equation, an equation for nonhousing consumption, nonhousing asset demand equations (stocks, bonds, etc.) as well as an equation to explain the level of consumer debt."[16] Very similarly, Follain and Dunsky note that the empirical specification should stem from a theoretical model in which the demand for mortgage credit would be specified as a system of demand equations including the demand for housing, the demand for nonhousing consumption, the demand for various assets, and the demand for mortgage and other types of consumer debt.[17]

In practice, however, this approach would be exceptionally challenging, both statistically and with regard to the availability of the necessary data; consequently, estimation of the "complete model" has not been fully carried out in practice.

Follain and Dunsky, for example, approach estimation on a much simpler basis, concentrating only on the demand for mortgage credit. Two approaches are utilized: (1) a single equation (reduced form) for the demand for mortgage credit, where the critical variables are the costs of equity-financed housing investment, mortgage-debt financed housing investment, consumer credit, household income, and numerous variables capturing household preferences (size, age, marital status, composition, and so forth); and (2) a model (structural equations) in which the demand for mortgage credit depends, in part, on the demand for housing. Thus, in the second formulation, the demand for mortgage debt equation includes the value of the house purchase (a separate reduced-form equation for the value of the house is also specified, which includes the user cost of owner-occupied housing). Ling uses a similar (simultaneous) approach to house value and debt level.

Despite the attention given to both theory and estimation, however, there is still not full agreement as to what is really happening in the credit decision and how the various factors interact. Ling notes that there is really not a very well developed theory of the

[16] See Ling, David and Gary McGill, "Evidence on the Demand for Mortgage Debt by Owner-Occupants," 1997, p.7.

[17] See Follain, James and Robert Dunsky, "The Demand for Mortgage Debt and the Income Tax," 1997.

determinants of LTVs. Despite its importance, house value alone certainly cannot fully explain the demand for credit, and many household socioeconomic characteristics are significant in the decision.[18] In addition, while the level and variability of household income are important, including the manner in which current income constrains the amount of credit that can be supported, there is no final verdict on the structure of the relationship.[19] Furthermore, both the definition and impact of "liquidity constrained" are still being debated, but, in general, if households are somehow constrained beyond the normal expectations of their income and wealth relative to the underwriting process, some sort of market failure may be at play.[20] Another theory is that non-housing wealth is a substitute for mortgage debt, but evidence in both directions has been found.[21] Finally, the level of mortgage credit in the United States was not found to change much following the introduction of adjustable-rate mortgages; on the other hand, U.S. households are in fact highly sensitive to changes in the deductibility of mortgage interest.[22]

What bearing do any of these findings have on the development of models and data for Poland. Actually, the "lessons learned" that can be derived from the debates and estimations to date can probably save Poland considerable time in model building and in guidance as to which data are most important for inclusion in a household-level survey. All five questions noted above are probably of interest to Poland (even estimating the impacts of its current tax policies on demand). For example, estimation of income and price elasticities will help determine what the impact of macroeconomic changes in income and the cost of credit will be. New mortgage products—for example, simpler adjustable-rate products replacing more complex DIMs—could have a beneficial effect in Poland. And finally, Poland is quite likely to want to investigate the "liquidity constraint" issues, since it might be expected that both lenders and borrowers would be climbing a learning curve in the early days of market lending; rationalizing the underwriting/budget constraint rules might have a reasonably large impact on affordability. Thus, the purpose of this brief review was simply to help Poland not "reinvent the wheel."

[18] See Hendershott, Lafayette, and Haurin, 1997.

[19] See, for example, Follain and Dunsky, 1997, op. cit.; Cho, Kim, and Megbolugbe, 1996; and Ioannides, 1989.

[20] See, for example, Linneman and Wachter, 1989; and Follain and Wong, 1995.

[21] See, for example, Hendershott and Lemmon, 1975; Jones, 1994; and Cho, Kim, and Megbolugbe, 1996.

[22] See Goodman, 1992; and Follain and Dunsky, 1997.

4.0 SPECIFICATION OF DEMAND MODELS IN POLAND AND OTHER TRANSITION COUNTRIES: BARRIERS TO ESTIMATION

There are a number of issues to be addressed with regard to the demand for housing, the demand for credit, and related housing and financial issues in Poland. Some factors relate to the estimation methodology; others relate to the available macroeconomic and microeconomic data. Key issues include the following:

- The traditional models utilized for estimation of demand equations need to be modified, if possible, to take better account of the barriers to effective demand—that is, the gap between potential and effective demand—in Poland and in the other transition countries. As a first step, policy studies should be carried out to better understand demand in a transition economy setting; as a related step, suggestions for statistical adjustments are presented in annex I.

- The macroeconomic data now available in Poland are not adequate to support estimation of macroeconomic demand models (formal statistical models) for either housing or mortgage credit. A critique is presented in annex II.

- Fairly substantial sets of microeconomic data already exist in Poland; these can be utilized for descriptive analyses of housing. However, there is no single household data set that contains all the requisite information. Rather, the data needed for estimation (again, of formal statistical models) are either scattered across numerous different surveys or not collected at all (there are no data on mortgage credit, for example, and insufficient data on income and wealth). This precludes the type of approach necessary for estimation of the basic parameters of the demand for housing and the demand for credit.[23]

4.1 Potential and Effective Demand in Poland

Among the key questions to be addressed are the following:

1. How does one define “potential demand” and “effective demand” in operationally meaningful ways for (a) housing and (b) mortgage credit?

2. How can potential and effective demand be measured?

[23] As was discussed above with regard to the AHS and SCF, estimation of multivariate statistical models—necessary for the basic analyses that Poland needs—depends on household surveys where a complete set of information is obtained for each household in the chosen sample. As it is, Poland’s micro data preclude the use of the type of regression analyses necessary.

3. What are the key determinants of potential and effective demand? What are the key barriers to translating potential into effective demand?

4. How can the effects of these determinants (and of barriers) be measured and quantified?

As has been noted, annex I presents a discussion of traditional macroeconomic and microeconomic approaches to estimating demand functions; the annex is designed for economists, econometricians, and statisticians, but the essence of the argument is presented here in (hopefully) nonstatistical terms. Following the discussion of "traditional" approaches to estimation, the annex provides a discussion of "more realistic" models of demand for transition countries. In essence, traditional (econometric) approaches to estimation should be modified, to the extent possible, to take into account various barriers between potential and effective demand.

Some of the possible constraints to effective demand in transition were introduced in section 2.0. A summary list of the relevant potential barriers includes the following:

- Supply constraints on housing types and locations, resulting in serious constraints on mobility and tenure choice.

- Liquidity constraints: households (previously subject to remuneration partly in kind) have not accumulated sufficient wealth for down payments.

- Distortions in the cost of housing: distortions due to rent control or other factors.

- The relative cost of housing and consumer durables. Also the portfolio of consumer durables is still being adjusted, as are the relative prices.

- The relative cost of mortgage credit (high real mortgage lending rates) certainly discourages borrowing; subsidies available through contract saving schemes may also discourage market rate borrowing.

- Expectations/attitudes regarding indebtedness and payments for housing: low expectations regarding the proportion of household income that should be spent on housing. Also, payment burdens worldwide are higher than they are (or have been) in transition countries; lenders may be unduly conservative with regard to LTVs, and so may households.

The Demand for Housing

A traditional approach to estimating the aggregate (macroeconomic) demand for housing requires an understanding of the "desired" stock of housing, the actual stock of

housing, and the "speed of adjustment" between the stock desired by households and the actual stock. Thus, modeling of the aggregate relationship requires time-series data on the stock of dwellings, determinants of "desired demand" for housing stock, and determinants of the "speed of adjustment" of actual to desired demand. The "desired" demand for housing is generally determined from the relationship between the market value of the housing stock, the price of housing, household income, and various household characteristics.

The problem is that in transition economies, given the distortions and constrained supply responses associated with previous interventionist policies, the (econometrically) estimated parameters of the "desired" stock function will not accurately describe what demand will look like in the near future under a new regime of market-determined decisions.[24]

The types of barriers noted above between potential and effective demand affect the speed of adjustment toward "desired demand." Indeed, these barriers are theoretically important determinants of the failure to translate potential into effective demand. Within the transition economies, one striking factor associated with slow adjustment toward "desired demand" may be low residential mobility rates.[25] Consequently, studies focusing on determinants of residential mobility would appear to have great utility in understanding barriers to effective demand.

In transition economies at the current time, "potential demand" may be better analyzed by examining relationships between the size of the housing stock for *market economies* and the determinants of demand included in these equations. It might, for example, be assumed that once market forces are more fully unleashed in a transitional economy such as Poland's, the housing sector will be increasingly pulled in directions that replicate the sectoral performance of other market economies. Countries such as Turkey, Chile, and Malaysia, for example, with relatively similar income levels to Poland's, had 1.20, 0.99, and 1.03 households per dwelling in 1990, compared with a figure of about 1.09 for urban Poland in 1990. International comparisons can establish "norms" of such outcomes in relation to the determinants in the equation. "Expected" levels of housing stock in relation to households and other variables can be established based on estimates of demand equations using cross-country data. Estimates of the "desired demand" for Poland, so obtained, can be interpreted directly, as "potential demand"; alternatively, they

[24] The estimated parameters will be biased; the all-important income and price elasticities will not be adequate for future policy planning. Thus, while the equation may be of use for forecasting in the very short term, it will not provide adequate information for planning for the long term.

[25] In 1990 annual rates of residential mobility in Warsaw were estimated to be 2.6 percent. Within 18 cities studied in the Housing Indicators Project with highly restrictive policy frameworks, annual mobility averaged only 5 percent, while among 18 cities with "enabling" policy frameworks, mobility averaged 10 percent—four times as high as that in Warsaw.

can be utilized in a demand equation and used as a method to estimate the "speed of adjustment" parameter.

In any case, estimations of both the desired stock and the rate of adjustment of actual to desired stock (whether inferred from Polish time-series data or from international comparisons) are likely to be highly revealing in two ways: (1) understanding the differences in potential and effective demand and (2) understanding the degree to which various barriers impede the process of adjustment toward equilibrium (desired) levels of housing stock. Indeed, one could in principle let the adjustment rate be modeled as policy dependent, whereby, for example, it depended on availability of mortgage credit, mortgage terms and conditions, and so forth.

In summary, the traditional models are basically "naive" with regard to the conditions prevailing in transition economies. They are useful as descriptive devices. However, more useful and realistic models would take account of particular institutional and historical features of the transition economies to model explicitly the key barriers to translating potential into effective demand.

Demand for Mortgage Credit

In some traditional (naive) models of the demand for mortgage credit, demand is directly linked to demand for housing, assuming, for example, freedom with regard to determining the loan-to-value ratio.[26] In this "naive" model, it is assumed implicitly that mortgages are granted as they are demanded, in effect assuming that there are no independent determinants of mortgage demand and supply.

Alternatively, based on similar arguments as for the demand for housing, more realistic models would take account explicitly of supply constraints and borrowing restrictions. As an important example, would-be borrowers are subject to two restrictions on ability to borrow—one based on housing payments relative to income, the other based on down payment requirements relative to assets. The latter issue was noted above as part of the so-called liquidity constraint. As also noted in section 3.0, Poland may wish to assess the evolution of the use of mortgage credit in countries such as Spain, Portugal, and Ireland. In these countries, although the rate of homeownership is quite high, the use of mortgage credit is still relatively low; however, mortgage credit (relative to GDP) has grown very rapidly in the past decade, such that important barriers may have been overcome.

In summary, a comparison of the magnitudes of housing demand and mortgage demand from calculations based on models more realistic for transition countries should

[26] Refer, however, to the literature review above for various approaches and their problems in understanding and estimating the demand for mortgage credit.

be revealing in the following manner: the degree to which effective demand for credit is limited by (1) limited mobility of potential movers; (2) income and assets constraints on borrowing; (3) other restrictions on borrowing reflecting the traditions and/or preferences of both borrowers and lenders; and (4) supply restrictions concerning available housing types and values.

4.2 Macroeconomic and Microeconomic Data in Poland

Annex II presents a review of the macroeconomic and microeconomic data in Poland that would be required for formal analyses of the demand for housing and the demand for mortgage credit. This review follows from annex I—that is, the authors followed the constructs of the equations presented in annex I and provided a critique of the data that would be necessary to measure each of the key variables.[27]

Limitations of Poland's Macroeconomic Data for Estimation of Demand for Housing and Credit

In summary, problems with Poland's macroeconomic housing data include the following:

- Consistent and appropriately valued time-series data are difficult or impossible to obtain.
- The market valuation of the existing stock, or of newly constructed stock, is not appropriate in the aggregate.
- The housing consumption variable covers only part of the stock.
- Investment in housing may not be measured properly.
- New dwellings are underestimated.
- Household income may not be measured properly (from the GUS survey, per capita estimates tend to be developed rather than household-level data).

[27] The annex II critique, while very informative, is somewhat technical in two ways: (1) reference is made to actual variables specified in the equations presented in annex I; and (2) for macroeconomic data, in particular, the discussion refers to accounting conventions and estimation procedures that are familiar to those working with national account data. Thus, again, this section summarizes the key findings from this critique in less technical terms.

- No data on household wealth exist.

- No mortgage credit data are yet published by the National Bank of Poland (NBP).

Thus, as noted in annex II, the available data for macroeconomic analysis are seriously hampered by the lack of consistent historical time series and by limitations on overall accuracy and representativeness. Macroeconomic housing investment data and data on new dwellings are thought to be extremely unreliable. Data on general financial conditions are available, but there are no detailed data on mortgage credits. Finally, due to changes in classification methods, economic data on existing and newly constructed housing stock are not easy to track in recent years, including, for example, suitably detailed studies on the depreciation of the housing stock. As discussed in section 5.0, GUS is aware of many of these criticisms and is undertaking to bring its estimation and accounting procedures more in line with international procedures.

Limitations on Poland's Microeconomic Data for Households, Housing, and Finance

Various institutions in Poland collect microeconomic data on households, housing characteristics, housing allowances, and rents. These include the Micro-Census, conducted by GUS in 1995; the Census itself, which will take place again in 2002; the Housing and Building Analysis, which presents housing data at the level of the voivodship (the latest was 1996); and the important housing monitoring data regularly collected by the Housing Research Institute. These data provide much descriptive information about various aspects of the housing stock. For two major reasons, however, the data are not suitable for estimation of the microeconomic demand functions that lie at the heart of the analysis questions we wish to address.

First, the annex provides a critique regarding the suitability of some of these data and notes that the determination of effective demand for housing using microeconomic data is impeded by a range of factors, both historic and present. Most glaring is the inadequacy in reporting of household income suitable for assessing housing and credit demand. Until 1992, when the personal income tax system was introduced, household income was measured through a household income survey methodology (described in the annex). This may be desegregated only to the microregional level for five socioeconomic groupings. Also, while some demographic and housing characteristic data useful for housing stock analysis exist, data on tenure and duration of stay and more detailed information on housing units and locational characteristics are not available. The lack of historic and current data on housing costs and prices and distortions in the market through nontransparent subsidies, both historic and present, limits stock valuation. And, as noted, there are no data on mortgage credit.

Second—and most important, from the point of view of constructing a database needed for estimation—either (1) the requisite data are not available at all; (2) they are not available at the household level; and/or (3) an adequate set of variables describing the ***same household****, its housing, and its financial and socioeconomic characteristics do not exist in the same data set.* It is for these types of reasons that household surveys, such as the American Housing Survey and the Survey of Consumer Finance, were developed in the United States.[28] Countries do not typically develop these types of micro surveys without very specific purposes in mind; thus, there is no reason to expect that Poland would have developed the requisite survey data. As discussed below, however, development and implementation of a household survey on housing and finance is our first and most important recommendation.

Expand Microeconomic Surveys Conducted by Gminas

Finally, as also described in the annex, gminas—now responsible for housing and most aspects of housing policy and planning—will be likely to feel a need for a microeconomic household database. Several gminas have in fact conducted local surveys, including Szczecin, Gdynia, Sopot, and Dzierzoniow. These surveys have been conducted to obtain information on effective demand for housing; in addition, other data sources, such as income tax records, have been used to corroborate income information (Szczecin and Ostrow Wielkopolski, for example, utilized tax information). Annex II provides a brief review of the most complete of the gmina surveys—that undertaken by Szczecin (an effort supported by USAID). However, no mortgage credit data were obtained, and, in addition, the data on household income and financial characteristics were limited, so it would be utilize these data for estimation of formal models. We recommend that gminas expand their survey efforts, and when doing so, to provide a more complete data set.

5.0 NEXT STEPS FOR POLAND

A number of recommendations are offered to assist Poland to quickly enhance its ability to analyze the demand for housing and the demand for mortgage credit. In the first instance, better measures of the market value of the housing stock and annual production must be developed. Poland should also develop an ongoing household (microeconomic) survey to obtain housing and financial data; variables representing the important factors in the housing and credit decisions could then be made available, including household income and assets, other determinants of household preferences, financial and economic indicators, factors underlying mobility, the market price of housing, the demand for consumer durables, demand for financial assets, and so forth.

[28] There are also numerous other special-purpose surveys in the United States and elsewhere, dealing with issues of health, retirement (e.g., the Retirement History Survey), education, and so forth.

In summary, it is suggested that Poland should undertake the following:

- **Household Survey on Housing and Consumer Finance.** Develop a long-term, ongoing "Survey for Housing and Consumer Finance" and prepare a representative sample of households. Microeconomic data from this survey will be crucial to estimating the basic models of the demand for housing and mortgage credit (and consumer credit as well, for example); the survey could be adapted from questions already existing in the AHS and SCF surveys in the United States (see annex IV).

- **Computerized Databases.** Prepare a database based on the Household Survey noted above. Also, prepare a computerized database of mortgage credit information based on existing bank portfolios, including household-level data on both loan characteristics and household characteristics.

- **Valuation of Housing.** Develop systematic procedures for compiling data on the market value of housing: on the stock of, and annual originations of, housing units. This could involve a wide range of institutions, including HUDA, NBP, and the realtors, appraisers, and banks.

- **Quantitative Demand Models.** Develop modifications to formal models of the demand for housing and the demand for mortgage credit that are most suitable for Poland. Adjustments to the traditional models might relate to the barriers between potential and effective demand in Poland (and other transition countries). In addition, the (apparently) lagged relationship between growth in GDP in Poland and an increase in the demand for housing should be investigated, as should the factors that determine why the demand for mortgage credit may not be as robustly related to the demand for housing (or may also be related with a substantial lag) as might be expected from results in developed countries.

- **Studies of Housing Indicators.** Compare housing indicators in Poland with those in the advanced emerging nations (such as Turkey, Malaysia, and Chile) to help establish benchmarks for emergence from transition. Compare mortgage credit indicators and the institutional evolution of mortgage credit with countries such as Spain, Portugal, and Ireland, where use of mortgage credit is relatively low but growing rapidly.

- **Macroeconomic Data.** Improve the methodologies underlying derivation and estimation of macroeconomic aggregates for the national accounts on housing investment, depreciation, new production, and so forth.

It is difficult to compare—in monetary terms—the costs and benefits of these steps. Suffice it to say, however, that it should not be exceptionally expensive to begin a process that will serve macroeconomic and microeconomic estimation for decades to come as Poland's housing and housing finance sectors continue toward an equilibrium properly characteristic of emergence from transition.

With regard to the most important and most challenging recommendation—the development and implementation of a household survey—there will certainly be development costs and data collection costs. However, Poland by no means needs to start from scratch. First, as has been discussed, some of the necessary topics for a more effective micro/household survey are already being addressed in various surveys in Poland; they need, however, to be integrated at a household level and redesigned in order to support the types of estimations that Poland needs. Second, a review of the AHS and SCF will hopefully provide guidance as to design of an appropriate survey. These surveys have been utilized for many decades, and they have been thoroughly tested and improved. Without a newly devised household survey, however, Poland will lack basic estimation capability since existing data cannot support it. With regard to the remaining recommendations, the necessary tasks for implementation are much less formidable. In summary, then, UIC suggests that the benefits will certainly outweigh the costs.

Additional details with regard to the key recommendations include the following.

- **Institute a Household Survey for Housing and Consumer Finance.** *The first and most important recommendation is that Poland needs to go back to the basics of systematic household data collection for the analysis of many aspects of housing and housing finance*.[29] This will entail, in the first instance, redesigning and/or combining some of the various micro/household surveys that already exist. It should not be too formidable a task, as has been noted.

The household survey would concentrate on housing, housing finance, consumer credit, other financial variables, savings, consumer durables, and so forth. A single survey could be modeled from the most relevant information in the AHS and SCF. The emphasis of the AHS is on housing consumption, housing features, housing finance, mobility, and tenure choice. The SCF has more detailed financial data, and thus provides better information for analyzing for demand for mortgage credit in a portfolio choice context (that is, how might households make decisions about allocating their wealth and entering into different types of borrowing arrangements), and more information on wealth and asset types.

[29] It has been noted by the World Bank (Bertrand Renaud) that China has recently designed a basic household survey for housing, which will be implemented using a sample of 4,000 households. The reason is exactly as for Poland: China wishes to better understand the basic economic relationships while developing its housing reform plans.

The next step is to design a sampling frame. At a minimum, the data should be representative on a nationwide basis. It may be desirable, however, to also have Poland's largest cities be represented by a valid statistical sample—and perhaps each voivodship. Similarly, differences between urban and rural households should be distinguished.

The survey should be designed to be ongoing. The AHS is undertaken every other year, as noted above. The initial survey will provide a cross-section database. *As time goes on, this will then emerge into a combined cross-section/time-series database, which is very important to understanding a wide variety of dynamic phenomena, such as the rates and determinants of mobility, life-cycle asset behavior and savings behavior, the probability of becoming a homeowner, the probability of obtaining mortgage credit, and so forth.*

■ **Develop a Database from Bank Portfolios.** At present, only "anecdotal" information exists in Poland regarding mortgage credit aggregates and the details of the loan portfolios. The National Bank of Poland does not yet release data that distinguishes mortgage lending from other types of credit. The Polish Banks Association, as well, has not yet made public any information relating to mortgage credit. During the preparation of the report "Building on Progress: The Evolution of Housing Finance in Poland," information on some of the items note above was obtained (for 1996) through interviews with the main lenders by UIC team members. For 1997, estimates of a few aggregates have been made by CREI staff, with the realization that these figures are basically "guesstimates." (These are the figures presented in this report in section 2.0.)

In order to determine whether the information in the portfolios of the lending banks would support database creation, CREI staff undertook brief reconnaissance interviews with the major mortgage lenders. The results are presented in annex III. The basic issues to be addressed were:

- What data are typically collected by banks during the process of loan application, underwriting, loan approval, and establishment of the loan in a portfolio for servicing?

- Are any or all of these data computerized?

The results suggest that an analysis of existing bank portfolios with regard to their mortgage lending activity would be an extremely useful first step in understanding the evolution of mortgage credit in Poland. This is especially so until a complete household survey, as suggested above, has been undertaken. Bank portfolios cannot be used to obtain (unbiased) estimates of the demand for mortgage credit, since the files contain only those who have already applied and who have been accepted for a loan. (In other words, that portion of Polish households who do not need to apply or do not wish to apply for a loan—or who were refused, which is an interesting analysis in itself—are not included.) Nevertheless, descriptive analysis of current mortgage portfolios would provide very

interesting insights regarding the total volume of mortgage lending, the total number of loans, the average size of the loans and the distribution by size, the type of mortgage product, the LTV, loan duration, other loan terms, the general characteristics of the borrowers, the geographic distribution, and so forth.

No doubt individual banks in Poland analyze their own mortgage portfolio information internally for use in marketing, just as banks do elsewhere. These data and analyses are, of course, not available to the public. It is a fairly common practice in the United States for mortgage banks, and all other mortgage finance lenders, however, to report a variety of aggregate statistics to the U.S. Mortgage Bankers Association (MBA), as well as certain details of their portfolios. In fact, a great deal of information on mortgage lending trends and profiles becomes public knowledge, either through the MBA, through secondary market institutions such as Fannie Mae and Freddie Mac, or through the Federal Reserve. As elsewhere, however, only individual banks analyze their own portfolios using a household/loan-level microeconomic approach.

However, the question may be addressed as to whether banks would be willing to "strip" their files of confidential information and provide them (a sample of them) to the Foundation for Mortgage Credit and/or Polish Banks Association, for example, for analysis. The database could be made fully computerized, which would then easily allow numerous types of analyses using available software.[30] Thus, without sacrificing too much "competitive" information, benefits could accrue to individual banks as they make decisions about institutional approaches and the scale and location of their future retail lending given a reasonable estimate of potential market demand.[31] Findings could be discussed with the relevant authorities as desired, perhaps in order to press for supportive subsidy policies such as first-time homeowner grants or government-sponsored (risk sharing) mortgage insurance, both of which would be likely to increase the utilization of mortgage credit.[32]

Finally, the data collected by the Mortgage Fund on the relevant loan portfolios may also offer an excellent opportunity to study the details of mortgage loans now outstanding in Poland.

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[30] U.S. banks and mortgage lending institutions—either with their own research staffs or through consulting firms—routinely analyze their portfolios. Highly sophisticated software exists whereby banks can analyze what motivates their customers from every important point of view (analysis of variance, discriminant analysis, etc.).

[31] It may also be useful to analyze data from the BudBank, collected from the Mortgage Fund; see annex III.

[32] Please refer to the recent UIC report on "Public Sector Finance Strategies for Poland," which discusses these and other subsidy programs designed to enhance homeownership and encourage the use of mortgage credit in the process.

■ **Systematic Data on Housing Market Values and Mortgage Credit.** Poland needs to develop systematic data collection systems for both housing and housing finance data. Housing data include market rents, market prices of recently sold homes, and market values of owned homes (and perhaps better data on "completions"). The mortgage credit aggregates would include data on both existing portfolios and new originations; the data would be reported via NBP specifications by the banks to the NBP, as noted above.

The housing value data, as in the United States, would come from a variety of sources.[33] Market-based rents need to be reported on a consistent basis nationwide. With regard to owned housing, both housing just sold and the existing housing stock need to be valued using consistent estimation and recording procedures; in part, this recommendation pertains to suggestions for GUS regarding macroeconomic data, noted above. In addition, Poland needs to solve the problem of under reporting of sales values (for tax avoidance purposes). If a variable with a decided bias such as that caused by under reporting is used in estimation, the results of any estimation of demand models will be inaccurate.[34]

[33] A forthcoming UIC report, sponsored by USAID, addresses some of the issues in recording of sales values. See "Property Valuation and Appraisal: U.S. Information Systems and Recommendations for Poland."

[34] More specifically, the estimated parameters will be biased. And there are many other very important reasons to have accurate data on house value, including the interests of the lending banks, the NBP, realtors, and appraisers.

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ANNEX I

MACROECONOMIC AND MICROECONOMIC MODELS OF THE DEMAND FOR HOUSING AND MORTGAGE CREDIT

1.0 INTRODUCTION

The feasibility of estimation of models of the demand for housing or residential credit in Poland (and in other transition countries) is limited by a major problem: that of translating "potential demand" for housing and residential credit into "effective demand." Indeed, this is a critical problem not only in the transitional economies but also wherever government policies and institutions have not been designed to be responsive to market signals concerning demand.

Problems of inadequate "effective demand," as commonly perceived, can result from policy failure on both the demand side and the supply side of the housing market. For example, households occupying heavily subsidized housing, that would with smaller or no subsidies consider moving to another dwelling or even another city, may have little or no incentive to move as long as subsidies exist. Similarly, incentives to change dwellings will be minimal if available housing is priced beyond the means of most households—perhaps as a result of government-imposed restrictions on land development or house construction. Regarding mortgage credit, parallels exist concerning either demand- or supply-side barriers to translating potential demand into effective demand. If the possibility of government-subsidized credit exists for a household, even if it must wait for years to take advantage of it, the household will be reluctant to seek unsubsidized credit at market rates of interest. This is a demand-side barrier to effective demand for private mortgage credit. On the supply side, any policy that either rations credit or increases its price (such as inefficient administrative practices in granting credit or failure to manage credit risk properly) will restrict the ability to translate potential demand into effective demand.

Any study of the demand for housing and mortgage credit should seek as far as possible to identify the key barriers on both the demand and supply sides of the market for housing and credit and to quantify their relative impacts. By so doing, priorities can be established for policy, administrative, and institutional reform. Potential beneficiaries of a better framework and better information about barriers to realizing effective demand for housing and credit include households (particularly those wishing to move), producers of housing, land developers, banks and other financial intermediaries, and both local and central governments.

Studies to identify and quantify barriers to effective demand should be conducted so as to identify both the magnitude of potential demand and past and current effective demand and, by doing so, illustrate the stakes of modifying current policies and institutions. They should then also attempt to find the sources of shortfalls in effective

demand for both housing and residential credit according to both demand- and supply-side policy shortcomings.

Among the key questions to be addressed in such studies are the following:

1. How does one define “potential demand” and “effective demand” in operationally meaningful ways for (a) housing and (b) mortgage credit?

2. How can potential and effective demand be measured?

3. What are the key determinants of potential and effective demand? What are the key barriers to translating potential into effective demand?

4. How can the effects of these determinants (and of barriers) be measured and quantified?

5. What are the key priorities for policy and institutional reform to narrow gaps between potential and effective demand?

Key elements of a series of studies to address these questions include the following:

1. Background studies of key housing indicators.

2. Studies of the aggregate supply-demand relationship using stock/user matrices.

3. Studies of the structure of housing prices

   — Hedonic price studies
   — User cost studies

4. Traditional models of demand for housing and mortgage credit.

5. More realistic models of demand and supply.

6. Policy simulations regarding barriers to realizing effective demand.

This annex briefly describes each of these key elements. Technical models are developed for both macroeconomic and microeconomic approaches. Adjustments to these traditional models are then discussed. Please note that this annex has been developed for the use of various technicians, including economists, statisticians, and technical housing policy analysts.

2.0 BACKGROUND STUDIES

Key indicators related to housing and mortgage demand include the following:

- Housing price (rent, selling prices (existing/new), hedonic prices, and price of other goods)
- Dwellings
- Households/dwellings
- Floor area per person (distribution)
- Infrastructure adequacy (distribution)
- Construction
- Construction per 1,000 households
- Investment
- Investment/GDP
- Outstanding mortgage credit
- Number of outstanding mortgages
- New mortgages credit
- New mortgages
- Loan-to-value ratio on outstanding mortgages
- Loan-to-value ratio on new mortgages
- Terms (interest rate, term in years) of outstanding mortgages
- Terms (interest rate, term in years) of new mortgages
- Lending rates for other sectors, credit use:
  - -- Consumer loans
  - -- Import/export credits
  - -- Enterprise loans
- Other background variables
- Consumer prices
- Prime lending rate
- Exchange rate

These and other indicators should be examined to establish basic trends and distributional aspects of indicators. Key indicators should then be compared to:

- Other transition economies
- Other countries at similar income levels

For a variety of reasons, it is not particularly fruitful for transition countries to undertake comparisons with the United States or Western Europe. Not only do income and relative prices differ, the various barriers that cause the “gap” between potential and effective demand, discussed below and in the main text, are likely to be much more pronounced. For a good policy-related analysis of key housing indicators focusing on Eastern Europe, and, in some cases, countries with comparable incomes, see Hegedüs, Mayo, and Tosics (1996).

The main sources of these indicators include household interview surveys, borrower surveys, banks and financial institutions, and the central bank. For comparative data, information is available from the Housing Indicators Program (see Hegedüs, Mayo, and Tosics).

3.0 BASIC DATA AND DESCRIPTIVE ANALYSES

3.1 Stock/User Matrices

Stock/user matrices are simply cross tabulations of housing types and household types. They serve to inform those preparing data for model estimation where the important elements of a sample of households are located, and are good tools for descriptive analysis. Each element of the matrix is equal to the number of households of a given type (A, B, ..., Z) occupying housing of a given type (1, 2, ..., N).

Housing	Household Type			
Type	A	B	. . . . . Z	
1	N_{1A}	N_{1B}	. . . . . N_{1Z}	N_1
2	N_{2A}	N_{2B}	. . . . . N_{2Z}	N_2
.	.	.	.	.
.	.	.	.	.
N	N_{NA}	N_{NB}	. . . . . N_{NZ}	N_N
	N_A	N_B	. . . . . N_Z	

Matrices may encompass either the entire housing stock, or subcomponents or strata based on, for example, subsector (public, private, cooperative); new or existing; city/country, urban/rural; city size; etc. Housing types will typically be defined based on unit size, quality level and, perhaps, location. Household types typically encompass household size, income, and, perhaps, age of head of household and gender of head of household.

Stock/user matrices are useful in examining both regularities in patterns of occupancy and anomalies (such as small households living in big units and vice-versa).[1] The existence of many anomalous housing allocations helps identify disequilibria and distortion that can serve as the focus of policy reform efforts.

[1] For a good description of stock/user matrices and their application, see Strassman, W. Paul. *The Transformation of Urban Housing*. Johns Hopkins University Press, 1982.

Data sources for stock/user matrices include:

A. Household interview surveys
    1. Census
    2. Special purpose
B. Borrower surveys by mortgage-granting institutions

3.2 The Structure of Housing Prices

Studies of the structure of housing prices should focus on construction and analysis of two measures of price—hedonic price indices and indices of user cost. Data requirements for each include:

A. Hedonic price studies
    1. For recent movers only
        a. Market rent
            (1) Contract rent
            (2) Utilities
        b. Sale price
        c. Housing characteristics
            (1) Dwelling unit characteristics
                (a) Size
                (b) Interior facilities—bedrooms, bathrooms, kitchen, sharing of facilities
                (c) Condition—state of repair, quality of interior finishes, working condition (reliability) of utilities (heat, hot water, electricity)
            (2) Building characteristics
                (a) Number of units in building
                (b) Stories in building, story of unit
                (c) Access to places of employment, shopping, schools, churches, etc.
                (d) Centrally heated
            (3) Institutional status
                (a) Private
                (b) Cooperative
                (c) Existence, magnitude of subsidies
                (d) Relationship of tenant/purchase to previous owner
            (4) Length of stay

Data for hedonic price studies are typically based on household interview surveys.

B. User cost studies
    1. For renters
        a. Contract rent

b. Utilities payments
c. Transactions costs (key money, agency fees, etc.)

2. For owners
   a. Market value of unit (from owner estimate or hedonic price studies)
   b. Outstanding mortgage balance
   c. Mortgage terms
      (1) Interest rate
      (2) Term
      (3) Monthly payment
   d. Initial down payment percentage relative to purchase price
   e. Property tax rate (effective rate as percentage of market value)
   f. Maintenance expenditures as percentage of market value
   g. Estimated depreciation rate
   h. Interest rate on non-housing investments
   I. Interest rate on non-housing-based borrowing (e.g., consumer loan rate)
   j. Estimated annual rate of appreciation of housing
   k. Non-priced mortgage characteristics—prepayment penalties, default costs, excise taxes and transfer fees, etc.

Sources for user cost studies include household interviews, borrower interviews, and interviews with bank officials.

4.0 TRADITIONAL MODELS OF DEMAND AND SUPPLY

Models of housing demand and supply that are traditionally applied within market economies can provide useful comparisons and insights into the nature of housing market disequilibria in Poland. Some of these models are briefly outlined below.

4.1 Microeconomic Demand for Housing and Credit

The simplest and most widely applied models of housing demand are log-linear models that assume constant price and income elasticities of demand. These facilitate straightforward comparisons with demand models estimated in many developing and industrialized countries. They are:

1. a. Cross-section data

$$V^* = a y^{\epsilon_y} P_h^{(\epsilon_p + 1)} Z^{\gamma} \qquad \textbf{(1)}$$

where:

V* = market value (for owner-occupied housing) or rent (for renters)

y = household income
P_h = price per unit of housing (from hedonic price or repeat sales studies)
Z = sector of household characteristics
and a, ϵ_y, ϵ_p, and γ are to be estimated

b. If cross-section and time-series data are to be pooled, rewrite (1), deflating as necessary

$$\frac{V^*}{P} = a \left(\frac{Y}{P} \right)^{\epsilon_y} \left(\frac{P_h}{P_o} \right)^{\epsilon_p + 1} Z^{\gamma} \quad \textbf{(2)}$$

where:
P = consumer price index
P_O = price index for non-housing goods

2. Alternative estimates for the price of housing can be developed based on:
   a. Hedonic prices
   b. Repeat sales prices
   c. User cost (see Sections 3.2.B above, and 4.1.3, below)

3. Mortgage credit demand may be estimated most simply by assuming that it is proportional to demand for owner-occupied housing, where the constant of proportionality, l, is just the average or "typical" loan-to-value ratio:

$$m^* = l \; V^* \quad \textbf{(3)}$$

Note: If a user cost definition of housing price is used, the total user cost of owner-occupied housing is:

$$UC_h = rM + (t_p + c_m + d + i(1-l) - g) \; V \quad \textbf{(4)}$$

where:
r = mortgage interest rate
M = mortgage amount
t_p = property tax rate
c_m = maintenance cost (percent of value)
d = depreciation rate (percent of value)
I = interest rate on non-housing investments
g = expected capital appreciation rate on housing

The term *rM* is the interest cost of a mortgage and the second term is "other housing costs," including the cost of foregone interest on the downpayment *l* (1-*l*) *V*. For a fixed loan-to-value ratio, if *M* = *lV* and:

$$UC_h = \left[(rl + t_p + c_m + d + i(1-l) - g) \right] V \qquad \textbf{(5)}$$

where the bracketed term is the "price per unit of housing" to be used in demand estimation, mortgage demand depends on mortgage interest rates and down payment requirements, as well as other elements of user cost, even within this simple "proportional" credit demand model.[2]

4.2 Macroeconomic Demand for Housing and Credit

In macroeconomic demand models, emphasis is not placed on estimating the rent or value of housing for which households are willing to pay, but rather on estimating the demand for stocks (or flows) of housing demanded, where "stocks" are often measured in terms of numbers of dwellings. Models can be estimated of the demand for a stock of housing, a stock of corresponding mortgages, or a flow of housing as follows:

(1) Demand for dwellings

a. Housing stock demand

Models of housing stock demand generally posit a relationship between the "desired" housing stock and a number of economic and demographic variables; e.g.,

$$N_t^* = f\left(HH_t,\ y_t,\ Z_t,\ \left(\frac{P_h}{P_o} \right)_t \right) \qquad \textbf{(6)}$$

where:

N_t^* = desired dwelling units at time *t*

HH_t = number of households at time *t*

y_t = income at time t

Z_t = a vector of demographic characteristics of household heads and household composition

$(P_h / P_O)_t$ = relative price of housing (compared to other goods) at time *t*

[2] More realistic models of demand for mortgages can be based on the observation that mortgage lending is often a "preference of both borrowing and lending which permits other goods and services to be financed with 'excess demand' for credit." See C. Jones, "The Demand for Home Mortgage Debt," *Journal of Urban Economics*, January 1993, pp. 10–28.

N_t* cannot be observed directly but can be inferred from observing the process by which the housing stock evolves over time. For example, this year's stock may be related to last year's stock by the following:

$$N_t = N_{t-1} + \gamma\ (N_t^* - N_{t-1}) \qquad \textbf{(7)}$$

In this traditional "stock-adjustment" model this year's stock is equal to last year's stock (N_{t-1}) plus a fraction of the difference between the desired stock and the actual stock. Combining terms in (7) and substituting (6) yields:

$$N_t = \gamma\ f\left(HH_t\ ,\ y_t\ ,\ Z_t\ ,\ \left(\frac{P_h}{P_o}\right)_t\right) + (1 - \gamma)\ N_{t-1} \qquad \textbf{(8)}$$

Regressing current stock on lagged stock and the presumed determinants of N* permits estimation of the adjustment rate, γ; the effects of exogenous variables on the desired stock of housing, and the stock of desired housing itself. Having estimated the parameters of (8), it is possible to estimate the unobservable "desired" housing stock.

In transition economies, given the constrained supply responses associated with heavily interventionist policies, econometrically estimated parameters of (8) may be of interest for forecasting but of less interest for determining "potential demand," which may be better estimated by examining relationships between the size of the housing stock for *market economies* and the determinants indicated in Eq. (6).

It might be assumed, for example, that once market forces are unleashed in a transitional economy such as Poland's, the housing sector will be increasingly pulled in ways to replicate the sectoral performance of market economies. Countries such as Turkey, Chile, and Malaysia, for example, with income relatively similar to Poland, had 1.20, 0.99, and 1.03 households per dwelling in 1990, compared with a figure of about 1.09 for Poland (Warsaw) in 1990. International comparisons facilitated by data from efforts such as the Housing Indicators Project can establish "norms" of such outcomes in relation to the determinants listed in Eq. (6). "Expected" levels of housing stock in relation to households and other variables can be established based on estimates of Eq. (6) using cross-country data, assuming that an average $N_t = N_t$*. Estimates of *N** for Poland so obtained can be interpreted either directly, as "potential demand," or can be entered directly into a stochastic version of Eq. (7) and used as an alternative method to estimate the adjustment rate, γ.

While other variables can be useful to characterize "stock demand," such as the market value of dwellings, alternative measures entail far heavier data requirements and are likely to be measured with far greater error than the number of dwellings.

In any case, estimations of both the desired stock and the rate of adjustment of actual to desired stock (whether inferred from Polish time-series data or from international comparisons) are likely to be highly revealing concerning both the differences in potential and effective demand and the degree to which various barriers impede the process of adjustment toward equilibrium levels of housing stock. Indeed, one could, in principle, let the adjustment rate be modeled as policy dependent, whereby, for example, it depended on the availability of mortgage credit, mortgage terms and conditions, etc.

In that case, Eq. (8) would be rewritten:

$$N_t = \gamma(M)\, f\left(HH_t\ ,\ y_t\ ,\ Z_t\ ,\ \left(\frac{P_h}{P_o} \right)_t \right) + (1 - \gamma(M))\ N_{t-1} \qquad \textbf{(9)}$$

where econometrically N_t would be estimated by regressing current stock on the lagged stock, N_{t-1} ; presumed determinants of the desired stock, f( ); a vector of variables affecting the speed of adjustment, γ(*M*); and interaction terms between *M*, arguments of f (), and N_{t-1} .

Modeling of the aggregate relationships described above requires *time-series data on the stock of dwellings, determinants of "desired demand" for housing stock, and determinants of the "speed of adjustment" of actual to desired demand*.

b. Mortgage stock demand

In a "naive" model of the demand for outstanding mortgage credit, demand for mortgage credit is directly linked to demand for housing, assuming a fixed loan-to-value ratio and observing that:

$$S_t^* = M_t^*\ N_t = l\ V_t^*\ N_t \qquad \textbf{(10)}$$

where S_t* = stock of mortgages at time *t*. In the naive model, it is implicitly assumed that mortgages are granted as they are demanded, in effect assuming that there are no independent determinants of mortgage demand and supply.

c. Dwelling flow demand

In addition to demand for the stock of dwellings, it is useful to know the potential flow demand for dwellings—the number demanded to be built within a given time period. This number is interpreted simply as the amount of new construction demanded per unit of time (in fact, it is equal to demand for new construction plus net additions to the stock from conversions and mergers). Investment demand is closely related—it is equal to the flow demand for dwellings multiplied by the average value per dwelling. The flow demand is defined as:

$$C_t = \gamma(N_t^* - N_{t-1}) + \delta N_{t-1} \quad \textbf{(11)}$$

where C_t = construction in time period t, which is equal to the adjustment toward desired demand $\gamma (N_t^* - N_{t-1})$ plus replacement of dwellings from the stock, which are removed at a rate δ. One may think of "desired construction" as the full adjustment plus replacement ($N_t^* - N_{t-1} + \delta N_{t-1} = N_t^* + (\delta-1) N_{t-1}$), where the amount by which adjustment fails to occur is $(1-\gamma) (N_t^* - N_{t-1})$.

This formulation suggests that factors which impede the speed of adjustment from actual to desired demand constitute the source of many of the potential barriers that impede translation of potential demand into effective demand. The "naive" models described above are all useful as descriptive devices, albeit with modest analytical soundness. More useful and realistic models would take account of particular institutional and historical features of the transition economies to explicitly model the key barriers to translating potential into effective demand.

5.0 MORE REALISTIC MODELS OF THE DEMAND FOR HOUSING AND CREDIT

As discussed above, factors affecting the speed of adjustment toward "desired demand" are a theoretically important determinant of the failure to translate potential demand into effective demand. Within the transition economies, *the single most striking factor associated with slow adjustment toward "desired demand" is low residential mobility rates*. In 1990, annual rates of residential mobility in Warsaw were estimated to be 2.6 percent. Within 18 cities studied in the Housing Indicators Project with highly restrictive policy frameworks, annual mobility averaged only 5 percent, while among 18 cities with "enabling" policy frameworks, mobility averaged 10 percent—four times as high as that in Warsaw.

Consequently, studies focusing on determinants of residential mobility would appear to have great utility in gaining an understanding of the barriers to effective demand. In a microeconomic model of residential mobility, households will move if their utility after a

move, after accounting for moving costs, is greater than or equal to their pre-move utility, i.e. if the following inequality is satisfied:

$$U\ (V^*,\ y\ -\ UC^*\ -\ T) \geq U\ (V_o\ ,\ y\ -\ UC_o) \qquad \textbf{(12)}$$

where:

*V** = desired demand
y = income
*UC** = user cost of housing for *V**
T = transactions cost (search, moving, etc.)
V_o = initial housing
UC_o = initial user cost of housing

If the utility of pre-move and post-move conditions is taken as stochastic, the probability of moving, p_m, may be expressed as:

$$p_m\ =\ p_m\left(U\ (V^*,\ y-UC^*-T)\ -\ U\ (V_o\ ,\ y-UC_o)\right) \qquad \textbf{(13)}$$

Alternative means exist to estimate Eq. (13):

A. Substitute terms for *V** and *UC** from sections above, as well as determinants (or estimates) of *T* (*V** from demand equation for recent movers; V_o from hedonic equation applied to population; *UC* from user cost estimate terms); predict $\hat{p}_m$; define conditional mortgage demand as $\hat{p}_m M$.

B. Assume explicit functional form for *U*( ); calculate *U*(*V**-*UC**-*T*) - *U* (V_o - UC_o); if *U*(*V**. .) ≥ *U*(V_o. . .)+T^c, then household is assumed to move (where T^c is an assumed critical value of the transactions cost). Effective mortgage demand =

$$\sum_{i-1}^{N} l\ m_i^*$$

for all households for which the condition is satisfied.

Note that each of these assumes that housing of value V_i* will be produced and available for each household and that all households will meet lending criteria at the same rate as households that have already moved. Neither of these may be the case.

C. An alternative is simply to observe rates of transition from status other than owner-occupied housing to owner-occupied housing and assume those rates to be stable over time.

For example, assume that transition rates (p_{ij}) differ by initial status (public, cooperative, private; renter, owner) and that the transition process is governed by a first-order Markov Process.

$$[N_{1t} \ldots N_{Nt}] = [N_{1t-1} \ldots N_{Nt-1}] \begin{bmatrix} p_{11} & p_{12} \cdots & p_{1N} \\ p_{21} & p_{22} \cdots & p_{2N} \\ . & . & . \\ . & . & . \\ p_{N1} & p_{N2} \cdots & p_{NZ} \end{bmatrix} \quad \textbf{(14)}$$

where N represents the number of households in a given "state" at time t and p_{ij} are transition probabilities (assumed constant over time from state i to state j).

Observe average mortgage assessment and house value for recent owners (or for recent owners transitioning from each state) and calculate the weighted average mortgage amount for households from each originating category.

$$\hat{M} = \sum_{i=1}^{N} \bar{M}_i \; p_{i1} \; N_{it-1} \quad \textbf{(15)}$$

One could disaggregate to other categories (income, household size, or location) and the model retains its generality.

Data would come primarily from household interview surveys (probability samples) and, to a lesser extent, from borrower surveys focusing on mortgages for selected originating categories.

D. Another alternative explicitly takes account of supply constraints and borrowing restrictions. Borrowers are subject to two restrictions on their ability to borrow—one based on housing payments relative to income, the other based on down payment requirements relative to assets. The first of these may be stated as:

$$a_r^T \; M \leq ky \quad \textbf{(16)}$$

where a_r^T = loan amortization factor for interest rate = r for N periods

e.g., 30 years, a_r = .08/yr = .00734/mo.

M = mortgage amount

k = maximum mortgage payment to income ratio (e.g., 0.28-0.33 in U.S.— which should bear some relation to the "normal" ratio in specific countries). Evidence from

the Housing Indicators Program suggests that at an equilibrium value of $\hat{R}/y$ (housing payments relative to income) in market economies with incomes similar to Poland would be about 0.25. Values for such countries are: Turkey, 0.25; Chile, 0.28; Malaysia, 0.26.

With a fixed loan-to-value ratio = 0.25 *l*, $M^* = lV^*$

$$a_r \; lV^* \leq ky \tag{17}$$

$$V - M = D \leq F \tag{18}$$

The second constraint is on household liquid assets (*F*) relative to down payment requirements:

$$V - M = D \leq F \tag{19}$$

If housing were supplied at a level to put each household in equilibrium, and a fixed loan-to-value ratio *l* is assumed, the equilibrium condition would be:

$$F \geq (1-l) \; V^* \tag{20}$$

Eq. (20) might not be satisfied even if suppliers put forward V^* for each y, since a constant payment ratio is not consistent with housing demand functions; that is, to the extent that equilibrium spending differs from the payment rule (especially if the equilibrium payment is greater). In addition, the stock of housing offered for sale might be different from equilibrium V^*s. If the actual distribution of *V*s is on average well above V^*s for most of the population, Eq. (20) will not be satisfied. Similarly, if this is true, many households will not have adequate financial assets to purchase more expensive housing than their equilibrium level.

Here, one must examine the value distribution of recently sold houses and calculate which households satisfy both payments and assets conditions. That is, for each household calculate (using data from borrower and household interview surveys) :

$$y - \frac{a_r \; l \; V_{\min}}{k} = C_p \qquad \textbf{(21)}$$

$$F - (1-l) \; V_{\min} = C_a \qquad \textbf{(22)}$$

Where V_{min} is the observed "minimum value" dwelling recently purchased, it is probably best to use dwellings at the fifth to twentieth percentile as better reflecting the average incremental unit. C_p and C_a are excess income for payments and excess assets for down payments, respectively. If households meet payments and down payment requirements, it is then assumed that their demand for housing will become "effective demand" based on mortgage lending.

For households with $C_p \geq 0$ and $C_a \geq 0$, calculate I^* (from the demand function estimated for recent movers) and $M^* = IV^*$. Potential mortgage originations will be equal to the number of households meeting the two conditions. The potential mortgage demand will be IV_i^* for households meeting the conditions.

A comparison of the magnitudes of housing demand and mortgage demand from the calculations from subsections C and D above can be revealing concerning the degree to which effective demand for credit is limited by (1) limited mobility of potential movers (in part a function of low user costs and/or higher-quality preexisting housing); (2) income and assets constraints on borrowing; and (3) supply restrictions concerning available housing types and values.

Note that in subsections C and D a number of "what if" experiments can be conducted. In C, transition probabilities can be modified, either parametrically without reference to empirical relationships to policy and other variables or based on empirical relationships such as those estimated in Section 4.1 above. In D, varying assumptions can be made concerning interest rates, lending terms, payments ratios (I), loan-to-value ratios, and the distribution of housing values offered. In the last connection, a more realistic assumption is made than that posed in D; i.e., that households will purchase if:

$$y - \frac{a_r \; lV_{\min}}{R} \geq 0 \qquad \textbf{(23)}$$

and

$$F - (1-l)\ V_{\min} \geq 0 \qquad \textbf{(24)}$$

is that there is a set of critical values, V_c^j, associated with each of a number of household types j = 1, . . . J, V^j_{min}, which satisfy:

$$U_j\ (V_c^j,\ y - UC_{\underset{c}{j}} - T) = U_j\ (\ V_o,\ y - UC_o\ )$$

These values of V_c^j are the quantities of housing that make households indifferent between moving and staying. With assumptions about the form of the utility function, observations on initial housing V_o and income, and estimates of transactions costs and user costs, values of *UC* could be calculated for each household. Those estimates could then be compared to the recent distribution of observed housing purchased, and calculations could be done of the number of households able to satisfy income and assets requirements as well as to locate housing in the appropriate value class.

■**Policy Simulations**. Once a number of the basic parameters of housing demand have been established, as well as basic information on other parameters such as loan-to-value ratios, mobility rates and the value distribution of new and existing housing, it will be useful to conduct a series of policy simulations focusing on:

- Measures to increase mobility;
- Measures to increase transition to ownership;
- Effects of changing loan terms and conditions;
  - -- Loan-to-value ratio;
  - -- Interest rate;
  - -- Down payment constraints;
  - -- Payment constraints; and
- Decontrol of rents and extended housing allowance.

These simulations can reveal which of a number of alternative policies, separately or in combination, can have the greatest effects on translating potential demand into effective demand and improving the efficiency of the housing sector.

ANNEX II

REVIEW OF MACROECONOMIC AND MICROECONOMIC DATA IN POLAND AND GMINA STUDIES OF HOUSING DEMAND

1.0 INTRODUCTION

An estimate of effective demand for housing and residential credit requires statistical data for housing, income, of various household characteristics, investment in housing, maintenance costs, mortgage loans, interest rates, the relative costs of other goods, and so forth.

This paper reviews the data available in Poland compared to data requirements for microeconomic and macroeconomic studies of demand for housing and residential credit as set out in Annex I.

The review is divided into sections on macroeconomic data, microeconomic data, data provided by the government and the HRI, and household data collected by gminas.

2.0 REVIEW OF MACROECONOMIC DATA

As noted in Annex I, macro-modeling of effective housing demand requires data on:

— The housing stock;
— The factors which determine the demand for housing; and
— The factors which might determine the speed of adjustment of actual to desired demand.

In order to estimate these factors, consistent time series data of national accounts are required, including investment in housing, depreciation of the existing stock, institutional changes of ownership, new housing development, the income distribution, and current additions to the housing stock. What data on housing are available and how reliable are they for statistical demand analysis regressions?

2.1 Supply Data

The main source of national accounts data is the Statistical Yearbook. It includes data on both the demand and supply sides of the economy. Currently, the national accounts are published according to standards of the System of National Accounts of 1993. Supply side data are published annually and as yet quarterly data on housing

investment are not available from Central Statistical Office (GUS). However, quarterly estimates of economic activities are available from some economic institutes.[1]

GDP is disaggregated into five institutional sectors (enterprises, financial institutions, governments, households and non-commercial institutions) and into 15 main economic sectors. The sectors are disaggregated according to the European Economic Classification (EKD), which was introduced in 1994. This is a major reason why time series analyses are either difficult or impossible to conduct. Since quarterly data are not generally available, and the number of years available in a consistent time series is so low, time series regression analysis would be difficult or impossible. Nevertheless, the current system of National Accounts of the Polish economy is operated according to United Nations standards and further progress is expected; for instance, the Central Statistical Office (CSO) is expected to publish quarterly estimates of GDP, and its aggregates.

2.2 Demand Data and Price Indexes

Domestic demand aggregates are also regularly published by GUS in the Statistical Yearbook. Domestic demand consists of: private consumption, public consumption, and investment (including changes of inventories). These aggregates are available by institutional sectors (as described above). Moreover, data on foreign demand (that is, data on exports and imports) are published, which balance the total GDP.

Nominal and real personal income are published and are disaggregated to several categories: salaries, social benefits and other transfers, and income from property. Data on the disposable income of households are available according to type of household. Disposal income consists of savings and individual consumption; the last item is disaggregated to five main expense groups: food, alcohol, non-food articles, services and depreciation (amortization) of dwellings (housing). The last item is defined as estimated amortization of co-operative houses and private houses (so it covers only these parts of the housing stock). Public consumption includes, among other items, subsidies to housing, mostly to cover the maintenance costs of the communal housing stock.

Time series analyses require price indexes. All the main price indexes are regularly published, including the investment price index, production price index, and consumer price index, as well as the GDP index. PPI and CPI are calculated according to Laspeyer's formula. Most of the indexes are calculated on the basis of monthly surveys and are available on a monthly basis.

[1] For instance, the Gdansk Institute for Market Economics and NOBE in Łódż regularly publish such estimations.

2.3 Investment and Fixed Assets

Investments are calculated according to the EKD classification of the firm, with the exception of investments not directly related to the firm's main activity. For instance, expenses on kindergartens and schools developed by a manufacturing firm are not classified under its EKD section, but rather to other classifications (health care, education, etc.). The investment expenses of farm households and businesses employing less than five employees and investment expenses on individual houses are estimated. The base for estimating investment expenses of individual houses is the floor area of dwellings completed within a calendar year.

Fixed assets are defined as tools and other items which are used for more than one year. The value of assets purchased before 1995 are calculated according to special rules in order to obtain an estimated present value (due to high inflation rates in the 1990's). Fixed assets are classified according to the company's EKD classification. In particular, housing units of a manufacturing firm are classified as an industrial fixed asset. The same rule applies to hospitals or schools belonging to any firm. However, there is one exception. Houses of farmers are not classified as assets of EKD section A ("Agriculture, Hunting and Forestry") but as part of the section for real estate and firms' services.

2.4 Macroeconomic Data: Summary of Main Problems and Possible Solutions

For macroeconomic analysis, long-term time series data are essential for accuracy and meaningful calculations. Unfortunately, this basic condition is not fulfilled as far as the Polish statistical data are concerned.

First, the current classification system of firms (EKD) replaced the previous system, Classification of National Economy (KGN), in 1994, creating difficulty in historical comparisons between sectors. This could be partly solved by using the present system and applying it to statistics based on the KGN. However, some rough estimation would be necessary. Secondly, quarterly data on GDP are not yet officially published. Unofficial quarterly data may be used, but in some instances the data are not very detailed. Thirdly, the price system for calculation of the supply side of GDP was changed in 1995, in that producer prices were replaced by a "base price." Producer prices had been reported with indirect taxes and tariffs; base prices are "bare" prices. This did not change GDP, but it changed its structure by sectors. To address this problem, one may assume the structure of indirect taxation by sectors and the sectoral structure of economy (or sectoral change dynamics), and estimate backwards. Fourthly, income from the informal economy was steadily introduced into the national accounts system, so additional calculations would be needed for any consistent historical analysis.

All these changes need to be addressed, requiring strong assumptions for the calculation of historical data. Thus, any serious regression analysis based on time series sectoral data is both difficult to carry out and risky to report.

On the demand side, the major problem is data on investment. This was mentioned above; rough estimates are used to calculate total investment, including housing investment of individuals. Unfortunately, there is a very major problem in estimating investment in individual houses. First, the estimation method does not take into account changes in houses under construction during a calendar year. Secondly, and more importantly, recent housing statistics suggests that the number of new dwellings completed and the number of dwellings in progress are not logically correlated. One explanation is that the average length of time used for construction is greater than before. A more probable explanation, which is suggested by a number of experts, is that occupied and completed individual houses are not formally registered as completed (oddane do uóytku) (see Table A2.1). There are benefits for these investors in housing; they do not pay property tax, nor a stamp fee for registration in the title register.

Table A2.1
Building Permits and Dwellings Under Construction

Year	1985	1991	1993	1995
Building permits in '000	79.3	55.3	78.4	61.7
Apartments under construction: – in December, in '000	275.8	334.4	403.0	496.6

Source: CSO statistics, and: Gorczyca, M.: Stan I rozwój mieszkalnictwa w Polsce, GUS, Warszawa 1997.

It is probably not credible that the average investment period for housing is as long as suggested in Table A2.1. This problem is also indirectly revealed by data provided by Ministry of Finance on tax expenditure. There were over 900,000 taxpayers claiming land acquisition and new construction expenditures in 1995. Data on housing tax deductions are provided in Table A2.2.

Table A2.2
Tax Deductions for Housing Investment in 1995

	Total	Total Housing (renovation, land acquisitions, new construction)	Land Acquisition and New Construction
Taxpayers (in '000)	22.874	4.781	901
Claims (in '000 PLN)	16.752	7.207	4.711

Source: Ministry of Finance

These data suggest that data on investment, especially housing investment, is underestimated. Additionally, data on new dwellings are also probably seriously underestimated. Gorczyca suggests that 400,000 out of 540,000 houses under construction reported at the end of 1996 are already inhabited. But any estimate of new, completed dwellings and housing investment expenses, such as that above, are very roughly determined and should be used accordingly.[2]

Fixed asset data (net and gross) have been provided using two methods. Until 1994, assets were reported according to their purposes rather than the firm's main activity (see Section 2.3 above). Thus, houses owned by manufacturing firms are now reported in the Manufacturing Sector (Section D of EKD classification), but until 1994 were reported in the Housing Sector (in the old classification system KGN). Therefore, any depreciation calculation for housing is difficult, and historical analysis enigmatic.

2.5 Other Data for Macroeconomic Housing Analysis

Financial data are currently widely available. The National Bank of Poland (NBP) regularly publishes data on:

- interest rates, such as: interbank rate, commercial bank credit rates, main deposit rates, as well as NBP's rates (for example, the re-discount rate);
- credits for enterprises and households;
- money creation;
- money supply;
- deposits of firms and households in local currency and in hard currency;
- hard currency reserves; and
- exchange rates and export/import transaction data.

These data are essential for background studies for housing demand analysis. However, additional data related to outstanding mortgages, new mortgage credits, loan-to-value ratios (LTVs), mortgage terms, interest rates, and so forth, are not published.

With regard to user cost analyses, the institutional environment for housing development may be relatively easily described. There is a real estate tax, which is levied on the dwelling area. The maximum rates are set nationally, but local governments may reduce them by up to 50 percent. For 1998, the maximum rate for housing is set at 0.33 PLN/sq.m., so an average apartment of 64 sq.m. costs 21 PLN annually for real estate tax, which is very low. Data on maintenance costs of housing are published by the Central Statistics Office (GUS) according to household characteristics.

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[2] com.: Gorczyca, M.: Stan I rozwój mieszkalnictwa w Polsce, GUS, Warszawa 1997.

2.6 Conclusions

Again, macroeconomic analysis of housing demand is seriously hampered by a lack of consistent historical data and inaccurate assumptions and classifications. For housing studies in Poland, investment data and data on new dwellings are probably the most critical, but at the same time the least reliable. Data on general financial conditions are available, but there is no detailed data on mortgage credits. Finally, due to changes in classification methods, economic data on existing and newly constructed housing stock, such as detailed studies of the depreciation of housing, are not easy to track in recent years.

3.0 ASSESSMENT OF MICROECONOMIC DATA AVAILABLE TO CONDUCT STUDIES OF THE DEMAND FOR HOUSING AND MORTGAGE CREDIT

The determination of effective demand for housing based on microeconomic models is impeded by a wide range of factors, both historic and present. Most glaring is the inadequacy in the reporting of household income for the purposes of assessing housing and credit demand. Until 1992, when the personal income tax system was introduced, household income was measured through a household income survey methodology which can be disaggregated only to the micro-regional level and for five socio-economic groups. While some demographic and housing characteristic data useful for a stock/user matrix[3] analysis exists, critical detail on income, household descriptors, tenure duration, and more detailed information on housing products and locational characteristics are not available. *More importantly, all the micro data should relate to a given household, not drawn from a number of different sources.* In addition, the lack of historic and current data on housing costs and prices and the distortions in the market due to non-transparent subsidies, both historic and present, affect the supply-side analysis.

Below is a review of data and background information sources to assist in the microeconomic analysis of demand for housing and residential credit. In addition to GUS and HRI (Housing Research Institute) data, a few local surveys have been conducted to begin to ferret out information on effective demand, and background data sources have been used to corroborate income information.

3.1 Microeconomic Data Produced by Central Statistical Office (GUS) and Regional Statistical Offices (VUS)

■ **Census Data.** The last census was conducted in 1988. The next census will be conducted in 2002. Based on the 1998 census, reports are available that provide data and

[3] See Annex I for a brief discussion of stock/user analysis. Basically, this is descriptive analysis which simply disaggregates the housing stock by tenure and household characteristics.

analysis nationally: “Housing Conditions,” “Inhabited Buildings”, “Demographic Structure and Social and Professional Conditions of the Population,” “Household Income and Families,” and “Population and Housing: An Outline of Changes in Years 1979-1988”.

The report “Housing Conditions” provides information on the number of units, their condition, amenities, utilities, heating system type, age, area, number of rooms, and ownership structure. The occupants are described by: number of households and persons per unit/room, household size, square meters per person, profession, education and employment of head of household. The reported data are aggregated to the city level. The data are published by the Voivodship Statistical Offices (VUS) and categorized by type of municipality (city or village). Data may be ordered in aggregates as small as the census tracts.

Comments: A drawback to using this data for time series comparisons is due to the changes in ownership classifications and structures as housing reform progresses. In addition, a serious drawback to use of the data in cross section analyses is the lack of linkage among the data items.

- **Micro-Census Data.** In 1995, the first study called “Population and Housing Census: Representative Methodology” was conducted on approximately five percent of the population and dwelling units in Poland. Reports are available by voivodship. Data is presented by municipal type (cities and villages). The study claims to provide representative samples for the five cities with populations exceeding 500,000. This study contains household characteristics such as: household composition, socio-economic group (employed, retired or social security, self employed, other) and age of children. Education, employment and sex of the head of household are also provided.

Housing stock characteristics include: apartment size, number of rooms, amenities, tenure, and ownership. Cross tabulations of households per 1000 dwellings, floor area per person, person per room, and households per unit are presented. Cost/affordability information includes: monthly housing payments (rent/utilities), rent arrears, and monthly housing allowances by stock ownership type. Information is provided on the number of households paying mortgage credit and the monthly amount by ownership type. There is no information on the total amount of mortgage credit, its terms, or the total unit price.

Comments: The data provided by the micro-census could potentially be quite useful as a basis for a national demand study, as it provides a wide range of household and housing stock data useful for a picture of the existing housing system. However, there are no data on household income, unit sales price, time of purchase, length of tenure, use of mortgage credit interest to move, preferences, or satisfaction.

3.2 Other Statistical Data

Annual Yearbooks summarize all collected and reported data annually, aggregated by state and voivodship. Statistical Yearbooks of Demography have been published annually for the past 29 years based on census data, other surveys, administrative records, and various projections. Information includes:

— Distribution of the population
— Vital statistics of the population: marriages, divorces, births, deaths
— Migration of the population
— International review

The information is mostly categorized by voivodship, with some information categories disaggregated to the municipal level.

■ **Household Budget Surveys.** Household Budget Surveys are conducted annually using a representative sample to allow for generalization to the entire population and to be significant down to the level of the ten micro-regions. Using a monthly rotation of survey subjects, 2,700 households are surveyed monthly for an annual total of 32,400 dwellings, or roughly 0.3 percent of the entire population. The household budget surveys include the following information: households classified by socio-economic group (salary-employed, hired farmer, farm owner, self-employed, retired or social security); income other than earned income such as unemployment benefits and alimony; household size; composition by age, sex, level of education; monthly per capita income; expenditures by categories; and ownership of durable goods. Housing expenditures are broken down into the following categories: total monthly payments, which include rent and specific utilities, and renovation or development services.

The information is provided on a national basis and may be disaggregated to a micro-regional level.

■ **Housing and Building Analysis (GUS).** Analysis based on the 1988 census is updated with bi-annual reporting by gminas, cooperatives and private developers to the Voivodship Statistical Offices. Data are then assembled by GUS in periodic reports, most recently in 1993, 1994 and 1996. General information categories include:

- Description of existing housing stock by voivodship (city and village), standard, amenities, age of building, wall type, size of apartments, inhabitants, and households.

- Effects of the investment in housing by type of owner or developer including information on:

  — Number of newly constructed buildings by:
    -- number of apartments, average size
    -- number of stories
    -- technology type
    -- area, number of rooms

  — Number of apartments by:
    -- square meters
    -- number of rooms

- Selected information on cooperative housing, communal housing, enterprise housing such as:

  — New development
  — Renovation
  — Rent arrears
  — Sale of communal stock, number of buildings, apartments and price per square meter

- Stock returned to previous owners

These GUS reports provide data by voivodship. Bi-annual reports are published on new construction by voivodship. Data by municipality are published by the Voivodship Statistical Offices or are available from the municipal administrations. As the municipalities are the primary source of this data, it is possible for them to add to the information collected (currently all cities collect information based on the GUS questionnaires) including more data on building characteristics, location and even cost. This would allow for better analyses of preferences, building trends, and factors which could be used in hedonic price studies. However, there is no indication that any municipality has begun to add to the VUS database.

Improved correlation of data on building permits with applications for residency permits would illuminate the problem of increased construction time described in the macroeconomic section (section 2.0 above). This issue of buildings being inhabited prior to obtaining a residency permit has been raised with municipalities, as it poses a potentially more significant problems than the statistical issues raised here.

■ **Analysis of Municipal Budgets.** Budget information on capital investment in housing and infrastructure and operating subsidies for housing management is available directly from each municipality, as aggregated by the Voivodship and Central Statistical Offices.

■ **Personal Income Tax Data/Tax Deductions for Housing Investment.** Information on taxes paid by filer type and income category may be ordered from local tax offices. The data are aggregated by tax region. Tax regions are not necessarily contiguous with municipal boundaries; for instance, Szczecin has three regions but they also include some surrounding villages and towns. Information on tax deductions for housing investment may also be ordered.

The Ministry of Finance synthesized and published information on tax deductions for land purchase, new construction, and renovation for years 1994, 1995 and the first half of 1996. More recent information may now be available.

Comment: This is useful information in itself for income and housing investment assessments. Analysis of this data and correlations within it may suggest possible determinants for housing and mortgage credit demand.

4.0 HOUSING RESEARCH INSTITUTE DATA AND STUDIES

4.1 Housing Information: Monitoring Results by Institute of Housing

The Housing Institute monitors the activities of the housing sector with a focus on the implementation of housing reform legislation. The bi-annual monitoring project consists of review of the statistical data and survey research of 123 gminas of varied sizes: 100,000 persons; 25,000 to 100,000 persons; and less than 25,000.

This detailed information supplements broader statistical information with background on housing development costs, operating costs, investments in building and infrastructure, percent of municipal budgets spent on various housing and housing related items, gmina rent levels, use of housing credits, rent arrears, and housing allowances.

4.2 Analyses by the Housing Research Institute

The Housing Institute conducts various housing sector analyses that provide background information in various areas. Publications include: *The Building Industry 1994*, *Housing Prognosis to the Year 2010, A Synthesis of Social and Economic Conditions*, and *A Profile of the Housing Sector in Poland*.

5.0 LOCAL DATA COLLECTION AND SURVEYS

5.1 Local Government Housing Preference and Demand Surveys

The selection and use of housing information systems and indicators to assess local conditions, determine local strategies, and monitor progress has been evolving over the

past several years. As described above, most published statistical data are national or voivodship level aggregates. As municipalities begin to develop locally-based community development strategies, they quickly determine that they need local data to facilitate local analyses and monitoring systems. One of the first attempts at assembling local indicators resulted from the inclusion of Poland in the Central and Eastern European Country Monographs for Habitat II; information was collected in Warsaw. Other efforts (Szczecin, Ostrów Wielkopolski, and Gdynia, for example) evolved from strategic housing or economic development processes that identified data needs, sources and gaps.

In general, while data is available to gminas to describe basic demographic trends, there is insufficient data on household income, savings, and preferences for housing and housing investment. Similarly, assessment of housing demand is hindered by the lack of supply side data on historic and current sales prices, housing development costs, and use of financing mechanisms, including subsidies as well as more detailed descriptive information of the housing products. This type of information is crucial to local governments responsible for helping to meet the housing needs of its residents. Also, surveys have been undertaken to determine satisfaction with current housing conditions, housing preferences and desire to change, and effective demand for housing, to assist in determining appropriate directions for local housing and community development strategies by several local governments.

- **Szczecin.** Selected indicators for Szczecin were developed in conjunction with Szczecin's Housing Policy Group in the process of developing the city's housing strategy, which was supported by USAID. During the development of the strategy, emphasis was placed on the importance of monitoring selected key conditions in the housing sector and progress in housing policy goal attainment. Thus, the indicators were selected to monitor both the local housing system and the progress of housing strategy implementation. Indicators include those that use existing data sources as well as some for which data must be generated. For instance, Szczecin had not as yet begun to record data on sales prices (although it had information on the prices of communal units sold). The municipalities should, in fact, be accessing sales price data from the real estate brokerage community, the courts (sales records) and local cooperatives.

Szczecin's housing survey originated from review of the extensive research conducted by the Szczecin Housing Policy Group to assess local housing conditions for development of the local housing policy. A glaring deficiency in their research, and essential to developing an effective housing policy and strategy, was thorough information on household income and housing expenditures. Due to a lack of income data, a phased program was conceived to attempt to develop a baseline of local income data. Local research firms, Habitat and the Social Research Center, were commissioned to conduct a field survey of 1,000 families selected as representative of the city's population.

The survey findings were compared against estimates and assessments of gross and net annual income of Szczecin residents obtained through two methodological

approaches. The first method was an empirical examination of local household income based on personal income tax filings of approximately one third of the city's population, received from the administrative records of the Fiscal District 1 Tax Office. The second was an analysis of aggregate income generated from employment, pension, disability payments, and unemployment compensation to workers and residents of Szczecin.

Once the survey findings were positively verified, a more in-depth analysis was conducted of supply side options and further correlations were tabulated to answer specific questions on effective demand posed by the city team. One flaw in the survey was the failure to clearly ascertain unit owners' use of mortgage credit to finance their current housing; this could be corrected with additional questions.

- **Sopot.** Sopot conducted a survey of all residents in its targeted revitalization areas to assess housing conditions, resident satisfaction with their housing and neighborhood, issues requiring change, interest in moving, income level, and willingness (and conditions for) participation in the revitalization strategy; 750 persons were interviewed.

- **Gdynia.** Gdynia collected information to support USAID's efforts to build local government capacity in city development and information management and analysis. This cooperation was designed to develop a database of demographic and economic information and indicators in order to conduct analyses and make projections of local economic, demographic, and real estate conditions. Areas of analysis include economic productivity, investment patterns, and profitability by type of ownership, growth sectors in the emerging private sector, trade patterns, population growth trends, employment, and land and building utilization patterns by sector and location. Interestingly, Gdynia combined information from numerous sources, including VUS and GUS, Voivod labor offices, the port of Gdynia, the Chamber of Commerce, public utilities, and local businesses.

- **Ostrow Wielkopolski.** Under USAID's Pilot Local Government Program, Ostrow developed a Housing Monitoring System, designed to provide city planners with access to housing data. Eight separate spreadsheets of data are included: basic indicators on housing occupancy and land, demographic indicators, income (based on municipal tax returns), housing stock by type, new construction, social welfare indicators, real estate transactions, and housing finance. Data can be added over time as they become available. The data collected to date are all from secondary sources, including GUS, VUS, the Ostrow tax office, local banks, local construction firms, the WZGM (the Municipal Housing Management Company), and private developers and real estate agencies. The data are designed to support analyses of housing stock management, construction, land use, infrastructure, and social safety net issues.

In summary, further development of housing-related databases by gminas can be expected, as local governments become increasingly active in urban planning and

infrastructure and housing development. To date, however, the data most generally collected are not suitable for estimation of “micro” (household level) demand functions. In all the examples described above, there are insufficient data on household income, loans, and financial characteristics; in addition, data from secondary sources, although widely used for planning purposes, lack the “linked” nature necessary to multi variate estimation.

6.0 MARKET RESEARCH AND MONITORING

In determining rent setting policies for municipal stock, municipalities are evaluating housing and housing location characteristics based on local preference. Some municipalities are also monitoring prices and costs of other stock in the local housing market, obtaining cost data from local co-operatives and, less often, from local developers and recent sales information from the local courts. One city receives summary data quarterly from the courts. This is a potentially rich source of sales data that has yet to be tapped.

Formal market studies, when done, are usually carried out by the private sector. An early market analysis/demand study was conducted by Polish-American Home Builders Institute in 1993 to assess the demand in the Tri-City area for single family homes (study available from USAID). A more recent analysis of housing demand in the Tri-City area was conducted for one of the largest local housing developers in the region. Other developers have used focus groups to determine preferred housing characteristics.

Real estate brokerage companies and regional associations keep track of sales and rental data, some developing housing type and locational charts on price per square meter trends. Local newspapers may also regularly publish recent sales and rental trend information on housing type and location.

ANNEX III

INFORMATION IN THE MORTGAGE CREDIT PORTFOLIOS OF POLISH BANKS

1.0 INTRODUCTION

An analysis of bank portfolios with regard to mortgage lending activity would be an extremely useful first step in understanding the evolution of mortgage credit in Poland. As discussed in the text, bank portfolios cannot be used to obtain (unbiased) estimates of the demand for mortgage credit, since the files contain only those who have already applied and who have been accepted for a loan. (In other words, that portion of Polish households who do not need to apply, or do not wish to apply for a loan—or who were refused, which is an interesting analysis in itself—are not included.) Nevertheless, descriptive analysis of current mortgage portfolios would provide very interesting insights regarding the total volume of mortgage lending, total number of loans, the average size of the loans and the distribution by size, the type of mortgage product, the LTV, loan duration, other loan terms, the general characteristics of the borrowers, the geographic distribution, and so forth.

No doubt individual banks in Poland analyze their own mortgage portfolio information internally for use in marketing statistics, just as banks do elsewhere. These data and analyses are not, of course, available to the public. However, the question may be addressed as to whether banks would be willing to strip their files of confidential information and provide them for analysis to the Polish Banks Association, for example, and/or the Foundation for Mortgage Credit. In order to determine what data are actually collected by the banks engaged in mortgage lending, CREI undertook a brief informational survey, the results of which are presented here. The types of data discussed with each bank include borrower characteristics, loan characteristics, and the key features of the type of unit or building being financed. The two main questions were as follows:

- What data are typically collected by banks during the process of loan application, underwriting, loan approval, and establishment of the loan in a portfolio to be serviced?

- Are any or all of these data computerized?

2.0 RESULTS OF THE SURVEY OF MORTGAGE LENDERS

Not surprisingly, banks are very reluctant to provide any information on their databases, even if it is general information without any request for various statistics. In applications for credit, and in documents attached to the application form, much detailed information is obtained. Ultimately, this could provide for a very large database. Some information is computerized, some is not; some is available using an additional identification number (PESEL).

The following comments summarize the situation with regard to each of the interviewed banks:

- **GBW – Gospodarczy Bank Wielkopolski.** The bank has access to information stored in the loan applications (which include various attachments). No analyses have been made of current portfolios, marketing environment, etc. The information is not computerized, with the exception of the data used to calculate the amount of the payment.

- **PAM-Bank – Polsko-Amerykanski Bank Hipoteczny.** The bank has a large computerized database, begun in 1996. A significant amount of the total information collected is stored electronically. Analyses of customer profile have been done by the marketing department. Some types of information (especially borrower characteristics) are not stored in electronic form, but are available from the applications and attached documents (PamBank always asks its customers for a large number of documents).

- **PKO BP – Powszechna Kasa Oszczednosci (Krakow) and PKO BP – Powszechna Kasa Oszczednosci (Warsaw).** Fairly extensive real estate finance data is collected and the full set is stored manually in a special card-index. Some information on loans and credit project characteristics is available in electronic form through PKO's monitoring system: the KDO system is used to register and monitor payments of the "ALICJA" (indexed) type of loan and the so-called KDH to monitor payments of other loan types.

- **LG PETROBANK.** In October 1998, the bank began to expand its housing lending. The previously existing portfolio (originated before their new efforts at expansion started) consists of no more than 50 loans. It is relatively difficult to obtain information from the files, because a large number of the housing loans were called "consumption loans" and had no separate file. The bank has not yet analyzed its current portfolio profile.

- **PeKaO S.A. – Polska Kasa Opieki and PBG – Powszechny Bank Gospodarczy.** These banks act as a group, currently finishing preparations for full consolidation. All data from applications (with attachments) are stored in electronic form in the branches, but are not available on a nation-wide level. No analyses have been made of the current portfolio, marketing environment, etc. Only a small amount of information (i.e., loan amount, terms of credits) is used in the monitoring system.

- **BISE – Bank Inicjatyw Spo eczno-Ekonomicznych.** Only some data are stored in electronic form. Analyses of customer profiles have been done several times, but only on samples. The bank is preparing a computer program (for both

a loan database and information for management support) for housing loans which will be linked to BISE's overall accounting software. The program is not ready yet.

- **Mortgage Fund – Fundusz Hipoteczny.** All data from applications (with attachments) are stored in electronic form. A special monitoring computer program (MINISAK) had been prepared for the Mortgage Fund (BudBank with all participating banks) but has never been fully implemented. No analyses were made of the current portfolio, marketing environment etc.

In summary, the majority of banks in Poland engaged in real estate lending collect a reasonably extensive set of data describing loan and borrower characteristics. However, in most cases, the data are not yet computerized. As might be expected, only those lenders with relatively large portfolios have computerized much of the information (PKO BP, PamBank, and BISE). In addition, the portion of the data that are computerized relate primarily to information needed by the accounting and monitoring functions, rather than borrower or project characteristics. Since real estate finance is a fairly new activity in Poland, this is not surprising. In the future, however, PBA might encourage the banks to computerize more of the information that would facilitate analyses of loan behavior over time and borrower characteristics. Even is this were done on a sample basis, it would be useful to the banks in their future underwriting and servicing decisions, as well as serve as the basis for an industry-wide analysis of trends in Poland.

ANNEX IV

U.S. HOUSEHOLD SURVEYS FOR HOUSING AND CONSUMER FINANCE

This Annex describes two surveys—the American Housing Survey (AHS) and the Survey of Consumer Finance (SCF)—both of which have been in use for many decades in the United States for the collection and analysis of household data on housing, housing finance, consumer finance, and overall income and asset characteristics. The information derived from these surveys is used by policy makers and research academicians alike. As discussed in Section 3.0 of this report, these data underlie a great number of the investigations into the demand for housing and the demand for mortgage credit.

Section 5.0 of the report sets forth the recommendations stemming from this study—the first of which is the suggestion that Poland undertake, as soon as possible, a large-scale household survey. The most important rationale for this is that there are currently no household-level data suitable to support the numerous analyses surrounding housing and consumer credit issues, such as an analysis of mortgage credit. *It would certainly be feasible—probably most desirable—to combine the most important features of the AHS, the SCF, and some of Poland's key microeconomic surveys into one, ongoing, nation-wide effort.*

THE AMERICAN HOUSING SURVEY[1]

The American Housing Survey (AHS) focuses on housing and household characteristics. The survey started in 1973; national data is collected every other year, and data for each of 47 selected Metropolitan Areas is collected about every four years, with an average of 12 Metropolitan Areas included each year. The national sample covers, on average, 55,000 homes. Each metropolitan area sample covers 2,500 or more homes. All use personal interviews. The survey is conducted by the Bureau of the Census of the U.S. Department of Commerce for the Department of Housing and Urban Development.

This appendix includes the actual questionnaire used in the administration of the 1995 AHS. The definitions used in the Questionnaire can also be found in the appendix of each issue of the *Current Housing Reports*, which are available at the website of the Bureau of the Census.[2]

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[1] This information is also available on the Internet at the website of the Bureau of the Census (http://www.census.gov/hhes/housing/ahstext.html).

[2] Current Housing Reports based on the results of the survey for each metropolitan area can be found at the Internet address http://www.census.gov/prod/www/abs/h170sma.html#1996

The survey covers a variety of questions. Housing unit characteristics are recorded in detail. The collection of data is focused on housing, including apartments, single-family homes, mobile homes, vacant housing units; their size and quality; quality of the neighborhood; and characteristics of the housing inventory. Data relating to housing expenses, such as rent, utilities bills, and maintenance costs are also gathered.[3] Financial characteristics of owners and renters, including total household income, are included. Using these income data in comparison to other data collected in the survey, analysts can assess the burden of housing costs on all socio-economic groups. Finally, mortgage payments and mortgage credit are examined. Specific themes and responses are listed below.

Tenure and Mobility

The AHS has returned to the same housing units year after year to gather data since 1985, which is ideal for examining the residential mobility and the flow of households through housing. Analysts can also see changes over time in the size of households in both owners' and renters' homes, lot size, and differences in the housing of families above and below the poverty line. In addition, samples are taken in some metropolitan areas every 4-6 years to measure local conditions.

The tenure of the housing unit is examined; the unit, condominium, or cooperative is considered "owner-occupied" if the owner or co-owner lives in the unit, even if it is mortgaged or not fully paid for. All other occupied residential units are considered "renter-occupied," classified by subsidized and non-subsidized renters.[4]

Mobility is measured in several ways, with the objective of establishing the year in which the current occupancy of the householder began, so the year the householder moved into the unit is recorded. This history includes a move from one apartment to another in the same building. It is usually the case that the entire household moves when the respondent householder moves.

Other topics covered by the AHS include:

- **Household Demographic Characteristics**

  — Number of persons in household, by age
  — Number of single children under 18 years old
  — Number of persons 65 years old and over

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[3] See the Department of Housing and Urban Development's website, which includes a summary of the Survey's findings (http://www.huduser.org/data/other/ahsqwik.html).

[4] *Current Housing Report H170/96-59: American Housing Survey for the St. Louis Metropolitan Area in 1996.* Issued November 1997. Appendix A, p. A-5.

- Age, sex of “householder,” who is the first household member listed as the respondent (who is 18 years old or over)
- Number of married and single members of household, by age
- Number of members of household other than spouse or children under 18, such as other relatives, lodgers, co-owners or co-renters
- Race of householder
- Educational attainment of householder
- Income group, poverty level

- **Housing Unit Characteristics**

  - The year housing structure was built
  - Number of units in structure, number of rooms
  - Cooperatives and condominiums
  - Occupied or vacant units
  - Year-round or seasonal units
  - Mobile home
  - Value and purchase price of owner-occupied unit
  - Unit for sale or for rent
  - Newly constructed (within past four years)
  - Major additions, alterations, or repairs made to the property
  - Kitchen facilities
  - Type of heating fuel used
  - Means of sewage disposal
  - Heating and air-conditioning equipment
  - Primary source of water
  - Number of bathrooms
  - Square feet per person
  - Severe or moderate physical problems, such as water leakage, exposed wiring, vandalization

- **Mobility History**

  - Year householder moved into present unit
  - Number of respondents moved during past year
  - Reasons for moving from previous home
  - Reasons for choice of current residence, neighborhood

- **Housing Costs**

  - Monthly mortgage payments
  - Monthly rent payments, noting if rent control or rent subsidies are applied
  - Utility costs (including electricity, piped gas, fuel oil, and water)
  - Property insurance costs

— Garbage collection costs

— Real estate taxes paid in the previous year, per $1000 value
— Monthly costs for routine maintenance in previous year
— Monthly fee paid to cooperative, condominium, or homeowners' association

- **Mortgage Credit**

— Current total loan as percent of value
— Payment plan of primary mortgage
  -- Fixed-payment, self-amortizing
  -- Adjustable rate mortgage
  -- Adjustable term mortgage
  -- Graduated payment mortgage
  -- Balloon (a balance payable when the loan is due)
  -- Combination of the above
— Type of mortgage (federal guarantees)
  -- Federal Housing Administration (FHA)
  -- Veteran's Administration (VA)
  -- Farmers Home Administration (FmHA)
  -- Other types (such as those guaranteed by state and local agencies)
— Year mortgage originated; obtained when property acquired or later
— Term of mortgage at origination of assumption (years), remaining years mortgaged
— Current interest rate of mortgage
— Total outstanding principal amount
— Items included in mortgage payment
  -- Principal and interest only
  -- Property taxes
  -- Property insurance
— Lender of mortgage
  -- Borrowed from firm(s)
  -- Borrowed from seller

- **Major Source of Down Payment**

— Sale of previous home
— Savings or cash on hand
— Sale of other investment or asset
— Borrowing other than mortgage
— Inheritance or gift

- **Other Financial Characteristics**

— Income for past 12 months
— Interest or dividends income

— Social Security, public assistance, or welfare payments
— Household property insurance

Findings

Much can be learned from studying the data collected in this type of survey. For instance, the results show that one of the most critical housing problems in the United States remains the gap between what people can afford to pay and the cost of their homes. For example, almost one quarter of rural households currently pay more than 30 percent of their incomes for housing, which is defined as "cost burdened" under federal standards.[5]

One study using data from the 1987 American Housing Survey concluded that federal housing programs have little effect on the participants' expenditures on housing (4.4 percent increase), but a great effect on their non-housing expenditures (141 percent increase). Furthermore, the assistance seems to lower the housing expenditures of 42 percent of participating households. Finally, it was estimated that substituting cash subsidies for in-kind housing assistance will provide more housing, but with smaller non-housing expenditures, than the current (primarily in-kind) system.[6]

THE SURVEY OF CONSUMER FINANCES[7]

The Survey of Consumer Finances (SCF) is sponsored by the Board of Governors of the Federal Reserve Board (FRB) to report on selected financial characteristics of U.S. households. It is a triennial survey of families' labor force participation, financial balance sheet, pensions, use of financial services, demographic characteristics, household income, investments, borrowing, and expenses. A wide range of financial assets is covered. Detailed questions are asked about credit cards, mortgage loans, education loans, health insurance coverage, inheritances, and charity giving.

Households across the full economic spectrum are interviewed about their finances and their use of financial institutions. As with the American Housing Survey, the U.S.

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[5] Housing Assistance Council. *Rural Housing and Welfare Reform*. Washington, DC. 1997.

[6] Crews, Amy D. "Do Housing Programs for Low-Income Households Improve Their Housing?" Center for Policy Research, Syracuse University, Metropolitan Program Studies Paper No. 178. (April 1996). (See http://www-cpr.maxwell.syr.edu/metro/abs178.htm)

[7] This information is also available on the Internet at the website of the Federal Reserve Board, as well as the full questionnaire, codebooks, other data documentation, and technical working papers describing survey methodology and results. See (http://www.bog.frb.fed.us/BoardDocs/Surveys/). Other background information on the SCF can be found in Arthur B. Kennickell, Martha Starr-McCluer, and Annika E. Sunden, "Family Finances in the U.S.: Recent Evidence from the Survey of Consumer Finances," *Federal Reserve Bulletin*, vol. 83 (January 1997), pp. 1-24.

government funds the collection of this type of information in order to gain an objective understanding of the financial health of the nation. In 1995, 4,299 families were interviewed. The interviews are conducted by the National Opinion Research Center at the University of Chicago. Between May and December 1998, respondents for this survey were interviewed in areas across the United States.

This appendix includes the sections of the 1992 Survey Questionnaire for the Survey of Consumer Finances[8] that pertain to housing. In the 1995 and 1998 surveys, interviews continued to be conducted in person, but a Computer-Assisted Personal Interviewing (CAPI) Program was utilized. The interviewer now conducts the personal interview with the CAPI Program leading him or her through the questionnaire on a laptop computer. Also attached are specific questions from the 1995 CAPI administration of the SCF.

Most of the data in the SCF are for a subset of the household unit referred to as the "primary economic unit" (PEU). The PEU consists of an economically dominant single individual or couple (married or living as partners) in a household and all other individuals in the household who are financially dependent on that individual or couple.[9]

Household Financial Assets, Habits, and Plans

The SCF examines all types of borrowing, expenditure, investment, and consumer credit in greater detail than is found in the American Housing Survey. Respondents are asked about their planned use of household income over the long term, their willingness to bear investment risk, and the investments in stocks, bonds, and other securities they have made specifically in planning for retirement. Households' saving and spending habits, such as decisions to purchase a car, are closely examined, and spending in the previous year is compared to income.

The examination of consumer credit is an important component of this survey. Respondents are asked to state what interest rate they pay on credit cards and their total credit limit on credit cards. They are also asked to estimate from their last bills how much the new charges were to these accounts. The questionnaire also inquires about lines of

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[8] For further references, see:
http://www.bog.frb.fed.us/BoardDocs/Surveys/ (FRB homepage on all available surveys)
http://www.bog.frb.fed.us/pubs/oss/oss2/92/scf92home.html (Survey home page)
http://www.bog.frb.fed.us/pubs/oss/oss2/92/quex92.pdf (Entire 1992 questionnaire to download using Adobe Acrobat software) http://www.bog.frb.fed.us/pubs/oss/oss2/95/codebk95pt2.html (Text file of all questions from 1995 survey).
Note that in the questionnaire, the abbreviation "R" stands for respondent, "Q" for "question," and "HU" for "housing unit."

[9] For further information on the unit of analysis, imputation of missing data, sampling error, and other data and programming questions, see http://www.bog.frb.fed.us/pubs/oss/oss2/95/codebk95pt1.html

credit, which are formal agreements with a lender that allow households to borrow up to a specified limit.

Respondents are also asked about the household's mortgage(s). The schedule and terms of regular mortgage payments are discussed, and respondents are asked if their payments are on schedule. Respondents also report if the mortgage carries any type of private mortgage insurance against default.

The respondent answers a set of questions about each type of loan their household has taken. This includes home equity loans (loans that use property as collateral), education loans, loans for major home remodeling or additions, and all other types of loans. Specific questions are asked about payment schedules and terms for all loans. Also included are questions on the annual interest rate charged on these loans and the principal amount. Finally, respondents are asked if the lender was a commercial bank, savings and loan bank, a credit union, or some other type of institution, and what influenced their choice of a lender.

Findings in Housing Finance

Analysts learn a great deal from the Survey about real estate and the housing finance sector, such as households' net worth, the incidence and amount of debt, the ability to repay debt obligations, and changes in payment burdens for individual households. As a nationally representative survey of households, the SCF allows analysts to assess the distribution of assets and liabilities, unlike aggregate statistics on the household sector.

The 1983, 1989, and 1992 Surveys showed that most of the household sector's debt was owed by upper-income households. Then, in studying the change between the 1989 and 1992 Surveys, analysts learned that loan delinquency rates had declined sharply and that the median amount owed by households was steady. But it was also shown that the composition of that debt changed, as the median amount owed on consumer debt (e.g. debt on durable goods) decreased while mortgage obligations increased. This is said to reflect the declining use of consumer credit during the 1990-91 recession and an increase in the use of home equity credit (mortgage debt) as a substitute for traditional consumer loan instruments.[10]

Comparing the results of the 1992 Survey to the 1995 Survey showed that mortgage debt became a much larger portion of family debt, which could be attributed to the rise in home ownership and increased refinancing due to declining mortgage interest rates in that period. From 1989 to 1995, the share of borrowing directly attributable to borrowing for

[10] Glenn B. Canner, Arthur B. Kennickell, and Charles A. Luckett. "Household Sector Borrowing and the Burden of Debt." *Federal Reserve Bulletin*, vol. 81 (April 1995), pp. 323-38.

home purchase rose to 65 percent from 53 percent in 1989. Of all families, 39.1 percent held mortgage and home equity debt in 1995. Of these families, the median value of their mortgage and home equity debt was $47,400.[11]

[11] See Arthur B. Kennickell, Martha Starr-McCluer, and Annika E. Sunden, 1997, as above.

EXCERPTS OF 1995 SCF SURVEY[1]

Home Improvements

Have you ever made any major additions or done extensive remodeling to this property?

Have you and your family living here ever made any major additions or done extensive remodeling to this property?

Roughly what was the total cost of all remodeling or additions to this property?

Other than what I have already recorded, do you owe any money on loans taken out for these projects?

Other than what I have already recorded, do you or your family living here owe any money on loans taken out for these projects?

In what month and year was the most recent loan taken out?

How much was borrowed, not including finance charges?

Is this a regular installment loan where you pay a fixed dollar amount each month for a fixed number of months until the loan is repaid, or some other kind?

How many monthly payments or years were agreed upon when the loan was received?

How much are the payments?

Are you paying off this loan ahead of schedule, behind schedule, or are the payments about on schedule?

In what month and year do you expect this loan to be repaid?

How much is still owed on this loan?

What is the current annual rate of interest being charged on this loan? Name the lending institution.

[1] See http://www.bog.frb.fed.us/pubs/oss/oss2/95/codebk95pt2.html

Rent Out Any Portion of Property

Do you or anyone in your family here rent out any portion of this (house or lot/apartment/mobile home/building) to others?

How much rent do you collect? And how often is that amount collected?

Loan Contracts and Notes Given by Respondents

Have you or anyone in your family living here ever sold any real estate for which you loaned money to the buyer?

Please include accepting a note, land contract, or mortgage from the buyer. Does the buyer still owe your family money on any of these notes, land contracts, or mortgages? Altogether, on how many such loans is your family owed money?

In what month and year was this loan taken out?

How much money did your family lend the borrower?

When the loan was taken out, was it agreed upon that there were going to be a number of years, a number of payments, or was there no set number of years or payments?

Will the regular payments pay off the loan completely or will there be a balance payable or "balloon" when the loan is due?

Do you or your family living here still owe any money on loans for this property?

Investment Real Estate and Vacation Properties

Do you or anyone in your family living here own any (other) real estate such as a lot, vacation home, timeshare, apartment building, commercial property, or other investment property, including properties owned in partnership with other people?

What type of property is this?

10. Farm/Ranch – any mention
11. Land only: Lot, tract, acreage; building lots; "farmland"
12. Land and (seasonal) residence (exc. 14); "house + 50 acres"
13 Land and some other type of structure
14. Land and trailer/mobile home
21. Seasonal/vacation house (winter/summer home; cottage; etc.)
22. Trailer/Mobile Home
24. Mobile home park

25. Time-share ownership – any
40. One single family house
41. Multiple single family houses
42. Duplex – 2 unit residence
43. Triplex – 3 unit residence
44. Fourplex – 4 unit residence
45. 5 or more unit residence
46. "Apartment house" – NA # of units; "rental" units or property NFS
47. Other business/commercial property (exc. 41-46)
48. Business/commercial and residential combination
49. Condominium
50. Residential
51. Garage
52. Burial lot
-7. Other, including combinations
999. Misc. vacation property

Is this property owned by you and your family living here is it owned jointly with others, owned by a partnership, is it a timeshare, or what?

What percentage of the property do you and your family living here own?

How much in total is this property worth?

In what month and year did you first purchase this property?

Are there any outstanding loans or mortgages on this property? In total, how much is still owed?

In total, how many years or what number of payments were agreed upon when the loan was taken out?

In total, how much are the payments? Does this amount include property taxes or insurance? And how often is a payment made?

Is this loan being paid off ahead of schedule, behind schedule, or are the payments about on schedule? When do you expect this loan to be repaid? What is the current annual interest rate being charged on the loan?

Does this loan have an adjustable rate?

That is, does it have an interest rate that can rise and fall from time to time? Type of lending institution?

Did your family living here receive any income from this in 1994? How much gross income did your family receive?

Education Loans

Not counting credit cards or loans you may have told me about in detail, do you and your family living here owe any money or have any loans for educational expenses?

Other Consumer Loans

Now I want to ask you about the loans you and anyone in your family living here have. Not counting credit cards or loans you have told me about in detail, do you or anyone in your family living here owe any money or have any loans for any other reason? These are loans for household appliances, furniture, hobby or recreational equipment, medical bills, loans from friends or relatives or other loans. (Do not include gifts from family members you are not expected to re-pay).

Current Main Job of Head and Spouse/Partner

We are interested in your (spouse's/partner's) present job status. (Are you/Is [he/she]) working now, temporarily laid off, unemployed and looking for work, disabled and unable to work, retired, a student, a homemaker, or what?

CODE ALL THAT APPLY

1. Working now or on strike
2. Temporarily laid off – on sick or other leave; seasonal work and not working now
3. Unemployed and looking for work
4. Student
5. Homemaker
6. Disabled
7. Retired
10. Unpaid volunteer
-7. Other

What is the official title of your (spouse's/partner's) job?

(The title that (your/her/his) employer uses?)

What sort of work (do you/does [he/she]) do on (your/her/his) job? (Tell me little more about what (you do/[he/she] does).)

What kind of business or industry (do you/does your [spouse/partner]) work in—that is, what do they make or do at the place where (you/he/she) work(s)?

How many hours (do you/does [he/she]) work on (your/her/his) main job in a normal week?

Counting paid vacations as weeks of work, how many weeks (do you/does your [spouse/partner]) work on this job in a normal year?

About how much (do you/does [he/she]) earn before taxes on (your/her/his) main job? (Not self-employed) and how often (do you/does [he/she]) receive that amount?

How many years in total (have you/has [he/she]) worked for this employer?

(Are you/Is [he/she]) covered on this job by a union or employee-association contract?

How many years (do you/does [he/she]) expect to continue?

Do you/Does [he/she]) receive a portion of the net earnings, or some other kind of income? In addition to regular salary, how much (do you/does [he/she]) personally receive from the business before taxes?

Many employers have pension plans, and some provide tax-deferred plans such as thrift, savings, 401Ks, profit sharing, or stock ownership plans. Some plans span multiple jobs, for example TIAA-CREF, union plans, etc. (Are you/Is [he/she]) included in any pension or retirement plans, or in any tax-deferred savings plans connected with the job you just told me about? (Do not include social security.)

What percent of (your/her/his) pay or amount of money per month or year does (your/her/his) employer currently contribute?

If (you/your spouse/partner) needed money in an emergency, could (you/he/she) withdraw some of the funds in the account?

Can (you/he/she) borrow against the account?

Current and Future Benefits from Social Security and Pensions

Are you or your (spouse/partner) currently receiving Social Security benefit payments, or any other type of pension, retirement, or disability benefit payment?

Are the payments your (spouse/partner) receives for retirement, disability, or survivors benefits?

When your (spouse/partner) retires, will (he/she) receive the money in the account as a lump sum, or will (he/she) receive regular payments?

Income, Support, Alimony

We have talked about various sources of income. Now we would like to get the overall picture of all the different sources of income that you and members of your family living here had in 1994.

In total, how much income from wages and salaries did you and your family receive in 1994, before deductions for taxes and anything else? Did you or anyone have income or losses from a professional practice, business, or farm?

(Other than wages or salaries) In total, how much income from non-taxable investments such as municipal bonds did you and your family receive in 1994, before deductions for taxes and anything else?

Did you or anyone have any other interest income? In total, how much income from other interest did you receive in 1994, before deductions for taxes and anything else? Did you and your family receive in 1994, before deductions

In total, how much income from dividends did you and your family receive in 1994, before deductions for taxes and anything else?

In total, how much income from net gains or losses from the sale of stocks, bonds, or real estate did you receive in 1994, before deductions for taxes and anything else?

Did you and your family receive in 1994, before deductions for taxes and anything else?

In total, how much income from net rent, trusts, or royalties from any other investment or business did you receive in 1994, before deductions for taxes and anything else?

Did you and your family receive in 1994, before deductions for taxes and anything else?

In total, how much income from child support or alimony which you or your family here receive? Did you receive in 1994, before deductions for taxes and anything else?

In total, how much income from AFDC (Aid to Families with Dependent Children), food stamps, or other forms of welfare or assistance such as SSI did you receive in 1994, before deductions for taxes and anything else? Did you and your family receive in 1994, before deductions for taxes and anything else?

Is this income unusually high or low compared to what you would expect in a "normal" year, or is it normal?

Over the past five years, did your total family income go up more than prices, less than prices, or about the same as prices?

Over the next year, do you expect your total family income to go up more than prices, less than prices, or about the same as prices?

Inheritances and Charitable Contributions

Have you ever received an inheritance, or been given substantial assets in a trust or in some other form?

What was its approximate value at the time it was received?

During 1994, did you or anyone in your family living here volunteer an average of one hour or more a week to any charitable organizations?

During 1994, did you or anyone in your family living here make charitable contributions of money or property totaling $500 or more?