



Economic and Community Revitalization Activity (ECRA)

DEVELOPMENT CREDIT AUTHORITY

CROATIA

**PERMANENT ACCOMODATIONS AND HOME IMPROVEMENT LOANS IN WAR-AFFECTED
AREAS OF CROATIA**

**FINANCIAL VIABIITY ANALYSIS
LOAN PORTFOLIO GUARANTEE FOR MORTGAGE LENDING**

**SALLY MERRILL
THE URBAN INSTITUTE**

JULY 24, 2002

1.0 INTRODUCTION AND SUMMARY OF FINDINGS

1.1 Overview of Project

Purpose and Objectives of the DCA Project. In May 2001, USAID/Croatia launched the Economic and Community Revitalization Activity (ECRA) to address refugee return, economic development and market-based housing solutions in selected war-affected areas of Croatia. The war-affected areas are encompassed under the Government's Areas of Special State Concern (ASSC).¹ Under ECRA, the New Housing Solutions (NHS) program has been initiated and was formally adopted by USAID/Croatia and the Government of Croatia (GoC) in a Memorandum of Understanding signed on April 12, 2002. Among other projects, the NHS encompasses a proposed \$35 million DCA, in two equal tranches, that specifically addresses market-based housing finance needs and promotion of economic development through increased household access to market-based housing finance in war-affected areas.

The DCA has four objectives in the economically- impacted, war-affected areas:

- ❑ generate private bank market-based finance for war-related housing solutions;
- ❑ promote increased access to formal bank credit for non-traditional borrowers in the ASSC through the DCA sponsor bank(s) institutionalizing more flexible (but still financially-sound) underwriting criteria;
- ❑ promote homeownership as a permanent relocation housing solution for war refugees and displaced persons and, through this relocation process, promote return and repossession of these homes by minority refugees who are the rightful owners; and
- ❑ promote economic development in war-affected areas with increased borrower access to property improvement loans in the ASSC.

The DCA will provide U.S. Government guarantees to cover 50% of losses on private bank loan portfolios for housing loans originated for the following purposes:

- 1) \$20 million in home purchase mortgages for families of temporary occupants to acquire homes under the GoC permanent accommodations program. (The first tranche will be \$10 million, to be followed by a second tranche of \$10 million), and
- 2) \$15 million in property improvement loans for homeowners in the ASSC. (The first tranche will be \$7.5 million, to be followed by a second tranche of \$7.5 million).

USAID, Croatia has been discussing the DCA program in the ASSC with a number of banks. The strongest interest has been expressed by Privredna Bank, the second largest bank in Croatia, and the second largest mortgage lender. Thus, many of Privredna's mortgage practices, loan products, loan terms, and so forth, have been utilized in the analyses that follow.

1.2 Key Issues to be Addressed to Assess Financial Viability.

Two major questions are addressed in the financial viability assessment:

- ❑ Is the housing finance sector financially sound in Croatia? Does mortgage lending activity in Croatia appear to be stable, growing, and based on sound legal, financial, and regulatory operating principles?
- ❑ Do the circumstances in the ASSC appear to offer a financially viable situation for mortgage lending by Croatian banks? Specifically, do potential borrowers have sufficient cash flow to

¹ Please refer to the Economic Viability Analysis.

undertake home purchase or home improvement loans? Will mortgage lending in ASSC require modification of the mortgage lending practices currently the norm in Croatia?²

There is also an issue with regard to the visibility of the ASSC as a target lending areas for Croatia's major banks. Thus, if the proportion of households in ASSC which are deemed "bankable" is small, participating banks may hesitate to create "expectations" which cannot be effectively fulfilled. Thus, the key issues with regard to financial viability in the ASSC are the following:

- Is there adequate **effective** household demand for loans in the ASSC? Is borrower cash flow sufficient to repay a mortgage loan?
- Is there adequate **total demand** in the ASSC to make establishing a lending infrastructure a viable and reasonable activity for a participating bank, especially in the long run?
- The DCA credit guarantee offers important support for mortgage lending in the ASSC. However, changes in underwriting standards and guidelines may still be necessary in order to qualify a strategically adequate number of households.³ Will the mortgage lending activities, given the DCA credit guarantee, be **financially viable for the participating bank(s)**?

Surveys of Croatian Banks in Mortgage Lending and ASSC Households. In order to gain a better understanding of both the economic circumstances of households in the ASSC and the details of mortgage lending in Croatia – particularly the underwriting criteria – three special surveys have been undertaken for this analysis – two surveys of households in the ASSC and a survey of major mortgage lenders to better understand their procedures and requirements.

The Home Purchase Survey (sample size of 630) assesses the employment and income profiles of ASSC households eligible under the DCA Home Purchase Program. It also assesses their desire to purchase a dwelling in the area, and their desire and ability to utilize a bank loan to do so. The Property Improvement Loan Survey (sample size of 490) addresses the same issues for ASSC households wishing to rehabilitate their dwellings utilizing a home improvement loan.

Finally, a survey of mortgage lending, designed to gain a more detailed understanding of loan products, underwriting requirements, loan delinquencies, and so forth, was undertaken with the assistance of the Croatian Bankers Association,⁴ Since underwriting borrowers in the ASSC may require some loosening of underwriting standards, it is extremely useful to understand the backdrop against which this might take place.

1.3 Summary of Findings.

Mortgage Lending in Croatia is Dynamic and Growing. Mortgage lending as now practiced by the major lenders in Croatia is market-based and fully commercial. Banks are becoming increasingly competitive and spreads have begun to fall. Commercial bank policies and market forces have, together, established a structure of mortgage lending (loan terms, interest rates, etc.) and underwriting standards (LTV, borrower cash flow, guarantor system, etc.) that is clearly

² Please refer to the Memorandum prepared for Privredna Banka detailing the characteristics of potential borrowers in the ASSC. Sally Merrill, Final Survey Results for Home Purchase Program Survey, the Urban Institute, June 28, 2002.

³ See Sally Merrill, Draft Memorandum on Underwriting for Households with Moderate and Informal Sector Income, The Urban Institute, April 2002.

⁴ The Urban Institute is deeply indebted to the Croatian Bankers Association, which distributed the survey form to its member banks with a cover letter encouraging their response.

financially viable and competitive. As a proportion of GDP, mortgage lending in Croatia is among the leaders in the region.

Mortgage Lending in ASSC Appears Financially Viable. The local economy in the ASSC, household employment circumstances, and the viability of the housing market in the ASSC differs from that in much of the rest of the country. Thus, It has not been clear whether the success in mortgage lending in Zagreb and other urban areas can be replicated in the ASSC. *Our surveys of ASSC households, however, indicate that income levels in ASSC will be able to support home purchase borrowing for typical houses in the ASSC, given the 50% Government discount. In addition, as the loans are generally smaller, borrowing for rehabilitation is highly feasible.*

□ **A Substantial Number of ASSC Households can Afford Home Purchase Loans**

- There is a wide distribution of incomes in the Home Purchase sample. Notably, however, 56.5 percent of the sample has monthly income of 2000 HRK or more, and 32.6 percent have monthly income of 3000 HRK or more.
- Of the households with monthly income of HRK 3000 or more, 64.8% have income from a registered company or from the government; the mean amount of this monthly income is 3886 HRK. Registered income (or more precisely, non-gray economy income) may be a key underwriting criteria for many banks.
- A very substantial proportion of the ASSC households should be able to purchase homes, aided by the Government's 50% discount. The following example illustrates a typical scenario. With a house price of 160,000 HRK, the Government discount will equal 80,000 HRK. Thus, 80,000 HRK remains to be financed. Assuming that the lender will require a 10% downpayment (8000 HRK), the bank loan will be 72,000 HRK. Under typical lending terms now offered in Croatia, households with monthly income of 2100 HRK to 2400 HRK can afford this loan. Obviously, higher income households can afford the loan as well.
- There is a very strong preference for home purchase in the ASSC: 87.7% of the sample prefer to become homeowners, and, notably, 96% of the highest income group.

□ **A Very Large Proportion of ASSC Households can Afford Home Improvement Loans**

- Again, there is a wide distribution of incomes in the Home Improvement sample. Overall, income levels for those eligible for home purchase loans appear to exceed those in the home purchase group: 48.4% of the sample have monthly income of 3500 HRK or more, and 29.85 fall between 1501 and 3500 HRK. The universe of households eligible for home improvement loans under the program is potentially very large.
- Interest in a property improvement loan was expressed by 55% of the sample, while another 12% are "perhaps" interested. Among those expressing interest 57.6% are in the highest income group: more than 3501 HRK per month. Thus, a very high proportion of the households can qualify for rehabilitation loans, which of course are likely to be smaller than home purchase loans.

□ **Home Purchase Lending in ASSC by Participating Banks is Financially Viable.**

- Privredna Bank, Zagreb, is likely to be a DCA partner in the ASSC program. Privredna is the second largest bank and send largest mortgage lender in Croatia. Its portfolio and profitability are growing steadily. Lending to consumers has risen from HRK 4929 million in 2000 to HRK 6584 million, increasing from 33% to 43% of the total loan portfolio. ROE has risen steadily, reaching 24.3% in 2001, up from 10.9% in 1999.

- Privredna's mortgage lending terms are financially sophisticated and well developed for conduct of financially viable mortgage lending under Croatian circumstances.
 - Our assessment of the ability of potential borrowers to service home purchase loans is based on terms that fit Privredna's national underwriting criteria. It is assumed, therefore, that loans made in the ASSC will be financially viable under terms already utilized by Privredna elsewhere in Croatia. *The 50% GoC discount and the DCA 50 percent portfolio guarantee are very significant credit enhancements for participating banks. This provides Privredna Bank, and any other participating bank, with a strong assurance mechanism.*
- **The Cash Flow Analysis Provides Positive Results**
- The Cash Flow model developed to determine the likely NPV and IRR shows that the DCA project will be financially viable. The NPV is positive and the IRR stands at 4.25%.
 - Only under extremely adverse economic circumstances is the DCA guarantee likely to be called upon. First, the "very adverse scenario" developed to assess the sensitivity of the cash flow model, is not at all likely to occur. Second, the Government of Croatia (GoC) discount under the program – of 50% - yields a very low effective loan-to-value (LTV) ratio.

Overview of this Report. Section 2.0 provides an overview of the various analyses required to ultimately undertake a cash flow analysis of home purchase and home improvement lending under the DCA project. Section 3.0 provides a description of mortgage lending in Croatia, The ability to purchase homes in the ASSC by ASSC households is discussed in section 4.0, based on the findings from the Home Purchase and Property Improvement Loan Surveys. Finally, section 5.0 presents the cash flow analysis from the perspective of the lender.

2.0 OVERVIEW of the ANALYSIS OF FINANCIAL VIABILITY: ANALYZING MORTGAGE LENDING IN CROATIA and in the ASSC

Borrower and Bank Risk Assessments. The Cash Flow Analysis of mortgage lending in the ASSC involves an assessment of both borrower ability to pay for home purchase loans, given the GoC discount of 50% and the financial viability of the transaction for participating banks. We have multiple sources of information on bank and borrower risk – that is, the ability to service a home purchase loan or home improvement loan, the probability of default on the mortgage, and the terms under which mortgage lending is financially viable.

The status of mortgage lending in Croatia is described drawing largely on the Banking Survey. The analysis of borrower ability to pay is based on data from the Home Purchase Survey (and secondarily the Home Improvement Survey). Based on our data collection, and also on our analysis of financial ratios taken from Privredna's Annual Report and Web site, we know a good deal about how the banks in Croatia underwrite mortgages. And, finally, we know how borrowers in ASSC compare to Croatian norms overall. Specifically, we have data on the following:

1. The Current Financial/Economic Scenario of Mortgage Lending in Croatia. We have data from the Bank Survey from all the major mortgage lenders, including Zagrebacka, the largest bank in Croatia, and Privredna, the second largest. We know the loan terms and interest rates. We know default rates for many of the banks (amazing really!) We know underwriting standards, including PTI (payment to income ratio), use of fees, use of deposits, and use of guarantors.

2. Borrower Ability to Pay. We know the borrower income distribution, source of income, ability to provide a deposit, and ability to get guarantors. And we know that nearly all of them – especially the high income groups (96%)– want to purchase a home in the same or similar municipality.

3. Affordability of Housing in ASSC. We have house price data in ASSC. Together with the GoC discount policy, we know what house price targets the would-be borrowers are aiming at, and we know the amount left that must be financed with a loan after the discount. We know what percent of income Privredna would want the households to be able to pay (PTI). We know the likely loan terms – 10 to 20 years and between 8% and 10% interest rate. Thus, using borrower income, the PTI, and the loan terms, we calculate the maximum loans that ASSC borrowers can afford. We then compare this with house prices and figure out which borrowers (as regards income level) can afford to buy houses in ASSC.

4. Financial Viability for Privredna. From Privredna's Annual Reports, we can see that the Bank overall has positive cash flow. (A cash flow profile specifically for mortgage lending, or consumer lending in total, is not available.) Also,

Importantly, the DCA program is asking a further question: what will the cash flow be for extending mortgage lending to ASSC areas, currently very under-served? There is very little lending currently done in the ASSC, and Privredna Bank states it has only very limited loans there. This is exactly why the ASSC household surveys are so useful to the banks. Privredna can undoubtedly estimate the expenses for expanding lending into the ASSC. But the bank could not estimate income flow without further information on borrower ability to pay and access to the credit enhancements standard in mortgage lending in Croatia – guarantors and guarantee deposits.

Each of these topics is discussed in turn. Finally, a model describing mortgage risk calculations under the home purchase program in ASSC is presented, providing several scenarios of the financial environment and the implications for participating banks and the DCA Guarantee.

3.0 THE CROATIAN BANKING SECTOR and MORTGAGE LENDING IN CROATIA

3.1 The Banking Sector.

The banking sector in Croatia is relatively well-developed for a transition country⁵. The sector has already gone through several stages of privatization, foreign investment, and consolidation. Major restructuring occurred during 1999, which witnessed a banking crisis and the closure of a number of smaller private banks. Privatization of large state-owned banks has been completed; combined with consolidation, mergers, and bank closures, the number of commercial banks has fallen 49 - to a more appropriate level.⁶

The Croatian Bankers Association notes that there are seven major banking groups, as viewed from the perspective of ownership structure. The two largest banks – Zagrebacka and Privredna – have been particularly active in the acquisition of smaller regional banks and now control roughly 50 percent of the market and a similar proportion of total bank assets. Five other major groups roughly divide the remaining portion of the market. In addition, with the increased foreign investment in both large and medium banks, the share of banks owned by foreign investors in the total assets of the banking system reached 76 percent by the end of 2000. This compares with a figure of 40 percent at the end of 1999.⁷ Finally, based on a substantial increase in deposits, public confidence in the banking system is being restored. In summary, the Bankers Association

⁵ See "ECRA Housing Project: Financial Sector Analysis", Leslie Matthews Sulenta, The Urban Institute, July 2001

⁶ National Bank of Croatia, June 2002.

⁷ Annual Report, Privredna Banka Zagreb, 2000

has concluded that this new structure is now much more conducive to robust competition. This now also appears to be the situation for mortgage lending.⁸

3.2 Overview of Mortgage Lending.

Both mortgage lending and consumer lending overall are growing in importance in Croatia. The National Bank of Croatia estimates that outstanding housing loans totaled HRK 9.5 billion (roughly \$1.18billion) at the end of the first quarter of 2002, which is a sizeable portfolio for Croatia and represents significant progress in a transition nation. Substantial foreign investment in the banking sector has brought with it a valuable level of market expertise. Nevertheless, serious problems, primarily in the legal infrastructure supporting mortgage lending, remain to be addressed; these are noted below.

The commercial banks are the major source of mortgage lending in Croatia.⁹ Thus, as providers of private, market-based mortgage loans, it is the commercial banks that are of relevance to the DCA program. Table 1 summarizes the growth in housing and other consumer lending (primarily credit cards and car loans) since 1999. Total consumer lending increased by 62 percent between 1999 and the first quarter of 2002, while housing lending has increased by 30 percent.

Table 1
Total Consumer and Housing Lending
(billions of HRK)

Type of Lending	1999	2000	2001	2002: Q1
Housing Loans	7.3	8.0	9.1	9.5
Other Consumer Loans	11.8	13.6	19.3	21.4
Grand Total	19.1	21.6	28.4	30.9

Source: National Bank of Croatia (Dr.Evan Kraft)

Table 2 provides the responses to our survey of commercial banks.¹⁰ The majority of the major housing lenders are represented in Table 2, which accounts for three quarters of total housing lending -- 6.78 billion HRK out of the 9.1billion HRK in 200. Estimates of mortgage lending for 2002 by the banks responding to the survey indicate an increase of 21 percent. Zagrebacka Bank and Privredna Bank Zagreb together accounted for 60 percent of total mortgage lending in 2001. Privredna's mortgage lending accounts for 17 percent of total mortgage lending in 2001; the bank expects its mortgage portfolio to increase by 20 percent in 2002.

It is important to note again that there is very little lending in the ASSC. Privredna Bank, in particular, stated that they have undertaken little lending in ASSC to-date, and have only limited knowledge of lending conditions and ability to pay of the ASSC residents, and those that would potentially be eligible for loans under the DCA program.

⁸ Given the restructuring of Croatian banks that has taken place in the last several years, the Croatian Bankers Association is now much more sanguine about the competitiveness of the sector, which had previously been as issue. Discussion with Dr. Zoran Bohacek, April, 2002.

⁹ The Croatian Bank for Reconstruction and Development (HBOR) has played an important role in housing lending by providing incentives to commercial banks to make loans to those without adequate housing. Also, the housing savings banks, which are based on the German Bausparkassen model, may play a larger role in the future. They have only just now begun to lend; however, this is savings-based approach to mortgage finance that carries a Government subsidy.

¹⁰ The Croatian Banks Association sent the survey form to 18 banks; 3 responded that they did not make housing loans, 8 banks returned the full survey form; all are active in the mortgage market.

Table 2
Mortgage Lending by Selected Banks: Results of the Mortgage Banking Survey
 (billions of HRT)

Bank	Loans 2001		Loans 2002 (bank estimates)	
	Value of Loans Outstanding	# Loans Outstanding	Value of Loans Outstanding	# Loans Outstanding
Privredna Bank Zagreb	1.55 billion	9200	1.85 billion	11,000
Zagrebacka Banka	3.90 billion	30,460	(4.6 billion.*)	n.a.
Splitska Banka	570 million	3150	700.0 million	4400
Raiffeisen Bank	432.3 million	2954	666.2 million	4754
HVB Bank Croatia	221.0 million	287	269.7 million	398
Erste Bank	100.5 million	618	249.0 million	1170
Hypo Bank**	293.0 million	1288	420.0 million	1600
Dalmatinska Banka	103.1 million	n.a.	113.3 million	637

*Author's estimate from "estimate of loans to be originated in 2002" as stated by the bank.

• Some figures were provided in EUR. The EUR/KUNA exchange used in the table was 7.37

** Hypo Bank reported loans originated rather than outstanding in the given year.

3.3 Profile of Mortgage Lending Practices

Mortgage lending practices in Croatia are becoming increasingly flexible and innovative, in response perhaps, to increasing competition among the lenders. Loans of all sizes are being provided, from small rehabilitation loans, to home purchase loans of nearly 2 million HRK. An average size loan from the dominant lenders ranges from 200,000 to 380,000 HRK. Terms may be as long as 20 to 25 years.

Loan-to-value (LTV) ratios are difficult to determine precisely. LTVs generally seem to be around 80%, or higher. However, if a mandatory deposit is required (see below), the *effective* LTV is actually much lower. *Also note the Government's 50% guarantee also lowers the LTV dramatically. In the examples shown in section 5.0 (see table 13) the effective LTV after both the household downpayment and the GoC guarantee, the LTV is only 45%.* (Note that it is also possible that participating banks may relax their underwriting standards given the DCA guarantee program.¹¹)

Interest rates range from about 7.5 percent to 10 percent, depending on factors such as borrower income and credit profiles, use of guarantors, use of mandatory deposits as collateral, and loan size and purpose. In addition, when a deposit is required, banks must now state an "effective" rate that factors in the cost of tying up these "guarantee deposit" funds. Interest rates have fallen, likely in response to falling rates within the economy; however, it may be the case that spreads have also fallen – indicative of a response to competitive pressure.

New mortgage loan products are being introduced; some banks now offer multiple products, with different loan products, underwriting rules, and interest rates for different clients. This is so-called risk-based pricing, which is a methodology very heavily utilized in highly developed markets. Thus, loan products exhibit a fair degree of sophistication in many attributes. As a result, a new degree of flexibility has appeared as the banks compete for market share.

Nearly all loans are variable rate loans – in actuality, they might be labeled "double-indexed loans". First, the vast majority of loans are now indexed to the Euro (and were previously indexed to the DM and other currencies). This is indexation of principle: if the Kuna is revalued relative to the Euro, the outstanding principal is changed and thus all subsequent installment payments.

¹¹ See Sally Merrill, "Memorandum on Underwriting for Households with Moderate and Informal Sector Income", The Urban Institute, April, 2002.

Second, loan terms may also include a variable interest rate; in practice, however, banks do not change the rate frequently or according to preset rules. One problem is that there are no formalized internal indices, nor specific rules for the level and frequency of changes in interest rates. Instead, adjustments are made solely by the decision of the banks, at any time of the banks' choosing. Most loans are indexed to foreign currencies (especially the Euro and DM). At present, there are no generally acceptable indexes on which to base index adjustments on the variable rate loans. The ZBOR (Zagreb Interbank Offer Rate) is viewed as too heavily influenced by just two banks. Cost of living indices are also not yet considered. (Clearly, this represents one of the areas of primary market development that should fall high on Croatia's list, as well as establishing ceilings on rates of change, as note above.)

A summary profile of mortgage lending practices, based on the survey responses of largest lenders, is provided in Table A.1 in the Annex.

3.4 Constraints to Mortgage Lending.

Despite the relative sophistication in lending, the terms of the lending are quite conservative, notably in response to a number of legal and administrative barriers involving foreclosure, titling, and lack of centralized credit assessment information. Each of these problems is noted below. As a result, banks demand various types of "alternative" collateral, in many circumstances requiring two or even more guarantors and a mandatory savings deposit held against the loan.

Default Rates. Default rates were reported by some of the responding banks (this information is frequently not made public). There seems to be a wide range of delinquency and default rates among banks, ranging from one to five percent.

Ineffective Foreclosure. The foreclosure process is both time-consuming and difficult. Thus, one of the main pillars of mortgage lending in developed countries, the ability to obtain the housing collateral upon default, is currently severely compromised in Croatia. The banks responding to the survey report that foreclosure can take between one and three years; given these severe difficulties, relatively few defaulted loans go into formal foreclosure.

As noted, a variety of methods are used to get around the fact that foreclosure is extremely slow, expensive, and uncertain. First and foremost, most loans require two (or even more) guarantors. The guarantors are essentially underwritten as if they were to be paying off the loan; employment in registered industries is often required. In sum, the guarantor approach, while substituting for lack of foreclosure, may seriously constrain lending and cause banks to remain unduly conservative. *This problem results in a "second best" approach to credit enhancement, introducing a risk structure into lending with largely unknown dimensions, as the guarantors may have undertaken multiple guarantees and/or face a large gross debt position themselves. In sum, lack of foreclosure undermines the very concept of "mortgage: lending – that is, the use of the property as collateral.*

Titling and Registration Problems. Uncertainties regarding title and inadequate registration remain other important problems. The problems are reputed to be particularly bad in Zagreb. Without title insurance, loans are denied to questionable title situations, which is presumably constraining market growth.¹²

Lack of a Credit Bureau. Another problem is lack of a central facility -- such as a credit bureau -- for assessment of the total debt position of would-be borrower. The Croatian Bankers Association has sought to persuade the banks that a credit bureau is in their mutual best interest, and this effort is still underway.

¹² The Urban Institute is currently preparing a major report on titling and registration, which should be available by the fall of 2002.

Foreign Exchange Risk. Like many other transition and emerging economies, Croatia potentially faces substantial foreign exchange risk. The Kuna floats on international markets and risk stems from indexation of HRK loans to foreign currencies. The Euro (and previously the Deutsche Mark (DM) are the most prevalent choices. A recent example of the type of impact that can occur is the 1999 depreciation of the Kuna, leading to a negative repercussion on contracts indexed to DM. As a result, interest payment for consumer loans increased dramatically.¹³ The problem is mitigated by the fact that many deposits are also in foreign currency or indexed to foreign currency. The problem will end when Croatia becomes a member of the European Union, but this is expected to take considerable time.

Note that these types of “credit shock” foreign exchange problems, are likely to be far more troublesome to modest income borrowers than to those with higher income, as even slight changes in the required monthly payments may cause difficulties. More major changes are quite likely to lead to serious “credit shock” and thus increased delinquencies and defaults, especially among the lower income borrowers (see section 5.0 for further discussion of this issue).

4.0 ABILITY TO PAY FOR HOME PURCHASE LOANS BY ASSC BORROWERS

Banks considering offering home purchase mortgage loans in war-affected areas have raised a number of issues regarding the viability of mortgage lending at appropriate scale in the ASSC:

- low levels of capacity to pay;
- low proportions of income derived from registered employment;
- low market value of housing, especially because the level of market demand is minimal;
- a potential “public relations” problem, stemming from providing loans if only a few households can be deemed bankable but refusing loans to others in the DCA program.

Thus, our Home Purchase Survey has sought to provide data on the income and demographic profile of eligible households in the ASSC and the degree of interest in purchasing a home with a bank loan. The results of the survey data analysis are summarized below.¹⁴

4.1 Level and Sources of Income in the Home Purchase Sample.

Table 3 indicates that a substantial number of ASSC households eligible for loans under the DCA program have income levels and sources of credit enhancement compatible with bank requirements and the program’s structure: There is a wide distribution of incomes in the sample. Notably, however, 56.5 percent of the sample have monthly income of 2000 HRK or more, and 35.2 percent have monthly income of 3000 HRK or more.

¹³ World Bank op. Cit.

¹⁴ These data are drawn from Sally Merrill, “Final Survey Results for Home Purchase Program Survey”, the Urban Institute, June 28, 2002. Please refer to this Memorandum for a complete presentation of the survey results.

Table 3
Distribution of Monthly Income in the Home Purchase Survey

Total Monthly Income				
Income Level	Up to 1500 HRK	1501 – 1999 HRK	2000 – 2999 HRK	3000 HRK plus
% of Sample	31.7%	10.9%	21.3%	35.2%
# Respondents	203	70	136	225

* 6 households out of 640 did not respond to this question

The main sources of income for the sample – see table 4 -- are social assistance (49.1% of the sample), registered or government employment (35.3%), and pension income (29.5%). The incidence of these sources varies dramatically by income group, however, as discussed below. A somewhat smaller group (13.5%) claims business income (from owned businesses). Several approaches were used to discern whether the respondent households received gray economy income: households were asked whether they had income from unregistered sources, “other” income, or additional cash income. Interestingly perhaps, the major unidentified type of income was simply “other”, which is claimed by 15.4 percent of the sample. Only 4.3% admitted to gray economy income, while 6.7% noted that they had additional cash income.

Finally, contrary to expectations, very few respondents indicated that they had remittance income, either from relatives abroad (only 3.9%) or from relatives living elsewhere in Croatia (4.4%). The initial assumption prior to carrying out the survey had been that remittance income was substantial. The balance of payments statistics for Croatia indicates substantial income flows from abroad. In fact, our assumptions about remittance income were such that a memorandum was prepared for Privredna Banka noting examples of flexible underwriting from banks elsewhere in the world, and concentrating especially on bank procedures for underwriting remittance income in Jamaica, Central America, and Mexico, where the U.S. is a major source of these income flows.¹⁵ It is possible, of course, that remittance income, as well as gray economy income, are represented in “other” income and “additional cash” income.

Table 4
Sources of Income for Households in the Home Purchase Survey

Source of Income	Percent of Sample	Sample Size
Employment and Business Income		
• Registered or government employment	35.3%	226
• Business income from owned business	13.5%	86
• Farm income	1.1%	7
• Self-employment income	1.3%	8
Retirement and Social Income		
• Social assistance income	49.1%	312
• Pension income	29.5%	194
Remittances and “Other” Income		
• Assistance from family members in Croatia	4.4%	24
• Remittances from abroad	3.9%	20
• “Other” income	15.4%	99
• Additional cash income	6.7%	51
• Gray economy or unregistered income	4.3%	27

Sources of Income for Different Income Groups. As noted, for households with income of 3000 HRK or over, the dominant source of income is employment with a registered company or

¹⁵ See Sally Merrill, “Draft Memorandum on Underwriting for Households with Moderate and Informal Sector Income”, The Urban Institute, April 25, 2002.

government; 68.4% of this group has registered income (see table 5). The average amount is 3886 HRK per month; 28% of the group has registered income of 3000 – 4500 HRK, and another 16% receive over 4500 HRK per month. Over 20% of the highest income group also have business income, which averaged 3009 HRK per month. A quite large proportion of this group also indicated that they had “other” income (19.6%), but the amounts are fairly small (an average of 809 HRK). In contrast, a limited group (4.9%) has indicated a rather large amount of gray economy income (3636 HRK).

A somewhat similar profile is seen for the group with income between 2000 and 2999; 41.9% have income from registered or government employment and 18.4% have business income. However, this group also tends to have relatively more reliance on social assistance (47.8%). This income group shows the largest incidence of remittance income (5.1%), but the average amount is small (368 HRT). In contrast, a fairly sizeable share, 20.6%, has other income, which averaged 648 HRK.

The pattern of income sources for the two lower income groups is quite different. Substantial proportions of these groups have social assistance income and/or pension income. For example, 64.5% of households with income of less than 1500 receive social assistance, while 61.4% of the group receiving 1501 – 1999 HRK do so. Similarly, the proportions of these low income groups receiving pensions are 38.9% and 44.3%, respectively. The only other income source of note for the group with income of 1501 – 1999 is “other” income (17.1%).

Table 5
Total Monthly Income for Major Sources of Income
Percentage Distribution and Average Amounts by Type

Total Monthly Income by Source of Income % Distribution and Average Amounts by Type				
Source of Income	Up to 1500 HRK	1501 – 1999 HRK	2000 – 2999 HRK	3000 HRK plus
Total % with registered or government employment	3.9%	11.4%	41.9%	68.4%
• % with registered income 2001 – 3000 HRK	1.5%	0	21.3	19.6
• % with registered income 3000 – 4500 HRK	0.5%	0	0	28.0
• % with registered income > 4500 HRK	0	0	0	16.0
Mean amount registered income	(2307 HRK)*	1705	2169 HRK	3886 HRK
% with business income	2.5%	7.1%	18.4%	22.7%
Mean amount business income	**	**	2152	3009
% with pension income	38.9%	44.3%	21.3%	24.4%
Mean amount pension income	664 HRK	(2136)*	820	1721
% with social assistance	64.5%	61.4%	47.8%	32.4%
Mean amount social assistance	776	1256	1393	1076
% with remittance income	3.4%	1.4%	5.1%	2.7%
Mean amount remittance income	318 HRK	**	368 HRK	**
% with “other” income	7.9%	17.1%	20.6%	19.6%
Mean amount other income	349 HRK	640	648	809
% with gray economy income	**	**	7.3%	4.9%
Mean amount gray income	**	**	1123 HRK	3636 HRK

* Amount of income from specific source exceeds stated total income

** sample size of 5 or less

In contrast, pension and social assistance income, although prevalent throughout the sample, are of primary importance to the households with income less than 2000 HRK. Over 60% of these groups receive social assistance and around 40% receive pensions.

Finally, it is likely that income is understated: this tends to be a worldwide phenomenon in household surveys. Thus, we also asked about expenditures as a proxy for income. Indeed, expenditures appear to slightly exceed income. For example, for those with income under 1500 - 1999, 14.3% spend more than 2000 HRK per month. Similarly, for those with income under 3000, 14.0% spend more than that amount.¹⁶

Other Underwriting Requirements. As discussed in section 3.0 above, because of the various problems facing mortgage lending, most especially the serious foreclosure issue, a variety of other credit enhancements are generally required in order to have a mortgage loan. Foremost among these is the requirement for guarantors, and often, two or more guarantors are required. Table 6 summarizes the guarantor information from the Survey; a substantial share of the higher income households state that they could secure two, or at least one, guarantor.

Table 6
Guarantors for the Home Purchase Loan

Guarantors for the Loan	Total Sample	Income Group (HRK per month)			
		% of Income Group in Category			
		Up to 1500 HRK	1501 – 1999	2000 – 3000 HRK	3000 plus HRK
% having two guarantors	52.2%	40.0%	32.6%	48.1%	64.8%
% having one guarantor	6.7%	11.6%	4.3%	4.7%	6.1%
% having none or DK	41.0%	48.4%	63.0%	47.2%	29.1%
Sample	100% (N = 446)	100% (N = 95)	100% (N = 46)	100% (N = 106)	100% (N = 196)

Another potential requirement is a mandatory savings account held with the bank during the life of the loan; note that this requirement can sometimes be waived if a higher interest rate, or lower LTV is utilized. Note, however, that survey results indicated that nearly three-quarters of the highest income group states they are able to make a deposit, and about 60 percent of the second highest income group.

Finally, banks needed to know the age distribution of the eligible households, as mortgage loans generally won't be granted if the head of household will reach 65 well before the loan term is ended. The survey indicated, however, that there is a strong association between level of income and age of respondent (assumed in most cases to be the head of household). Higher income households are represented by a significantly larger proportion of younger and middle-aged respondents than lower income groups. For example, 59.4% and 74.2%, respectively, of households with income of 2000 – 3000 HRK and 3000+ HRK, are aged 26 to 50. In contrast, only 35.9% of households with income up to 1500 HRK are in this age bracket.

In summary, there is a substantial group of “typical” homebuyers in the ASSC: younger households with children who appear to have stable and significant income, deriving from employment with registered companies, government, and/or business income. The income distribution represented in our sample compares quite favorably with that for all of Croatia: whereas 35.2% of our sampled households have income of 3000 HRK per month or more, the comparable national statistic is 41 percent for 2001. The higher income component of our sample

¹⁶ See Merrill, op. cit. for more information. Note also that some allowance should be made for savings, especially among the higher income categories, which would tend to boost total outlays even further above stated income.

not only shares the strong preference for homeownership evidenced by such groups worldwide, but also appears able to qualify for a home purchase loan in Croatia. A large proportion of the group with income over 2000 HRK appears able to purchase a home with the assistance of the Government contribution. (Indeed, a sizeable group -- for example, those with monthly income over 3000 HRK -- may be able to qualify for a loan even without such assistance.)

4.2 Borrower Ability to Pay and Preferences for Purchasing a Home

Borrower Ability to Pay. Cash flow analysis, in the classical sense, is not directly applied to analysis of individual households – that is -- would-be borrowers of mortgage loans. There are several reasons. First, it is not possible to predict the flow of their future income. Rather, based on their current and past income, as well as on their credit history, bankers predict the probability that the loan will proceed as specified. Bankers use large databases of historical loan performance (as well as credit scores and other factors) to place borrowers in risk categories. The meaningful summary statistics include the delinquency and default rates associated with borrowers of different income levels and credit history; these data are then used in loan pricing and determination of what proportion of income a borrower can reasonably pay.

A second major difference is that the funds from the mortgage loan are not directly utilized to support a future income flow, unlike loans to an SME or other enterprises.

The discussion below and tables 7, 8, and 9 present our analysis of borrower ability to pay.

Table 7 illustrates the loan payment required to service a housing loan from Privredna Bank. The calculations for payment amount are taken directly from Privredna Bank's "Loan Calculation Service". The interest rate for the loans illustrated here is 8.88%. We have used examples of home purchase loans at 15 years and 20 years. Privredna undertakes all calculations in Euros. We have also translated the amounts into HRK for consistency with other tables. The amounts range from 8000 EUR to 12,000 EUR. At a conversion of 7.4 HRK to the Euro, these loan amounts range from 59,200 HRK to 88,800 HRK. These loan sizes are exactly in line with a typical loan that an eligible ASSC households would take out in order to pay for a home in the ASSC area – after the 50% GoC discount is taken into consideration. The average prices paid by APN for homes in ASSC are shown in table 9. As noted below, however, there is considerable variation from area to area.

The next step is to determine what level of income a household needs in order to make these payments. Mortgage bankers generally express this as a payment-to-income ratio, or PTI. The PTI is most commonly expressed as a percent of income, in Croatia as well as around the world. We have used two common PTI levels: 30% of income and 33% of income. These are typical PTIs, and Privredna and other Croatian banks responding to the survey cited 33% as one standard for the PTI. However, borrowers whose income is "only just" qualifying, may be offered a lower PTI figure, which is why we have also included 30% in the analysis. (In practice, for borrowers with marginal and/or relatively lower incomes, banks often utilize rules that involve requiring a household to have a minimum monthly income remaining after the loan payment is taken account of; thus, the effective PTI may be a bit lower than for higher income borrowers.)

Referring to table 7 then, a loan of 10,000 EUR, or 74,000 HRK, taken for a term of 20 years requires a loans payment of 89.2 EUR, or 660 HRK. If the PTI utilized by the bank is 30%, monthly income would need to be 2200 HRK. If the PTI is more "liberal" – at 33%, a monthly income level of 2000 HRK suffices to pay for this loan.

**Table 7
Borrower Payments for Mortgage Loan from Privredna Bank**

Loan Terms in EUR	Borrower Monthly Payment in EUR	Required Borrower Income to support a 30% PTI* in Kuna	Required Borrower Income to support a 33% PTI in Kuna
8000 EUR (59,200 HRK)			
• 15 years	86.6 EUR/ 641 HRK	2136 HRK	1942 HRK
• 20 years	71.4 EUR /528 HRK	1761	1601
9000 EUR (66,000 HRK)			
• 15 years	90.6 EUR/ 670	2235	2032
• 20 years	80.3 EUR/ 594	1981	1800
10,000 EUR (74,000 HRK)			
• 15 years	100.7 EUR/ 745	2483	2256
• 20 years	89.2 EUR/ 660	2200	2000
11,000 EUR (81,400 HRK)			
• 15 years	110.8 EUR/820	2733	2485
• 20 years	98.1 EUR/ 726	2420	2200
12,000 EUR(88,800 HRK)			
• 15 years	120.9 EUR/ 846	2821 HRK	2565 HTK
• 20 years	107.0 EUR/ 792	2639 HRK	2399 HRK

Clearly, as indicated in the survey results, a very substantial number of the ASSC households can afford loans of the magnitude in table 7 – that is, their “cash flow” is sufficient to pay the mortgage based on the relevant PTI and to have the remainder of their income – in this case 67% or 70% -- available for other items in their budgets, such as food, clothing, health costs, and so forth. For example, as discussed above, 56.5% of the surveyed households have a monthly income of 2000 HRK or more, and another 35.2% have incomes exceeding 3000 HRK. Thus, the loan sizes in table 7, and the borrower’s cash flow, are very much in line with our eligible ASSC population.

Table 8 simply looks at the same issue from the other side: if a household has a monthly income of a certain amount – what is the largest bank loan that they are likely to qualify for at the present time in Croatia. Thus, from this perspective, table 8 provides as assessment of the maximum loan amount possible for households with different levels of income under different scenarios of interest rate and term. This analysis again shows our concern regarding the proportion of households with income exceeding 2000 per month. In order to purchase a home using a bank loan – with the 50% Government discount – households with income of under 2000 or 2400 generally cannot afford to make the loan payments (assuming that the household pays 30% of its income for the mortgage loan). However, the substantial portion of household with higher incomes can certainly participate in the program

Our affordability calculations indicate that households with monthly income of 2400 HRK, for example, could service a loan of 57,000 HRK at a 9% interest rate for a loan for 10 years. If the term is extended to 15 years, the same household can afford a loan of 71,000 HRK; at 20 years, the household could support a loan of 80,000 HRK.

Lower interest rates also have a significant impact on monthly payments. With an 8% interest rate, these “feasible” loan amounts increase to 59,000 HRK for a 10 year loan, 75,000 HRK for a 15 year loan, and 86,000 HRK for a 20 year loan. *Thus, under the most “liberal” loan terms – 20 years at 8% - in order to support a loan of approximately 80,000 HRK, household income must be between 2100 and 2400 HRK per month.*

Table 8
Affordable Loan Sizes by Income Groups
Alternative Loan Terms (in thousands of Kuna) and Interest Rates

Monthly Net Income	Maximum Affordable Loans under Alternative Loan Terms (HRK)								
	10 yr. 8%	10 yr. 9%	10 yr. 10%	15 yr. 8%	15 yr. 9%	15 yr. 10%	20 yr. 8%	20 yr. 9%	20 yr. 10%
1500	37,000	35,000	34,000	47,000	44,000	42,000	54,000	50,000	47,000
1800	45,000	43,000	41,000	57,000	53,000	50,000	65,000	60,000	56,000
2100	52,000	50,000	47,000	66,000	62,000	59,000	75,000	70,000	65,000
2400	59,000	57,000	54,000	75,000	71,000	67,000	86,000	80,000	75,000
2700	67,000	64,000	61,000	85,000	80,000	75,000	97,000	90,000	84,000
3000	74,000	71,000	68,000	94,000	89,000	84,000	108,000	100,000	93,000
3500	87,000	83,000	79,000	110,000	104,000	98,000	126,000	117,000	109,000
4000	99,000	95,000	91,000	126,000	118,000	112,000	143,000	133,000	124,000
5000	124,000	118,000	114,000	157,000	148,000	140,000	179,000	167,000	155,000

Assumptions: PTI = 30 percent

Referring again to the example presented in the Executive Summary, a very substantial proportion of the ASSC households should be able to purchase homes, aided by the Government's 50% discount. The following illustrates a typical scenario. With a house price of 160,000 HRK, the Government discount will equal 80,000 HRK. Thus, 80,000 HRK remains to be financed. Assuming that the lender will require a 10% downpayment (8000 HRK), the bank loan will be 72,000 HRK. With a lending term of 15 years (now offered in Croatia), households with monthly income of 2100 HRK to 2400 HRK can generally afford the 72,000 HRK loan. Obviously, higher income households can afford the loan as well.

Finally, note that in this table we have used the more conservative PTI of 30%; use of a PTI of 33% would "improve" the results – that is, the same household could afford a slightly larger loan. Note also that it is possible that participating banks may relax their underwriting standards given the DCA guarantee program.¹⁷ This is because the GoC guarantee effectively reduces the LTV to a very low level in comparison with Croatian or international standards (see section 5.0).

House Prices in the ASSC and Affordability Calculations. Table 9 summarizes the average purchase prices for houses in the ASSC purchased by the APN over the last 6 years. Please note, however, that there is considerable variation from county to county. For example, the average prices have ranged from 80,447 HRK in Virovitičko Podravska and 94,323 HRK in Požeško Slavonska to 165,000 in Ličko Senhska and 177,779 in Šibensko Kninska.

Table 9
Average Purchase Prices for APN purchases of Housing

Year	1997	1998	1999	2000	2001	2002
Purchase Price	121,095	116,140	173,460	168,319	168,830	187,221

Preference for Using a Bank Loan for Home Purchase. Finally, table 10 indicates the proportion of households in the survey who wish to purchase a home and consider themselves

¹⁷ See Sally Merrill, "Memorandum on Underwriting for Households with Moderate and Informal Sector Income", The Urban Institute, April, 2002.

able to do so. Clearly, the two highest income categories are most interested and most able. They are also highly likely to use a bank loan to purchase. Preference for home purchase is very substantial, and a majority of the higher income groups would wish to utilize a bank loan:

- Preference for being a homeowner is strong for all groups in the sample (87.8%). Notably, however, 94.1% of those with income of 2000 - 2999 HRK wish to become owners, and 96% of those with income of 3000 HRK or more. *This portion of the sample is representative of households who typically wish to become homeowners in any country.* As noted, they are younger; also, they are more likely to have children under 18, and are much more likely to be receiving income from a registered company or owned business.
- Of the higher income group, 52.9% of those with income of 2000 – 2999, and 72.4% of those with income of 3000 or more, indicated that they would be able to purchase a home with their own funds, bank loans, and/or family funds, given the Government of Croatia (GOC) discount.
- Over half the sample, 56.6%, indicated that they would consider a bank loan to purchase a home. This proportion rises to 65.4% and 75.1%, respectively, of the top two income groups. ***Viewed as a proportion of those who are interested in purchase, 90.3% would consider a bank loan. Again, this proportion increases to over 95% for the two top income categories.***
- Similarly, 48.1% and 64.8%, respectively, of the groups with income of 2000-2999 and 3000 and over say they would be able to secure two guarantors for the loan, while others (4.7% and 6.1%) indicate having one guarantor. Finally, 83.1% of the 3000 and over group, and 59.7% of the 2000-2999 group state that they could make monthly payments of 250 HRK or more.

Table 10
Home Purchase Preferences and Capacity

% Able to Purchase a Home and % Considering a Bank Loan for Purchase		Income Group (HRK per month) % of Income Group in Category			
		Up to 1500 HRK	1501 – 1999	2000 – 3000 HRK	3000 plus HRK
% able to purchase with own funds, bank loan, or family funds with GOC discount	52.3%	34.5%	37.1%	52.9%	72.4%
Don't know	15.5%	14.8%	27.1%	16.2%	12.4%
Not able to purchase	32.2%	50.7%	35.7%	30.9%	15.1%
Sample	100% (N=640)	100%	100%	100%	100%
% Considering a bank loan for purchase	56.6%	34.5%	45.7%	65.4%	75.1%
% that would pay cash rather than borrow	5.5%	7.4%	10.0%	2.9%	3.6%
% that do not know if would use a loan	13.1%	12.3%	20.0%	12.5%	12.0%
% not interested in purchase (w/w/o loan)	24.8%	45.8%	24.3%	19.1%	9.3%
Sample	100% (N = 640)	100%	100%	100%	100%

It is important to note that the terms of the home purchase option were made very clear during the interview. Under the home purchase option, respondents were told that the Government would

contribute approximately 80,000 HRK – estimated to be one-half the purchase price of a typical home in the ASSC – and the household would be responsible for funding the other half. If the household portion were to be funded via a bank loan, the monthly loan payments were estimated to be about 700 HRK. Thus, households were responding to precise figures in framing their answers regarding ability to purchase and to make loan payments.

4.3 Demand for Home Improvement Loans among Eligible Households.

As noted, a survey of households eligible for home improvement loans under the DCA program was also undertaken. The results suggest that income among these households is even higher than that for those eligible for home purchase. Thus, as seen in table 11, 48.4% of households have income exceeding 3500 and 78% have monthly income in excess of 1500 HRK. In addition, over half the sample is interested in a home improvement loan (and another 11.8% have not yet decided – see table 12).

Home Improvement loans are expected to cover a wide range of values, as many different preferences and needs were expressed. The loan ceiling under the DCA program is \$10,000 (about 80,000 HRK) although one might expect that most of the loans will be less than this. Thus, from our analysis of affordability of home purchase loans, we can assume that a very wide range of borrowers and loan sizes will qualify under this aspect of the program.

Table 11
Income Distribution for the Home Improvement Survey Sample

Income Category	1500 HRK & less	1501 – 3500 HRK	3501 HRK & over	Don't know or refuse
% of sample	16.8%	29.6%	48.4%	5.0%
Sample size* (total = 491)	82	146	238	25

* 6 households indicated they had no income and 19 don't know or refuse to answer

Table 12
Preference for a Home Improvement Loan by Income Group

Interest in Home Improvement Loan	1500 HRK & less	1501 – 3500 HRK	3501 HRK & over	Total Sample
Yes	34.1%	50.0%	63.4%	53.2%
No	56.1%	41.8	21.4%	35.0%
Maybe, not sure	9.8%	8.2%	15.1%	11.8%
Sample size	82	146	238	491*

5.0 CASH FLOW ANALYSIS OF FINANCIAL VIABILITY OF MORTGAGE LENDING BY PARTICIPATING BANKS

This section discusses the cash flow model used to assess the discounted net present value (NPV) and internal rate of return (IRR) calculations to address financial viability from the perspective of the participating banks. The sections below discuss the flow of loans under the home purchase and home improvement portions of the DCA program, the likely terms of these loans, the expenses associated with making the loans, the expenses incurred under DCA and the likely financial scenarios, especially with regard to the expected default rate. The assumptions underlying the cash flow model are based primarily on two sources: (1) data specific to Privredna

Bank, taken from the annual reports, website, and conversations with Privredna staff, and (2) data from the bank survey, as discussed in section 3.0.

Please note that the cash flow analysis is based on the full amount of the funding under the program – that is -- \$35 million. However, the funds are to be disbursed in two tranches of \$17.5 million each. At present, approval is being sought only for the first tranche of \$17.5 million.

The cash flow model results are presented in Chart 1: Expected Scenario

5.1 Home Purchase (Mortgage) Loans: Expected Cash Flow Scenario

Determining Loan Volume and Cash Flow for Home Purchase Loans. The universe of households in ASSC which are eligible for participation in the DCA home purchase program is approximately 8300. On the basis of the income statistics taken from the Home Purchase Survey, approximately one half of the group should be able to afford a home purchase loan. The majority also wishes to purchase a home, and a large majority of this group wishes to do so with a bank loan. There also may be underwriting requirements regarding one or more guarantors and a mandatory guarantee deposit, as discussed, but many of households are also able to meet these requirements.

The bank underwriting process will reveal exactly how many households both qualify for a loan and wish to utilize a loan. In actual practice, we expect that 3000 to 4000 home purchase loans will be made under the program. For the sake of our illustrative analysis, however, we have assumed that Privredna will make 2000 home purchase loans. This is the amount of home purchase lending that is covered under the DCA Guarantee. The average loan value is \$10,000, or about 80,000 HRK. For the sake of simplicity, we assume that all 2000 home purchase loans are made in year one. Thus, loan origination is \$20,000,000, as shown in Chart 1.

Income. The loans are assumed to be fixed-rate, self-amortizing loans. The interest rate is 9.98% (this rate was the posted rate on Privredna's website on July 11, 2002 for a mortgage loan) and the term is 15 years. (Note that this is a conservative rate the actual rate used by Privredna may be closer to the 8.8% used in the analyses above.) The interest and principal repayments are shown in Chart 1. There is also an origination fee of 2% of the loan, which is fairly standard practice among Croatian banks.

Outstanding Portfolio and Default Rate for Expected Scenario. The outstanding loan balance is calculated after defaulted loans are removed from portfolio. Default rate for the expected scenario is 5%. (Privredna's stated default rate is 5.05% of its outstanding portfolio.) Assuming an "average portfolio life" of about 5 years (this rate also includes short-term car loans, credit cards, etc.), this default rate is spread over each five year period. Thus, in any given year, approximately 1% of the loans default. The recovery ratio for defaults is assumed to be 90%. This would result from the combined impact of sale at auction, funds from guarantors, and utilization of the mandatory deposits for the defaulting borrower.

Expenses. Bank Expenses. The cost of funds is assumed to be 3.35%. This was derived from Privredna's actual data for 2001 (Notes to the Financial Statements). Servicing costs are assumed to be constant at \$100 per loan (also derived from the Notes to the Financial Statements as well as from practice elsewhere). We have also included provisioning for defaulted loans.

DCA Expenses. DCA expenses include a one time charge for the origination fee of \$43,750, and an annual utilization fee: 0.75% per annum on that portion of the aggregate outstanding principal amount of all Qualifying Loans which are guaranteed by USAID.

5.2 Home Improvement Loans: Expected Cash Flow Scenario

Determining Loan Volume and Cash Flow for Home Improvement Loans The information for the Home Improvement Loans is shown in the middle section of Chart 1. The potential demand for these loans is quite large. As discussed in section 4.0 – see tables 11 and 12 – the income profile of the surveyed households exceeds that for the eligible home purchase group. Under the DCA Agreement, a ceiling of \$15 million in home improvement loans is guaranteed, and the maximum loan size is \$10,000. We have used the \$15 million ceiling, but assume, again, that potential demand far exceeds this. Since home improvement loans are generally smaller and shorter-term than home purchase loan, we have assumed an average loan size of \$2500 and a term of 5 years. As shown in chart 1, there is a total loan volume of \$15 million in the 15 year analysis period; this is divided into three 5-year cycles of \$5 million each.

Income. Principal and interest payments are shown on Chart 1. The interest rate used for home improvement loans is 11%. The origination fee was waived, as it is not clear whether the banks charge this fee for home improvement loans.

Expenses. The expense assumptions are similar to those for home purchase loans. The cost of funds remains at 3.35%. Servicing costs have been reduced proportionately to loan size.

Default Assumptions. The default rate assumption in the expected scenario is 1% - again, that is 1% over a five year period, so that in any given year the default rate is only about 0.2%. The recovery of principal from default is assumed to be 95%.

5.3 Net Present Value and IRR Analysis

Net Cash Flow. The results of the cash flow analysis are shown in the bottom section of Chart 1. The net cash flows are consistently positive in all years for both the mortgage (home purchase) and home improvement lending.

Discounted Net Present Value of Cash Flows. The discount rate used in the analysis is 3.35%. This is the cost of funds for Privredna from its deposits. (This was calculated as the ratio of interest expense of HRK 694 million to total due to customers of HRK 20,708 million, or 3.35%.)

The Discounted NPV of Cash Flows from tot total mortgage loan and home improvement loan portfolio is positive, standing at \$1,659,546.

Internal Rate of Return. *Similarly, the IRR is positive, and equals 4.25%. Thus, the project is deemed to meet all the requirements of financial viability under the "Expected Economic Scenario".*

5.4 Financial Viability under Alternative Default Scenarios.

The final step in the financial viability analysis is to assess several options of possible outcomes for mortgage lending in the ASSC. Thus, we have also prepared four economic/financial scenarios in order to provide an assessment of the sensitivity of the assumptions to the stresses which might occur in the Croatian economy. The four lending "scenarios" are: (1) the current lending conditions in Croatia overall, (2) the "expected" lending conditions in ASSC under the DCA program, (3) an "adverse" scenario in ASSC, and (4) a "very adverse" scenario in the ASSC.

These scenarios describe mortgage risk calculations under the home purchase program in ASSC. The model's structure is drawn from the approach to risk assessment used in evaluating credit enhancement options, such as mortgage insurance. Since the DCA represents a related credit enhancement mechanism, the approach is relevant for this program. Table 13 sets forth the values for the terms and conditions of the home purchase loan, under the current lending environment and under the three alternatives for lending in the ASSC under the DCA program.

Table 13
Hypothetical Loan Terms in Home Purchase Lending in ASSC

Loan Terms and Viability Assessment Criteria	Current Mortgage Lending	Scenarios of Mortgage Lending in ASSC		
	Actual Parameters	Expected	Adverse	Very Adverse
Estimated Value of the Home	160,000 HRK	160,000 HRK	160,000 HRK	160,000 HRK
GOC Subsidy	n.a.	80,000 HRK	80,000 HRK	80,000 HRK
Value of Loan	120,000	72,000 HRK	72,000 HRK	72,000 HRK
Downpayment	25% = 40,000 HRK	10% 8000	10% 8000	10% 8000
Loan-to-Value Ratio	.75	(.45)	(.45)	(.45)
DCA Credit Coverage	Not applicable	50%	50%	50%
Interest Rate	9.98%	9.98%	9.98%	9.98%
Term	15years	15 years	15 years	15 years

Table 14 sets forth the parameters of the different conditions under the three scenarios. For the sake of simplicity, the major differences are seen in the default rates and the salvage value at foreclosure.

The cash flow analysis discussed above and shown in Chart 1, utilized the “expected DCA scenario”. We also present below – summarized in Chart 2 - the very adverse (Negative) scenario. The economic and financial conditions in this scenario are such as might happen in the face of extreme economic collapse in Croatia.

Expenses, Default Rate and Salvage Value. In the very adverse scenario, the default rate has jumped to 20% over a five year period. The costs associated with at least 15% of this are “above and beyond” normal expenses included above in the cost assumptions for the expected outcome. Thus, note that the expenses in the very adverse cash flow model include provisioning for lost principal that is not recouped through foreclosure, guarantors, or mandatory deposits. As has been discussed, foreclosure is very time consuming in Croatia, and in fact may not be successful. We have made assumptions here about the number of foreclosure actions that are successful, and the number that are written off. The so-called salvage value, in this very adverse case, is a combination of sale at auction and properties unable to be foreclosed successfully. Thus, there are new, additional costs all associated with foreclosure, or attempts to foreclose.

Cash Flow Results for the Very Adverse Scenario. The results shown in Chart 2, indicate that the Discounted NPV of Cash Flows has become negative. In addition, the IRR has fallen to 1.51%. Further, from table 14, it is seen that the bank loses principal and the DCA guarantee has been called upon.

There is no reason to expect that economic disaster will arrive in Croatia. This scenario has been developed only to define an “outer bound” of possibility. **Note also that it is only in the very adverse scenario is the DCA Guarantee called upon.** Because of the GoC 50% discount, the effective LTV is extremely low under the DCA program – see table 13 – where the examples provided show an LTV of .45. Thus, only under the combined impact of a very high default rate and very poor outcome in salvaging does the participating bank experience loss of principal and receive a 50% reimbursement via the DCA guarantee. *Again, please note that this scenario is not expected to occur, but was developed to show conditions under which the DCA guarantee might be utilized.*

Table 14
Hypothetical Scenarios for Home Purchase Lending in ASSC under the DCA

Default & Foreclosure Scenarios	Current Mortgage Lending	Scenarios of Mortgage Lending in ASSC under the DCA Program		
	Actual Parameters	Expected	Adverse	Very Adverse
Default Rate	2% - 5%	5%	10%	20%
Loan Amount	120,000 HRK	72,000	72,000	72,000
Principal Remaining at Default (year 0)	120,000 HRK	72,000 HRK	72,000 HRK	72,000 HRK
Salvage Value (% & Value)	75% 120,000 HRK	75% 120,000 HRK	60% 96,000 HRK	20% 32,000 HRK
Potential Loss of Principal	None	None	None	40,000 HRK
DCA Guarantee Utilized	Not applicable	Not required	Not required	20,000 HRK
Loss of Principal	None	None	None	20,000 HRK
Time to Foreclose	12 - 24 months	24 months	24 months	36 months
Delinquent Interest at Default (months)	18 months	24 months	36 months	36 months
% Failed Foreclosures	0%	0%	10%	40%

