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Distributional Effects of Crises: The Financial Channel

Who pays for financial crises? What are the mechanisms for spreading the cost across different social groups? The literature is only beginning to provide answers to these crucial questions. Several papers measure the depth and duration of crises, defined as the cumulative output loss and recovery time, and conclude that these crises have been very costly for developed and emerging economies. The period 1973–97 registered more than forty-four crises in developed countries and ninety-five in emerging markets, with average output losses of 6.25 percent and 9.21 percent of gross domestic product (GDP), respectively.[1]

Crises do not hit all groups of people equally. Several papers analyze how crises affect different ranges of the income distribution; they identify four main channels through which crises affect households and, in particular, the poor.[2] First, financial crises generally lead to slowdowns in economic activity and, consequently, to a reduction in labor demand. Adverse income

1. See Bordo and others (2001); Eichengreen and Bordo (2002).
2. See, for example, Ferreira, Prennushi, and Ravallion (1999); Manuelyan and Walton (1998).

and employment shocks hurt the poor the most, because they do not have the means to protect themselves. They lack assets to hedge against these shocks and often have no direct access to credit markets to smooth their impact. Furthermore, unskilled workers (typically poor people) are often the first to lose their jobs, as firms hoard their trained labor force.[3] Second, financial crises affect both the wealth and income of the poor through high inflation, which tends to accompany crises and their resolution. Since the poor normally hold a greater proportion of their wealth in cash than do the nonpoor, they tend to be more strongly affected by the increased rate of inflation (which is a tax on money holding). Inflation also leads to a decline in real wages, since nominal wages are not perfectly linked to the price index. This affects the poor more than the rich because poor people do not have capital rents, such that labor earnings constitute a much larger share of their total income. Third, crises may cause changes in relative prices that hurt the poor by aggravating the fall in real wages. Currency depreciation (which is usually associated with crises) may affect the price of imported food, increasing domestic food prices and thus hurting poor households that are net consumers of food.[4] Fourth, the public spending cutback that is conventionally implemented in response to financial crises causes a severe impact on poor families. Public expenditure cuts, beyond causing declines in labor demand, affect cash transfers to households and the provision of social services. These cuts tend to hurt those who rely on public services, mostly the poor.

The common conclusion from this literature is that the poor are more strongly affected than the rich, but precise results vary across countries and episodes. Lustig shows that out of twenty crises in Latin America, all were followed by an increase in the poverty headcount ratio and fifteen of them by a rise in the Gini coefficient.[5] Regarding the social costs of the East Asian financial crises of 1997–98, the evidence also indicates large impacts on poverty. In Indonesia the incidence of poverty rose from 11.0 to 18.0 percent in 1996–99, while in South Korea the urban poverty

3. In addition, owing to the lack of education and skills, the poor tend to be less mobile and thus are often unable to switch jobs toward available employment opportunities.
4. Sahn, Dorosh, and Younger (1997).
5. Lustig (2000).

headcount index rose from 8.5 to 18.0 percent in 1997–98.[6] Detailed studies of the Mexican crisis of 1994–95 show that the incidence of poverty increased between 1994 and 1996, although the richest ten percent also experienced losses and inequality dropped.[7] Lokshin and Ravallion, who study the welfare impact of the 1998 Russian crisis, find that the expenditure-poverty rate rose by almost 50 percent from 1996 to 1998.[8]

In this paper we argue that the recent literature overlooks an important channel: the financial channel. We focus on financial crises that involve bailouts and ask who pays for bailouts and how bailouts affect income distribution. We first analyze transfers from nonparticipants to participants in the financial sector, including creditors, debtors, and financial institutions.[9] Then we ask who receives these financial transfers within the financial sector and what other redistributions take place among financial sector participants. For this we consider the behavior of different participants—namely, small and large depositors, domestic and foreign investors, small and large borrowers, and related and nonrelated companies.

This is a very difficult topic to study because financial transfers are slippery to measure and available data are very limited. We overcome this problem by combining case studies with econometric estimations based on data from Latin America. This region has experienced very significant financial redistributions, which are partly explained by its bank-based financial structure and history of large and frequent crises. We study the crises of Chile in 1981–83, Mexico in 1994–95, Ecuador in 1998–2000, Argentina in 2001–02, and Uruguay in 2002, which count

6. See Bourguignon, Robilliard, and Robinson (2001) and Friedman and Levinsohn (2002) for studies of the distributional impact of Indonesia's financial crisis.

7. For example, Cunningham and Maloney (2000); Lopez-Acevedo and Salinas (2000). The latter study finds that the top decile protected their income flow with financial and other capital assets during the crisis, but the increase in their financial income did not compensate the drastic fall in their labor earnings. The top decile was concentrated in nontradable sectors such as financial services, which were the hardest hit by the recession.

8. Lokshin and Ravallion (2000). A few studies also document the distributional effects of crises across regions; see, for example, Baldacci, de Melo, and Inchauste (2002); Diwan (2002).

9. By financial sector we refer to the banking sector. Though crises may generate important transfers among holders of bonds and equity, we do not cover those redistributions in this paper. Also, most financial crises involve bailouts to the financial sector, so we abstract from crises without bailouts.

among the most severe recent crises in Latin America. Finally, we also examine household data from these countries, as well as from Bolivia and Peru.[10]

We believe that this is the first attempt to investigate and document financial redistributions during crises, using unique data sets that are not easy to gather.[11] The conclusions are disheartening. We provide evidence of important wealth redistribution via the financial sector during crises. We show that people outside the financial system tend to be severely hit by crises, even though the crises are financial. The fiscal cost of crisis resolution generally implies large transfers from nonparticipants to participants in the financial sector. Moreover, not all financial sector participants receive these transfers equally, and important income reallocations also occur within the financial sector. The Argentine, Ecuadorian, and Uruguayan crises show that large depositors (including foreign depositors or those with access to foreign-based accounts) obtain compensation or even capital gains, while small depositors suffer capital losses. The crises in Chile, Ecuador, and Mexico further show that large borrowers with close ties to banks benefit the most from crises and their resolution. Econometric evidence shows that financial redistributions during crises benefit the rich and hurt the poor.

The rest of the paper is organized as follows. The next section studies financial transfers from people outside to those inside the financial sector and presents empirical evidence on the impact of these transfers on income distribution. We then explore differential effects across participants in the financial sector and show how they may accentuate the impact on income inequality. The final section discusses the policy implications and concludes.

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10. We use household income data to show the effects on income inequality, but we do not explicitly test the impact on the typical measures of income distribution. One alternative approach would be to study the effects on inequality by analyzing changes in indicators such as the Gini coefficient during crises. Our discussant, Ugo Panizza, estimated this type of regression, trying to measure the importance of the financial channel. One problem, however, is how to measure financial transfers. Since the cost of the transfers is usually financed over a long time through taxes, lower spending, and inflation, it is difficult to identify the short- or medium-run effect of this channel.

11. This difficulty may explain why there are no such studies on this topic.

Transfers to the Financial Sector

Crises always imply costs to the economy. An important cost is fiscal, defined as the estimated net present value of the costs incurred over the years for the resolution of the crisis (usually expressed as a percentage of GDP). The fiscal costs of banking crises have been large, especially in emerging markets. In a sample of forty banking crises, governments have spent an average of 6.2 percent of GDP on crisis resolution in developed countries and 14.7 percent of GDP in emerging markets.[12] For instance, the approximate resolution cost is around 33–42 percent of GDP for the Chilean crisis, 20–24 percent of GDP for the Mexican crisis, and 10–25 percent of GDP for the Ecuadorian crisis.[13]

Who pays for these fiscal costs, and who receives the benefits? Fiscal costs comprise fiscal and quasi-fiscal outlays for financial system restructuring, including the costs of bank recapitalizations, bailouts for depositors, and debt relief schemes for borrowers. In other words, fiscal costs are incurred to help the financial system and to alleviate the potential losses of depositors, borrowers, and financial institutions. The government may finance these costs through a combination of a rise in taxes (whether present or future), a fall in spending, and an increase in the inflation tax. Fiscal costs thus inevitably constitute a transfer from individuals outside the financial sector to those inside the financial sector.[14]

Next we study transfers from nonparticipants to participants in the financial sector and their impact on income inequality. We start by describing

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12. Honohan and Klingebiel (2003). They also find that crises are deeper, on average, in emerging markets than in developed countries: the former suffered an average cumulative output loss of 15.6 percent of GDP, versus 11.2 percent among developed countries. Recovery is quicker, however, taking 3.2 years, on average, in emerging markets and 4.4 years in developed economies.

13. On Chile, see Dziobec and Pazarbasioglu (1997); Caprio and others (2003). On Mexico, see Caprio and others (2003) and our own estimations. On Ecuador, see Standard and Poor's (2000); Caprio and others (2003).

14. Alternatively, we could say that fiscal costs constitute a transfer from the whole population to individuals inside the financial sector, as they are actually paid by all taxpayers. However, as resolution costs are directed toward assisting the financial sector, the (net) burden ultimately falls on those taxpayers who do not participate in the financial sector. Resolution costs therefore imply a transfer from individuals outside the financial sector to those inside, or from the "unbanked" population to the "banked" population.

different ways in which these transfers operate, and then investigate the income level of the households receiving the transfers and of those paying for them.

How Transfers to the Financial Sector Occur

We use data from the crises of Chile, Mexico, Ecuador, Argentina, and Uruguay to illustrate the mechanisms that contribute to transfers to depositors, debtors, and financial institutions.[15]

TRANSFERS TO DEPOSITORS. Two instruments frequently used by authorities to help depositors are liquidity support and implicit ex post deposit insurance. These tools are typically used when a crisis is unfolding to restore public confidence and avoid a generalized deposit run that can lead to the collapse of the banking system. Liquidity lines and deposit guarantees involve large fiscal outlays, which are amplified by the moral hazard that these tools themselves generate.

Liquidity support includes loans, rediscounts, repurchase agreements, and other instruments used by central banks to assist financial institutions facing liquidity problems. These liquidity lines to banks during crises often represent a fiscal cost, as financial institutions tend not to repay them in full. This seems to be the case in many of the Latin American crises we study. A common reason is that banks are eventually closed or taken over by the government or public organizations. In Ecuador, for example, central bank liquidity support totaling 2.3 billion U.S. dollars from August 1998 to December 1999 was directed to banks that are currently controlled either by the Deposit Guarantee Agency (AGD, or *Agencia de Garantía de Depósitos*), which was created by the government to insure deposits and resolve bank failures, or by the government itself. In Uruguay, emergency liquidity lines from the central bank, amounting to 2.1 billion dollars between January 2002 and August 2002, went mainly to three banks severely hit by the deposit outflow, which were then taken over and merged into a new commercial

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15. Studies on these crises include Larraín (1989) and Velasco (1991) for the Chilean crisis; Sachs, Tornell, and Velasco (1996) and de Luna-Martínez (2000) for the Mexican crisis; de la Torre, García-Saltos, and Mascaró (2002) for the Ecuadorian crisis; de la Torre, Levy Yeyati, and Schmukler (2003) for the Argentine crisis; and Licandro and Licandro (2003) for the Uruguayan crisis.

bank (Nuevo Banco Comercial) owned by the government.[16] Only the case of Mexico appears to be different: central bank liquidity support of around 46.4 billion dollars was repaid in full by September 1995.[17] Even when loans are repaid, however, this liquidity assistance can still generate a fiscal cost if subsidized interest rates are involved.

Deposit guarantees that are not established ex ante but rather are issued as the crisis approaches also add greatly to the total fiscal cost of crises.[18] In Chile in the 1980s, only a limited explicit guarantee existed for small deposits, but most deposits had a de facto 100 percent guarantee. After the banking crisis started in 1981, the Chilean authorities offered an explicit deposit guarantee to all depositors in order to restore confidence. In Mexico, the 1990 Law of Credit Institutions established Fobaproa (*Fondo Bancario de Protección del Ahorro*), a trust administered by the central bank to support commercial banks and to protect savings. The law did not obligate Fobaproa to insure any obligations of commercial banks, but by the time of the 1994–95 crisis, Fobaproa de facto protected 100 percent of deposits. In Ecuador, the government introduced deposit guarantees as the currency and banking system breakdown became imminent in 1998. The emergency legislation of November 1998 created AGD, providing an explicit guarantee for the international trade-related liabilities and practically all the deposits of banks taken over by AGD for resolution (banks placed under so-called *saneamiento*).[19]

Governments incur substantial costs as a consequence of these ex post and de facto guarantees. In Chile, the net total cost of covering depositors of the sixteen banks liquidated in 1982–86 amounted to nearly 10 percent of 1983 GDP.[20] In the cases of Mexico and Ecuador, the cost of bailing out

16. The Uruguayan central bank did not, however, provide liquidity assistance to Banco de Galicia Uruguay (BGU), which was the first bank hit by the deposit run (mainly from Argentine depositors) and lost 194 million dollars during January 2002.

17. De Luna-Martínez (2000).

18. Ex ante insurance that is privately funded, on the contrary, would not represent a fiscal cost.

19. Argentina had (ex ante) a partial, privately funded deposit insurance scheme that was supposed to cover deposits up to 30,000 pesos or dollars depending on their maturity (though insurance funds were depleted once the crisis and deposit withdrawals started). Uruguay did not have deposit insurance. See Martínez Pería and Schmukler (2001) for more details on the deposit insurance systems.

20. Sanhueza (2001).

depositors will ultimately depend on the fraction of assets to be recovered by Fobaproa and AGD, respectively. The cost will clearly be large, however, given the low recovery rates of the restructured debt. In Mexico, Fobaproa had sold only 0.5 percent of the acquired assets by early 1999, four years after it was established.[21] In Ecuador, AGD has paid 850 million dollars to depositors and still has to return deposits for 757 million dollars (in addition to nearly 1.4 billion dollars that AGD has spent on bank capitalization and expenses), while recovered assets only amounted to 43 million dollars by May 2003.[22]

TRANSFERS TO BORROWERS. The above examples suggest that a number of borrowers are bailed out in the resolution of crises, even if the programs are actually aimed at bailing out creditors. When bank loans are transferred to the central bank or an asset management company, borrowers find it relatively easy to default on their debts. The transfer to debtors tends to be large because borrowers often take advantage of the bailout and stop paying their debts, regardless of their capacity to pay.

The case of Ecuador provides overwhelming evidence on this type of transfer to borrowers. The first panel of figure 1 shows that the ratio of past-due loans to total loans for banks taken over by the government or AGD increased steadily after December 1998, whereas for other private banks this ratio started to decrease as early as 2000. One could expect the ratio of past-due loans to total loans to increase in intervened banks as a result of a fall in total loans, since the asset management company would sell the banks' good assets. However, table 1 reports that the total loans of banks taken over by the government or AGD remained practically unchanged over the period.[23] The second panel of figure 1 depicts the change in the percentage of past-due loans for banks that were taken over, relative to the takeover date (time t). The figure shows that the portion of nonperforming loans increased after banks were taken over. This suggests that borrowers abused the situation and quit paying their debts, expecting the government to bear the costs and anticipating no serious consequences for their actions.

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21. Klingebiel (2000).
22. See AGD (2003).
23. The increase in total loans in December 1999 is due to the large number of banks that had been taken over by that date.

F I G U R E 1 .   Debtors' Response to Takeover in Ecuador[a]

a. Past-due loans over total loans, by bank type

b. Past-due loans over total loans after takeover
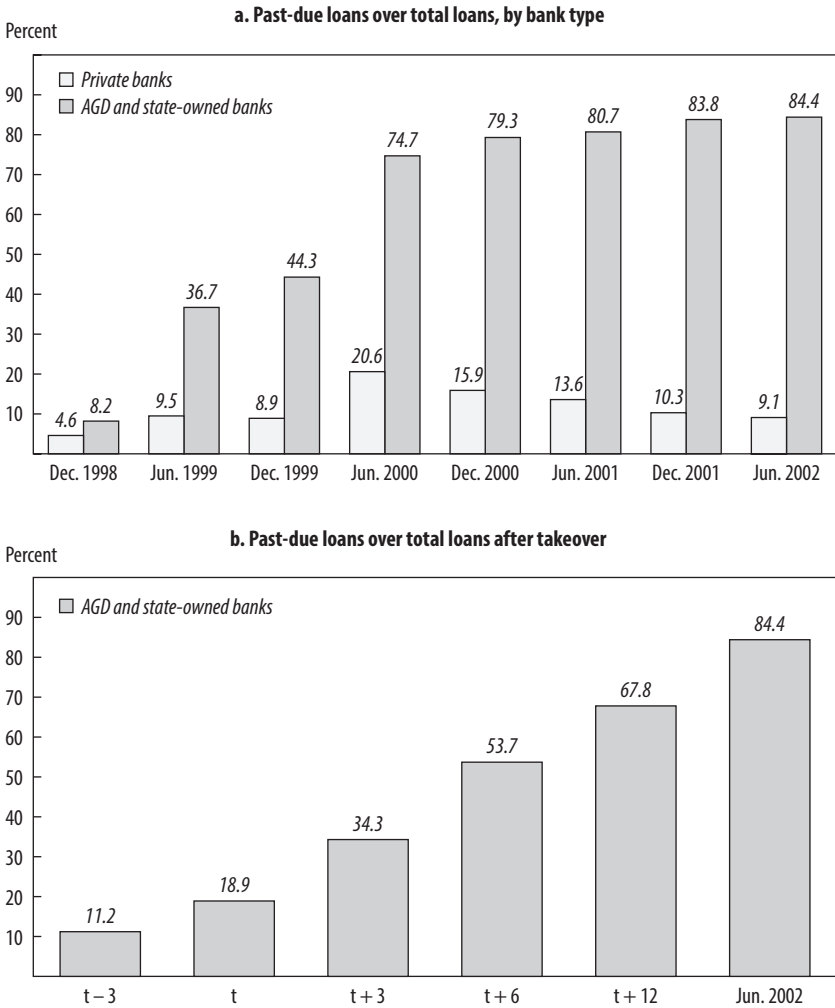
Source: Superintendency of Banks, Ecuador.

a. The first panel shows the evolution of the share of past-due loans corresponding to private banks and banks taken over by AGD or the government. The second panel shows how the past-due loans share changes for taken over banks relative to the takeover date. Periods are in months, and fourteen events are considered.

T A B L E 1 . Participation of Banks in the Ecuadorian System, by Bank Type

Indicator	Dec. 1998	June 1999	Dec. 1999	June 2000	Dec. 2000	June 2001	Dec. 2001	June 2002
No. banks								
Private	37	33	26	26	24	21	21	21
AGD and state owned	2	6	14	14	14	14	14	14
Total loans (millions of U.S.$)								
Private	3,786	2,973	1,190	1,135	1,194	1,559	1,930	2,143
AGD and state owned	806	971	1,845	1,580	1,695	1,688	1,679	1,569
Percentage of system loans								
Private	82	75	42	43	40	48	53	69
AGD and state owned	18	25	58	57	60	52	47	31

Source: Superintendency of Banks, Ecuador.

Another costly measure often implemented in the resolution of crises to aid borrowers is debt relief programs. For example, the Chilean central bank established schemes in 1983 and 1984 to enable banks to reschedule a portion of their firm, mortgage, and consumer loans, benefiting debtors with longer maturities and lower subsidized interest rates. In Mexico, seven programs were launched to help debtors in 1995–98. The last program (called *Punto Final*) was announced in 1998; it gave subsidies to debtors with mortgage, small businesses, and agricultural loans.

Other mechanisms used to help debtors in the aftermath of crises are aimed at alleviating the negative effects of devaluations. To reduce the impact that the June 1982 devaluation of the peso had on foreign currency borrowers, the Central Bank of Chile established a preferential exchange rate for foreign-currency-denominated debt (that is, the central bank sold dollars to debtors at a subsidized exchange rate).[24] This program was the most expensive of all the resolution tools used in that crisis. In Argentina, the devaluation of the peso announced in January 2002 would have meant bankruptcy for many debtors, since 70 percent of the banking system's loans were denominated in dollars; the authorities therefore decreed the conversion of dollar debts to peso debts at one dollar equal to one peso, the exchange rate before the devaluation. Given that total dollar-denominated loans reached approximately 46 billion dollars by January 2002 and that

24. The Central Bank of Argentina used a similar mechanism to deal with the 1981–82 crisis.

the daily average exchange rate during 2002 was 3.21 pesos per dollar, foreign currency borrowers received a transfer of nearly 32 billion dollars.

TRANSFERS TO FINANCIAL INSTITUTIONS. Financial institutions also receive transfers during the resolution of crises. Loan-purchase pro-grams are common, and they tend to benefit banks significantly. Under these pro-grams, the central bank or an asset management company (set up by the government) buys risky loans from financial institutions to recapitalize them. Banks avoid large potential losses by transferring their nonperform-ing debt to the government. Though the low recovery rates of the restruc-tured debt may be due, in part, to the opportunistic behavior of borrowers described above, they also (and perhaps mostly) reflect the poor quality of the portfolio acquired by the central bank or asset management company. Moreover, the transfer price of the debt absorbed by the authorities is generally above the market price, and it is sometimes even equal to the book value of the loans. In this sense, the cost arising from loans that are not recovered constitutes a (sometimes unintended) transfer to financial institutions.

This kind of transfer to financial institutions can imply large fiscal costs. In Chile, where the central bank bought the high-risk portfolio of banks with a repurchase obligation backed by future profits, the fiscal cost of this program reached around 6.7 percent of 1983 GDP.[25] This cost was due to loans that were never recovered, combined with the advantageous interest rate offered by the central bank for the financing of bad loans.

The rationale behind these bailouts to banks is not to help bank share-holders. Liquidity support and capitalizations, for example, are aimed at preventing a collapse of the financial system that could cause many depos-itors to lose their money. Whether bank shareholders benefit from resolu-tion measures depends on whether shareholders lose their capital in the resolution and whether they are penalized for the excessive risk they might have taken in the precrisis period.

The Impact of Transfers to the Financial Sector on Inequality

This section draws on data from different Latin American countries to study how transfers to the financial sector affect the distribution of income. First, we provide evidence that people receiving these transfers (that is,

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25. Sanhueza (2001).

participants of the financial sector) have high incomes. Next, we show that the cost of the transfers falls on all income groups.

WHO RECEIVES THE TRANSFERS? The literature on access to finance shows that the poor and the small and medium-sized enterprises (SMEs) face higher constraints on accessing financial services.[26] This is particularly true in Latin America, where often only the wealthy have bank savings or access to formal credit. For example, data for the three largest Mexican cities indicate that only 14 percent of the population has a savings or debit account, and a much smaller portion has access to checking accounts or time deposits.[27]

To study the relation between access to finance and income level, we gathered data from different household surveys conducted in Argentina, Bolivia, Ecuador, Mexico, and Peru. Surveys from these countries contain information that can be used as proxies for participation in the financial sector.[28] Based on answers to specific questions included in the surveys, we are able to ascertain whether households have a bank savings account or a bank loan and then relate this to their income level and other household characteristics.

We provide evidence of the higher income level of financial sector participants vis-à-vis nonparticipants through two different exercises. Focus first on the income distribution of those households reporting to participate in the financial sector. Figure 2 displays the distribution per income decile of households that have a bank savings account in the top panel and households that have a bank loan in the bottom panel. Given the data availability, the sample includes Argentina, Ecuador, Mexico, and Peru for households with bank savings, and Argentina, Bolivia, and Peru for households with a bank loan. Household income deciles are calculated for each country sample independently and not for the pooled data set as a whole (that is, we define income levels relative to other households in the same country).

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26. See, among many others, Hulme and Mosley (1996); Wydick (1999); FSA (2000); Caskey (2001); Westley (2001).

27. World Bank (2003).

28. In the case of Argentina, the data come from a special survey conducted by the World Bank after the 2001–02 crisis. In the case of Mexico, the data come from a survey commissioned for the World Bank (2003) report. See table A1 in the appendix for more information on the surveys.

F I G U R E 2 .   **Participation in the Financial Sector, by Income Level**[a]

a. Holders of bank savings accounts, by household income decile
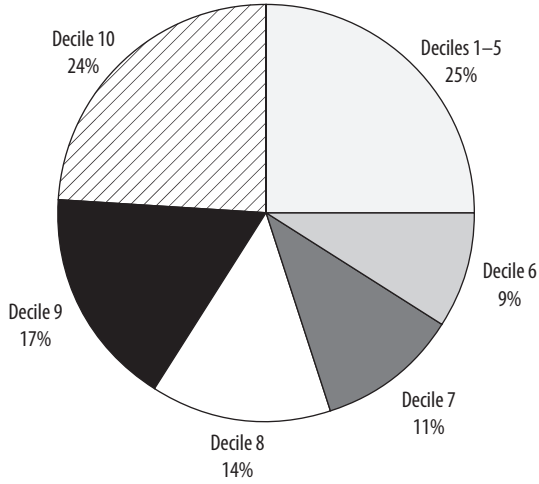
b. Holders of bank loans, by household income decile
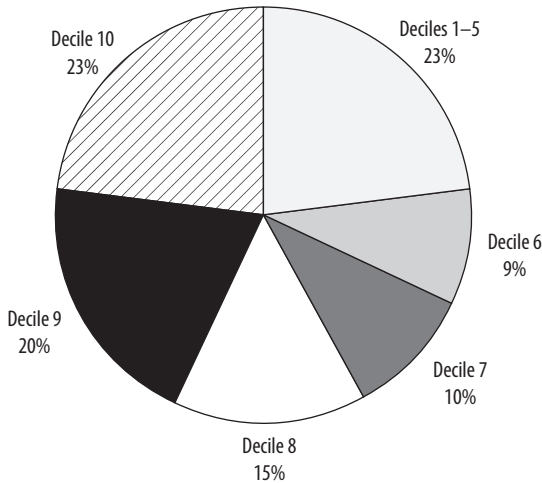
Source: Household surveys (see appendix for details).

a. The figures show the income distribution of households that have bank savings and loans according to the household surveys. Decile 1 is the poorest and decile 10, the richest. In the first panel, the sample includes Argentina, Ecuador, Mexico, and Peru; in the second panel, the sample includes Argentina, Bolivia, and Peru. Deciles are calculated for each country separately.

The income distribution of financial sector participants shown in the figure indicates that the majority are high-income households. More than half of the total bank savings accounts and bank loans reported in the surveys belong to the upper three income deciles (which are deciles 8, 9, and 10 in the figure). The bottom 50 percent of the income distribution (deciles 1 through 5) has only 25 percent of the savings accounts and 23 percent of the bank loans. The distributions are shown by number of households with a savings account or loan in each decile, since we do not have data on the amounts of deposits and loans. If we considered the median value of the deposits and loans of each income decile, the portion of bank savings and loans that belongs to the rich would increase significantly.[29] Data from the 1998 U.S. Survey of Consumer Finances indicate that the median value of transaction accounts held by families in the upper ten percent of the income distribution in the United States is more than thirty-eight times the median value of the transaction accounts held by families in the bottom 25 percent of the distribution.[30] This difference is likely to be even greater in Latin America, where the income distribution is more skewed. This matters because the bailout received by households is proportional to the value of their deposits and loans. The evidence so far shows that the bailout to the financial sector during crises benefits households in the upper ranges of the income distribution.

Next we analyze the relation between the probability of accessing financial services and the income of a household. Table 2 presents maximum-likelihood probit estimations of the probability of participating in the financial sector as a depositor and a borrower separately. The dependent variables are a dummy equal to one if the household has savings in a bank and a dummy equal to one if the household has a bank loan. The explanatory variables include geographic region (a dummy equal to one if the household lives in a rural area); the household income decile; and individual characteristics of the household head, namely, age, sex (a dummy equal to one if the person is male), education (a dummy equal to one if the person

29. The distribution may also be affected by the fact that the Mexican survey only covers urban areas. Estimations for both rural and urban areas in Mexico would indicate a larger share of bank accounts held by high-income households.

30. See Kennickell, Starr-McCluer, and Surette (2000).

T A B L E   2 .   Access to the Financial Sector: Pooled Data Estimations[a]

Maximum-likelihood probit estimations, marginal effects

Explanatory variable	Bank savings (1)	Bank loan (2)
Rural area	−0.031***	−0.017***
	(0.007)	(0.005)
Age	−0.000**	−0.000***
	(0.000)	(0.000)
Sex	0.005	0.004
	(0.007)	(0.005)
Education	0.072***	0.015***
	(0.007)	(0.005)
Household income decile	0.021***	0.015***
	(0.001)	(0.001)
Employed	0.005	0.018*
	(0.016)	(0.009)
Not in the labor force	0.031	−0.001
	(0.020)	(0.012)
Country dummies	yes	yes
Summary statistic		
Pseudo R^2	0.11	0.10
Predicted sample probability	0.10	0.06
No. countries	3	3
No. observations	12,252	12,221

Source: Authors' calculations.

* Significant at the 10 percent level.

** Significant at the 5 percent level.

*** Significant at the 1 percent level.

a.   The table shows maximum-likelihood probit estimations of the probability of accessing financial services. In column 1, the dependent variable is a dummy equal to one if the household has bank savings; the sample includes Argentina, Ecuador, and Peru. In column 2, the dependent variable is a dummy equal to one if the household has a bank loan; the sample includes Argentina, Bolivia, and Peru. All individual variables correspond to the household head; sex is a dummy equal to one if the household head is male; education is a dummy equal to one if the household head has secondary or higher education. Marginal effects are reported. Robust standard errors in parentheses.

has secondary or higher education), and employment status (a dummy equal to one if the person has a job and a dummy equal to one if the person is not in the labor force).

Table 2 reports two regressions on the probability of participating in the financial sector. The first regression estimates the probability of having a bank savings account using pooled data from Argentina, Ecuador, and Peru. We do not include data from Mexico because the Mexican survey does not provide information for many of the independent variables that

we test, such as age, sex, education, and employment status.[31] The second regression estimates the probability of having a bank loan using pooled data from Argentina, Bolivia, and Peru. The standard errors are robust to heteroskedasticity. The table reports marginal effects, which are the effects on the observed (not the latent) variable. The marginal effects show how the probability of participating in the financial sector changes with a one-unit increase in the explanatory variable, starting at the mean. In the case of binary variables (such as rural, sex, education, employment, and unemployment), the marginal effects show how the probability changes as the variable changes from zero to one.

These regressions show the importance of income as a determinant of access to financial services. The coefficient on the income decile is positive and statistically significant at the one percent level for both the probability of having bank savings and the probability of having a bank loan. The marginal effects reported in the table indicate that starting at the fifth decile (which is the mean decile), the probability that a household has bank savings increases by 2.1 percent as we move up one decile, after controlling for the other variables. In the case of having a bank loan, the probability would increase by 1.5 percent as we go from the fifth to the sixth decile. The results also show that households living in rural areas have a lower probability of having bank savings or loans, and households whose head has secondary or higher education are more likely to participate in the financial sector. Lastly, we find that having a job raises the probability of having access to bank credit.

Tables 3 through 8 present similar estimations by country using different measures of income. In addition to the household income decile, we test household income, individual income (of the head of household), and per capita household income (which we define as the household income divided by the number of family members).[32] These variables are in logs so that marginal effects are comparable across tables.

The regressions on the probability of having bank savings presented in tables 3, 5, 6, and 7 confirm and extend the results found in table 2.[33]

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31. While the Mexican survey does include a question on whether the household head has a job, it does not distinguish individuals who are not in the labor force from individuals who are unemployed.

32. Income measures are monthly for all countries but Peru, which uses annual income.

33. Similar regressions for Brazil yield consistent results; see Kumar and others (2004).

T A B L E 3 . Access to the Financial Sector in Argentina[a]
Maximum-likelihood probit estimations, marginal effects

Explanatory variable	Bank savings				Bank loan			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rural area	−0.053***	−0.059***	−0.044***	−0.045***	0.015	0.003	0.014	0.021
	(0.016)	(0.015)	(0.016)	(0.017)	(0.017)	(0.017)	(0.018)	(0.018)
Age	0.001***	0.001***	0.001*	0.001**	−0.001*	−0.001	−0.001*	−0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Sex	0.025*	0.032**	0.031**	0.018	−0.003	0.008	0.007	−0.009
	(0.015)	(0.014)	(0.014)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Education	0.112***	0.122***	0.095***	0.098***	0.020	0.039***	0.022	0.007
	(0.015)	(0.014)	(0.015)	(0.017)	(0.015)	(0.014)	(0.015)	(0.015)
Log of household income	0.033***				0.048***			
	(0.009)				(0.010)			
Log of individual income		0.014***				0.013***		
		(0.004)				(0.005)		
Log of per capita household income			0.050***				0.035***	
			(0.009)				(0.007)	
Household income decile				0.019***				0.023***
				(0.003)				(0.003)
Employed	0.015	0.003	0.002	0.000	0.071***	0.066**	0.080***	0.061**
	(0.027)	(0.028)	(0.027)	(0.027)	(0.026)	(0.026)	(0.026)	(0.026)
Not in the labor force	0.050	0.041	0.034	0.041	0.034	0.025	0.034	0.027
	(0.033)	(0.032)	(0.032)	(0.029)	(0.035)	(0.034)	(0.036)	(0.035)
								(continued)

T A B L E   3 .   Access to the Financial Sector in Argentina (*continued*)
Maximum-likelihood probit estimations, marginal effects

Explanatory variable	Bank savings				Bank loan			
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
Summary statistic								
Pseudo R^2	0.08	0.07	0.10	0.09	0.06	0.03	0.04	0.07
Predicted sample probability	0.12	0.13	0.12	0.12	0.11	0.13	0.12	0.11
No. observations	2,486	2,564	2,486	2,486	2,515	2,595	2,515	2,515

Source: Authors' calculations.
* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.
    a. The table shows maximum-likelihood probit estimations of the probability of accessing financial services in Argentina. In columns 1 through 4, the dependent variable is a dummy equal to one if the house-hold has bank savings; in columns 5 through 8, it is a dummy equal to one if the household has a bank loan. All individual variables correspond to the household head; sex is a dummy equal to one if the household head is male; education is a dummy equal to one if the household head has secondary or higher education. Marginal effects are reported. Robust standard errors in parentheses.

T A B L E 4 .   Access to the Financial Sector in Bolivia[a]
Maximum-likelihood probit estimations, marginal effects

Explanatory variable	(1)	(2)	(3)	(4)
Rural area	−0.028***	−0.052***	−0.041***	−0.028***
	(0.006)	(0.007)	(0.006)	(0.006)
Age	−0.000	0.000	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Sex	0.002	0.009	0.011	0.002
	(0.006)	(0.007)	(0.006)	(0.006)
Education	0.017***	0.039***	0.022***	0.018***
	(0.007)	(0.008)	(0.007)	(0.006)
Log of household income	0.028***			
	(0.003)			
Log of individual income		0.009***		
		(0.003)		
Log of per capita household income			0.021***	
			(0.003)	
Household income decile				0.012***
				(0.001)
Employed	0.015	0.015	0.021**	0.016*
	(0.009)	(0.012)	(0.010)	(0.010)
Not in the labor force	−0.004	−0.003	−0.005	−0.006
	(0.014)	(0.017)	(0.015)	(0.013)
Summary statistic				
Pseudo R^2	0.13	0.09	0.10	0.13
Predicted sample probability	0.04	0.05	0.04	0.04
No. observations	5,736	5,736	5,736	5,736

Source: Authors' calculations.
* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.
a. The table shows maximum-likelihood probit estimations of the probability of accessing financial services in Bolivia. The dependent variable is a dummy equal to one if the household has a bank loan, determined according to a question in the survey on the expenditure in loan payments. All individual variables correspond to the household head; sex is a dummy equal to one if the household head is male; education is a dummy equal to one if the household head has secondary or higher education. Marginal effects are reported. Robust standard errors in parentheses.

T A B L E 5 . Access to the Financial Sector in Ecuador[a]
Maximum-likelihood probit estimations, marginal effects

Explanatory variable	Saved in a bank in the last three months				Received interest income from savings account			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rural area	-0.063***	-0.066***	-0.060***	-0.033***	-0.040***	-0.044***	-0.039***	-0.008***
	(0.011)	(0.01)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Age	-0.000	-0.000	-0.000	-0.001***	0.000	0.001	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sex	0.004	0.007	0.006	-0.012	0.001	0.006	0.004	-0.014
	(0.012)	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Education	0.134***	0.136***	0.130***	0.093***	0.154***	0.158***	0.152***	0.113***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)
Log of household income	0.010***				0.011***			
	(0.003)				(0.003)			
Log of individual income		0.007***				0.006***		
		(0.001)				(0.002)		
Log of per capita household income			0.013***				0.012***	
			(0.003)				(0.003)	

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household income decile				0.025***				0.027***
				(0.002)				(0.002)
Employed	0.046*	0.017	0.041	0.031	−0.001	−0.029	−0.003	−0.019
	(0.026)	(0.032)	(0.027)	(0.027)	(0.031)	(0.036)	(0.032)	(0.032)
Not in the labor force	0.055	0.055	0.051	0.038	0.009	0.010	0.007	−0.005
	(0.044)	(0.043)	(0.044)	(0.040)	(0.036)	(0.036)	(0.036)	(0.033)
Summary statistic								
Pseudo R²	0.09	0.09	0.09	0.12	0.07	0.07	0.07	0.10
Predicted sample probability	0.13	0.13	0.13	0.12	0.15	0.16	0.15	0.15
No. observations	5,796	5,796	5,796	5,796	5,796	5,796	5,796	5,796

Source: Authors' calculations.
* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.
   a. The table shows maximum–likelihood probit estimations of the probability of accessing financial services in Ecuador. In columns 1 through 4, the dependent variable is a dummy equal to one if the household has saved in a bank in the last three months; in columns 5 through 8, it is a dummy equal to one if the household has received interest income from a savings account. All individual variables correspond to the household head; sex is a dummy equal to one if the household head is male; education is a dummy equal to one if the household head has secondary or higher education. Marginal effects are reported. Robust standard errors in parentheses.

TABLE 6. Access to the Financial Sector in Mexico[a]

Maximum-likelihood probit estimations, marginal effects

Explanatory variable	(1)	(2)	(3)	(4)	(5)	(6)
Log of household income	0.027***			0.037***		
	(0.005)			(0.009)		
Log of individual income		0.028***			0.037***	
		(0.005)			(0.008)	
Household income decile			0.040***			0.050***
			(0.004)			(0.008)
Bank in the neighborhood	0.072***	0.076***	0.056**			
	(0.026)	(0.026)	(0.026)			
Distance to bank (minutes)				−0.010***	−0.010***	−0.009**
				(0.004)	(0.004)	(0.004)
Summary statistic						
Pseudo R^2	0.04	0.04	0.08	0.06	0.07	0.10
Predicted sample probability	0.23	0.23	0.22	0.27	0.27	0.26
No. observations	1,177	1,163	1,177	436	431	436

Source: Authors' calculations.
* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.
a. The table shows maximum-likelihood probit estimations of the probability of accessing financial services in Mexico. The dependent variable is a dummy equal to one if the household has bank savings. The variable rural is not reported because the survey only covers urban areas. Independent variables such as sex, age, and education of the household head are not included because these data are not available in the survey from Mexico. Variables on employment are not included because it is not possible to distinguish unemployed individuals from individuals who are not in the labor force in the survey. Marginal effects are reported. Robust standard errors in parentheses.

All the different measures of income are significant and positive determinants of having deposits in a bank. For example, a one-percent increase in the household income raises the probability of having bank savings by 0.033 percent in Argentina, 0.010 percent in Ecuador, 0.027 percent in Mexico, and 0.062 percent in Peru.[34] In other words, the probability that a household in Argentina with a mean monthly income of 441 pesos will

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34. In the case of Ecuador (table 5), we test two different variables to proxy participation in the financial sector through bank savings. The first variable corresponds to a question in the Ecuadorian survey asking whether the household has saved money in a bank in the last three months. The second variable relates to a question on whether the household has received interest income from savings deposits. While surveys in many countries include questions on the amount of interest income received by households, only the Ecuadorian survey has a yes-no question to report whether the household earns (any amount of) interest. This makes the data from Ecuador much more reliable, as people often do not know the amount of interest income received, and they tend to underestimate it and answer that they receive zero interest income.

T A B L E 7 . Access to the Financial Sector in Peru[a]

Maximum-likelihood probit estimations, marginal effects

Explanatory variable	(1)	(2)	(3)
Rural area	−0.011	−0.011	−0.013
	(0.010)	(0.010)	(0.010)
Age	−0.001*	−0.001**	0.000
	(0.000)	(0.000)	(0.000)
Sex	0.011	0.021**	0.013
	(0.010)	(0.009)	(0.010)
Education	0.020**	0.011	0.025***
	(0.009)	(0.009)	(0.009)
Log of household income	0.062***		
	(0.006)		
Log of per capita household income		0.065***	
		(0.005)	
Household income decile			0.017***
			(0.002)
Employed	−0.034	−0.029	−0.029
	(0.031)	(0.028)	(0.030)
Not in the labor force	−0.014	−0.014	−0.011
	(0.023)	(0.022)	(0.024)
Summary statistic			
Pseudo R^2	0.11	0.12	0.09
Predicted sample probability	0.06	0.06	0.07
No. observations	3,970	3,970	3,970

Source: Authors' calculations.

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

a. The table shows maximum-likelihood probit estimations of the probability of accessing financial services in Peru. The dependent variable is a dummy equal to one if the household has bank savings. All individual variables correspond to the household head; sex is a dummy equal to one if the household head is male; education is a dummy equal to one if the household head has secondary or higher education. Marginal effects are reported. Robust standard errors in parentheses.

have bank savings is 12 percent, whereas that probability is 16 percent for a household with an income 1,000 pesos higher.[35] Regarding the other explanatory variables, we find that living in a rural area is negative and significant in most country regressions, and education is positive and statistically significant in almost all estimations. Other individual characteristics of the household head are significant in some of the country regressions.

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35. The mean of the log of the household income in Argentina is 6.09. So an increase of 1,000 pesos in the household income—starting at exp(6.09) = 441 pesos—would increase the probability by 0.033 * {ln[1,000 + exp(6.09)] − 6.09} = 0.04, or 4 percent.

TABLE 8. Access to the Financial Sector in Peru, with Selection[a]

Maximum-likelihood probit estimations with selection, marginal effects

Equation and explanatory variable	(1)	(2)	(3)
Main equation			
Rural area	−0.012	−0.020**	−0.011
	(0.009)	(0.008)	(0.009)
Education	0.018**	0.017**	0.019***
	(0.007)	(0.007)	(0.007)
Log of household income	0.037***		
	(0.005)		
Log of per capita household income		0.030***	
		(0.004)	
Household income decile			0.011***
			(0.001)
Employed	−0.030	−0.016	−0.027
	(0.030)	(0.027)	(0.028)
Not in the labor force	−0.030*	−0.024	−0.029*
	(0.017)	(0.019)	(0.016)
Selection equation (having some form of credit)			
Rural area	−0.022	−0.035**	−0.017
	(0.015)	(0.015)	(0.015)
Age	−0.001***	−0.001**	−0.001***
	(0.000)	(0.000)	(0.000)
Sex	−0.014	−0.013	−0.014
	(0.015)	(0.014)	(0.015)
Education	0.043***	0.048***	0.040***
	(0.014)	(0.014)	(0.014)
Log of household income	0.039***		
	(0.009)		
Log of per capita household income		0.022***	
		(0.008)	
Household income decile			0.013***
			(0.003)
Employed	0.007	0.012	0.007
	(0.044)	(0.043)	(0.044)
Not in the labor force	−0.020	−0.017	−0.020
	(0.044)	(0.045)	(0.045)
Summary statistic			
Rho	0.98	0.99	1.00
Log pseudolikelihood	−2,234	−2,243	−2,234
No. observations	3,970	3,970	3,970

Source: Authors' calculations.

* Significant at the 10 percent level.

** Significant at the 5 percent level.

*** Significant at the 1 percent level.

a. The table shows maximum-likelihood probit estimations with selection of the probability of accessing formal credit in Peru. In the selection equation, the dependent variable is a dummy equal to one if the household has access to some form of credit; in the main equation, the dependent variable is a dummy equal to one if the household has a bank loan. All individual variables correspond to the household head; sex is a dummy equal to one if the household head is male; education is a dummy equal to one if the household head has secondary or higher education. Marginal effects are reported. Robust standard errors in parentheses.

The estimations for Mexico in table 6 show that the probability of having bank savings is higher when a bank is located in the neighborhood and lower the further away the bank is from the house.

Tables 3, 4, and 8 present country regressions on the probability of having a bank loan. All measures of income are positive and statistically significant in all estimations. For example, a one-percent increase in the household income raises the probability of having bank credit by 0.048 percent in Argentina, 0.028 percent in Bolivia, and 0.037 percent in Peru. Thus, the probability that a household in Argentina with a mean monthly income of 441 pesos will have a bank loan is 11 percent, while that probability for a household with an income of 1,441 pesos is 18 percent. Other variables that are significant in some specifications are the geographic region, the education level of the household head, and whether the household head has a job.

The estimations for Peru in table 8 provide further evidence on the probability of having informal and formal credit. The survey from Peru distinguishes several sources of credit, allowing us to test the likelihood of having access to bank loans. To study whether the loans held by households are formal, we estimate a model that takes into account the incidental truncation of the data, since information on the type of loan is only available for those households having access to some form of credit and, otherwise, observations are missing. Ignoring the missing values might lead to a sample selection bias.[36] We therefore estimate two equations simultaneously by maximum likelihood. In table 8, the selection equation estimates the probability that a household has some form of credit, and the main equation estimates the probability for the selected group that the credit is in the form of a bank loan. For the model to be identified, the selection equation must include at least one variable that is not in the main equation, so we do not include the variables age and sex in the main equation. We assume that these characteristics are not as important for access to formal credit as the other variables.[37] The regressions show that income is positive and statistically significant for predicting both the probability

36. See Heckman (1979), among others.
37. Education level and geographic region play a significant role on the demand side (to determine whether the household would ask for a loan at a bank), while income and employment status are central on the supply side (to determine whether a bank would grant a loan to the household).

of having any form of credit and the probability (for those having credit) of having a bank loan.

The estimations presented in tables 2 through 8 provide convincing evidence of the positive relation between income and access to financial services. Moreover, these results are surely underestimates, since the analysis does not take into consideration differences in the value of deposits and loans held by households, as explained above. In addition, the fact that some of the independent variables are correlated among themselves (for example, households with higher income tend to have a higher education level) reduces the coefficients of the income variables. If we regress the probability of participating in the financial sector on the income variables only, the point estimates increase, sometimes doubling.

WHO PAYS FOR THE TRANSFERS? So far we have shown that households in the upper ranges of the income distribution are more likely to participate in the financial sector and thus to benefit from the resolution of crises. Now we turn to the other side of the equation, those who bear the costs. If the households that bear these costs were the ones to whom transfers are directed, there would be no impact on income inequality (and no net transfers). However, the evidence suggests that the fiscal costs of crises fall on income groups other than those who get the transfers.

Because fiscal costs are partly financed with taxation, we analyze the tax structure by income distribution. The value-added tax (VAT) is the main source of tax revenue in Latin America.[38] We therefore studied the VAT incidence in Mexico by household income decile, based on the National Household Income and Expenditure Survey (ENIGH). The five lower deciles pay 17.3 percent of total VAT revenues, which in turn implies that they would pay 17.3 percent of the fiscal cost of the resolution of the crisis. Of course, upper-income groups pay a greater portion of the taxes collected because they spend more on the levied items. The VAT structure is not as progressive as it seems, however. The VAT paid as a percentage of the (average) income of each decile is similar across deciles, with averages of 4.3 and 4.5 percent for the lower and upper five deciles, respectively.[39]

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38. As documented by Stotsky and WoldeMariam (2002), the VAT rose from 23.5 percent of tax revenues in 1990–94 to 33.1 percent in 1995–99 in Latin American countries (simple average). The average VAT rate in the region also increased, from 10.2 percent at introduction to 14.7 percent in 2001. The VAT is now considered the mainstay of the revenue system in Latin America (see World Bank, 2004).

39. Gingale, Lafourcade, and Nguyen (2001).

A recent survey by Chu, Davoodi, and Gupta finds little evidence of progressive tax systems in Latin America.[40] Though personal income taxes and specific taxes on luxury items are mostly progressive, the high reliance on consumption taxes in the region makes the redistributive effect of taxes very small or even negative. Indeed, Gemmel and Morrissey find that tax systems in Latin America range from slightly progressive to slightly regressive.[41] These data suggest that poor households would bear a significant cost should the authorities increase taxes to finance the resolution of the crisis.

The situation is not better when resolution costs are financed through lower spending or inflation. Public spending cuts tend to affect mainly the poor, who rely on social programs. There is evidence that marginal spending is progressive, but it displays wide variation across countries and social programs.[42] Expenditure expansions tend to crowd in poorer groups and thus improve the distribution of income, whereas contractionary policies or slow expansions are likely to be regressive. Similarly, a rise in inflation generates a larger impact on the poor than on the nonpoor.[43]

The evidence presented so far shows that transfers from individuals outside the financial sector to those inside the financial sector move from the relatively poor to the relatively rich. Low-income households pay a share of the fiscal costs (which is sometimes even larger than that paid by high-income households), but they may not benefit at all from the crisis resolution or they may benefit in a much lower proportion than their share of the costs or only through indirect channels.

Differential Effects across Participants in the Financial Sector

Having studied transfers from nonparticipants to participants of the financial sector, we now investigate the impact of crises on different participants within the financial sector. Are all financial sector participants compensated for the losses arising from crises? If not, which participants bear most of

40. Chu, Davoodi, and Gupta (2000).
41. Gemmel and Morrissey (2002).
42. See, for example, Wodon and others (2000); Bravo, Contreras, and Millán (2001); Vélez and Foster (2003).
43. Numerous studies show the negative implications of inflation for the poor; see Cardoso (1992); Ferreira and Litchfield (1999); Easterly and Fischer (2001).

the losses? Do some participants obtain capital gains from crises and their resolution?

Differential effects can occur in two ways. First, transfers to the financial sector may not be directed to all participants equally, but rather may target a selected group. Second, transfers may also occur within the financial sector, going from some participants to other participants. This section explores these differential effects to identify the winners and losers within the financial sector. Since we are interested in studying the implications for income distribution, we focus on uneven effects on small participants versus large (and probably rich) participants of the financial sector.[44] The first two subsections investigate which depositors and borrowers emerge unharmed or even benefit from crises and whether certain groups are particularly affected. A third subsection presents econometric evidence for the Argentine crisis suggesting that those financial sector participants that are hit the hardest by crises belong to relatively lower income levels.

Differential Effects across Depositors

To measure capital gains and losses among depositors in the Argentine, Ecuadorian, and Uruguayan crises, we gathered financial data on different types of deposits to analyze the behavior of depositors during these crises. Since we have no information on the wealth of individuals behind each type of deposit, we assume, based on anecdotal evidence, that large (or rich) depositors have large deposits, while small (or poor) depositors hold small deposits. In the case of Ecuador, the data do not identify deposits

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44. We do not study, for example, the differential effects of crises on creditors and debtors. Crises often produce opposite impacts on depositors and borrowers, as the devaluation of the currency (which typically accompanies crises) benefits holders of foreign currency deposits but adversely affects holders of foreign currency loans. This was the case in Chile, where foreign currency borrowers were severely hit by the devaluation of the peso. Authorities may take measures that reverse the effects of the currency devaluation. This happened in the Argentine crisis, where the conversion of dollar contracts into peso ones (pesification) hurt holders of dollar deposits and greatly benefited holders of dollar loans. Asymmetric impacts on creditors and debtors may also arise from other mechanisms. For example, in Ecuador, the government determined the interest rates to be applied to deposits and loans (of all banks) that were frozen in March 1999. As both deposit and lending interest rates were fixed at levels below market rates, this measure implied a transfer from depositors to borrowers (and financial institutions).

by size, so we study differential effects across depositors by distinguishing deposits by jurisdiction. We assume, again based on various accounts, that offshore deposits belong to rich households, while onshore deposits (and particularly onshore sucre deposits) belong to poor households.[45]
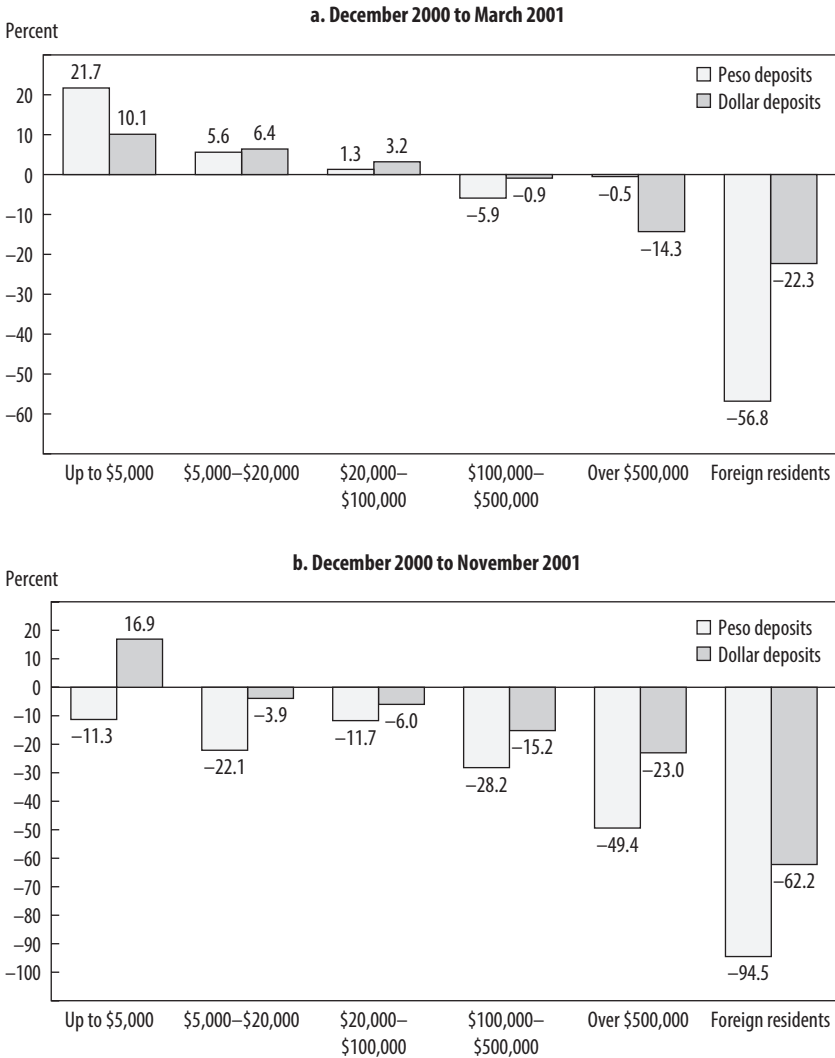
Our analysis reveals dissimilar behaviors across depositors in all three cases. Figure 3 presents the evolution of deposits during the Argentine crisis. The figure shows the cumulative change in private time deposits by size, currency, and residence for two periods, December 2000 through March 2001 and December 2000 through November 2001. This allows us to distinguish different behaviors at an early stage, when the future of the Argentine economy was still in doubt, and at a later time, when the crisis was well advanced.[46] We see visible differences between small depositors and large and foreign depositors during the period December 2000 through March 2001. Small and medium-sized deposits (up to 100,000 dollars) increased. The rise was particularly sharp among the smallest category (up to 5,000 dollars), which jumped by 21.7 percent in the case of peso deposits and 10.1 percent in the case dollar deposits. In contrast, large depositors and especially foreign depositors (who are also typically large) were already withdrawing their peso and dollar deposits in this period: dollar deposits over 500,000 dollars fell by 14.3 percent and foreign dollar deposits by 22.3 percent. During the period running from December 2000 to November 2001, withdrawals of peso deposits were common, though clearly more substantial in the case of large and foreign depositors. Peso deposits over 500,000 dollars and foreign peso deposits fell by 49.4 and 94.5 percent, respectively, against a fall of 11.3 percent in peso deposits up to 5,000 dollars. Dollar deposits display a similar behavior, with the exception of deposits smaller than 5,000 dollars, which increased by 16.9 percent.

Depositor responses in Ecuador and Uruguay are in line with these findings. In the case of Ecuador, we focus on the deposit run between

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45. Offshore banks in Ecuador were of a singular nature. These institutions had a license issued by a foreign, typically Caribbean country and were also authorized by the superintendency of banks to take dollar deposits from and grant dollar loans to Ecuadorian residents. By the mid-1990s, the offshore banking sector was about 70 percent the size of the onshore system. See de la Torre, García-Saltos, and Mascaró (2002).

46. We cover through November because in December the authorities imposed the *corralito*, restricting cash withdrawals from bank accounts.

F I G U R E 3 . Cumulative Change in Deposits in Argentina[a]

a. December 2000 to March 2001

Percent

Legend: ☐ Peso deposits ☐ Dollar deposits

Values: Up to $5,000: 21.7, 10.1; $5,000–$20,000: 5.6, 6.4; $20,000–$100,000: 1.3, 3.2; $100,000–$500,000: −5.9, −0.9; Over $500,000: −0.5, −14.3; Foreign residents: −56.8, −22.3

b. December 2000 to November 2001

Percent

Legend: ☐ Peso deposits ☐ Dollar deposits

Values: Up to $5,000: −11.3, 16.9; $5,000–$20,000: −22.1, −3.9; $20,000–$100,000: −11.7, −6.0; $100,000–$500,000: −28.2, −15.2; Over $500,000: −49.4, −23.0; Foreign residents: −94.5, −62.2

Source: Central Bank of Argentina.

a. The figure shows the cumulative percent change in peso and dollar private time deposits by residence and size of deposit for the periods December 2000 to March 2001 and December 2000 to November 2001. The dollar sign ($) stands for both U.S. dollars and Argentine pesos, as the exchange rate was still one peso per dollar.

December 1998 and December 1999, because only end-of-year data are available for offshore deposits during those times.[47] We find that no run occurred in the onshore system, yet large offshore depositors withdrew most of their funds (see figure 4).[48] Onshore sucre deposits in nominal terms increased by 25.2 percent from December 1998 to December 1999 (in terms of dollars, onshore sucre deposits fell owing to the depreciation of the sucre), whereas onshore dollar deposits fell by 15.6 percent. Offshore deposits sharply decreased by 52.3 percent during this period.

For Uruguay, we analyze the change in deposits from December 2001 to December 2002 by size, currency, and residence (see figure 5). Our sample covers all Uruguayan private banks except BGU and Banco Comercial, for which we have incomplete data.[49] The data show that most of the deposit outflow from private banks was driven by large foreign investors. Foreign depositors with dollar accounts over 25,000 dollars withdrew more than 2.7 billion dollars from December 2001 to December 2002, producing a fall in their deposits of 75.5 percent. We also find important differences among local depositors. Small depositors with accounts up to 25,000 dollars decreased their peso deposits by only 6.1 percent and their dollar deposits by 24.5 percent, while larger investors reduced their peso and dollar deposits by 30.1 and 33.4 percent, respectively.

We complement these data with evidence on deposit withdrawals by bank, displayed in figures 6, 7, and 8. These figures show kernel distributions of the percent change in deposits across banks in Argentina, Ecuador, and Uruguay. For Argentina, figure 6 shows the distribution of the percent change in peso and dollar deposits up to 5,000 dollars and over

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47. Data permitting, it would be better to analyze the deposit run from August 1998 to March 1999, when the deposit freeze was imposed, though the Ecuadorian government gradually freed frozen deposits after April 1999.

48. The fact that they had deposits in the offshore system was not sufficient to ensure that the crisis would not affect them (as the crisis proved).
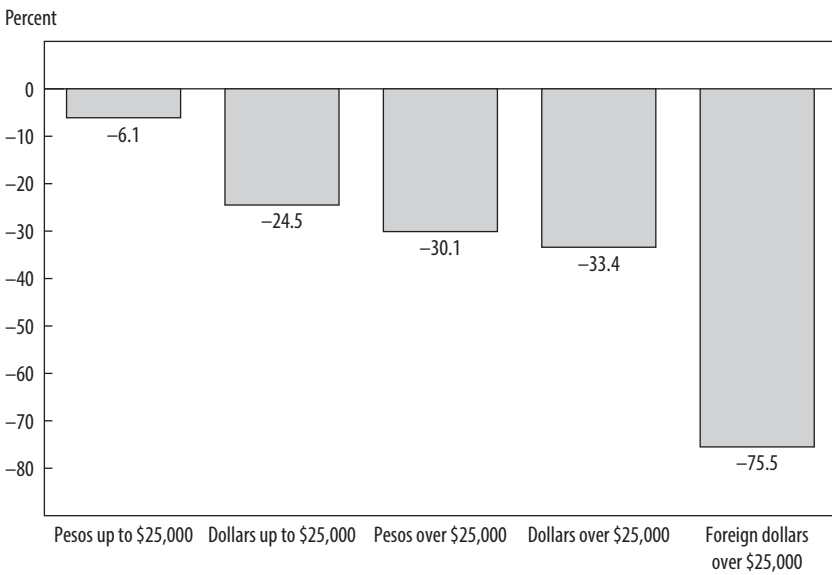
49. There are no data by size for state-owned banks and no updated information for BGU after December 2001 or for Banco Comercial after March 2002. Though we miss a large part of the Uruguayan banking system, our decision to exclude BGU and Banco Comercial from the sample allows us to better analyze the response of depositors, apart from the withdrawals by those depositors who triggered the run. The deposit outflow in Uruguay was started by Argentine investors withdrawing their deposits from BGU and Banco Comercial, which were affiliated with Argentine banks.

F I G U R E 4 . Cumulative Change in Deposits in Ecuador, December 1998 to December 1999

Percent
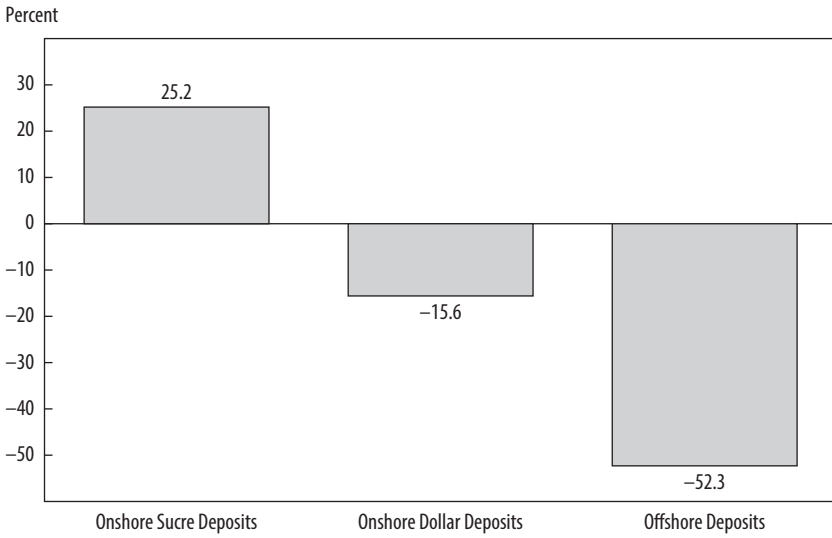
F I G U R E 5 . Cumulative Change in Deposits in Uruguay, December 2001 to December 2002[a]

Percent

a. Change in peso deposits

Density

December 2000 – March 2001

.06

.04

.02

D=0.286

Density

December 2000 – June 2001

.04

.02

D=0.391**

Density

December 2000 – September 2001

.02

.015

.01

.005

D=0.407**

Density

December 2000 – December 2001

.02

.015

.01

.005

D=0.492***

−50   0   50

——— Deposits up to $5,000   – – – Deposits over $100,000
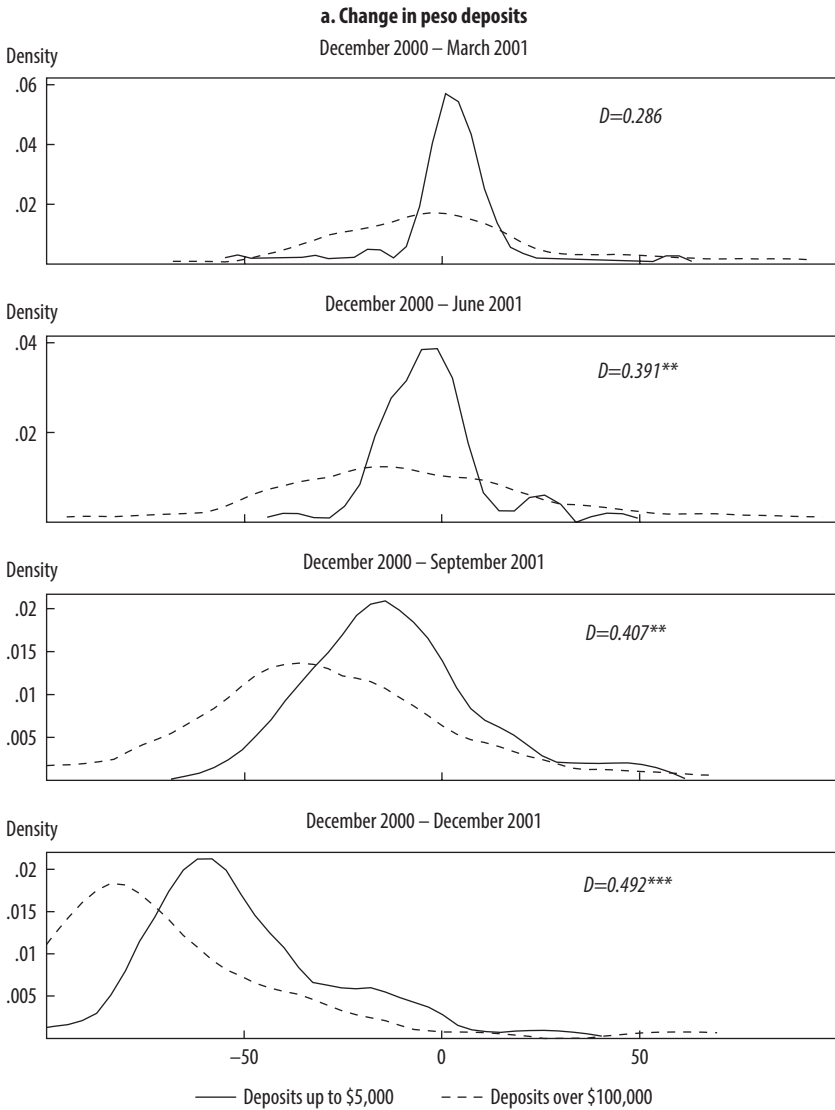
Source: Authors' calculations, based on data from the Central Bank of Argentina.
** Statistically significant at the 5 percent level.
*** Statistically significant at the 1 percent level.
   a. The figures show the Kernel density functions of the cumulative percent change in private time deposits across banks by size of deposit. The two-sample Kolmogorov-Smirnov tests for equality of distribution functions indicate that the distributions become different across sizes as the crisis approaches. The statistic D reports the maximum vertical difference between the empirical (not the density) distribution functions. The dollar sign ($) stands for both U.S. dollars and Argentine pesos, as the exchange rate was still one peso per dollar.

b. Change in dollar deposits

Density

December 2000 – March 2001

.06

.04

.02

D=0.224

Density

December 2000 – June 2001

.04

.03

.02

.01

D=0.296

Density

December 2000 – September 2001

.03

.02

.01

D=0.386***

Density

December 2000 – December 2001

.03

.02

.01

D=0.394***

−50   0   50

—— Deposits up to $5,000   – – – Deposits over $100,000

Source: Authors' calculations, based on data from the Central Bank of Argentina.
*** Statistically significant at the 1 percent level.
a.   The figures show the Kernel density functions of the cumulative percent change in private time deposits across banks by size of deposit. The two-sample Kolmogorov-Smirnov tests for equality of distribution functions indicate that the distributions become different across sizes as the crisis approaches. The statistic D reports the maximum vertical difference between the empirical (not the density) distribution functions. The dollar sign ($) stands for both U.S. dollars and Argentine pesos, as the exchange rate was still one peso per dollar.

F I G U R E   7 .   Kernel Distributions of the Change in Deposits in Ecuador, December 1998 to December 1999[a]
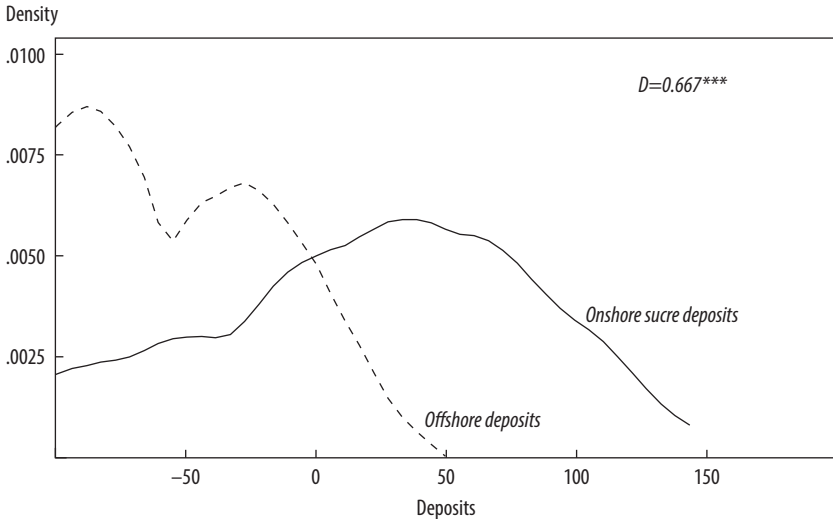
Density

Source: Authors' calculations, based on data from the Superintendency of Banks, Ecuador.
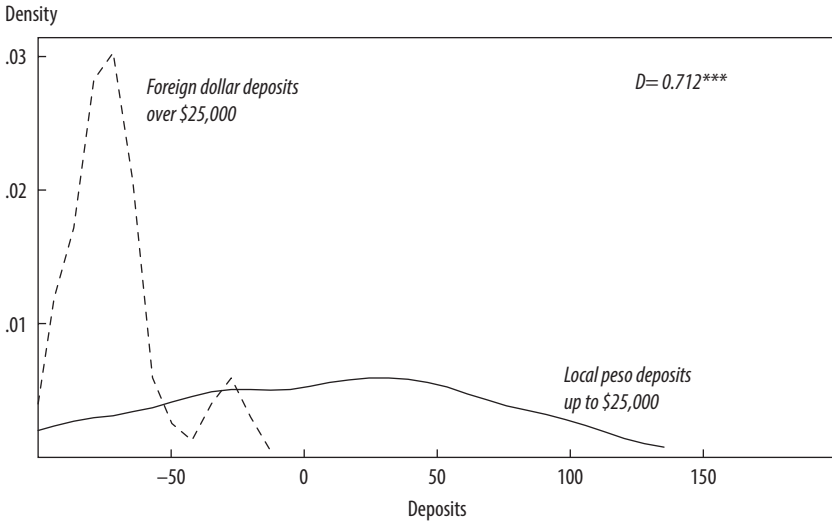
*** Statistically significant at the 1 percent level.

a. The figure shows the Kernel density functions of the percent change in Ecuadorian onshore sucre and offshore deposits across banks from December 1998 to December 1999. The two-sample Kolmogorov-Smirnov tests for equality of distribution functions indicate that the distributions are different. We also ran tests comparing the distributions of the changes in onshore sucre and onshore dollar deposits in Ecuador and obtained similar results (not reported). The statistic D reports the maximum vertical difference between the empirical (not the density) distribution functions.

100,000 dollars. We use quarterly data on deposits by bank, and we report the change in the distributions from December 2000 to December 2001, aggregating one quarter at a time. For Ecuador, figure 7 compares the distributions of the percent change in onshore sucre deposits and off-shore deposits between December 1998 and December 1999. For Uruguay, figure 8 displays the distributions of the percent change in peso deposits up to 25,000 dollars held by local depositors and dollar deposits over 25,000 dollars held by foreign investors. Data are for December 2001 through December 2002.

Figures 6, 7, and 8 show a more extensive and generalized run by large depositors than by small depositors. In Argentina, deposit withdrawals by large investors spread rapidly to most banks as the crisis advanced.

F I G U R E 8 . Kernel Distributions of the Change in Deposits in Uruguay, December 2001 to December 2002[a]

Density

Source: Authors' calculations, based on data from the Central Bank of Uruguay.

*** Statistically significant at the 1 percent level.

a. The figure shows the Kernel density functions of the percent change in Uruguayan local peso deposits up to 25,000 dollars and foreign dollar deposits over 25,000 dollars across banks from December 2001 to December 2002. The two-sample Kolmogorov-Smirnov tests for equality of distribution functions indicate that the distributions are different. We also ran tests comparing the distributions of local small and large peso deposits and small and large dollar deposits in Uruguay and obtained similar results (not reported). The statistic D reports the maximum vertical difference between the empirical (not the density) distribution functions. The dollar sign ($) stands for U.S. dollars.

The two-sample Kolmogorov-Smirnov test for equality of distribution functions indicates that the distributions of the change in small and large deposits become significantly different in the second and third quarter of 2001 for peso and dollar deposits, respectively. The data for Ecuador show a quite widespread deposit run in the offshore system and practically no pattern for onshore sucre deposits. The Uruguayan distributions show sizable withdrawals by large, foreign depositors, as opposed to an almost insignificant reaction by small depositors. The two-sample Kolmogorov-Smirnov tests confirm the difference of the distributions compared in Ecuador and Uruguay.

The data presented in this section suggest some kind of information asymmetries between large (including foreign) depositors and small

depositors.[50] Large depositors, who probably had access to better, more timely information than did small depositors, ran before the crises and resolution measures took place. Conversely, small depositors seem to have been unaware of the vulnerabilities of the financial system, and they thus did not withdraw their deposits. Small depositors probably also faced high costs for shifting the money out and had no readily available investment options, whereas large investors most likely had access to foreign-based accounts.

As a result of the dissimilar depositor reactions, the crises affected small and large depositors differently. In the case of Argentina, small local depositors were the most heavily hit by the crisis and resolution measures, which included the devaluation of the currency and pesification of deposits. Small players suffered the conversion of dollar deposits at one dollar equal to 1.4 pesos while the value of the dollar in the market went rapidly over 1.7 pesos, reaching 3.86 pesos in June 2002. They were also the most affected by the restrictions on cash withdrawals from bank accounts (the *corralito*) and the forcible reprogramming of pesified time deposits (the *corralón*) imposed by the government.[51] Further-more, small depositors did not receive the deposit insurance for which they were implicitly charged. Argentina had a partial deposit insurance scheme that was supposed to cover deposits up to 30,000 pesos or dollars, depending on their maturity. Since the deposit guarantee fund was constituted by mandatory contributions from financial institutions, banks transferred this cost to creditors by lowering the interest rate on small deposits. When the crisis and deposit drain began, however, deposit insurance funds were depleted.

The impact of the Argentine crisis on large and foreign depositors was very different. These investors ran before the government devalued the currency and pesified the deposits. The evidence suggests that most of them took their money out of the country. As reported by the Argentine

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50. In the case of Uruguay it is harder to assess whether information asymmetries, transaction costs, or other factors are behind the different behaviors of small and large depositors. Large Argentine depositors, who were probably in need of liquidity following the collapse of the Argentine financial system, initiated the deposit run.

51. Time deposit accounts up to 5,000 dollars constituted 54 percent of total peso deposits and 48 percent of total dollar deposits that were compulsorily reprogrammed, whereas large deposits represented a small share of reprogrammed accounts. These figures are by number of accounts, as there are no data on the value of reprogrammed deposits.

central bank, the accumulated private capital flight (excluding financial institutions) between December 2000 and December 2001 amounted to 12.9 billion dollars, or 5.1 percent of the 2001 GDP (this amount is similar to the total deposit fall of 14.3 billion dollars during that period).[52] This capital flight represented an increase of 13.6 percent in private external asset holdings, which reached 107.3 billion dollars in December 2001.[53] The strong net foreign asset position of 72 billion dollars allowed large investors to hedge against capital losses arising from devaluation and pesification. Large players also benefited from changes in relative prices. While their net foreign asset holdings represented 28.6 percent of the current nominal GDP in December 2001 (before the devaluation), by the first quarter of 2002 their net foreign asset position (equal to 75.8 billion dollars) could acquire 93.9 percent of GDP. [54]

In the case of Ecuador, contrasting reactions by large offshore depositors and small onshore depositors similarly caused the latter to be the hardest hit by the crisis and its resolution. Most deposits left in the system by December 1999 belonged to small onshore depositors. The share of onshore sucre deposits, for example, increased from 37 percent to 54 percent between December 1998 and December 1999, whereas the share of offshore deposits fell from 40 percent to 23 percent during that period. As a result, small onshore depositors were severely affected by the deposit freeze and later dollarization. (The freeze was also applied to most of the deposits that remained in the offshore system.) Dollarization involved converting deposits at the new rate of 25,000 sucres per dollar, instead of applying the prefreeze rate of around 10,090 sucres per dollar. Small

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52. Some investors seem to have been able to move their money out even after the *corralito* was established. Indeed, the *corralito* allowed depositors to use their frozen deposits to purchase stocks listed on the Argentine exchange, thus providing a legal mechanism for transferring funds abroad via cross-listed securities. Auguste and others (2002) and Melvin (2003) show that investors were able to purchase cross-listed stocks for pesos in Argentina, convert them into depositary receipts, and resell them in New York for dollars. This mechanism did not imply capital outflows for the overall economy, as explained by Levy Yeyati, Schmukler, and van Horen (2004).

53. This figure is probably a very low estimative, given the underreporting of Argentina's external assets.

54. In addition to the opposite effects on small and large foreign investors, the resolution of the Argentine crisis generated different results among the creditors whose deposits were reprogrammed. For example, some depositors who had their money in the *corralón* were able to get their dollars back through *amparos* (or judicial injunctions).

depositors who had onshore sucre deposits frozen in the system thus bore a decrease in the value of their funds of more than 60 percent. In addition, many small onshore depositors had their money in banks that were taken over by AGD. As mentioned above, the majority of them had to wait for months or even years to recover their deposits, and many have not yet received their funds. As of March 2003, AGD still had to return deposits to 3,246 individuals (a total of 103 million dollars).[55]

Large Ecuadorian depositors, who withdrew their money from offshore banks, clearly had a different outcome. These investors escaped from the deposit freeze, the dollarization, and the takeover of banks—and even though they had their funds in the offshore system, the evidence suggests that withdrawals by large depositors were financed by central bank liquidity. First, offshore banks lacked other liquidity sources to face the deposit run, since external credit lines had dramatically dried up (falling from almost 2.5 billion dollars in August 1998 to nearly one billion dollars in December 1999). Second, and as already mentioned, the Ecuadorian central bank was providing extensive liquidity assistance to onshore banks (2.3 billion dollars between August 1998 and December 1999), at the same time that onshore deposits were actually increasing. It is thus likely that onshore banks transferred central bank liquidity assistance to their offshore affiliates, which allowed larger depositors to take their funds out of the system. This redirection of liquidity from onshore to offshore banks is reflected in the capital flight of nearly 730 million dollars between December 1998 and December 1999 (as reported by the Central Bank of Ecuador), compared with a deposit fall of around 1.6 billion dollars in the offshore system during that period.

Finally, financial gains and losses also resulted among depositors in Uruguay, but these appear to be more limited than in the Argentine and Ecuadorian crises. In Uruguay, holders of peso deposits were hit by a currency devaluation of 84 percent between December 2001 and December 2002, and holders of dollar time deposits in state-owned banks suffered the reprogramming of their deposits.[56] The rest of the depositors, however, did not suffer delays in the payment of their funds, and deposits were paid in

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55. In addition to individuals' deposits, AGD owes 654 million dollars on account of foreign trade deposits, nonguaranteed deposits, and deposits in other institutions.

56. Other depositors who suffered delays in the payment of their deposits were those with accounts in banks that were liquidated.

most cases with the banks' own resources.[57] Moreover, depositors were not affected by deposit freezes or further changes in the value of their deposits due to pesification or dollarization, as it happened in Argentina and Ecuador.[58]

The evidence presented in this section clearly shows the opposite effects of crises and their resolution on small and large depositors. One possible objection is that small depositors are compensated ex ante for the losses they bear ex post, which would imply a zero-sum game. For example, small depositors could have benefited from higher interest rates during the precrisis period. The evidence, nevertheless, sug-gests otherwise. Small depositors generally receive lower interest rates than large depositors, and the gap between interest rates on large and small deposits tends to increase as a crisis approaches. In the case of Argentina, for example, the average interest rate during 2000 for peso time deposits was 7.9 percent for small and medium-sized deposits (up to 100,000 dollars) and 9.2 percent for large deposits (between 500,000 and one million dollars). From January 2001 to November 2001, the average interest rate increased to 10.5 percent for small and medium-sized deposits and 17.8 percent for large deposits, with the gap rising from 1.3 to 7.3 percentage points. Interest rates for large accounts were similarly higher for dollar time deposits, for which the gap between interest rates on large and small deposits increased from 0.8 (the difference between 7.9 and 7.1 percent) to 3.1 percentage points (the difference between 12.1 and 9 percent) from 2000 to 2001. In sum, the data suggest that small depositors are not compensated ex ante, though

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57. The Uruguayan central bank provided liquidity assistance only to Banco Hipote-cario, Banco Comercial, Banco La Caja Obrera, Banco de Crédito, and Banco Montevideo. In 2002, foreign bank shareholders made capital contributions for approximately 68 million dollars to Uruguayan private banks.

58. The crisis of Uruguay, compared with the experiences of Argentina and Ecuador, provides a valuable lesson—namely, that the effects of crises on depositors are not indepen-dent of resolution measures. While it might be difficult to mitigate information asymmetries or differences in transaction costs to shift money abroad, the Uruguayan evidence shows that authorities can implement policies that reduce, or at least do not exacerbate, the negative impact on small depositors who remain in the financial system. Some caveats are in order, however. First, the Uruguayan financial system is considerably smaller than the financial systems of Argentina and Ecuador. This not only facilitates the resolution process for the authorities, but also makes it less costly for shareholders to contribute extra capital and for international financial institutions to provide financial assistance. Second, the Uruguayan crisis occurred right after the Argentine crisis. Uruguay had probably learned some lessons from the Argentine experience.

the counterfactual (of where equilibrium interest rates should be) is difficult to ascertain.

Differential Effects across Borrowers

Evidence from several Latin American episodes suggests that the effects of crises and their resolution are also uneven across borrowers. Though small debtors may not experience financial losses as small depositors do, financial gains are strongly concentrated on large companies with close ties to banks. We show that these related parties benefit from preferential loan conditions offered by their affiliated banks (transferring the cost of the unsound practices to society), emerge relatively unharmed from the crises, and often end up profiting from public bailouts. Next we make this point using data on the transfers received by large related borrowers during the Chilean, Ecuadorian, and Mexican crises.

Loose lending practices and particularly loan concentration in affiliated firms were important determinants of these three blowups. In Chile before the crisis, industrial and financial conglomerates had acquired most of the country's largest manufacturing and banking firms. The financial system displayed high loan concentration in related businesses that were not credit-worthy.[59] The problem of the related portfolio in the Chilean banking system had become significant by June 1982: related loans accounted for 21.1 percent of the portfolio of the five largest private banks. Velasco argues that Chilean banks would not have extended so many unsound loans if the clients had not been the banks' own related firms, and without that sizeable related portfolio, a financial crisis of Chile's proportions would never have occurred.[60]

Financial institutions in Ecuador and Mexico had similarly large related portfolios by the time the crises erupted. In Ecuador, several local news-papers and financial publications claim that related lending was one of the main causes of the large fiscal costs and redistributions that the crisis

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59. In many cases, banks lent to firms controlled by their new owners so that these firms could use the proceeds to pay for the shares of these banks that they were buying. Also, many companies borrowed from their banks at preferential rates and bought stock among themselves, benefiting through price appreciation and then using the stocks as collateral for bank credit.

60. Velasco (1991).

generated. Though there are no formal statistics on the fraction of loans to related parties, it is widely known that the system's largest banks belonged to industrial and financial conglomerates (owned in many cases by some of the richest families in Ecuador), whose businesses were financed through preferential bank credits. In Mexico, the lax regulation and supervision that accompanied the rapid growth of credit in the precrisis years permitted a high concentration of bank loans in related firms. La Porta, López-de-Silanes, and Zamarripa show that 20 percent of total loans at the end of 1995 were to related companies.[61] They find that related firms borrowed at lower interest rates and for longer maturities, were less likely to post collateral, offered fewer personal guarantees, and were more likely to default than unrelated ones.

The evidence indicates that the extent of related lending contributed significantly to the large fiscal costs that these crises generated, suggesting that the cost of the preferential treatment to related parties fell on taxpayers (who pay the fiscal costs). In Chile, part of the transfer received by related firms can be inferred from the risky loans sold by financial institutions to the Chilean central bank under the program of acquisition of high-risk portfolio.[62] Figure 9 compares the percentage of loans sold to the central bank with the share of related loans over total loans for the largest banks in the system.[63] The upward slope of the fitted line suggests that the costly central bank assistance borne by taxpayers financed the advantageous and unsound loans granted to related parties. For example, the largest private bank, Banco de Santiago, had 42.3 percent of its loan portfolio concentrated in related firms by December 1982; it sold 60.4 percent of its loans to the central bank.

Ecuador also presents evidence of a large transfer directed to related borrowers. The loan portfolio of the Ecuadorian banks that were finally taken over was highly concentrated in a small number of large firms. As of June 2003, the average size of loans granted by banks under the control of AGD was 36,871 dollars, against an average size of 2,250 dollars for loans given by other private banks. Moreover, of the total portfolio of intervened banks, around 65 percent corresponded to 527 related clients with debts
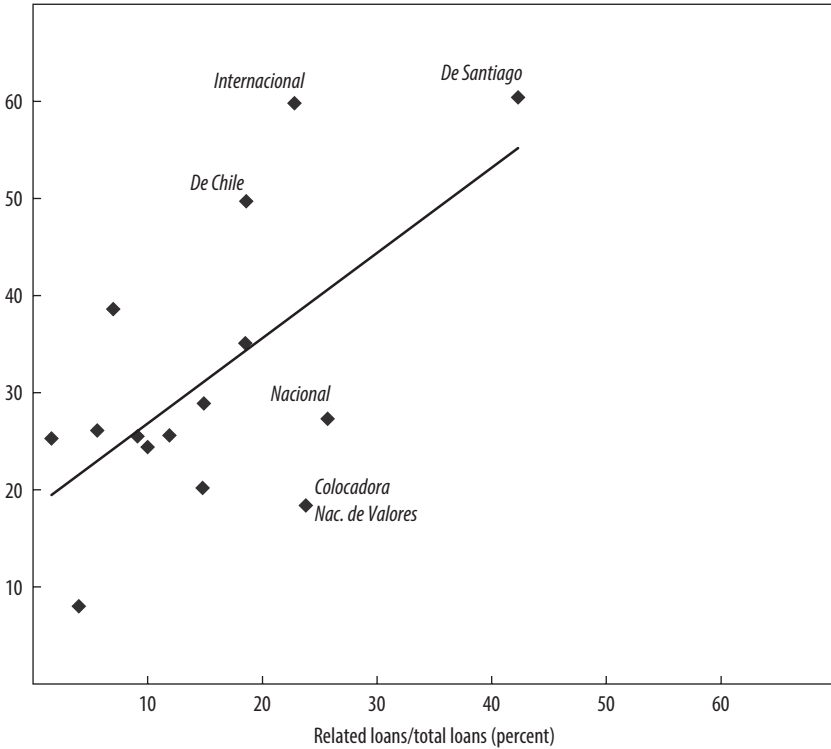
61. La Porta, López-de-Silanes, and Zamarripa (2003).

62. As mentioned above, the central bank recovered only a small fraction of this assistance.

63. The banks in the figure are the ones for which these data are available.

F I G U R E 9 . Related Lending and Central Bank Assistance in Chile[a]

Risky loans sold to central bank/total loans (percent)

Related loans/total loans (percent)

Source: Authors' calculations, based on data from Larraín (1989) and Sanhueza (2001).
a. The figure displays the share of loans sold to the central bank relative to the share of related loans in the portfolio of institutions.

greater than one million dollars.[64] This portfolio, with 94 percent of its loans not performing as of June 2003, was transferred to AGD despite the evidence of widespread related lending.

Related loans by Ecuadorian banks increased as the takeover date approached. Anticipating the government bailout, banks granted large, cheap loans to their firms. An example is that of Filanbanco, one of the largest

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64. Salgado (2001). Of these 527 clients, 120 borrowers apparently refused to pay their debts; see the interview of the World Bank advisor for the debt-restructuring plan, Gerald Meyerman, which was published in the local newspaper *El Comercio*, 13 March 2001.

banks in Ecuador.[65] Filanbanco's main shareholders, the Isaías family, repro-
grammed loans to thirty-six companies owned by the family before losing
control over the bank. These loans had special terms of two to seven years
and subsidized interest rates, and were denominated in sucres (just as the
currency was depreciating sharply). Twelve days before AGD took control
of Filanbanco, the bank granted a loan of nearly 2.1 billion sucres with a
maturity of eight years and zero interest to one of the companies of the
conglomerate. After that, Filanbanco not only transferred its liabilities and
(nonrecoverable) assets to AGD, but also received more than 500 million
dollars from the government for recapitalization.

Finally, related lending also appears to have greatly contributed to the
fiscal costs of the Mexican crisis. La Porta, López-de-Silanes, and Zamarripa
compare related lending in banks that went bankrupt in the crisis and banks
that survived.[66] While the shares of loans to related parties were similar for
bankrupt and survivor banks in 1993, the share for bankrupt banks increased
significantly as the takeover approached. Bankrupt banks then sold their
nonperforming portfolio to Fobaproa and received considerable assistance
from the government. The costs of these unsound lending practices thus
seem to have fallen on taxpayers.

While the evidence clearly shows that large borrowers with ties to banks
benefit from preferential loan conditions, one may ask what happens to
bank shareholders. Why do financial institutions grant unsound loans to
related parties even though this can severely affect them and prevent them
from continuing operating? The answer is very simple: because it is prof-
itable to do so. Bank shareholders provide cheap funds to their companies
as long as their share of profits in their own companies is larger than the
share of profits in the bank. In the Chilean, Ecuadorian, and Mexican cri-
ses, shareholders often lost control over their banks but not over their
industrial assets. Therefore, banks had an incentive to go broke for profit at
society's expense—that is, to loot. Akerlof and Romer explain that looting
is particularly common when a government guarantees a firm's obligations.[67]
In the three crises analyzed in this section, banks had either implicit or
explicit guarantees that the government would absorb their liabilities. Banks

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65. See Salgado (2001).
66. La Porta, López-de-Silanes, and Zamarripa (2003).
67. Akerlof and Romer (1993).

thus took excessive risk and made loans to related parties at advantageous terms, expecting the authorities to bear the costs of such practices. In this sense, bank shareholders, just like large related borrowers, are recipients of financial transfers.

How Differential Effects within the Financial Sector Affect Income Inequality

Capital gains and losses within the financial sector have important implications for the distribution of income. Small depositors, who appear to suffer capital losses as a result of devaluation, deposit freeze, pesification or dollarization at unfavorable rates, reprogramming of deposits, and other mechanisms, tend to be mostly low-income households. Large depositors, who obtain significant capital gains from the increased value of the funds taken out of the financial system (and the country), tend to belong to higher ranges of the distribution of income. Moreover, bank shareholders and large borrowers with ties to banks, both of whom benefit from advantageous loan terms and government bailouts, are undoubtedly in the top range of the income distribution.

We provide more formal evidence on the distributional impact of differential effects within the financial sector by analyzing data from Argentina. A survey conducted by the World Bank, aimed at evaluating the social consequences of the Argentine crisis, gives us a unique opportunity to test differential effects across households. We use this survey to study which Argentine households having savings were affected by the deposit freeze.[68] Table 9 reports maximum-likelihood probit estimations with selection of the probability of being affected by this policy measure. These Heckman-type regressions (similar to those in table 8) account for the fact that only households with savings could be affected by the deposit freeze, and thus we have missing observations for households with no savings. We estimate the probability of having savings in the selection equation and the probability that those households with savings are affected by the resolution policies in the main equation. We use the same explanatory variables as before in the selection equation, and we include the geographic region, education, and income level in the main

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68. The survey includes a question on whether the household has been affected by the deposit freeze.

T A B L E 9 . Impact of Deposit Freeze in Argentina
Maximum-likelihood probit estimations with selection, marginal effects

Equation and explanatory variable	(1)	(2)	(3)	(4)
Main equation				
Rural area	0.015	0.018	0.010	0.015
	(0.013)	(0.012)	(0.013)	(0.014)
Education	−0.048***	−0.053***	−0.042***	−0.045***
	(0.010)	(0.010)	(0.010)	(0.010)
Log of household income	−0.015***			
	(0.004)			
Log of individual income		−0.005**		
		(0.002)		
Log of per capita household income			−0.021***	
			(0.004)	
Household income decile				−0.007***
				(0.002)
Selection equation (having savings)				
Rural area	−0.056***	−0.061***	−0.047***	−0.047***
	(0.017)	(0.016)	(0.018)	(0.017)
Age	0.002***	0.002***	0.002***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
Sex	0.019	0.022*	0.022*	0.012
	(0.012)	(0.011)	(0.011)	(0.012)
Education	0.136***	0.146***	0.122***	0.120***
	(0.015)	(0.014)	(0.016)	(0.015)
Log of household income	0.033***			
	(0.008)			
Log of individual income		0.015***		
		(0.004)		
Log of per capita household income			0.049***	
				(0.009)
Household income decile				0.021***
				(0.003)
Employed	0.004	−0.003	0.001	−0.004
	(0.021)	(0.021)	(0.022)	(0.022)
Not in the labor force	0.026	0.024	0.020	0.024
	(0.025)	(0.024)	(0.025)	(0.025)

T A B L E 9 .   Impact of Deposit Freeze in Argentina (*continued*)
Maximum-likelihood probit estimations with selection, marginal effects

Equation and explanatory variable	(1)	(2)	(3)	(4)
Summary statistic				
Rho	−0.99	−0.99	−0.99	−0.99
Log pseudolikelihood	−1,266	−1,319	−1,251	−1,249
No. observations	2,474	2,550	2,474	2,474

Source: Authors' calculations.
* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.
a. The table shows maximum-likelihood probit estimations with selection of the probability of being affected by the deposit freeze imposed during the resolution of the crisis in Argentina. In the selection equation, the dependent variable is a dummy equal to one if the household has (formal or informal) savings; in the main equation, the dependent variable is a dummy equal to one if the household has been affected by the deposit freeze. All individual variables correspond to the household head; sex is a dummy equal to one if the household head is male; education is a dummy equal to one if the household head has secondary or higher education. Marginal effects are reported. Robust standard errors in parentheses.

equation.[69] The selection equation part of these regressions differs from the regressions presented in table 3, which estimate the probability of having savings in a bank. In table 9 we define the selected group as those having any savings at all, regardless of whether these are formal (in the form of bank deposits) or informal savings. This allows us to account for those households that might have taken their deposits out of the bank right before the crisis.

The results in table 9 confirm the evidence presented. While income is positive and statistically significant in predicting the probability of having savings, it is negative and statistically significant in predicting the probability of being affected by the deposit freeze. In other words, while richer households are more likely to have savings, the poorer households with savings have a higher probability of being harmed from the crisis and its resolution. This is true for all income measures tested in table 9.

69. As explained above, we need to have at least one variable in the selection equation that is not included in the main equation for the model to be identified. We consider that age, sex, and employment status are not key determinants of a household's ability to escape from the deposit freeze. On the other hand, the geographic region may affect a household's capacity to withdraw its money before this policy measure is implemented, while the education level and income may affect the likelihood that a household is well informed and has the means to rapidly shift money out of the financial system. Though it is difficult to make these choices, we believe that this is a sensible identification strategy.

For example, we find that a one-percent increase in house-hold income raises the probability of having savings by 0.033 percent, but it reduces the probability of being affected by the deposit freeze by 0.015 percent, after controlling for other factors. These results are consistent with the hypothesis that the households who withdrew their deposits before the crisis and escaped from the deposit freeze had more information. The education of the head of household is negative and statistically significant in the main equation, meaning that households with a higher education level were less likely to be affected by the crisis-related policy measures.[70]

Conclusions and Policy Implications

There is no obvious formula for avoiding the negative impact of crises and their resolution on the distribution of income.[71] This does not mean, however, that outcomes have to be as dismal as those described in this paper or that the distribution of income must worsen as much as it seems to have worsened in these Latin American episodes.

With regard to transfers from nonparticipants to participants in the financial sector, the two factors with the largest distributional impact are the extent of the bailout and the financing of the bailout. A good start would be for governments to limit the fiscal cost of its intervention, which is paid by all taxpayers.[72] The literature on banking crises emphasizes the importance of a prompt resolution to reduce adverse effects and limit the overall costs.[73] A rapid and strict resolution could prevent fragile institu- tions from "gambling for resurrection"; it would also stop the flow of funds

70. The probability of being affected by the deposit freeze falls by around five percent when the head of household has secondary education or higher.

71. The policy implications depend on many factors. The sources of a crisis matter: a financial crisis stemming from government insolvency requires different actions than from one triggered, for example, by regulatory mistakes or private sector insolvency. Also, bail- outs might be the optimal policy option according to efficiency and general equilibrium considerations, even when they lead to moral hazard.

72. Limiting the bailout is important not only because of the high resolution costs that are paid by the whole economy, but also because of signaling and incentive problems that unrestricted aid produces. Authorities may want to ensure that their interventions do not increase the likelihood of subsequent crises and bailouts.

73. See, for example, Sheng (1996); de Luna-Martínez (2000); Kane and Klingebiel (2004).

to loss-making borrowers. Likewise, guarantees for depositors and debtors should not be across the board. Rather, the conditions and eligibility for a guarantee ought to be determined ex ante.

The financing of the (restricted) assistance to the financial sector also deserves attention. Clearly, the distributional impact of the bailout depends on how it is financed. Increases in taxes, spending cuts, or inflation generally result in a net loss for individuals outside the finan-cial system, who are mostly low income. Issuing debt to finance the bailout implies more taxation in the future, causing income redistributions across generations. Less regres-sive financing schemes that somehow tax those high-income households that participate in the financial sector are desirable.

Concerning capital gains and losses within the financial sector, policy measures should aim at helping those participants most affected by the crises. On the depositor side, freezing or restructuring tools could discriminate among deposits by type and size.[74] Since large investors run first, ex ante stop-loss clauses on the use of liquidity could be imposed, so that something is left to share among small depositors. Moreover, the government could force the reprogramming of time deposits only for deposits larger than a certain threshold, giving some form of claim priority over available liquid-ity to small deposits.[75] On the borrower side, resolution measures should discriminate among loans. Though difficult to put into practice, it would be desirable to distinguish among borrowers who cannot honor their debts as a result of the crisis, borrowers who were not able to pay their obligations even in good times, and borrowers who do have the resources to pay their loans but are simply taking advantage of the bailout in refusing to pay. Finally, the results of this paper suggest that related lending needs particular attention. Authorities that imple-ment loan-purchase programs or other debt relief tools may want to avoid diverting costly assistance to firms that profited from unsound, advantageous loans. Affiliated banks that engage in looting behavior should be punished, or at least excluded from any public assistance.

74. De la Torre, Levy Yeyati, and Schmukler (2003).

75. In the Uruguayan crisis, the authorities concentrated central bank reserves on fully backing demand deposits in troubled banks to preserve the functioning of the payment system, while time deposits of troubled (state-owned) banks were restructured by decree. This preference to demand deposits also appears to be crucial; as happened in the Argentine crisis, the collapse of the payment system may increase the cost of the crisis considerably, affecting output and employment and, thus, particularly hurting the poor.

The several policy recommendations outlined above call for distinctive measures that discriminate among different financial sector participants. It is not totally clear, however, whether this kind of approach is always preferable over blanket measures. Discretionary measures taken on a case-by-case basis are useful to avoid helping participants that are not in need or institutions that are insolvent; this helps restrict the cost of the bailout. Nonetheless, across-the-board measures are much easier to implement. This tradeoff has no easy solutions.

Political economy factors also play an important role. The political structure and sectoral interests may significantly affect regulatory and resolution policies. In the Mexican crisis, for example, bank borrowers organized themselves and forced the government to reassign part of the fiscal resources to support the debt restructuring.[76] In Argentina, the political crisis and resignation of De la Rúa's government were triggered by massive street protests, which began only after the relatively rich were affected; the recession and increase in unemployment, which hurt mostly the poor, began much earlier. Although the specific impact of political economy factors on policy measures and financial redistributions is difficult to predict, the final consequences for the distribution of income are likely to be negative. The poor are slower to form groups and exert pressure, and they therefore tend to lack a political voice.[77] The result is as predictable as it is unfair: their demands and needs are largely ignored.

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76. De Luna-Martínez (2000). Debtors also impeded reforms to the bankruptcy law that would have made it easier for banks to take possession of guarantees and for the government to rapidly sell the acquired impaired assets.

77. This is clearly reflected, for example, by the usual decisions on how to finance the costs of a crisis. Powerful interest groups put up obstacles to certain tax raises or public expenditure cuts, which forces the government to increase spending cutbacks on social protection and other programs targeted at the poor.

Appendix: Household Surveys, by Country

The table in this appendix describes the household surveys we use to conduct the empirical tests for each country in our sample.

T A B L E A 1 . Description of Household Surveys Used in the Econometric Estimations

Country	Survey	Year	Description
Argentina	Impacto Social de la Crisis en Argentina (ISCA)	2002	Survey of the effects of the 2001–02 crisis on households conducted by the World Bank. Applied to 2,800 households across the country.
Bolivia	Encuesta a Hogares— Programa MECOVI	2002	Survey of living conditions conducted by the National Institute of Statistics (INE). Applied to 5,952 households across the country.
Ecuador	Encuesta de Condiciones de Vida	1998	Survey of living conditions conducted by the National Institute of Statistics and Census (INEC). Applied to 5,800 households across the country.
Mexico	Encuesta de Demanda de Servicios Financieros en el Área Metropolitana de la Ciudad de México	2002	Survey of access to financial services commissioned for the World Bank (2003) study with Universidad Nacional Autónoma de México (UNAM). The survey was conducted as part of the regular employment surveys carried out by the National Institute for Statistics, Geography, and Informatics (INEGI). Applied to 1,500 households in urban areas.
Peru	Encuesta Nacional de Niveles de Vida (ENNIV)	2000	Survey of living conditions conducted by Instituto Cuánto. Applied to 3,978 households across the country.