Formal and Informal Social Protection in Iraq

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Abstract:

We study formal and informal insurance in Iraq using empirical data from a household survey. We study access to social security, health insurance, and retirement. Then, we examine the types of risks that Iraqi households face, and the informal coping mechanisms they use to deal with them. After studying formal and informal social protection separately, we study the relationship between the two and test the hypothesis of crowding out. We find that socio-demographic characteristics affect formal insurance detention, the probability of a risk occurring, and the type of risk coping mechanism that a household uses. The most important determinant of receiving formal benefits is the sector of employment: public sector workers are between 83% and 84% more likely than private sector workers to have formal benefits. Poverty, the type of employment, the place of residence, the size of the household, the gender of the household head, and the education of the household impact the probability with which a household is affected by different types of risks. These socio-demographic characteristics along with the type of risk that the household faced influence the household’s choice of risk coping mechanism. We find evidence of crowding out; however, we conclude that this should not translate to a reduction in formal safety nets. Our results have many policy implications to improve access to formal insurance, reduce risks, and mitigate the negative aspects of certain informal coping mechanisms in Iraq.

Keywords:
Social protection, formal and informal insurance, risk coping mechanisms, Iraq.

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We propose to study formal and informal social protection in Iraq using empirical data from a household survey. In terms of formal social protection, our study will focus on access to social security, health insurance and public pension programs. Because much more than half of the Iraqi population does not benefit from these programs, we will also study informal insurance mechanisms through households’ responses to adverse events. As El Mekkaoui et al. (2010) show, insurance can have an impact on poverty. Also, according to Dercon (2002), exposure to risk is a cause of persistent poverty. Thus, studying social protection in developing countries is important in order to better understand how to protect vulnerable populations. Finally, we test the relationship between formal and informal insurance in Iraq to test the theory of crowding out. To understand the Iraqi social welfare system, we will use the 2006-2007 Iraq Household Socio Economic Survey (IHSES), which was carried out by the Central Organization for Statistics and Information Technology (COSIT), the Kurdistan Regional Statistics Organization (KRSO), and the World Bank. This survey interviewed over 18,000 households and 127,000 individuals and is designed to be representative of the Iraqi population.

This study complements and contributes to the existing literature in several ways. First, it fills the knowledge gap about the Iraqi social protection system. It completes information on which households have access to formal insurance and explores informal insurance mechanisms other than private transfers. Second, it expands upon the techniques used in Skoufias and Quisumbing (2005). This study goes into more detail than Skoufias and Quisumbing’s research by focusing on only one country. It also studies a larger number of risk coping mechanisms. Finally, this study complements the literature on crowding out by examining the relationship between formal and informal forms of social protection in Iraq.

Before discussing public and private social protection in Iraq, it is useful to understand the context of the country and the characteristics of the population. Compared to other countries, Iraq is characterized by a relatively low level of inequality. Over 70% of the population lives in urban areas, and the standards of living vary greatly by region. While the poverty headcount is higher in rural areas, there are fewer inequalities between residents of rural areas than between residents of urban areas. Iraq is a young country (median age 19.3) with a high unemployment rate. There are more than 2 million unemployed workers, representing up to 30 percent of the workforce (Blomquist, John et al., 2005). Unemployment among the young is nearly twice as high as the overall rate and the participation of women in the workforce is very low. Due to the recent conflict, approximately 1.6 million people were internally displaced between 2003 and 2009. The displacement rate was especially high between 2006 and 2007, during the collection of the IHSES data (Confronting Poverty in Iraq).
According to the World Bank, during the 1980s, Iraq had among the best health and education systems in the region. However, over the past 20 years, the education and health systems have undergone a sharp decline. Primary school enrollment rates fell from 99% in 1998 to 77% in 2006. Illiteracy remains high, between 10-20 percentage points higher than others MENA countries such as Syria and Jordan. Gender disparities are growing, especially in rural areas where up to one third of girls are not enrolled in primary school (Blomquist, John et al., 2005).

Before the 1991 Gulf War, Iraq used oil revenues to develop one of the most modern healthcare systems in the region. However, due to the war and to the ensuing sanctions, there was a sharp decline in the quality and availability of healthcare during the 1990s (Frankish 2003). Garfield et al. (2003) estimated that the sanctions and 1991 Gulf War caused an 85-90% decline in food and medicine imports. In 2011, life expectancy was only 58 years in Iraq, while it was 70 on average in other MENA countries. However, most of the anthropomorphic measures of Iraqi children were better than those of the average MENA country.

This paper will be structured in seven sections. In the following section, we review the literature, discuss the Iraqi social welfare system, and highlight the main contributions of our paper. Third, we present our theoretical models and methodology. Then, we analyze the socio-demographic characteristics that are tied to formal insurance detention. The fifth section analyzes the risks that Iraqi households face and the informal coping mechanisms that they use to deal with these risks. The sixth section examines the relationship between formal and informal social protection and tests the theory of crowding out. Finally, we will conclude and present policy recommendations for social system reform in Iraq.

**Literature Review**

This study draws inspiration from several trends in the literature. While only a few studies test the importance of formal social protection systems in developing countries, there is a fairly extensive body of both theoretical and empirical literature on informal social safety nets in developing countries. Several studies make the distinction between risk management and risk coping techniques, and much of the literature focuses on models of risk sharing. Another trend in the literature regards the relationship between formal and informal insurance and tests the hypothesis of crowding out. After discussing each of these trends, this literature review will present the structure of the social protection system in Iraq.

**Formal social welfare systems**

Before delving into the different trends in the literature regarding formal social protection, it is important to define social protection. Harvey et al. (2007) summarize the definitions of social protection used in various other papers. Social protection “refers to interventions implemented by the state, or those operating in
the public interest, such as NGOs, to respond to levels of vulnerability, risk and deprivation which are deemed socially unacceptable within a given polity or society.” It responds to the dual goal of addressing both economic and social risk and vulnerability through protective, preventative, promotive and transformative actions (9-10). Van Ginneken (1999) offers a wider, but similar, definition: “The provision of benefits to households and individuals through public or collective arrangements to protect against low or declining living standards arising from a number of basic risks and needs” (3).

Much of the literature on insurance and savings in developed countries is based on the life-cycle model (Modigliani and Brumberg, 1954; Ando and Modigliani, 1963; Friedman, 1957). In its simplest version, individuals live two periods. In the first period, each person earns a wage from his/her labor supply, and in the second period, the person retires. Individuals save part of their income during the first period to provide for the second-period consumption. The interest rate is supposed constant, regardless of the level of savings. The main result obtained from this framework is that consumption is smoothed in the sense of maintaining a constant marginal utility throughout life. Individuals save in order to transfer purchasing power to the retirement period.

Outreville (1996) tests this model using a panel of 48 developing countries. He finds that the life-cycle hypothesis does not explain the aggregate savings in developing countries well due to the poor organization of capital markets, consumption linked to immediate needs rather than consumption smoothing, young populations that tend to consume more, large fluctuations in income, and financial repression. He also finds that the development of the life insurance market is linked to the country’s level of financial development and anticipated inflation.

Like Outreville, Rosenzweig (2001) also rejects the relevance of the life cycle hypothesis for developing countries. He notes that in many developing countries, households are inter-generational: the life cycle of the household may not match that of the individual. Furthermore, households may display forward-looking behavior through other mechanisms such as investments in human capital and in children. Rosenzweig also discusses the permanent income model, in which households may freely save and borrow money in order to smooth their consumption. Their utility is only based upon consumption, and production is only based upon rainfall, which is random and i.i.d. Transitory shocks to income should not affect consumption; however, consumption will be affected by changes in persistent components of income. He finds some evidence supporting the permanent income model: “an increase in transitory income on savings exceeds that of an equivalent change in permanent income” (4).

While some of the literature on formal insurance focuses on models of savings and consumption, Van Ginneken discusses exclusion from formal safety nets. He notes that half of the global population is excluded from any form of social protection, and in Sub-Saharan Africa and South Asia, social security only covers
between 5 and 10% of the working population. In most cases, informal sector workers are excluded from social security programs. They are often unable to join social insurance programs due to their financial situation or due to government regulations, and many prefer to invest in business, land or housing because they rely on their children to support them when they reach retirement. He notes, however, that healthcare costs can be devastating to a household, and most households, including poor households, spend 5-10% of their income on healthcare. In addition to expanding public health insurance schemes, Van Ginneken proposes ways to promote self-financed schemes.

Such self-financed schemes, or community based health insurance schemes (CBHIS) constitute another branch of the literature on formal social protection in developing countries. While it may be difficult to foster solidarity and reach an agreement about the extent of coverage at a national level, it may be more feasible to reach such consensus among community groups. Such groups are formed to share risk and provide access to either hospital care or primary care services. While Jutting (2003) demonstrates the potential of CBHIS to help part of the vulnerable population increase their access to healthcare in Senegal, Carrin (2002) and Carrin et al (2005) discuss some of the problems of the implementation of such schemes. They note, however, that a higher level of income, better administrative structures, and providing coverage at the household rather than the individual level encourage the development of CBHIS. Asfaw and von Braun (2005) test if CBHIS could improve the health system in rural Ethiopia. Unlike previous studies that suggest weak participation in CBHIS, they find that nearly 60% of respondents would be willing to pay for a CBHIS with the first or second bid prices shown to them. Furthermore, respondents were willing to contribute an average of 3.5% of their monthly income to CBHIS. Finally, Asfaw and von Braun (2005) test the socio-demographic characteristics that influence the household’s declared willingness to pay. They find that the sex of the household head, the ethnic group, family size, membership in iddirs (funeral insurance groups) and income all influence household’s willingness to pay for CBHIS.

Informal Social Safety Nets

The literature on informal insurance is divided into two main streams. The first branch of literature discusses the differences between risk management and risk coping strategies and the determinants that influence households’ choices of risk management and coping strategies. The second branch of the literature on informal insurance focuses on one type of risk coping strategy, risk-sharing agreements. Several variants of risk-sharing models have been developed and tested using empirical data from different countries.

Risk management and risk coping mechanisms

Alderman and Paxon (1992) make an important distinction between risk management and risk coping. Risk management refers to efforts ex-ante to smooth
income fluctuations through the diversification of income generating activities and portfolio diversification. The choices regarding risk management depend on a household's risk aversion and ability to sacrifice riskier, higher income generating activities for more stable but lower return activities. Risk coping refers to mechanisms that households use ex-post to deal with a negative income shock. These mechanisms allow households to smooth consumption in the face of income fluctuations. Households may smooth consumption intertemporally or across households. Intertemporal mechanisms rely on savings and investments to develop a capital stock during years with positive income generation for use during years with negative income shocks. Households may also use formal or informal credit markets to smooth their consumption across time periods. Risk coping mechanisms that smooth consumption across households rely on either formal insurance markets or informal risk pooling arrangements between households.

There are different motives for informal risk sharing arrangements among households according to Alderman and Paxon (1992). They cite studies that show that shared norms and values can generate solidarity among households. They also discuss models based on self-interest. Households participate in risk sharing arrangements because they will benefit from such arrangements during negative income shocks. Much of the literature on informal insurance explores these self-interest based models and is discussed in the following section.

Deaton (2002) further develops the possibilities and limits of risk management and risk coping mechanisms discussed in Alderman and Paxon (1992). Income diversification as a risk management strategy is not always effective. During economic downturns, the demand for goods and services falls. Agricultural and non-agricultural income may be highly correlated in small villages. Furthermore, the income generating activities that are better protected from agricultural cycles, such as transportation, cattle herding, or shop keeping, require a large amount of capital. Thus, there is an entry barrier to such secure, lucrative activities. He also discusses different ways to diversify income, through increasing labor force participation of women and children and through migration to find work.

In relation to asset accumulation and savings as a way to self-insure, Deaton notes the problem of correlated shocks. If negative income shocks are related to weather or other common shocks, households will want to sell their assets during the same period, driving down the prices of these assets. Likewise, during prosperous periods, the price of commonly held assets increases because there is a higher demand to accumulate assets. Furthermore, “lumpy” assets can limit the effectiveness of self-insurance. “Lumpy” assets are goods, such as cattle, that can only be purchased in their entirety. They require a large amount of cash to acquire, and if the household needs to sell it, it has to sell the asset in its entirety, even if it is at a loss.

Habton and Ruys (2007) test which risk coping mechanisms are the most widely used in Eritrea to deal with health shocks. They examine mechanisms such as
receiving monetary help from members of the extended family, borrowing money from neighbors and friends, receiving assistance from quasi-religious mutual aid community associations, religious groups, or professional or occupational associations, and selling household assets. They also analyze the type of contributions that households receive. While the results vary by the geographic zone studied, they find that labor in time is the most common type of contribution, followed by monetary contributions, in kind contributions and attention.

Skoufias and Quisumbing (2005) take this analysis a step further by examining the determinants of the choice of risk coping mechanisms in Bangladesh, Mali, Mexico, Russia, and Ethiopia. In all of the countries except Mexico, in which panel data was not available, they used fixed effect logit regressions to test if the type of risk coping mechanism used depends on the type of risk that the household faced. In Mexico, they use simple logit regressions and calculate the marginal probability of using a specific risk coping mechanism after different adverse events. They find that in Mali, there is a significant difference in the type of coping strategies adopted in asset rich families and asset poor families. In Bangladesh, the time invariant characteristics of the households are important to the choice of risk coping mechanism. Poorer households have less access to credit, while debt is higher for better-educated households and those with a higher proportion of non-land assets. Furthermore, remittances are higher in larger families and those with a higher proportion of females. They examined such risk coping strategies as getting a second job, becoming involved in informal economic activities, receiving remittances, receiving public transfers, debt, selling assets, cultivating land, or changing the composition of food consumption. The types of coping mechanisms used in each country depend on the institutions and cultural context, and households usually use a variety of strategies rather than a single mechanism.

While Skoufias and Quisumbing (2005) examine a variety of different risk coping mechanisms, LeMay Boucher (2009) tests the determinants of participation in informal insurance groups. He compares participation in Ethiopian “iddirs,” which are groups primarily designed to protect families against funeral expenses, and participation in informal groups in Benin. After comparing the two systems, he uses a probit marginal effects model to test how socio-demographic characteristics influence participation in each of these groups. In Ethiopia, he finds that households that are wealthier in terms of livestock, female headed households and household size all significantly and positively impact the probability that a household participates in at least one “iddir.” Wealth measured in terms of land and the age of the head of household have no significant impact on “iddir” participation. In Benin, however, LeMay Boucher finds that wealth increases the probability of joining an informal insurance group. Age has a significant non-linear effect on the probability of joining. Unlike the Ethiopian data, household size and the gender of the head of household are not statistically significant.

Risk sharing models
As discussed above, one particular risk coping strategy involves risk sharing across households. There is a broad body of literature on these risk-sharing models. Coate and Ravaillon (1993) present a basic model of risk sharing using game theory. The model includes two risk-adverse households that have the same expected income and preferences. Their income varies at each date, and they cannot save between periods. The households work out an agreement ex-ante that the household that receives a larger income will share some of its wealth with the less fortunate household. After the households receive their income, they will honor the agreement if it is a repeated game with an unlimited time frame and if the implementation constraint holds. It is assumed that if one household reneges on the agreement, it cannot enter into another risk sharing agreement for the rest of the time periods. The implementation constraint must be fulfilled: the sum of a household’s expected utility for all periods when honoring the agreement must be higher than its utility from reneging on the agreement plus the sum of its expected utility for all future periods in autarky. Coate and Ravaillon (1993) suggest that the first best solution is complete risk sharing; however, if complete risk sharing does not meet the implementation constraint, partial risk sharing is the second best solution.

Many studies test risk-sharing models in developing countries and build upon the basic risk-sharing model presented in Coate and Ravaillon (1993). Townsend (1994) was one of the first to test risk-sharing models. He used data from the ICRISTAT villages in Southern India to test how consumption fluctuated in relation to income fluctuations. He found that the marginal propensity to consume did not vary much with personal income, a finding that supports risk-sharing models. However, most other studies have rejected the presence of full risk sharing in favor of partial risk sharing hypotheses.

Dercon and Krishnan (2003) test risk sharing using a fairly traditional model. They test if positive income shocks affect households’ consumption through personal income or only through the increase in aggregate village resources. When controlling for community fixed effects, they find that positive shocks to personal income in the form of food aid affect a household’s consumption level. A 10% increase in food aid increases consumption by 0.8%. They reject the complete risk-sharing model because there is an effect of personal income on consumption; however, they find evidence of partial risk sharing.

Skoufias and Quisumbing (2005) make an interesting distinction between food and non-food consumption in their tests of risk sharing. When they test total consumption, they find that consumption is not fully insured from idiosyncratic income shocks in Ethiopia, Mali, Mexico or Russia. Consumption varies significantly with negative income shocks. However, when they separate the types of consumption, they find that food consumption is better insured from income shocks

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3 For a good summary of different risk sharing models and studies that test these models, see Morduch (1999).
than non-food consumption in all four of the countries studied. In Mali and in Ethiopia, food consumption is almost completely covered through informal arrangements. It appears that households sacrifice non-food consumption in order to secure their food consumption.

Ligon et al. (2001) attempt to explain the failure of full risk pooling models by developing the concept of limited commitment. They build upon Coate and Ravaillon’s static model to create a dynamic limited commitment model. In this model, transfers depend not only upon current income but also upon previous transfers. This model also includes a discount factor. They use data on three Indian villages to test their model and find that the dynamic limited commitment model explains the relationship between individual income and idiosyncratic shocks better than a static model or than a full risk-pooling model. However, this model does not predict the distribution of consumption among households in the village effectively.

Hoogeveen (2003) also offers an extension on traditional risk-sharing models. He argues that an absence of correlation between household income and household consumption does not necessarily imply risk-sharing agreements: households may accumulate assets and use them during difficult times to self-insure. To test for risk sharing while controlling for asset buffers, Hoogeveen generates a model with a village-level centralized planner that sets the aggregate savings rate in order to maximize utility for the village. A household’s change in consumption depends on their individual income change, village level changes, a change in individual asset detention and error. He tests the model using data from rural Zimbabwe and finds evidence of partial risk sharing.

Vanderpuye, Orgle, and Barrett (2009) present another modification of the risk-sharing model. They test if informal insurance coverage depends on a person’s social visibility. They tested social visibility in several ways. Survey participants were asked about their relationship with other randomly selected members of the community. The different social visibility measures were constructed using the responses of an individual about the people he or she knows and the number of other community members that reported knowing this person. Using data from rural Ghana, they find that there is a group of socially “invisible” people, who tend to be younger, engaged in farming, new to the area, poor, or from parents that did not hold any village offices. They find that the degree of risk sharing depends greatly on one’s social visibility. For the subsample of socially visible people, they cannot reject the hypothesis of complete risk sharing. However, for the subsample of socially invisible people, they overwhelmingly reject the null hypothesis of complete sharing and they cannot reject the hypothesis of no risk sharing. Thus, access to informal insurance depends on one’s social network.

Alderman and Paxson (1992) note that while evidence supports partial risk sharing, certain types of transfers are difficult to measure. Households may transfer people or labor instead of money. They may also work insurance components into rent contracts. Furthermore, Alderman and Paxson argue that not all transfers are
for insurance purposes. Some people may transfer money or services in order to secure their inheritance, for altruistic purposes, or to repay previous services. Indeed, De Weerdt and Fafchamps (2011) prove the importance of kinship ties and altruism in both the frequency and the size of transfers using data from a household panel survey in a Tanzanian village. They find that 34% of transfers happen between related households; although, these households only represent 6% of the pairs of households. Transfers among kin represent 43% of the total value of transfers. Other proximity variables, such as geographic distance, religion or clan also significantly and positively affect the amount and the frequency of transfers between households. These findings have two possible implications. Some of the transfers observed in other studies may be due to altruism or kinship ties rather than pre-existing informal insurance arrangements. Alternatively, these transfers may represent pre-existing informal insurance arrangements; however, households prefer to have such arrangements with kin or people with other ties to them.

Crowding out

While the literature discussed thus far has focused on either formal or informal insurance mechanisms, another trend in the literature regards the relationship between formal and informal social protection. Notably, this literature focuses on the phenomenon of crowding out, or formal insurance replacing informal insurance mechanisms. One of the first major empirical tests of the relationship between private and public transfers is Cox and Jimenez (1992), which studied this relationship in Peru using the Peruvian Living Standards Survey. While they did not find complete crowding out, as predicted in Becker (1974) and Barro (1974), they did find evidence of partial crowding out. They estimated that the probability that an urban household receives an inter-household transfer decreases 8 percentage points when the household receives social security. Furthermore, removing social security would cause a 7.07% increase in inter-generational transfers. Thus, public transfers do partially crowd out private transfers in Peru.

Dercon (2002) discusses Cox and Jimenez’ findings and their implication for policies. He argues that the impact of public transfers is usually smaller than the total transfer amount, as private transfers are often reduced. Poor households may actually become more vulnerable as they leave informal arrangements due to the newly received transfers. He argues that policy could target groups of individuals rather than individuals. In this way, the transfer affects all members of a group risk sharing agreement, and their incentives to maintain the informal arrangement rest relatively unchanged. Policies could also encourage group insurance rather than bilateral insurance between private parties.

Dercon and Krishnan (2003) test how food aid affects informal risk sharing arrangements. Their study first tests if household consumption responds to positive income shocks in the form of food aid. They find evidence of partial risk sharing arrangements in the community. In order to test if food aid decreases the amount of partial risk sharing in a community, they introduce interacted variables into the
traditional risk sharing equation discussed in the previous section. These variables interact food aid with observable idiosyncratic shocks, such as crop or livestock shocks. The null hypothesis that the coefficient of these interacted variables is zero is rejected. They find that villages in which there is food aid, idiosyncratic shocks have a larger impact on household consumption. This implies that traditional risk sharing mechanisms are weaker in villages that received food aid.

In contrast to much of the literature that takes an empirical approach, Heemskerk and Norton (2004) take an ethnographic approach to understand how public insurance affects informal insurance in rural Latin America. Through qualitative interviews they find that “informal insurance fails when shocks are cumulative, co-variant, irreversible, unforeseen and extremely costly” (3). They argue that while formal insurance may crowd out certain informal arrangements, it still has important welfare enhancing effects for families. Formal insurance increases the number and variety of survival strategies for vulnerable households and can improve the standard of living in recipient communities. Heemskerk and Norton even argue that public welfare might help to strengthen traditional safety nets, as “reciprocity works better when there is more to share” (11). Furthermore, with higher incomes, households may be better able to save and self-insure.

Insurance in Iraq

Iraq has a rather unique public welfare system, marked especially by the Public Distribution System (PDS). While other countries in the MENA region spend an average of 3.6% of GDP on public social safety nets, Iraq spent 8.8% of their GDP on social safety nets in 2008. The formal social protection system can be broken down into three different categories: the Public Distribution System (PDS), the Social Protection Net (SPN), and job-related benefits. This section will first detail each of these programs and then discuss the literature on private transfers.

The largest public welfare program is the Public Distribution System (PDS), which distributes food rations to 99.7% of Iraqi households. These rations include ten different staples and provide 85% of the average caloric requirement. The program was introduced in 1990 when food imports declined due to sanctions, and the PDS was expanded during the Oil for Food Program. While the distribution system was affected by conflict in 2006, by 2007, the most households were again receiving their rations on time. The program represents 8.6% of GDP, and it provides 14% of the poverty line to each household. However, while this program is the largest social program in Iraq, it has certain problems. First, as it is universal, it does not target the poor or vulnerable households. Because of its size, it has caused some distortions in the food market that have depressed food prices and thus hurt rural farmers. There is some evidence also that the PDS has introduced labor distortions. Iraq has unusually low labor market participation rates. Only 57% of

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4 The majority of this section is based on information in “Confronting Poverty in Iraq,” unless otherwise noted.
adults are active, and 87% of women are out of the labor market. The report “Confronting Poverty in Iraq” suggested that the unusually low labor market participation in Iraq could be due to the guarantee of food rations.

Iraq is gradually moving toward reform of the PDS in order to support programs that can have a larger impact on poverty reduction. In 2009, a five-year reform plan of the PDS was adopted. Reforms included a reduction in the number of participants, a revision of the food basket, decentralization to governorates that have effective capacity and to the Kurdistan Regional Government, and capacity building to help the private sector provide food. Finally, reforms aim to merge the PDS and the SPN by 2015. By 2010, eligibility had already been terminated for some of the wealthiest households (Iraq Briefing Book).

In order to better target social policies and reduce poverty, the Social Protection Net (SPN) was introduced in 2004 by the Ministry of Labor and Social Affairs. The SPN is a cash transfer program meant to target poor and vulnerable populations. In addition to providing cash benefits, the SPN also provides other social benefits, such as vocational training, career counseling and support for income-generating projects (Iraq Briefing Book). The SPN currently targets groups of individuals that are believed to be vulnerable, such as the disabled, orphaned children, divorced or widowed women, married male university students, families of imprisoned or missing persons, those unable to work due to terrorism, and the internally displaced. Despite the efforts to target vulnerable populations, the SPN does not effectively target poor individuals. The program reaches less than 10% of the poor, and two-thirds of beneficiaries live above the poverty line. In fact, not all of the groups targeted are more vulnerable or poorer than the average Iraqi. Some of the groups that are targeted actually have a lower poverty head count and poverty gap than the whole population. According to the Economist Intelligence Unit Iraq Country Report, another problem with the SPN is the lack of sufficient funds to meet the demand of those that are eligible to receive transfers. Indeed, the Iraq Briefing Book estimated that the SPN only reaches about 112,000 of the 850,000 eligible families. Furthermore, the benefits are relatively small, as they are less than 10% of the median income of the lowest quintile.

While workers in both the formal and informal sectors are eligible for the PDS and the SPN, other formal social welfare programs are limited to wage workers in the formal sector. Public sector workers receive pension benefits, and private sector workers often receive retirement, healthcare, and other benefits. While these benefits are linked with employment in the formal sector, not all formal workers receive these benefits. 68% of Iraqis work for wages, of whom 50% receive benefits. Only 30% of Iraqi workers are covered by job benefits, and only 15% of poor workers are covered. Pension benefits are relatively generous, and on average they constitute 16% of transfer income to the poor and 25% of transfer income to the non-poor. Nevertheless, these systems are unsustainable because the contribution rates are not sufficient to cover the benefits. Furthermore, they primarily assist households living above the poverty line.
Iraq was one of the first countries in the region to create a public social protection system. They established a provident fund in 1956, which became the social security plan in 1964 (Turner and Lichtenstein 2002). Both employers and employees contribute to the defined benefit retirement program. Oil companies contribute 20%, while other companies contribute 12% to cover employment injury, retirement benefits, and other benefits. Employees contribute 7% of their salary to the social security system. Retirement benefits are distributed in the form of annuities, which is similar to the system in other MENA countries (Turner and Lichtenstein 2002). The benefits are calculated based on the “length of contribution/service, some measure of the individual’s wage and a policy parameter setting the generosity of the scheme, the so called accrual rate” (Akhtar et al. 2009). The mandatory retirement age is 63 years of age, and one has to contribute 15 years in order to receive full benefits.

In 2007, Iraq passed a law to reform the social security system, and the World Bank’s Emergency Social Protection Project provided technical assistance to conceive and implement the reforms. One of the biggest changes under the 2007 reform was to merge public and private pension systems by 2010. Previously, the State Pension System (SPS) administered the public sector while the Social Security System (SSS) administered the private sector pension and healthcare plans. The reforms created the National Board of Pensions (NBP) to administer these two systems in order to decrease labor market segmentation. One challenge that the NBP now faces is that the SSS includes other social insurance components such as health insurance, while SPF only includes retirement benefits (Akhtar 2009).

There are different assessments of the performance of the Iraqi pension system. According to Turner and Lichtenstein (2002), the Iraqi pension system functions relatively well compared to other countries in the region. Although the public social security program in Iraq only covers about 30% of Iraqi workers, this is slightly above the average for the MENA region, in which 25% or less of the labor force is covered on average by social security programs (Turner and Lichtenstein 2002). While Turner and Lichtenstein (2002) presented a rather optimistic view of the pension system’s reach in Iraq, Akhtar et al. (2009) estimated that even if pension reforms are effective, only a quarter of laborers will be covered, and Iraq would be 10% below the average coverage rates in the MENA region. According to this study, only Yemen and the West Bank and Gaza would have a lower retirement protection rates than Iraq. Furthermore, they argue that the pension system reinforces old age poverty, as only the middle and upper classes have access to the system. Akhtar et al (2009) also note using data from 2005 that pension payments represented 5.6% of GDP and that extensions to the system would make it unsustainable.

Overall, public and private transfers account for 28% of poor people’s income in Iraq and for 21% of the income of households living above the poverty line. The public welfare system is the largest source of income transfers in Iraq, as
83% of the transfers that households receive come from the PDS or the SPN. While private transfers represent a much smaller part of transfer income, they come from more varied sources, including gifts from other households, remittances from abroad, zakat, or income from NGOs. A quarter of poor households receive private transfers. A similar percentage of non-poor households receive private transfers; however, households above the poverty line usually receive greater transfer amounts than poor households. Most transfers are domestic: less than 5% of transfers come from abroad. Households with female heads tend to receive more and larger private transfers than those with male heads. To our knowledge, there are no studies that examine other informal insurance mechanisms than private transfers in Iraq.

This study complements and contributes to the existing literature in several ways. First, it fills the knowledge gap about the Iraqi social protection system. It completes information on which households have access to formal insurance and explores informal insurance mechanisms other than private transfers. Second, it expands upon techniques used in Skoufias and Quisumbing (2005). This study goes into more detail than Skoufias and Quisumbing's research by focusing on only one country. It also studies a larger number of risk coping mechanisms. Finally, this study complements the literature on crowding out by examining the relationship between formal and informal forms of social protection in Iraq.

**Economic models for testing formal and informal insurance**

To understand the factors that affect access to and use of formal and informal insurance mechanisms, we use data from the Iraq Household Socio Economic Survey (IHSES) 2006-2007, which was carried out by the Central Organization for Statistics and Information Technology (COSIT), the Kurdistan Region Statistics Organization (KRSO), and the World Bank. This survey interviewed over 18,000 households and 127,000 individuals and is designed to be representative of the Iraqi population. The survey contains data on many different socio-demographic characteristics at both the individual and household level. All individuals over 6 years of age were inquired about their employment and formal insurance benefits; thus the analysis of formal insurance is also done at the individual level. On the other hand, the questions regarding risks and informal coping mechanisms were asked at the household level; thus, the section on informal insurance uses household level analysis.

**Formal Insurance**

As mentioned above, over 99% of the Iraqi population has access to the food rations under the Public Distribution Service (PDS). As this program is almost universal, it does not make sense to examine the determinants of participation in this social safety net. The IHSES 2006-2007 does not contain information on benefits received from the Social Protection Net (SPN). However, it does include
information on access to other formal social protection programs, including social security, health insurance and retirement benefits. As social security, health insurance and retirement are all linked with formal wage employment, only those holding wage jobs were inquired if their job offered one of the aforementioned benefits. Thus, our analysis of formal insurance detention only applies to wage workers in the formal sector. We test how socio-demographic characteristics influence whether a wage-worker benefits from social security, health insurance, and retirement. The model can be written:

\[
Pr(SocialSecurity = 1) = \alpha \mu + \alpha_{poor} + \alpha_{urban} + \alpha_{education} + \alpha_{hhsize} + \alpha_{age} + \alpha_{gender} + \alpha_{public} + \alpha_{governorate} + \mu
\]

\[
Pr(HealthInsurance = 1) = \alpha \mu + \alpha_{poor} + \alpha_{urban} + \alpha_{education} + \alpha_{hhsize} + \alpha_{age} + \alpha_{gender} + \alpha_{public} + \alpha_{governorate} + \mu
\]

\[
Pr(Pensions = 1) = \alpha \mu + \alpha_{poor} + \alpha_{urban} + \alpha_{education} + \alpha_{hhsize} + \alpha_{age} + \alpha_{gender} + \alpha_{public} + \alpha_{governorate} + \mu
\]

Poor is a dichotomous variable that takes the value of one if the household lives below the poverty line, as defined through the calculations leading up to the Poverty Reduction Strategy Paper and described in Amendola and Vecchi (2011). Using a method similar to that in Grimm, Guénard and Mesplé-Somps (2000), we calculated the variable education, which represents the percentage that the individual achieved of their education potential. The education potential is the number of successful years of education that an individual received divided by the maximum number of years that the individual could have attained given their age. The variable hhsize refers to the size of the household in which the individual lives, and public is a dummy variable that takes the value of one if the individual is employed in the public sector and zero otherwise. Finally, governorate is a series of dichotomous variables that represent the 18 governorates, or administrative regions, in Iraq.

**Informal Insurance**

After testing the determinants of access to formal insurance, our study focuses on risks that Iraqi households face and on informal social protection. The IHSES includes a module on risks that the household faced within the 12 months preceding the survey, and it inquires households that faced at least one difficulty about the risk coping mechanisms they used. As these questions were asked at the household level, the analysis for the rest of the study is conducted at the household level. We begin by analyzing the risks that households face and if households’ socio-demographic characteristics influence the probability that they experienced a certain risk. We regrouped the questions in the IHSES to include four categories: job-related risks, health-related risks, violence, and other. After analyzing the descriptive statistics we run logit and probit regressions on the following model:

\[
Pr(JobRisk = 1) = \alpha \mu + \alpha_{poor} + \alpha_{urban} + \alpha_{hhedu} + \alpha_{hhsize} + \alpha_{agehead} + \alpha_{headfem} + \alpha_{governorate} + \mu
\]

The variables in this model are similar to those in the formal insurance model. However, as everything is at the household level, hhedu represents the
overall education level of the household, agehead and headfem are the age and gender of the household head respectively. The sector of employment was excluded from this model, as this information was only available for wage-workers in the formal sector. The same model is used for health, violence, and other risks.

After testing how household characteristics influence the risks that they face, we test how households cope with difficulties. We regrouped the coping mechanisms included in the survey to form 11 groups. The mechanisms studied include: reducing consumption or spending, using savings or investments, taking out loans, receiving transfers, selling assets, migration, joining the military, using child labor, forcing young girls to marry, other, and nothing. We test the following model on each of the mechanisms listed above in order to understand how the type of risk that the household faced and its socio-demographic characteristics influence the choice of risk coping mechanism.

\[ \Pr(\text{CopingMechanism} = 1) = \alpha_1 + \alpha_2 \text{jobrisk} + \alpha_3 \text{healthrisk} + \alpha_4 \text{violence} + \alpha_5 \text{other} + \alpha_6 \text{hhcharacteristics} + \mu \]

Where hhcharacteristics is a vector of different socio-demographic characteristics, including poverty, area of residence (urban/rural), education, size, age and gender. As in the analysis of risks, the analysis takes place at the household level, and thus variables such as age and gender refer to those of the household head.

As only households that experienced problems were asked the questions regarding coping mechanisms, our regressions in this section correct for selection bias. Because the households that faced risks may have different characteristics than those that did not face risks, uncorrected results may not represent the population. Thus, we use bivariate probit models with sample selection to control for sample selection bias. This type of model simultaneously estimates two probit models: one being the outcome equation described above, and the other being the selection equation. The selection equation we use tests the probability that a household faced a problem, given its characteristics and its region of residence. Because we cannot compute the marginal effects using this model, we also estimate probit and logit models in order to determine the marginal effects. In the section on robustness checks, we test if these marginal effects are robust despite selection bias.

**Crowding out**

After understanding the determinants of both formal and informal social protection, we test the relationship between formal and informal insurance. As discussed in the literature review, many studies have tried to understand the extent to which formal insurance crowds out informal insurance. To test this in the case of Iraq, we take a closer look at the choice to not use any coping mechanisms. We re-estimate the above equation, with no coping mechanism as the dependant variable and including access to one of the forms of social security as an independent variable. If the coefficient of this variable is significant, we can understand the
extent to which formal insurance replaces the use of informal coping mechanisms. However, as once again we only have the information on coping mechanisms for the sub-sample of households that faced difficulties, we must use corrected regressions to avoid problems of sample selection bias.

**Analysis of Formal Insurance**

**Descriptive Statistics**

As discussed above, our discussion of formal insurance includes access to social security, health insurance and retirement benefits. Only wage-workers in the formal sector have access to these formal social programs; thus, the following analysis only considers the determinants of participation in formal insurance among formal wage workers.

Slightly less than half of formal wage-workers benefit from at least one of the aforementioned programs. Between 45 and 46% of wage-workers participate in social security and pension systems. 97% of individuals with social security also have pension benefits and visa versa. Individuals that have health insurance also tend to have social security and retirement. However, as only 30% of workers have health insurance, not all individuals with social security or retirement have health insurance. The descriptive statistics that figure in appendix two implicate that coverage depends on socio-demographic characteristics.

Individuals that live in families living above the poverty line are twice as likely as those living below it to have access to formal insurance. Those living in urban areas have a slightly higher coverage rate than those in rural areas, and the coverage rates also vary by governorate. Individuals that live in larger households are less likely to have social security, health insurance or pension benefits. Those that have reached at least 50% of their education potential are much more likely than those that have less education to benefit from formal insurance. 29.5% of the individuals in the lowest education bracket have at least one form of formal insurance while 74% of individuals in the highest education bracket have a form of insurance. Females are much more likely than males to benefit from insurance. 91% of women employed in formal wage jobs have insurance, but only 41% of men employed in formal wage jobs have formal social protection. Participation in social protection programs is overwhelmingly linked to the sector of employment. 90% of public sector workers are covered; however, only 2.5% of private sector or non-profit employees have coverage.

The logit and probit regressions on formal insurance detention figured in appendix 3 confirm the relationship between socio-demographic characteristics and formal insurance detention. While both the probit and logit models produce the same basic results, in terms of significance and direction of effects, the two models differ slightly in the size of the marginal effects, as can be seen in appendix 4. For
social security and retirement, the marginal effects calculated using a logit model are larger than those calculated with the probit model. However, for health insurance detention, using a probit model results in larger marginal effects than using a logit model. We will discuss the range of the marginal effects of the independent variables on insurance detention, taking into account the different models.

Poverty, the area of residence, education, age, the size of the household, gender and the sector of activity all affect whether an individual has access to social security. Poor individuals are 4.2% less likely than individuals living above the poverty line to have social security. People living in urban areas are between 4.6% and 5.3% less likely than those in rural areas to have social security. Increasing the achieved percentage of one’s education potential by one percentage point increases the likelihood that the individual will have social security by between 36.4% and 41%. The probability of benefitting from social security increases only slightly, by less than one percent, when the household increases in size. While this effect is small, the sector of activity greatly affects access to social security benefits. Working in the public sector as opposed to the private sector increases the probability that someone will benefit from social security by between 81.6% and 82.5%. Men are between 23% and 28.4% less likely than women to benefit from social security. Finally, we observe a non-linear relationship between age and the detention of social security. The probability of having social security increases by about 2% to 2.4% per year; however, after age 61 it decreases by approximately 0.02% each year.

The same variables that affect social security also influence whether or not an individual has pension benefits, with the exception of household size. Poverty decreases the probability of benefiting from public retirement funds by 3%. Living in an urban area decreases the probability of having retirement by between 5.6% and 6.1%. Increasing the achieved education potential by one percentage point increases the likelihood of having retirement benefits by between 40.1% and 43.2%. Public sector workers are between 83.1% and 84% more likely than private sector workers to be offered retirement benefits through their jobs. Men are between 28.4 and 34.5% less likely than women to benefit from public pensions. Finally, as with social security, age has a non-linear relationship with the probability of having pension benefits. The probability of having a public retirement plan increases by between 2.3% and 2.5% per year up until age 62, when it begins decreasing by 0.02% per year.

Socio-demographic characteristics have a smaller influence on the detention of health insurance. Additionally, age has a linear relationship with health insurance detention; an additional year increases the probability of having health insurance by approximately 0.1%. A one-percentage point increase in the achieved education potential increases the probability of having health insurance by between 9.6% and 12.5%. Finally, employment in the public sector raises the chances of having health insurance by 44%.
Analysis of Informal Insurance

Do different types of households face different risks?

The descriptive statistics show that the amount of risk to which households are exposed depends upon their socio-demographic characteristics and their geographic location. A greater percentage of households with younger or female household heads report experiencing at least one problem during the 12 months preceding the survey. There is a higher incidence of risk among households with wage-workers, those that live above the poverty line and those in urban areas. The percentage of households that reported problems in the 12 months leading up to the survey varies significantly by governorate. Only 5.92% of households were affected by economic, health or security risks in Salah al-Deen, while 36.5% of households in Al-Anbar reported problems.

Additionally, socio-demographic characteristics and geographic location also affect the types of risk that households face, as shown in appendix 5. In terms of economic or employment risks, urban, large and poor households are more affected by employment risks. Households with female heads are more likely to experience a decline in wages. Additionally, wage-workers are more affected by employment risk than self-employed individuals. Finally, education seems to have the largest impact on households with a relatively high level of education; households that have reached 75% or more of their education potential are less likely to lose their jobs.

Socio-demographic characteristics seem to have a smaller impact upon the incidence of health risks. Nevertheless, large households are more likely to report illness or death. On the other hand, well-educated households (those that have attained 75% or more of their education potential) are less likely to experience severe illness. Households with female heads are more likely to declare a death in the household but less likely to report illness.

The risk of violence depends on socio-demographic characteristics and geographic location. Households that have achieved 75% or more of their education potential are twice as likely than those that have achieved 25% or less of their potential to be affected by war related violence. Well-educated households may be targets because of the wealth and social positions that are correlated with a high degree of education. Urban households are more likely to report theft or kidnapping, and households with female heads are more likely to report kidnapping or death threats. Finally, large households are less likely to experience violence.

The governorate in which a household resides greatly affects the type of problems that the household faces. Economic woes are centered in a few governorates that have exceptionally high rates of job loss, bankruptcy or lowered wages. These governorates include: Al Anbar, Baghdad, Kerbela, Thi-Qar, Maysan and Basrah. The incidence of economic risk varies significantly among the other
governorates. The incidence of health related risks also varies among governorates, but to a lesser degree than economic risk. The governorates that are most affected by health related shocks are not the same ones that were most affected by economic shocks. Violence only significantly affects households in Diyala, Al-Anbar and Baghdad; however, the percentages of households that are affected by war-related violence in these governorates are 25%, 18%, and 15% respectively.

For the most part, the probit and logit regressions presented in appendix 6 and the marginal effects and odds ratios presented in appendix 7 confirm the trends in the descriptive statistics discussed above. Being poor, a wage earner, or living in urban areas increases the probability that one experiences job related problems. The probability of job related problems decreases with age and the education of the household, and the governorate in which a household is situated affects the probability that it experiences job related difficulties. More precisely, poor households are 20% more likely than households living above the poverty line to experience job risks. Urban families are 68% more likely to face job difficulties than rural households. Wage earners are 21% more likely than self-employed individuals to struggle with job related risks. Finally, residents in Al-Anbar were especially susceptible to job related risks: they were 430% more likely than residents of Duhok to face problems with work.

The probability of facing health related risks is higher for urban populations and for larger and female-headed households. The probability of health risks decreases with the education of the household and the age of the household head. Urban populations are 39% more likely than rural ones to report health related problems. Households with female heads are 97% more likely than their male counterparts to report health issues.

While the regression results for job risks and health risks are consistent with the descriptive statistics, the only statistically significant factors affecting the probability of reporting violence are the size of the household and the governorate. Larger households are more likely to face violence. Certain governorates have an extremely high probability of violence. Residents of Diyala are 6,351% more likely than residents of Duhok to report violence, those in Al-Anbar are 7,214% more likely to report violence, and those in Baghdad are 5,995% more likely to report violence.

What determines the choice of risk coping mechanisms?

The IHSES asked households that had faced one of the problems discussed in the previous section about the types of risk coping mechanisms that they used to deal with the problems they faced. The questionnaire included 24 possible risk coping mechanisms, which we regrouped into 11 groups. The risk coping mechanisms under study include decreasing consumption or spending, using savings or investments, taking out loans, receiving transfers, selling assets or durable goods, migrating to another region or abroad, joining the military, using
child labor, forcing young girls to get married, other mechanisms including begging, or doing nothing.

By far, the most important risk coping mechanism used in Iraq is decreasing consumption or spending, as 71.57% of households reported using this type of strategy. The next most widely used mechanisms are using savings or investments and taking out loans, each of which was used by 45% of households. Seventeen percent of households received transfers, and the same amount of households sold assets or durable goods. The amount of households that resorted to child labor or child brides was non negligible. In the entire sample, 3.36% of households put their children to work, and 1.75% married off their young daughters.

Analysis of the descriptive statistics that figure in appendix 8 implies that the choice of risk coping mechanism depends on geographic location, the socio-demographic characteristics of the household and the type of risk that the household faced. A higher percentage of rural households decrease consumption, spend savings, or take out loans than urban households. However, urban households are more likely than rural households to join the military, migrate or resort to child labor. Households only use child marriage to cope with difficulties in urban areas.

In addition to the type of locality in which the household is situated, the percentage of households that use different risk coping mechanisms varies significantly by governorate. For example, in Qadisiya only 4.07% of households reported decreasing consumption or spending in response to a problem, while in Maysan, 93.79% of households used this technique. Migration and spending savings or investments also fluctuate greatly among different governorates. Some of the other coping mechanisms seem to be almost uniquely used in a few governorates. Joining the military is used almost exclusively in Diyala, Baghdad and Wasit. Additionally, in many governorates, households do not use child labor or marry off their daughters. The rate of child labor is exceptionally high in Baghdad and Basrah, and the rate of using marriage as a coping mechanism is especially elevated in Baghdad and Wasit. Finally, in some governorates, such as Kirkuk or Maysan, less than 1% of households did nothing to cope with their problems, whereas in Sulaimaniya, Al-Anbar and Qadisiya, between a fifth and a third of households did not use any risk coping mechanisms after a problem.

The socio-demographic characteristics of the household also seem to influence the choice of risk coping mechanism. Households with women heads tend to decrease consumption, spend savings or take out loans more frequently than households that have male heads. Consistent with the literature on the subject, households with women heads also receive transfers in a higher proportion than their male counterparts. Despite the literature that argues that in general women are more protective of and concerned with the welfare of their children, households with women heads are much more likely to use child labor or force their young daughters to marry. Nevertheless, despite the apparent correlation in the
descriptive statistics, the regression results demonstrate no relationship between any household characteristics and the use of child labor or child marriage. Only the types of risks that a household faces have a statistically significant relationship with the use of these coping mechanisms.

The age of the household head also affects the choice of risk coping mechanism. Whereas younger household heads tend to use loans, older household heads tend to use savings. This result is quite logical, as households with younger heads might not have had enough time to build up savings. Younger households also tend to receive more transfers or migrate more after facing a difficulty. Using marriage as a risk coping mechanism is only important for households whose head is 45 years old or older.

The size of the household also seems to affect the choice of risk coping mechanisms. Smaller households are more likely to decrease consumption or spending, spend savings, receive transfers or migrate. Households with ten or more members are more likely to cope with risks by joining the military, using child labor, marrying young daughters, or doing nothing than those that are smaller. While size does seem to matter in the choice of risk coping mechanism, having a wage job does not seem to make a large impact, except in the cases of child labor and migration.

The general level of a household’s education seems to influence the choice of risk coping mechanism. Households that reached a greater percentage of their education potential use decreasing consumption less often and use self-insurance through savings more often than less-educated households. The percentage of households that use loans to cope with risk rises with education at first and then falls. Education may increase a household’s awareness of and access to financial products, but those in the highest education category may prefer to use savings rather than loans. Households in the lowest education bracket are more likely to receive transfers. Twice as many households in the highest education bracket migrate than those in the lowest education bracket. No households that have reached 75% of their education potential or more used marriage as a coping mechanism. Finally, the percentage of households that did not use any coping mechanisms increases with the level of education.

Poverty also affects the use of risk coping mechanisms. Poor households are half as likely as households living above the poverty line to do nothing to cope with risk. Poor households are more likely to decrease consumption or take out loans; however, they are less likely to use savings or sell durable goods to deal with problems. This is rather logical, as households below the poverty line may have difficulty saving or accumulating assets. Somewhat surprisingly, poor households are less likely to use child labor or to use marriage as a coping mechanism.

In addition to geographic and socio-demographic characteristics of the household, the type of risk that the household faced also affects the choice of risk coping mechanism. After a job related problem, a larger percentage of households
reduces consumption. After a violence related problem, households tend to use savings or migrate more; however, they do not take out as many loans. Higher percentages of households use transfers and child labor to respond to both job or health risks than for violence or other types of problems.

Not all of the inferences drawn from the descriptive statistics above are confirmed in the regression results. While above we examined which coping mechanisms people with different characteristics and facing different problems privilege, in this section, we test how the characteristics and types of problems influence the probability of using a specific coping mechanism. To eliminate selection bias we estimated bivariate probit with sample selection models; however, as this type of model does not allow us to calculate marginal effects, we also estimated logit and probit regressions. While there is evidence of sample selection bias, the results do not seem to be compromised by selection bias. This will be further discussed in the section on robustness checks. The results from the bivariate probit regressions with sample selection are in appendix 9. The results from the logit and probit regressions figure in appendix 10, and the marginal effects and odds ratios calculated using these two models figure in appendix 11.

Regarding decreasing consumption or spending as a way to cope with difficulties, facing job related problems increases the probability of reducing consumption by 37.5%. Experiencing health problems increases the probability that a household decreases consumption by 6.4%. Households that experienced violence or other related risks are respectively 22% and 13% more likely than those that did not experience these difficulties to reduce consumption. Poor households are 14% more likely than non-poor households to decrease their consumption spending, and urban households are 9.4% less likely than rural households to use decreasing consumption as a coping mechanism. Female-headed households are less likely to decrease consumption than male-headed households. Finally, the likelihood of using consumption as a risk coping mechanism decreases with the household’s education level and size.

The probability of using savings as a coping mechanism increases after any kind of problem and with the education of the household, and it decreases with the size of the household. Urban households and wage earning households are less likely to spend savings than rural or self-employed households. People that experienced job, health, or other types of problems were respectively 18%, 24%, and 17% more likely to take out loans as those that did not experience these problems. However, those that are affected by violence are 8% less likely than others to use loans to deal with difficulties. The use of loans decreases with the household’s education and the household head’s age. Poor households are 11% more likely to use loans to deal with problems, which may make these households more vulnerable. Households that experienced job, health, violence, or other problems have a higher probability of receiving transfers than those that did not. The probability is higher in the face of health related problems: households that had health problems are 12% more likely than those that did not to receive transfers to
deal with their difficulties. Poor households are 5% more likely than non-poor families to use transfers as a coping mechanism. The use of transfers declines with the size of the household.

Regarding using the sale of assets or durable goods to deal with difficulties, those that experience job, health, or violence related problems are more likely than those that don’t to use this coping mechanism. Poor households are 9% more likely than those living above the poverty line to sell their assets or durable goods in response to difficulties. As with the use of loans, this coping mechanism may perpetuate the cycle of poverty and make these households more vulnerable. Migrating to deal with difficulties is strongly tied to the experience of violence. Households that experienced violence are between 12% and 13% more likely to use migration as a risk coping technique than those that did not experience violence. The probability of using migration as a coping technique decreases as the size of the household increases and increases among poor households.

Joining the military in response to a problem seems to especially be the case in households that experienced risks other than job, health, or violence, as these households are between 3% and 4% more likely to use the military as a coping mechanism than those that did not have these other problems. Health and job related risks are also correlated with a higher rate of joining the military to deal with difficulties, though to a lesser extent than other problems.

Only the type of risk that a household faces, and not its characteristics, determine the use of child labor as a coping mechanism. Child labor is most prevalent in the face of health risks, followed by job related risks. Households that underwent a health shock are between 2% and 3% more likely than those that did not experience a health related issue to use child labor. Households that experienced a job related problem are between 1% and 2% more likely than those that did not experience such a problem to use child labor. Similarly to child labor, the type of risk faced has the largest impact on the use of child marriage to cope with difficulties. The effects are largest for health and other problems. Additionally, the regressions confirm one of the implications of the descriptive statistics: the age of the household head slightly increases the probability that a household will use child marriage as a coping mechanism.

There is not a strong relationship between household characteristics and risks and using other coping mechanisms than the ones described so far. The only exceptions seem to be that urban households are 1% more likely than rural households to use other coping mechanisms, and households facing economic risks are less likely to use other coping mechanisms. Finally, poor families are less likely to do nothing in the face of difficulties. However, the probability of doing nothing to cope with problems increases with the education and size of the household and among urban households. The following section will further examine the determinants of doing nothing in the face of risk in order to test formal insurance crowds out the use of informal coping mechanisms.
Robustness Checks

This section of the study is subject to several potential problems. First, there is a risk of selection bias in the regressions on the use of coping mechanisms. Only households that experienced problems were asked how they dealt with them. Because different households face different risks, the sub-sample of households that responded to questions on coping mechanisms is not representative of the population. Second, there could be problems of reverse causality. Perhaps the risks that a household faces or the coping mechanisms that they use influence their characteristics, such as poverty, place of residence, or size. This section discusses the robustness checks we used to test the sensitivity of our results to these potential problems.

To test for selection bias, we estimated bivariate probit with sample selection models for each of the coping mechanism regressions discussed above. Rho measures the correlation between the error terms of the outcome and the selection equations to test the presence of selection bias. For all of the models, we reject the null hypothesis that rho is equal to zero; thus, we find evidence of selection bias. However, when we compare the results of the bivariate probit models with the results from the probit models discussed above, the results do not change. All of the coefficients remain statistically significant, and the value of the coefficients only changes slightly. Thus, despite the presence of selection bias, our results are robust.

After testing for selection bias, we test if reverse causality affects our study of informal insurance and risks. In order to test for reverse causality, we considered each independent variable separately and listed the risks or coping mechanisms that could potentially influence the value of the independent variable. We then used either logit or OLS regressions to test if these risks or coping mechanisms had a statistically significant effect on the independent variable. There are three cases that are worth discussing.

The most obvious example is that of poverty. Individuals that are poor may be poor because they experienced job, health, or violence related risks or because they decreased their consumption and sold productive assets in response to a crisis. Not surprisingly, decreasing consumption in the face of difficulties increases the probability that a household is poor by 91%. This is not surprising, as poverty is measured through per capita consumption. To see how this reverse causality impacts our study, we redid the regressions on risk and coping mechanisms without including poverty as an independent variable. The results did not change significantly from our original results; thus, it seems that though there is a slight problem of reverse causality, it does not compromise the integrity of this study.

A second potential source of reverse causality is that women may become the head of a household after the death of the male head of household, and health related problems include the death of a household member. When we tested the
impact of health related problems on the probability that a household has a woman head, we found that death increased the probability that the household has a women head, while illness decreases this probability. Households that experienced the death of a working member within twelve months of the survey are eight times more likely to have a woman head than those that did not lose a working household member. Thus, there is a problem of reverse causality between the independent variable, female-headed household, and the dependent variable, risk of health related problems. As with poverty, when female household head is excluded from the regression of the probability of facing health risks, the results presented above hold.

The final issue regarding reverse causality is the relationship between holding a wage-earning job and experiencing job related problems. Those who lost their jobs or experienced pay cuts may have tried to diversify their income sources by seeking wage employment. The logit regressions testing the impact of job related difficulties on wage employment are significant. Individuals who lost their jobs within 12 months of the survey are 29% more likely to have been engaged in wage employment within 12 months of the survey. Those who experienced pay cuts were 97% more likely to have been employed for wages. Because the time period used for both the question regarding job related problems and wage employment is the same, it is difficult to establish a direction of causality. The regressions suggest that the causality could be in either direction. However, it is more logical that someone would have job related problems if they were in formal, wage employment than vise versa. While there is a risk of reverse causality related to job related risks, the coefficients when wage employment is excluded from the regression only change slightly. All remain significant except for two of the governorates.

Crowding out

To test our model of crowding out, we test if having formal insurance increases the probability that a household does not use any informal coping mechanisms after a risk. To do so, we use the same type of regression as in the previous section, and we introduce a dummy variable that takes the value of one if at least one member of the household has access to formal insurance. As in the previous section, we correct for selection bias using a bivariate probit with sample selection model. Both the corrected and uncorrected models produce similar results; however, there is evidence of sample selection bias because we reject the hypothesis rho is equal to zero. The results figure in appendix 12.

Households in which at least one member has some form of formal social protection are significantly more likely to do nothing in the face of risk. They are between 4.2% and 4.4% more likely to do nothing, depending on whether a logit or a probit model is used. Thus, there is some evidence supporting the hypothesis that formal insurance crowds out the use of traditional coping mechanisms. However, we
could not determine which forms of formal social protection had the biggest effect. In fact, when we included dummy variables for social security, health insurance, and retirement, none of the coefficients were statistically significant. Nevertheless, the joint hypothesis test rejects the hypothesis that all three coefficients are equal to zero at the 1% level. This is consistent with the preceding conclusion that formal insurance crowds out informal insurance, but we are unable to identify which type of formal insurance decreases most the use of informal mechanisms.

Despite the fact that formal insurance does mildly reduce the use of traditional coping mechanisms, this is not an argument against the expansion of formal insurance. Many of the traditional coping mechanisms can have negative consequences for the household and for the larger society. Using coping mechanisms such as loans and selling productive assets can leave a household more vulnerable to poverty and can subject them to unfair lending practices. Reducing consumption in the face of common economic, health, or security shocks can reinforce economic depressions or health problems. At the village level, reduced consumption decreases economic activity. Furthermore, if health or nutritional spending is reduced, individuals will be more vulnerable to disease or death. Other coping mechanisms, such as child labor or child marriage, have negative social impacts and can be seen as a violation of children’s rights. Thus, if formal insurance is replacing these traditional coping mechanisms that can have negative effects, crowding out is not a bad thing.

**Conclusions and Recommendations**

The main contribution of this paper is to better understand formal and informal insurance mechanisms in Iraq and particularly risk coping mechanisms. These conclusions have several implications for policy in order to increase access to formal insurance, to lower the probability that households face risks, and to diminish the problems associated with certain informal coping mechanisms. One general recommendation would be to support the educational system. Better educated individuals have better access to formal insurance, less chance of experiencing most difficulties, and tend to use informal coping mechanisms that have the least detrimental impacts.

As discussed above, only wage-earning employees in the formal sector are able to receive social security, health insurance or retirement benefits; however, less than half of these individuals are covered. Socio-demographic characteristics are highly correlated with access to formal insurance, especially the sector of activity. Public sector workers are much more likely than private sector workers to receive benefits. As a result, one way to improve access to formal insurance is through encouraging private sector firms to offer formal insurance benefits to their employees. Furthermore, as poor, less-educated, and urban workers have less
coverage, policy could also push for formal insurance expansion among these socio-demographic groups.

The largest risks that households face depend on socio-demographic characteristics and geographic location. Policy should improve job security, both in terms of employment and wages, among poor workers, as poor workers are more likely to experience employment related problems, and these risks make poor households even more vulnerable. Second, programs should target job creation and security and public health in urban areas, as urban residents are more likely to suffer from job or health related risks. Furthermore, the security situation in Diyala, Baghdad, and Al-Anbar should be addressed, as the residents of these governorates were especially affected by violence.

This paper allows us to understand who uses which coping mechanisms. As previously mentioned, some coping mechanisms can have detrimental effects, such as increasing vulnerability to poverty or illness, perpetuating economic downturns, or violating children’s rights. Thus, the detailed description of which coping mechanisms are the most prevalent and the characteristics of the households that use them can help form policy that encourages the development of mechanisms that have fewer harmful effects and limits the negative impact of others.

Poor households tend to use the coping mechanisms that reinforce poverty, such as reducing consumption, selling productive assets, and taking out loans. In order to reduce the risk of poverty traps, policy makers could try to increase the options of both formal and informal mechanisms available to poor households. Our results showed that reducing consumption is the most widely used coping mechanism in Iraq, followed by savings and loans. Because reducing consumption has a more detrimental effect on the local economy than the other two mechanisms, policy could encourage the development of savings and credit markets. Programs to encourage savings should target less educated, wage-earning, and urban households because these households are less likely to use savings as a coping mechanism. Additionally, ensuring that households have access to loans at fair interest rates can lower the negative effects of loans.

Furthermore, due to ethical reasons, policy should discourage the use of child labor and child marriage. Because the use of child labor is only correlated with the type of problems that a household faces and not the characteristics of the household, efforts to decrease the use of child labor should focus on dealing with risks. The use of child labor is especially strong after job or health related problems. Thus, developing job security, unemployment benefits, and access to health insurance could decrease the use of child labor. Because the age of the head of household has a significant and positive impact on the use of child brides, awareness campaigns that attempt to decrease the use of child marriage should target older populations.
The results of this paper have allowed us to recommend policies that would bolster both the formal and informal protection systems in Iraq. We have made recommendations for how to expand formal sector coverage, how to lower the probability that a household will face a risk, and how to mitigate the negative effects of the informal mechanisms that households use. Further research could study the effectiveness of the Social Protection Net, a social safety net that is available to both wage and self-employed workers. It could also follow the reforms that are currently taking place to the Public Distribution System, the authority that distributes food rations. Finally, further research could test informal retirement arrangements in order to understand how households prepare for the future, and not simply deal with present difficulties.

References


