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Synopsis: Social networks and factor markets: Panel data evidence from Ethiopia

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In the absence of well-established factor markets, the roles of indigenous institutions and social networks as mobilizing factors for agricultural production can be substantial. We investigate the role of an indigenous social network in Ethiopia, the *iddir*, in facilitating factor market transactions among smallholder farmers. Using detailed longitudinal household survey data and employing a difference-in-differences approach, we find that *iddir* membership improves households' access to factor markets. Specifically, we find that by joining an *iddir* network, households' access to land, labor, and credit improves between 7 and 11 percentage points. Furthermore, our findings indicate that *iddir* networks crowd-out borrowing from local moneylenders (locally referred as *Arata Abedari*), a relatively expensive credit source, virtually without affecting borrowing from formal credit sources. These results improve our understanding of the role informal market arrangements, such as social networks, can play in mitigating factor market inefficiencies in poor rural markets. The results also have important policy implications for designing alternative policy measures which aim to improve these markets.

Introduction

Markets in developing countries are characterized by a broad range of failures that affect individuals and those institutions that attempt to improve how markets function. Often such markets are inefficient and lack transparency. Deficiencies in contract enforcement and monitoring results in costly transactions. As a result, institutions that substitute for these ineffective market institutions emerge to allow commercial transactions to take place. Traditional, more informal arrangements based around social networks can play a critical role in filling gaps in information necessary to facilitate exchanges of goods, services, and factors of production that market institutions fail to deliver. Such social networks capitalize on pre-existing trust and thereby reduce transaction costs related to contract monitoring and enforcement. These social networks can play an important role in overcoming market imperfections to enable significant commercial activity within smallholder farmer communities across Ethiopia.

Social networks in Ethiopia (*Iddirs*)

Iddir is the most inclusive and widespread type of social network in Ethiopia, prevalent both in rural and urban settings and across all gender, wealth, education, religion, and ethnic groups (Pankhurst 2008). Originally, *iddir* networks were established to provide financial and other types of support when a family member dies. However, a closer look at *iddir* networks reveals that they go beyond funeral associations. *Iddirs* provide small credit for their members, often without collateral; help unemployed members; finance members' health care expenditures; provide financial assistance when members suffer from other shocks; and in recent years, *iddir* networks provide insurance against the death of key livestock, such as oxen (Dercon et al, 2006; Mariam, 2003).

Iddir networks often have well-defined written rules. Membership is on a voluntary basis and commonly is open to all members living in a village. Members are required to pay a monthly contribution, while new members may have to pay an entrance fee. Membership fees in most *iddirs* are relatively small and provide some flexibility in payment due dates, and flexible membership conditions (i.e. accepting non-monetary contributions) and hence, most interested potential members are able to join.

Like many other social networks, *iddir* associations provide informal social insurance and information and strengthen trust among members of the association. Besides socially linking members, commercially, *iddirs* reduce transaction costs within the community and provide security against shirking or defection in the absence of formal contractual agreements.

Factor markets

Factor markets in Ethiopia fall into three categories – markets involving land, labor, and credit. These markets are incomplete and generally are dominated by traditional arrangements. Most of these transactions do not involve formal contractual agreements. Thus, their validity hinges on informal relationships and trust among members. In the presence of these imperfect factor markets, understanding the role of *iddir* networks in these markets is crucial in designing policy measures that aim to improve factor markets in agriculture. Social networks play a key role in trust formation (Fafchamps and Lund 2003) and information sharing. These qualities of such networks reduce information asymmetry among participants in rural factor markets, and hence, facilitate factor market transactions among farmers.

In this study, we investigate the role *iddir* networks play at improving factor market imperfections in rural Ethiopia. *Iddir* networks can serve as information hubs where households can exchange information relevant to their input endowment. Furthermore, and most importantly, *iddir* associations serve as a safety net (insurance) and as a basis for stronger reciprocity among members. This study also postulates how *iddir* networks can bridge the information and reputation related gaps between those who would like to acquire access to land or labor and those who would like to provide these factors through land or labor sharing agreements.

We expect that *iddir* membership could potentially crowd-out access to credit from traditional moneylenders who, on account of the relatively high risk and transaction cost involved, charge higher interest rates. Although *iddirs* may not have a clearly defined legal basis to enforce market transactions, they appear endorsed by members and within the community by a sound set of rules to which members can appeal in case of default. Furthermore, through their informational resource advantage, *iddir* members may enjoy better access to factor markets that involve transactions with other members.

Data and sampling

The data we use for this study comes from a longitudinal household survey collected to evaluate the Productive Safety Net Program in Ethiopia. The data was collected from 68 food-insecure woredas (districts) randomly drawn from the 153 food-insecure woredas where this program operates in Ethiopia. These 153 food-insecure woredas are found in the four main regions of Ethiopia – Tigray, Amhara, Oromia and SNNP. Four rounds of interviews (2006, 2008, 2010, and 2012) were conducted with the sample households.

Table 1 presents the distribution of *iddir* membership across the the longitudinal survey. There is an increasing trend in *iddir* membership numbers. This probably can be attributed to the recurrence of drought and other shocks in rural Ethiopia in recent years, for which membership in an *iddir* network can directly or indirectly mitigate such shocks for a household.

Table 1—Overall distribution of *iddir* membership across sample households of Productive Safety Net Program surveys

	Survey			
	2006	2008	2010	2012
<i>Iddir</i> -members	1,629	2,157	1,974	2,453
Non-members	1,569	1,534	1,024	1,383
Share <i>iddir</i> members, %	51	58	66	64

Source: Authors' estimates

Estimation results

The results of our investigations of the role of *iddir* networks in factor markets in rural Ethiopia highlight that informal indigenous networks can help the formation of physical and social capital that can improve factor market transactions among smallholder farmers. Specifically, we find that *iddir* membership causally improves households' probability to participate in land markets. Similarly in labor markets, *iddir* membership improves the probability of households participating in labor-sharing arrangements, and build partnerships through *iddir* networks. Table 2 presents the effect of *iddir* networks on labor transactions.

Finally, the effect of *iddir* membership on credit access for households present a consistent story of greater sharing. As a consequence, the flow of credit between members in a village should increase. Simultaneously, *iddir* networks help mitigate the high transaction costs in rural credit markets by providing information and security against non-compliance in credit transactions.

Policy implications and future challenges

Indigenous social networks, such as *iddir* associations, are shown to play a crucial role in facilitating factor market transactions. *Iddir* networks are the most popular and widely available social networks both in urban and rural areas of Ethiopia.

The key fact that these networks are inclusive, offers an interesting context and perspective through which to investigate their role in overcoming some of the factor market imperfections in rural economies. Moreover, the fact that *iddir* networks avail information, strengthen trust, and reduce enforcement costs between members and within a community, all have important implications in view of the binding factor market imperfections have in rural economies.

Owing to these qualities, *iddir* networks can substantially reduce transaction costs and information asymmetry among participants in factor markets, thus facilitating smooth transactions at lower cost.

Table 2—Effect of *iddir* networks on labor transactions, difference-in-differences estimates

Explanatory variables considered	Labor-sharing (Main season)		
	(1) Without controls	(2) With controls	(3) With village-fixed effect
β_1 (<i>treated</i>)	-0.011 (0.032)	-0.023 (0.032)	-0.010 (0.039)
β_2 (<i>Post</i>)	0.033 (0.025)	0.025 (0.027)	0.025 (0.027)
β_3 (<i>treated*Post</i>)	0.101** (0.041)	0.098** (0.041)	0.101** (0.041)
Probit DID: Marginal effects ⁺	0.099*** (0.044)	0.101*** (0.043)	0.109*** (0.042)
Other controls	No	Yes	Yes
Regional dummy variables (4)	No	Yes	Yes
Village-level fixed effects (65)	No	No	Yes
Constant	0.289*** (0.019)	0.167*** (0.055)	0.244*** (0.090)
<i>R</i> -squared	0.010	0.100	0.213
Number of observations (<i>N</i> *2)	1,852	1,852	1,852

Notes: Each column presents difference-in-differences estimations of equation (1) for household's involvement in labor transactions. The second column includes regional dummies corresponding to the main regions of Ethiopia. Estimates in the third column include 65 village (*kebele*)-level fixed effects.

Robust standard errors are in parentheses. ***, **, * indicates statistical significance levels at 1, 5 and 10 percent, respectively.

⁺ Marginal effects are from a probit difference-in-differences estimation.

To summarize, given the direct and indirect roles that *iddir* networks can play in factor markets and other development initiatives, new thinking regarding ways of supporting these networks is needed. Policy makers might focus on scaling up the institutional capacity of these networks without diluting their institutional strength.

Although our results highlight the potential of indigenous social networks, such as *iddirs*, in facilitating factor market transactions, further investigation into how to exploit the potential of these networks is needed. One possible dimension might be forming partnerships between *iddir* networks and other government and non-government organizations (Pankhurst 2008). Such partnerships may be vital to expanding formal credit institutions by combining the desirable qualities of *iddir* networks with the institutional capacity of the formal organizations. Whichever direction is considered, there needs to be an initiative to tap the commercial potential that these networks offer.

Finally, although *iddir* networks facilitate factor market transactions, further research on the efficiency of such transactions should be considered. Furthermore, social networks are complicated. Thus, further research on the potential of these indigenous networks would help in designing better policy interventions.

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