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Merima Abdella Ali, Jack Peerlings

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**Ethnic Ties in Trade Relationships and the Impact on
Economic Performance:
The Case of Small-Scale Producers in the
Handloom Sector in Ethiopia**

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3 1 **Ethnic Ties in Trade Relationships and the Impact on Economic Performance:**
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5 2 **The Case of Small-Scale Producers in the Handloom Sector in Ethiopia**
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12
13 5 **Abstract**
14

15 6 *This paper analyzes the importance of ethnic ties in trade relationships of small-*
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17 7 *scale producers in the handloom sector in Ethiopia using both a non parametric*
18
19 8 *and a parametric statistical method. It is shown how various socio-economic*
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21 9 *characteristics of producers lead to ethnic ties with traders. It is also shown that*
22
23 10 *ethnic ties affect the performance of producers negatively. Apparently the positive*
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25 11 *effect of ethnic ties, through the reduction of transaction costs arising from*
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27 12 *market imperfections, does not outweigh the negative effects of closed social*
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29 13 *networks.*
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39 16 **Keywords:** ethnic ties, trade, transaction cost, small-scale producers, Ethiopia.
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43 18 **1. Introduction**
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20 In the presence of transaction costs associated with market imperfections and in the
21 absence of an effective legal system, trade relationships of small-scale producers in
22 developing countries are often based on trust, that in turn is based on local group cohesion
23 and common identity such as ethnic ties (Annen, 2001; Fafchamps, 2002; Bowles and
24 Gintis, 2004). Such bonding social capital manifested though ascribed trust to members of
25 one's own ethnic group helps to reduce the costs of producers in searching and reaching

1 traders, and facilitates contractual enforcement due to the availability of low-cost
2 information about one's trading partner (Bowles and Gintis, 2004; Alesina and La Ferrara,
3 2005; Knorringa and van Staveren, 2006). Ethnic ties can also help traders to screen
4 potential business partners and grant credit for producers, especially in the initial phase of
5 their business (Fafchamps, 2000; Fisman, 2001).

6
7 In addition to reducing transaction costs, ethnic ties may also play an important role in
8 providing social protection. Social networks based on a common identity may give a
9 sense of security to vulnerable producers who tie themselves to traders that offer short-
10 term stability through a 'patron-client' relationship (Wood, 2003). This kind of
11 relationship might prevail for survival-oriented and risk-averse producers with limited
12 alternatives other than subordinate transaction with traders.

13
14 While ethnic homogeneity can positively impact business outcomes by reducing
15 transaction costs, and is important for survival and access to various resources, it may
16 also hinder economic performance by limiting access to a wider range of business-related
17 ideas and constrain the ability of producers to respond to 'exogenous developments'
18 (Nadvi, 1999; Annen, 2001; Annen, 2003, Knorringa and van Staveren, 2006;
19 Nooteboom, 2007). Furthermore, an exclusive social network can restrict the business
20 relationship to only a few agents, who can change the power structure and easily
21 manipulate the exchange process depending on their control over 'power resources' such
22 as information about prices, markets, capital and credit (Nadvi, 1999; Lyon, 2000;
23 Alesina and La Ferrara, 2005). In general, inward-looking social networks can
24 'insidiously turn from ties that bind to ties that blind' (Grabher, 1993: 24).

25

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3 1 Using a rich dataset of small-scale handloom producers operating in clusters in Ethiopia,
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5 2 the purpose of this study is to identify socio-economic factors that determine ethnic ties in
6
7 3 contacts between producers and traders. In addition, it analyzes whether ethnic ties
8
9 4 positively or negatively affect the performance of producers, in other words whether the
10
11 5 benefits of ethnic ties are higher or lower than the costs of having closed social networks.
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15 7 By unraveling various factors leading to ethnic ties in trade relationships and analyzing
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17 8 the effect on economic performance, this study adds to the growing literature that is
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19 9 exploring the role and impact of social networks on small-scale producers in developing
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21 10 countries (Moore, 1997; Fafchamps and Minten, 1999; Nadvi, 1999; Schmitz, 1999; Lyon,
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23 11 2000; Nooteboom, 2007).
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31 13 In Ethiopia, where there are more than eighty languages and as many ethno-linguistic
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33 14 groups, ethnic ties play an important role both in the day-to-day lives of people and in
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35 15 trade relationships. This may particularly be true for the handloom sector, which is
36
37 16 characterized by naturally emerged clusters that are dominated by certain ethnic groups
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39 17 with their own language and distinct cultural and social norms. Based on the cultural
40
41 18 background of weavers, handloom products also have specific designs distinct to each
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43 19 ethnic group.
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50 21 Although the sector supports the lives of more than 220,000 people (CSAE, 2003),
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52 22 enterprises are often small in size and most operate in their dwellings using family labor.
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54 23 Those operating in their dwellings are more likely to be isolated from outside markets
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56 24 with limited information about prices and the organization of the market. Given this
57
58 25 situation, they have to rely more on localized group cohesion originating, for example,
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1 from ethnic ties as a buffer for market imperfections. In addition, enterprises in the sector
2 face financial constraints both when starting up their business and during operation
3 (CSAE, 2003). This has led a large proportion of producers to rely on informal sources of
4 finance such as borrowing from friends and relatives and trade credit (Ayele et al., 2009).
5 Most traders in the sector used to be weavers themselves and often have their close
6 relatives working in the sector, which might further strengthen the social bond and
7 personalized trust between producers and traders. In general, handloom clusters in
8 Ethiopia are not only business agglomerations but also socio-cultural entities where
9 people interact on a personal basis, which could also be reflected in trade relationships.

10

11 Such strong social bonds may positively impact business outcomes of handloom
12 producers through, for example, easing credit constraints both when starting up a business
13 and during operation and provision of business related information. Trade credit between
14 producers and traders is found to be widespread in handloom clusters in Ethiopia and help
15 to ease working capital constraints (Ayele et al., 2009). Furthermore, traders in handloom
16 clusters are found to be the main source of information about prices and new techniques
17 of production (Ayele et al., 2009). However, trade relationships based on ethnic ties may
18 also impact the performance of producers negatively either through limited flows of new
19 business related ideas or manipulative power structure on the side of traders who can take
20 advantage of their control over market information.

21

22 In this study, we find that recent immigrants and less experienced producers are more
23 likely to be ethnically tied. Ethnic ties are also found to be important for producers
24 operating in remote areas. On the other hand, producers with a wide network of business-
25 related contacts with different traders such as those operating in producers' cooperatives

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4 1 are less likely to be ethnically tied. Ethnic ties in credit provision are also found to lock
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6 2 producers into trade relationships. The impact of ethnic ties on economic performance of
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8 3 producers further reveals that ethnic ties result in lower profits. And the loss in profit due
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10 4 to ethnic ties is found to be higher for immigrant producers.
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14
15 6 The remainder of the paper is organized as follows. Section two, provides a brief review
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17 7 of the data while section three presents the empirical model. Section four describes the
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19 8 results and the conclusions are outlined in section five.
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24 25 10 **2. Data**

26 27 11 **2.1 Data collection**

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32 13 The study uses data collected on handloom producers by the International Food Policy
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34 14 Research Institute (IFPRI) in collaboration with the Ethiopian Development Research
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36 15 Institute (EDRI) from March until May 2008. The survey covered 486 handloom
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38 16 producers in nine clusters, three of which are found in the capital city, Addis Ababa, and
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40 17 the rest in the Gamo zone in the Southern Nations Nationalities and Peoples (SNNP)
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42 18 region. These two regions have been selected because of their large concentration of
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44 19 handloom establishments in proportion to other manufacturing activities (Ayele et al.,
45
46 20 2009). Sample units were selected based on the proportion of the handloom
47
48 21 establishments in the different clusters (Ayele et al., 2009). Of the total handloom
49
50 22 producers covered in the survey, 40 percent are from urban areas and 60 percent from
51
52 23 rural areas. In the survey, producer-specific information like education level, gender and
53
54 24 experience are included. These are supplemented by information regarding horizontal and
55
56 25 vertical networks through cooperation among producers and between producers and
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1 traders respectively. Detailed information regarding the ethnicity of producers and traders
2 and the number of traders with which producers have regular contact, and for how many
3 years, is also included. Furthermore, information regarding whether a producer is an
4 immigrant or not and when a producer has migrated to a cluster are included. After
5 discarding observations including incomplete and inconsistent information, this study
6 uses data from 473 handloom producers.

7

8 **2.2 A characterization of handloom producers**

9

10 This section provides a brief discussion about producers and their ethnic ties with traders
11 based on the surveyed data. In this paper we define the level of ethnic tie as the
12 proportion of traders that are of the same ethnic group as the producer. This is calculated
13 by dividing the number of traders that are of the same ethnic group as the producer by the
14 total number of traders regularly contacted by the producer in the past 12 months of the
15 time of the survey. From this, we classify a producer as being ethnically tied if more than
16 half of the traders that he/she has transacted with on a regular basis are of the same ethnic
17 group as the producer. Otherwise, they are classified as non-ethnically tied. Among the
18 473 producers, 69.3 percent are ethnically tied and the remaining 30.7 percent are not
19 ethnically tied.

20

21 Producers in the survey belong to five ethnic groups. The majority of producers (79.3%)
22 belong to the *Gamo* ethnic group followed by the *Amhara* ethnic group (18.0%) (Table1).
23 Compared to other ethnic groups in Ethiopia, weaving is a predominantly common
24 practice in these two ethnic groups and is a tradition where the distinct designs and
25 knowledge of weaving have been passed from generation to generation. Among the

1
2
3 1 *Gamo* ethnic group, 79.2 percent of the weavers are ethnically tied compared with 32.9
4
5
6 2 percent in the case of the *Amharas*. The majority of the *Oromos* and *Gurages* included in
7
8 3 the survey are not ethnically tied with traders (Table 1).
9
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13 5 *[Insert Table 1 here]*
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17 7 Of the 473 surveyed handloom producers, 217 are immigrants from other towns and
18
19 8 regions (Table 1). Among the immigrant producers, 57.1 percent are ethnically tied.
20
21 9 (Table 1). A large proportion, 79.7 percent, of the non-immigrant producers are also
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23 10 ethnically tied, which might be because almost 60 percent of producers in the survey
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25 11 operate in rural areas while the majority of migration occurs in the direction of urban
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27 12 clusters.
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34 14 There are various marketing channels used by producers to sell their output to traders.
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36 15 Producers were asked to state the first most important marketing channel they use to sell
37
38 16 their products. 83.5 percent of producers responded that they sell their products in open
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40 17 markets where they transact with mobile traders who usually travel to the marketplace on
41
42 18 certain days of a week to collect finished products in bulk from various producers (Table
43
44 19 1). This marketing mechanism is common in rural markets where traders travel from
45
46 20 Addis Ababa and other urban towns and collect products which they then channel to
47
48 21 consumers in towns like Addis Ababa (Ayele et al., 2009). These urban traders were
49
50 22 mostly born and raised in rural areas and have strong social networks and family ties that
51
52 23 can enhance trust-based transactions. Of the 395 producers selling their output to traders
53
54 24 in the open market, 73.9 percent are ethnically tied (Table 1).
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4 1 Selling on a contractual basis is another form of marketing channel. 7.8 percent of the
5
6 2 producers sell their output to traders acting as intermediaries for ordering companies,
7
8 3 usually exporters (Table 1). Since traders act as an important agent in linking producers
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10 4 with contracting companies, the business of producers may depend on the kind of
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12 5 networks they have with traders. According to the survey, almost 54.1 percent of those
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14 6 selling on a contractual basis are ethnically tied.
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20 8 8.7 percent of producers sell to traders operating in street-stand shops and ‘door-to-door’
21
22 9 traders that tour enterprises to collect products (Table 1).
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27 11 When we look at the credit relationship between producers and traders, about 41.7
28
29 12 percent of producers have received credit from traders in the past 12 months of the time
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31 13 of the survey (Table 1). Credit provision by traders is bound to several conditions,
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33 14 previous successful business with a trader and being a relative of a trader are the major
34
35 15 ones according to the survey. Among producers who have received trade credit, 74.1
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37 16 percent are ethnically tied (Table 1).
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43 18 **3. Empirical model and estimation**

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48 20 **3.1 Effects of ethnic ties on profitability of producers**

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53 22 In order to capture the effect of ethnic ties on the economic performance of handloom
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55 23 producers, we use profit¹ as an indicator of performance and compare the average
56
57 24 monthly profit of ethnically tied and non-ethnically tied producers. However, simply
58
59 25 comparing the profit of ethnically tied and non-ethnically tied producers may result in
60

1 selection bias since transacting with traders is not a random process. This means that
2 producers with certain socio-economic characteristics might self-select themselves to
3 transact with a member of their own ethnic group. These socio-economic characteristics
4 in turn can affect the profitability of producers.

5
6 To take into account the bias that can arise from self-selection of producers in transacting
7 with traders from the same ethnic group, we match producers that share the same socio-
8 economic characteristics with the exception of being ethnically tied or not. For this we
9 use a non-parametric statistical method known as propensity score matching (PSM)
10 (Heckman et al., 1997).

11
12 The main pillars of PSM are individuals (handloom producers), the treatment (being
13 ethnically tied) and potential outcome of the treatment (profit). Unlike parametric
14 techniques such as OLS, PSM requires no assumption about the functional form between
15 outcomes and covariates. Parametric techniques requiring a functional form may result in
16 biased estimates if the covariate distribution differs substantially between treated and
17 non-treated groups (Eren, 2007). Unlike OLS, PSM also eliminates outliers and helps to
18 achieve a more precise estimation of the treatment effect (Sianesi, 2004). In addition,
19 PSM allows a comparison of the treatment effect before and after the bias that arises from
20 self-selection has been controlled for. However, PSM is only concerned with calculating
21 the treatment effect, and thus omits any information about how other factors might also
22 affect the outcome. OLS, on the other hand, gives additional insight into the effect of
23 covariates other than the treatment. Hence we also estimate the effect of ethnic ties on the
24 profitability of producers by using OLS, and we compare the results with PSM
25 accordingly.

Propensity score matching

Let $D_j \in \{1,0\}$, be an indicator of whether producer j is ethnically tied or not. The potential outcome of ethnic ties is the monthly profit for producer j , which is defined as $\pi_j(D_j)$. The effect of ethnic ties on individual producer j can then be written as:

$$T_j = \pi_j(1) - \pi_j(0) \quad (1)$$

With this specification, however, one cannot observe the counterfactual, that is, the profitability of producer j had he not been ethnically tied with traders. To deal with this problem, other producers that share similar observable characteristics, but who are not ethnically tied with traders, will be identified and the average effect on monthly profit, instead of the individual effect, will be computed.

Although there are different ways to estimate the average treatment effect, the one that has received most attention in the evaluation literature is the average treatment effect on the treated, which is defined as:

$$ATT = E(T|D = 1) = E[\pi(1)|D = 1] - E[\pi(0)|D = 1] \quad (2)$$

where ATT is the average treatment effect on the treated and $E[\pi(1)|D = 1]$ is the expected outcome for those producers actually selling to traders of their own ethnic group or that received a treatment, and $E[\pi(0)|D = 1]$ is the counterfactual for the treated, which estimates what the outcome would be if those producers that are in fact selling to traders

1 of their own ethnic group do not do so. Since the counterfactual cannot be observed, it
 2 should be constructed using producers that do not sell to traders of their own ethnic group
 3 but share similar observable characteristics, except for being ethnically tied.

4
 5 An important assumption of this method is the conditional independence assumption
 6 (CIA) which states that the set of observable characteristics that are included in the
 7 matching should determine both the probability of being ethnically tied and the outcome
 8 of interest (profit); that is $(\pi_0, \pi_1) \perp D | v$, denoting the statistical independence of (π_0, π_1)
 9 conditional on observable characteristics, v (Heckman et al., 1997).

10
 11 If all the variables influencing both the probability of being ethnically tied and profitably
 12 of producers are not incorporated, then CIA is violated since the impact of ethnic ties will
 13 be accounted for by information that is not included in the estimation of the predicted
 14 probabilities (propensity scores) (Smith and Todd, 2005).

15
 16 Given that the CIA holds, the PSM estimate for ATT can be written as:

$$17 \quad ATT_{PSM} = E_{P(v)|D=1} \{E[\pi_{(1)} | D=1, P(v)] - E[\pi_{(0)} | D=0, P(v)]\} \quad (3)$$

18
 19 where $P(v)$ is the probability of being ethnically tied based on observable socio-economic
 20 characteristics, v .

21
 22
 23 Once the propensity scores are generated using a probit regression, a producer that is not
 24 ethnically tied with traders but is 'closest' in terms of propensity score has to be selected
 25 as a match. This is done using the Kernel matching method that associates the outcome of

1 an ethnically tied producer j with the matched outcome that is given by a kernel-
 2 weighted average of all the non-ethnically tied producers. Since the weighted averages of
 3 all producers that are not ethnically tied are used to construct the counterfactual outcome,
 4 kernel matching has an advantage of lower variance since more information is used
 5 (Heckman et al., 1998). The weight given to non-ethnically tied producer i is in
 6 proportion to the closeness between i and the ethnically tied producer j .

7
 8 In order to eliminate outliers that have very high and very low propensity scores, the
 9 matching is restricted to the area of common support in the sample, which is defined by
 10 dropping the treatment observations at which the propensity score density of the control
 11 observation is the lowest (Sianesi; 2004). To be effective, matching should balance
 12 observable explanatory variables across ethnically tied and non-ethnically tied producers.
 13 For this, a balancing test is performed after the match. This test is primarily concerned
 14 with the extent to which the difference in the observable characteristics between
 15 ethnically tied and non-ethnically tied producers has been eliminated.

17 **OLS regression**

18
 19 We estimate the following OLS regression to look at the impact of ethnic ties on the
 20 profitability of producers.

$$22 \quad profit = \alpha_0 + \alpha_1 EthnicTie + \sum_{i=2}^n \alpha_i x_i + \varepsilon, \quad (4)$$

23 where the dependent variable is the monthly profit of producers, *EthnicTie* is a dummy
 24 that has a value of 1 if more than half of the traders that a producer has transacted with on

1 a regular basis are of the same ethnic group as the producer, and 0 otherwise; α_0 is a
 2 constant; α_i are unknown parameters to be estimated; x_i are control variables that affect
 3 the profitability of a producer besides ethnic ties; and ε is a random term.

3.2 Variables and Hypothesis

7 In order to capture the impact of ethnic ties on the performance of producers using PSM,
 8 observable factors affecting both the probability of receiving a treatment (being
 9 ethnically tied) and the outcome of the treatment (profitability) should be controlled for.
 10 Following the arguments in section 3.1, we estimate the following probit model which is
 11 used to generate propensity scores to match producers.

$$EthnicTie = \sum_{i=1}^n \alpha_i x_i + \varepsilon \quad (5)$$

14 where *EthnicTie* is a dummy that has a value of 1 if more than half of the traders that a
 15 producer has transacted with on a regular basis are of the same ethnic group as the
 16 producer, and 0 otherwise; α_i are unknown parameters to be estimated; x_i are explanatory
 17 variables; and ε is a random term.

19 The explanatory variables included in the model are various socio-economic
 20 characteristics of producers. We include variables like experience, which is measured as
 21 number of years in which the owner has been in the handloom business, and a dummy
 22 that captures whether the producer has migrated from another region to join a cluster or
 23 not. We would expect ethnic ties to be more important for less experienced and
 24 immigrant producers. Among immigrant producers, we also want to investigate if there is

1 a difference in the importance of ethnic ties between recent and earlier immigrants. For
2 this, we estimate another model for immigrant producers only by using a variable that
3 captures the number of years since the producer migrated to a cluster. We would expect
4 ethnic ties to be more important for recent immigrants and to diminish in importance for
5 earlier immigrants that might have started to earn trust through long-term business
6 relationships.

7
8 Ethnic ties become important during trade relationships in the provision of credit.
9 Ethnicity and family linkages can help traders to screen potential business partners and
10 provide capital to producers, especially in the initial phase of their business (Fafchamps,
11 2000; Fisman, 2001). This is a common phenomenon in handloom clusters in Ethiopia,
12 where the more successful traders act as guardians to bring their kin members and close
13 relatives from rural areas to work in rural towns and big cities. Not only do these traders
14 provide the newcomers with a place to stay, but they also grant them capital to start their
15 own businesses on the condition that they will pay them back. This condition may oblige
16 handloom producers to continue to trade with their own ethnic group who are not only
17 business partners but also close relatives. But once producers have established more
18 contacts, the credit tie may diminish and family and ethnic linkages may lose their
19 importance. Because we do not have separate information on the amount of starting
20 capital borrowed from traders, we use the total percentage of starting capital borrowed
21 from relatives of handloom producers as a proxy. We expect producers with a large share
22 of starting capital borrowed from relatives to be ethnically tied.

23
24 Related to this, we include the value of machinery and equipments as an explanatory
25 variable. On the one hand, if ethnicity and family linkages are important in the provision

1
2
3 1 of credit, especially at the start of the business, producers may have used the trust
4
5 2 developed through ethnic networks to borrow more money and invest it in machinery and
6
7 3 equipments. Given that there could be a credit tie, these producers might continue to
8
9 4 transact with traders of their own ethnic group. On the other hand, those with more
10
11 5 machinery and equipment might be producers that already had better alternatives for
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13 6 obtaining credit from other sources such as formal banks or they may even have raised
14
15 7 the money from their own savings, which may diminish the importance of ethnic ties.
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22 9 The wealth of a producer might also be another factor in determining whether he/she
23
24 10 attaches more importance to ethnic ties or not. We would expect wealthier producers to
25
26 11 have better alternatives than poorer producers when it comes to choosing with whom to
27
28 12 trade. For example, wealthier producers may have enough collateral for borrowing money
29
30 13 for their business and they can easily go to formal banks instead of relying on ethnic ties.
31
32 14 In addition, wealthier producers could invest more in their business and take more risky
33
34 15 business decisions that would allow them to have wider networks with various traders. On
35
36 16 the other hand, poorer producers might choose ethnic ties as a survival strategy that
37
38 17 would help them manage risks by securing small but less variant income (Greenwald and
39
40 18 Stiglitz, 1990; Wood, 2003). As an indication of wealth, we use a dummy that captures
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42 19 whether a producer owns a workshop (building) or not.
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51 21 Besides economic gains when trading with one's own ethnic group, there is also a social
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53 22 component present where producers might simply inherit the business networks of their
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55 23 parents. To capture this effect, we use a dummy if producers are of the second generation
56
57 24 or not, in other words whether their parents were in the handloom business before them or
58
59 25 not. We would expect second-generation producers to have relatively better information
60

1 about the business in general and markets in particular as they could have shared the
2 experience of their parents. Hence, second-generation producers might be less likely to be
3 ethnically tied.

4
5 In addition to social and economic factors, the size of the enterprise might be important in
6 determining whether a producer attaches great importance to ethnic ties or not. The
7 smaller the enterprise, the smaller the network that the producer might have, and hence
8 the more likely to sell his/her products to the few traders that the producer is familiar with
9 through ethnic ties. The larger the enterprise, however, the more likely it is that the
10 producer has already established a wide and intensive network with various traders,
11 diminishing the importance of ethnic ties. We use the number of people who are actively
12 working in the enterprise as an indicator of size, and we expect smaller enterprises to be
13 more likely to be ethnically tied.

14
15 Another variable used in the probit regression is a dummy that captures whether a
16 producer is a member of a producers' cooperative or not. We would expect producers that
17 are members of a cooperative to have a large network with traders, and to have better
18 bargaining power, thereby diminishing the importance of ethnic ties.

19
20 Since producers from the *Gamo* ethnic group are a majority in our survey, it is more
21 likely for *Gamos* to be ethnically tied than producers from other ethnic groups. For this
22 we use a dummy that captures whether a producer belongs to the ethnic majority, *Gamo*,
23 or not. In addition, we also include dummies for the various marketing channels used by
24 producers. We would expect producers transacting with traders in open markets to be
25 more ethnically tied than producers using other marketing channels since open markets

1 are more common in rural and remote areas (Ayele et al., 2009), thus increasing the
2 importance of trust-based transactions with mobile traders.

3
4 Instead of using a dummy for urban and rural areas in order to capture regional variation,
5 we use a dummy that depicts the infrastructural facilities available in the various clusters.
6 This is because there is a strong correlation between the regional dummy and the dummy
7 for being a member of a producers' cooperative since most producers operating in
8 cooperatives are found in the capital city, Addis Ababa. As an indicator of infrastructural
9 facility, we use a dummy that indicates whether there is access to electricity or not. There
10 is a strong correlation between the infrastructural dummy and the regional dummy, hence
11 we believe that the infrastructural dummy is a good proxy to capture regional variation.
12 Gender, schooling and age of the producer are also used as control variables.

13
14 A shortcoming of PSM is that it only eliminates biases arising from observable variables
15 and it does not control for possible biases that may arise from unobservables, which can
16 simultaneously affect the assignment to treatment and the outcome variable (violation of
17 conditional independence assumption). For example, ethnically tied producers may be
18 less talented than non-ethnically tied producers, which in turn can affect their profitability.
19 There may also be certain cultural beliefs specific to certain ethnic groups that can
20 promote for example capital accumulation through 'self-denial' (Moor, 1997). Such
21 beliefs may affect the kind of relationships that producers choose in trade exchanges,
22 which in turn affect their success and profitability. Producers might also be risk-averse as
23 in the case of survival-oriented firms that may rely more on ethnic ties and less upon
24 transactions with 'intimate others' (Wood, 2003). This kind of producer may forgo long-
25 term growth and profitability for short-term security by committing to 'patron-client

1 relationships' (ibid). In this research we do not have a good measure of risk aversion
2 although wealth of producers, measured in this research by ownership of the workshop,
3 might give some indication. Due to a lack of valid instruments, we could not check if
4 such biases from unobservables exist and thus were unable to control for them.

4. Results

4.1 Determinants of importance of ethnic ties in trade relationships

10 Table 2 shows the marginal effects of two probit regression models; one for all producers
11 in the survey and the second for immigrant producers only. In the model estimated for
12 immigrant producers, there is high correlation between the variables, experience and year
13 since immigration. This is to be expected, since most producers could have migrated to
14 start a business. To avoid multicollinearity, the variable 'experience' is discarded in the
15 second model. In addition, the dummies for access to electricity and owning a
16 workshop/building are discarded in the second model because these variables perfectly
17 predicted the binary dependent variable, ethnic ties.

19 Less experienced producers are more likely to be ethnically tied in the first model,
20 indicating the importance of ethnic linkages in the provision of information at the start of
21 a business. A similar finding was seen in the surgical instrument cluster in Pakistan,
22 where ethnic ties and family relationships are important for providing information and a
23 material basis at the start of the business (Nadiv, 1999).

1 In contrast to what is expected, immigrants in general are less likely to be ethnically tied.
2 This could be because those who chose to migrate are already the more 'able' part of the
3 society with wider ambitions and endurance than non-immigrants (Moore, 1997),
4 probably with less preference for ethnic ties. However, in the second model estimated for
5 immigrant producers only, ethnic ties are found to play an important role for recent
6 immigrants, and diminish in importance for earlier immigrants.

7
8 *[Insert Table 2 here]*
9

10 In both models, producers with a large percentage of starting capital borrowed from
11 relatives are more likely to be ethnically tied, which might be due to credit ties where
12 producers who cannot pay back are forced to continue to trade with those who have
13 provided them with credit. Such credit ties might result in power asymmetry, where the
14 trade relationship which was once based on ascribed trust will shift to an unequal
15 interaction, with the powerful party having more say in the exchange (Lyon, 2000). This
16 is consistent with the finding that producers possessing a larger value in machinery and
17 equipment are more likely to be ethnically tied. This could be because producers who
18 have once used the trust developed through ethnic networks to borrow more money and
19 invest it in their businesses are now tied in trade relationships due to credit ties.

20
21 As expected, those working under cooperatives are less likely to be ethnically tied in both
22 models, possibly due to information and networking facilities generated while working
23 through cooperatives that might diminish the importance of ethnic ties. On the other hand,
24 producers operating in areas where there is no access to electricity are more likely to be
25 ethnically tied. This could be an indication of the remoteness of the cluster so that ethnic

1 ties with traders may become important in reducing risks that are associated with
2 marketing, and facilitate trust in long-distance trades (Ali and Peerlings, 2010).

3
4 Producers that belong to the majority ethnic group (*Gamo*) are more likely to be
5 ethnically tied than minority ethnic groups like *Amharas*, *Gurages* and *Oroms*. In addition,
6 those producers selling their product in the open markets are more likely to be ethnically
7 tied as expected. In the first model, those transacting on a contractual basis are also more
8 likely to be ethnically tied, although the probability is much lower compared to those
9 selling in open markets.

10
11 In contrast to what was expected, being a second-generation producer, the size of the
12 enterprise, and the wealth of a producer do not explain being ethnically tied.

13 14 **4.2 Effect of ethnic ties on performance of producers**

15 16 **Propensity Score Matching**

17 Using the same explanatory variables as in the probit regression, a propensity score
18 matching is done between ethnically tied and non-ethnically tied producers using kernel
19 matching² in order to check whether ethnic ties have a positive or negative impact on
20 performance of producers. The results of the match are presented in Table 3 both for the
21 whole sample and immigrant producers only.

22
23 The figures presented in Table 3 are based on the matching results made on the logarithm
24 of profit, but are converted back into levels in order to make the results easier to interpret.
25 Logarithm of profit is used in PSM in order to be consistent with the OLS regression. The

1 reasons for the use of the log linear specification in the OLS regression are given in note
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11 *[Insert Table 3 here]*
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15 6 The matching is done between producers from the treated (ethnically tied) and non-
16
17 7 treated (non-ethnically tied) groups that are on the common support. As shown in Table 3,
18
19 8 ethnically tied producers have a monthly average profit of 50.31 birr (5.24 US\$)³ less than
20
21 9 that of matched producers that are not ethnically tied. The loss in profit is even higher for
22
23 10 immigrant producers, where the average monthly profit for ethnically tied producers is
24
25 11 82.01 birr (8.54 US\$) less than that of the matched counterparts. This is equivalent to a
26
27 12 24.3 percent⁴ and 29.1 percent decrease in average monthly profit due to ethnic ties for all
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29 13 producers and immigrant producers respectively. This finding shows that the negative
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31 14 effects of ethnic ties have offset the positive effects.
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39 16 To check how the matching has performed in terms of eliminating differences in
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41 17 observable explanatory variables between the matched ethnically tied and non-ethnically
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43 18 tied producers, balancing tests are performed. Following Sianesi (2004) and Smith and
44
45 19 Todd (2005), we use a chi square test for the joint significance of variables used in the
46
47 20 probit model before and after the match. The chi square test after the match confirms that
48
49 21 all the variables in the probit model are not jointly significant with $\text{prob} > \chi^2 = 0.45$ and
50
51 22 $\text{prob} > \chi^2 = 0.99$ for the whole sample and immigrant producers respectively (Table 2 in the
52
53 23 Appendix). This implies that there is no systematic difference in the distribution of
54
55 24 observable covariates included in the PSM between the matched ethnically tied and non-
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57 25 ethnically tied producers. This shows that the matching procedure has performed well.
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6 2 **OLS regression**
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Tables 4 and 5 show the results of the OLS regression using the logarithm of monthly profit⁵ as dependent variable and the ethnic tie dummy and other controls used in the PSM as explanatory variables both for the whole sample and immigrant producers⁶. In using logarithm of profit, we loose six observations that had negative profits. In addition to using a dummy for ethnic ties in the regression, we also use a continuous variable that measures the proportion of traders that are of the same ethnic group as a producer as defined in section 2.2. The estimation is done both on the unmatched sample and the matched sample from the PSM.

[Insert Table 4 here]

For producers in the whole sample, (ceteris paribus) being ethnically tied, measured using the dummy, reduces profit significantly by about 20.0 and 29.0 percent for the unmatched and matched samples respectively (Table 4). The percentage reduction in profitability due to ethnic ties found using the OLS estimation on the matched sample (29.0 percent) is higher than the percentage reduction of 24.3 percent found in the PSM. For producers in the whole sample, (ceteris paribus) ethnic ties, measured using the continuous variable, reduces profit significantly by 22.0 and 25.0 percent for the unmatched and matched samples respectively (Table 4). The result for the matched sample (25.0 percent) is close to what we find in the PSM (24.3 percent).

1
2
3 1 For immigrant producers there is no significant result for both measures of ethnic ties for
4
5 2 the unmatched sample (Table 5). For the matched sample, however, a significant result is
6
7
8 3 found with a reduction in profitability of 27.0 percent using both the dummy and
9
10 4 continuous measures of ethnic ties. The reason why no significant results were found for
11
12 5 the unmatched sample could be due to outliers that may have increased the variance,
13
14 6 preventing more efficient estimates in OLS.
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20 8 In all models for the whole sample (Table 4), more units of labor and machinery, owning
21
22 9 a workshop and having more years of experience increase profit significantly. Producers
23
24 10 belonging to the majority ethnic group (*Gamo*) and those selling their output in open
25
26 11 markets have a significantly lower profit. For the unmatched producers of the whole
27
28 12 sample, a significantly higher profit is found for immigrant producers, producers that are
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30 13 members of producers' cooperatives and producers with more years of schooling.
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36 15 *[Insert Table 5 here]*
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41 17 In all models for immigrant producers only (Table 5), more units of labor have a
42
43 18 significant positive affect on profit. Compared to the models of the whole sample,
44
45 19 machinery and equipment are not any more significant. Similar to the whole sample,
46
47 20 producers that are members of the majority ethnic group (*Gamo*) and producers that sell
48
49 21 their output in open markets have a significantly lower profit. On the other hand,
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51 22 producers that are members of producers' cooperatives have significantly higher profits
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53 23 (Table 5).
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60 25 **5. Discussion and conclusions**

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5 2 This paper analyzes various socio-economic factors leading to ethnic ties in trade
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7 3 relationships and investigates the effect on economic performance by taking small-scale
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9 4 producers of the handloom sector in Ethiopia as a case study and using a parametric and a
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11 5 non-parametric statistical method.
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17 7 Recent immigrants and less experienced producers are more likely to be ethnically tied.
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19 8 This may be caused by the lack of time and resources at hand to establish a wide network
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21 9 of business-related contacts with traders. Ethnic ties are also found to be important for
22
23 10 producers operating in remote areas. Ethnic ties in remote areas may help to reduce risks
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25 11 associated with marketing and facilitate trust in long-distance trades. On the other hand,
26
27 12 producers with a wide network of business-related contacts with different traders such as
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29 13 those operating in producers' cooperatives are less likely to be ethnically tied. Ethnic ties
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31 14 in credit provision are also found to lock producers into trade relationships by increasing
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33 15 the cost of credit and decreasing the probability of trading with 'outsiders' (Portes, 1995a).
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41 17 Although ethnic ties can positively impact business outcomes by reducing transaction
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43 18 costs and facilitating access to various resources, the non-parametric estimate of the PSM
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45 19 reveals that ethnic ties result in lower profit. This could be due to forgone economies of
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47 20 scale from having limited flows of new business-related ideas in closed social networks
48
49 21 that can offset the benefits of ethnic ties. An exclusive social network can also restrict the
50
51 22 extent of business relationships to a limited number of agents who can change the power
52
53 23 structure and manipulate the exchange process depending on their control over 'power
54
55 24 resources' such as information about prices, markets, capital and credit (Nadvi, 1999;
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57 25 Lyon, 2000; Alesina and La Ferrara, 2005). The loss in profit due to ethnic ties is found to
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3 1 be even higher for immigrant producers. This is probably due to the tendency to have
4
5 2 more ‘immigrant-solidarity’ that arises from a common cultural background, which often
6
7 3 results in a greater density of social networks, thereby lowering the probability of
8
9 4 assimilating with ‘outsiders’ (Portes, 1995b). After controlling for the same observable
10
11 5 covariates as in the non-parametric matching method, the OLS regressions further
12
13 6 confirm that both the binary and continuous measures of ethnic ties result in lower profits.
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20 8 In general, producers will continue to transact with traders from the same ethnic group,
21
22 9 even with low returns, as long as the losses incurred by having closed social networks are
23
24 10 offset by the problem-solving capacity of ethnic ties when there are market imperfections
25
26 11 (Bowles and Gintis, 2004). The losses in profit from ethnic ties can be considered as a
27
28 12 shadow price of transacting with ‘outsiders’, which might indicate the cost of intervention
29
30 13 needed in order to reduce the various market imperfections faced by producers. Such an
31
32 14 intervention can be made for example by providing access to business development
33
34 15 services such as training, marketing assistance, information, credit, business linkages and
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36 16 promotion that can be provided by individuals, private for-profit firms, non-government
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38 17 organizations, and government agencies.
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46 19 The main limitation of this study is its inability to control for unobservable factors like
47
48 20 the talent, beliefs and risk behavior of producers that can affect both the likelihood of
49
50 21 being ethnically tied and their profitability. Despite this limitation the study adds to the
51
52 22 growing literature that is exploring the role and impact of social networks on small-scale
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54 23 producers in developing countries.
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3 **1 End Notes**
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3 1. Profit is defined as value of production minus value of raw materials, operational costs
4 and wage and salaries for paid apprentices, seasonal and temporary workers and paid
5 permanent workers. Opportunity cost of family labor is not included because family labor
6 is assumed to be a fixed input in the short run.

7
8 2. STATA software on PSMATCH2 developed by Edwin Leuven & Barbra Sianesi is
9 used.

10
11 3. The 2008 exchange rate was 9.6 birr : 1 US\$

12
13 4. The percentage increase in monthly average profit is calculated as the difference in
14 average profit between matched ethnically tied and non-ethnically tied producers divided
15 by the average profit of matched non-ethnically tied producers.

16
17 5. A log linear specification is chosen because the skewness/kurtosis normality test shows
18 that the residuals of the OLS regression using the level-dependent variable, monthly
19 profit, are not normally distributed while the residuals from the logarithm of monthly
20 profit are normally distributed.

21
22 6. A chow test between the whole sample and the subsample for immigrants shows a
23 significant difference in coefficients across the two, justifying the need to have two
24 separate OLS regressions.
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1 Table 1: Producers' characteristics

	Total		Ethnically tied producers		Non-ethnically tied producers	
	Freq.	%	Freq.	%	Freq.	%
Ethnic Groups						
Oromo	8	1.69	1	12.50	7	87.50
Gurage	3	0.63	1	33.33	2	66.67
Amhara	85	17.97	28	32.94	57	67.06
Gamo	375	79.28	297	79.20	78	20.80
Others	2	0.42	1	50.00	1	50.00
Migration status						
Immigrant	217	45.88	124	57.14	93	42.86
Non-immigrant	256	54.12	204	79.69	52	20.31
Marketing channel						
Open market	395	83.51	292	73.92	103	26.08
Contractual-based transaction	37	7.82	20	54.05	17	45.95
Street stand shops	24	5.07	9	37.50	15	62.50
'door-to-door' traders	17	3.59	7	41.18	10	58.82
Receiving trade credit from traders						
Yes	197	41.65	146	74.11	51	25.89
No	276	58.35	182	65.94	94	34.06

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1 Table 2: Marginal effects^α from probit regression (standard errors are given in parentheses).

Variables	Marginal effects	
	Whole sample	Immigrants only
Male (dummy)	0.03 (0.19)	-0.25 (0.22)
Age	0.01 (0.01)	0.01 (0.02)
Age squared	-0.00 (0.00)	0.00 (0.00)
Schooling	0.00 (0.00)	-0.00 (0.01)
Experience	-0.01*** (0.00)	--
Second generation (dummy)	-0.07 (0.05)	-0.01 (0.08)
Immigrant (dummy)	-0.11** (0.05)	--
Year since immigrated	--	-0.01** (0.00)
Ethnic majority (dummy)	0.33*** (0.08)	0.43*** (0.09)
Member of producers' cooperative (dummy)	-0.29*** (0.08)	-0.35*** (0.11)
Starting capital borrowed from relatives (%)	0.001*** (0.00)	0.001* (0.00)
Open market (dummy)	0.18* (0.09)	0.35** * (0.13)
Contract (dummy)	0.12* (0.07)	0.21 (0.13)
Number of persons working in the enterprise	0.01 (0.02)	0.01 (0.03)
Current value of machinery and equipment	0.01** (0.00)	0.01** * (0.01)
Ownership of workshop (dummy)	-0.12 (0.18)	--
Access to electricity (dummy)	-0.21 (0.05)***	--
Number of observations	473	217
Prob > chi ²	0.00	0.00
Pseudo R ²	0.29	0.30

2

3 ^α Marginal effects are estimated at the sample mean except for the dummy variables.

4 *significant at 10%, ** significant at 5%; *** significant at 1%.

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1 Table 3: Average monthly profit in birr for ethnically tied and non-ethnically tied
 2 producers[Ⓜ].

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	Ethnically tied producers (Treated)	Non-ethnically tied producers (Non-treated)	Difference
Whole Sample			
Unmatched	156.65	343.44	-186.79
Matched (ATT)	156.34	206.65	-50.31 (0.15)**
Immigrants Only			
Unmatched	185.30	359.60	-174.29
Matched (ATT)	199.74	281.74	-82.01 (0.21)*

4 *significant at 10%, ** significant at 5%; *** significant at 1%.

5 [Ⓜ]The standard error for the Average Treatment Effect of the Treated (ATT) are in
 6 parentheses and is estimated after bootstrapping 100 times.

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1 Table 4: OLS regression for the whole sample (dependent variable: log monthly profit)^{xx}

	Unmatched sample		Matched sample	
Ethnic ties (dummy)	-0.20*		-0.29*	
	(0.10)		(0.14)	
Ethnic ties (continuous)	--	-0.22**	--	-0.25*
		(0.11)		(0.15)
Male (dummy)	0.09	0.09	0.19	0.18
	(0.38)	(0.38)	(0.16)	(0.16)
Age	-0.02	-0.02	-0.05	-0.05
	(0.02)	(0.02)	(0.03)	(0.03)
Age squared	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Schooling	0.03**	0.03**	0.02	0.02
	(0.01)	(0.01)	(0.02)	(0.02)
Experience	0.01**	0.01**	0.02***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)
Second generation (dummy)	0.07	0.07	0.07	0.06
	(0.10)	(0.10)	(0.15)	(0.15)
Immigrant (dummy)	0.21**	0.21**	0.15	0.14
	(0.10)	(0.10)	(0.13)	(0.14)
Ethnic majority (dummy)	-0.44***	-0.44***	-0.36*	-0.36*
	(0.12)	(0.12)	(0.19)	(0.20)
Member of producers' cooperative (dummy)	0.23*	0.22*	0.04	0.02
	(0.13)	(0.13)	(0.17)	(0.17)

Starting capital borrowed from relatives (%)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Open market (dummy)	-0.65*** (0.13)	-0.64*** (0.12)	-0.58*** (0.15)	-0.56*** (0.15)
Contract (dummy)	0.15 (0.17)	0.15 (0.17)	0.33 (0.24)	0.35 (0.24)
Number of persons working in the enterprise	0.15*** (0.05)	0.15*** (0.05)	0.17*** (0.06)	0.17*** (0.06)
Current value of machinery and equipment	0.01* (0.01)	0.01** (0.01)	0.02** (0.01)	0.02** (0.01)
Ownership of workshop (dummy)	1.53*** (0.50)	1.54*** (0.49)	1.08** (0.54)	1.06** (0.55)
Access to electricity (dummy)	0.05 (0.12)	0.04 (0.12)	0.16 (0.18)	0.15 (0.18)
Constant	6.01*** (0.56)	6.04*** (0.57)	6.57*** (0.65)	6.62*** (0.64)
R ²	0.330	0.330	0.285	0.278
Number of observations	467	467	463	463

*significant at 10%, ** significant at 5%; *** significant at 1%.

[□] robust standard errors corrected for any form of arbitrary heteroskedasticity are reported in parenthesis.

1 Table 5: OLS regression for immigrant producers only (dependent variable: log monthly profit)^α

	Unmatched sample		Matched sample	
Ethnic ties (dummy)	-0.16	--	-0.27*	--
	(0.14)		(0.15)	
Ethnic ties (continuous)	--	-0.19	--	-0.27
		(0.13)		(0.15)
Male (dummy)	0.75	0.75	0.47	0.47
	(0.72)	(0.73)	(0.83)	(0.83)
Age	-0.04	-0.04	-0.07**	-0.07**
	(0.03)	(0.03)	(0.03)	(0.03)
Age squared	0.00	0.00	0.00*	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Schooling	-0.00	-0.00	-0.00	-0.00
	(0.02)	(0.02)	(0.03)	(0.03)
Second generation (dummy)	0.21	0.21	0.10	0.10
	(0.15)	(0.15)	(0.17)	(0.17)
Year since immigrated	0.01	0.01	0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.01)
Ethnic majority (dummy)	-0.44**	-0.45**	-0.56**	-0.57**
	(0.18)	(0.18)	(0.22)	(0.22)
Member of producers' cooperative (dummy)	0.41**	0.40**	0.46**	0.44**
	(0.19)	(0.18)	(0.23)	(0.23)
Starting capital borrowed from relatives (%)	-0.00*	-0.00*	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Open market (dummy)	-0.80***	-0.80***	-0.78***	-0.77***

	(0.17)	(0.16)	(0.19)	(0.19)
Contract (dummy)	0.21	0.21	-0.00	0.01
	(0.23)	(0.22)	(0.29)	(0.28)
Number of persons working in the enterprise	0.25***	0.24***	0.22***	0.22***
	(0.06)	(0.06)	(0.07)	(0.07)
Current value of machinery and equipment	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Constant	6.01***	6.05**	7.25***	7.33**
	(0.56)	(0.94)	(1.05)	(1.06)
R ²	0.371	0.372	0.306	0.304
Number of observations	215	215	204	204

*significant at 10%, ** significant at 5%; *** significant at 1%.

[□] robust standard errors corrected for any form of arbitrary heteroskedasticity are reported in parenthesis.

1 **Appendix**

2 Table 1: Descriptive statistics of variables

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4 (Figures in columns 'a' are for the whole sample and figures in columns 'b' are for
5 immigrants only).
6

Variables	Mean		Std.Dev		Min		Max	
	a	b	a	b	a	b	a	b
Male (dummy)	0.99	0.99	0.12	0.09	0	0	1	1
Age	36.74	38.24	13.58	13.91	15	16	75	75
Schooling	4.82	4.13	3.65	3.42	0	0	14	12
Experience	16.73	16.72	13.24	14.05	0	0	72	57
Second generation (dummy)	0.67	0.68	0.47	0.47	0	0	1	1
Immigrant (dummy)	0.46	--	0.49	--	0	--	1	--
Year since immigrated	--	18.66	--	13.43	--	0	--	60
Ethnic majority (dummy)	0.79	0.74	0.41	0.44	0	0	1	1
Member of producers' cooperative (dummy)	0.19	0.27	0.39	0.44	0	0	1	1
Starting capital borrowed from relatives (%)	34.36	31.13	45.83	45.49	0	0	100	100
Open market (dummy)	0.84	0.75	0.37	0.44	0	0	1	1
Contract (dummy)	0.08	0.12	0.27	0.33	0	0	1	1
Number of persons working in the enterprise	1.62	1.59	1.10	1.26	1	1	8	8
Current value of machinery & equipment(birr)	326.49	447.84	777.34	1029.55	6	15	7120	7120
Ownership of workshop (dummy)	0.01	0.009	0.12	0.09	0	0	1	1
Access to electricity (dummy)	0.70	0.90	0.46	0.30	0	0	1	1
Monthly profit(birr)	374.73	435.90	799.72	517.57	-816.67	0	14330.83	3041.67

1

2 Table 2: Chi square test for the joint significance of variables.

	Pseudo R ²	LR chi ²	p>chi ²
Whole Sample			
Unmatched	0.31	183.04	0.00
Matched	0.02	16.07	0.45
Immigrants Only			
Unmatched	0.22	65.95	0.00
Matched	0.01	3.76	0.99

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